



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

South East New Territories (SENT) Landfill Extension

Monthly Environmental Monitoring & Audit Report No.9 for September 2019

October 2019

ERM

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South East New Territories (SENT) Landfill Extension

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

Reference Document/Plan

Document/Plan to be Certified/Verified:	Monthly Environmental Monitoring & Audit Report No.9 for September 2019 for South East New Territories (SENT) Landfill Extension
Date of Report:	9 October 2019

Reference EP Condition

EP Condition:

Condition No. 3.4

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

ET Certification

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

Frank Wan, Environmental Team Leader:

(ERM Hong-Kong, Limited)

Warchitt T.

Date: 9 October 2019

IEC Verification

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

Fredrick Leong, Independent Environmental Checker:

Date: 10 October 2019

(Meinhardt Infrastructure and Environment Limited)

South East New Territories (SENT) Landfill Extension

Monthly Environmental Monitoring & Audit Report for September 2019

Environmental Resources Management

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Green \	/alley Landfill Ltd.	0465	5169		
Summary:		Date:			
		9 Oc	t 2019		
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		Partr	ner		1
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Revision	Description	Ву	Checked	Approved	Date
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EXECUTIVE SUMMARY

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

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

Exceedance of Action and Limit Levels for Air Quality

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

Exceedance of Action and Limit Levels for Noise

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

Exceedance of Action and Limit Levels for Surface Water Quality

2 exceedances of the Limit Level for pH and 1 exceedance of the Limit Level for Suspended Solids (SS) were recorded for surface water quality impact monitoring in the reporting period. The pH and SS exceedances at DP4 (Future, temporary) on 5 September 2019 and pH exceedance at DP4 (Future, temporary) on 12 September 2019 were considered not Project-related upon further investigation.

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 October 2019 are mainly associated

with dust emission from the exposed area and loading and uploading operation of dusty materials.

1 INTRODUCTION

1.1 BACKGROUND

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

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

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

1.2 PROJECT DESCRIPTION

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

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

- (1) ERM (2018). South East New Territories (SENT) Landfill Extension: Environmental Monitoring & Audit Manual
- (2) ERM (2007). South East New Territories (SENI) Landfill Extension Feasibility Study: Environmental Impact Assessment Report

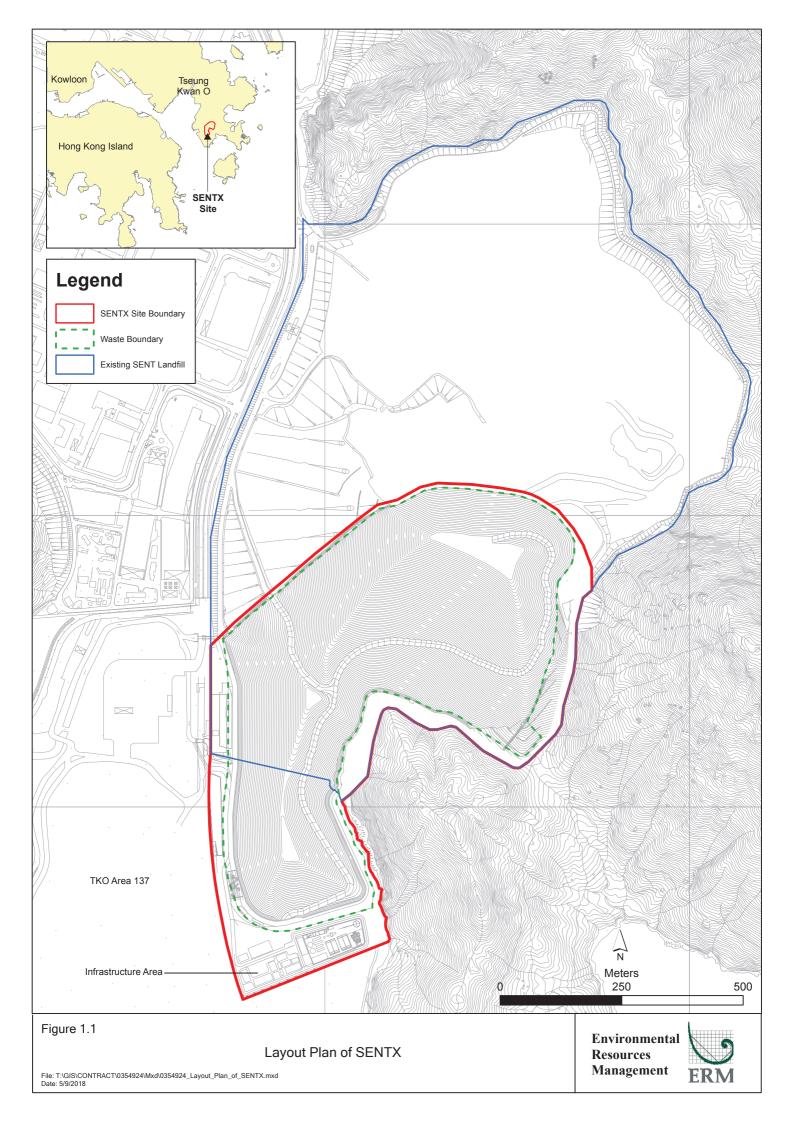


Table 1.1Estimated Key Dates of Implementation Programme

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.

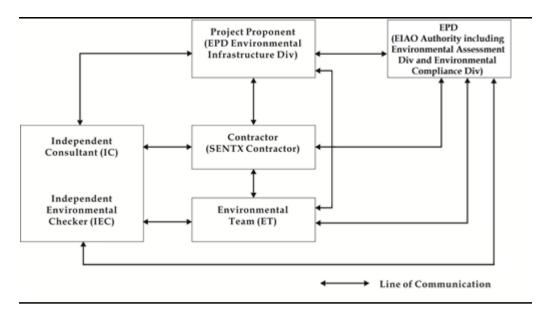
1.3 Scope of the EM&A Report

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 September 2019 for the construction works.

1.4 **PROJECT ORGANISATION**

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

Figure 1.2 Organisation Chart



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

Table 1.2Contact Information of Key Personnel

Party	Position	Name	Telephone
Contractor	Project Manager	Gary Barnicott	2706 8827
(Green Valley Landfill			
Limited)			
Environmental Team (ET)	ET Leader	Frank Wan	2271 3152
(ERM-Hong Kong, Limited)			
Independent Environmental	IEC	Fredrick Leong	28591739
Checker (IEC)			
(Meinhardt Infrastructure			
and Environment Limited)			

1.5 SUMMARY OF CONSTRUCTION WORKS

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

- Rebar fixing, concreting and formwork erection for the plinth and control buildings at Landfill Gas Plant area;
- Excavating, removing and replacing unsuitable fill materials;
- Sediment trap remedial works;
- Construction of drop inlet shaft, MHX1 manhole and outlet box culvert;
- Rebar fixing, formwork and concreting to the Leachate Treatment Plant (LTP) area and EPD, GVL and laboratory buildings;

- Rebar, formwork and concreting to the substructure of infrastructure buildings (EPD building, GVL building and Laboratory);
- Installation of ammonia stripping plant, equalization tank 2 and sequencing batch reactor tank 1 at LTP area;
- Construction of perimeter bund for Cell 1X and 2X;
- Maintenance and improvement of the temporary surface water drainage;
- Preparation works of buttress wall (shotcreting and mass);
- Installing groundwater pipe works along eastern perimeter bund;
- CLP trench works at Area X2; and
- Construction of X12 channel.

The implementation schedule of the mitigation measured recommended in the Updated EM&A Manual is presented in *Annex B*.

1.6 SUMMARY OF EM&A PROGRAMME REQUIREMENTS

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

Table 1.3Summary of Status for the Environmental Aspects under the Updated EM&AManual

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

ENVIRONMENTAL RESOURCES MANAGEMENT

Parameters	Status
Environmental Log Book	On-going

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

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

- One environmental management meeting was held with the Contractor, ER, ET, IEC and EPD on 18 September 2019; and
- Environmental toolbox trainings on Mosquito Nuisance and Persistent Organic Pollutants were provided on 11 September and 23 September 2019 respectively by the Contractor to the workers.

1.7 STATUS OF STATUTORY ENVIRONMENTAL COMPLIANCE WITH THE ENVIRONMENTAL PERMIT

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

Table 1.4Status of Submissions required under the EP and Implementation Status of
Mitigation Measures

EP	Submission / Implementation Status	Status
Condition		
2.3	Management Organisation of Main Construction Companies	Submitted and accepted by EPD.
2.4 2.5	Setting up of Community Liaison Group Submission of Detailed Landfill Gas	Community Liaison Group was set up.
2.5	Hazard Assessment Report	Submitted, and accepted by EPD on 10 January 2019.
2.6	Submission of Restoration and Ecological Enhancement Plan	Submitted to EPD on 28 June 2019.
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 System	1

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.

Description Ref No. Status EP-308/2008 Environmental Permit 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 Licence No.: WT00033525- Validity from 27 March Water Discharge License under WPCO (Permit Holder: Chun Wo) 2019 2019 to 31 March 2024 Billing Account for Disposal of Chit Account Number: Approved on 28 December Construction Waste 5001692 2005 Registration as a Chemical Waste 5213-839-C3507-10 Issued on 23 August 2018 Producer (Permit Holder: Chun Wo) Construction Noise Permit (Permit GW-RE0404-19 Validity from 28 May 2019 Holder: Chun Wo) to 22 November 2019 (cancelled with effect from 9 September 2019 at 07:00 hrs) GW-RE0695-19 Validity from 9 September 2019 to 3 March 2020

Table 1.5Status of Statutory Environmental Requirements

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 2.1Action and Limit Levels for 24-hour TSP

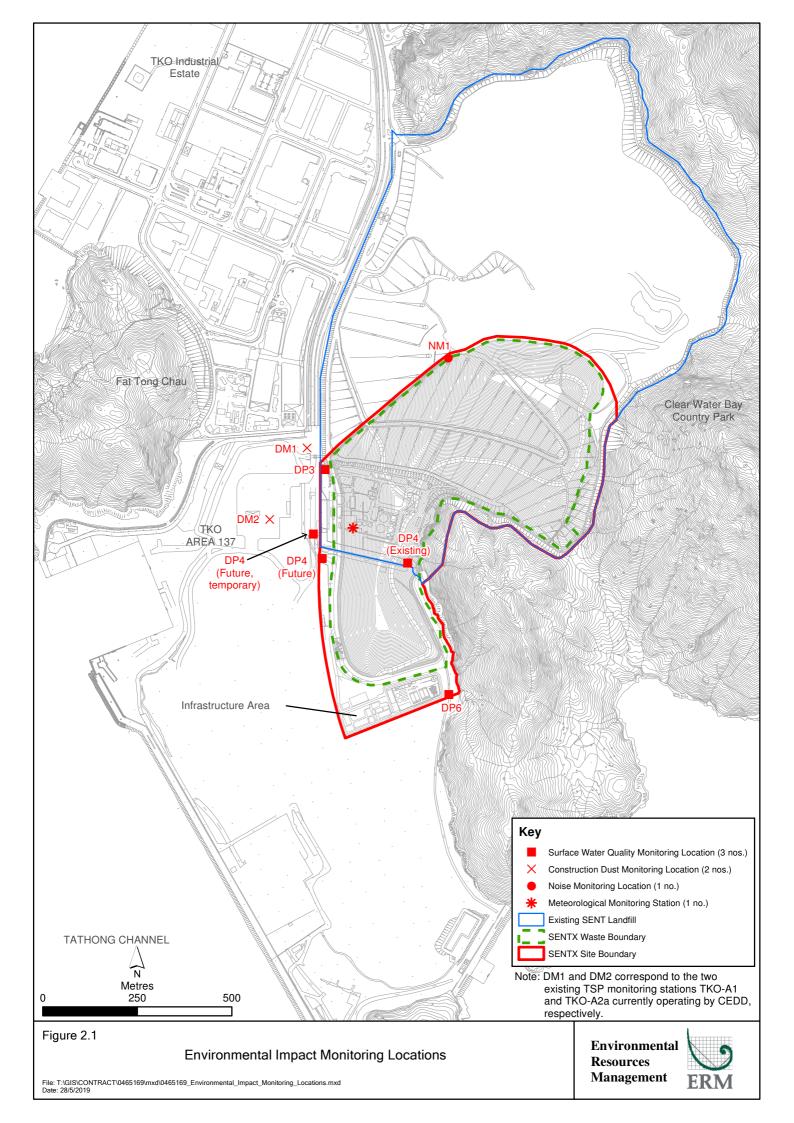
Monitoring Station	Action Level	Limit Level
DM-1 - Site Egress of TKO Area 137 Fill Bank	204 µg m- ³	260 μg m- ³
DM-2A – Combined Reception and Exit Office (CREO) of TKO Area 137 Fill Bank	193 μg m- ³	260 μg m- ³

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

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

Table 2.2Dust Monitoring Details

Monitoring Station	Location	Parameter	Frequency and Duration	0	Equipment
DM1	Site Egress of TKO Area 137 Fill Bank		Once every 6 days during the	7, 13, 19, 25 September 2019	HVS Greasby 105 (S/N: 9795 (ET/EA/003/18))



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

2.1.2 Monitoring Schedule for the Reporting Month

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

2.1.3 *Results and Observations*

The monitoring results for 24-hour TSP are 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 2.3Summary of 24-hour TSP Monitoring Results in the Reporting Period

Monitoring Station	Average 24-hr TSP Concentration (µg m ⁻³) (Range in bracket)	Action Level (µg/m³)	Limit Level (µg/m ³)
DM-1 – Site Egress of TKO Area 137 Fill Bank	103 (67 - 134)	204	260
DM-2A –Combined Reception and Exit Office (CREO) of TKO Area 137 Fill Bank	108 (79 - 146)	193	260

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

All the 24-hour TSP results were below the Action and Limit Levels at the monitoring locations in the reporting period. No action is thus required to be undertaken in accordance with the Event and Action Plan presented in *Annex D*3.

2.1.4 Meteorological Data

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

2.2 Noise Monitoring

2.2.1 Monitoring Requirements and Equipment

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

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

Tim	e Period	Action Level ^(a)	Limit Level ^(b)
	0 – 19:00 hrs on normal «days	When one documented complaint is received from any one of the noise sensitive receivers (NSRs)	75 dB(A) at NSRs
		or	
		75 dB(A) recorded at the monitoring	
		station	
Note	25:		
(a)	75dB(A) along and at al Level.	pout 100m from the SENTX site boundary w	was set as the Action
(b)	Limits specified in the C	GW-TM and IND-TM for construction and	operational noise,

Table 2.4Action and Limit Levels for Construction Noise

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 2.5Noise Monitoring Details

respectively.

