



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

South East New Territories (SENT) Landfill Extension

Quarterly Environmental Monitoring & Audit Report No.1

April 2020

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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:

Quarterly Environmental Monitoring & Audit Report No.1
for South East New Territories (SENT) Landfill Extension

Date of Report:

28 April 2020

Reference EM&A Manual Requirement

EM&A Manual:

Section 11.4

The quarterly EM&A summary report shall be prepared by the ET, certified by the ET Leader and verified by the IEC. The quarterly EM&A summary report should contain all information listed under Section 11.4 of the approved EM&A Manual.

ET Certification

I hereby certify that the above referenced document/plan complies with the above referenced EM&A Manual requirement.

Frank Wan,
Environmental Team Leader:
(ERM Hong-Kong, Limited)

Date: 28 April 2020

IEC Verification

I hereby verify that the above referenced document/plan complies with the above referenced EM&A Manual requirement.

W.K. Chiu,
Independent Environmental Checker:
(Meinhardt Infrastructure and
Environment Limited)




Date: 4 May 2020

South East New Territories (SENT) Landfill Extension

Quarterly Environmental Monitoring & Audit Report No.1

Environmental Resources Management

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Client: Green Valley Landfill Ltd.		Project No: 0465169			
Summary: This document presents the Quarterly EM&A Report No.1 for <i>South East New Territories (SENT) Landfill Extension</i>		Date: 28 April 2020			
		Approved by:  Frank Wan Partner			
1	Quarterly EM&A Report No.1 (ES, Section 2.3.1, 2.3.3, 2.8 & 4, Table 2.7, 2.8 & 2.9, Annex F1 & G revised)	AL	FW	FW	28 Apr 20
0	Quarterly EM&A Report No.1	AL	TS	FW	14 May 19
Revision	Description	By	Checked	Approved	Date
<p>This report has been prepared by Environmental Resources Management the trading name of 'ERM Hong-Kong, Limited', with all reasonable skill, care and diligence within the terms of the Contract with the client, incorporating our General Terms and Conditions of Business and taking account of the resources devoted to it by agreement with the client.</p> <p>We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above.</p> <p>This report is confidential to the client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report at their own risk.</p>		Distribution		 <input type="checkbox"/> Internal <input checked="" type="checkbox"/> Public <input type="checkbox"/> Confidential 	

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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 Quarterly EM&A report presents the EM&A works carried out during the period from 2 January to 31 March 2019 for the Project in accordance with the updated EM&A Manual.

Exceedance of Action and Limit Levels for Air Quality

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

Exceedance of Action and Limit Levels for Noise

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

Exceedance of Action and Limit Levels for Surface Water Quality

One Limit Level of Suspended Solids (SS) exceedance was recorded for surface water quality impact monitoring in the reporting period. The exceedance was 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.

1 INTRODUCTION

1.1 BACKGROUND

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

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

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

1.2 PROJECT DESCRIPTION

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

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

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

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

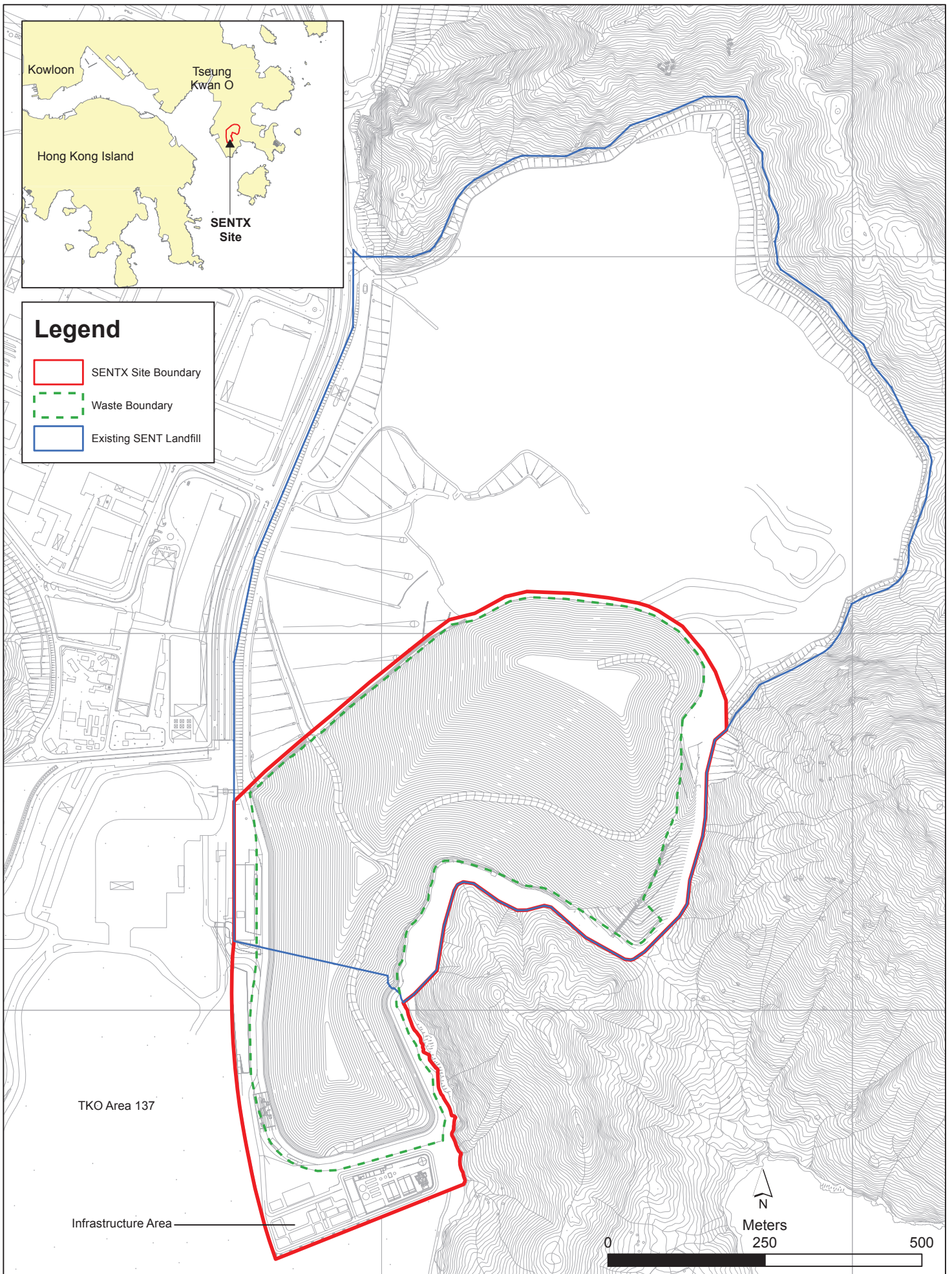


Figure 1.1

Layout Plan of SENTX

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

Table 1.1 *Estimated Key Dates of Implementation Programme*

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

The major construction works of the SENTX includes:

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

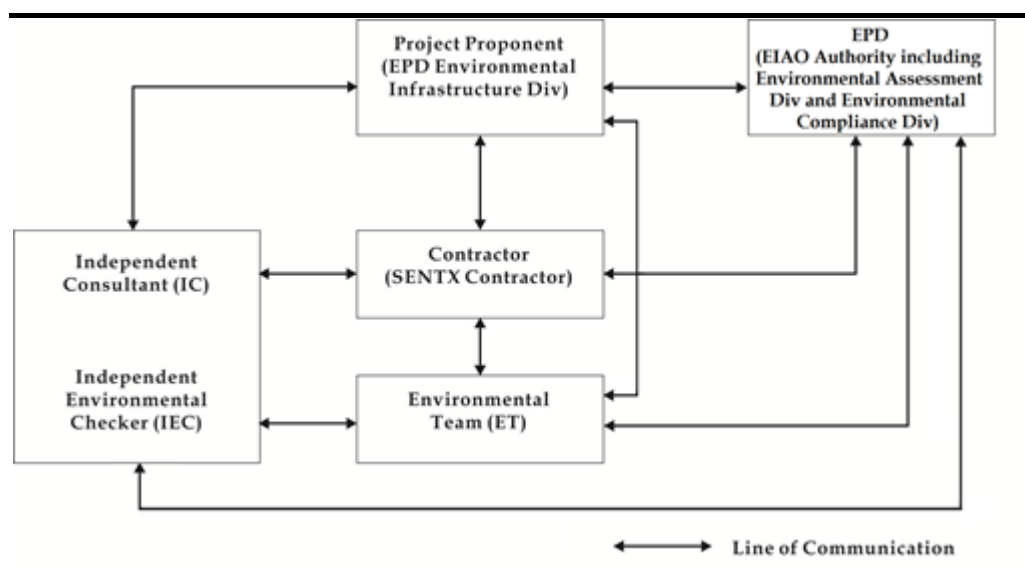
1.3 *SCOPE OF THE EM&A REPORT*

This is the Quarterly EM&A Report for the Project which summarises the key findings of the EM&A programme during the reporting period from 2 January to 31 March 2019 for the construction works.

1.4 *PROJECT ORGANISATION*

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

Figure 1.2 Organisation Chart



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

Table 1.2 Contact Information of Key Personnel

Party	Position	Name	Telephone
Contractor (Green Valley Landfill Limited)	Project Manager	Gary Barnicott	2706 8827
	Complaint Hotline		2706 8682
Environmental Team (ET) (ERM-Hong Kong, Limited)	ET Leader	Frank Wan	2271 3152
Independent Environmental Checker (IEC) (Meinhardt Infrastructure and Environment Limited)	IEC	Fredrick Leong	2859 1739

1.5 SUMMARY OF CONSTRUCTION WORKS

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

January 2019

- Site entrance establishment;
- Installation of chain link fence;
- Site formation of landfill Cell 1 & 2;
- Site clearance of landfill Cell 1 & 2 and sediment pit;
- Site formation of infrastructure area; and

- Construction of perimeter bund.

February 2019

- Construction of perimeter bund;
- Site clearance;
- Erection of fencing;
- Plate load test at Leachate Treatment Plant (LTP); and
- DP4 channel improvement works.

March 2019

- Erection of site fencing;
- Construction of perimeter bund – Cell 1X;
- Excavation of sediment trap and inlet box culvert X9;
- Formation of new Infrastructure Area;
- Plate load test for new Infrastructure Area;
- Remediation works for DP4 Channel; and
- Advance screen planting.

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

1.6 SUMMARY OF EM&A PROGRAMME REQUIREMENTS

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

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

Parameters	Status
Air Quality	
Baseline Monitoring	The results of baseline air quality monitoring were reported in Baseline Monitoring Report and submitted to EPD under EP Condition 3.3
Impact Monitoring	On-going
Noise	
Baseline Monitoring	The results of baseline noise monitoring were reported in Baseline Monitoring Report and submitted to EPD under EP Condition 3.3
Impact Monitoring	On-going
Surface Water Quality	

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

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

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

- Three environmental management meetings were held with the Contractor, ER, ET, IEC and EPD on 17 January, 14 February and 14 March 2019; and
- Environmental toolbox trainings on the following topics were provided by the Contractor to the workers:
 - Dark Smoke on 11 January 2019;
 - Air Pollution Control (NRMM) (Emission) Regulation on 25 January 2019;
 - Illegal Dumping on 13 February 2019;
 - Noise Control Ordinance on 21 February 2019;
 - Waste Water Management on 11 March 2019; and
 - Vehicle Maintenance Practices on 26 March 2019.

1.7 STATUS OF STATUTORY ENVIRONMENTAL COMPLIANCE WITH THE ENVIRONMENTAL PERMIT

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

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

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

1.8 STATUS OF OTHER STATUTORY ENVIRONMENTAL REQUIREMENTS

The environmental licenses and permits, including environmental permit, water discharge license, registration as chemical waste producer and construction noise permit, which are valid in the reporting period are presented in *Table 1.5*. No non-compliance with environmental statutory requirements was recorded.

Table 1.5 *Status of Statutory Environmental Requirements*

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

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

2.1 AIR QUALITY MONITORING

2.1.1 Monitoring Requirements and Equipment

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

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

Table 2.1 Action and Limit Levels for 24-hour TSP

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

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

The equipment used in the impact air quality monitoring programme and monitoring locations are summarized in *Table 2.2* and illustrated in *Figure 2.1* respectively.

