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.13

June 2022

ERM

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

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. 13 for South East New Territories (SENT) Landfill Extension
Date of Report:	7 June 2022

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: 7 June 2022

IEC Verification

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

Claudine Lee,
Independent Environmental Checker:
(Meinhardt Infrastructure and Environment Limited)

Date: 9 June 2022

South East New Territories (SENT) Landfill Extension

Quarterly Environmental Monitoring & Audit Report No.13

Environmental Resources Management

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Client:	Project No:
Green Valley Landfill Ltd.	0465169
Summary:	Date: 7 June 2022
This document presents the Quarterly EM&A Report No.13 for *South East New Territories (SENT) Landfill Extension*	Approved by:  Frank Wan *Partner*

Revision	Description	By	Checked	Approved	Date
0	Quarterly EM&A Report No.13	AL	FW	FW	7 Jun 22

Distribution

☐ Internal

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ANNEXES

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 1 January to 31 March 2022 for the Project in accordance with the updated EM&A Manual.

Exceedance of Action and Limit Levels for Air Quality

No exceedance of Action and Limit Levels for operation/ restoration phase air quality monitoring was recorded in the reporting period.

Exceedance of Action and Limit Levels for Noise

No exceedance of Action and Limit Levels for operation/ restoration phase noise monitoring was recorded in the reporting period.

Exceedance of Action and Limit Levels for Water Quality

Three exceedance of the Limit Level for groundwater (Chemical Oxygen Demand (COD)) were recorded for water quality impact monitoring in the reporting period. The groundwater (COD) exceedances at MWX 4 and MWX-6 on 15 February 2022 and groundwater (COD) exceedance at MWX 4 on 15 March 2022 were considered non Project-related.

Exceedance of Action and Limit Levels for Landfill Gas

No exceedance of Action and Limit Levels for operation/ restoration phase landfill gas monitoring was recorded in the reporting period.

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 Mm^3 and provides an additional lifespan of about 6 years, commencing operation upon exhaustion of the SENT Landfill. The SENTX will receive construction waste only.

(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

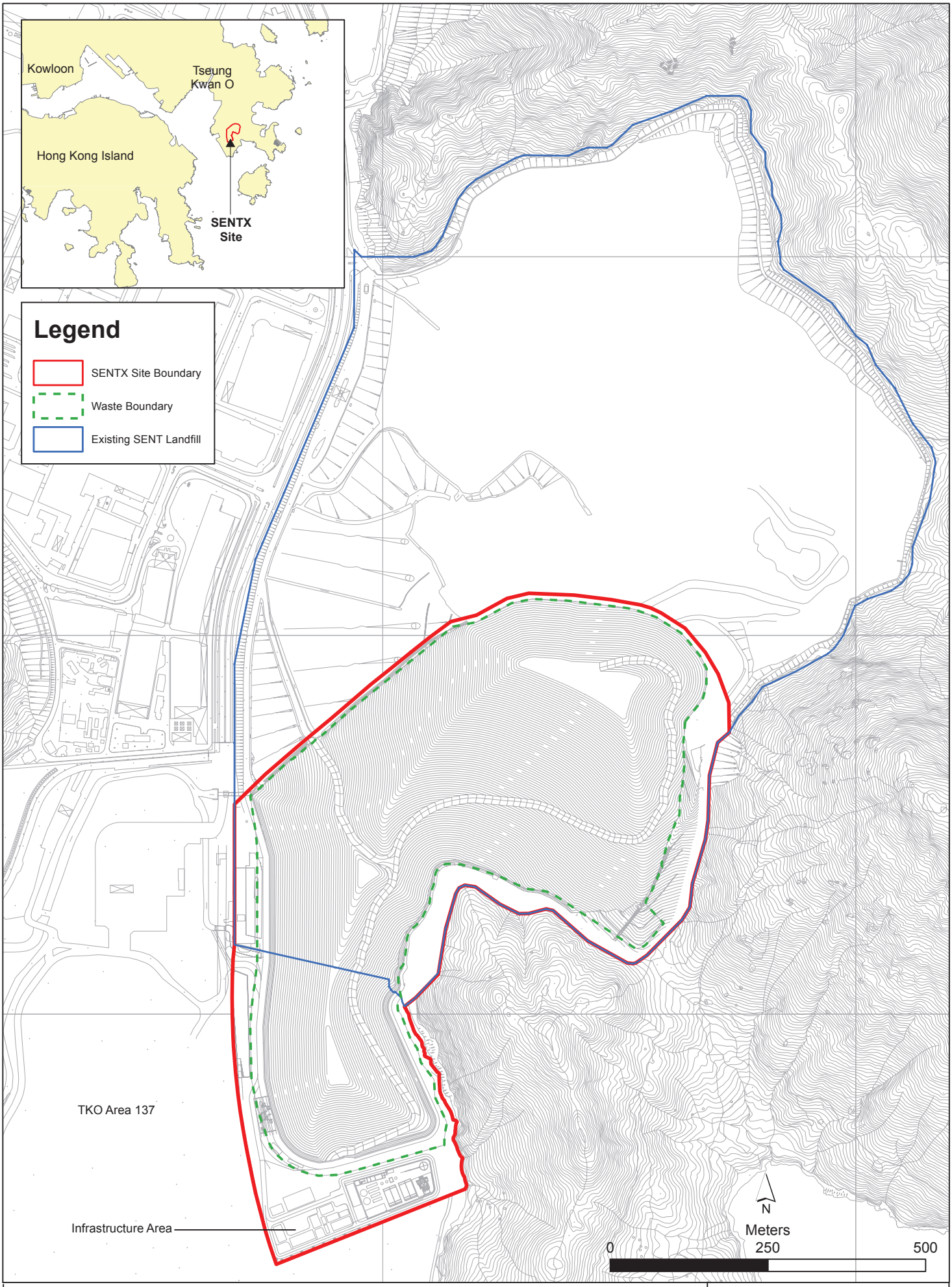

Figure 1.1

Layout Plan of SENTX

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Date: 5/9/2018

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The key implementation milestones of the Project are indicatively summarised in *Table 1.1*. The construction works and operation of the Project commenced on 2 January 2019 and 21 November 2021, respectively.

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	21 November 2021
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.

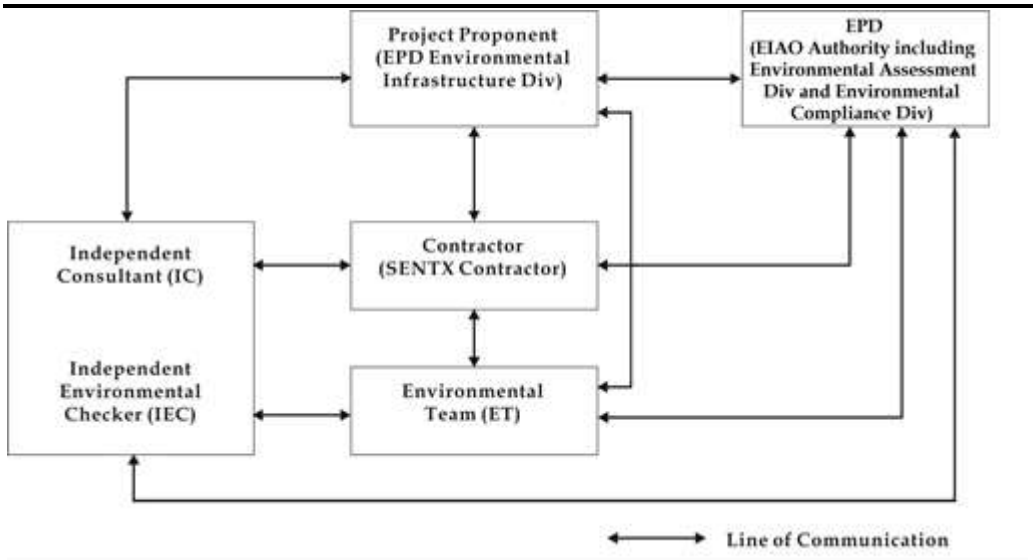
1.3 SCOPE OF THE EM&A REPORT

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 1 January to 31 March 2022 for the construction and operation works.

1.4 PROJECT ORGANISATION

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

Figure 1.2 Organisation Chart



Contact details of the key personnel are 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	Carl Lai	2706 8829
Environmental Team (ET) (ERM-Hong Kong, Limited)	ET Leader	Frank Wan	2271 3152
Independent Environmental Checker (IEC) (Meinhardt Infrastructure and Environment Limited)	IEC	W.K. Chiu	2858 0738

1.5 SUMMARY OF CONSTRUCTION WORKS

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

January 2022

- Rectification of defects at Landfill Gas (LFG) Plant, Leachate Treatment Plant (LTP), infrastructure area and waste reception area;
- Rectification of defects for underground utilities and pipe;
- Construction of pump house 4X;
- Construction of MSE wall;
- Site formation for Cell 4X;

- Liner works at Cell 4X; and
- Maintenance and improvement of temporary surface water drainage.

February 2022

- Rectification of defects at LFG Plant, LTP, infrastructure area and waste reception area;
- Rectification of defects for underground utilities and pipe;
- Construction of MSE wall;
- Site formation for Cell 4X;
- Liner works at Cell 4X;
- Construction of perimeter channel along Western bund of Cell 4X; and
- Maintenance and improvement of temporary surface water drainage.

March 2022

- Rectification of defects at LFG Plant, LTP, infrastructure area and waste reception area;
- Landscaping works at infrastructure area;
- Rectification of defects for underground utilities and pipe;
- Construction of MSE wall;
- Construction of retaining wall at Western boundary planting;
- Liner works at Cell 4X;
- Construction of perimeter channel X10A and X10C along Western bund of Cell 4X;
- Maintenance and improvement of temporary surface water drainage; and
- Utilities installation along Western bund of Cell 4X.

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

1.6 SUMMARY OF EM&A PROGRAMME REQUIREMENTS

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

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

Parameters	Status
Air Quality	
Baseline Monitoring	The results of baseline air quality monitoring were reported in Baseline Monitoring Report and Pre-operation 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
Water Quality	
Baseline Monitoring	The results of baseline surface water quality monitoring were reported in Baseline Monitoring Report and Pre-operation Baseline Monitoring Report and submitted to EPD under EP Condition 3.3
Impact Monitoring	On-going
Landfill Gas	
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 operation works, impact monitoring of air quality, noise, water quality, landfill gas and waste management were carried out in the reporting period. The impact monitoring schedule of air quality, noise, water quality and landfill gas monitoring are provided in *Annex C*.

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

- Three environmental management meetings were held with the Contractor, ER, ET, IEC and EPD on 20 January, 24 February and 24 March 2022; and

- Environmental toolbox trainings on the following topics were provided by the Contractor to the workers:
    - Site Practice for Waste Reduction in Construction Industry on 4 January 2022;
    - Clean Recycling on 18 January 2022;
    - Quality Powered Mechanical Equipment (QPME) on 9 February 2022;
    - Good Vehicle Maintenance Practices on 23 February 2022;
    - Chemical Waste Handling on 9 March 2022; and
    - Green Procurement on 23 March 2022 .

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 the recommended mitigation measures are presented in *Table 1.4*.

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

EP Condition	Submission / Implementation Status	Status
2.3	Management Organisation of Main Construction Companies	Submitted and 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	Submitted, and accepted by EPD on 10 January 2019.
2.6	Submission of Restoration and Ecological Enhancement Plan	Submitted to EPD on 28 June 2019.
2.7	Setting up of Trial Nursery	Trial Nursery works was commenced on 28 August 2019.
2.8	Advance Screen Planting	Advance Screen Planting works were completed on 28 June 2019.
2.9	Provision of Multi-layer Composite Liner System	Under implementation.

1.8 STATUS OF OTHER STATUTORY ENVIRONMENTAL REQUIREMENTS

The environmental licenses and permits (including EP, *Water Pollution Control Ordinance* (WPCO) discharge license, registration as a chemical waste producer, and construction noise permit) that are valid in the reporting period are presented in *Table 1.5*. No non-compliance with environmental statutory requirements was identified.

Table 1.5 Status of Statutory Environmental Requirements

Description	Ref No.	Status
Environmental Permit	EP-308/2008	Granted on 5 August 2008
Variation of Environmental Permit	EP-308/2008/A	Granted on 6 January 2012
	EP-308/2008/B	Granted on 20 January 2017
Further Environmental Permit	FEP-01/308/2008/B	Granted on 16 May 2018
Water Discharge License under WPCO (Permit Holder: GVL)	Licence No.: WT00036269-2020	Validity from 21 June 2020 to 30 June 2022
Billing Account for Disposal of Construction Waste	Chit Account Number: 5001692	Approved on 28 December 2005
Registration as a Chemical Waste Producer (Permit Holder: Chun Wo)	5213-839-C3507-10	Issued on 23 August 2018
Registration as a Chemical Waste Producer (Permit Holder: REC)	5518-839-R2289-06	Issued on 24 October 2019
Construction Noise Permit (Permit Holder: GVL)	GW-RE0990-21	Validity from 6 October 2021 to 4 January 2022
	GW-RE1316-21	Validity from 5 January 2022 to 14 June 2022
Construction Noise Permit (Permit Holder: Paul Y.)	GW-RE1138-21	Validity from 16 November 2021 to 15 February 2022
	GW-RE0278-22	Validity from 31 March 2022 to 22 September 2022

2 EM&A RESULTS

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

2.1 AIR QUALITY MONITORING

2.1.1 Dust Monitoring

Monitoring Requirements and Equipment

According to the updated EM&A Manual of the Project, impact dust monitoring (in term of Total Suspended Particulates (TSP)) was carried out at the four designated locations along the site boundary (i.e. AM1, AM2, AM3 and AM4) during the operation/restoration phase, at a 6-day interval.