Monitoring Station ⁽¹⁾	Location	Parameter	Frequency and Duration	Monitoring Dates	Equipment
NM1	SENTX Site Boundary (North)	Leq (30 min) measurement between 07:00 and 19:00 hours on normal	Once per week for 30 mins during the construction period of the	5, 12, 19, 26 September 2019	Sound Level Meter: B&K 2238 (S/N: 2285762) Acoustic
		weekdays (Monday to Saturday)	Project		Calibrator: Rion NC-75 (S/N: 34680623)

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 2.6Summary of Construction Noise Monitoring Results in the Reporting Period

Monitoring Station	Measu	ared Noise Level L _e	eq (30 min), dB(A)
	Average	Range	Action and Limit Level
NM1	52.6	51.0 - 54.8	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 2.7Action and Limit Levels for Surface Water Quality

Parameters	Action Level	Limit Level
	DP4 & DP6	
DO	< 5.80 mg/L	< 5.42 mg/L

ENVIRONMENTAL RESOURCES MANAGEMENT

Parameters	Action Level	Limit Level	
	DP4 & DP6		
SS	> 11.7 mg/L	> 12.7 mg/L	
pН	> 8.39	> 8.40	

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

Table 2.8Impact Surface Water Quality Monitoring Details

Monitoring Station	Location	Frequency	Monitoring Dates	Parameter	Equipment
DP4 (Future, temporary)	Surface water discharge point DP4	Weekly	5, 12, 19, 26 September 2019	•pH •DO	YSI Professional DSS (S/N: 15H102620)
DP6	Surface water discharge point DP6			•SS	

Notes:

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

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

2.3.2 Monitoring Schedule for the Reporting Month

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

2.3.3 Results and Observations

A total of 4 monitoring events for impact surface water quality monitoring were scheduled at all designated monitoring stations during the reporting period. However, sampling was not carried out on 5 September 2019 at DP6, 19 September 2019 and 26 September 2019 at DP6 due to insufficient flow. Impact water quality monitoring results and graphical presentations are provided in *Annex F2*.

Action and Limit Level exceedances were 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 on the Action and Limit Levels exceedances were conducted and summarised in *Table 2.9* below. Investigation reports of the exceedances are presented in *Annex F4*.

Table 2.9Details of Exceedances Recorded for Surface Water Quality Monitoring

Date	Monitoring Location	Parameter	Type of Exceedance	Remarks
5 September 2019	DP4 (Future, temporary)	pН	Limit Level	Non Project-related
5 September 2019	DP4 (Future, temporary)	SS	Limit Level	Non Project-related
12 September 2019	DP4 (Future, temporary)	pН	Limit Level	Non Project-related

Based on the investigation conducted for each of the monitoring event with potential Action and Limit Levels exceedances with the Contractor, and the IEC, the pH and SS exceedances at DP4 (Future, temporary) on 5 September 2019 and pH exceedance at DP4 (Future, temporary) on 12 September 2019 were considered not Project-related upon further investigation. 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 27 September 2019 to monitor the implementation of the landscape and visual mitigation measures during construction phase.

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

2.4.2 Results and Observations

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

Regarding the landscape and visual audit, the Contractor was reminded to identify the topsoil to be generated from the construction works and plan for the storage and re-use of the topsoil where practical. The Contractor shall consider the mitigation measures during the design phase, including the preparation of the Construction Drawings and Detailed Landscape Design Drawings.

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 5, 12, 18 and 26 September 2019.

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

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

Inspection Date	Environmental Observations and Recommendations
5 September 2019	• The Contractor shall display a NRMM label to the roller near the new haul road.
	• The Contractor shall remove the deposited silt and grit and maintain the concrete bund at the temporary drainage along the Western perimeter bund to prevent overflow of site water
	outside the site boundary.
	• The Contractor shall maintain the concrete partition and enhance the efficiency of the silt removal facilities at DP6 to ensure all water is treated before discharge.
	• The Contractor shall clean up the oil spillage near the sediment trap and handle the clean up materials as chemical waste.
	• The Contractor shall maintain the drainage at the upstream of DP4T (near buttress wall) to avoid direct discharge of muddy water to the channel.
	• The Contractor shall provide drip trays for all chemicals on site and ensure all chemicals are contained inside the drip trays.
	• The Contractor shall clear the general refuse in the refuse skips near DP4T channel regularly to reduce odour and pest impacts and avoid accumulation of stagnant water in the refuse skips.
12 September 2019	 The Contractor shall enhance watering to the site, especially to the working areas to minimize fugitive dust emission. The Contractor shall also increase watering frequency of water trucks to the haul road prior to the complete installation and operation of sprinklers along the haul road.
	• The Contractor shall implement dust control measure when conducting activities related to dusty materials (i.e. handling of sawdust) near future LFG Plant.
	 The Contractor shall remove the deposited silt and grit (especially around the excavator) and maintain the concrete bund at the temporary drainage along the Western perimeter bund to prevent overflow of site water outside the site boundary.
18 September 2019	• The Contractor shall replace the faded NRMM label on the generator near DP6 and ensure all NRMM labels on the regulated machines on site are coloured and clearly visible.
26 September 2019	The Contractor shall display chemical labels to the chemicals placed near sediment trap, future EPD Building and DP6 channel.
	• The Contractor shall replace the NRMM label on the generator near future GVL Building to ensure the label is coloured and clearly visible in accordance with the APCO.
	 The Contractor shall continue to remove the deposited silt and grit at the temporary channel along the Western perimeter bund to prevent overflow of site water outside the site boundary.

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*.

Deficiencies **Rectifications Implemented Proposed Additional Control** Measures Surface Water Intercepting channels Reviewed drainage plan. Addition of channels. • • & drainage system Expedite the construction of permanent sediment trap and discharge culverts. DP channels (design Carried out regular N.A. & regular silt maintenance and cleaning removal) of channels. DP4 channel: Area near the channel was paved with concrete and a bund was built. 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. DP6: Pipes through the gravel piles between different channel sections were covered with geotextiles to block debris and silt. Stockpiles & exposed • Installed silt fencing near Improve soil covering. ٠ soil surface water channel Compaction and cover for along DP6 channel. stockpiles and soil slopes. Wetsep (treatment Reviewed Wetsep Install additional Wetsep. capacity & number) capacity. Chemicals dosage of the Wetsep was increased to enhance the efficiency. Backflow / ponding Raised with EPD (LDG) N.A.

Table 2.11Summary of Environmental Deficiencies Identified and Corresponding
Rectification Actions

2.6 WASTE MANAGEMENT STATUS

during heavy rainfall

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

and CEDD.

As informed by the Contractor, waste generated during this reporting period include mainly non-inert construction waste. 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 2.12Quantities of Different Waste Generated and Imported Fill Materials

Month/ Year	Inert C&D Materials (a)	Impor (in '00	rted Fill 10kg)	Inert Construction Waste Re- used	Non-inert Construction Waste ^(b) (in '000m ³)	Recyclable Materials ^(c) (in '000kg)	Chemical Wastes (in '000kg)
	(in '000m³)	Rock	Soil	(in '000m³)	. ,		
1 - 30	0.007	0	12560.05	0	0.048	0	0.09
September							
19							
Notes:							
					large broken cc 6 (kg/L) for pul		naterials

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

(c) Recyclable materials include metals, paper, cardboard, plastics and others.

2.7 IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURES

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

2.8 SUMMARY OF EXCEEDANCES OF THE ENVIRONMENTAL QUALITY PERFORMANCE LIMIT

The 24-hour TSP monitoring results and construction noise monitoring results complied with the Action and Limit Levels in the reporting period. 2 exceedances of the Limit Level for pH and 1 exceedance of the Limit Level for SS were recorded for surface water quality impact monitoring in the reporting period. The pH and SS exceedances at DP4 (Future, temporary) on 5 September 2019 and pH exceedance at DP4 (Future, temporary) on 12 September 2019 were considered not Project-related upon further investigation.

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 October 2019 will be:

- Site clearance, preparation and formation of Area X1 and X2;
- Excavation and removal of unsuitable fill materials;
- Remaining site formation works at Area X1;
- Filling of perimeter bund for Cell 2X;
- Construction of drop inlet shaft;
- Construction of buttress wall;
- Construction of perimeter wall and plinths at LTP area and substructure at bioplant;
- Installation of ammonia stripping plant, equalization and sequencing batch reactor tanks and other equipment at LTP area;
- Construction of CLP trench;
- Excavation and construction of discharge box culvert;
- Construction of substructure and superstructure of new infrastructure building;
- Construction of plinths and superstructure of Landfill Gas Plant area;
- Construction of X12 channel;
- Construction of groundwater pipe from east to south in Cell 1X and 2X perimeter bund; and
- Construction of substructure and superstructure at maintenance building.

3.2 Key Issues for the Coming Month

Potential environmental impacts arising from the above upcoming construction activities in the next reporting period of October 2019 are mainly associated with dust emission from the exposed area and loading and uploading operation of dusty materials. The ET will keep track on the construction works to confirm compliance of environmental requirements and the proper implementation of all necessary mitigation measures.

3.3 MONITORING SCHEDULE FOR THE COMING MONTH

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

CONCLUSION AND RECOMMENDATION

4

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

Air quality (24-hour TSP), noise and water quality (DO, pH and SS) monitoring were carried out in the reporting period. Results for air quality monitoring (24-hour TSP) complied with the Action and Limit Levels in the reporting period. No Action and Limit Levels exceedances were recorded for construction noise monitoring. 2 exceedances of the Limit Level for pH and 1 exceedance of the Limit Level for SS were recorded for surface water quality impact monitoring in the reporting period. The pH and SS exceedances at DP4 (Future, temporary) on 5 September 2019 and pH exceedance at DP4 (Future, temporary) on 12 September 2019 were considered not Project-related upon further investigation.

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.

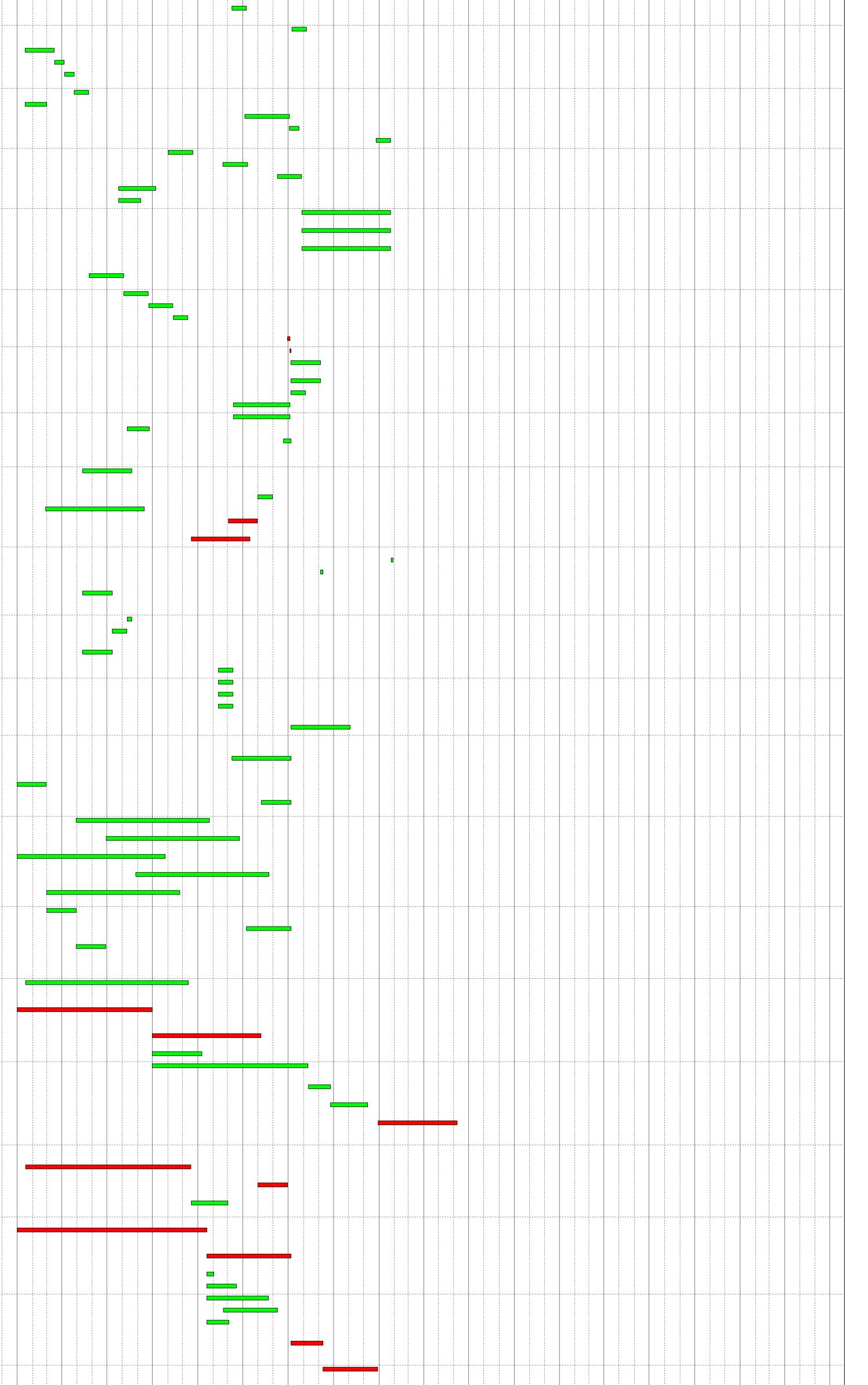
There were no complaints, notification of summons or prosecution recorded in the reporting period.