Table 2.2 Dust Monitoring Details

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

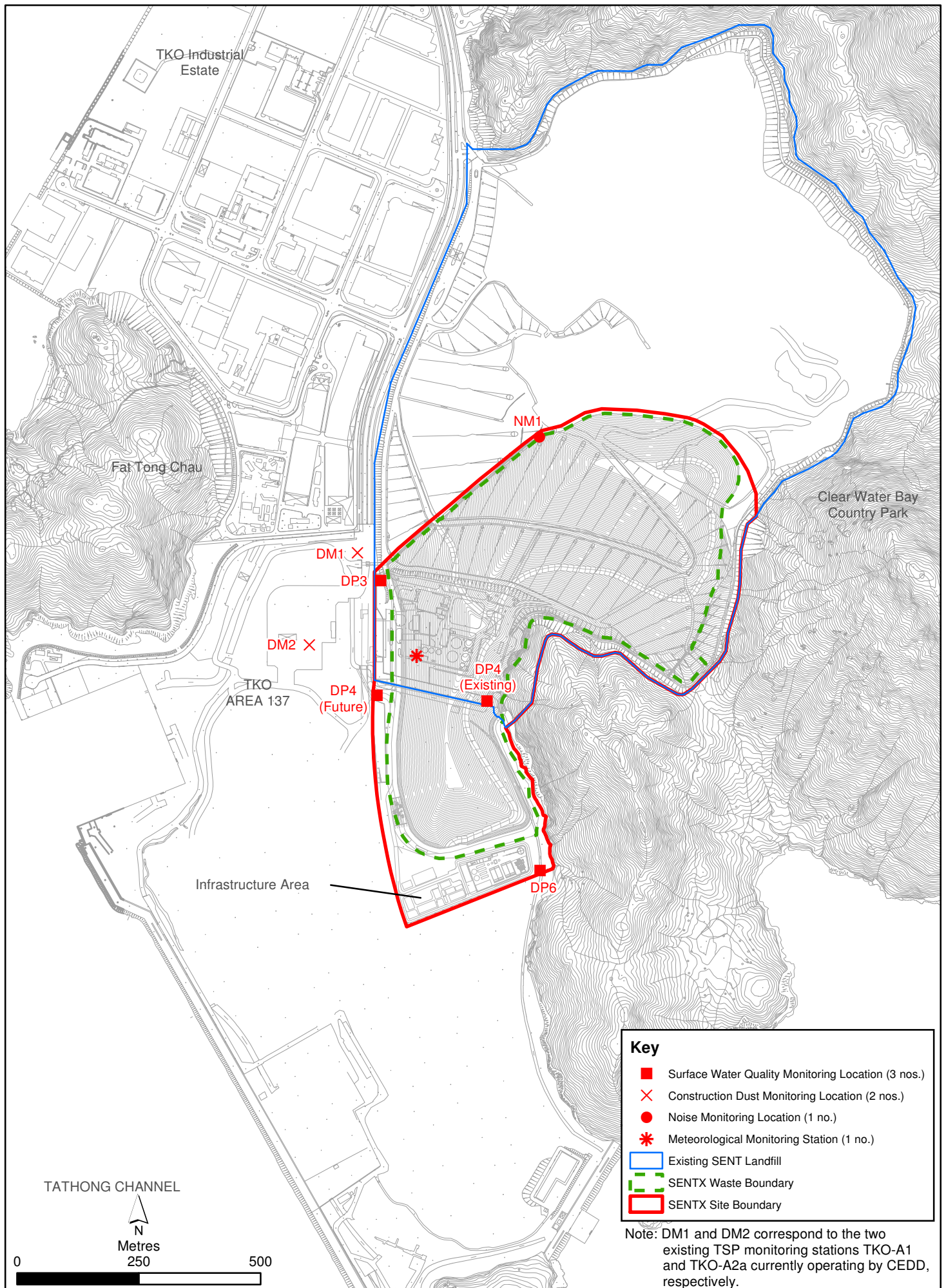


Figure 2.1

Environmental Impact Monitoring Locations

Monitoring Station	Location	Parameter	Frequency and Duration	Monitoring Dates	Equipment
DM2	Combined Reception and Exit Office (CREO) of TKO Area 137 Fill Bank		construction phase of the Project	3, 9, 15, 21, 27 February 2019 5, 11, 17, 23, 29 March 2019	HVS Andersen G1051 (S/N: 1176 (ET/EA/003/05))

2.1.2 *Monitoring Schedule for the Reporting Period*

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

2.1.3 *Results and Observations*

The monitoring results for 24-hour TSP are summarized in *Table 2.3*. The detailed monitoring results and the graphical presentation of the 24-hour TSP results at each monitoring location are provided in *Annex D1*.

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

Month	Monitoring Station	24-hr TSP Concentration ($\mu\text{g m}^{-3}$)		Action Level ($\mu\text{g/m}^3$)	Limit Level ($\mu\text{g/m}^3$)
		Average	Range		
January 2019	DM-1	110	79 - 146	204	260
	DM-2	113	84 - 161	193	260
February 2019	DM-1	111	83 - 134	204	260
	DM-2	116	82 - 160	193	260
March 2019	DM-1	88	67 - 107	204	260
	DM-2	95	68 - 113	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 D2*.

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 D3*. The meteorological station will be relocated to a new position for SENTX as per the updated EM&A Manual after the new infrastructure area at the SENTX is constructed. It is considered that meteorological data obtained at the existing the on-site meteorological monitoring station are representative of the Project area and could be used for the construction phase dust monitoring programme for the Project.

2.2 NOISE MONITORING

2.2.1 Monitoring Requirements and Equipment

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

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

Table 2.4 Action and Limit Levels for Construction Noise

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

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

Table 2.5 Noise Monitoring Details

Monitoring Station ⁽¹⁾	Location	Parameter	Frequency and Duration	Monitoring Dates	Equipment
NM1	SENTX Site Boundary (North)	L _{eq} (30 min) measurement between 07:00 and 19:00 hours on normal weekdays (Monday to Saturday)	Once per week for 30 mins during the construction period of the Project	3, 10, 17, 24, 31 January 2019 8, 13, 20, 27 February 2019 7, 13, 22, 28 March 2019	Sound Level Meter: B&K 2238 (S/N: 2285722) Acoustic Calibrator: Quest QC-20 (S/N: QO9090006) 3M AC-300 (S/N: AC300006213)

2.2.2 *Monitoring Schedule for the Reporting Period*

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

2.2.3 *Results and Observations*

Results for noise monitoring are summarized in *Table 2.6*. The monitoring results and the graphical presentation of the data are provided in *Annex E1*.

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

Month	Monitoring Station	Measured Noise Level $L_{eq(30\ min)}$, dB(A)		
		Average	Range	Action and Limit Level
January 2019	NM1	52.0	48.9 – 53.6	75
February 2019	NM1	51.0	48.0 – 52.5	75
March 2019	NM1	52.2	51.1 – 53.1	75

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

No Action and Limit Levels exceedance was recorded for construction noise monitoring in the reporting period. No action is thus required to be undertaken in accordance with the Event and Action Plan presented in *Annex E2*.

2.3 *SURFACE WATER QUALITY MONITORING*

2.3.1 *Monitoring Requirements and Equipment*

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

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

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

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

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

Table 2.8 *Impact Surface Water Quality Monitoring Details*

Monitoring Station	Location	Frequency	Monitoring Dates	Parameter	Equipment
DP4	Surface water discharge point DP4	Weekly	3, 10, 17, 24, 31 January 2019	•pH	YSI Professional
			8, 13, 20, 27 February 2019	•DO	DSS (S/N: 15H102620/15H103928)
DP6	Surface water discharge point DP6		8, 13, 22, 28 March 2019	•SS	

Notes:

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

2.3.2 *Monitoring Schedule for the Reporting Period*

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 13 monitoring events for impact surface water quality monitoring were scheduled at all designated monitoring stations during the reporting period. However, sampling could not be carried out in January and February 2019 and on 22 and 28 March 2019 at all monitoring locations, on 8 March 2019 at DP6 and on 13 March 2019 at DP4 and DP6 and due to insufficient flow. Impact water quality monitoring results and graphical presentations are provided in *Annex F1*.

Action and Limit Level exceedance was recorded for surface water quality impact monitoring in the reporting period and actions in accordance with the Event and Action Plan presented in *Annex F2* were undertaken.

Investigations on the Action and Limit Levels exceedances were conducted and summarized in *Table 2.9* below.

Table 2.9 *Details of Exceedances Recorded for Surface Water Quality Monitoring*

Date	Monitoring Location	Parameter	Type of Exceedance	Remarks
8 March 2019	DP4	SS	Limit Level	The absence of construction works at the upstream of and in the vicinity of DP4 might suggest that the exceedance at DP4 is deemed to activities that are not related to the Project.

Based on the preliminary investigation conducted for each of the monitoring event with potential Action and Limit Levels exceedances with the Contractor, the ER and the IEC, there is no evidence showing the exceedances were related to the Project. Nevertheless, 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 17 January, 13 February and 21 March 2019 to monitor the implementation of the landscape and visual mitigation measures during construction phase.

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

2.4.2 *Results and Observations*

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

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

2.5 *EM&A SITE INSPECTION*

Site inspections were carried out on a weekly basis with the Contractor, IEC and ER to monitor the implementation of proper environmental pollution

control and mitigation measures for air quality, noise, surface water quality and waste management under the Project. In the reporting period, 13 site inspections were carried out on 3, 10, 17, 24 and 31 January, 8, 14, 21 and 28 February and 7, 14, 21 and 28 March 2019.

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

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

Inspection Date	Environmental Observations and Recommendations
3 January 2019	<ul style="list-style-type: none"> • The Contractor shall display a NRMM label to the excavator at Cell 1 Area. • Sandbags shall be placed on the netting next to the buttress wall. • A proper drip tray shall be provided near the Chun Wo's vehicle entrance. • A temporary wheel washing facility at the Chun Wo's vehicle entrance/ exit shall be provided.
10 January 2019	<ul style="list-style-type: none"> • The Contractor shall clean up the oil stain near the Chun Wo's vehicle entrance and dispose of it as chemical waste.
17 January 2019	<ul style="list-style-type: none"> • The Cell 1 and Cell 2 areas were generally observed dry despite regular watering by water trucks was provided. Fugitive dust emission was observed when vehicles passed by. The Contractor shall enhance watering to the Site, especially the working areas such as the excavation works. • The Contractor shall display a NRMM label to the roller at Cell 1 area.
24 January 2019	<ul style="list-style-type: none"> • The Site was generally observed dry despite regular watering by water trucks on the main haul road was provided. Fugitive dust emission was observed under strong winds. The Contractor shall enhance watering to the Site (e.g. increase the frequency of watering or install sprinklers), especially the working areas. • A proper drip tray shall be provided at X1 area.
31 January 2019	<ul style="list-style-type: none"> • The Contractor shall cover or water any stockpile of dusty materials to ensure the entire surface is wet.
8 February 2019	<ul style="list-style-type: none"> • -
14 February 2019	<ul style="list-style-type: none"> • The Contractor shall display a NRMM label to the roller at Cell X1 perimeter bund. • The Contractor shall display chemical labels to the chemicals and keep daily record of the WetSep near the Chun Wo's vehicle entrance. • The Contractor shall display chemical label to the chemical at wheel washing facilities. • The Contractor shall clear the general refuse near the Chun Wo's vehicle entrance.
21 February 2019	<ul style="list-style-type: none"> • The Contractor shall remove the wash-water at the wheel washing facilities regularly to avoid overflow. • The Contractor shall keep the road near the vehicle exit clear of dusty materials. • The Contractor shall clear the general refuse at Cell X1 west.
28 February 2019	<ul style="list-style-type: none"> • The Contractor shall conduct activities related to dusty materials, i.e. handling of cement in an enclosed area to avoid fugitive dust emission. • The Contractor shall remove the wash-water and silt at the wheel washing facilities regularly to avoid overflow. • The Contractor shall clear the general refuse at Cell X1 perimeter bund.

Inspection Date	Environmental Observations and Recommendations
7 March 2019	<ul style="list-style-type: none"> The Contractor shall maintain the slit trap at DP6 channel. The Contractor shall clear the general refuse near the Chun Wo's vehicle entrance and DP6.
14 March 2019	<ul style="list-style-type: none"> The Contractor shall minimize and compact the exposed soil near the DP6 channel to avoid SS runoff to the water channel.
21 March 2019	<ul style="list-style-type: none"> The Contractor shall implement dust control measures when conducting activities related to dusty materials (i.e. handling of sawdust).
28 March 2019	<ul style="list-style-type: none"> The Contractor shall avoid accumulation of stagnant water in the drip trays in Cell X1 area and near DP6.

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

2.6

WASTE MANAGEMENT STATUS

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

As informed by the Contractor, waste generated during this reporting period include mainly inert C&D materials. Reference has been made to the waste flow table prepared by the Contractor. The quantities of different types of wastes and imported fill materials are summarised in *Table 2.11*.

Table 2.11 *Quantities of Different Waste Generated and Imported Fill Materials*

Monthly/ Year	Inert C&D Materials (a) (in '000m ³)	Imported Fill (in '000kg)		Inert Construction Waste Re- used (in '000m ³)	Non-inert Construction Waste (b) (in '000m ³)	Recyclable Materials (c) (in '000kg)	Chemical Wastes (in '000kg)
		Rock	Soil				
January 2019	0.061	0	0	0	0	0	0
February 2019	0.008	0	0	0	0.005	0	0
March 2019	0.032	1482.09	0	0	0.006	0	0

Notes:

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

2.7

IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURES

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

2.8 *SUMMARY OF EXCEEDANCES OF THE ENVIRONMENTAL QUALITY PERFORMANCE LIMIT*

Results for air quality monitoring (24-hour TSP) complied with the Action and Limit Levels in the reporting period. No Action and Limit Levels exceedances were recorded for construction noise monitoring. One Limit Level of Suspended Solids (SS) exceedance was recorded for surface water quality impact monitoring in the reporting period. The exceedance was 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 and successful prosecutions are summarised in *Annex G*.

This Quarterly EM&A Report presents the findings of the EM&A activities undertaken during the period from 2 January to 31 March 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. One Limit Level of Suspended Solids (SS) exceedance was recorded for surface water quality impact monitoring in the reporting period. The exceedance was considered not Project-related upon further investigation.

Thirteen 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.

It is noted that the environmental pollution control and mitigation measures were properly implemented and the construction activities of the Project did not introduce any adverse impact to the sensitive receivers in the reporting period. The monitoring programme has been reviewed and was considered as adequate to cater for the nature of works in progress. Change to the monitoring programme was thus not recommended at this stage. The monitoring programme will be evaluated as appropriate in the next reporting period. The ET will keep track on the construction works to confirm compliance of environmental requirements and the proper implementation of all necessary mitigation measures.