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
AM1 - SENTX Site Boundary (North) AM2 - SENTX Site Boundary (West, near DP3) AM3 - SENTX Site Boundary (West, near RC15) AM4 - SENTX Site Boundary (West, near EPD building)	260 µg m^{-3}	260 µg m^{-3}

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

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

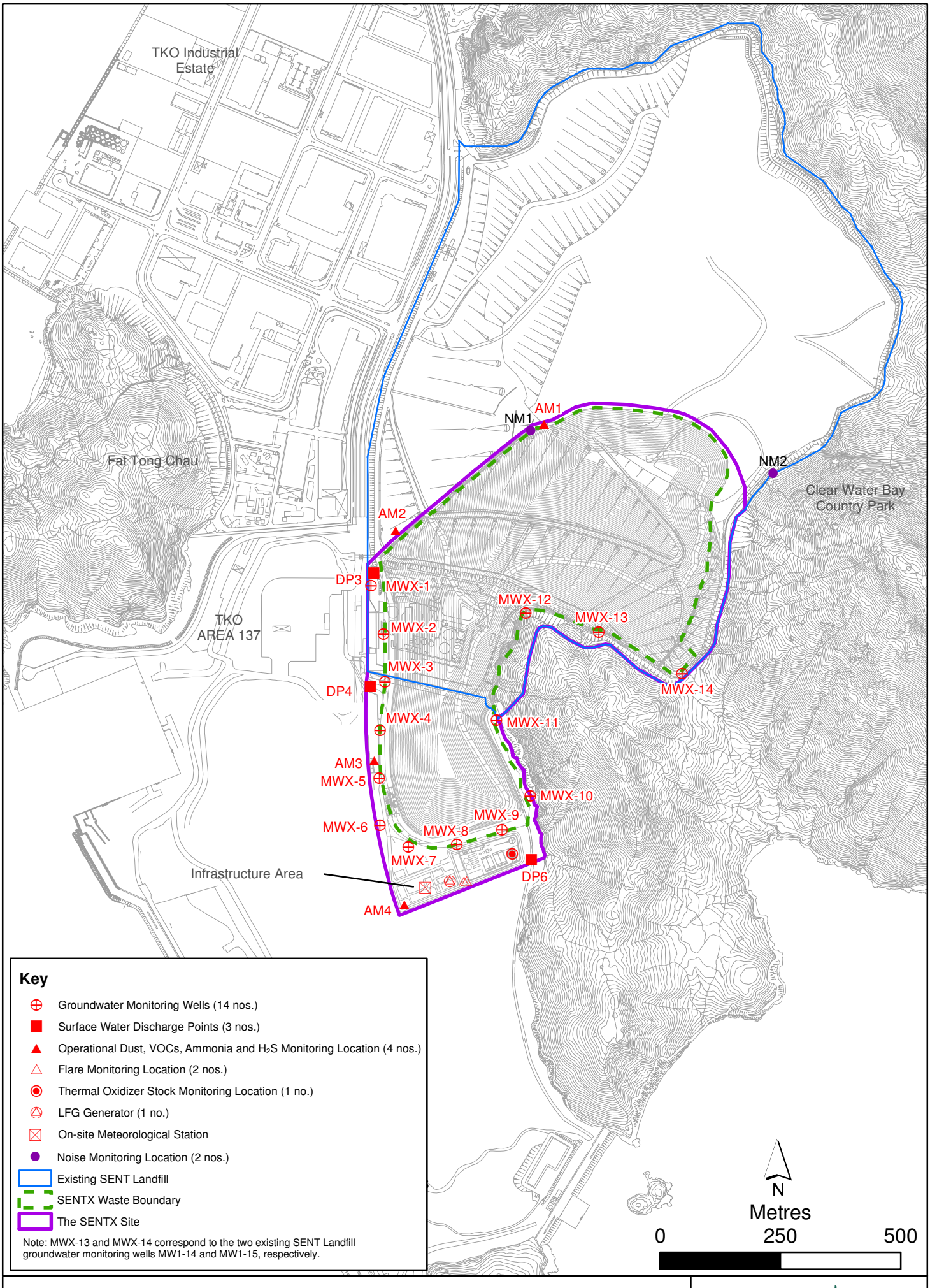


Figure 2.1

Environmental Monitoring Locations

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Date: 19/11/2019

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Table 2.2 Dust Monitoring Details

Monitoring Station	Location	Parameter	Frequency and Duration	Monitoring Dates	Equipment
AM1	SENTX Site Boundary (North)	24-hour TSP	Once every 6 days	6, 12, 18, 24, 30 Jan 2022	Tisch TE-5170 (S/N: 1190)
AM2	SENTX Site Boundary (West, near DP3)			5, 11, 17, 23 Feb 2022	Tisch TE-5170 (S/N: 1047)
AM3	SENTX Site Boundary (West, near RC15)			1, 7, 13, 19, 25, 31 Mar 2022	Tisch TE-5170 (S/N: 1258)
AM4	SENTX Site Boundary (West, near EPD building)				Tisch TE-5170 (S/N: 1101)

Monitoring Schedule for the Reporting Period

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

Results and Observations

The 24-hour TSP monitoring results are summarised in *Table 2.3*. The detailed monitoring results and the graphical presentation of the 24-hour TSP monitoring 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 (μg m^{-3})		Action Level (μg/m^3)	Limit Level (μg/m^3)
		Average	Range		
January 2022	AM1	133	55 – 210	260	260
	AM2	66	32 – 102	260	260
	AM3	150	100 – 218	260	260
	AM4	105	53 – 132	260	260
February 2022	AM1	73	42 – 132	260	260
	AM2	56	32 – 85	260	260
	AM3	100	57 – 140	260	260
	AM4	75	47 – 107	260	260
March 2022	AM1	96	62 – 133	260	260
	AM2	70	39 – 106	260	260
	AM3	163	35 – 224	260	260
	AM4	81	33 – 107	260	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 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.

Meteorological Data

Meteorological data obtained from the SENTX on-site meteorological monitoring station was used for the dust monitoring and is shown in *Annex D3*. It is considered that meteorological data obtained at the on-site meteorological monitoring station is representative of the Project area and could be used for the operation/ restoration phase dust monitoring programme for the Project.

2.1.2 Odour Monitoring

Monitoring Requirements

According to the updated EM&A Manual of the Project, odour patrol was carried out along the site boundary during the operation/ restoration phase. During the first month of operation, daily odour patrol (3 times per day) was conducted jointly by the ET and the IEC. The odour intensity detected was based on that determined by the IEC. In addition, an independent party (ALS Technichem (HK) Pty Ltd.) was appointed to undertake odour patrol together with the ET and IEC three times per week. During these patrols, the odour intensity detected was based on that determined by the independent third party.

Reduction of odour monitoring frequency from Period 1 (daily, three times per day) to Period 2 (weekly)) was approved by EPD on 4 February 2022. Weekly odour patrol was conducted jointly by the ET and the IEC from 4 February 2022. In addition, an independent party (ALS Technichem (HK) Pty Ltd.) was appointed to undertake odour patrol together with the ET and IEC once every two weeks.

The Action and Limit Levels for odour patrol is provided in *Table 2.4* below.

Table 2.4 Action and Limit Levels for Odour Patrol

Parameter	Action Level	Limit Level
Perceived odour intensity and odour complaints	• Odour intensity ≥ Class 2 recorded; or • One documented complaint received	• Odour intensity ≥ Class 3 recorded on 2 consecutive patrol [(a) (b)]

Notes:
(a) i.e. either Class 3-strong or Class 4-extreme odour intensity.
(b) The exceedances of the odour intensity do not need to be recorded at the same location.

Odour patrol was conducted by trained personnel / competent persons with a specific sensitivity to a reference odour (i.e. on reference materials n-butanol with the concentration of 50ppm in nitrogen (v/v)) in compliance with Section 3.7.2 of the updated EM&A Manual patrolling and sniffing along the SENTX Site boundary to detect any odour.

The odour monitoring programme and patrol route are summarised in *Table 2.5* and illustrated in *Figure 2.2* respectively.

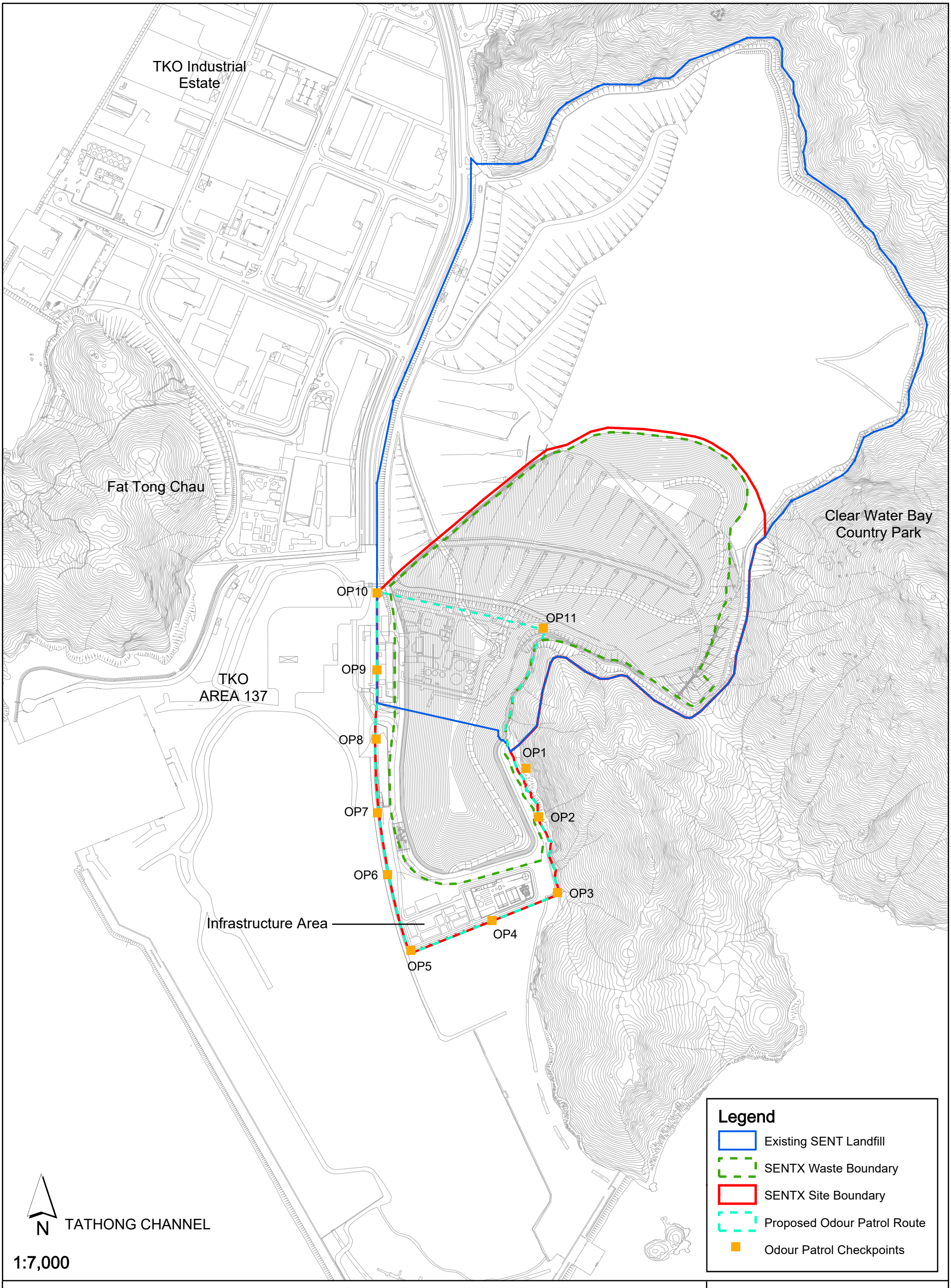

Figure 2.2

Odour Patrol Route for Operation/ Restoration Phase Odour Monitoring

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Date: 28/9/2021

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Table 2.5 Odour Monitoring Details

Patrol Locations	Parameters	Patrol Frequency [a]	Monitoring Dates and Time
Patrol along the SENTX Site Boundary (Checkpoints OP1 – OP11 [d])	Odour Intensity (see *Table 2.6*)	Period 1 - First month of operation Daily, three times a day in the morning, afternoon and evening/night (between 18:00 and 22:00 hrs) conducted by the ET and the IEC	Conducted by ET & IEC: 1 – 31 Jan 2022 (10:30 – 12:00, 14:30 – 16:00, 18:00 – 19:30)
		Three times per week on different days conducted by an independent third party together with the ET and IEC [b]	1 – 4 Feb 2022 (10:30 – 12:00, 14:30 – 16:00, 18:00 – 19:30), 18, 28 Feb 2022
		Period 2 - Three months following period 1 [c]	7, 16, 21, 29 Mar 2022
		Weekly conducted by the ET and the IEC	Conducted by an independent third party, ET & IEC: 1 Jan 2022 (14:30 – 16:00), 5 Jan 2022 (10:00 – 12:00), 7 Jan 2022 (14:30 – 16:00), 10 Jan 2022 (14:30 – 16:00), 12 Jan 2022 (14:30 – 16:00), 14 Jan 2022 (14:30 – 16:00), 17 Jan 2022 (14:30 – 16:00), 18 Jan 2022 (14:30 – 16:00), 19 Jan 2022 (14:30 – 16:00), 24 Jan 2022 (14:30 – 16:00), 25 Jan 2022 (14:30 – 16:00), 27 Jan 2022 (10:00 – 12:00), 31 Jan 2022 (14:30 – 16:00) 4 Feb 2022 (10:00 – 12:00), 11, 21 Feb 2022 7, 21 Mar 2022
		Once every two weeks conducted by an independent third party together with the ET and IEC [b]	
		Period 3 - Throughout operation following period 2 [c] Monthly conducted by the ET and the IEC	
		Quarterly conducted by an independent third party together with the ET and IEC [b]	

Notes:

(a) Reduction of monitoring frequency will be subject to the monitoring results to demonstrate environmentally acceptable performance.

(b) Patrol shall be scheduled so that they are carried out together with the patrols to be carried out jointly by the ET and the IEC.

(c) Commencement of each period will be justified by the ET Leader and verified by the IEC and will be subject to agreement with the EPD (EIAO Authority) and Project Proponent.

(d) The revised odour patrol route with the addition of checkpoint OP11 was applied from 10 December 2021.

Table 2.6 Odour Intensity Level

Class	Odour Intensity	Description
0	Not Detected	No odour perceived or an odour so weak that it cannot be easily characterised or described.
1	Slight	Identified odour, slight
2	Moderate	Identified odour, moderate
3	Strong	Identified odour, strong
4	Extreme	Severe odour

Monitoring Schedule for the Reporting Month

The schedule for odour patrol during the reporting period is provided in *Annex C*.

Results and Observations

The odour monitoring results are summarised and provided in *Table 2.7* and *Annex D4*, respectively.

Table 2.7 Summary of Odour Monitoring Results in the Reporting Period

Odour Checkpoints	Odour Intensity Class (Range)	Action Level	Limit Level
OP1	0 – 1	Odour intensity ≥ Class 2 recorded	Odour intensity ≥ Class 3 recorded on 2 consecutive patrol
OP2	0 – 1		
OP3	0 – 1		
OP4	0 – 1		
OP5	0 – 1		
OP6	0		
OP7	0 – 1		
OP8	0 – 1		
OP9	0 – 1		
OP10	0 – 1		
OP11	0 – 1		

The potential odour sources in the reporting period included the construction works, generator, slurry truck, excavator, dead body of wild animal ,vehicles and vegetation at SENTX, as well as nearby operations of the Leachate Treatment Plant and Town Gas Plant.

All the odour monitoring results were below the Action and Limit Levels in the reporting period. No action is thus required to be undertaken in accordance with the Event and Action Plan presented in *Annex D2*.

2.1.3 Thermal Oxidiser, Landfill Gas Flare and Landfill Gas Generator Stack Emission Monitoring

Monitoring Requirements and Equipment

According to the updated EM&A Manual of the Project, the performance of the thermal oxidiser, landfill gas flare and landfill gas generator was

monitored when they are in operation. Gas samples were collected from the stack of the thermal oxidizer, landfill gas flare and landfill gas generator for laboratory analysis for NO_2, CO, SO_2, Benzene and Vinyl chloride and in-situ analysis for exhaust gas velocity at monthly interval. The operating conditions of the thermal oxidiser, landfill gas flare and landfill gas generator were also monitored continuously.

The Limit Levels for stack emission of the thermal oxidiser, landfill gas flare and landfill gas generator are provided in *Tables 2.8 – 2.10* below.

Table 2.8 Limit Levels for Stack Emission of the Thermal Oxidiser

Parameters	Limit Level
NO_2	1.58 gs^{-1}
CO	0.53 gs^{-1}
SO_2	0.07 gs^{-1}
Benzene	3.01×10^{-2} gs^{-1}
Vinyl chloride	2.23×10^{-3} gs^{-1}
Gas combustion temperature	850°C (minimum)
Exhaust gas exit temperature	443K (minimum) (a)
Exhaust gas velocity	7.5 ms^{-1} (minimum) (a)

Note:
(a) Level under full load condition.

Table 2.9 Limit Levels for Stack Emission of the Landfill Gas Flare

Parameters	Limit Level
NO_2	0.97 gs^{-1}
CO	2.43 gs^{-1}
SO_2	0.22 gs^{-1}
Benzene	4.14×10^{-4} gs^{-1}
Vinyl Chloride	2.60×10^{-4} gs^{-1}
Gas combustion temperature	815°C (minimum)
Exhaust gas exit temperature	923 K (minimum) (a)
Exhaust gas velocity	9.0 m s^{-1} (minimum) (a)

Note:
(a) Level under full load condition.

Table 2.10 Limit Levels for Stack Emission of the Landfill Gas Generator

Parameters	Limit Level
NO_2	1.91 gs^{-1}
CO	2.48 gs^{-1}
SO_2	0.528 gs^{-1}
Benzene	2.47×10^{-4} gs^{-1}
Vinyl chloride	1.88×10^{-5} gs^{-1}
Gas combustion temperature	450°C (minimum)
Exhaust gas exit temperature	723K (minimum) (a)
Exhaust gas velocity	30.0 ms^{-1} (minimum) (a)

Parameters	Limit Level
Note: (a) Level under full load condition.	