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

# W	/BS Path Activity Activity Name	Dur Start Finish Total Predecessor Details Successor Details Float	2018 2021 2023 2023 2023 2023 2023 2023 2023
336 337		Float	Q2 Q3 Q4 Q1 Q2 Q3
338 339			
340 341 342			
342 343 344 345			
345 346 347			
348 349			
350 351			
352 353	SA2.5 Construction (Initial Works) SA2.5.02 Advance Works & Site Establishment SA2.5.02.01 Site Establishment & Mobilization	1153 12-Apr-18 07-Jun-21 705 1148 12-Apr-18 02-Jun-21 35 222 42-Apr-14 40-Mar 40 200	
355 355 356	SA2.3.02.01 Site Establishment & Mobilization 5.02.01 52-1000 Site Mobilization for Parts X1 & X2 5.02.01 52-1100 Site Mobilization for Parts X3, X4 & X5	333 12-Apr-18 10-Mar-19 820 Control 30 31-Dec-18 29-Jan-19 820 11-1100: FS, 11-1200: FS 52-1300: FS, M 3. 1: FS, M 3. 2: FS 30 12-Apr-18 11-May-18 1083 11-1300: FS, 11-1400: FS, 11-1500: FS 52-1300: FS, M 3. 1: FF	
357 358	5.02.0152-1200Temporary Office for Employer / ER / IC5.02.0152-1300Hoarding and Fencing Works	60 10-Oct-18 08-Dec-18 0 23-1300: FS 11-1700: SS, M 3. 1: FS 40 30-Jan-19 10-Mar-19 820 52-1000: FS, 52-1100: FS 32-1500: FS, M10. 1: FS -26, M10. 2: F	FS -13, M10. 3: FS
359 360	SA2.5.02.02 Site Survey & Investigation Works for Parts X1 & X2 5.02.02 52-1400 Condition Survey	50 31-Dec-18 18-Feb-19 840 11-1100: FS, 11-1200: FS 52-1600: FS	
361 362	5.02.02 52-1500 Topographic Survey 5.02.02 52-1600 Site inspection, Review of Condition Survey Report	20 31-Dec-18 19-Jan-19 845 11-1100: FS, 11-1200: FS 52-1600: FS 25 25-Jan-19 18-Feb-19 840 52-1500: FS, 52-1400: FS 32-1500: FS	
363 364 365	SA2.5.02.03 Site Survey & Investigation Works for Parts X3, X4 & X5 5.02.03 52-1700 Condition Survey 5.02.03 52-1800 Topographic Survey	50 12-Apr-18 31-May-18 1103 Image: Constraint of the state of the stat	
366 367	5.02.03 52-1900 Site inspection, Review of Condition Survey Report SA2.5.02.04 Environmental Monitoring	25 07-May-18 31-May-18 1103 52-1700: FS, 52-1800: FS 32-1500: FS 975 02-Oct-18 02-Jun-21 35 4	
368 369	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 5.02.04 52-2200 Conduct Baseline Monitoring for Construction (one month)	120 02-Oct-18 29-Jan-19 0 23-1600: FS 52-2200: SS 60 120 02-Oct-18 29-Jan-19 0 23-1600: FS 52-2200: SS 60 30 01-Dec-18 30-Dec-18 0 52-2200: SS 60, 52-2100: SS 60 11-1100: FS	
370	5.02.04 52-2200 Conduct Baseline Monitoring for Operation (one year) SA2.5.03 Civil Engineering Works	30 01-Dec-18 30-Dec-18 0 52-2000: SS 60, 52-2100: SS 60 11-1100: FS 365 03-Jun-20 02-Jun-21 35 32-1500: FS -400, 53-4500: FS 12-1400: FS 748 13-Jan-19 29-Jan-21 834 64 14-1400: FS	
373 374	SA2.5.03.0 Buttress Wall 5.03.0 53-1000 Section adj. SENT	475 02-Mar-19 18-Jun-20 83 6 300 13-Apr-19 06-Feb-20 96 11-1300: FS, 23-2500: FS, 53-3000: FS, 31-1200: FS, 53-1100: FS, 53-1300: FS, 53-3100: FS, 53-3100: FS, 53-1300: FS, 53-3100: FS, 53-1300: FS, 53-1300: FS, 53-3100: FS, 53-1300: FS, 5	FS, M 3. 5: FS -150, M 3.
375 376	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 53-1300: FS, 54-4000: FS, M 3. 3: FS 400 02-Mar-19 04-Apr-20 83 11-1300: FS, 23-2500: FS, 53-3000: FS, 11-1400: FS 53-1300: FS, 53-3100: FS, M 3. 7: FS, M 3.	
377	5.03.0 53-1300 Install Landfill Gas Pipe on Buttress Wall	75 05-Apr-20 18-Jun-20 83 41-1500: FS, 53-1100: FS, 53-1200: FS, 53-1000: FS 54-4000: FS	
378 379	SA2.5.03.1 Landfill Cell 1 5.03.1 53-1400 Earth bund (Eastern)	503 13-Jan-19 29-May-20 214 90 90 04-Aug-19 01-Nov-19 9 11-1100: FS, 23-2500: FS, 53-4200: FS, 53-2800: FS 53-2000: FS, 53-2300: FS, 53-3400: FS 63-1100: FS, 63-1200: FS, 63-1200: FS, 63-1300: FS 9 11-1100: FS, 23-2500: FS, 53-4200: FS, 53-2800: FS 53-2000: FS, 53-2300: FS, 53-3400: FS	
380	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 53-2000: FS, 53-2200: FS, 53-2300: FS 53-3700: FS, 53-3800: FS 53-3700: FS, 53-3800: FS 53-3700: FS, 53-3800: FS	
381 382	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 53-1900: FS, 53-2000: FS, 53-2200: FS 75 13-Jan-19 28-Mar-19 432 11-1100: FS, 23-2500: FS 53-2000: FS	FS, 53-3800: FS
383	5.03.1 53-1900 Pump Station (PS#1X)	90 13-Jan-19 12-Apr-19 217 11-1100: FS, 23-2500: FS, 31-1300: FS 53-1900: FS, 63-1100: FS, 63-1200: FS 45 13-Apr-19 27-May-19 507 53-1800: FS, 53-1600: FS 53-2100: FS, 53-2200: FS	
385	5.03.1 53-2000 Lining Works	135 02-Nov-19* 15-Mar-20 214 41-1500: FS, 53-1400: FS, 53-1500: FS, 53-1600: FS, 53-2100: FS, 53-2100: FS 53-2100: FS	
386 387	5.03.1 53-2100 Protective Stone Laying & Leachate Collection Pipe 5.03.1 53-2200 Install Leachate Force Main	75 16-Mar-20 29-May-20 214 53-2000: FS, 41-1500: FS, 53-1900: FS 32-1500: FS, 54-2800: FS, M 4. 3: FS 75 25-Jul-19 07-Oct-19 449 53-1500: FS, 53-1600: FS, 41-1500: FS, 53-1900: FS 54-2800: FS	
388 389	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 54-4000: FS 30 09-Mar-20 07-Apr-20 266 23-2500: FS, 54-1000: SS 54-2800: FS	
390 391	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	30 09-Jul-20 07-Aug-20 144 23-2500: FS, 63-2600: SS -90 54-2800: FS, M 3. 3: FS 740 16-Jan-19 24-Jan-21 839 54-2800: FS, M 3. 3: FS	
393 394	5.03.5 53-2600 Construct Cut-Off Channel 12A 5.03.5 53-2700 Connect Cut-Off Channel 12A to DP6	60 16-Jan-19 16-Mar-19 9 11-1100: FS, 23-2800: FS 53-2700: FS 20 17-Mar-19 05-Apr-19 9 53-2600: FS, 31-1400: FS, 23-1900: FS 53-2800: FS	
395 396	5.03.5 53-2800 Diversion from Existing Trapezoidal Channel into Channel 12A 5.03.5 53-2900 Removal of Existing Trapezoidal Channel along Eastern Bund	20 06-Apr-19 25-Apr-19 9 53-2700: FS 53-1400: FS, 53-1500: FS, 53-2900: FS 30 26-Apr-19 25-May-19 9 53-2800: FS 53-4200: FS	FS, 63-100: FS,
397 398	5.03.5 53-2900 Reinoval of Existing Trapezoldal 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 23-Valy-19 9 33-2200. FS 53-4200. FS 45 16-Jan-19 01-Mar-19 83 11-1300: FS, 23-2800: FS 53-1000: FS, 53-1200: FS 90 05-Apr-20 03-Jul-20 289 53-1000: FS, 53-1200: FS 53-3200: FS	
399 400	5.03.553-3200Temporary Diversion Cut-Off Channel X5 to 12A5.03.553-3300Culvert X5 (5m long) & Perm Connection of Cut-Off Channel X5	20 04-Jul-20 23-Jul-20 289 53-3100: FS, 23-1900: FS 53-3300: FS, M 3. 4: FS 30 26-Dec-20 24-Jan-21 134 53-4100: FF, 63-1900: FS, 53-3200: FS 32-1500: FS	
401 402	5.03.5 53-3400 Construct Perimeter Channel X6 on Eastern Bund & Southern Bund of Cell 1 5.03.5 53-3500 Construct Perimeter Channel X6 on Eastern Bund of Cell 2 5.03.5 53-3500 Construct Perimeter Channel X6 on Eastern Bund of Cell 2	50 02-Nov-19 21-Dec-19 249 53-1400: FS, 53-1500: FS 53-3500: FS 50 20-Feb-20 09-Apr-20 189 63-1000: FS, 53-3400: FS 53-3600: FS 50 20-bit 20 09-Apr-20 189 63-1000: FS, 53-3400: FS 53-3600: FS	
403	5.03.5 53-3600 Construct Perimeter Channel X6 Eastern Bund of Cell 3 5.03.5 53-3700 Culvert X6 (25m long) at Cell 1 Southern Bund 5.03.5 53 3800 Perimeter Channel (Y9R) at Cell 1 Southern Bund	50 09-Jun-20 28-Jul-20 129 63-1900: FS, 53-3500: FS 53-3900: FS 75 25-Jul-19 07-Oct-19 1314 53-1500: FS 53-3900: FS 45 25-Jul 49 07-Sop 19 1344 53-1500: FS 53-1500: FS	
405 406	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	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 2: FS FS 25-3000: FS 25-3000: FS 25-3000: FF, 53-4100: FF, 53-6000: FS	FS, M 9. 1: FS -90, M 9.
407	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: FF 53-6000: FS, M 9. 3: FS -90, M 9. 4: FS 180 29-Jul-20 24-Jan-21 129 11-1100: FS, 11-1200: FS, 23-1900: FS, 53-3900: FF 53-3300: FF, 53-6000: FS, M 9. 1: FS -90, M 9. 1:	
409	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: FF 53-3300: FF, 53-6000: FS, M 9. 1: FS - 53-3000: FF, 53-6000: FS, M 9. 1: FS - 53-3000: FF, 53-6000: FS, M 9. 1: FS - 53-3000: FF, 53-6000: FS, M 9. 1: FS - 53-3000: FF, 53-6000: FS, M 9. 1: FS - 53-3000: FF, 53-6000: FS, M 9. 1: FS - 53-3000: FF, 53-6000: FS, M 9. 1: FS - 53-3000: FF, 53-6000: FS, M 9. 1: FS - 53-3000: FF, 53-6000: FS, M 9. 1: FS - 53-3000: FF, 53-6000: FS, M 9. 1: FS - 53-3000: FF, 53-6000: FS, M 9. 1: FS - 53-3000: FF, 53-6000: FS, M 9. 1: FS - 53-3000: FF, 53-6000: FS, M 9. 1: FS - 53-3000: FF, 53-6000: FS, M 9. 1: FS - 53-3000: FF, 53-6000: FS, M 9. 1: FS - 53-3000: FF, 53-6000: FS, 53-1000: FS, 53-2000: FS 200 26-May-19 03-Aug-19 9 11-1100: FS, 23-1600: FS, 53-2900: FS 53-1400: FS, 53-4300: FS, 63-1000: FS	
410	5.03.6 53-4300 Construct Groundwater Collection Pipe along Cell X3 Eastern Bund	50 04-Aug-19 22-Sep-19 159 53-4200: FS 53-4200: FS	
412 413 414	5.03.6 53-4400 Construct Groundwater Collection Pipe along Intercell Bund X2/X3 5.03.6 53-4500 Construct Manhole MH-X1 SA2.5.03.7 Utilities - Distribution within New Infrastructure Area	50 23-Sep-19 11-Nov-19 209 53-4300: FS 53-4500: FS, 63-1200: FS 30 12-Nov-19 11-Dec-19 209 53-4400: FS 52-2300: FS, M 9. 5: FS 391 11-Aug-19 04-Sep-20 276 276 276	
415 416	5.03.753-4600Power Supply HV Works (Transformer & HV switchgear)5.03.753-4700Power Distribution, LV Power Supply Works	5 30-Jun-20 04-Jul-20 0 54-3000: FS 12-1200: FS 2 05-Jul-20 06-Jul-20 0 54-3100: FS, 12-1200: FS 12-1000: FS	
417 418	5.03.7 53-4800 Sewerage (Collection to LTP) 5.03.7 53-4900 Sewerage (Discharge to Site Boundary)	60 07-Jul-20 04-Sep-20 271 54-1000: FS, 54-3100: FS, 54-3300: FS, 54-4100: FS 12-1100: FS, 53-6100: FS 60 07-Jul-20 04-Sep-20 271 54-1000: FS, 54-4100: FS, 54-4600: FS 12-1100: FS, 53-6100: FS	
419 420	5.03.7 53-5000 Lighting Provision 5.03.7 53-5100 Fire Services	30 07-Jul-20 05-Aug-20 6 54-100: FS, 54-4100: FS, 54-4600: FS 12-1100: FS, 32-2100: FS 115 12-Mar-20 04-Jul-20 2 53-6800: FS 12-1000: FS	
421 422	5.03.7 53-5200 Water Supply (Fresh & Salt) 5.03.7 53-5300 Telecom & Network	115 12-Mar-20 04-Jul-20 338 53-6600: FS, 53-6700: FS 12-1100: FS 45 11-Aug-19 24-Sep-19 622 53-6400: FS 12-1100: FS 45 22-lum 20 22-lum 20 53-6400: FS 54-6000 FS	
423 424 425	5.03.7 53-5400 Gas Network (LFG to LTP) SA2.5.03.8 Utilities - Works Associated with Utilities Undertakers SA2.5.03.8.U1 CLP	15 22-Jun-20 06-Jul-20 176 54-1000: FF 54-2800: FS 703 27-Feb-19 29-Jan-21 129 60-100 60-100 60-100 459 27-Feb-19 30-May-20 43 60-100 60-100 60-100 60-100	
426	5.03.8.U1 53-5500 Excavate Trench for CLP Cable	100 13-May-19 20-Aug-19 194 23-2900: FS 53-5800: FS, 54-1000: SS, 54-4100: SS 53-5800: FS, 54-1000: SS, 54-4100: SS 1: FS -60, M10. 2: FS -30, M10. 3: FS	
427 428	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) 5.03.8.U1 53-5800 CLP Cable Laying (from Site Boundary to H)/ Switchroom)	30 01-May-20 30-May-20 43 53-5800: FS 54-1000: FF, 54-4100: FF, 54-4600: FF 200 27-Feb-19 14-Sep-19 229 32-2400: FS 54-3000: FS 54-3000: FS 60 02-Mar-20 30-Apr-20 0 53-5500: FS 53-5600: FS 53-5600: FS 53-5600: FS	
429	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: FF 15 53-5600: FS, 54-3000: FS 120 18-Dec-19 15-Apr-20 0 54-2900: FS, 32-2400: FS 53-5800: FF 15	
431 432	SA2.5.03.8.U2 DSD 5.03.8.U2 53-6000 Connection to Storm 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 32-1500: FS 5 05-Sep-20 00-Sep-20 271 53-4100: FS, 53-4000: FS 32-1500: FS	
433 434 435	5.03.8.U2 53-6100 Connection to Foul Drain System SA2.5.03.8.U3 Telecom 5.03.8.U3 53-6200 Excavate Trench for PCCW	5 05-Sep-20 09-Sep-20 271 53-4800; FS, 53-4900; FS 32-1500; FS 100 13-May-19 20-Aug-19 327 53-6400; FS, 54-1000; SS, 54-4100; SS 53-6400; FS, 54-1000; SS, 54-4100; SS 60 13-May-19 11-Jul-19 307 23-2900; FS 53-6400; FS, 54-1000; SS, 54-4100; SS	
436	5.03.8.U3 53-6300 Backfill Trench after PCCW Cable Laying	10 11-Aug-19 20-Aug-19 327 53-6400: FS 54-1000: FF, 54-4100: FF, 54-4600: FF	
437 438 430	5.03.8.U3 53-6400 Laying Cables & Connection SA2.5.03.8.U4 WSD 5.03.8.U4 53-6500 Install Watermain & Piping for Water Supplies	30 12-Jul-19 10-Aug-19 327 53-6200: FS 53-5300: FS, 53-6300: FS 304 13-May-19 11-Mar-20 338 53-600: FS, 53-6700: FS, 53-6800: FS	FS, 53-6900: FS
440	5.03.8.U4 53-6600 Connection for Fresh Water & Meter Installation	30 11-Feb-20 11-Mar-20 338 53-6500: FS, 32-2300: FS 53-5200: FS	
441 442	5.03.8.U4 53-6700 Connection for Salt Water 5.03.8.U4 53-6800 Connection for Fire Services 5.03.8.L4 53-6900 Connection for Cooling Tower & Meter Installation	30 11-Feb-20 11-Mar-20 338 53-6500: FS, 32-2300: FS 53-5200: FS 30 11-Feb-20 11-Mar-20 2 53-6500: FS, 32-2300: FS 53-5100: FS 30 11-Feb-20 11-Mar-20 11 53-6500: FS, 32-2300: FS 53-5100: FS 30 11-Feb-20 11-Mar-20 117 53-6500: FS, 32-2300: FS 54-2700: FS, 54-3900: FS	
443 444 445	5.03.8.U4 53-6900 Connection for Cooling Tower & Meter Installation SA2.5.03.8.U5 HyD Lighting 5.03.8.U5 53-7000 Installation of Public Street Lighting / Handover	30 11-Feb-20 11-Mar-20 117 53-6500: FS, 32-2300: FS 54-2700: FS, 54-3900: FS 120 07-Jul-20 03-Nov-20 216	
446 447 448	SA2.5.04 Building Construction, incl. E&M and System Installation, and T&C SA2.5.04.A Part X1 Area A 5.04.A 54-1000 General Area & Access Road	890 31-Dec-18 07-Jun-21 0 0 554 31-Dec-18 06-Jul-20 36	
449	5.04.A 54-1000 General Alea & Access Road 5.04.A 54-1100 Carpark & Supporting Area	60 31-Dec-18 28-Feb-19 64 23-1300: FS, 11-1100: FS 53-5000: FS, 53-5400: FF, 53-7000: FS 31-Dec-18 28-Feb-19 64 23-1300: FS, 11-1100: FS 32-1500: FS, M 5.11: FS -30, M 5.12: F	FS, 68-1700: FS
450	5.04.A 54-1200 Diesel Fuel Tanks	60 08-May-20 06-Jul-20 36 23-1300: FS, 23-5200: FS, 12-1000: FF, 11-1100: FS 32-2200: FS	
451	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: SS 60 32-2100: FS, M 5. 4: FS -135, M 5. 5: F 270 29-Jun-19 24-Mar-20 44 23-1300: FS, 23-5200: FS, 11-1100: FS, 54-1300: SS 60 32-2100: FS, M 5. 10: FS, 12-1000: FS, 12-1	
453	5.04.A 54-1400 File Service Tank 5.04.A 54-1500 GVL Building	270 29-301-19 24-401-20 44 25-1300. FS, 23-5200. FS, 11-1100. FS, 54-1300. SS 60 52-2100. FS, M 5. 10. FS, M 5. 11. SF 30, M 5. 2: SF 300 31-Dec-18 26-Oct-19 44 23-1300: FS, 23-5200: FS, 11-1100: FS 32-2100: FS, M 5. 1: SF 30, M 5. 2: SF 54-1700: SS 60 54-1700: SS 60 32-2100: FS, M 5. 1: SF 30, M 5. 2: SF	
454	5.04.A 54-1600 Laboratory Building 5.04.A 54-1700 Maintenance Building & Area	270 28-Aug-19 23-May-20 44 23-1300: FS, 23-5200: FS, 11-1100: FS, 54-1400: SS 60 32-2100: FS, M 5. 6: FS -135, M 5. 7: F 270 01-Mar-19 25-Nov-19 44 23-1300: FS, 23-5200: FS, 11-1100: FS, 54-1500: SS 60 32-2100: FS, M 5. 8: FS -135, M 5. 7: F	
456	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: SS 60 32-2100: FS, M 5. 8: FS -135, M 5. 9: F 60 01-Mar-19 29-Apr-19 64 23-1300: FS, 11-1100: FS, 54-1100: FS 32-1500: FS, M 5.11: FS -30, M 5.12: F 54-2000: FS 44 23-1300: FS, 11-1100: FS, 54-1100: FS 54-2000: FS 32-2100: FS, M 5.11: FS -30, M 5.12: F	
457	5.04.A 54-1900 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 32-2200: FS	
459	5.04.A 54-2000 Water Service House SA2.5.04.B Part X1 Area B SA2.5.04.B 1 BioPlant Building	60 30-Apr-19 28-Jun-19 64 23-1300: FS, 23-5200: FS, 11-1100: FS, 54-1800: FS 32-2100: FS, M 5.10: FS, 12-1000: FS, 890 31-Dec-18 07-Jun-21 0 0 330 17-Jan-19 12-Dec-19 243	
461	SA2.5.04.B.1 BioPlant Building 5.04.B.1 54-2100 LTP BioPlant Building SA2.5.04.B.2 Leachate Treatment Plant	330 17-Jan-19 12-Dec-19 243 330 17-Jan-19 12-Dec-19 243 23-1300: FS, 23-5200: FS, 23-3200: FS, 11-1100: FS, 32-2200: FS, 32-2200: FS, M 6. 2: FS - 31-1000: FS 589 31-Dec-18 10-Aug-20 21 21	S-165, M 6. 3: FS
463	SA2.5.04.B.2 Leachate Treatment Plant 5.04.B.2 54-2200 Main Plant Area included Civil works	589 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 SF 30, M 6. 4: FS -137, M 6. 5: FS SF 30, M 6. 4: FS -137, M 6. 5: FS SF 30, M 6. 4: FS -137, M 6. 5: FS	
464	5.04.B.2 54-2300 MEP Installation 5.04.B.2 54-2400 SBR Tanks	220 01-Oct-19 07-May-20 0 41-2100: FS, 41-1800: FS, 22-2100: FS, 54-2200: FS, 12-1000: FS 60, 32-1900: FS, 54-2600: M 6. 9: FS, 32-2200: FS 100 01-Oct-19 08-Jan-20 236 41-2400: FS, 54-2200: FS 54-2600: FS, M 6. 6: FS	0: FS, M 6. 8: FS -110,
466 467	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 54-2600: FS, M 6. 6: FS 315 01-Oct-19 10-Aug-20 21 41-3000: FS, 54-2200: FS 54-2600: FS, M 6. 8: FS -150, M 6. 9: F 301 11-Aug-20 07-Jun-21 0 6 6	FS F
468	5.04.B.3 54-2700 Wet testing	301 11-Aug-20 07-0 u1/21 0 2 45 11-Aug-20 24-Sep-20 21 54-2300: FS, 54-2400: FS, 54-2500: FS 23-6600: FS -150, 23-6900: SS, 54-270 75 25-Sep-20 08-Dec-20 21 54-2600: FS, 12-1200: FS, 53-6900: FS, 31-2200: FS, 54-2800: FS, M11. 2: FS	700: FS, M11. 1: FS
470	5.04.B.3 54-2700 Wet testing 5.04.B.3 54-2800 Operational testing	75 25-Sep-20 08-Dec-20 21 54-2600: FS, 12-1200: FS, 53-6900: FS, 31-2200: FS, 51-2200: FS, 51-22	
471	SA2.5.04.C Part X1 Area C SA2.5.04.C.1 LFG - Power Supply Building	730 31-Dec-18 29-Dec-20 0	
472 473	SA2.5.04.C.1 LFG - Power Supply Building 5.04.C.1 54-2900 LFG Building (with Transformer Room) 5.04.C.1 54-2000 Transformer 8 bl/ (Sutisfaces lastellation)	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 53-5800: FS, 53-5900: FS, 54-3000: FS 60 01 May 20 20 Jun 20 0 E4 2000: ES E1 2600: ES E2 2600: ES E2 2700: ES E3 4600: ES M 7 4: ES 20 M 7 5: ES	
474 475	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 53-4600: FS, M 7. 4: FS -30, M 7. 5: FS 75 18-Dec-19 01-Mar-20 125 54-2900: FS 32-1400: FS, 32-2100: FS, 53-4700: FS	
476 477	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 FS - 30, M 7. 5: FS 384 31-Dec-18 18-Jan-20 0 23-3500: FS, 11-1100: FS 54-3300: FS, 54-3400: FS, 54-3500: FS	FS, 54-3600: FS,
478	5.04.C.2 54-3300 MEP Installation	54-3700: FS, 54-3800: FS, M 7. 1: SF 3 170 19-Jan-20 06-Jul-20 0 54-3200: FS, 12-1000: FF 32-2000: FS, 53-4800: FS, 54-3900: FS	³ 0, M 7. 2: FS -200, M
479	5.04.C.2 54-3400 GHS600 Blower 601 A&B Relocation	15 19-Jan-20 02-Feb-20 155 23-5800: FS, 54-3200: FS 54-3900: FS, M 7. 4: FS -8, M 7. 5: FS	
480 481 482	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 LEG Engine (incl. on-grid protection, PLC control, turning)	60 19-Jan-20 18-Mar-20 110 41-3900: FS, 54-3200: FS 54-3900: FS, M 7. 4: FS -30, M 7. 5: FS 125 19-Jan-20 22-May-20 45 41-3300: FS, 54-3200: FS 54-3900: FS, M 7. 4: FS -60, M 7. 5: FS 110 21-Feb-20 09-Jun-20 27 41-3600: FS, 54-3200: FS 54-3900: FS, M 7. 4: FS -60	
483 484	5.04.C.2 54-3700 LFG Engine (incl. on-grid protection, PLC control, turning) 5.04.C.2 54-3800 Cooling System SA2.5.04.C.3 LFG - Test & Commission	45 19-Jan-20 03-Mar-20 125 22-1500: FS, 54-3200: FS 54-3900: FS, M 7. 4: FS -25, M 7. 5: FS 176 07-Jul-20 29-Dec-20 0 0	<u></u>
485	5.04.C.3 54-3900 MEP Testing	65 07-Jul-20 09-Sep-20 0 54-3400: FS, 54-3500: FS, 54-3600: FS, 54-3700: FS, 51-2200: FS, 51-220	
486	5.04.C.3 54-4000 Operational Testing	111 10-Sep-20 29-Dec-20 0 53-1300: FS, 63-2700: FS, 63-1800: FS, 53-2300: FS, 53-23	FF, 63-4900: FS,
487	SA2.5.04.D Part X1 Area D	374 29-Jun-19 06-Jul-20 6	