Annex A

Work Programme

WBS Path	Activity	Activity Name	Dur	Start	Finish	Phase	Predecessor Details	Successor Details	2018		2019		2020		2021		2022		2023		
									Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
332	SA2.5	Construction (Initial Works)	1163	12-Apr-18	07-Jun-21	756															
333	SA2.5.02	Advance Works & Site Establishment	1148	12-Apr-18	02-Jun-21	35															
334	SA2.5.02.01	Site Establishment & Mobilization	333	12-Apr-18	15-May-19	820															
335	5.02.01	62-1000 Site Mobilization for Parts X1 & X2	30	31-Dec-18	20-Jan-19	820															
336	5.02.01	62-1100 Site Mobilization for Parts X3, X4 & X5	30	12-Apr-18	11-May-18	1063															
337	5.02.01	62-1200 Temporary Office for Employer / ERI/C	60	10-Oct-18	08-Dec-18	0															
338	5.02.01	62-1300 Hoarding and Fencing Works	40	30-Jan-19	10-Mar-19	820															
339	SA2.5.02.02	Site Survey & Investigation Works for Parts X1 & X2	50	31-Dec-18	18-Feb-19	840															
340	5.02.02	62-1400 Condition Survey	25	31-Dec-18	24-Jan-19	840															
341	5.02.02	62-1500 Topographic Survey	20	31-Dec-18	19-Jan-19	845															
342	5.02.02	62-1600 Site Inspection, Review of Condition Survey Report	25	25-Jan-19	18-Feb-19	840															
343	SA2.5.02.03	Site Survey & Investigation Works for Parts X3, X4 & X5	58	12-Apr-18	31-May-18	1103															
344	5.02.03	62-1700 Condition Survey	25	12-Apr-18	06-May-18	1103															
345	5.02.03	62-1800 Topographic Survey	20	12-Apr-18	01-May-18	1108															
346	5.02.03	62-1900 Site Inspection, Review of Condition Survey Report	25	07-May-18	31-May-18	1103															
347	SA2.5.02.04	Environmental Monitoring	975	02-Oct-18	02-Jun-21	35															
348	5.02.04	62-2000 Installation of Monitoring Stations & Waits (SP & DVI)	120	02-Oct-18	20-Jan-19	0															
349	5.02.04	62-2100 Installation of Monitoring Stations & Waits (SP & DVI) on Butress Wall	120	02-Oct-18	20-Jan-19	0															
350	5.02.04	62-2200 Conduct Baseline Monitoring for Construction (one month)	30	01-Dec-18	30-Dec-18	0															
351	5.02.04	62-2300 Conduct Baseline Monitoring for Operation (one year)	365	03-Jun-20	02-Jun-21	35															
352	SA2.5.03	Civil Engineering Works	748	13-Jan-19	29-Jan-21	634															
353	SA2.5.03.01	Butress Wall	475	08-Apr-19	03-Jun-20	48															
354	5.03.01	63-1000 Section w/d, SENT	300	13-Apr-19	06-Feb-20	96															
355	5.03.01	63-1100 Characterise SENT Landfill Gas Pipe	48	07-Feb-20	23-Mar-20	96															
356	5.03.01	63-1200 Section at Cell 4	400	02-Mar-19	04-Apr-20	83															
357	5.03.01	63-1300 Install Landfill Gas Pipe on Butress Wall	75	05-Apr-20	18-Jun-20	83															
358	SA2.5.03.01	Landfill Cell 1	503	13-Jan-19	29-May-20	214															
359	5.03.01	63-1400 Earth bund (Eastern)	90	04-Aug-19	01-Nov-19	9															
360	5.03.01	63-1500 Earth bund (Southern)	90	26-Apr-19	24-Jul-19	314															
361	5.03.01	63-1600 Earth bund (Western)	90	13-Jan-19	12-Apr-19	417															
362	5.03.01	63-1700 Interfill bund (Cell 1G)	75	13-Jan-19	28-Mar-19	432															
363	5.03.01	63-1800 Site Formation	90	13-Jan-19	12-Apr-19	217															
364	5.03.01	63-1900 Pump Station (PS#1X)	45	13-Apr-19	27-May-19	507															
365	5.03.01	63-2000 Lining Works	135	02-Nov-19	15-Mar-20	214															
366	5.03.01	63-2100 Protective Stone Laying & Leachate Collection Pipe	75	16-Mar-20	29-May-20	214															
367	5.03.01	63-2200 Install Leachate Force Main	75	25-Jul-19	07-Oct-19	449															
368	5.03.01	63-2300 Install Landfill Gas Pipe on earth bund	55	03-Nov-19	26-Dec-19	258															
369	5.03.01	63-2400 Leachate Pipe Connection (Cell 1 to LTP)	30	09-Mar-20	07-Apr-20	266															
370	SA2.5.03.04	Landfill Cell 4	30	09-Jul-20	07-Aug-20	144															
371	5.03.04	63-2500 Provide Temporary Leachate Pipe on Cell 4 Area	30	09-Jul-20	07-Aug-20	144															
372	SA2.5.03.05	Drainage - Surface Run-Off	740	16-Jan-19	24-Jun-21	859															
373	5.03.05	63-2600 Construct Cut-Off Channel 12A	60	16-Jan-19	18-Mar-19	9															
374	5.03.05	63-2700 Construct Cut-Off Channel 12A to DP6	20	17-Mar-19	05-Apr-19	9															
375	5.03.05	63-2800 Diversion from Existing Trapezoidal Channel into Channel 12A	20	06-Apr-19	25-Apr-19	9															
376	5.03.05	63-2900 Removal of Existing Trapezoidal Channel along Eastern Bund	30	26-Apr-19	25-May-19	9															
377	5.03.05	63-3000 Cut-Off Channel 04 Diversion to Cut-Off Channel 11-2	45	16-Jan-19	01-Mar-19	83															
378	5.03.05	63-3100 Cut-Off Channel XS on Butress Wall, Cell 4, Cell 3	90	05-Apr-20	03-Jul-20	289															
379	5.03.05	63-3200 Temporary Diversion Cut-Off Channel XS to 12A	20	04-Jul-20	23-Jul-20	289															
380	5.03.05	63-3300 Culvert XS (5m long) & Perm Connection of Cut-Off Channel XS	30	26-Dec-20	24-Jan-21	134															
381	5.03.05	63-3400 Construct Perimeter Channel XS on Eastern Bund & Southern Bund of Cell 1	50	02-Nov-19	21-Dec-19	249															
382	5.03.05	63-3500 Construct Perimeter Channel XS on Eastern Bund of Cell 2	50	20-Feb-20	08-Apr-20	189															
383	5.03.05	63-3600 Construct Perimeter Channel XS Eastern Bund of Cell 3	50	06-Jun-20	26-Jul-20	129															
384	5.03.05	63-3700 Culvert XS (25m long) at Cell 1 Southern Bund	75	25-Jul-19	07-Oct-19	1314															
385	5.03.05	63-3800 Perimeter Channel (OSB) at Cell 1 Southern & Western Bund	45	25-Jul-19	07-Sep-19	1344															
386	5.03.05	63-3900 Drop Inlet & Culvert (OS) - 21m long	180	29-Jul-20	24-Jan-21	129															
387	5.03.05	63-4000 Sediment Trap (ST)	180	29-Jul-20	24-Jan-21	129															
388	5.03.05	63-4100 Dual Culvert 14m long (connect to DP4)	180	29-Jul-20	24-Jan-21	129															
389	SA2.5.03.06	Drainage - Groundwater	200	26-May-19	11-Dec-19	269															
390	5.03.06	63-4200 Construct Groundwater Collection Pipe along Cells X1 & X2 Eastern Bund	70	26-May-19	02-Aug-19	9															
391	5.03.06	63-4300 Construct Groundwater Collection Pipe along Cell X3 Eastern Bund	50	04-Aug-19	22-Sep-19	159															
392	5.03.06	63-4400 Construct Groundwater Collection Pipe along Interfill Bund X2/X3	50	25-Sep-19	14-Nov-19	209															
393	5.03.06	63-4500 Construct Manhole MH-X1	30	13-Nov-19	11-Dec-19	209															
394	SA2.5.03.07	Utilities - Distribution within New Infrastructure Area	391	11-Aug-19	04-Sep-20	276															
395	5.03.07	63-4600 Power Supply HV Works (Transformer & HV switchgear)	5	30-Jun-20	04-Jul-20	0															
396	5.03.07	63-4700 Power Distribution, LV Power Supply Works	2	05-Jul-20	06-Jul-20	0															
397	5.03.07	63-4800 Sewerage (Collection to LTP)	60	07-Jul-20	04-Sep-20	271															
398	5.03.07	63-4900 Sewerage (Discharge to Site Boundary)	60	07-Jul-20	04-Sep-20	271															
399	5.03.07	63-5000 Lighting Provision	30	07-Jul-20	05-Aug-20	6															
400	5.03.07	63-5100 Fire Services	115	02-Mar-20	04-Jul-20	2															
401	5.03.07	63-5200 Construct Firewater (Fresh & Salt)	110	03-Mar-20	04-Jul-20	338															
402	5.03.07	63-5300 Telecom & Network	45	11-Aug-19	24-Sep-19	622															
403	5.03.07	63-5400 Gas Network (LFG to LTP)	15	22-Jun-20	06-Jul-20	176															
404	SA2.5.03.08	Utilities - Works Associated with Utilities Undertakes	703	27-Feb-19																	

WBS Path	Activity ID	Activity Name	Dur	Start	Finish	Task ID	Predecessor Details	Successor Details	2018			2019			2020			2021			2022			2023		
									Q1	Q2	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
508	SA2.6.03	Chd Engineering Works	1269	02-Nov-19	13-Apr-23	30																				
510	SA2.6.03.1	Landfill Cell 2	449	02-Nov-19	23-Jan-21	810																				
511	6.03.2	63-1000 Earth bund (Eastern)	110	02-Nov-19	19-Feb-20	9	11-1100 FS, 23-2500 FS, 63-4200 FS, 63-1400 FS, 63-2800 FS	63-3000 FS, 63-1500 FS, 63-1800 FS, 63-1900 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, 63-1800 FS, 63-1400 FS, 63-3000 FS	63-1400 FS, 63-1500 FS, 63-1700 FS, 63-3500 FS, 63-3000 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, 63-1800 FS, 63-1400 FS, 63-3000 FS, 63-1100 FS	63-1500 FS																		
514	6.03.2	63-1300 Site Formation	75	02-Nov-19	15-Jan-20	14	11-1100 FS, 23-2500 FS, 63-1800 FS, 63-1400 FS	63-1400 FS, 63-4200 FS																		
515	6.03.2	63-1400 Pump Station (PS42X)	45	09-Jun-20	23-Jul-20	84	63-1500 FS, 63-1100 FS	63-1600 FS, 63-1700 FS																		
516	6.03.2	63-1500 Leachate Works	90	01-Oct-20	29-Dec-20	710	41-1500 FS, 63-1000 FS, 63-1100 FS, 63-1200 FS	63-1900 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	32-1800 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	26-Mar-20	168	41-1500 FS, 63-1000 FS	54-4000 FS, M12, 3 FS																		
522	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, 63-4200 FS, 63-1000 FS, 63-4000 FS, 63-2800 FS, 63-4200 FS	63-3000 FS, 63-3600 FS, 63-2400 FS, 63-2700 FS, M12, 1 FS, 50, M12, 2 FS, 63-2000 FS, 45, 63-2200 FS																		
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, 63-1100 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	23-Aug-20	9	11-1100 FS, 63-1000 FS, 63-1900 FS	63-3200 FS																		
525	6.03.3	63-2300 Pump Station (PS43X)	45	23-Aug-20	16-Oct-20	9	63-2200 FS, 63-2000 FS	63-2500 FS, 63-2600 FS																		
526	6.03.3	63-2400 Leachate Works	100	01-Oct-21	08-Jan-22	435	41-1500 FS, 63-1900 FS, 63-2000 FS, 63-2100 FS, 63-1500 FS	63-2500 FS, M12, 3 FS																		
527	6.03.3	63-2500 Protective Stone Laying & Leachate Collection Pipe	25	09-Jan-21	03-Feb-21	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	53-2100 FS, 40, 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, 63-3000 FS, 63-4100 FS, 63-4100 FS, 55, 40, M, 6, 6 FS, 40, 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																		
534	6.03.4	63-3100 Pump Station (PS44X)	45	05-May-22	18-Jun-22	239	63-3000 FS, 63-2900 FS	63-3300 FS, 63-3400 FS																		
535	6.03.4	63-3200 Leachate Works	135	01-Oct-22	12-Feb-23	0	41-1500 FS, 63-2900 FS	63-3300 FS, M12, 3 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	790	16-Jan-20	03-Feb-22	464																				
539	6.03.5	63-3500 Perimeter Channel (X0A) at Cell 2 Western Bund	15	09-Jan-20	23-Jun-20	1054	63-1100 FS	12-1900 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	63-4000 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 OP3	10	25-Jan-22	03-Feb-22	464	63-3900 FS, 63-3900 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, 40	63-3000 FS																		
546	6.03.5	63-4200 Temporary Channel (XT) 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 M11 to Existing LIC-625	60	07-Sep-21	20-Oct-21	529	23-1900 FS, 11-1300 FS, 62-1000 FS	63-4400 FS																		
549	6.03.6	63-4400 Divert OCV at M11 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 Reconnect of GWP 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	SA2.6.03.8.1	CLP	210	20-Dec-20	27-Jul-21	655																				
553	6.03.8.U1	63-4600 LFG Generator Ongrid Testing	180	30-Dec-20	27-Jun-21	655	32-2000 FS, 12-1200 FS, 64-4000 FS	63-4700 FS																		
554	6.03.8.U1	63-4700 LFG Generator Ongrid Inspection & Verify	30	28-Jun-21	27-Jul-21	655	63-4600 FS	12-1900 FS																		
555	SA2.6.03.8.1.6	Town Gas	55	15-Nov-20	08-Jan-21	855																				
556	6.03.8.U1.6	63-4800 Laying Gas Mains (from LFG to Town Gas PP)	45	15-Nov-20	29-Dec-20	855	64-4000 FF	63-4900 FS																		
557	6.03.8.U1.6	63-4900 Gas Meter Relocation & Connection at LFG	10	30-Dec-20	08-Jan-21	855	63-4800 FS, 64-4000 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	661	01-Oct-19	22-Jul-21	660																				
560	SA2.6.04.C.1	LFG Treatment Plant	661	01-Oct-19	22-Jul-21	660																				
561	6.04.C.02	64-1000 (4000) Storage 01 C Relocation	15	06-Jul-21	02-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	54-2000 FS	12-1900 FS																		
563	SA2.6.08	Landscaping 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	03-Apr-19	1264	14-1300 FS																			

Annex B

Environmental Mitigation Implementation Schedule

Annex B Environmental Mitigation Implementation Schedule

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

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

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

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						D	C	O/R	A		
		ground level will be provided along the entire length of that portion of the site boundary except for the site entrance or exit.									<i>TM Annex 4</i>
4.8.1	AQ7	<u>Excavation Works</u> <ul style="list-style-type: none"> Working area of any excavation or earth moving operation will be sprayed with water immediately before, during and immediately after the operation so as to ensure that the entire surface is wet. 	To minimise potential dust nuisance	All construction works area	SENTX Contractor		✓			<i>Air Pollution Control (Construction Dust) Regulations</i> <i>HKAQO and EIAO-TM Annex 4</i>	Deficiency of mitigation measures but rectified by the Contractor
4.8.1	AQ8	<u>Building Demolition</u> <ul style="list-style-type: none"> The area where the demolition works are planned to take place will be sprayed with water immediately prior to, during and immediately after the demolition activities. Any dusty materials remaining after a stockpile is removed will be wetted with water and cleared from the surface of roads or street. 	To minimise potential dust nuisance	All construction works area	SENTX Contractor		✓			<i>Air Pollution Control (Construction Dust) Regulations</i> <i>HKAQO and EIAO-TM Annex 4</i>	Not applicable
4.8.1	AQ9	<u>Construction of the Superstructure of Building</u> <ul style="list-style-type: none"> Effective dust screens, sheeting or netting will be provided to enclose the scaffolding from the ground level up to the highest level of the scaffolding. 	To minimise potential dust nuisance	All construction works area	SENTX Contractor		✓			<i>Air Pollution Control (Construction Dust) Regulations</i> <i>HKAQO and EIAO-TM Annex 4</i>	Not applicable

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

Noise – Construction Phase

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

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

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

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

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

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

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

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

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						D	C	O/R	A		
		between the waste and the new infrastructure area to monitor the migration of landfill gas, if any.									
Ecology – Construction Phase											
9.10.2	EC1	Measures to control construction runoff: <ul style="list-style-type: none"> Exposed soil areas will be minimised to reduce the contamination of runoff and erosion; 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; 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; Temporary covers such as tarpaulin will also be provided to minimise the generation of high suspended solids runoff; 	To minimise potential water quality impacts affecting ecological resources	All construction works area	SENTX Contractor				✓	<i>EIAO-TM Annex 16</i> <i>ProPECC PN 1/94</i> <i>Water Pollution Control Ordinance (WPCO)</i> <i>EIAO-TM Annex 6</i>	Deficiency of mitigation measures but rectified by the Contractor Implemented Deficiency of mitigation measures but rectified by the Contractor Deficiency of mitigation measures but rectified by the Contractor

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

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

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

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

Annex C

Monitoring Schedule for This Reporting Period

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

January 2019

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

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.