Gas samples were collected from the centroid of the stack with stainless steel sampling probe, into inert sample containers (i.e. Canister and Tedlar Bag) and transferred to ALS Technichem (HK) Pty Ltd. (HOKLAS Registration No. 066) laboratory within 24 hours of collection for direct analysis on a gas chromatography within 48 hours after collection. The flue gas velocity of the gas stream at the exhaust of thermal oxidizer was determined by S-Pitot tube during the emission sampling.

The stack emission monitoring programme and monitoring locations are summarised in *Table 2.11* and illustrated in *Figure 2.1,* respectively.

Table 2.11 Thermal Oxidiser, Landfill Gas Flare and Landfill Gas Generator Stack Emission Monitoring Details

Monitoring Location	Parameter	Frequency	Monitoring Date
Stack of Thermal Oxidiser	Laboratory analysis for • NO_2 • CO • SO_2 • Benzene • Vinyl chloride In-situ analysis for • Exhaust gas velocity	Monthly for the first 12 months of operation and thereafter at quarterly intervals	12 Jan 2022, 11 Feb 2022, 7 Mar 2022
	Laboratory analysis for • Non-methane organic compounds	Quarterly for the 1st year of operation (b)	11 Feb 2022
	Laboratory analysis for • Ammonia	Quarterly	11 Feb 2022
	• Gas combustion temperature • Exhaust temperature • Exhaust gas velocity (a)	Continuously	1 Jan – 31 Mar 2022
Stack of Landfill Gas Flare	Laboratory analysis for • NO_2 • CO • SO_2 • Benzene • Vinyl chloride In-situ analysis for • Exhaust gas velocity	Monthly for the first 12 months of operation and thereafter at quarterly intervals	12 Jan 2022, 11 Feb 2022, 8 Mar 2022
	Laboratory analysis for • Non-methane organic compounds	Quarterly for the 1st year of operation (b)	11 Feb 2022

Monitoring Location	Parameter	Frequency	Monitoring Date
	• Gas combustion temperature • Exhaust temperature • Exhaust gas velocity (a)	Continuously	1 Jan – 31 Mar 2022
Stack of Landfill Gas Generator	Laboratory analysis for • NO_2 • CO • SO_2 • Benzene • Vinyl chloride In-situ analysis for • Exhaust gas velocity	Monthly for the first 12 months of operation and thereafter at quarterly intervals	12 Jan 2022, 11 Feb 2022, 8 Mar 2022
	Laboratory analysis for • Non-methane organic compounds	Quarterly for the 1st year of operation (b)	11 Feb 2022
	• Exhaust temperature • Exhaust gas velocity (a)	Continuously	1 Jan – 31 Mar 2022

Note:

(a) The exhaust gas velocity will be calculated based on the cross-section area of the stack and continuous monitored gas flow and combustion temperature data.

(b) The monitoring results will be reviewed towards the end of the first year of operation to determine if monitoring of this parameter can be terminated upon agreement by the EIAO Authority, IEC and Project Proponent.

Monitoring Schedule for the Reporting Month

The schedule for thermal oxidizer, landfill gas flare and landfill gas generator stack emission monitoring during the reporting period is provided in *Annex C*.

Results and Observations

The thermal oxidizer, landfill gas flare and landfill gas generator stack emission monitoring results and detailed continuous monitoring results are summarised in *Tables 2.12 - 2.14* and provided in *Annex D5,* respectively.

Table 2.12 Summary of Thermal Oxidiser Stack Emission Monitoring in the Reporting Period

Parameters	Monitoring Results (Range in Bracket)	Limit Level
	January 2022	
NO_2	0.38 gs^{-1}	1.58 gs^{-1}
CO	0.047 gs^{-1}	0.53 gs^{-1}
SO_2	<0.015 gs^{-1}	0.07 gs^{-1}
Benzene	$<4 \times 10^{-5}$ gs^{-1}	3.01×10^{-2} gs^{-1}
Vinyl chloride	$<3 \times 10^{-5}$ gs^{-1}	2.23×10^{-3} gs^{-1}
Gas combustion temperature	972°C (952°C - 994°C)	850°C (minimum)
Exhaust gas exit temperature	1,237K (1,218K – 1,265K)	443K (minimum) (a)
Exhaust gas velocity	9.9 ms^{-1} (b)	7.5 ms^{-1} (minimum) (a)
	February 2022	
NO_2	1.17 gs^{-1}	1.58 gs^{-1}
CO	0.06 gs^{-1}	0.53 gs^{-1}
SO_2	0.02 gs^{-1}	0.07 gs^{-1}
Benzene	$<3 \times 10^{-5}$ gs^{-1}	3.01×10^{-2} gs^{-1}
Vinyl chloride	$<3 \times 10^{-5}$ gs^{-1}	2.23×10^{-3} gs^{-1}
Non-methane Organic Carbons	3.6×10^{-3} gs^{-1}	-
Ammonia	6.52×10^{-2} gs^{-1}	- (c)
Gas combustion temperature	973°C (958°C – 1,013°C)	850°C (minimum)
Exhaust gas exit temperature	1,230K (1,219K – 1,241K)	443K (minimum) (a)
Exhaust gas velocity	9.9 ms^{-1} (b)	7.5 ms^{-1} (minimum) (a)
	March 2022	
NO_2	1.54 gs^{-1}	1.58 gs^{-1}
CO	0.04 gs^{-1}	0.53 gs^{-1}
SO_2	<0.01 gs^{-1}	0.07 gs^{-1}
Benzene	$<3 \times 10^{-5}$ gs^{-1}	3.01×10^{-2} gs^{-1}
Vinyl chloride	$<3 \times 10^{-5}$ gs^{-1}	2.23×10^{-3} gs^{-1}
Gas combustion temperature	979°C (959°C – 1,035°C)	850°C (minimum)
Exhaust gas exit temperature	957K (941K – 1,003K)	443K (minimum) (a)
Exhaust gas velocity	9.1 ms^{-1} (b)	7.5 ms^{-1} (minimum) (a)

Note:

(a) Level under full load condition.

(b) The exhaust gas velocity was calculated based on the cross-section area of the stack and the gas flow and combustion temperature data measured during the stack emission monitoring. The limit level was not applicable as the stack was not operated under full load condition.

(c) The emission limit for ammonia is under review and will be supplemented in subsequent revision.

Table 2.13 Summary of Landfill Gas Flare Stack Emission Monitoring in the Reporting Period

Parameters	Monitoring Results (Range in Bracket)	Limit Level
	January 2022	
NO_2	Flare 1: <0.01 gs^{-1}	0.97 gs^{-1}
	Flare 2: <0.01 gs^{-1}	
CO	Flare 1: 0.032 gs^{-1}	2.43 gs^{-1}
	Flare 2: 0.04 gs^{-1}	
SO_2	Flare 1: 0.09 gs^{-1}	0.22 gs^{-1}
	Flare 2: 0.10 gs^{-1}	
Benzene	Flare 1: 1.3 x 10^{-5} gs^{-1}	4.14 x 10^{-4} gs^{-1}
	Flare 2: 1.6 x 10^{-5} gs^{-1}	
Vinyl chloride	Flare 1: <1.1 x 10^{-5} gs^{-1}	2.60 x 10^{-4} gs^{-1}
	Flare 2: <1.3 x 10^{-5} gs^{-1}	
Gas combustion temperature	Flare 1: 1,010°C (854°C – 1,171°C)	815°C (minimum)
	Flare 2: 916°C (820°C – 1,171°C)	
Exhaust gas exit temperature	Flare 1: 1,144K (1,023K – 1,223K)	923 K (minimum) (a)
	Flare 2: 1,116K (1,045K – 1,283K)	
Exhaust gas velocity	Flare 1: 4.3 ms^{-1} (b)	9.0 m s^{-1} (minimum) (a)
	Flare 2: 2.0 ms^{-1} (b)	
	February 2022	
NO_2	<0.01 gs^{-1}	0.97 gs^{-1}
CO	0.027 gs^{-1}	2.43 gs^{-1}
SO_2	0.110 gs^{-1}	0.22 gs^{-1}
Benzene	5.1 x 10^{-5} gs^{-1}	4.14 x 10^{-4} gs^{-1}
Vinyl chloride	<1.1 x 10^{-5} gs^{-1}	2.60 x 10^{-4} gs^{-1}
Non-methane Organic Carbons	4.1 x 10^{-3} gs^{-1}	-
Gas combustion temperature	Flare 1: 893°C (816°C – 995°C)	815°C (minimum)
	Flare 2: 857°C (830°C – 924°C)	
Exhaust gas exit temperature	Flare 1: 1,143K (1,083K – 1,213K)	923 K (minimum) (a)
	Flare 2: 1,072K (1,015K – 1,123K)	
Exhaust gas velocity	4.4 ms^{-1} (b)	9.0 m s^{-1} (minimum) (a)
	March 2022	
NO_2	0.02 gs^{-1}	0.97 gs^{-1}
CO	0.056 gs^{-1}	2.43 gs^{-1}
SO_2	0.007 gs^{-1}	0.22 gs^{-1}
Benzene	<1.2 x 10^{-5} gs^{-1}	4.14 x 10^{-4} gs^{-1}
Vinyl chloride	<1.0 x 10^{-5} gs^{-1}	2.60 x 10^{-4} gs^{-1}
Gas combustion temperature	Flare 1: 911°C (830°C – 990°C)	815°C (minimum)
	Flare 2: 854°C (820°C – 890°C)	
Exhaust gas exit temperature	Flare 1: 1,141K (1,073K – 1,223K)	923 K (minimum) (a)
	Flare 2: 1,077K (1,033K – 1,123K)	
Exhaust gas velocity	3.9 ms^{-1} (b)	9.0 m s^{-1} (minimum) (a)

Parameters	Monitoring Results (Range in Bracket)	Limit Level

Note:

(a) Level under full load condition.

(b) The exhaust gas velocity was calculated based on the cross-section area of the stack and the gas flow and combustion temperature data measured during the stack emission monitoring. The limit level was not applicable as the stack was not operated under full load condition.

Table 2.14 Summary of Landfill Gas Generator Stack Emission Monitoring in the Reporting Period

Parameters	Monitoring Results (Range in Bracket)	Limit Level
	January 2022	
NO_2	0.008 gs^{-1}	1.91 gs^{-1}
CO	0.050 gs^{-1}	2.48 gs^{-1}
SO_2	0.009 gs^{-1}	0.528 gs^{-1}
Benzene	2×10^{-6} gs^{-1}	2.47×10^{-4} gs^{-1}
Vinyl chloride	$<1.3 \times 10^{-6}$ gs^{-1}	1.88×10^{-5} gs^{-1}
Exhaust gas exit temperature	843K (835K – 853K)	723K (minimum) [(a)]
Exhaust gas velocity	7.8 ms^{-1} [(b)]	30.0 ms^{-1} (minimum) [(a)]
	February 2022	
NO_2	0.016 gs^{-1}	1.91 gs^{-1}
CO	0.056 gs^{-1}	2.48 gs^{-1}
SO_2	0.002 gs^{-1}	0.528 gs^{-1}
Benzene	$<3 \times 10^{-6}$ gs^{-1}	2.47×10^{-4} gs^{-1}
Vinyl chloride	$<2 \times 10^{-6}$ gs^{-1}	1.88×10^{-5} gs^{-1}
Non-methane Organic Carbons	2×10^{-4} gs^{-1}	-
Exhaust gas exit temperature	843K (836K – 847K)	723K (minimum) [(a)]
Exhaust gas velocity	11.9 ms^{-1} [(b)]	30.0 ms^{-1} (minimum) [(a)]
	March 2022	
NO_2	0.022 gs^{-1}	1.91 gs^{-1}
CO	0.06 gs^{-1}	2.48 gs^{-1}
SO_2	<0.001 gs^{-1}	0.528 gs^{-1}
Benzene	$<2 \times 10^{-6}$ gs^{-1}	2.47×10^{-4} gs^{-1}
Vinyl chloride	$<1.9 \times 10^{-6}$ gs^{-1}	1.88×10^{-5} gs^{-1}
Exhaust gas exit temperature	845K (840K – 850K)	723K (minimum) [(a)]
Exhaust gas velocity	7.8 ms^{-1} [(b)]	30.0 ms^{-1} (minimum) [(a)]

Note:

(a) Level under full load condition.

(b) The exhaust gas velocity was calculated based on the cross-section area of the stack and the gas flow and combustion temperature data measured during the stack emission monitoring. The limit level was not applicable as the stack was not operated under full load condition.

All thermal oxidizer, landfill gas flare and landfill gas generator stack emission monitoring results were below the Limit Levels 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 *Ambient VOCs, Ammonia and H_2S Monitoring*

Monitoring Requirements and Equipment

According to the updated EM&A Manual of the Project, ambient VOCs, ammonia and H_2S monitoring was carried out at the four designated locations along the site boundary (i.e. AM1, AM2, AM3 and AM4) during the operation/restoration phase, at quarterly interval.

The Limit Levels for ambient VOCs, ammonia and H_2S monitoring is provided in *Table 2.15* below.

Table 2.15 Limit Levels for Ambient VOCs, Ammonia and H_2S Monitoring

Parameters	**Limit Level (μg m^{-3})**
Ammonia	180
H_2S	42
Methane	NA [a]
1.1.1-Trichloroethane	5,550
1.2-Dibromoethane (EDB)	39
1.2-Dichloroethane	210
Benzene	33
Butan-2-ol	3,080
Butanethiol	4
Carbon Disulphide	150
Carbon Tetrachloride	64
Chloroform	99
Decanes	3,608
Dichlorobenzene	120
Dichlorodifluoro-methane	NA [a]
Dimethylsulphide	8
Dipropyl ether	NA [a]
Limonene	212
Ethanethiol	13
Ethanol	19,200
Ethyl butanoate	71
Ethyl propionate	29
Ethyl benzene	4,410
Heptane	20,850
Methanethiol	10
Methanol	2,660
Methyl butanoate	30
Methyl propionate	353
Methylene Chloride	3,530
Butyl acetate	7,240
Butyl benzene	47
Nonane	11,540
Propyl benzene	19

Octane	7,942
Propyl propionate	276
Terpenes	NA [(a)]
Tetrachloroethylene	1,380
Toluene	1,910
Trichloroethylene	5,500
Undecane	5,562
Vinyl Chloride	26
Xylenes	2,200

Notes:

(a) No relevant WHO/USEPA/CARB's ambient criteria, odour thresholds and WEL available.

VOCs

Ambient air samples were drawn into the pre-cleaned and vacuum canister directly when the valve of the flow controller (with preset flow rate) was opened. After sampling, the valve will be closed manually and the canister with VOCs gas samples were transported for laboratory analysis.

Methane

Pre-cleaned Tedlar bag was placed in the vacuum chamber. Ambient air was collected in the Tedlar bag under the vacuum condition when the pump is switched on. The Tedlar bag was filled up to 90% of total capacity to avoid leakage and bag deformation. After sampling, pump is switched off and the valve of Tedlar bag was closed manually. The air samples were transported back to laboratory for analysis.

Ammonia

Calibrated personal air pump was used to pump the air through a sulfuric acid-treated silica gel sorbent tube. Gaseous ammonia in air was then trapped in the sorbent tube. The tube was transported back to laboratory for analysis.

H_2S

H_2S in air is collected in mid-get impingers by aspirating a measured volume of air through an alkaline suspension of cadmium hydroxide (as the absorbing solution). The sulphide is precipitated as cadmium sulphide to prevent air oxidation of the sulphide. Arabinogalactan is added to the cadmium hydroxide slurry prior to sampling to minimize photo-decomposition of the precipitated cadmium sulphide. The solution is transported back to laboratory for analysis.