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				0.0000.10,00-4000.10,1012.4.10-00,1012.0.10
508	6.02.9 62-1200 Existing SENT LFG		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
507	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	63-3000: FS, 63-4500: FS, M12. 4: FS -30, M12. 5: FS
506	6.02.9 62-1000 Existing SENT General Infrastructure Facility & Building	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
505	SA2.6.02.9 Demolition of SENT Infrastructure Area		09-Jul-21 26-Sep-21 339	
504	SA2.6.02 Advance Works	80	09-Jul-21 26-Sep-21 339	
503	SA2.6 Construction (Remaining Works)	1474	01-Apr-19 13-Apr-23 30	
502	5.08.S 58-1300 Establishment of Screen Planting	270	01-Apr-19* 26-Dec-19 529 58-1200: SS	32-1500: FS
j01	5.08.S 58-1200 Advance Screen Planting		01-Apr-19* 29-Jun-19 529 23-7900: FS, 31-1100: FS, 11-1500: FS	58-1300: SS, M 3. 2: FS
500	SA2.5.08.S Area S	270	01-Apr-19 26-Dec-19 529	
i99	5.08.N 58-1100 Establishment of Screen Planting	270	01-Apr-19* 26-Dec-19 529 58-1000: SS, 14-1800: FS	32-1500: FS
ð	5.08.N 58-1000 Advance Screen Planting	90	01-Apr-19* 29-Jun-19 529 23-7900: FS, 31-1100: FS, 11-1500: FS	14-1800: SS -60, 58-1100: SS, 68-1600: SS 30, M 3. 2: FS
97	SA2.5.08.N Area N		01-Apr-19 26-Dec-19 529	
196	SA2.5.08 Landscape Works - Advance Screen Planting in CWB Country Park		01-Apr-19 26-Dec-19 529	
495	5.04.E 54-4700 Guard House & Entrance Gate	100	26-Jan-20 04-May-20 63 23-1300: FS, 23-5200: FS, 11-1100: FS, 11-1200: FS, 54-4500: SS 30	32-2100: FS, M 8. 2: FS, 12-1000: FS
			12-1000: FF, 11-1100: FS, 11-1200: FS	
494	5.04.E 54-4600 General Area & Access Road		09-Mar-20 06-Jul-20 6 53-5500: SS, 53-5600: FF, 53-6200: SS, 53-6300: FF,	32-2100: FS, 53-4900: FS, 53-5000: FS, 53-7000: FS
493	SA2.5.04.E Part X1 Area E & Part X2	163	26-Jan-20 06-Jul-20 6	
92	5.04.D 54-4500 Wheel Wash Bath	75	27-Dec-19 10-Mar-20 63 23-1300: FS, 23-5200: FS, 41-4500: FS, 11-1100: FS, 54-4200: SS 60	32-2100: FS, M 8. 3: FS, 12-1000: FS, 54-4700: SS 30
191	5.04.D 54-4400 Weighmaster House	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
190	5.04.D 54-4300 Weighbridge	75	29-Aug-19 11-Nov-19 63 41-4200: FS, 23-1300: FS, 23-5200: FS, 11-1100: FS, 54-4400: SS 60	32-2100: FS, M 8. 6: FS -40, M 8. 7: FS, 54-4200: SS 60
89	5.04.D 54-4200 VWF Building	120	28-Oct-19 24-Feb-20 63 23-1300: FS, 23-5200: FS, 41-4500: FS, 11-1100: FS, 54-4300: SS 60	32-2100: FS, M 8. 4: FS, M 8. 6: FS -60, M 8. 7: FS, 12-1000: FS, 54-4500: SS 60
			53-6300: FF, 12-1000: FF, 11-1100: FS	53-7000: FS, M 8. 5: FS
488	5.04.D 54-4100 General Area & Access Road		09-Mar-20 06-Jul-20 6 23-1300: FS, 53-5500: SS, 53-5600: FF, 53-6200: SS,	32-2100: FS, 53-4800: FS, 53-4900: FS, 53-5000: FS,
487	SA2.5.04.D Part X1 Area D	37/	29-Jun-19 06-Jul-20 6	