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

February 2019

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

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.

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

March 2019

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

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

Annex D

Air Quality

Annex D1

24-hour TSP Monitoring Results

Table D1.1 24-hour TSP Monitoring Results at DM1

Start Date	Start Time	Finish Date	Finish Time	Weather	24-hour TSP ($\mu\text{g}/\text{m}^3$)
4 Jan 2019	15:00	5 Jan 2019	15:00	Fine	109
10 Jan 2019	8:00	11 Jan 2019	8:00	Fine	92
16 Jan 2019	15:00	17 Jan 2019	15:00	Fine	79
22 Jan 2019	8:00	23 Jan 2019	8:00	Sunny	146
28 Jan 2019	9:55	29 Jan 2019	9:55	Fine	123
3 Feb 2019	8:00	4 Feb 2019	8:00	Sunny	132
9 Feb 2019	8:00	10 Feb 2019	8:00	Sunny	134
15 Feb 2019	13:00	16 Feb 2019	13:00	Fine	83
21 Feb 2019	8:00	22 Feb 2019	8:00	Sunny	86
27 Feb 2019	14:00	28 Feb 2019	14:00	Fine	119
5 Mar 2019	8:00	6 Mar 2019	8:00	Fine	71
11 Mar 2019	10:00	12 Mar 2019	10:00	Fine	67
17 Mar 2019	8:00	18 Mar 2019	8:00	Fine	107
23 Mar 2019	8:00	24 Mar 2019	8:00	Fine	87
29 Mar 2019	10:15	30 Mar 2019	10:15	Fine	106
Average					103
Min					67
Max					146

Note:

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

Figure D1.1 Graphical Presentation for 24-hr TSP Monitoring at DM1

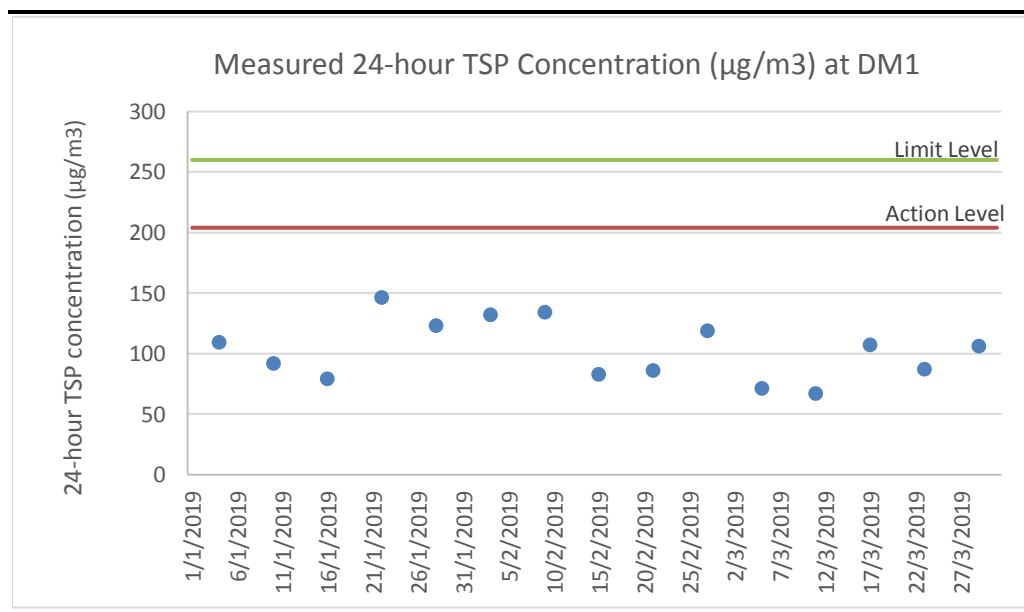


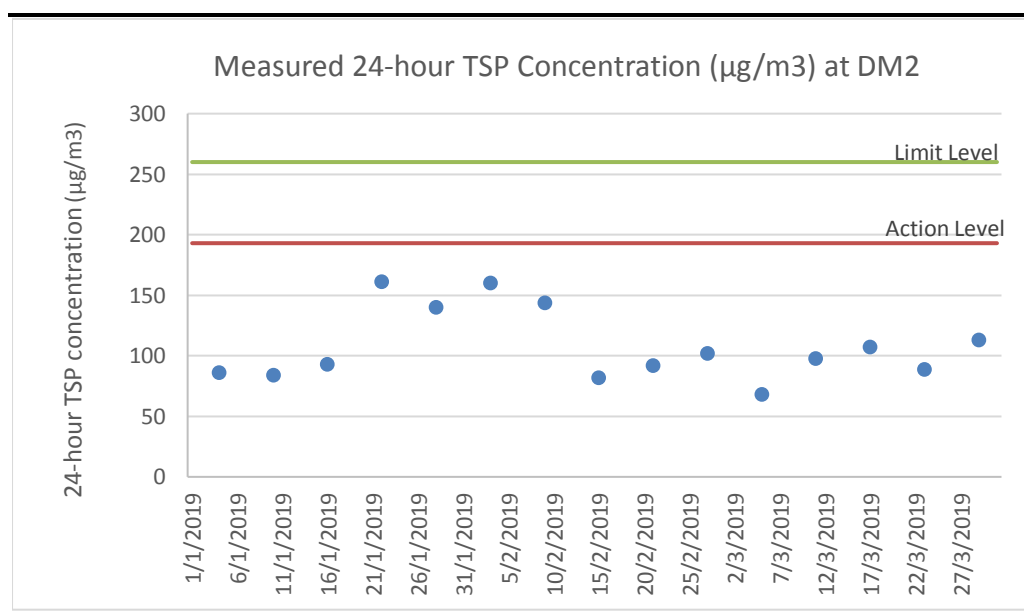
Table D1.2 24-hour TSP Monitoring Results at DM2

Start Date	Start Time	Finish Date	Finish Time	Weather	24-hour TSP ($\mu\text{g}/\text{m}^3$)
4 Jan 2019	15:00	5 Jan 2019	15:00	Fine	86
10 Jan 2019	8:00	11 Jan 2019	8:00	Fine	84
16 Jan 2019	15:00	17 Jan 2019	15:00	Fine	93
22 Jan 2019	8:00	23 Jan 2019	8:00	Sunny	161
28 Jan 2019	10:00	29 Jan 2019	10:00	Fine	140
3 Feb 2019	8:00	4 Feb 2019	8:00	Sunny	160
9 Feb 2019	8:00	10 Feb 2019	8:00	Sunny	144
15 Feb 2019	13:00	16 Feb 2019	13:00	Fine	82
21 Feb 2019	8:00	22 Feb 2019	8:00	Sunny	92
27 Feb 2019	14:00	28 Feb 2019	14:00	Fine	102
5 Mar 2019	8:00	6 Mar 2019	8:00	Fine	68
11 Mar 2019	10:00	12 Mar 2019	10:00	Fine	98
17 Mar 2019	8:00	18 Mar 2019	8:00	Fine	107
23 Mar 2019	8:00	24 Mar 2019	8:00	Fine	89
29 Mar 2019	10:15	30 Mar 2019	10:15	Fine	113
Average					108
Min					68
Max					161

Note:

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

Figure D1.2 Graphical Presentation for 24-hr TSP Monitoring at DM2



Annex D2

Event and Action Plan for Dust Monitoring

Annex D2 *Event and Action Plan for Dust Monitoring During Construction Phase*

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

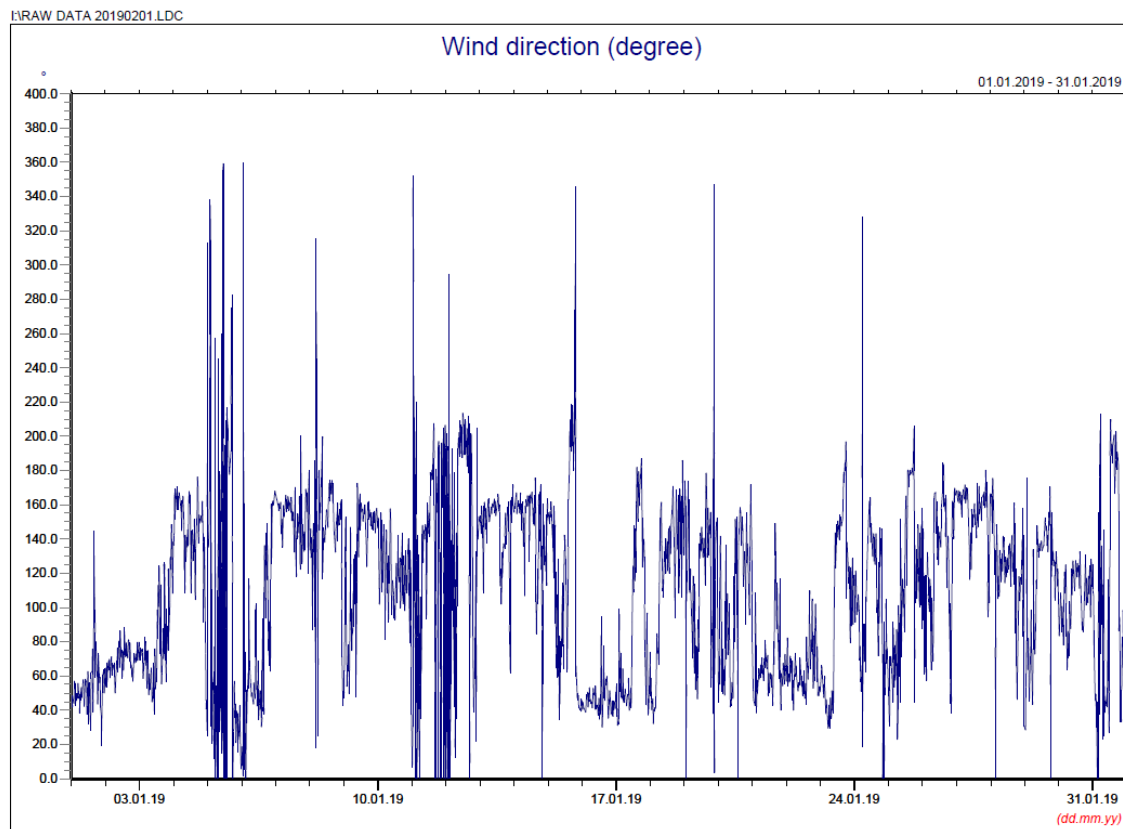
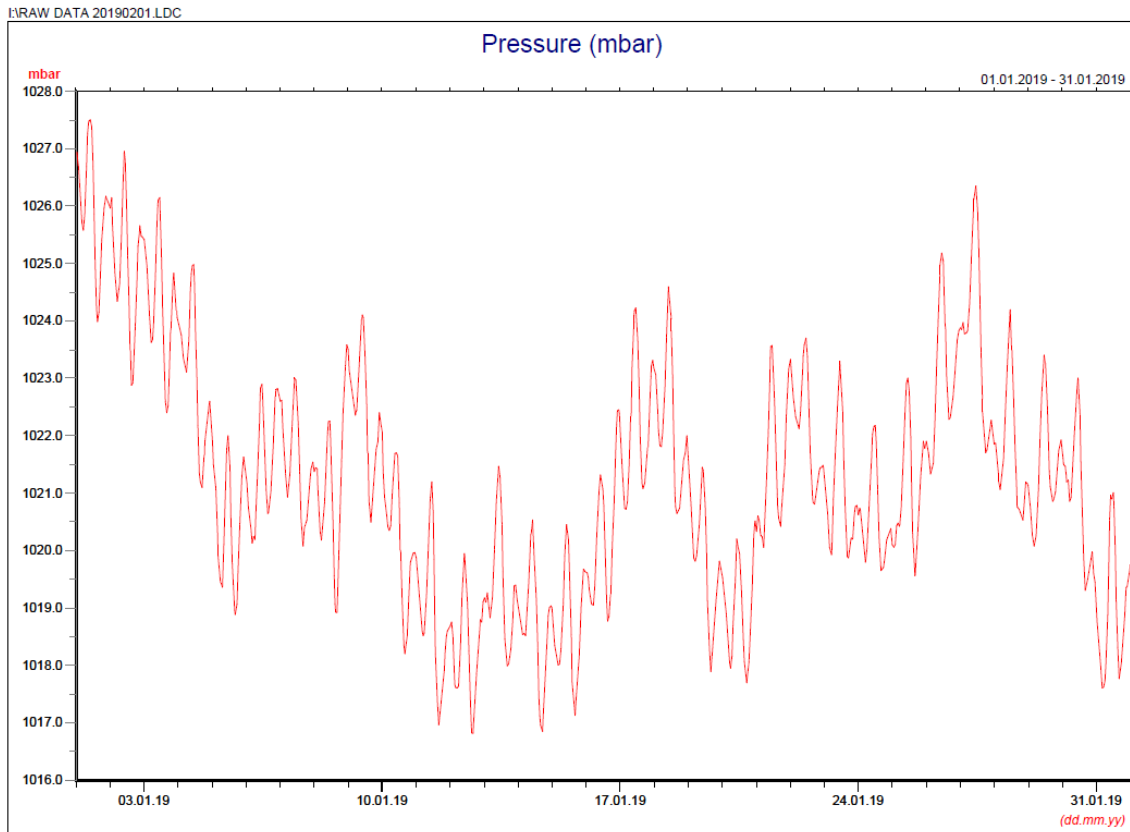
Event	Action		
	ET	IEC	Contractor
<i>Limit Level</i>			
Exceedance for one sample	<ul style="list-style-type: none"> Identify the source(s) and investigate the cause(s) of exceedance Prepare Notification of Exceedance within 24 hours Inform Contractor, IEC, Project Proponent and EPD whether the cause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