All air samples collected for laboratory analysis were transported to ALS Technichem (HK) Pty Ltd. (HOKLAS Registration No. 066) laboratory within 24 hours and analysed within 48 hours.

The ambient VOCs, ammonia and H_2S monitoring programme and monitoring locations are summarised in *Table 2.16* and illustrated in *Figure 2.1,* respectively.

Table 2.16 Ambient VOCs, Ammonia and H_2S Monitoring Details

Monitoring Station	Location	Parameter	Frequency	Monitoring Date
AM1	SENTX Site Boundary (North)	• Methane • Ammonia • A suite of VOCs (a) • H_2S	Quarterly	15 Feb 2022
AM2	SENTX Site Boundary (West, near DP3)			
AM3	SENTX Site Boundary (West, near RC15)			
AM4	SENTX Site Boundary (West, near EPD building)			

Notes:

(a) A suite of VOCs includes:

- Trichloroethylene
- Vinyl chloride
- Methylene chloride
- Chloroform
- 1,2-dichloroethane
- 1,1,1-trichloroethane
- Carbon tetrachloride
- Tetrachloroethylene
- 1,2-dibromoethane
- Benzene
- Toluene
- Carbon disulphide
- Propyl benzene
- Ethyl benzene
- Butyl benzene
- Xylenes
- Decanes
- Undecane
- Limonene
- Terpenes
- Ethanol
- Butan-2-ol
- Dimethylsulphide
- Methyl propionate
- Ethyl propionate
- Propyl propionate
- Butyl acetate
- Ethyl butanoate
- Dichlorobenzene
- Methyl butanoate
- Dipropyl ether
- Methanethiol
- Ethanethiol
- Butanethiol
- Methanol
- Heptanes
- Octanes
- Nonanes
- Dichlorodifluoro-methane
- Methane

Monitoring Schedule for the Reporting Month

The schedule for ambient VOCs, ammonia and H_2S monitoring during the reporting period is provided in *Annex C.*

Results and Observations

The ambient VOCs, ammonia and H_2S monitoring results are summarised in *Tables 2.17* and provided in *Annex D6.*

Table 2.17 Summary of Ambient VOCs, Ammonia and H_2S Monitoring Results in the Reporting Period

Parameters	Limit Level (μg m^{-3})	Monitoring Results (μg m^{-3})			
		AM1	AM2	AM3	AM4
Methane	NA (a)	0.00068% (v/v)	0.00031% (v/v)	0.00020% (v/v)	0.00020% (v/v)
Ammonia	180	<10	<10	<10	<10
H_2S	42	<14	<14	<14	<14
1.1.1-Trichloroethane	5,550	<0.8	<0.8	<0.8	<0.8
1.2-Dibromoethane (EDB)	39	<1.0	<1.0	<1.0	<1.0
1.2-Dichloroethane	210	0.5	0.5	0.5	0.6
Benzene	33	2.0	1.5	1.2	1.5
Butan-2-ol	3,080	<0.6	<0.6	<0.6	<0.6
Butanethiol	4	<1.2	<1.2	<1.2	<1.2
Carbon Disulphide	150	1.8	1.2	0.8	1.2
Carbon Tetrachloride	64	0.7	0.8	0.7	0.8
Chloroform	99	<0.8	<0.8	<0.8	<0.8
Decanes	3,608	0.7	<0.7	1.8	<0.7
Dichlorobenzene	120	<1.0	<1.0	<1.0	<1.0
Dichlorodifluoro-methane	NA (a)	1.3	1.8	1.3	1.9
Dimethylsulphide	8	<0.2	<0.2	<0.2	<0.2
Dipropyl ether	NA (a)	<0.8	<0.8	<0.8	<0.8
d-Limonene	212	0.8	<0.4	0.9	<0.4
Ethanethiol	13	<0.6	<0.6	<0.6	<0.6
Ethanol	19,200	8.2	<3.8	<3.8	<3.8
Ethyl butanoate	71	<1.0	<1.0	<1.0	<1.0
Ethyl propionate	29	<0.8	<0.8	<0.8	<0.8
Ethylbenzene	4,410	0.9	0.6	1.5	0.6
Heptane	20,850	<0.8	<0.8	<0.8	<0.8
Methanethiol	10	<0.4	<0.4	<0.4	<0.4
Methanol	2,660	13.3	29.9	37.2	22.0
Methyl butanoate	30	<0.8	<0.8	<0.8	<0.8
Methyl propionate	353	<0.7	<0.7	<0.7	<0.7
Methylene Chloride	3,530	2.4	3.0	2.9	3.2
n-Butyl acetate	7,240	<1.0	<1.0	<1.0	<1.0
n-Butyl benzene	47	<1.0	<1.0	<1.0	<1.0
Nonane	11,540	<0.9	<0.9	<0.9	<0.9
n-Propyl benzene	19	<0.8	<0.8	<0.8	<0.8
Octane	7,942	<0.9	<0.9	<0.9	<0.9
Propyl propionate	276	<1.0	<1.0	<1.0	<1.0
Terpenes	NA (a)	2.3	0.9	0.9	<0.8
Tetrachloroethylene	1,380	0.7	0.7	0.7	<0.7
Toluene	1,910	1.7	1.5	2.8	1.9
Trichloroethylene	5,500	<1.1	<1.1	<1.1	<1.1
Undecane	5,562	<1.2	<1.2	<1.2	<1.2
Vinyl Chloride	26	<0.3	<0.3	<0.3	<0.3
Xylenes	2,200	2.3	1.6	3.5	1.0

Notes:

(a) No relevant WHO/USEPA/CARB's ambient criteria, odour thresholds and WEL available.

All ambient VOCs, ammonia and H_2S monitoring results were below the Limit Levels in the reporting period. No action is thus required to be undertaken in accordance with the Event and Action Plan presented in *Annex D2*.

2.2 NOISE MONITORING

2.2.1 Monitoring Requirements and Equipment

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

The Action and Limit Levels for operational noise of the Project are provided in *Table 2.18* below.

Table 2.18 Action and Limit Levels for Operational Noise

Time Period	Action Level [a]	Limit Level [b]
07:00 – 19:00 hrs on all days	When one documented complaint is received from any one of the noise sensitive receivers (NSRs) or 75 dB(A) recorded at the monitoring station	65 dB(A) at NSRs [c]
19:00 – 23:00 hrs on all days		65 dB(A) at NSRs [c]
23:00 – 07:00 hrs on all days		55 dB(A) at NSRs [c]

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.

(c) Limit Level only apply to operational noise without road traffic and construction activities noise.

Noise monitoring was performed by ALS Technichem (HK) Pty Ltd (HOKLAS Registration No. 066) using a sound level meter placed 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 2.19*.

Table 2.19 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 operation period of the Project	7, 13, 19, 25, 31 Jan 2022 7, 14, 24 Feb 2022 2, 8, 14, 21, 28 Mar 2022	Sound Level Meter: B&K 2238 (S/N: 2285722) Rion NL-52 (S/N: 00921191) Acoustic Calibrator: Rion NC-74 (S/N: 34246492)

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*

A total of 13 impact noise monitoring events were scheduled during the reporting period. However, noise monitoring on 7 February 2022 and 28 March 2022 were cancelled due to adverse weather. The noise monitoring results are summarised in *Table 2.20* and graphically presented in *Annex E1*.

Table 2.20 Summary of 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 2022	NM1	51.4	49.4 – 53.4	75
February 2022	NM1	48.6	48.1 – 49.0	75
March 2022	NM1	48.6	45.9 – 51.3	75

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

No exceedance of the Action and Limit Levels for operation noise monitoring was recorded in the reporting period. No further mitigation measure was required in accordance with the Event and Action Plan presented in *Annex E2*.

2.3 WATER QUALITY MONITORING

2.3.1 Surface Water Quality Monitoring

Monitoring Requirements and Equipment

According to the updated EM&A Manual of the Project, impact surface water quality monitoring was carried out at the three designated surface water discharge points (i.e. DP3, DP4 and DP6) at monthly intervals during operation/ restoration phase to ensure that the SENTX will not cause adverse water quality impact. 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 2022.

The parameters as listed in *Table 2.22* were determined by ALS Technichem (HK) Pty Ltd. (HOKLAS Registration No. 066).

The Action and Limit Levels of the surface water quality impact monitoring are provided in *Table 2.21.*

Table 2.21 Action and Limit Levels for Surface Water Quality

Parameters	Limit Level
DP4 & DP6	
Ammoniacal-nitrogen	> 7.1 mg/L
COD	> 30 mg/L
SS	> 20 mg/L

The locations of the monitoring stations for the Project are shown in *Figure 2.1*. All *in situ* monitoring instruments were checked, calibrated and certified by a laboratory accredited under HOKLAS or other international accreditation scheme before use, and subsequently re-calibrated at 3 monthly intervals throughout all stages of the surface water quality monitoring programme. Calibration for a DO meter was carried out before measurement according to the instruction manual of the equipment model. Details of the equipment used in the impact surface water quality monitoring works are provided in *Table 2.22*.

Table 2.22 Impact Surface Water Quality Monitoring Details

Monitoring Station	Location	Frequency	Monitoring Dates	Parameter		Equipment
DP4 (Future, temporary)	Surface water discharge point DP4	Monthly	25 Jan 2022, 24 Feb 2022 21 Mar 2022	• pH • Electrical conductivity (EC) • DO • SS • COD • BOD_5 • TOC • Ammoniacal–nitrogen • Nitrate-nitrogen • Nitrite–nitrogen • TKN • TN • Phosphate • Sulphate • Sulphide • Carbonate • Oil & Grease	• Bicarbonate • Chloride • Sodium • Potassium • Calcium • Magnesium • Nickel • Manganese • Chromium • Cadmium • Copper • Lead • Iron • Zinc • Mercury • Boron	YSI Professional DSS (S/N: 15H103928)
DP6	Surface water discharge point DP6					YSI Professional DSS (S/N: 17B102764)

Notes:
(a) 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 2022.

Monitoring Schedule for the Reporting Period

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

Results and Observations

A total of 3 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 at the monitoring events below due to insufficient flow:

- 25 January 2022 at all monitoring locations;
- 24 February 2022 at all monitoring locations; and
- 21 March 2022 at all monitoring locations.

Details of impact surface water quality monitoring are provided in *Annex F1*. No action is thus required to be undertaken in accordance with the Event and Action Plan presented in *Annex F2*.

2.3.2 *Leachate Monitoring*

Monitoring Requirements and Equipment

According to the updated EM&A Manual, continuous monitoring of leachate level and daily monitoring of effluent quality were carried out during the operation/ restoration phase.

Reduction of effluent monitoring frequency (dry season) (from daily to monthly) was approved by EPD on 22 March 2022. Monthly effluent quality monitoring (dry season) shall be conducted from 23 March 2022.

Temperature, pH and volume of the effluent discharged from the leachate treatment plant were measured in-situ whereas the parameters as listed in *Table 2.24* were determined by ALS Technichem (HK) Pty Ltd. (HOKLAS Registration No. 066).

The Limit Levels of the leachate monitoring are provided in *Table 2.23*.

Table 2.23 Limit Levels for Leachate Levels and Effluent Quality

Parameters	Limit Level
Leachate Levels	
Leachate levels above the basal liner	1 m above the primary liner of the leachate containment system
Effluent Quality	
Temperature	> 43 °C
pH Value	6 – 10
Volume Discharged	>1,500 m^3
Suspended Solids (SS)	> 800 mg/L
Phosphate	> 25 mg/L
Sulphate	> 900 mg/L
Total Inorganic Nitrogen[(a)]	> 100 mg/L
Biochemical Oxygen Demand (BOD)	> 800 mg/L
Chemical Oxygen Demand (COD)	> 2,000 mg/L
Oil & Grease	> 20 mg/L
Boron	> 7,000 µg/L
Iron	> 7.5 mg/L
Cadmium	> 1 µg/L
Chromium	> 400 µg/L
Copper	> 1,000 µg/L
Nickel	> 800 µg/L
Zinc	> 800 µg/L

Note:

(a) Total Inorganic Nitrogen include Ammoniacal-nitrogen, Nitrite-nitrogen and Nitrate-nitrogen.

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 leachate quality monitoring programme. Details of the equipment used are provided in *Table 2.24*.

Table 2.24 Leachate Levels and Effluent Quality Monitoring Details

Location	Frequency	Parameter	Monitoring Dates	Equipment
Leachate levels above the basal liner	Continuous	Leachate Levels	1 Jan – 31 Mar 2022	Pairs of pressure transducers
Effluent discharged from LTP	Daily for the first 3 months upon full operation of the LTP at wet season (Apr to Sep) and dry season (Oct to Mar), respectively and reduce to monthly thereafter subject to the monitoring results of the first 3 months for each season and agreement with the EIAO Authority, IEC and IC. (a)	*On-site Measurements*: • Volume • pH • Temperature *Laboratory analysis:* • Suspended Solids • COD • BOD_5 • TOC • Ammoniacal–nitrogen • Nitrate-nitrogen • Nitrite–nitrogen • Total Nitrogen • Sulphate • Phosphate • Oil & Grease • Alkalinity • Chloride • Calcium • Potassium • Magnesium • Iron • Zinc • Copper • Chromium • Nickel • Cadmium • Boron	1 Jan – 23 Mar 2022 (b)	Lutron WA-2017SD (S/N: T.016811) TOA HM-30P (S/N: 790332)

Note:
(a) Reduction of monitoring frequency will be subject to the monitoring results to demonstrate environmentally acceptable performance.
(b) Effluent monitoring was suspended on 1 and 2 February 2022 as the LTP was not in operation and no treated effluent was discharged from the on-site LTP to the foul sewer leading to Tseung Kwan O Sewage Treatment Works (TKO STW) on 1 and 2 February 2022.

Monitoring Schedule for the Reporting Month

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

The leachate levels and effluent quality monitoring results are summarised in *Table 2.25* and *Table 2.26*, respectively. The detailed monitoring results are provided in *Annex F3* and *Annex F4,* respectively.