# WBS Path Activity Activity Name	Dur Start Finish Total Predecessor Details	Successor Details		2018		20	010		2	120		2021			2022	2		2023
	Float		Q2	Q3	Q4 Q1	Q2	Q3	Q4 Q1	1 Q2	Q3	Q4 Q1	Q2	Q3 Q4	Q1	Q2	Q3	Q4	Q1 Q2 (
509 SA2.6.03 Civil Engineering Works	1259 02-Nov-19 13-Apr-23 30																	
510 SA2.6.03.2 Landfill Cell 2 511 6.03.2 63-1000 Earth bund (Eastern)	449 02-Nov-19 23-Jan-21 810 110 02-Nov-19 19-Feb-20 9 11-1100: FS, 23-2500: FS, 53-4200: FS, 53-1400: FS, 53-1400	53-3500; FS, 63-1500; FS, 63-1800; FS, 63-1900; FS,																· · · · · · · · · · · · · · · · · · ·
	53-2800: FS	63-2000: FS, 63-2100: FS, 63-2200: FS, M12. 1: FS -50, M12.																
		2: FS, 63-1100: FS																
512 6.03.2 63-1100 Earth bund (Western)	110 20-Feb-20 08-Jun-20 84 11-1100: FS, 23-2500: FS, 53-1800: FS, 53-1400: FS,	63-1400; FS. 63-1500; FS. 63-1700; FS. 63-3500; FS.																
	63-1000: FS	63-3600: FS, 63-1200: FS																
513 6.03.2 63-1200 Intercell bund (Cell 2/3)	90 09-Jun-20 06-Sep-20 734 11-1100: FS, 23-2500: FS, 53-1800: FS, 53-1400: FS,	63-1500: FS																
	53-4400: FS, 63-1100: FS																	
514 6.03.2 63-1300 Site Formation	75 02-Nov-19 15-Jan-20 14 11-1100: FS, 23-2500: FS, 53-1800: FS, 53-1400: FS	63-1400: FS, 63-4200: FS																
515 6.03.2 63-1400 Pump Station (PS#2X)	45 09-Jun-20 23-Jul-20 84 63-1300: FS, 63-1100: FS	63-1600: FS, 63-1700: FS																
516 6.03.2 63-1500 Lining Works	90 01-Oct-20* 29-Dec-20 710 41-1500: FS, 63-1000: FS, 63-1100: FS, 63-1200: FS	63-1600: FS, M12. 3: FS, 63-2400: FS												· · · · · · · · · · · · · · · · · · ·				
517 6.03.2 63-1600 Protective Stone Laying & Leachate Collection Pipe	25 30-Dec-20 23-Jan-21 810 63-1500: FS, 41-1500: FS, 63-1400: FS	32-1600: FS, M12. 3: FS																
518 6.03.2 63-1700 Install Leachate Force Main	75 24-Jul-20 06-Oct-20 84 63-1100: FS, 41-1500: FS, 63-1400: FS	54-2800: FS, M12. 3: FS																
519 6.03.2 63-1800 Install Landfill Gas Pipe on earth bund	35 20-Feb-20 25-Mar-20 168 41-1500: FS, 63-1000: FS	54-4000: FS, M12. 3: FS																
520 SA2.6.03.3 Landfill Cell 3	714 20-Feb-20 02-Feb-22 435																	
521 6.03.3 63-1900 Earth bund (Eastern)	110 20-Feb-20 08-Jun-20 9 11-1100: FS, 53-4200: FS, 63-1000: FS, 53-4300: FS, 53-2800: FS, 63-4200: FS	53-3300: FS, 53-3600: FS, 63-2400: FS, 63-2700: FS, M12. 1: FS -50, M12. 2: FS, 63-2000: FS -45, 63-2200: FS																
	53-2000. FS, 63-4200. FS	F3 -50, M12. 2. F3, 03-2000. F3 -45, 03-2200. F3																
522 6.03.3 63-2000 Earth bund (Western)	110 25-Apr-20 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 63-2100 Intercell bund (Cell 3/4)	105 29-Jun-20 11-Oct-20 789 11-1100: FS, 63-1000: FS, 63-4200: FS, 63-2000: FS -45	63-2400: FS																
524 6.03.3 63-2200 Site Formation	75 09-Jun-20 22-Aug-20 9 11-1100: FS, 63-1000: FS, 63-1900: FS	63-2300: FS																
525 6.03.3 63-2300 Pump Station (PS#3X)	45 23-Aug-20 06-Oct-20 9 63-2200: FS, 63-2000: FS	63-2500: FS, 63-2600: FS																
526 6.03.3 63-2400 Lining Works	100 01-Oct-21* 08-Jan-22 435 41-1500: FS, 63-2000: FS, 63-2100: FS,	63-2500: FS, M12. 3: FS												·····				
	63-1500: FS																	
527 6.03.3 63-2500 Protective Stone Laying & Leachate Collection Pipe	25 09-Jan-22 02-Feb-22 435 63-2400: FS, 41-1500: FS, 63-2300: FS	32-1700: FS, M12. 3: FS																
528 6.03.3 63-2600 Install Leachate Force Main	75 07-Oct-20 20-Dec-20 9 63-2000: FS, 41-1500: FS, 63-2300: FS	53-2500: SS -90, 54-2800: FS, M12. 3: FS																
529 6.03.3 63-2700 Install Landfill Gas Pipe on earth bund	35 09-Jun-20 13-Jul-20 58 41-1500: FS, 63-1900: FS	54-4000: FS, M12. 3: FS																
530 SA2.6.03.4 Landfill Cell 4	584 07-Sep-21 13-Apr-23 30																	
531 6.03.4 63-2800 Remaining Portion of Buttress Wall	120 07-Sep-21 04-Jan-22 494 62-1000: FS																	
532 6.03.4 63-2900 Earth bund (Western) incl. MSE Wall	120 07-Sep-21 04-Jan-22 239 62-1000: FS	63-3000: FS, 63-3100: FS, 63-3200: FS, 63-3400: FS,																
		63-3800: FS, 63-3900: FS, 63-4100: SS -90, M 9. 6: FS -60, M 9. 7: FS -30, M 9. 8: FS																
533 6.03.4 63-3000 Site Formation	120 05-Jan-22 04-May-22 239 62-1000: FS, 62-1100: FS, 62-1200: FS, 63-2900: FS,	63-3100: FS																
524 C 02 A C 22400 Dume Chaties (DCHAV)	63-4100: FS	63-3300: FS, 63-3400: FS																
534 6.03.4 63-3100 Pump Station (PS#4X)	45 05-May-22 18-Jun-22 239 63-3000: FS, 63-2900: FS																	
535 6.03.4 63-3200 Lining Works	135 01-Oct-22* 12-Feb-23 0 41-1500: FS, 63-2900: FS	63-3300: FS, M12. 6: FS																
536 6.03.4 63-3300 Protective Stone Laying & Leachate Collection Pipe	60 13-Feb-23 13-Apr-23 0 41-1500: FS, 63-3200: FS, 63-3100: FS	12-1900: FS, 32-1800: FS, M12. 6: FS																
537 6.03.4 63-3400 Install Leachate Force Main & Remove Temporary Leachate Pipe	30 19-Jun-22 18-Jul-22 269 41-1500: FS, 63-2900: FS, 63-3100: FS	12-1900: FS, 32-1800: FS, M12. 6: FS																
538 SA2.6.03.5 Drainage - Surface Run-Off 539 6.03.5 63-3500 Perimeter Channel (X9A) at Cell 2 Western Bund	750 16-Jan-20 03-Feb-22 464 15 09-Jun-20 23-Jun-20 1054 63-1100: FS	12-1900: FS																
		63-4000: FS																
540 6.03.5 63-3600 Perimeter Channel (X10A) at Cell 2 Western Bund	30 09-Jun-20 08-Jul-20 1029 63-1100: FS																	
541 6.03.5 63-3700 Perimeter Channel (X10A) at Cell 3 Western Bund	30 13-Aug-20 11-Sep-20 964 63-2000: FS	63-4000: FS																
542 6.03.5 63-3800 Perimeter Channel (X10A) at Cell 4 Western Bund	20 05-Jan-22 24-Jan-22 464 63-2900: FS	63-4000: FS																
543 6.03.5 63-3900 Perimeter Channel (X10C) at Cell 4 Western Bund	15 05-Jan-22 19-Jan-22 469 63-2900: FS	63-4000: FS																
544 6.03.5 63-4000 Connection to Existing DP3	10 25-Jan-22 03-Feb-22 464 63-3900: FS, 63-3600: FS, 63-3700: FS, 63-3800: FS	12-1900: FS																
545 6.03.5 63-4100 Remove Cut-Off Channel C-7 at bottom of Buttress Wall	30 09-Jun-21 08-Jul-21 419 63-2900: SS -90	63-3000: FS																
546 6.03.5 63-4200 Temporary Channel (X7T) at SENT Infrastructure Area	30 16-Jan-20 14-Feb-20 14 63-1300: FS	63-1900: FS, 63-2100: FS																
547 SA2.6.03.6 Drainage - Ground Water	85 07-Sep-21 30-Nov-21 529																	
548 6.03.6 63-4300 Construct Temporary Channel (TC-1), from MH-1 to Existing UC-825	50 07-Sep-21 26-Oct-21 529 23-1900: FS, 11-1300: FS, 62-1000: FS	63-4400: FS																
549 6.03.6 63-4400 Divert GW at MH-1 to TC-1	5 27-Oct-21 31-Oct-21 529 63-4300: FS	63-4500: FS, M 9. 9: FS																
550 6.03.6 63-4500 Reconnection of GWCP across Cell 4	30 01-Nov-21 30-Nov-21 529 62-1100: FS, 62-1200: FS, 63-4400: FS	12-1900: FS																
551 SA2.6.03.8 Utilities - Works Associated with Utilities Undertakers	255 15-Nov-20 27-Jul-21 655																	
552 SA2.6.03.8.U1 CLP	210 30-Dec-20 27-Jul-21 655																	
553 6.03.8.U1 63-4600 LFG Generator On-grid Testing	180 30-Dec-20 27-Jun-21 655 32-2500: FS, 12-1200: FS, 54-4000: FS	63-4700: FS																
554 6.03.8.U1 63-4700 LFG Generator On-grid Inspection & Verify	30 28-Jun-21 27-Jul-21 655 63-4600: FS	12-1900: FS																
555 SA2.6.03.8.U6 TownGas	55 15-Nov-20 08-Jan-21 855	C2 4000 E0												····				
556 6.03.8.U6 63-4800 Laying Gas Mains (from LFG to Town Gas PF)	45 15-Nov-20 29-Dec-20 855 54-4000: FF	63-4900: FS																
557 6.03.8.U6 63-4900 Gas Meter Relocation & Connection at LFG	10 30-Dec-20 08-Jan-21 855 63-4800: FS, 54-4000: FS	12-1900: FS																
558 SA2.6.04 Building & E&M Works	661 01-Oct-19 22-Jul-21 660																	
559 SA2.6.04.C Part X1 Area C 560 SA2.6.04.C.02 LFG Treatment Plant	661 01-Oct-19 22-Jul-21 660 661 01-Oct-19 22-Jul-21 660																	
561 6.04.C.02 64-1000 GHS600 Blower 601 C Relocation	15 08-Jul-21 22-Jul-21 660 32-1500: FS	12-1900: FS																
562 6.04.C.02 64-1100 Absorption Chiller (Optional)	90 01-Oct-19 29-Dec-19 1231 54-2200: FS	12-1900: FS																
563 SA2.6.08 Landscape Works	613 01-Apr-19 03-Dec-20 891																	
564 SA2.6.08.1 SENT Area - Tree Removal & Transplanting	240 01-Apr-19 26-Nov-19 1264																	
565 6.08.1 68-1000 Access trees condition and select for transplanting	30 01-Apr-19* 30-Apr-19 1264 14-1300: FS	68-1100: FS, 68-1200: FS, 68-1400: FS																
566 6.08.1 68-1100 Prepare new site to receive trees	90 01-May-19 29-Jul-19 1264 68-1000: FS	68-1200: SS				1 1												
567 6.08.1 68-1200 Transplant selected trees	120 01-May-19 28-Aug-19 1264 68-1000: FS, 68-1100: SS	68-1300: FS																
568 6.08.1 68-1300 Prune trees prior to removal from Cell 4	90 29-Aug-19 26-Nov-19 1264 68-1200: FS	12-1900: FS																
569 6.08.1 68-1400 Tree Felling - Part X3	90 01-May-19 29-Jul-19 1384 23-8200: FS, 31-1600: FS, 68-1000: FS	12-1900: FS																
570 SA2.6.08.2 SENTX Area - Trial Nursery & Tree Planting	583 01-May-19 03-Dec-20 891																	
571 6.08.2 68-1600 Trial Nursery	300 01-May-19 24-Feb-20 1174 14-1800: FS, 58-1000: SS 30	12-1900: FS, M 3. 2: FS					· · · · · · · · · · · · · · · · · · ·	+										
572 6.08.2 68-1700 Landscaping in New Infrastructure Area	150 07-Jul-20 03-Dec-20 891 54-1000: FS, 23-7600: FS	12-1900: FS																

Remaining Work		South-East New Territories Land Fill Extension (SA2-SENTX)	Date	Revision	Checked	Approved
	Page : 4 of 4		11-May-18	SENTX-GVL-W-PB-ZZ-0001 Rev. I01		
 Milestone 		Baseline Programme	20-Jul-18	SENTX-GVL-W-PB-ZZ-0001 Rev. I02 (Detailed)		

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?	the n		implement ure? ⁽¹⁾ 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	 <u>Blasting</u> The area within 30m of the blasting area will be wetted prior to blasting. Blasting will not be carried out when 	dust nuisance a	Blasting area and 30m of blasting area	SENTX Contractor		✓		Air Pollution Control (Construction Dust) Regulations	Not applicable. Blasting is not required in the latest landfill design
		the strong wind signal or tropical cyclone warning signal No. 3 or higher is hoisted, unless this is with the express prior permission of the Commissioner of Mines.								
		• loose material and stones in the Site will be removed prior to the blast operation								
		• During blasting, blast nets, screens and other protective covers will be used to prevent the projection of flying fragments and material resulting from blasting								
4.8.1	AQ2	 <u>Rock Drilling</u> Watering will be carried out at the rock drilling activities to avoid fugitive dust emissions. 	To minimise potential dust nuisance	Rock drilling area	SENTX Contractor		~		Air Pollution Control (Construction Dust) Regulations	Not applicable. Rock drilling is not required in the latest landfill design

Annex B Environmental Mitigation Implementation Schedule

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

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended	Location of the Measures	Who to implement			implemen aure? ⁽¹⁾	t What requirements or standards for the	Implementation Status and Remarks
		0	Measure & Main Concerns to address		the measure?	D	С	O/R A	measure to achieve?	
4.8.1	AQ3	Site Access Road	To minimise potential		SENTX		✓		Air Pollution Control	Implemented
		• The main haul road will be kept clear of dusty materials or sprayed with	dust nuisance	road	Contractor				(Construction Dust) Regulations	
		water.							HKAQO and EIAO- TM Annex 4	
		 The main haul road will be paved with aggregate or gravel. 							11v111111RA 1	
		• Vehicle speed will be limited to 10kph.								
4.8.1	AQ4	Stockpiling of Dusty Materials	To minimise potential		SENTX		✓		Air Pollution Control	Implemented
		• 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.	dust nuisance	construction works area	Contractor				(Construction Dust) Regulations HKAQO and EIAO- TM Annex 4	
4.8.1	AQ5	Loading, unloading or transfer of dusty materials	To minimise potential dust nuisance	All construction	SENTX Contractor		✓		Air Pollution Control (Construction Dust)	Deficiency of mitigation measures
		• All dusty materials will be sprayed		works area					Regulations	but rectified by the
		with water immediately prior to any loading, unloading or transfer operation so as to maintain the dusty material wet.							HKAQO and EIAO- TM Annex 4	Contractor
4.8.1	AQ6	Site Boundary and Entrance	To minimise potential	Site boundary	SENTX		√		Air Pollution Control	Not applicable
		• 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	dust nuisance	and entrance	Contractor				(Construction Dust) Regulations HKAQO and EIAO-	