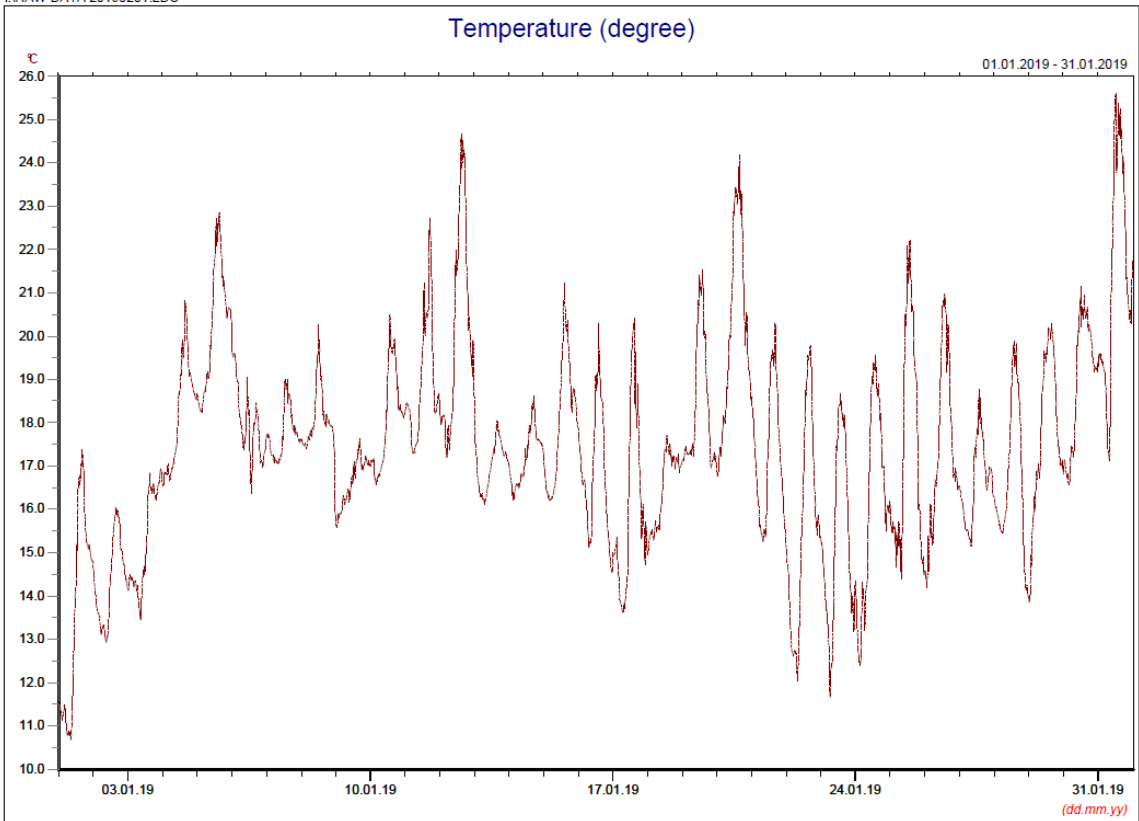
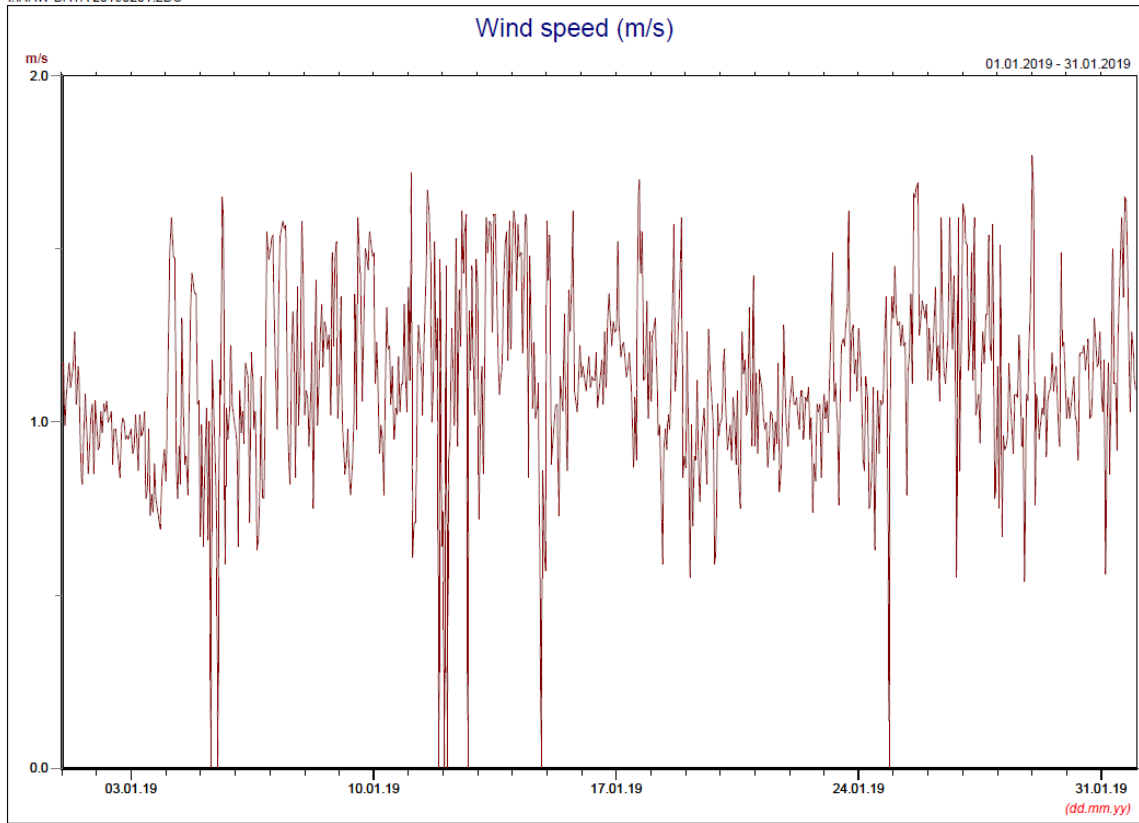
Annex D3

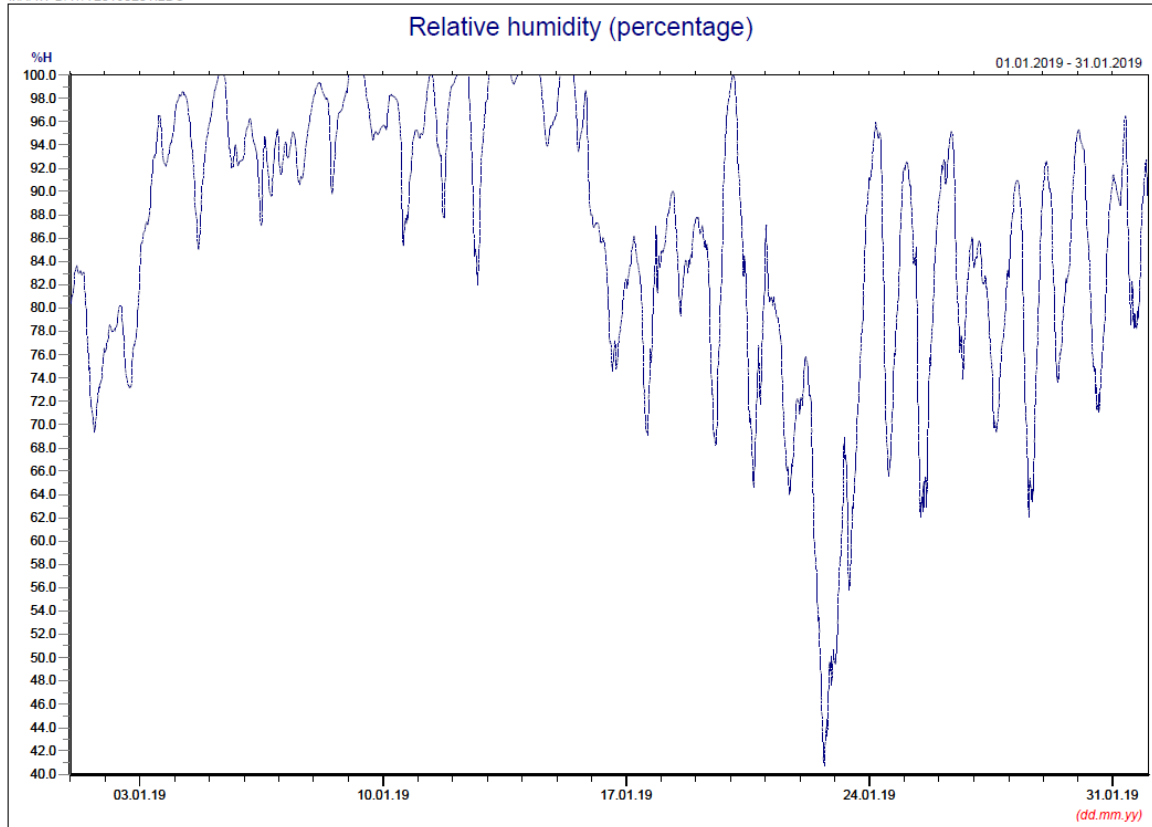
Meteorological Data

Annex D3 Meteorological Data

January 2019







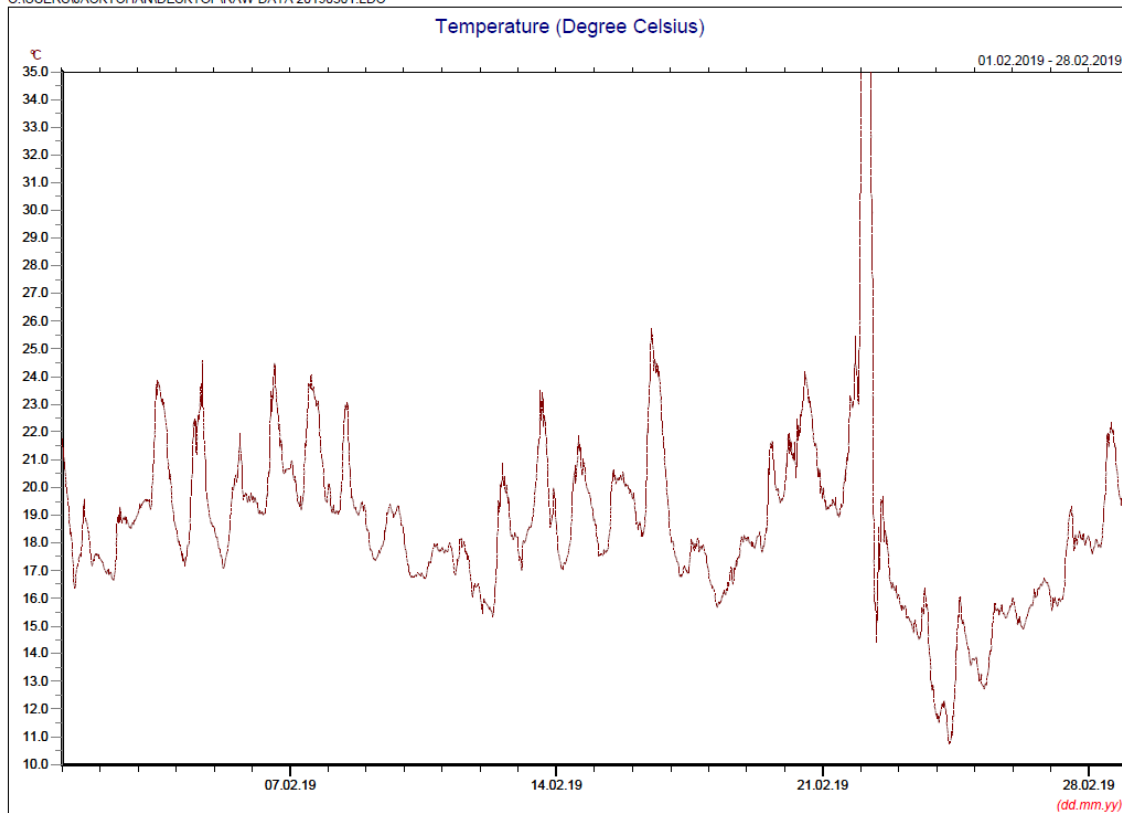
Manual Rain Gauge Readings

January 2019

Date	Rainfall (mm)
1 Jan 19	0.0
2 Jan 19	0.0
3 Jan 19	0.3
4 Jan 19	0.1
5 Jan 19	0.0
6 Jan 19	0.0
7 Jan 19	0.0
8 Jan 19	1.2
9 Jan 19	0.4
10 Jan 19	0.0
11 Jan 19	0.0
12 Jan 19	1.6
13 Jan 19	0.6
14 Jan 19	1.6
15 Jan 19	0.1
16 Jan 19	0.0
17 Jan 19	0.0
18 Jan 19	0.0
19 Jan 19	0.4
20 Jan 19	0.0
21 Jan 19	0.0
22 Jan 19	0.0
23 Jan 19	0.0
24 Jan 19	0.0
25 Jan 19	0.0
26 Jan 19	0.0
27 Jan 19	0.0
28 Jan 19	0.0
29 Jan 19	0.0
30 Jan 19	0.0
31 Jan 19	0.0
TOTAL RAINFALL	6.3