Table 2.25 Summary of Leachate Levels in the Reporting Period

Monitoring Location	Average Leachate Head Levels (cm) (Range in Bracket)	Limit Level (cm)
	January 2022	
Pump Station No. 1X (Cell 1X)		
Meter No. X-1	58 (28 – 79)	> 178
Meter No. X-2	76 (33 – 99)	
Average	67 (38 – 89)	
Pump Station No. 2X (Cell 2X)		
Meter No. X-1	125 (125 – 125)	> 180
Meter No. X-2	49 (39 – 61)	
Average	87 (82 – 93)	
Pump Station No. 3X (Cell 3X)		
Meter No. X-1	94 (75 – 99)	> 175
Meter No. X-2	94 (75 – 99)	
Average	94 (75 – 99)	
	February 2022	
Pump Station No. 1X (Cell 1X)		
Meter No. X-1	71 (53 – 97)	> 178
Meter No. X-2	86 (53 – 117)	
Average	78 (63 – 107)	
Pump Station No. 2X (Cell 2X)		
Meter No. X-1	85 (70 – 102)	> 180
Meter No. X-2	88 (75 – 104)	
Average	87 (73 – 103)	
Pump Station No. 3X (Cell 3X)		
Meter No. X-1	91 (62 – 144)	> 175
Meter No. X-2	91 (62 – 144)	
Average	91 (62 – 144)	
	March 2022	
Pump Station No. 1X (Cell 1X)		
Meter No. X-1	57 (42 – 79)	> 178
Meter No. X-2	74 (48 – 99)	
Average	66 (52 – 89)	
Pump Station No. 2X (Cell 2X)		
Meter No. X-3	78 (66 – 88)	> 180
Meter No. X-4	80 (68 – 90)	
Average	79 (67 – 89)	
Pump Station No. 3X (Cell 3X)		
Meter No. X-5	80 (53 – 168)	> 175
Meter No. X-6	80 (53 – 168)	
Average	80 (53 – 168)	

Table 2.26 Summary of Effluent Quality Monitoring Results in the Reporting Period

Month	Parameters	Average Monitoring Results (Range in Bracket)	Limit Level
	Effluent Discharged from LTP		
January 2022	Temperature	27.5°C (21.0°C – 33.5°C)	> 43 °C
	pH Value	8.5 (8.3 – 8.6)	6 – 10
	Volume Discharged	1,051m³ (588m³ - 1,444m³)	>1,500 m³
	Suspended Solids (SS)	24.8mg/L (13.6mg/L – 75.0mg/L)	> 800 mg/L
	Phosphate	8.7mg/L (7.6mg/L – 9.8mg/L)	> 25 mg/L
	Sulphate	101mg/L (86mg/L – 127mg/L)	> 900 mg/L
	Total Inorganic Nitrogen [(a)]	60.7mg/L (48.4mg/L – 72.6mg/L)	> 100 mg/L
	BOD	11mg/L (6mg/L – 20mg/L)	> 800 mg/L
	COD	1,012mg/L (892mg/L – 1,090mg/L)	> 2,000 mg/L
	Oil & Grease	<5mg/L (<5mg/L – <5mg/L)	> 20 mg/L
	Boron	5,532µg/L (4,720µg/L – 6,380µg/L)	> 7,000 µg/L
	Iron	1.37mg/L (1.04mg/L – 1.64mg/L)	> 7.5 mg/L
	Cadmium	<1.0µg/L (<1.0µg/L – <1.0µg/L)	> 1 µg/L
	Chromium	132µg/L (121µg/L – 144µg/L)	> 400 µg/L
	Copper	<10µg/L (<10µg/L – 22µg/L)	> 1,000 µg/L
	Nickel	124µg/L (113µg/L – 138µg/L)	> 800 µg/L
	Zinc	50µg/L (43µg/L – 64µg/L)	> 800 µg/L
February 2022	Temperature	23.9°C (13.2°C – 28.6°C)	> 43 °C
	pH Value	8.5 (8.2– 8.6)	6 – 10
	Volume Discharged	1,200m³ (385m³ - 1,496m³)	>1,500 m³
	Suspended Solids (SS)	30.1mg/L (13.4mg/L – 52.9mg/L)	> 800 mg/L
	Phosphate	7.5mg/L (3.6mg/L – 9.4mg/L)	> 25 mg/L
	Sulphate	132mg/L (96mg/L – 226mg/L)	> 900 mg/L
	Total Inorganic Nitrogen [(a)]	53.8mg/L (36mg/L – 73.5mg/L)	> 100 mg/L
	BOD	11mg/L (8mg/L – 22mg/L)	> 800 mg/L
	COD	913mg/L (430mg/L – 1,090mg/L)	> 2,000 mg/L
	Oil & Grease	<5mg/L (<5mg/L – 6mg/L)	> 20 mg/L
	Boron	5,137µg/L (3,210µg/L – 6,180µg/L)	> 7,000 µg/L
	Iron	1.37mg/L (0.57mg/L – 1.73mg/L)	> 7.5 mg/L
	Cadmium	<1.0µg/L (<1.0µg/L – <1.0µg/L)	> 1 µg/L
	Chromium	121µg/L (69µg/L – 142µg/L)	> 400 µg/L
	Copper	<10µg/L (<10µg/L – 68µg/L)	> 1,000 µg/L
	Nickel	111µg/L (65µg/L – 128µg/L)	> 800 µg/L
	Zinc	62µg/L (47µg/L – 92µg/L)	> 800 µg/L
March 2022	Temperature	29.4°C (24.9°C – 32.7°C)	> 43 °C
	pH Value	8.4 (8.3– 8.5)	6 – 10
	Volume Discharged	1,059m³ (357m³ - 1,498m³)	>1,500 m³
	Suspended Solids (SS)	23.6mg/L (10.7mg/L – 84.8mg/L)	> 800 mg/L
	Phosphate	8.0mg/L (4.4mg/L – 10.4mg/L)	> 25 mg/L
	Sulphate	151mg/L (114mg/L – 199mg/L)	> 900 mg/L
	Total Inorganic Nitrogen [(a)]	49.4mg/L (32.8mg/L – 63.3mg/L)	> 100 mg/L

Month	Parameters	Average Monitoring Results (Range in Bracket)	Limit Level
	BOD	9mg/L (6mg/L – 13mg/L)	> 800 mg/L
	COD	874mg/L (516mg/L – 1,190mg/L)	> 2,000 mg/L
	Oil & Grease	<5mg/L (<5mg/L – <5mg/L)	> 20 mg/L
	Boron	4,824µg/L (3,560µg/L – 5,570µg/L)	> 7,000 µg/L
	Iron	1.24mg/L (0.86mg/L – 1.63mg/L)	> 7.5 mg/L
	Cadmium	<1.0µg/L (<1.0µg/L – <1.0µg/L)	> 1 µg/L
	Chromium	113µg/L (86µg/L – 143µg/L)	> 400 µg/L
	Copper	20µg/L (15µg/L – 23µg/L)	> 1,000 µg/L
	Nickel	107µg/L (80µg/L – 130µg/L)	> 800 µg/L
	Zinc	75µg/L (46µg/L – 113µg/L)	> 800 µg/L

Note:

(a) Total Inorganic Nitrogen include Ammoniacal-nitrogen, Nitrite-nitrogen and Nitrate-nitrogen.

All the leachate levels and effluent quality monitoring results were below the Limit Levels in the reporting period. No action is thus required to be undertaken in accordance with the Event and Action Plan presented in *Annex F2*.

2.3.3 Groundwater Monitoring

Monitoring Requirements and Equipment

According to the updated EM&A Manual of the Project with incorporation of the proposed updates under the Amendment Summary approved by EPD on 15 June 2020, groundwater monitoring was carried out at 14 perimeter groundwater monitoring wells (including 3 up-gradient wells and 11 down-gradient wells) (i.e. MWX-1 to MWX-14) to monitor the groundwater quality and level of the perimeter groundwater monitoring wells at monthly interval.

The Limit Levels for groundwater quality is provided in *Table 2.27* below.

Table 2.27 Limit Levels for Groundwater Quality

Location	Limit Levels	
	Ammoniacal-nitrogen (mg L^{-1})	COD (mg L^{-1})
MWX-1	5.00	30
MWX-2	5.00	30
MWX-3	5.00	30
MWX-4	7.63	36
MWX-5	5.00	30
MWX-6	5.00	46
MWX-7	6.55	36
MWX-8	15.85	50
MWX-9	7.30	71
MWX-10	5.00	30
MWX-11	5.00	30
MWX-12	5.00	30
MWX-13	5.00	30
MWX-14	5.00	30

A bladder pump with Teflon sampling tube and adjustable discharge rates was used for purging and taking of groundwater sample from the monitoring wells. Filtered groundwater samples were collected by connecting a disposable in-line filter system to the tubing of the sampling pump, prior to storage and analysis by ALS Technichem (HK) Pty Ltd. (HOKLAS Registration No. 066).

A portable dip meter with 5mm accuracy was used for measurement of groundwater level at each well. The dip meter has an audio indicator of the water level and was checked before use.

The measurements of pH and electrical conductivity (EC) were undertaken *in situ*. *In situ* monitoring instruments in compliance with the specifications listed under Section 4.3.2 of the updated EM&A Manual were used to undertake the groundwater quality monitoring for the Project.

Details of the equipment used and the monitoring locations are summarised in *Table 2.28* and illustrated in *Figure 2.1,* respectively.

Table 2.28 Groundwater Monitoring Details

Monitoring Location	Frequency	Parameter		Monitoring Dates	Equipment
All groundwater monitoring wells (MWX-1 to MWX-14)	Monthly	• Water level • pH • EC • COD • BOD5 • TOC • Ammoniacal–nitrogen • Nitrate-nitrogen • Nitrite–nitrogen • TKN • TN • Sulphate • Sulphide • Carbonate • Bicarbonate • Phosphate	• Chloride • Sodium • Potassium • Calcium • Magnesium • Nickel • Manganese • Chromium • Cadmium • Copper • Lead • Iron • Zinc • Mercury • Boron	4, 11 Jan 2022, 15, 18 Feb 2022, 14, 15 Mar 2022	YSI Professional DSS (S/N: 17B102764) YSI Professional DSS (S/N: 15H103928)

Monitoring Schedule for the Reporting Month

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

Results and Observations

The groundwater quality monitoring results and detailed monitoring results are summarised in *Table 2.29* and provided in *Annex F5,* respectively.

Table 2.29 Summary of Groundwater Monitoring Results in the Reporting Period

Location	Ammoniacal-nitrogen (mg L^{-1})				COD (mg L^{-1})			
	Monitoring Results			Limit Levels	Monitoring Results			Limit Levels
	Average	Min	Max		Average	Min	Max	
MWX-1	0.23	0.17	0.34	5.00	7.67	4	10	30
MWX-2	0.01	<0.01	0.02	5.00	2.67	<2	4	30
MWX-3	1.26	1.07	1.45	5.00	16.00	15	17	30
MWX-4	6.93	5.91	7.6	7.63	38.33	34	43	36
MWX-5	2.70	1.9	3.8	5.00	25.67	24	28	30
MWX-6	3.88	3.83	3.95	5.00	46.67	44	50	46
MWX-7	6.05	5.7	6.26	6.55	13.33	11	15	36
MWX-8	13.10	11.8	14.2	15.85	31.33	20	45	50
MWX-9	4.95	3.29	6.42	7.30	20.33	17	26	71
MWX-10	0.02	<0.01	0.03	5.00	13.00	9	20	30
MWX-11	0.10	0.06	0.12	5.00	4.00	2	8	30
MWX-12	<0.01	<0.01	<0.01	5.00	5.33	4	7	30
MWX-13	0.05	<0.01	0.11	5.00	4.00	<2	5	30
MWX-14	<0.01	<0.01	<0.01	5.00	3.00	<2	4	30

Limit Levels exceedances were recorded for groundwater monitoring in the reporting period and actions in accordance with the Event and Action Plan presented in *Annex F2* were undertaken. The groundwater quality (COD) exceedances at MWX-4 and MWX-6 on 15 February 2022 and groundwater quality (COD) exceedance at MWX-4 on 15 March 2022 were considered non Project-related. Investigation reports of the exceedances are presented in Annex F6.

The ET will keep track on the monitoring data and ensure Contractor's compliance of the environmental requirements.

2.4 LANDFILL GAS MONITORING

2.4.1 Monitoring Requirements

According to the updated EM&A Manual of the Project, landfill gas monitoring was carried out at the perimeter of the waste boundary (monitoring wells), area between the SENTX Site boundary and the waste boundary (surface emission), occupied on-site building, service voids, utilities pit and manholes in the vicinity of the SENTX (build-up of landfill gas) during the operation/restoration phase.

The Limit Levels for landfill gas monitoring is provided in *Table 2.30* below.

Table 2.30 Limit Levels for Landfill Gas Constituents

Parameters	Monitoring Location	Limit Level (% (v/v))	
Perimeter Landfill Gas Monitoring Wells [(a)]			
Methane & Carbon Dioxide		Methane	Carbon Dioxide
	LFG1	1.0	2.2
	LFG2	1.0	4.2
	LFG3	1.0	6.3
	LFG4	1.0	7.0
	LFG5	1.0	3.4
	LFG6	1.0	9.1
	LFG7	1.0	1.5
	LFG8	1.0	1.7
	LFG9	2.5	1.7
	LFG10	1.0	1.6
	LFG11	3.0	2.0
	LFG12	13.2	1.5
	LFG13	22.5	2.7
	LFG14	1.0	1.6
	LFG15	18.2	2.0
	LFG16	1.0	1.7
	LFG17	10.5	2.1
	LFG18	2.3	1.9
	LFG19	6.3	3.1
	LFG20	1.0	4.2
	LFG21	1.0	4.3
	LFG22	1.0	3.9
	LFG23	1.0	10.3
	LFG24	1.0	4.0
	GP1	1.0	8.5
	GP2 (shallow)	1.0	11.4
	GP2 (deep)	1.0	10.4
	GP3 (shallow)	1.0	3.9
	GP3 (deep)	1.0	1.9
	GP4 (shallow)	1.0	2.3
	GP4 (deep)	1.0	5.6
	GP5 (shallow)	1.0	9.5
	GP5 (deep)	1.0	7.5
	GP6	1.0	7.8
	GP7	1.0	4.5
	GP12	1.0	2.3
	GP15	1.0	2.2
	P7	1.0	2.5
	P8	1.0	1.7
	P9	1.0	2.7
Service Voids, Utilities Pits and Manholes			
Methane (or flammable gas)	Service voids, utilities pits and manholes	1% by volume	

Parameters	Monitoring Location	Limit Level (% (v/v))
Permanent Gas Monitoring System		
Methane (or flammable gas)	Permanent Gas Monitoring System	1% by volume (20% LEL)
Area Between the SENTX Site Boundary and Waste Boundary (Surface Emission)		
Flammable gas	Area between SENTX site boundary and waste boundary	30 ppm

Notes:

(a) Limit Levels established based on the pre-operation phase baseline and additional landfill gas monitoring results in the Pre-operation Baseline Monitoring Report.

Gas analysers in compliance with the specifications listed under Section 5.4.1 of the updated EM&A Manual were used to monitor the gas parameters at the landfill gas monitoring wells, service voids, utilities pits and manholes. The gas analyser was calibrated by a laboratory accredited under HOKLAS at yearly intervals and checked before use to ensure the validity and accuracy of the results. A portable dip meter was used to monitor the water level in the monitoring wells.

Permanent gas monitoring systems with pre-set alarm levels for methane at 20% lower explosive limit (LEL, equivalent to 1% methane gas (v/v)) were installed and operated in all occupied on-site buildings at SENTX. A central control panel is equipped to alert site personnel when the gas concentration at any detector reaches the alarm level.

Flammable gas detector in compliance with the specifications listed under Section 5.4.1 of the updated EM&A Manual was used to measure flammable gas concentration. Flammable gas surface emission survey was conducted at a slow pace with the inlet tube of the meter probe a few centimeters above ground surface to detect flammable gas emitted from the ground surface.

Bulk gas samples were collected into inert sample containers (i.e. Tedlar Bag) and transferred to ALS Technichem (HK) Pty Ltd. (HOKLAS Registration No. 066) laboratory within 24 hours of collection for direct analysis on a gas chromatography within 48 hours after collection.

The equipment used in the landfill gas monitoring programme is summarised in *Table 2.31.* The landfill gas monitoring locations for perimeter landfill gas monitoring wells and service voids, utilities and manholes along the Site boundary and within the SENTX site are illustrated in *Figure 2.3 - 2.4* and *Annex G1*, respectively.