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?	the measure? ⁽¹⁾			What requirements or standards for the measure to achieve?	Implementation Status and Remarks
		ground level will be provided along the entire length of that portion of the site boundary except for the site entrance or exit.	Concerns to address						TM Annex 4	
4.8.1	AQ7	 Excavation Works Working area of any excavation or earth moving operation will be sprayed with water immediately before, during and immediately after the operation so as to ensure that the entire surface is wet. 	To minimise potential dust nuisance	All construction works area	SENTX Contractor	~	~		Air Pollution Control (Construction Dust) Regulations HKAQO and EIAO- TM Annex 4	Not applicable
4.8.1	AQ8	 Building Demolition The area where the demolition works are planned to take place will be sprayed with water immediately prior to, during and immediately after the demolition activities. Any dusty materials remaining after a stockpile is removed will be wetted with water and cleared from the surface of roads or street. 	To minimise potential dust nuisance	All construction works area	SENTX Contractor	v	, ,		Air Pollution Control (Construction Dust) Regulations HKAQO and EIAO- TM Annex 4	Not applicable
4.8.1	AQ9	 <u>Construction of the Superstructure of Building</u> Effective dust screens, sheeting or netting will be provided to enclose the scaffolding from the ground level up to the highest level of the scaffolding. 	To minimise potential dust nuisance	All construction works area	SENTX Contractor	~	, ,		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?	the		imple sure? ^{(;} O/R		What requirements or standards for the measure to achieve?	Implementation Status and Remarks
4.8.1	AQ10	Should a stone crushing plant be needed on site, the control measures recommended in the <i>Best Practicable</i> <i>Means Requirement for Mineral Works</i> <i>(Stone Crushing Plants) 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	Implemented
4.10.1	AQ12	Dust monitoring once every 6 days	Ensure the dust generated from the project meets the air quality requirement	At monitoring locations shown in <i>Figure 3.2a</i>	SENTX Contractor		~			HKAQO and EIAO- TM Annex 4	Implemented
4.10.2	AQ41	Monitoring of ambient TSP once every 6 days	Ensure the dust emission from the project meets the dust requirement	At monitoring locations shown in <i>Figure 11.3a</i>	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 <i>Figure 11.3a</i>	SENTX Contractor		✓	•	•	-	Implemented

Noise – Construction Phase

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended	Location of the Measures	Who to implement			implei sure? ⁽¹⁾		What requirements or standards for the	Implementation Status and Remarks	
			Measure & Main Concerns to address		the measure?	D	С	O/R	А	measure to achieve?		
5.7.1	N1	 Adopt good site practice listed below: Only well-maintained plant will be operated on-site and plant should be serviced regularly during the construction program; 	To minimise potential construction noise nuisance.	All construction works area	SENTX Contractor		~			Noise Control Ordinance (NCO) and EIAO-TM Annex 5	Implemented	
		• Silencers or mufflers on construction equipment should be utilized and will be properly maintained during the construction program;	e r									
		• 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
			Measure & Main Concerns to address		the measure?		С	O/R A	measure to achieve?	
5.8	N2	Weekly noise monitoring	Ensure noise generated from the project meets the criteria	At monitoring locations shown in <i>Figure 6.4a</i>	SENTX Contractor		✓		Noise Control Ordinance (NCO) and EIAO-TM Annex 5	Implemented
Water Qui	ality – Co	nstruction Phase								
6.8.1	WQ1	Construction Runoff								
		• Exposed soil areas will be minimised	To minimise potential	All	SENTX		\checkmark		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	
5.8.1	WQ2	• Perimeter channels will be	To minimise potential	All	SENTX	\checkmark	\checkmark		ProPECC PN 1/94	Implemented
		constructed in advance of site formation works and earthworks and intercepting channels will be provided	water quality impacts arising from the construction works	construction works area	Contractor				Water Pollution Control Ordinance (WPCO)	
		for example along the edge of excavation.							EIAO-TM Annex 6	
5.8.1	WQ3	• Silt removal facilities, channels and	To minimise potential	All	SENTX		\checkmark		ProPECC PN 1/94	Deficiency of
		manholes will be maintained and the	water quality impacts	construction	Contractor				WPCO	mitigation measures
		deposited silt and grit should be removed regularly to ensure they are functioning properly at all times.	arising from the construction works	works area					EIAO-TM Annex 6	but rectified by the Contractor
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 Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	the n		i mplement ure? ⁽¹⁾ O/R A	What requirements or standards for the measure to achieve?	Implementation Status and Remarks		
		and grease will pass through the oil interceptors.	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	Infrastructure			✓		ProPECC PN 1/94	Not applicable		
		prevent building debris, soil etc from entering public sewers/drains before	water quality impacts arising from the	area at existing SENT	Contractor				WPCO			
		commencing any demolition works	demolition works	Landfill					EIAO-TM Annex 6			
6.8.1	WQ7	• During the excavation works for the	To minimise potential	Tunnel boring	SENTX		✓		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	SENTX	SENTX		✓		ProPECC PN 1/94	Implemented
		schedules, lining and covering of excavated stockpiles	contaminated stormwater run-off	construction works	Contractor				WPCO			
		excavated stockpiles	from the SENTX Site	WOIKS					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	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?	
6.8.2	WQ11	Sewage Effluents								
		• Sufficient chemical toilets will be provided for the construction workforce.	To minimise potential water quality impacts arising from the sewage effluents	SENTX Site	SENTX Contractor		✓		WPCO	Implemented
6.8.2	WQ12	0	To minimise potential	SENTX Site	SENTX		\checkmark		WPCO	Deficiency of
		to discharge into the surrounding water body.	water quality impacts arising from the sewage effluents		Contractor				WDO	mitigation measures but rectified by the Contractor
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		\checkmark		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	adverse environmental impacts are prevented		Contractor				Waste Disposal (Charges for Disposal of Construction Waste) Regulation;	
		reception facilities, sorting facilities, 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	-	the m	easur		or standards for the	Implementation Status and Remarks
			Measure & Main Concerns to address		the measure?	D	C C	D/R A	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	<u>Measures for the Reduction of</u> <u>Construction Waste Generation</u>								
		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	Implemented
7.6.1	WM4	Chemical Waste								
		The construction contractor will register as a chemical waste producer with the	To ensure proper handling of chemical	SENTX Site	SENTX Contractor		✓		WDO	Deficiency of mitigation measures
		EPD. Chemical waste producer with the in accordance with the <i>Code of Practice on</i> <i>the Packaging, Handling and Storage of</i>	waste		Connector				Code of Practice on the Packaging, Handling and Storage of Chemical Wastes	but rectified by the Contractor

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?		o implement asure? ⁽¹⁾ O/R A	What requirements or standards for the measure to achieve?	Implementation Status and Remarks
		Chemical Wastes.							
7.6.1	WM5	<u>Sewage</u>							
		An adequate number of portable toilets will be provided at the site to ensure that sewage from site staff is properly collected. The portable toilets will be desludged and maintained regularly by a specialist contractor.	To ensure proper handling of sewage	SENTX Site	SENTX Contractor	~		WDO EIAO-TM Annex 7	Implemented
7.6.1 and	WM6	General Refuse							
SENTX latest design		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	V		WDO EIAO-TM Annex 7	Deficiency of mitigation measures but rectified by the Contractor
		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.							
7.6.1	WM7	Staff Training At the commencement of the construction works, training will be provided to workers on the concepts of site cleanliness and on appropriate waste management procedures, including	To ensure that adverse environmental impacts are prevented	SENTX Site	SENTX Contractor	~			Implemented

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

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended	Location of the Measures	Who to implement			o implo sure? (What requirements or standards for the	Implementation Status and Remarks
			Measure & Main Concerns to address		the measure?	D	С	O/F	R A	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	•	~	~	~	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	To protect workers from landfill gas risk	Infrastructure Area	SENTX Contractor	•	•			EPD's Landfill Gas Hazards Assessment Guidance Note EIAO-TM Annex 7	Not applicable

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended	Location of the Measures	Who to implement		implen sure? ⁽¹⁾	What requirements or standards for the	Implementation Status and Remarks
			Measure & Main Concerns to address		the measure?		O/R	measure to achieve?	
		between the waste and the new infrastructure area to monitor the migration of landfill gas, if any.							
Ecology –	Construct	ion Phase							
9.10.2	EC1	Measures to control construction runoff:Exposed soil areas will be	To minimise potential water quality impacts	construction	SENTX Contractor	~		EIAO-TM Annex 16 ProPECC PN 1/94	Implemented
		minimised to reduce the contamination of runoff and erosion;	affecting ecological resources	works area				Water Pollution Control Ordinance (WPCO)	
								EIAO-TM Annex 6	
		• 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;						-	Implemented
		• 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;						-	Deficiency of mitigation measures but rectified by the Contractor
		• Temporary covers such as tarpaulin will also be provided to minimise the generation of high suspended solids runoff;						-	Implemented

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	the n	neasu	mplen ure? ⁽¹⁾ O/R		What requirements or standards for the measure to achieve?	Implementation Status and Remarks
		• The surface runoff contained any oil and grease will pass through the oil interceptors; and,								-	Not applicable
		• 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.								-	Implemented
9.10.2 and	EC2	Good Construction Practice:									
SENTX latest design		• 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.	To minimise potential ecological impacts arising from the Project	SENTX Site	SENTX Contractor		✓			EIAO-TM Annex 16	Implemented
		• The work site boundaries will be regularly checked to ensure that they are not breached and that damage does not occur to surrounding areas.									
9.12.1	EC9	<u>Environmental Monitoring & Audit</u> <u>Requirements</u>	To ensure that	SENTX	SENTX		✓	✓	✓	EIAO-TM Annex 16	Implemented
		The implementation of the ecological mitigation measures should be checked as part of the environmental monitoring and audit procedures during the	adverse ecological impacts are prevented		Contractor						p 101101100

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	-			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		✓		EIAO-TM Annex 18	Implemented
10.6.5	LV3	CM3 - All existing trees at the edges of the landfill will be carefully protected during construction. Detailed Tree Protection Specification will be provided in the Contract Specification. Under this Specification, the Contractor will be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in Contractor's works areas.	To minimise the landscape and visual impacts	Potential impacted area	SENTX Contractor		~		EIAO-TM Annex 18 and ETWBC 3/2006	Implemented
10.6.5	LV4	CM4 - Trees unavoidably affected by the works will be transplanted, where necessary and practical. A detailed Tree	landscape and visual	Potential impacted area	SENTX Contractor	~	✓		EIAO-TM Annex 18 and ETWBC 3/2006	Not applicable

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

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main	Location of the Measures	Who to implement	the	meas	implement sure? ⁽¹⁾	What requirements or standards for the measure to achieve?	Implementation Status and Remarks
			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		V		EIAO-TM Annex 18	Not applicable
11.4.1 and SENTX latest design	LV9	During the preparation of the detailed landscape design plan, the design submission will be audited against the recommendation proposed in the <i>ER</i> <i>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	~	✓		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

September 2019

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



東業德勤測試顧問有限公司 ETS-TESTCONSULT LTD.

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

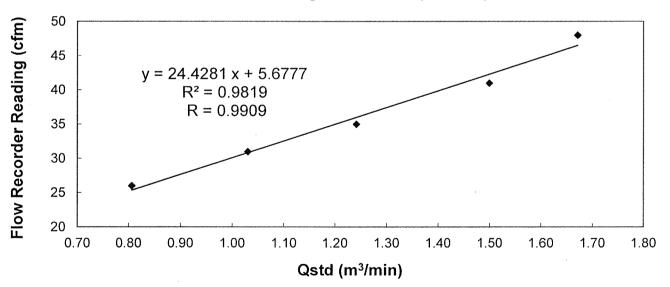
T: +852 2695 8318 F: +852 2695 3944 E: etl@ets-testconsult.com W: www.ets-testconsult.com

Calibration Report

of High Volume Air Sampler

Manufacturer	:	Graseby 105	Date of Calibration		:	29 July 2019				
Serial No.	:	9795 (ET/ĖA/003/18)	Calibration Due Date			28 Se	ptember 20)19		
Method	:	Five-point calibration by using standard calibration kit Tisch TE-5025A refer to the Operations Manual								
Results	:	Flow recorder reading (cfm)	48	41		35	31	26		
	Qstd (Actual flow rate, m ³ /min)		1.67	1.50		1.24	1.03	0.81		
		Pressure : 754.56 mm	Hg	Temp. :		303	ĸ			

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 :

Ner

LIAO, Yun Chao (Technician)

Checked by :

LAU, Chi Leung (Environmental Team Leader)

- END OF REPORT -



東業德勤測試顧問有限公司 ETS-TESTCONSULT LTD.

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

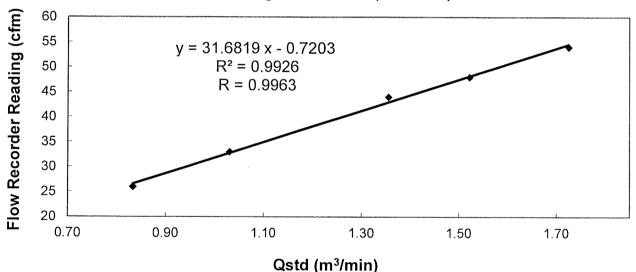
T: +852 2695 8318 F: +852 2695 3944 E: etl@ets-testconsult.com W: www.ets-testconsult.com

Calibration Report of

High Volume Air Sampler

Manufacturer	:	Andersen G1051	Date of Calibration			29 July 2019			
Serial No.	:	1176 (ET/EA/003/05)	Calibration Due Date			28 September 2019			
Method	:	Based on Operations Manual for the 5-point calibration using standard calibration kit manufactured by Tisch TE-5025 A							
Results	:	Flow recorder reading (cfm) Qstd (Actual flow rate, m ³ /min)	54 1.72	48 1.52		44 1.36	33 1.03	26 0.83	
		Pressure : 754.56 mm	Hg	Temp. :		303	К		

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.