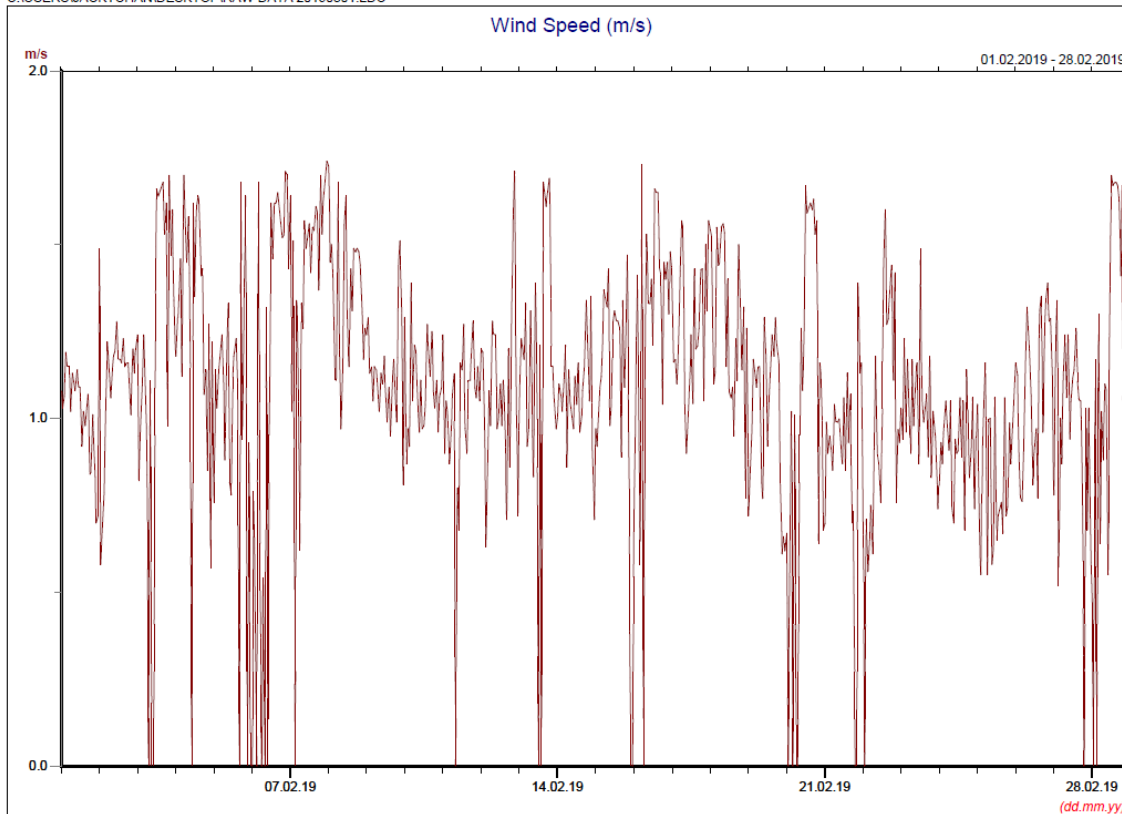
February 2019

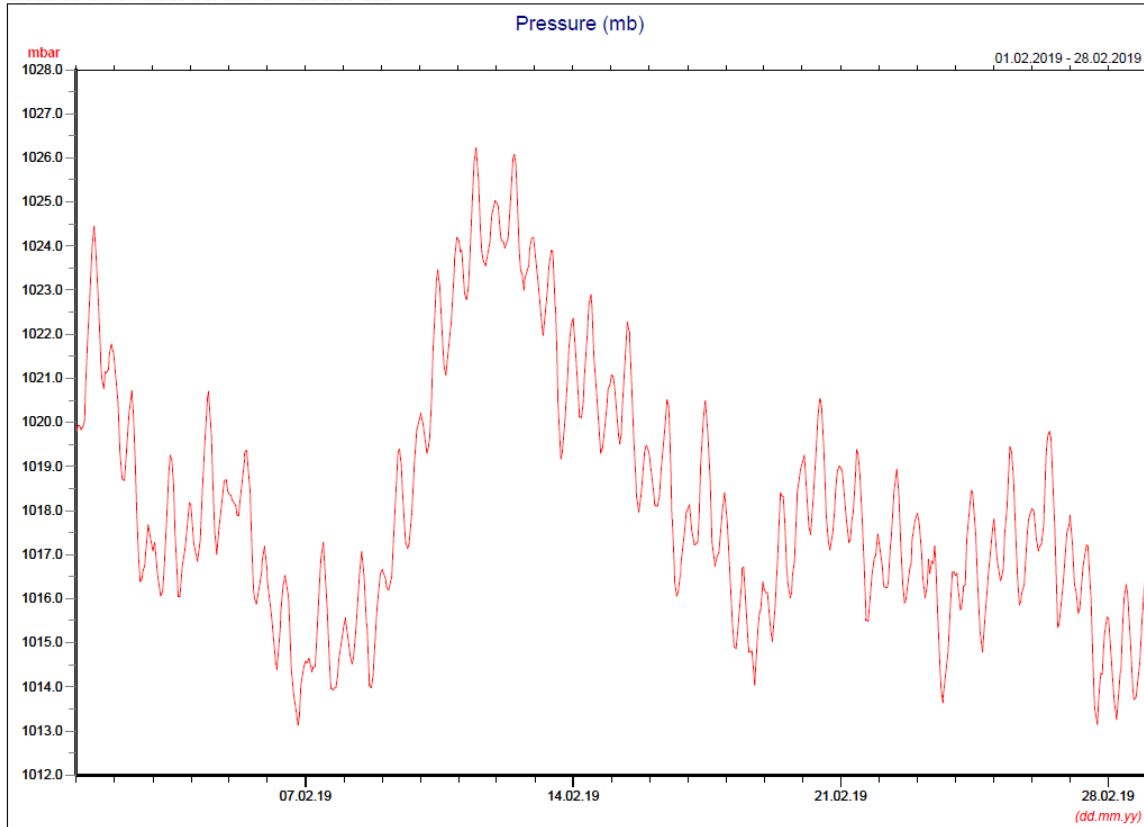
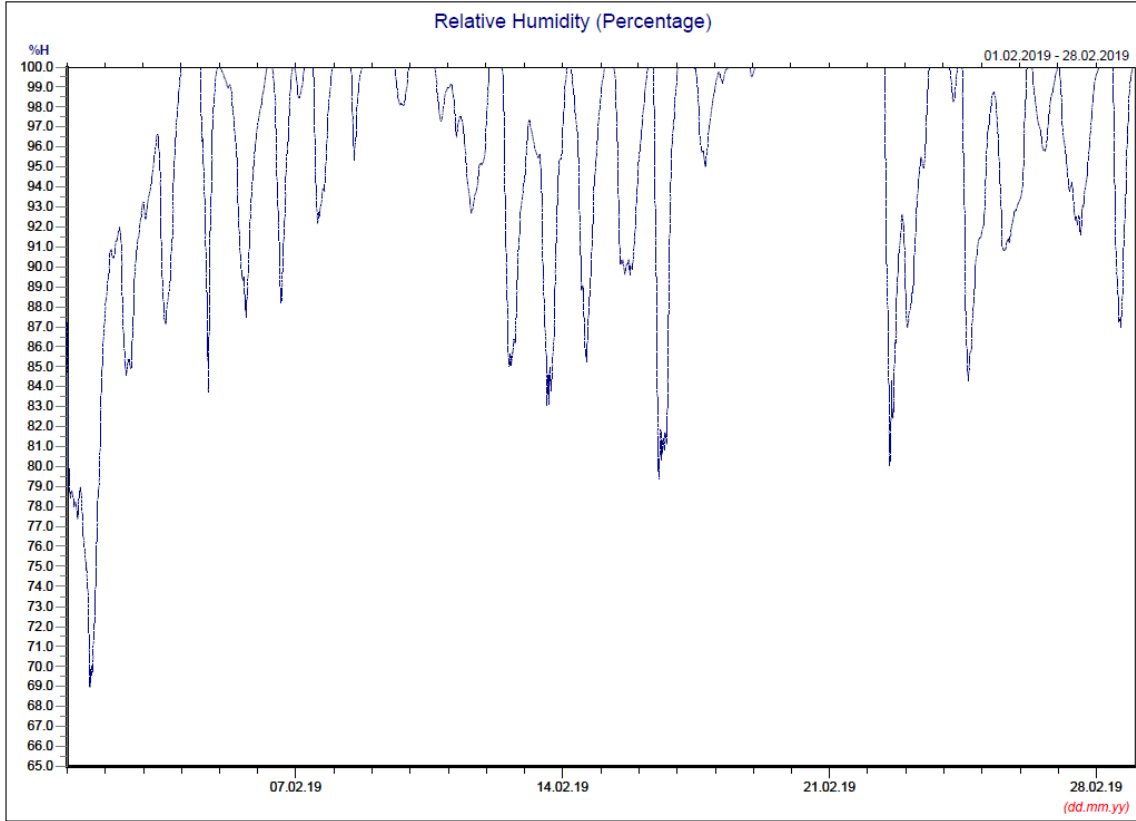
C:\USERS\JACKYCHAN\DESKTOP\RAW DATA 20190301.LDC

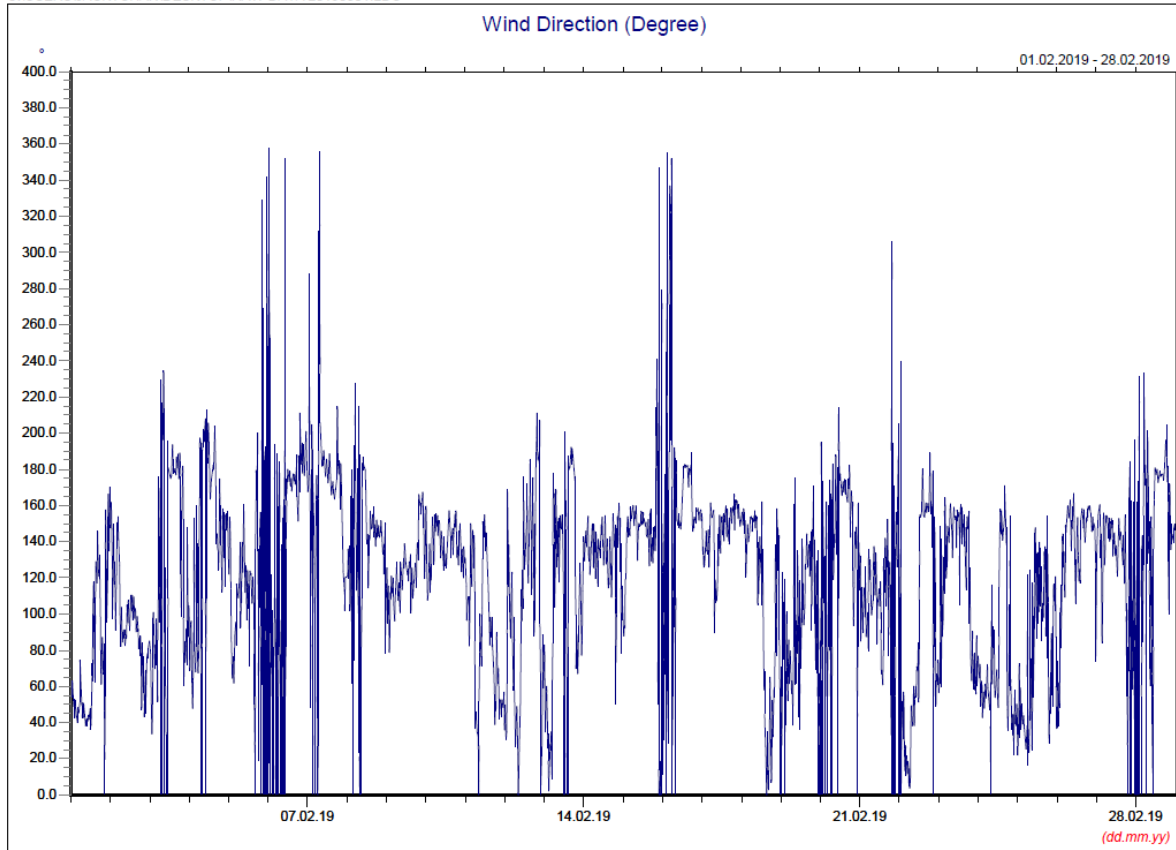


* Note: Data on 22 February 2019 was discarded due to equipment failure.

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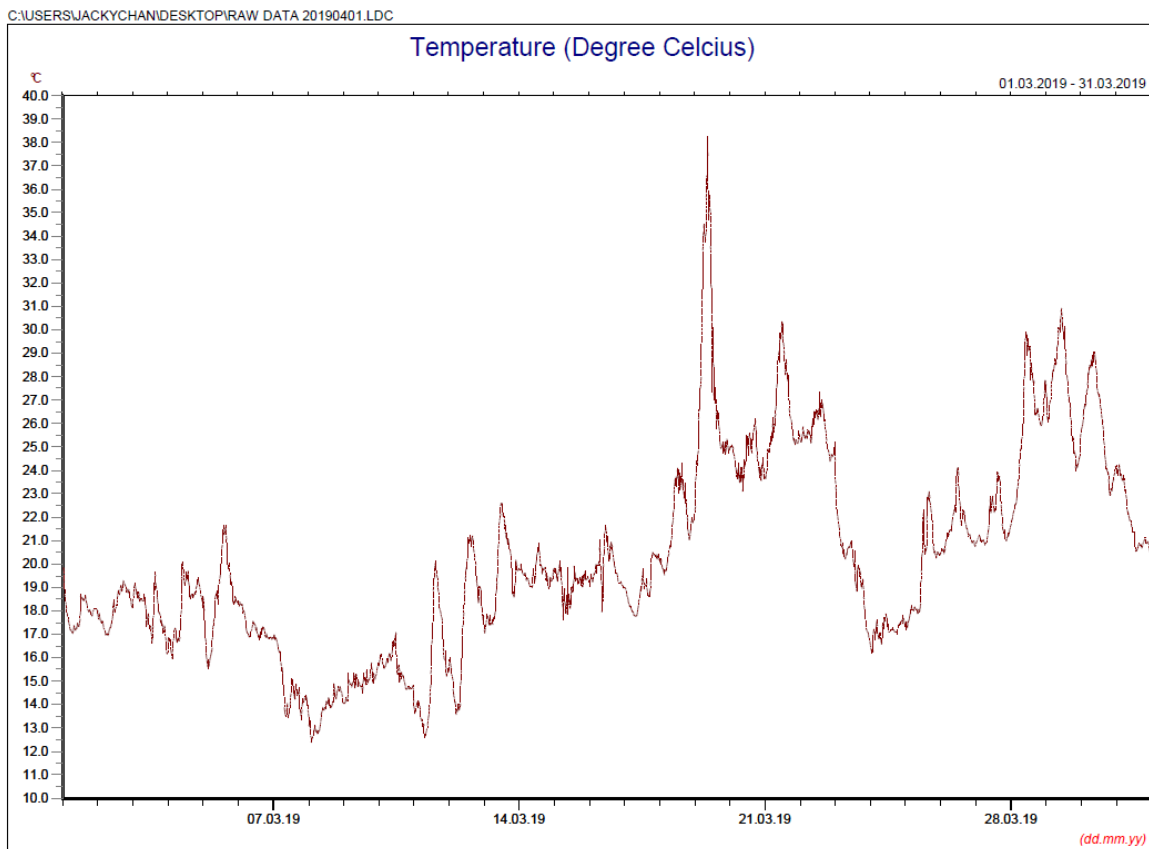