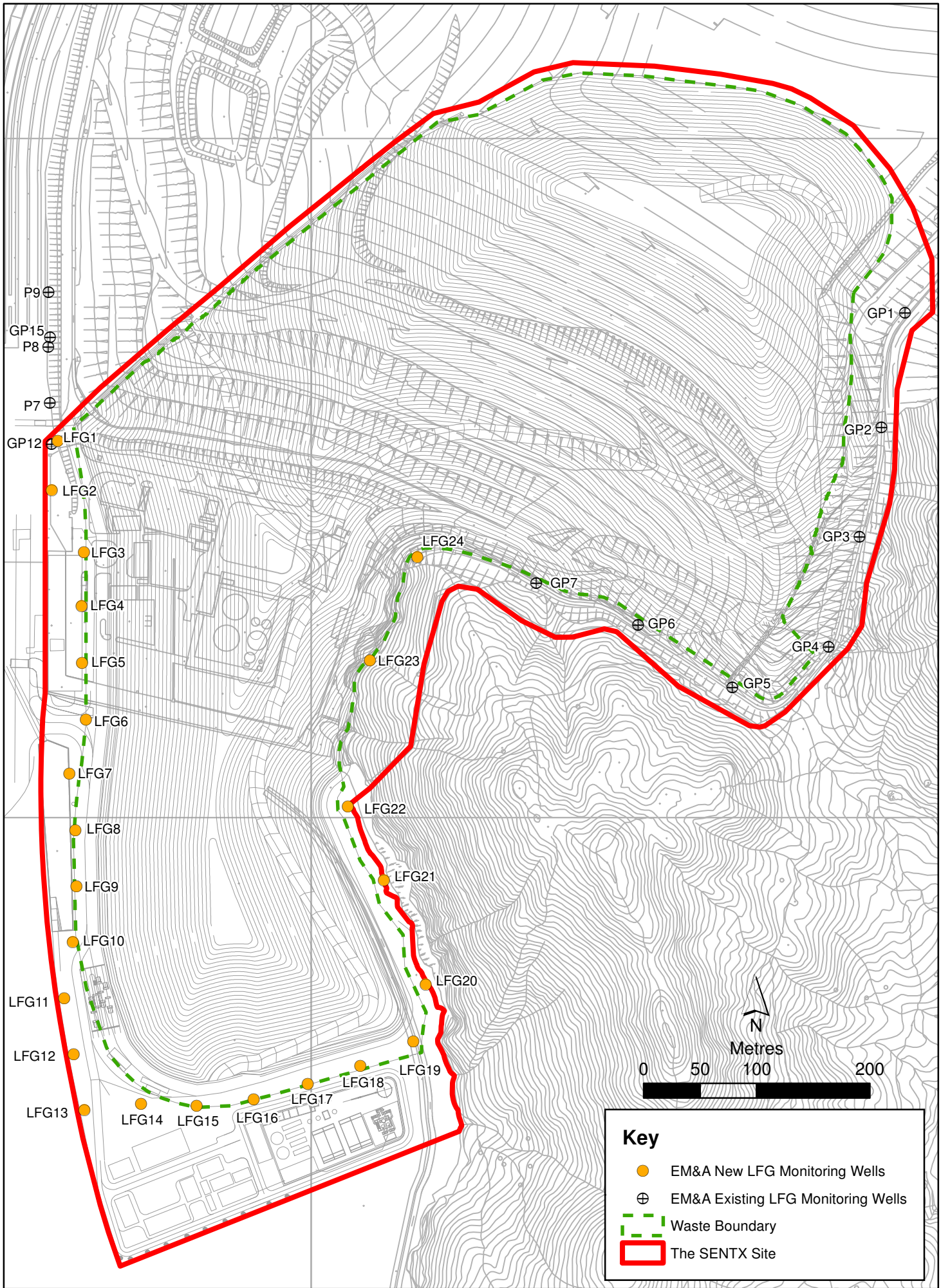

Figure 2.3

Location of Landfill Gas Monitoring Wells

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Date: 20/11/2019

Environmental Resources Management

ERM

TKO Industrial Estate

Fat Tong Chau

TKO AREA 137

Infrastructure Area

Clear Water Bay Country Park

Key

- Existing SENT Landfill
- SENTX Waste Boundary
- The SENTX Site
- Flammable Gas Surface Emission Monitoring Location

N

Metres

0 250 500

Figure 2.4

Flammable Gas Surface Emission Monitoring Locations

Environmental Resources Management

ERM

Table 2.31 Landfill Gas Monitoring Details

Monitoring Location	Frequency	Parameter	Monitoring Dates	Equipment
Perimeter landfill gas monitoring wells (LFG1 to LFG24, P7 to P9, GP1 to GP7, GP12 and GP15)	Monthly	• Methane • Carbon dioxide • Oxygen • Atmospheric pressure	18 Jan 2022, 9 Feb 2022, 8 Mar 2022	GA5000 (S/N: G507306)
Service voids, utilities and manholes along the Site boundary and within the SENTX Site (UU1 to UU28)	Monthly	• Methane • Carbon dioxide • Oxygen	20 Jan 2022, 11 Feb 2022, 11 Mar 2022	GA5000 (S/N: G507306)
Permanent gas monitoring system in all occupied on-site buildings	Continuous	• Methane (or flammable gas) by permanent gas monitoring system	1 Jan – 31 Mar 2021	Permanent gas monitoring system
Areas between the SENTX Site boundary and the waste boundary and location of vegetation stress	Quarterly	• Flammable gas emitted from the ground surface	15 Feb 2022	GMI Leak Surveyor (S/N: 554846)
Bulk gas sampling at least 2 of the perimeters LFG monitoring wells	Quarterly	• Methane • Carbon dioxide • Oxygen • Nitrogen • Carbon monoxide • Other flammable gas	16 Feb 2022	Gas sampling pump and Tedlar bags

Monitoring Schedule for the Reporting Month

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

Results and Observations

The landfill gas monitoring results are summarised and provided in *Tables 2.32 - 2.35 and Annex G2,* respectively.

Table 2.32 Summary of Landfill Gas Monitoring Results at Perimeter LFG Monitoring Wells in the Reporting Period

Location	Methane (% (v/v))				Carbon Dioxide (% (v/v))			
	Monitoring Results			Limit Level [(a)]	Monitoring Results			Limit Level [(a)]
	Average	Min	Max		Average	Min	Max	
LFG1	0.0	0.0	0.0	1.0	0.1	0.0	0.1	2.2
LFG2	0.0	0.0	0.0	1.0	0.2	0.0	0.4	4.2
LFG3	0.0	0.0	0.0	1.0	0.3	0.0	0.9	6.3
LFG4	0.0	0.0	0.0	1.0	0.0	0.0	0.1	7.0
LFG5	0.0	0.0	0.0	1.0	0.2	0.0	0.3	3.4
LFG6	0.0	0.0	0.0	1.0	0.0	0.0	0.1	9.1
LFG7	0.0	0.0	0.0	1.0	0.0	0.0	0.1	1.5
LFG8	0.0	0.0	0.0	1.0	0.0	0.0	0.1	1.7
LFG9	0.0	0.0	0.0	2.5	0.0	0.0	0.1	1.7
LFG10	0.0	0.0	0.0	1.0	0.0	0.0	0.1	1.6
LFG11	0.0	0.0	0.0	3.0	0.2	0.0	0.3	2.0
LFG12	0.0	0.0	0.0	13.2	0.0	0.0	0.1	1.5
LFG13	7.9	0.0	17.4	22.5	0.4	0.0	0.9	2.7
LFG14	0.0	0.0	0.0	1.0	0.0	0.0	0.1	1.6
LFG15	0.0	0.0	0.0	18.2	0.1	0.0	0.3	2.0
LFG16	0.0	0.0	0.0	1.0	0.1	0.0	0.1	1.7
LFG17	0.0	0.0	0.0	10.5	0.0	0.0	0.1	2.1
LFG18	0.0	0.0	0.0	2.3	0.1	0.1	0.1	1.9
LFG19	0.0	0.0	0.0	6.3	0.0	0.0	0.1	3.1
LFG20	0.0	0.0	0.0	1.0	1.2	0.4	2.5	4.2
LFG21	0.0	0.0	0.0	1.0	2.1	2.0	2.3	4.3
LFG22	0.0	0.0	0.0	1.0	1.2	0.5	1.8	3.9
LFG23	0.0	0.0	0.0	1.0	1.5	0.9	2.1	10.3
LFG24	0.0	0.0	0.0	1.0	0.8	0.7	0.8	4.0
GP1	0.0	0.0	0.0	1.0	1.1	0.1	3.1	8.5
GP2 (shallow)	0.0	0.0	0.1	1.0	0.1	0.1	0.1	11.4
GP2 (deep)	0.0	0.0	0.1	1.0	0.1	0.1	0.1	10.4
GP3 (shallow)	0.0	0.0	0.0	1.0	1.2	0.1	3.3	3.9
GP3 (deep)	0.0	0.0	0.0	1.0	0.3	0.1	0.7	1.9
GP4 (shallow)	0.0	0.0	0.0	1.0	0.2	0.2	0.2	2.3
GP4 (deep)	0.0	0.0	0.0	1.0	0.1	0.1	0.1	5.6
GP5 (shallow)	0.0	0.0	0.0	1.0	0.1	0.1	0.1	9.5
GP5 (deep)	0.0	0.0	0.0	1.0	0.1	0.1	0.1	7.5
GP6	0.0	0.0	0.0	1.0	4.5	0.4	6.7	7.8
GP7	0.0	0.0	0.0	1.0	0.1	0.1	0.2	4.5
GP12	0.0	0.0	0.0	1.0	0.5	0.2	0.6	2.3
GP15	0.0	0.0	0.0	1.0	0.0	0.0	0.1	2.2
P7	0.0	0.0	0.0	1.0	0.0	0.0	0.1	2.5
P8	0.0	0.0	0.0	1.0	0.0	0.0	0.1	1.7
P9	0.0	0.0	0.0	1.0	0.0	0.0	0.1	2.7

Notes:

(a) Limit Levels established based on the pre-operation phase baseline and additional landfill gas monitoring results in the Pre-operation Baseline Monitoring Report.

Table 2.33 Summary of Landfill Gas Monitoring Results at Service Voids, Utilities Pits and Manholes in the Reporting Period

Location	Methane (% (v/v))			
	Monitoring Results			Limit Levels
	Average	Min	Max	
UU01	0.0	0.0	0.1	1.0
UU02	0.0	0.0	0.1	1.0
UU03	0.1	0.0	0.2	1.0
UU04	0.1	0.0	0.2	1.0
UU05	0.1	0.0	0.2	1.0
UU06	0.1	0.0	0.2	1.0
UU07	0.1	0.0	0.3	1.0
UU08	0.1	0.0	0.3	1.0
UU09	0.0	0.0	0.0	1.0
UU10	0.0	0.0	0.0	1.0
UU11	0.0	0.0	0.0	1.0
UU12	Voided due to latest site programme and on-going operation work			1.0
UU13	0.0	0.0	0.0	1.0
UU14	0.0	0.0	0.0	1.0
UU15	0.0	0.0	0.0	1.0
UU16	0.0	0.0	0.0	1.0
UU17	Voided due to latest site programme and on-going operation work			1.0
UU18	0.0	0.0	0.0	1.0
UU19	0.1	0.0	0.2	1.0
UU20	0.0	0.0	0.0	1.0
UU21	0.0	0.0	0.0	1.0
UU22	0.0	0.0	0.0	1.0
UU23	0.0	0.0	0.0	1.0
UU24	0.0	0.0	0.0	1.0
UU25	0.0	0.0	0.0	1.0
UU26	0.1	0.0	0.2	1.0
UU27	0.0	0.0	0.1	1.0
UU28	0.0	0.0	0.0	1.0

Table 2.34 Summary of Landfill Gas Bulk Gas Sampling Monitoring Results in the Reporting Period

Parameters	Limit Level (LFG14) [(a)]	LFG14	Limit Level (LFG15) [(a)]	LFG15
Methane (% (v/v))	1.0	0.0	18.2	0.0
Carbon Dioxide (% (v/v))	1.6	0.119	2.0	0.110
Oxygen (% (v/v))	-	10.2	-	20.1
Nitrogen (% (v/v))	-	90.5	-	80.3
Carbon Monoxide (% (v/v))	-	<0.020	-	<0.020
Hydrogen (% (v/v))	-	<0.020	-	<0.020
Ethane (ppmv)	-	<1.0	-	<1.0
Propane (ppmv)	-	<1.0	-	<1.0
Butane (ppmv)	-	<1.0	-	<1.0

Notes:

(a) Limit Levels established based on the pre-operation phase baseline and additional landfill gas monitoring results in the Pre-operation Baseline Monitoring Report.

Table 2.35 Summary of Flammable Gas Surface Emission Monitoring Results in the Reporting Period

GPS Coordinates		Monitoring Results (ppm)	Limit Level (ppm)
Latitude (N)	Longitude (E)		
22°16'36"	114°16'36"	3	30
22°16'24"	114°16'36"	6	

The alarm of the permanent gas monitoring systems with pre-set levels for methane at 20% lower explosive limit (LEL, equivalent to 1% methane gas (v/v)) was not triggered at all occupied on-site buildings at SENTX from January to March 2022.

All the landfill gas monitoring results were below the Limit Levels in the reporting period. No action is thus required to be undertaken in accordance with the Event and Action Plan presented in *Annex G3*.

2.5 LANDSCAPE AND VISUAL MONITORING

2.5.1 Monitoring Requirements

According to the updated EM&A Manual of the Project, the monthly landscape and visual audit was conducted on 27 January, 24 February and 18 March 2022 to monitor the implementation of the landscape and visual mitigation measures during operation/ restoration phase.

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

2.5.2 Results and Observations

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

Regarding the landscape and visual audit, the Contractor was reminded to maintain the advance screen planting works as soon as possible to ensure effective screening of views of project works from the High Junk Peak Trail. The Contractor has considered the mitigation measures during the design phase, including the preparation of the Construction Drawings and Detailed Landscape Design Drawings.

2.6 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 6, 13, 20, 27 and 31 January 2022 and 10, 17 and 24 February 2022 and 3, 10, 17, 24 and 31 March 2022.

Key observations during the site inspections are summarized in *Table 2.36*.

Table 2.36 Key Observations Identified during the Site Inspections in this Reporting Period

Inspection Date	Environmental Observations and Recommendations
6 January 2022	• The Contractor shall replace the faded NRMM label displayed on the generators near DP3 and maintenance building. • The Contractor shall provide drip trays for the chemicals stored near DG house and Chunwo container area. • The Contractor shall remove the stagnant water and general refuse accumulated at the channel near sump house 3. • The Contractor shall remove the general refuse accumulated near water services house regularly to minimise odour and pest issues.
13 January 2022	• The Contractor shall remove the stagnant water and general refuse accumulated at the channel near sump house 3. • The Contractor shall clean up the oil spill at the breaker near buttress wall, handle the clean-up materials as chemical waste and maintain the break to avoid oil spillage, if necessary. • The Contractor shall dispose of the emptied chemical containers at Cell4X and near pump house 3 as chemical waste in the chemical waste cabinet. • The Contractor shall remove the general refuse accumulated near DP3 and dispose of the waste regularly to minimize odour and pest issues.
20 January 2022	• The Contractor shall clean up the oil spillage at the generator near GVL building and handle the clean-up materials as chemical waste. • The Contractor shall provide drip trays for the chemicals stored near DP3 and Chunwo container area. • The Contractor shall segregate the construction waste and materials near sediment trap and dispose of the waste regularly. • The Contractor shall maintain site tidiness and remove the general refuse accumulated at the channel near sump house 3, RC15, u channel near Chunwo container area and DP6 and dispose of the waste regularly to minimise odour and pest issues.
27 January 2022	• The Contractor shall remove the stagnant water accumulated at the channel near sump house 3 regularly and spray larvicides for mosquito control, if necessary. • The Contractor shall maintain site tidiness and remove the general refuse accumulated near town gas plant and dispose of the emptied chemical containers as chemical waste.
31 January 2022	• The Contractor shall clean up the oil spillage near sediment trap and DP6 channel and handle the clean-up materials as chemical waste. • The Contractor shall provide drip trays for the chemicals stored near sediment trap. • The Contractor shall dispose of the emptied chemical containers near sediment trap as chemical waste in accordance with the COP. • The Contractor shall remove the general refuse accumulated near RC15 and at the channel near Chun Wo container area and dispose of the waste regularly.
10 February 2022	• The Contractor shall provide a NRMM label on the crane near sump house 4. • The Contractor shall remove the general refuse accumulated at the channel near sump house 3 and dispose of the waste regularly to minimise odour and pest issues.