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

Calibrated by : / LIAO,

LIAO, Yun Chao (Technician)

- END OF REPORT -

24-hour TSP Monitoring Results

Start Date	Start Time	Finish Date	Finish Time	Weather	24-hour TSP (µg/m3)
1 Sep 19	8:00	2-Sep-19	8:00	Fine	94
7 Sep 19	8:00	8 Sep 19	8:00	Fine	134
13 Sep 19	11:25	14 Sep 19	11:25	Cloudy	89
19 Sep 19	8:00	20 Sep 19	8:00	Fine	129
25 Sep 19	8:00	26 Sep 19	8:00	Fine	67
				Average	103
				Min	67
				Max	134
Note:					

Table D2.124-hour TSP Monitoring Results at DM1

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

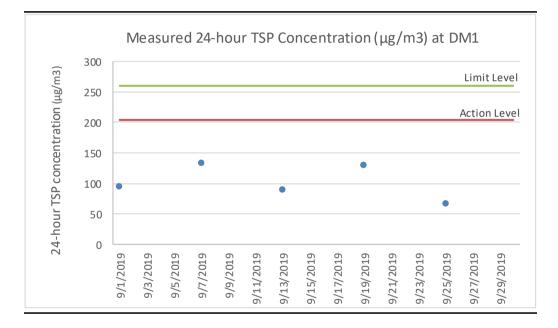
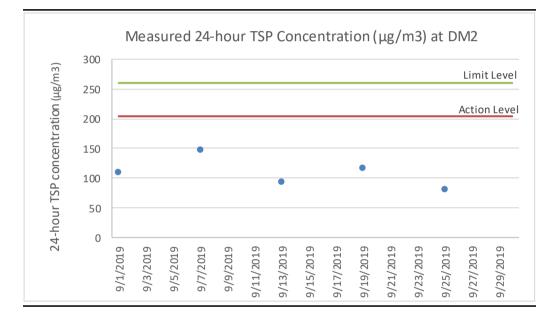


Table D2.224-hour TSP Monitoring Results at DM2

Start Date	Start Time	Finish Date	Finish Time	Weather	24-hour TSP (µg/m3)
1 Sep 19	8:00	2-Sep-19	8:00	Fine	108
7 Sep 19	8:00	8 Sep 19	8:00	Fine	146
13 Sep 19	11:30	14 Sep 19	11:30	Cloudy	92
19 Sep 19	8:00	20 Sep 19	8:00	Fine	115
25 Sep 19	8:00	26 Sep 19	8:00	Fine	79
				Average	108
				Min	79
				Max	146
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

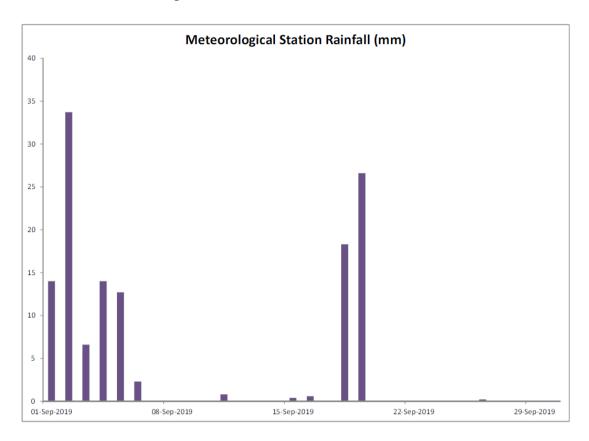
		Action	
Event	ET	IEC	Contractor
Action Level			
Exceedance for one sample	 Identify the source(s) and investigate the cause(s) of exceedance Prepare Notification of Exceedance within 24 hours Inform Contractor, IEC and Project Proponent whether the cause of exceedance is due to the Project Repeat measurement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

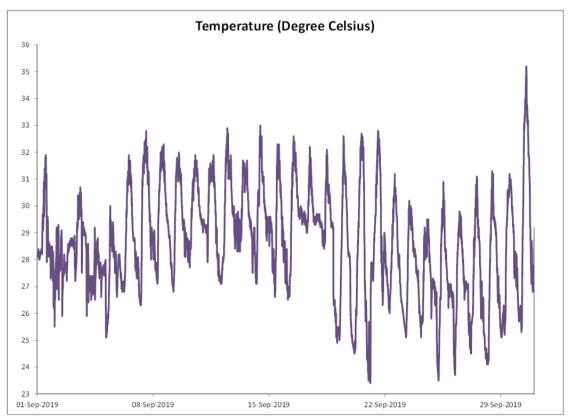
Annex D3 Event and Action Plan for Dust Monitoring During Construction Phase

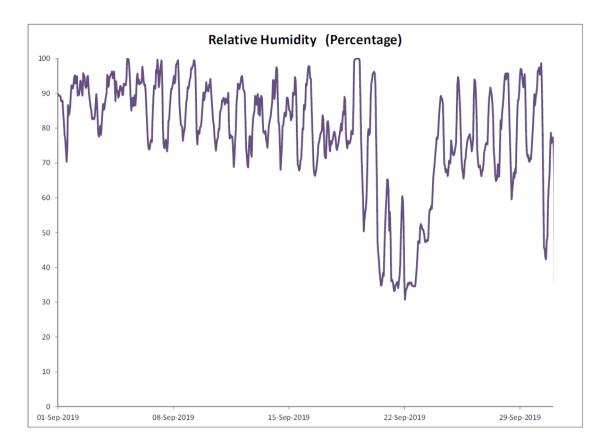
		Action	
Event	ET	IEC	Contractor
Limit Level			
Exceedance for one sample	 Identify the source(s) and investigate the cause(s) of exceedance Prepare Notification of Exceedance within 24 hours Inform Contractor, IEC, Project Proponent and EPD whether the cause of exceedance is due to the Project Discuss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

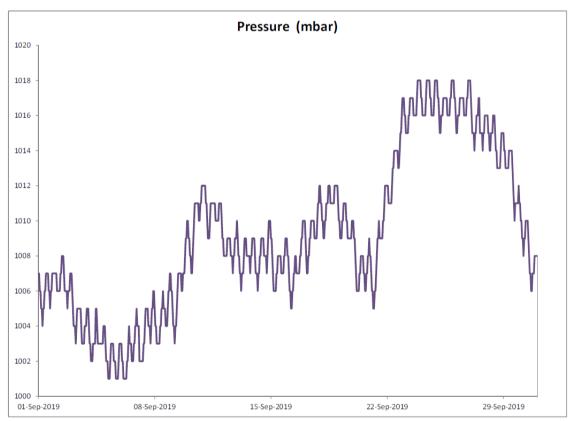
Meteorological Data

Annex D4 Meteorological Data

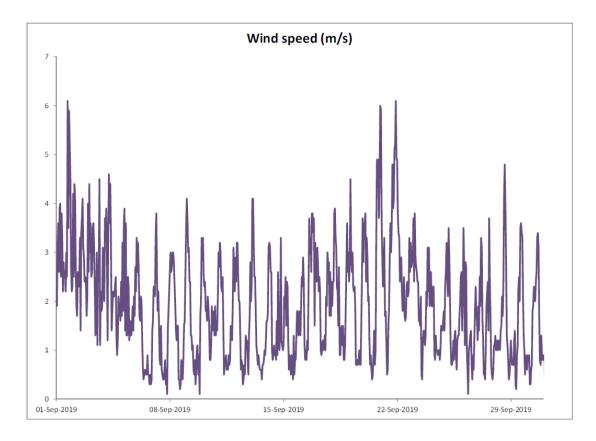


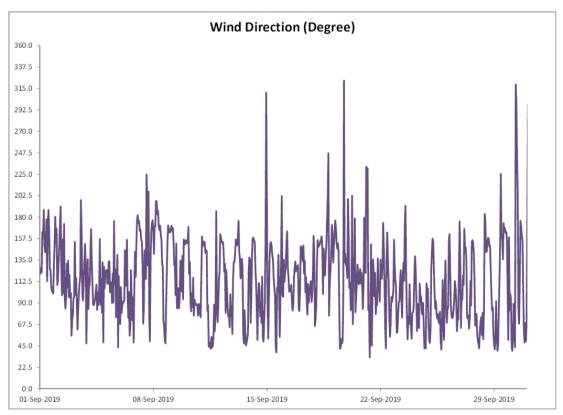


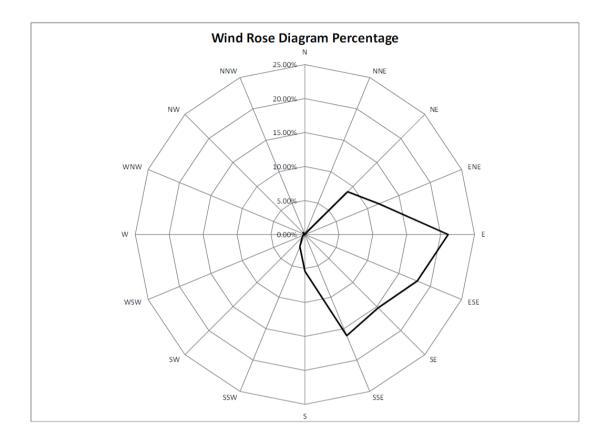




ENVIRONMENTAL RESOURCES MANAGEMENT







Manual Rain Gauge Readings

September 2019

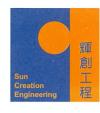
Date	Rainfall
	(mm)
1 Sep 19	35.4
2 Sep 19	25.8
3 Sep 19	18.0
4 Sep 19	24.0
5 Sep 19	4.0
6 Sep 19	1.0
7 Sep 19	0.0
8 Sep 19	0.0
9 Sep 19	0.0
10 Sep 19	1.2
11 Sep 19	0.0
12 Sep 19	0.0
13 Sep 19	0.0
14 Sep 19	0.4
15 Sep 19	1.2
16 Sep 19	0.0
17 Sep 19	0.0
18 Sep 19	55.2
19 Sep 19	1.0
20 Sep 19	0.0
21 Sep 19	0.0
22 Sep 19	0.0
23 Sep 19	0.0
24 Sep 19	0.0
25 Sep 19	0.3
26 Sep 19	0.0
27 Sep 19	0.0
28 Sep 19	0.0
29 Sep 19	0.0
30 Sep 19	0.0
TOTAL RAINFALL	167.5

Annex E

Noise

Annex E1

Calibration Certificates for Noise Monitoring Equipment



Sun Creation Engineering Limited

Calibration & Testing Laboratory

Certificate of Calibration 校正證書

Certificate No. : C193753 證書編號

ITEM TESTED / 送檢項目	(Job No. / 序引編號:IC19-1098)	Date of Receipt / 收件日期: 5 July 2019
Description / 儀器名稱 :	Integrating Sound Level Meter (EQ006)	
Manufacturer / 製造商 :	Brüel & Kjær	
Model No. / 型號 :	2238	
Serial No. / 編號 :	2285762	
Supplied By / 委託者 :	Action-United Environmental Services and C	onsulting
	Unit A, 20/F., Gold King Industrial Building,	
	35-41 Tai Lin Pai Road, Kwai Chung, N.T.	

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C Line Voltage / 電壓 : --- Relative Humidity / 相對濕度 : (50±25)%

TEST SPECIFICATIONS / 測試規範

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

K C Lee Engineer

Certified By 核證

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 — 校正及檢測實驗所 c/o 香港新界屯門興安里一號四樓 Tel/電話: (852) 2927 2606 Fax/傳真: (852) 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com Pa



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	40 MHz Arbitrary Waveform Generator	C190176
CL281	Multifunction Acoustic Calibrator	CDK1806821

- 5. Test procedure : MA101N.
- 6. Results :
- 6.1 Sound Pressure Level
- 6.1.1 Reference Sound Pressure Level
- 6.1.1.1 Before Self-calibration

	UUT S	Setting	Applied	Value	UUT	
Range	Parameter	Frequency	Time	Level	Freq.	Reading
(dB)		Weighting	Weighting	(dB)	(kHz)	(dB)
50 - 130	L _{AFP}	А	F	94.00	1	94.4

6.1.1.2 After Self-calibration

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

6.1.2 Linearity

	UUT	Γ Setting		Applie	d Value	UUT
Range	Parameter	Frequency	Time	Level	Freq.	Reading
(dB)		Weighting	Weighting	(dB)	(kHz)	(dB)
50 - 130	L_{AFP}	А	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.

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

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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

		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}	А	F	94.00	1	94.1	Ref.
	L _{ASP}		S			94.1	± 0.1
	L _{AIP}		Ι			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}	А	F	106.0	Continuous	106.0	Ref.
	L _{AFMax}				200 ms	104.9	-1.0 ± 1.0
	L _{ASP}		S		Continuous	106.0	Ref.
	L _{ASMax}				500 ms	102.0	-4.1 ± 1.0

6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting			Applied Value		UUT	IEC 60651	
Range	Parameter	Frequency	Time	Level	Freq.	Reading	Type 1 Spec.
(dB)		Weighting	Weighting	(dB)		(dB)	(dB)
50 - 130	L_{AFP}	А	F	94.00	31.5 Hz	55.2	-39.4 ± 1.5
					63 Hz	68.1	-26.2 ± 1.5
					125 Hz	78.0	-16.1 ± 1.0
					250 Hz	85.4	-8.6 ± 1.0
					500 Hz	90.8	-3.2 ± 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

Certificate of Calibration 校正證書

Certificate No. : C193753 證書編號

6.3.2 C-Weighting

C-weighting								
UUT Setting					Applied Value		IEC 60651	
Range	Parameter	Frequency	Time	Level	Freq.	Reading	Type 1 Spec.	
(dB)		Weighting	Weighting	(dB)	-	(dB)	(dB)	
50 - 130	L _{CFP}	С	F	94.00	31.5 Hz	91.5	-3.0 ± 1.5	
					63 Hz	93.4	-0.8 ± 1.5	
					125 Hz	93.9	-0.2 ± 1.0	
					250 Hz	94.1	0.0 ± 1.0	
					500 Hz	94.1	0.0 ± 1.0	
					1 kHz	94.1	Ref.	
					2 kHz	93.9	-0.2 ± 1.0	
					4 kHz	93.3	-0.8 ± 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

1 mile 1 iv	Thild Averaging									
	UUT Setting				Ap	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 250 Hz - 500 Hz 1 kHz 2 kHz - 4 kHz 8 kHz 12.5 kHz 104 dB : 1 kHz 114 dB : 1 kHz Burst equivalent level	: $\pm 0.30 \text{ dB}$: $\pm 0.20 \text{ dB}$: $\pm 0.35 \text{ dB}$: $\pm 0.45 \text{ dB}$: $\pm 0.70 \text{ dB}$: $\pm 0.10 \text{ dB}$ (Ref. 94 dB) : $\pm 0.10 \text{ dB}$ (Ref. 94 dB) : $\pm 0.2 \text{ dB}$ (Ref. 110 dB
		continuous sound level)

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

Note :

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

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

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

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

Certificate of Calibration 校正證書

Certificate No. : C186448 證書編號

ITEM TESTED / 送檢項目	(Job No. / 序引編號: IC18-0867) Date of Receipt / 收件日期: 8 November 2018
Description / 儀器名稱 :	Sound Calibrator (EQ089)
Manufacturer / 製造商 :	Rion
Model No. / 型號 :	NC-75
Serial No. / 編號 :	34680623
Supplied By / 委託者 :	Action-United Environmental Services and Consulting
	Unit A, 20/F., Gold King Industrial Building,
	35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C Line Voltage / 電壓 : --- Relative Humidity / 相對濕度 : (50 ± 25)%

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 24 November 2018

TEST RESULTS / 測試結果

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

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

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- The Bruel & Kjaer Calibration Laboratory, Denmark
- Agilent Technologies / Keysight Technologies

•

- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA

Tested By 測試

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ΗТ	Wong

Technical Officer

K C Lee Engineer

Certified By 核證 Date of Issue 簽發日期 :

27 November 2018

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

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

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 Tel/電話: (852) 2927 2606 Fax/傳真: (852) 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com Page 1 of 2



Certificate of Calibration 校正證書

Certificate No. : C186448 證書編號

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

Equipment ID CL130 CL281 TST150A Description Universal Counter Multifunction Acoustic Calibrator Measuring Amplifier <u>Certificate No.</u> C183775 CDK1806821 C181288

- 4. Test procedure : MA100N.
- 5. Results :
- 5.1 Sound Level Accuracy

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

5.2 Frequency Accuracy

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

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

Note :

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

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

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

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

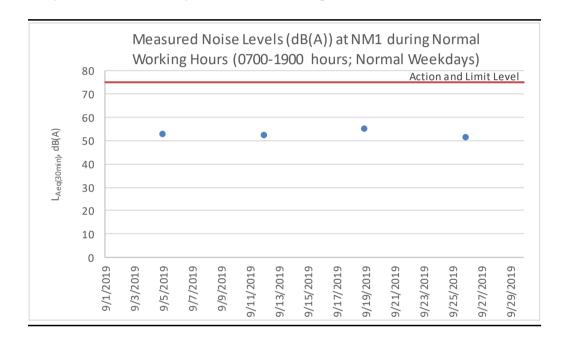
Annex E2

Noise Monitoring Results

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

Date	Start Time	Finish Time	Weather	L _{10 (30min)}	L90 (30min)	Leq (30min)
5 Sep 19	15:42	16:12	Cloudy	53.9	49.6	52.5
12 Sep 19	15:25	15:55	Sunny	53.5	49.5	52.0
19 Sep 19	14:56	15:26	Sunny	56.0	52.0	54.8
26 Sep 19	15:07	15:37	Sunny	52.5	48.5	51.0
					Average	52.6
					Min	51.0
					Max	54.8

Figure E2.1 Graphical Presentation for Noise Monitoring at NM1



Annex E3

Event and Action Plan for Noise Monitoring

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

Annex E3 Event and Action Plan for Construction Noise

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: CLIENT:	MR BEN TAM ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING	WORK ORDER:	HK1936450
ADDRESS:	RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T. HONG KONG	SUB-BATCH: LABORATORY: DATE RECEIVED: DATE OF ISSUE:	0 HONG KONG 26-Aug-2019 02-Sep-2019

<u>COMMENTS</u>

Equipment information (Brand name, Model No., Serial No. and Equipment No.) is provided by client. The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.