Manual Rain Gauge Readings

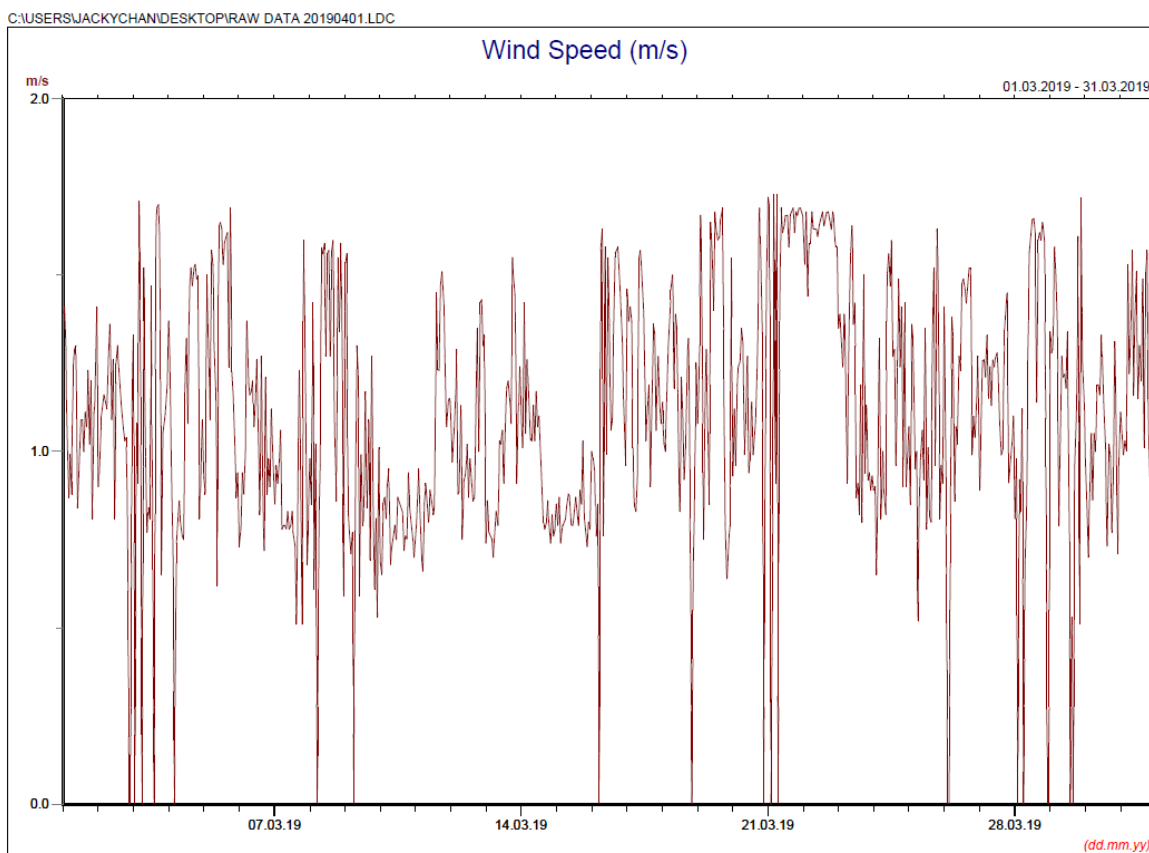
February 2019

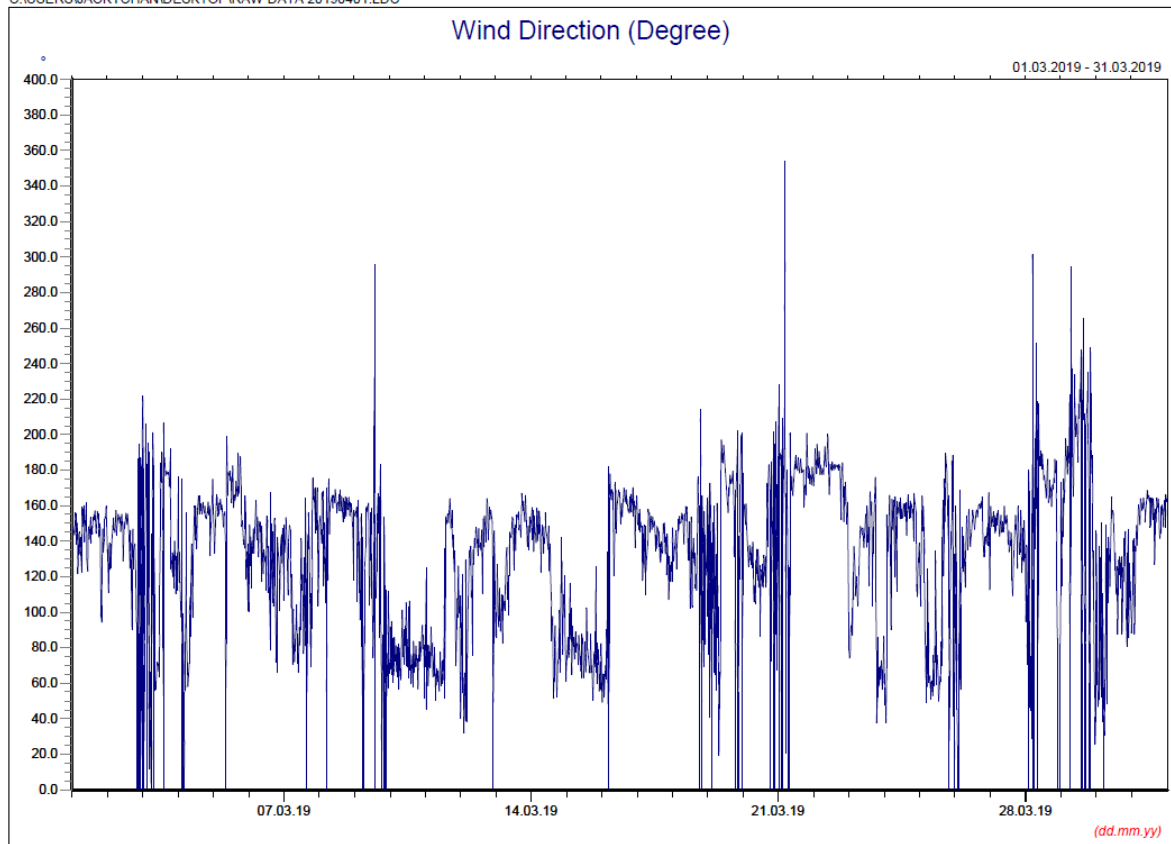
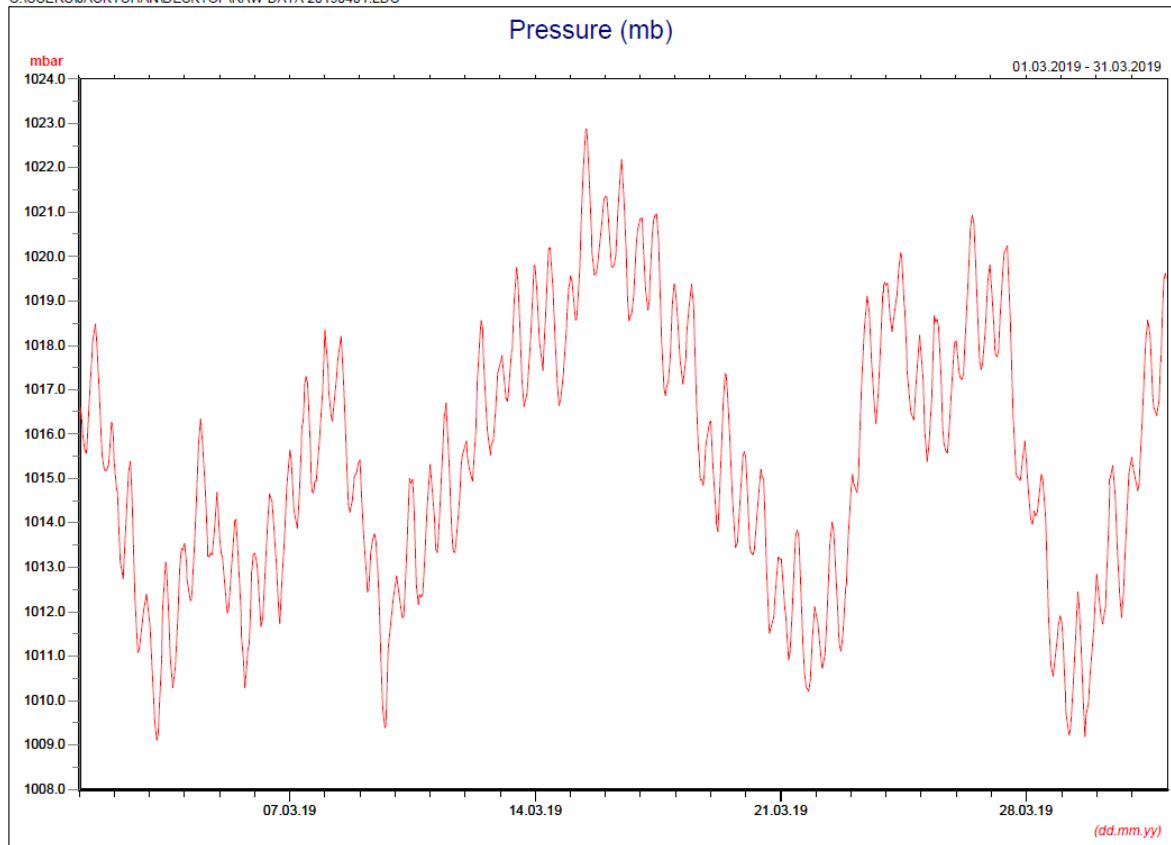
Date	Rainfall (mm)
1 Feb 19	0.0
2 Feb 19	0.0
3 Feb 19	0.0
4 Feb 19	0.0
5 Feb 19	0.0
6 Feb 19	0.0
7 Feb 19	0.0
8 Feb 19	0.4
9 Feb 19	1.4
10 Feb 19	0.2
11 Feb 19	0.6
12 Feb 19	0.0
13 Feb 19	0.0
14 Feb 19	0.3
15 Feb 19	0.1
16 Feb 19	0.0
17 Feb 19	0.0
18 Feb 19	21.4
19 Feb 19	42.8
20 Feb 19	0.2
21 Feb 19	0.2
22 Feb 19	0.0
23 Feb 19	16.0
24 Feb 19	0.2
25 Feb 19	0.3
26 Feb 19	0.4
27 Feb 19	0.0
28 Feb 19	0.0
TOTAL RAINFALL	84.5

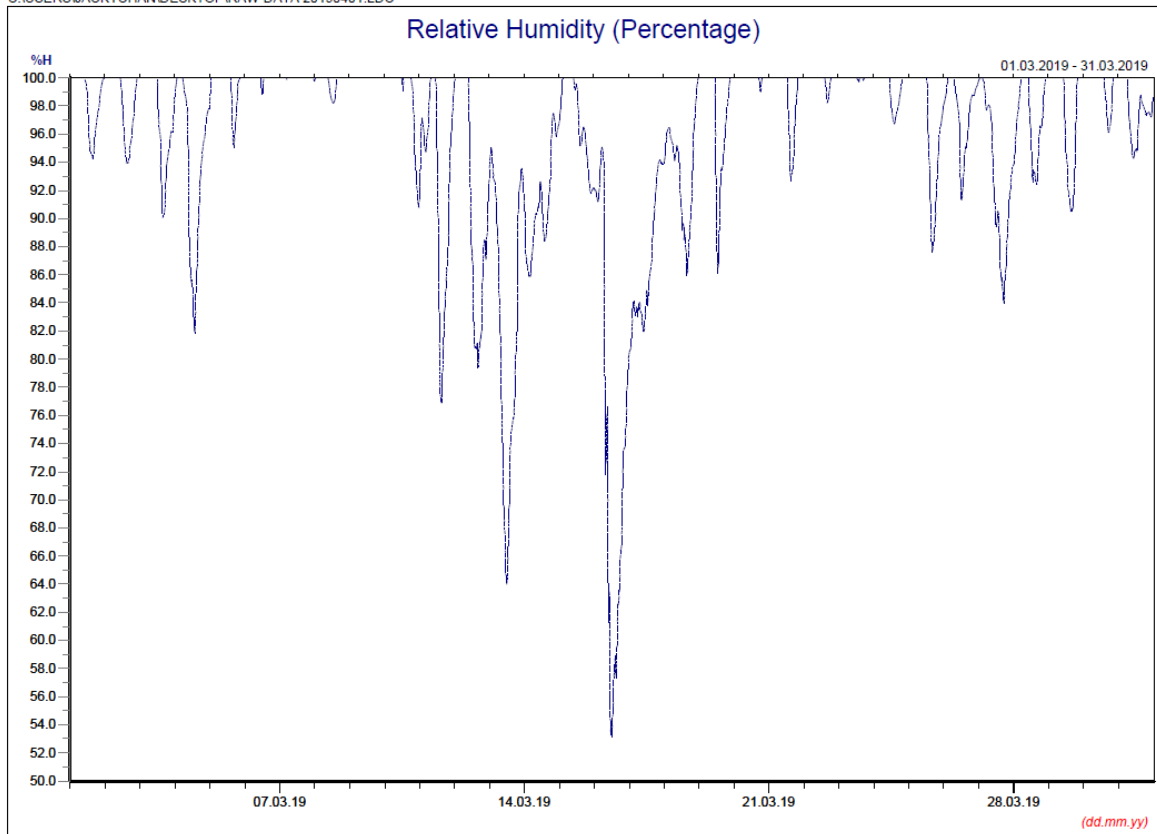
March 2019



* Note: Data on 19 March 2019 was discarded due to equipment failure.