Inspection Date	Environmental Observations and Recommendations
17 February 2022	• The Contractor shall provide drip tray for the chemical stored near X10a. • The Contractor shall remove the general refuse accumulated near X10a, Cell 3X perimeter bund and at the channel near sump house 3 and VWF, and dispose of the waste regularly.
24 February 2022	• The Contractor shall cover the water tank near sediment trap with lid to minimise pest issues. • The Contractor shall remove the stagnant water accumulated at the channel near sump house 3 and at Cell 4X regularly and spray larvicides for mosquito control, if necessary. • The Contractor shall remove the stagnant water accumulated in the drip trays at Wetsep near sediment trap.
3 March 2022	• The Contractor shall remove the general refuse accumulated at the channel near sump house 3 and along Western site boundary and dispose of the waste regularly. • The Contractor shall remove the stagnant water accumulated in the drip tray for generator at Cell 4X.
10 March 2022	• The Contractor shall display a NRMM label on the excavator near RC15. • The Contractor shall remove the general refuse accumulated at the channel near sump house 2 and 3 and dispose of the waste regularly. • The Contractor shall clean up the oil spillage near sump house 4 and handle the clean-up materials as chemical waste. • The Contractor shall provide drip tray for the chemical stored at Cell 4X.
17 March 2022	• The Contractor shall remove the stagnant water accumulated at the channel near pump house 3 regularly, and spray larvicides for mosquito control, if necessary. • The Contractor shall dispose of the waste and remove the stagnant water accumulated at the refuse skip near DP6 regularly to minimise odour and pest issues.
24 March 2022	• The Contractor shall display a NRMM label on the excavator near EPD building. • The Contractor shall clean up the oil spillage at the excavator near pump house 3 and handle the clean-up materials as chemical waste. • The Contractor shall remove the general refuse and stagnant water accumulated near Towngas plant and DP6 and dispose of the waste regularly to minimise odour and pest issues.
31 March 2022	• The Contractor shall remove the stagnant water accumulated at the channel near sump house 3 regularly and spray larvicides for mosquito control, if necessary. • The Contractor shall remove the general refuse and stagnant water accumulated at the refuse skip near DP6 and Towngas plant and dispose of the waste regularly to minimise odour and pest issues.

The Contractor has rectified all of the observations identified during environmental site inspections in the reporting period. Key environmental deficiencies identified and the corresponding rectification actions are presented in *Table 2.37*.

Table 2.37 ***Summary of Environmental Deficiencies Identified and Corresponding Additional Control Measures***

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

2.7 *WASTE MANAGEMENT STATUS*

The Contractor has registered as a 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 2.38*.

Table 2.38 Quantities of Different Waste Disposed and Imported Fill Materials

Month/ Year	Inert C&D Materials [a] (in '000m³)	Imported Fill (in '000kg) [b]		Inert Construction Waste Re-used (in '000m³)	Non-inert Construction Waste [c] (in '000m³)	Recyclable Materials [d] (in '000kg)	Chemical Wastes (in '000kg)
		Rock	Soil				
1 – 31 Jan 2022	0.273	0	0	0	0.035	0	0.800
1 – 28 Feb 2022	1.284	0	0	0	0.016	0	0.460
1 – 31 Mar 2022	0.039	0	0	0	0.010	0	0.800

Notes:

(a) Inert construction wastes include hard rock and large broken concrete, and materials disposed as public fill. Density assumption: 1.6 (kg/L) for public fill.

(b) Imported fill refers to materials generated from other project for on-site reuse.

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

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

2.8 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.

2.9 SUMMARY OF EXCEEDANCES OF THE ENVIRONMENTAL QUALITY PERFORMANCE LIMIT

The operation/ restoration phase air quality, noise and landfill gas monitoring results complied with the Action and Limit Levels in the reporting period. Three exceedances of the Limit Level for groundwater (COD) were recorded for water quality impact monitoring in the reporting period. The groundwater (COD) exceedances at MWX-4 and MWX-6 on 15 February 2022 and groundwater (COD) exceedance at MWX-4 on 15 March 2022 were considered non Project related.

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

2.10 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 H*.

3 CONCLUSION AND RECOMMENDATION

This Quarterly EM&A Report presents the findings of the EM&A activities undertaken during the period from 1 January to 31 March 2022 in accordance with the updated EM&A Manual and the requirements of the Environmental Permit (*EP-308/2008/B)*.

Air quality quality (24-hour TSP, odour, thermal oxidiser, landfill gas flare and landfill gas generator stack emission, ambient VOCs , ammonia and H_2S), noise, water quality (surface water, leachate and groundwater) and landfill gas monitoring were carried out in the reporting period. Results for air quality, noise and landfill gas monitoring complied with the Action and Limit Levels in the reporting period. Three exceedances of the Limit Level for groundwater (COD) were recorded in the reporting period.

Thirteen environmental site inspections were carried out during the reporting period. Environmental deficiencies were identified during the site inspection and the Contractor has proposed additional control measures to rectify the deficiencies.

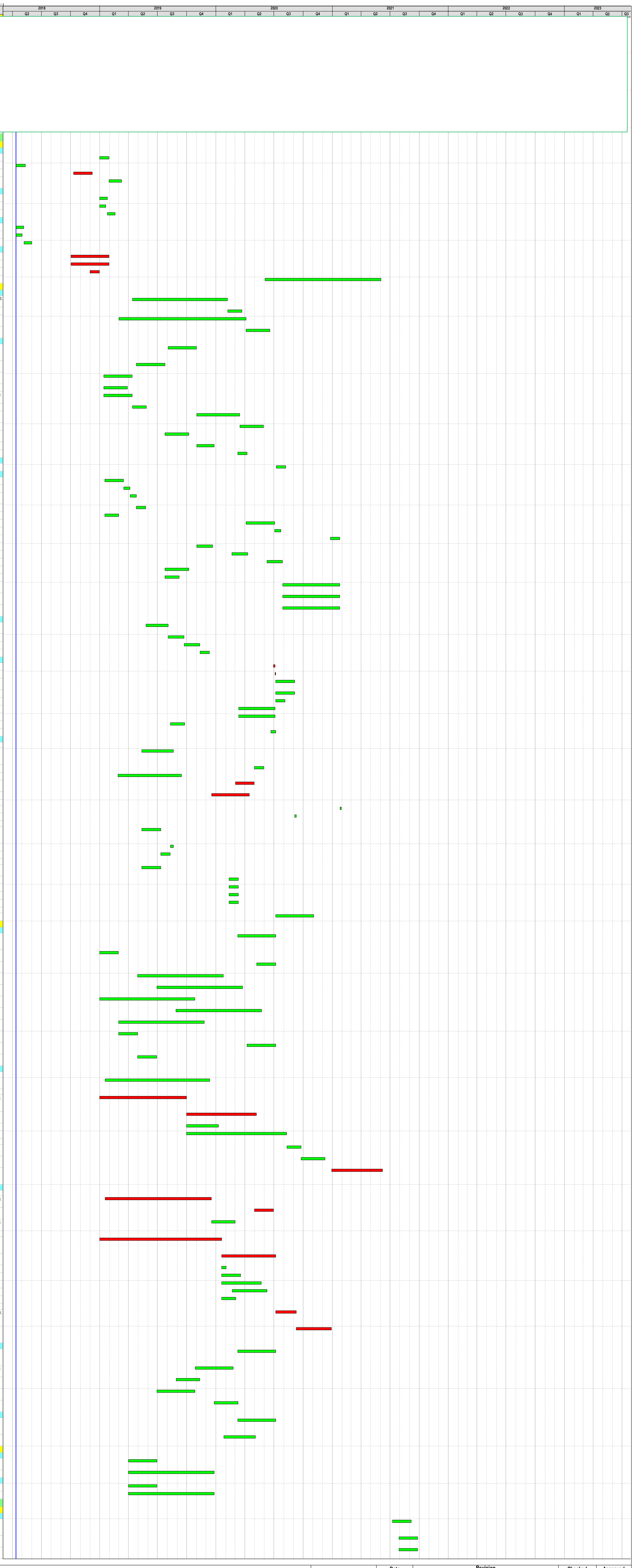
There were no complaints, notification of summons or prosecution recorded in the reporting period.