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

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

Scope of Test:Conductivity, Dissolved Oxygen, pH Value, Turbidity, Salinity and TemperatureEquipment Type:Multifunctional MeterBrand Name/ Model No.:YSI Professional DSSSerial No./ Equipment No.:15H102620/ 15H103928 (EQW018)

NOTES

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

30-Aug-2019

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

Ma Ani

Mr Chan Siu Ming, Vico Manager - Inorganic

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Date of Calibration:

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

WORK ORDER:	HK1936450			
SUB-BATCH: DATE OF ISSUE: CLIENT:	0 02-Sep-2019 ACTION UNITED ENVIRONMEN	IT SERVICES AND CONSULTING		
Equipment Type:	Multifunctional Meter			
Brand Name/ Model No.:	YSI Professional DSS			
Serial No./ Equipment No.:	15H102620/ 15H103928 (EQ	W018)		
Date of Calibration:	30-Aug-2019	Date of Next Calibration:	30-Nov-2019	

PARAMETERS:

Conductivity

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

Expected Reading (µS/cm)	Displayed Reading (µS/cm)	Tolerance (%)		
146.9	160.7	+9.4		
6667	6485	-2.7		
12890	12380	-4.0		
58670	55669	-5.1		
	Tolerance Limit (%)	±10.0		

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

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)		
7.43	7.41	-0.02		
4.06	4.07	+0.01		
2.05	2.20	+0.15		
	Tolerance Limit (mg/L)	±0.20		

pH Value

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

Expected Reading (pH unit)	Displayed Reading (pH unit)	Tolerance (pH unit)
4.0	4.15	+0.15
7.0	7.07	+0.07
10.0	9.90	-0.10
	Tolerance Limit (pH unit)	±0.20

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

Ma Alin

Mr Chan Siu Ming, Vico Manager - Inorganic

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

WORK ORDER:	HK1936450			AL
SUB-BATCH: DATE OF ISSUE: CLIENT:	0 02-Sep-2019 ACTION UNITED ENVIRONMEN	T SERVICES AND CONSULTING		
Equipment Type:	Multifunctional Meter			
Brand Name/ Model No.:	YSI Professional DSS			
Serial No./ Equipment No.:	15H102620/ 15H103928 (EQ)	W018)		
Date of Calibration:	30-Aug-2019	Date of Next Calibration:	30-Nov-2019	

PARAMETERS: Turbidity

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

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

Salinity

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

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

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

Ma Li

Mr Chan Siu Ming, Vico Manager - Inorganic

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

WORK ORDER:	HK1936450			ALS
SUB-BATCH: DATE OF ISSUE: CLIENT:	0 02-Sep-2019 ACTION UNITED ENVIRONMEN	T SERVICES AND CONSULTING		
Equipment Type:	Multifunctional Meter			
Brand Name/ Model No.:	YSI Professional DSS			
Serial No./ Equipment No.:	15H102620/ 15H103928 (EQ)	V018)		
Date of Calibration:	30-Aug-2019	Date of Next Calibration:	30-Nov-2019	
PARAMETERS:	Mathad Dafi Saction 6 of Intern	ational Accreditation New Zealand	Technical	
Temperature	Method Ker: Section 6 of Interna	ational Accieditation New Zealand	rechnical	

Guide No. 3 Second edition March 2008: Working Thermometer Calibration Procedure.Expected Reading (°C)Displayed Reading (°C)Tolerance (°C)10.09.9-0.120.018.9-1.138.036.4-1.6Tolerance Limit (°C)±2.0

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

Ma Sin

Mr Chan Siu Ming, Vico Manager - Inorganic

Surface Water Quality Monitoring Results

Table F2.1	Surface Water	Quality Monitorin	g Results at DP4T
------------	---------------	-------------------	-------------------

Date	Time	Weather Condition	Water Appearance	Water Condition	Water Temperature	Dissolved Oxygen (DO)	pН	Suspended Solids (SS)	Remarks
		common		contraction	(°C)	(mg/L)		(mg/L)	
5 Sep 19	14:50	Cloudy	Light yellow	Semi-clear	29.9	6.75	8.50	67.8	-
5 Sep 19	15:00	Cloudy	Light yellow	Semi-clear	29.8	7.52	8.51	66.1	DP4 (Future, temporary) (Duplicate)
12 Sep 19	14:59	Sunny	Light yellow	Semi-clear	34.1	11.01	8.85	9.9	-
19 Sep 19	14:44	Sunny	Unable to coll	ect water samp	ole due to insuffi	cient flow			-
26 Sep 19	14:48	Sunny	Light yellow	Semi-clear	29.2	9.28	8.38	7.3	-
26 Sep 19	14:50	Sunny	Light yellow	Semi-clear	28.3	9.15	8.37	5.3	DP4 (Future, temporary) (Duplicate)
					Average	8.74	8.52	31.3	-
					Min	6.75	8.37	5.3	-
					Max	11.01	8.85	67.8	-

Table F2.2Surface Water Quality Monitoring Results at DP6

Date	Time	Weather Condition	Water Appearance	Water Condition	Water Temperature (ºC)	Dissolved Oxygen (DO) (mg/L)	рН	Suspended Solids (SS) (mg/L)	Remarks
5 Sep 19	14:35	Cloudy	Unable to colle	ect water sam	ole due to insuffici	ent flow			-
12 Sep 19	14:26	Sunny	Light yellow	Semi-clear	31.5	6.93	6.44	8.2	-
12 Sep 19	14:28	Sunny	Light yellow	Semi-clear	31.9	6.93	6.53	8.1	DP6 (Duplicate)
19 Sep 19	14:35	Sunny	Unable to colle	ect water sam	ole due to insuffici	ent flow			-
26 Sep 19	14:39	Sunny	Unable to colle	ect water sam	ole due to insuffici	ent flow			-
					Average	e 6.93	6.49	8.2	-
					Min	n 6.93	6.44	8.1	-
					Max	c 6.93	6.53	8.2	-

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

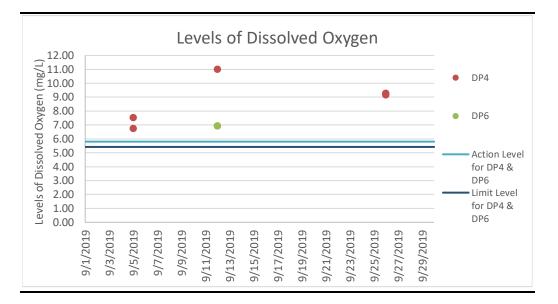


Figure F2.2 Graphical Presentation for Surface Water Quality Monitoring (pH)

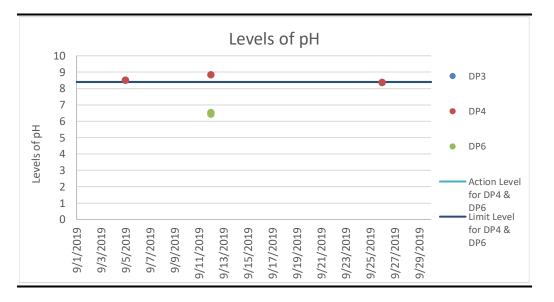
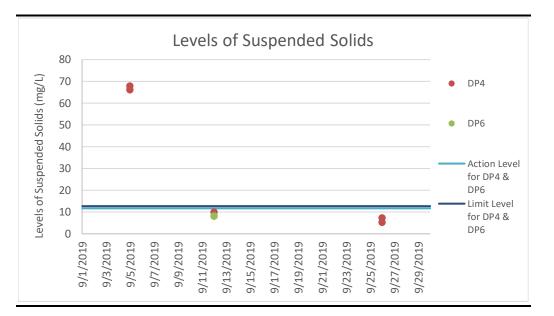


Figure F2.3 Graphical Presentation for Surface Water Quality Monitoring (SS)



Event and Action Plan for Surface Water Quality Monitoring

Event	Action					
	ET	IEC	Contractor			
Action Level being exceeded by one sampling day	 Repeat <i>in situ</i> measurement to confirm findings Identify the source(s) and investigate the cause(s) of exceedance Prepare Notification of Exceedance within 24 hours Inform Contractor, IEC and Project Proponent whether the cause of exceedance is due to the Project Repeat measurement on the next day of exceedance if exceedance is due to the Project 	 Verify the Notification of Exceedance Check monitoring data submitted by ET Check Contractor's working methods 	 Rectify any unacceptable practice Amend working methods if appropriate 			
Action Level being exceeded by two onsecutive ampling days	 Repeat <i>in situ</i> measurement to confirm findings Identify the source(s) and investigate the cause(s) of exceedance Prepare Notification of Exceedance within 24 hours Inform Contractor, IEC and Project Proponent whether the cause of exceedance is due to the Project Discuss with Contractor and IEC for remedial measures required Ensure remedial measures are properly implemented Increase the monitoring frequency to daily if exceedance of Action Level 	 Verify the Notification of Exceedance Check monitoring data submitted by ET Check Contractor's working methods Discuss with ET Leader and Contractor on proposed remedial measures Review proposals on remedial measures Audit the implementation of the remedial measures Audit the effectiveness of the implemented remedial measures 	 Submit proposals for remedial measures to IEC Implement the agreed proposals Amend proposal if appropriate 			

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

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

Investigation Reports of Environmental Quality Limit Exceedance

Project	South East New Territories (SENT) Landfill Extension
Date	5 September 2019
Time	DP4T: 14:50 and 15:00 (Duplicate)
Monitoring Location	DP4T
Parameter	Surface Water (pH)
Action / Limit Levels	DP4T: Action level: >8.39
	Limit level: >8.40
Measured Level	DP4T: 8.49 & 8.51
	DP4T (Duplicate): 8.49 & 8.52
Possible reason Action Taken / Action to	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 discharge or overflow to the DP4T channel was observed. Water from wheel-washing area discharged to the DP4T channel was treated by the Wetsep prior to discharge. Wetsep near DP4T was functioning properly with reference to the on-site checking of the treated water at the outlet of the Wetsep during the sampling event. The Contractor has complied with the recommendations and conditions outlined in the updated EM&A Manual. As no potential source from the Project-related activities which may lead to pH increase was identified, and the Contractor has implemented the relevant mitigation measures recommended in the updated EM&A Manual, there is no adequate evidence showing that the pH exceedance at DP4T was deemed to Project- related activities.
be Taken	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.
Remarks	-

Investigation Report of Environmental Quality Limit Exceedance

Prepared by:Abbey LauDesignation:Environmental TeamDate:9 September 2019

Project	South East New Territories (SENT) Landfill Extension				
Date	5 September 2019				
Time	DP4T: 14:50 and 15:00 (Duplicate)				
Monitoring Location	DP4T				
Parameter	Surface Water (Suspended Solids (SS))				
Action / Limit Levels	DP4T: Action level: >11.7 mg/L				
	Limit level: >12.7 mg/L				
Measured Level	DP4T: 67.8 mg/L				
	DP4T (Duplicate): 66.1 mg/L				
Possible reason	During the sampling event, the water level was observed to be above the weir plate for sampling. As there was flow of water from upstream to downstream, it was agreed on-site with IEC and GVL representatives that water monitoring and sampling should be carried out.				
	From the on-site rainfall record of September 2019, heavy rainfall event was recorded on 1, 2 and 4 September 2019. Amber rainstorm warning signal was also issued by the Hong Kong Observatory on 2 September 2019 before the sampling event on 5 September 2019. During the event, backflow of muddy water from downstream might well passed DP4T along the channel. The site rainfall record showed that there was little rainfall on 5 September 2019. It is therefore a high possibility that the high level of water observed at DP4T was due to backflow water from the TKO Fill Bank. The sample taken at DP4T on the day might not represent the surface water runoff from SENTX and further upstream.				
	In addition, no works which may lead to potential SS increase was conducted in the vicinity of surface water channel leading to DP4T on the sampling day based on on-site observations and construction activities described by the Contractor. During the sampling event, no potential surface water discharge or overflow to the DP4T channel was observed.				
	Water from wheel-washing area discharged to the DP4T channel was treated by the Wetsep prior to discharge. Wetsep near DP4T was functioning properly with reference to the on-site checking of the treated water at the outlet of the Wetsep during the sampling event. The Contractor has complied with the recommendations and conditions outlined in the updated EM&A Manual.				
	Due to presence of the influencing factor from the downstream and no potential source from the Project-related activities which may lead to SS increase was identified, there is no adequate evidence showing that the SS exceedance at DP4T was deemed to Project-				

Investigation Report of Environmental Quality Limit Exceedance

	related activities.
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.
Remarks	-
Prepared by: Abbey Lau	
Designation: Environmenta	l Team
Date: 16 September	2019

Project	South East New Territories (SENT) Landfill Extension
Date	12 September 2019
Time	DP4T: 14:59
Monitoring Location	DP4T
Parameter	Surface Water (pH)
Action / Limit Levels	DP4T: Action level: >8.39
	Limit level: >8.40
Measured Level	DP4T: 8.82 & 8.87
Possible reason Action Taken / Action to	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 discharge or overflow to the DP4T channel was observed. Water from wheel-washing area discharged to the DP4T channel was treated by the Wetsep prior to discharge. Wetsep near DP4T was functioning properly with reference to the on-site checking of the treated water at the outlet of the Wetsep during the sampling event. The Contractor has complied with the recommendations and conditions outlined in the updated EM&A Manual. As no potential source from the Project-related activities which may lead to pH increase was identified, and the Contractor has implemented the relevant mitigation measures recommended in the updated EM&A Manual, there is no adequate evidence showing that the pH exceedance at DP4T was deemed to Project- related activities.
be Taken	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.
Remarks	-

Investigation Report of Environmental Quality Limit Exceedance

Prepared by:Abbey LauDesignation:Environmental TeamDate:16 September 2019

Annex G

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

Table G1Cumulative 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	3	36

Table G2Cumulative Statistics on Complaints, Notifications of Summons and
Successful Prosecutions

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

Annex H

Monitoring Schedule for the Next Reporting Period

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

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

October 2019

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.