Manual Rain Gauge Readings

March 2019

Date	Rainfall (mm)
1 Mar 19	0.0
2 Mar 19	0.0
3 Mar 19	1.7
4 Mar 19	56.5
5 Mar 19	0.8
6 Mar 19	24.8
7 Mar 19	30.0
8 Mar 19	8.2
9 Mar 19	16.0
10 Mar 19	17.0
11 Mar 19	0.4
12 Mar 19	0.2
13 Mar 19	4.4
14 Mar 19	2.6
15 Mar 19	1.4
16 Mar 19	0.2
17 Mar 19	0.0
18 Mar 19	0.0
19 Mar 19	0.0
20 Mar 19	0.1
21 Mar 19	0.0
22 Mar 19	3.6
23 Mar 19	6.5
24 Mar 19	3.6
25 Mar 19	1.3
26 Mar 19	0.2
27 Mar 19	0.0
28 Mar 19	0.0
29 Mar 19	6.3
30 Mar 19	0.6
31 Mar 19	5.8
TOTAL RAINFALL	192.2

Annex E

Noise

Annex E1

Noise Monitoring Results

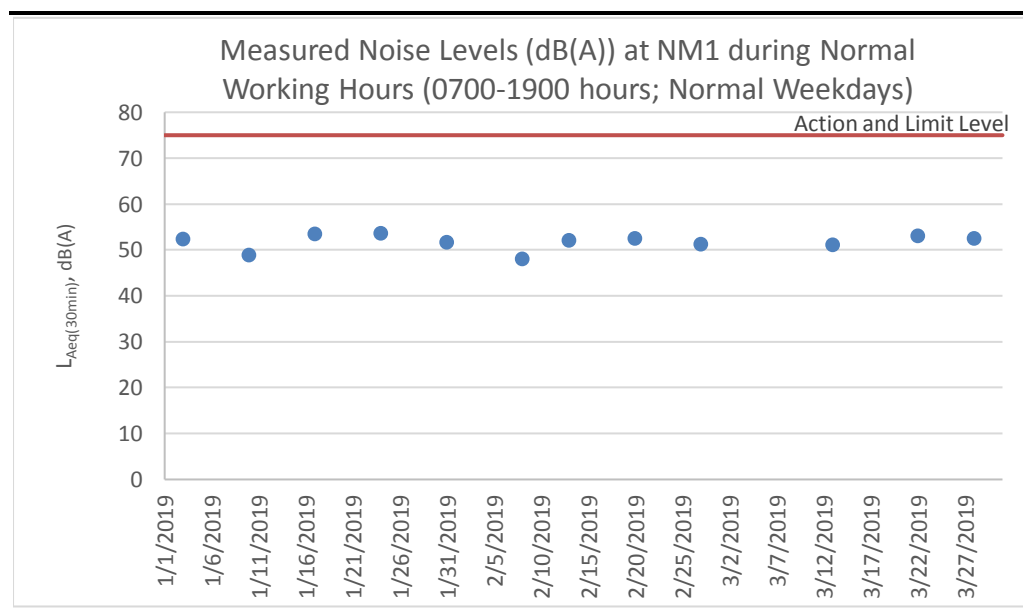
Table E1.1 Measured Noise Levels (dB(A)) at NM1 during Normal Working Hours (0700-1900 hours; Normal Weekdays)

Date	Start Time	Finish Time	Weather	L ₁₀ (30min)	L ₉₀ (30min)	L _{eq} (30min)
3 Jan 2019	16:15	16:45	Cloudy	54.0	50.5	52.4
10 Jan 2019	15:25	15:55	Cloudy	50.5	46.5	48.9
17 Jan 2019	9:43	10:13	Sunny	55.5	50.5	53.5
24 Jan 2019	14:17	14:47	Sunny	55.0	49.5	53.6
31 Jan 2019	14:14	14:44	Sunny	52.5	50.0	51.6
8 Feb 2019	14:17	14:47	Sunny	50.0	45.5	48.0
13 Feb 2019	14:48	15:18	Sunny	54.5	46	52.1
20 Feb 2019	14:48	15:18	Sunny	53.5	50	52.5
27 Feb 2019	14:44	15:14	Sunny	53.5	47	51.2
7 Mar 2019	NA	NA	Rainy	Monitoring was cancelled due to adverse weather.		
13 Mar 2019	15:46	16:16	Sunny	52.5	48	51.1
22 Mar 2019	14:56	15:26	Sunny	54.0	50.5	53.1
28 Mar 2019	14:24	14:54	Sunny	54.5	48.5	52.5
Average						51.7
Min						48.0
Max						53.6

Note:

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

Figure E1.1 Graphical Presentation for Noise Monitoring at NM1



Annex E2

Event and Action Plan for Noise Monitoring

Annex E2 *Event and Action Plan for Construction Noise*

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

Annex F

Surface Water Quality

Annex F1

Surface Water Quality Monitoring Results

Table F1.1 Surface Water Quality Monitoring Results at DP4

Date	Time	Weather Condition	Water Appearance	Water Condition	Water Temperature (°C)	Dissolved Oxygen (DO) (mg/L)	pH	Suspended Solids (SS) (mg/L)
3 Jan 2019	15:26	Cloudy	Unable to collect water sample due to insufficient flow					
10 Jan 2019	15:06	Cloudy	Unable to collect water sample due to insufficient flow					
17 Jan 2019	9:32	Sunny	Unable to collect water sample due to insufficient flow					
24 Jan 2019	11:32	Sunny	Unable to collect water sample due to insufficient flow					
31 Jan 2019	9:55	Sunny	Unable to collect water sample due to insufficient flow					
8 Feb 2019	10:30	Sunny	Unable to collect water sample due to insufficient flow					
13 Feb 2019	14:35	Sunny	Unable to collect water sample due to insufficient flow					
20 Feb 2019	14:15	Sunny	Unable to collect water sample due to insufficient flow					
27 Feb 2019	14:12	Sunny	Unable to collect water sample due to insufficient flow					
8 Mar 2019	11:00	Fine	Green	Semi-clear	16.1	9.83	8.38	22.9
13 Mar 2019	15:20	Overcast	Unable to collect water sample due to insufficient flow					
22 Mar 2019	14:24	Sunny	Unable to collect water sample due to insufficient flow					
28 Mar 2019	14:05	Sunny	Unable to collect water sample due to insufficient flow					
					Average	9.83	8.38	22.9
					Min	9.83	8.38	22.9
					Max	9.83	8.38	22.9

Table F1.2 Surface Water Quality Monitoring Results at DP6

Date	Time	Weather Condition	Water Appearance	Water Condition	Water Temperature (°C)	Dissolved Oxygen (DO) (mg/L)	pH	Suspended Solids (SS) (mg/L)
3 Jan 2019	15:51	Cloudy	Unable to collect water sample due to insufficient flow					
10 Jan 2019	11:19	Cloudy	Unable to collect water sample due to insufficient flow					
17 Jan 2019	11:47	Sunny	Unable to collect water sample due to insufficient flow					
24 Jan 2019	11:05	Sunny	Unable to collect water sample due to insufficient flow					
31 Jan 2019	11:01	Sunny	Unable to collect water sample due to insufficient flow					
8 Feb 2019	10:03	Sunny	Unable to collect water sample due to insufficient flow					
13 Feb 2019	14:19	Sunny	Unable to collect water sample due to insufficient flow					
20 Feb 2019	14:26	Sunny	Unable to collect water sample due to insufficient flow					
27 Feb 2019	14:21	Sunny	Unable to collect water sample due to insufficient flow					
8 Mar 2019	11:18	Fine	Unable to collect water sample due to insufficient flow					
13 Mar 2019	15:27	Overcast	Unable to collect water sample due to insufficient flow					
22 Mar 2019	14:32	Sunny	Unable to collect water sample due to insufficient flow					
28 Mar 2019	14:11	Sunny	Unable to collect water sample due to insufficient flow					
					Average	-	-	-
					Min	-	-	-
					Max	-	-	-

Figure F1.1 Graphical Presentation for Surface Water Quality Monitoring (DO)

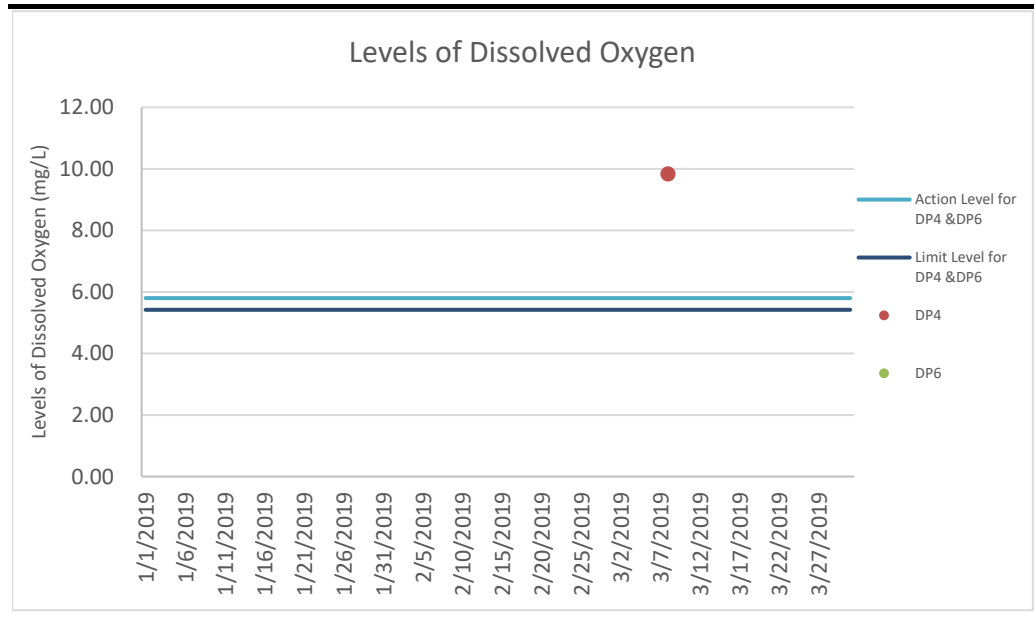


Figure F1.2 Graphical Presentation for Surface Water Quality Monitoring (pH)

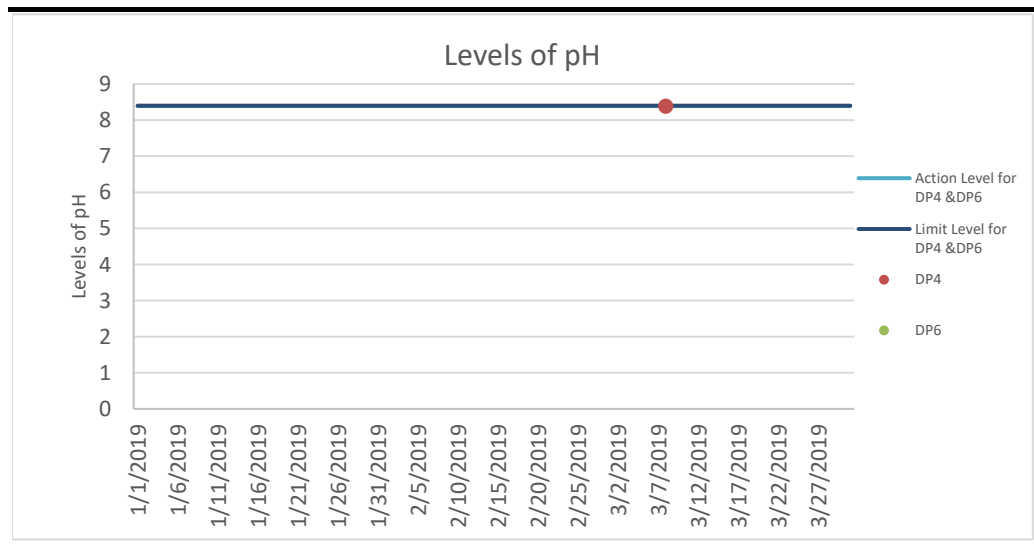
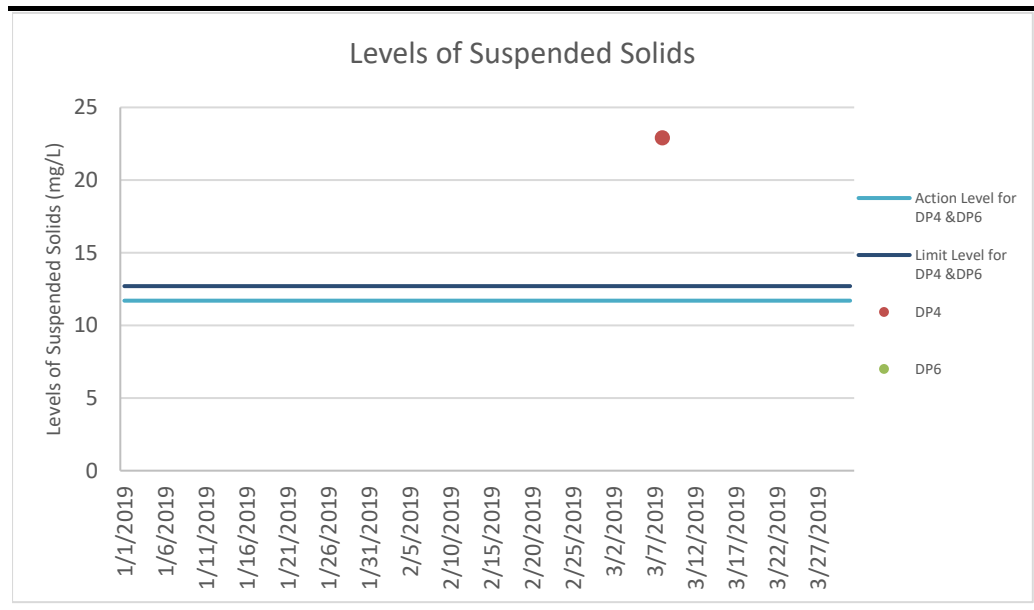


Figure F1.3 Graphical Presentation for Surface Water Quality Monitoring (SS)



Annex F2

Event and Action Plan for Surface Water Quality Monitoring

Annex F2 *Event and Action Plan for Surface Water Quality During Construction Phase*

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

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

Annex G

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

Table G1 *Cumulative Statistics on Exceedances*

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

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

Reporting Period	Cumulative Statistics		
	Complaints	Notifications of Summons	Prosecutions
This Reporting Period (2 January - 31 March 2019)	0	0	0
Total no. received since project commencement	0	0	0