It is noted that most environmental pollution control and mitigation measures were properly implemented and the construction and operation activities of the Project did not introduce any adverse impact to the sensitive receivers in the reporting period. Yet, some environmental deficiencies were identified during the reporting period and additional control measures have been proposed by the Contractor to rectify the corresponding deficiencies. 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 ID	Activity Name	Dur	Start	Finish	Total Float	Predecessor Details	Successor Details
336									
337									
338									
339									
340									
341									
342									
343									
344									
345									
346									
347									
348									
349									
350									
351									
352	**SA2.5 Construction (Initial Works)**			1153	12-Apr-18	07-Jun-21	705		
353	**SA2.5.02 Advance Works & Site Establishment**			1148	12-Apr-18	02-Jun-21	35		
354	**SA2.5.02.01 Site Establishment & Mobilization**			333	12-Apr-18	10-Mar-19	820		
355	5.02.01	52-1000	Site Mobilization for Parts X1 & X2	30	31-Dec-18	29-Jan-19	820	11-1100: FS, 11-1200: FS	52-1300: FS, M 3. 1: FS, M 3. 2: FS
356	5.02.01	52-1100	Site Mobilization for Parts X3, X4 & X5	30	12-Apr-18	11-May-18	1083	11-1300: FS, 11-1400: FS, 11-1500: FS	52-1300: FS, M 3. 1: FF
357	5.02.01	52-1200	Temporary Office for Employer / ER / IC	60	10-Oct-18	08-Dec-18	0	23-1300: FS	11-1700: SS, M 3. 1: FS
358	5.02.01	52-1300	Hoarding and Fencing Works	40	30-Jan-19	10-Mar-19	820	52-1000: FS, 52-1100: FS	32-1500: FS, M10. 1: FS -26, M10. 2: FS -13, M10. 3: FS
359	**SA2.5.02.02 Site Survey & Investigation Works for Parts X1 & X2**			50	31-Dec-18	18-Feb-19	840		
360	5.02.02	52-1400	Condition Survey	25	31-Dec-18	24-Jan-19	840	11-1100: FS, 11-1200: FS	52-1600: FS
361	5.02.02	52-1500	Topographic Survey	20	31-Dec-18	19-Jan-19	845	11-1100: FS, 11-1200: FS	52-1600: FS
362	5.02.02	52-1600	Site inspection, Review of Condition Survey Report	25	25-Jan-19	18-Feb-19	840	52-1500: FS, 52-1400: FS	32-1500: FS
363	**SA2.5.02.03 Site Survey & Investigation Works for Parts X3, X4 & X5**			50	12-Apr-18	31-May-18	1103		
364	5.02.03	52-1700	Condition Survey	25	12-Apr-18	06-May-18	1103	11-1300: FS, 11-1400: FS, 11-1500: FS	52-1900: FS
365	5.02.03	52-1800	Topographic Survey	20	12-Apr-18	01-May-18	1108	11-1300: FS, 11-1400: FS, 11-1500: FS	52-1900: FS
366	5.02.03	52-1900	Site inspection, Review of Condition Survey Report	25	07-May-18	31-May-18	1103	52-1700: FS, 52-1800: FS	32-1500: FS
367	**SA2.5.02.04 Environmental Monitoring**			975	02-Oct-18	02-Jun-21	35		
368	5.02.04	52-2000	Installation of Monitoring Stations & Wells (GP & GW)	120	02-Oct-18	29-Jan-19	0	23-1600: FS	52-2200: SS 60
369	5.02.04	52-2100	Installation of Monitoring Stations & Wells (GP & GW) on Buttress Wall	120	02-Oct-18	29-Jan-19	0	23-1600: FS	52-2200: SS 60
370	5.02.04	52-2200	Conduct Baseline Monitoring for Construction (one month)	30	01-Dec-18	30-Dec-18	0	52-2000: SS 60, 52-2100: SS 60	11-1100: FS
371	5.02.04	52-2300	Conduct Baseline Monitoring for Operation (one year)	365	03-Jun-20	02-Jun-21	35	32-1500: FS -400, 53-4500: FS	12-1400: FS
372	**SA2.5.03 Civil Engineering Works**			748	13-Jan-19	29-Jan-21	834		
373	**SA2.5.03.0 Buttress Wall**			475	02-Mar-19	18-Jun-20	83		
374	5.03.0	53-1000	Section adj. SENT	300	13-Apr-19	06-Feb-20	96	11-1300: FS, 23-2500: FS, 53-3000: FS, 31-1200: FS, 11-1400: FS	53-1100: FS, 53-1300: FS, 53-3100: FS, M 3. 5: FS -150, M 3. 7: FS
375	5.03.0	53-1100	Diversion of SENT Landfill Gas Pipe	45	07-Feb-20	22-Mar-20	96	23-2500: FS, 53-1000: FS	53-1300: FS, 54-4000: FS, M 3. 3: FS
376	5.03.0	53-1200	Section at Cell 4	400	02-Mar-19	04-Apr-20	83	11-1300: FS, 23-2500: FS, 53-3000: FS, 11-1400: FS	53-1300: FS, 53-3100: FS, M 3. 7: FS, M 3. 6: FS -200
377	5.03.0	53-1300	Install Landfill Gas Pipe on Buttress Wall	75	05-Apr-20	18-Jun-20	83	41-1500: FS, 53-1100: FS, 53-1200: FS, 53-1000: FS	54-4000: FS
378	**SA2.5.03.1 Landfill Cell 1**			503	13-Jan-19	29-May-20	214		
379	5.03.1	53-1400	Earth bund (Eastern)	90	04-Aug-19	01-Nov-19	9	11-1100: FS, 23-2500: FS, 53-4200: FS, 53-2800: FS	53-2000: FS, 53-2300: FS, 53-3400: FS, 63-1000: FS, 63-1100: FS, 63-1200: FS, 63-1300: FS, M 4. 2: FS
380	5.03.1	53-1500	Earth bund (Southern)	90	26-Apr-19	24-Jul-19	314	11-1100: FS, 23-2500: FS, 53-2800: FS	53-2000: FS, 53-2200: FS, 53-2300: FS, 53-3400: FS, 53-3700: FS, 53-3800: FS
381	5.03.1	53-1600	Earth bund (Western)	90	13-Jan-19	12-Apr-19	417	11-1100: FS, 23-2500: FS	53-1900: FS, 53-2000: FS, 53-2200: FS, 53-3800: FS
382	5.03.1	53-1700	Intercell bund (Cell 1/2)	75	13-Jan-19	28-Mar-19	432	11-1100: FS, 23-2500: FS	53-2000: FS
383	5.03.1	53-1800	Site Formation	90	13-Jan-19	12-Apr-19	217	11-1100: FS, 23-2500: FS, 31-1300: FS	53-1900: FS, 63-1100: FS, 63-1200: FS, 63-1300: FS, M 4. 1: FS -45
384	5.03.1	53-1900	Pump Station (PS#1X)	45	13-Apr-19	27-May-19	507	53-1800: FS, 53-1600: FS	53-2100: FS, 53-2200: FS
385	5.03.1	53-2000	Lining Works	135	02-Nov-19*	15-Mar-20	214	41-1500: FS, 53-1400: FS, 53-1500: FS, 53-1600: FS, 53-1700: FS	53-2100: FS
386	5.03.1	53-2100	Protective Stone Laying & Leachate Collection Pipe	75	16-Mar-20	29-May-20	214	53-2000: FS, 41-1500: FS, 53-1900: FS	32-1500: FS, 54-2800: FS, M 4. 3: FS
387	5.03.1	53-2200	Install Leachate Force Main	75	25-Jul-19	07-Oct-19	449	53-1500: FS, 53-1600: FS, 41-1500: FS, 53-1900: FS	54-2800: FS
388	5.03.1	53-2300	Install Landfill Gas Pipe on earth bund	55	02-Nov-19	26-Dec-19	258	41-1500: FS, 53-1400: FS, 53-1500: FS	54-4000: FS
389	5.03.1	53-2400	Leachate Pipe Connection (Cell 1 to LTP)	30	09-Mar-20	07-Apr-20	266	23-2500: FS, 54-1000: SS	54-2800: FS
390	**SA2.5.03.4 Landfill Cell 4**			30	09-Jul-20	07-Aug-20	144		
391	5.03.4	53-2500	Provide Temporary Leachate Pipe on Cell 4 Area	30	09-Jul-20	07-Aug-20	144	23-2500: FS, 63-2600: SS -90	54-2800: FS, M 3. 3: FS
392	**SA2.5.03.5 Drainage - Surface Run-Off**			740	16-Jan-19	24-Jan-21	839		
393	5.03.5	53-2600	Construct Cut-Off Channel 12A	60	16-Jan-19	16-Mar-19	9	11-1100: FS, 23-2800: FS	53-2700: FS
394	5.03.5	53-2700	Connect Cut-Off Channel 12A to DP6	20	17-Mar-19	05-Apr-19	9	53-2600: FS, 31-1400: FS, 23-1900: FS	53-2800: FS
395	5.03.5	53-2800	Diversion from Existing Trapezoidal Channel into Channel 12A	20	06-Apr-19	25-Apr-19	9	53-2700: FS	53-1400: FS, 53-1500: FS, 53-2900: FS, 63-1000: FS, 63-1900: FS, M 3. 3: FS
396	5.03.5	53-2900	Removal of Existing Trapezoidal Channel along Eastern Bund	30	26-Apr-19	25-May-19	9	53-2800: FS	53-4200: FS
397	5.03.5	53-3000	Cut-Off Channel C4 Diversion to Cut-Off Channel 17-2	45	16-Jan-19	01-Mar-19	83	11-1300: FS, 23-2800: FS	53-1000: FS, 53-1200: FS
398	5.03.5	53-3100	Cut-Off Channel X5 on Buttress Wall, Cell 4, Cell 3	90	05-Apr-20	03-Jul-20	289	53-1000: FS, 53-1200: FS	53-3200: FS
399	5.03.5	53-3200	Temporary Diversion Cut-Off Channel X5 to 12A	20	04-Jul-20	23-Jul-20	289	53-3100: FS, 23-1900: FS	53-3300: FS, M 3. 4: FS
400	5.03.5	53-3300	Culvert X5 (5m long) & Perm Connection of Cut-Off Channel X5	30	26-Dec-20	24-Jan-21	134	53-4100: FF, 63-1900: FS, 53-3200: FS	32-1500: FS
401	5.03.5	53-3400	Construct Perimeter Channel X6 on Eastern Bund & Southern Bund of Cell 1	50	02-Nov-19	21-Dec-19	249	53-1400: FS, 53-1500: FS	53-3500: FS
402	5.03.5	53-3500	Construct Perimeter Channel X6 on Eastern Bund of Cell 2	50	20-Feb-20	09-Apr-20	189	63-1000: FS, 53-3400: FS	53-3600: FS
403	5.03.5	53-3600	Construct Perimeter Channel X6 Eastern Bund of Cell 3	50	09-Jun-20	28-Jul-20	129	63-1900: FS, 53-3500: FS	53-3900: FS
404	5.03.5	53-3700	Culvert X6 (25m long) at Cell 1 Southern Bund	75	25-Jul-19	07-Oct-19	1314	53-1500: FS	
405	5.03.5	53-3800	Perimeter Channel (X9B) at Cell 1 Southern & Western Bund	45	25-Jul-19	07-Sep-19	1344	53-1500: FS, 53-1600: FS	
406	5.03.5	53-3900	Drop Inlet & Culvert (X9) - 21m long	180	29-Jul-20	24-Jan-21	129	11-1100: FS, 23-1900: FS, 53-3600: FS	53-4000: FF, 53-4100: FF, 53-6000: FS, M 9. 1: FS -90, M 9. 2: FS
407	5.03.5	53-4000	Sediment Trap (ST)	180	29-Jul-20	24-Jan-21	129	11-1100: FS, 23-1900: FS, 11-1200: FS, 53-3900: FF	53-6000: FS, M 9. 3: FS -90, M 9. 4: FS
408	5.03.5	53-4100	Dual Culvert 74m long (connect to DP4)	180	29-Jul-20	24-Jan-21	129	11-1100: FS, 11-1200: FS, 23-1900: FS, 53-3900: FF	53-3300: FF, 53-6000: FS, M 9. 1: FS -90, M 9. 2: FS
409	**SA2.5.03.6 Drainage - Ground Water**			200	26-May-19	11-Dec-19	209		
410	5.03.6	53-4200	Construct Groundwater Collection Pipe along Cells X1 & X2 Eastern Bund	70	26-May-19	03-Aug-19	9	11-1100: FS, 23-1600: FS, 53-2900: FS	53-1400: FS, 53-4300: FS, 63-1000: FS, 63-1900: FS
411	5.03.6	53-4300	Construct Groundwater Collection Pipe along Cell X3 Eastern Bund	50	04-Aug-19	22-Sep-19	159	53-4200: FS	53-4400: FS, 63-1900: FS
412	5.03.6	53-4400	Construct Groundwater Collection Pipe along Intercell Bund X2/X3	50	23-Sep-19	11-Nov-19	209	53-4300: FS	53-4500: FS, 63-1200: FS
413	5.03.6	53-4500	Construct Manhole MH-X1	30	12-Nov-19	11-Dec-19	209	53-4400: FS	52-2300: FS, M 9. 5: FS
414	**SA2.5.03.7 Utilities - Distribution within New Infrastructure Area**			391	11-Aug-19	04-Sep-20	276		
415	5.03.7	53-4600	Power Supply HV Works (Transformer & HV switchgear)	5	30-Jun-20	04-Jul-20	0	54-3000: FS	12-1200: FS
416	5.03.7	53-4700	Power Distribution, LV Power Supply Works	2	05-Jul-20	06-Jul-20	0	54-3100: FS, 12-1200: FS	12-1000: FS
417	5.03.7	53-4800	Sewerage (Collection to LTP)	60	07-Jul-20	04-Sep-20	271	54-1000: FS, 54-3100: FS, 54-3300: FS, 54-4100: FS	12-1100: FS, 53-6100: FS
418	5.03.7	53-4900	Sewerage (Discharge to Site Boundary)	60	07-Jul-20	04-Sep-20	271	54-1000: FS, 54-4100: FS, 54-4600: FS	12-1100: FS, 53-6100: FS
419	5.03.7	53-5000	Lighting Provision	30	07-Jul-20	05-Aug-20	6	54-1000: FS, 54-4100: FS, 54-4600: FS	12-1100: FS, 32-2100: FS
420	5.03.7	53-5100	Fire Services	115	12-Mar-20	04-Jul-20	2	53-6800: FS	12-1000: FS
421	5.03.7	53-5200	Water Supply (Fresh & Salt)	115	12-Mar-20	04-Jul-20	338	53-6600: FS, 53-6700: FS	12-1100: FS
422	5.03.7	53-5300	Telecom & Network	45	11-Aug-19	24-Sep-19	622	53-6400: FS	12-1100: FS
423	5.03.7	53-5400	Gas Network (LFG to LTP)	15	22-Jun-20	06-Jul-20	176	54-1000: FF	54-2800: FS
424	**SA2.5.03.8 Utilities - Works Associated with Utilities Undertakers**			703	27-Feb-19	29-Jan-21	129		
425	SA2.5.03.8.U1 CLP			459	27-Feb-19	30-May-20	43		
426	5.03.8.U1	53-5500	Excavate Trench for CLP Cable	100	13-May-19	20-Aug-19	194	23-2900: FS	53-5800: FS, 54-1000: SS, 54-4100: SS, 54-4600: SS, M10. 1: FS -60, M10. 2: FS -30, M10. 3: FS
427	5.03.8.U1	53-5600	Backfill Trench after CLP Cable Laying	30	01-May-20	30-May-20	43	53-5800: FS	54-1000: FF, 54-4100: FF, 54-4600: FF
428	5.03.8.U1	53-5700	CLP Cable Laying (from CLP Substation to Site Boundary)	200	27-Feb-19	14-Sep-19	229	32-2400: FS	54-3000: FS
429	5.03.8.U1	53-5800	CLP Cable Laying (from Site Boundary to HV Switchroom)	60	02-Mar-20	30-Apr-20	0	53-5500: FS, 54-2900: FS, 32-2400: FS, 53-5900: FF 15	53-5600: FS, 54-3000: FS
430	5.03.8.U1	53-5900	CLP HV associated equipment installation	120	18-Dec-19	15-Apr-20	0	54-2900: FS, 32-2400: FS	53-5800: FF 15
431	SA2.5.03.8.U2 DSD			147	05-Sep-20	29-Jan-21	129		
432	5.03.8.U2	53-6000	Connection to Storm Drain System	5	25-Jan-21	29-Jan-21	129	53-4100: FS, 53-4000: FS, 53-3900: FS	32-1500: FS
433	5.03.8.U2	53-6100	Connection to Foul Drain System	5	05-Sep-20	09-Sep-20	271	53-4800: FS, 53-4900: FS	32-1500: FS
434	SA2.5.03.8.U3 Telecom			100	13-May-19	20-Aug-19	327		
435	5.03.8.U3	53-6200	Excavate Trench for PCCW	60	13-May-19	11-Jul-19	307	23-2900: FS	53-6400: FS, 54-1000: SS, 54-4100: SS, 54-4600: SS, M10. 1: FS -40, M10. 2: FS -20, M10. 3: FS
436	5.03.8.U3	53-6300	Backfill Trench after PCCW Cable Laying	10	11-Aug-19	20-Aug-19	327	53-6400: FS	54-1000: FF, 54-4100: FF, 54-4600: FF
437	5.03.8.U3	53-6400	Laying Cables & Connection	30	12-Jul-19	10-Aug-19	327	53-6200: FS	53-5300: FS, 53-6300: FS
438	SA2.5.03.8.U4 WSD			304	13-May-19	11-Mar-20	338		
439	5.03.8.U4	53-6500	Install Watermain & Piping for Water Supplies	60	13-May-19	11-Jul-19	216	23-2900: FS	53-6600: FS, 53-6700: FS, 53-6800: FS, 53-6900: FS
440	5.03.8.U4	53-6600	Connection for Fresh Water & Meter Installation	30	11-Feb-20	11-Mar-20	338	53-6500: FS, 32-2300: FS	53-5200: FS
441	5.03.8.U4	53-6700	Connection for Salt Water	30	11-Feb-20	11-Mar-20	338	53-6500: FS, 32-2300: FS	53-5200: FS
442	5.03.8.U4	53-6800	Connection for Fire Services	30	11-Feb-20	11-Mar-20	2	53-6500: FS, 32-2300: FS	53-5100: FS
443	5.03.8.U4	53-6900	Connection for Cooling Tower & Meter Installation	30	11-Feb-20	11-Mar-20	117	53-6500: FS, 32-2300: FS	54-2700: FS, 54-3900: FS
444	SA2.5.03.8.U5 HyD Lighting			120	07-Jul-20	03-Nov-20	216		
445	5.03.8.U5	53-7000	Installation of Public Street Lighting / Handover	120	07-Jul-20	03-Nov-20	216	54-4100: FS, 54-4600: FS, 54-1000: FS	32-1500: FS
446	**SA2.5.04 Building Construction, incl. E&M and System Installation, and T&C**			890	31-Dec-18	07-Jun-21	0		
447	**SA2.5.04.A Part X1 Area A**			554	31-Dec-18	06-Jul-20	36		
448	5.04.A	54-1000	General Area & Access Road	120	09-Mar-20	06-Jul-20	6	23-1300: FS, 53-5500: SS, 53-5600: FF, 53-6200: SS, 53-6300: FF, 12-1000: FF, 11-1100: FS, 54-1100: FF, 54-1800: FF	32-2100: FS, 53-2400: SS, 53-4800: FS, 53-4900: FS, 53-5000: FS, 53-5400: FF, 53-7000: FS, 68-1700: FS
449	5.04.A	54-1100	Carpark & Supporting Area	60	31-Dec-18	28-Feb-19	64	23-1300: FS, 11-1100: FS	32-1500: FS, M 5.11: FS -30, M 5.12: FS, 54-1000: FF, 54-1800: FS
450	5.04.A	54-1200	Diesel Fuel Tanks	60	08-May-20	06-Jul-20	36	23-1300: FS, 23-5200: FS, 12-1000: FF, 11-1100: FS	32-2200: FS
451	5.04.A	54-1300	EPD Building	270	30-Apr-19	24-Jan-20	44	23-1300: FS, 23-5200: FS, 11-1100: FS, 54-1700: SS 60	32-2100: FS, M 5. 4: FS -135, M 5. 5: FS, 12-1000: FS, 54-1400: SS 60
452	5.04.A	54-1400	Fire Service Tank	270	29-Jun-19	24-Mar-20	44	23-1300: FS, 23-5200: FS, 11-1100: FS, 54-1300: SS 60	32-2100: FS, M 5.10: FS, 12-1000: FS, 54-1600: SS 60
453	5.04.A	54-1500	GVL Building	300	31-Dec-18	26-Oct-19	44	23-1300: FS, 23-5200: FS, 11-1100: FS	32-2100: FS, M 5. 1: SF 30, M 5. 2: SF 150, M 5. 3: FS, 54-1700: SS 60
454	5.04.A	54-1600	Laboratory Building	270	28-Aug-19	23-May-20	44	23-1300: FS, 23-5200: FS, 11-1100: FS, 54-1400: SS 60	32-2100: FS, M 5. 6: FS -135, M 5. 7: FS, 12-1000: FS, 32-2200: FS
455	5.04.A	54-1700	Maintenance Building & Area	270	01-Mar-19	25-Nov-19	44	23-1300: FS, 23-5200: FS, 11-1100: FS, 54-1500: SS 60	32-2100: FS, M 5. 8: FS -135, M 5. 9: FS, 12-1000: FS, 54-1300: SS 60
456	5.04.A	54-1800	Storage Facility & Area	60	01-Mar-19	29-Apr-19	64	23-1300: FS, 11-1100: FS, 54-1100: FS	32-1500: FS, M 5.11: FS -30, M 5.12: FS, 54-1000: FF, 54-2000: FS
457	5.04.A	54-1900	Waste Oil Tanks	90	08-Apr-20	06-Jul-20	36	23-1300: FS, 23-5200: FS, 12-1000: FF, 11-1100: FS	32-2200: FS
458	5.04.A	54-2000	Water Service House	60	30-Apr-19	28-Jun-19	64	23-1300: FS, 23-5200: FS, 11-1100: FS, 54-1800: FS	32-2100: FS, M 5.10: FS, 12-1000: FS, 54-4400: FS
459	**SA2.5.04.B Part X1 Area B**			890	31-Dec-18	07-Jun-21	0		
460	SA2.5.04.B.1 BioPlant Building			330	17-Jan-19	12-Dec-19	243		
461	5.04.B.1	54-2100	LTP BioPlant Building	330	17-Jan-19	12-Dec-19	243	23-1300: FS, 23-5200: FS, 23-3200: FS, 11-1100: FS, 31-1000: FS	32-2100: FS, 32-2200: FS, M 6. 2: FS -165, M 6. 3: FS
462	SA2.5.04.B.2 Leachate Treatment Plant			589	31-Dec-18	10-Aug-20	21		
463	5.04.B.2	54-2200	Main Plant Area included Civil works	274	31-Dec-18	30-Sep-19	0	23-1300: FS, 23-3200: FS, 11-1100: FS	54-2300: FS, 54-2400: FS, 54-2500: FS, 64-1100: FS, M 6. 1: SF 30, M 6. 4: FS -137, M 6. 5: FS
464	5.04.B.2	54-2300	MEP Installation	220	01-Oct-19	07-May-20	0	41-2100: FS, 41-1800: FS, 22-2100: FS, 54-2200: FS, 11-1100: FS	12-1000: FS 60, 32-1900: FS, 54-2600: FS, M 6. 8: FS -110, M 6. 9: FS, 32-2200: FS
465	5.04.B.2	54-2400	SBR Tanks	100	01-Oct-19	08-Jan-20	236	41-2400: FS, 54-2200: FS	54-2600: FS, M 6. 6: FS
466	5.04.B.2	54-2500	Ammonia Stripper	315	01-Oct-19	10-Aug-20	21	41-3000: FS, 54-2200: FS	54-2600: FS, M 6. 8: FS -150, M 6. 9: FS
467	SA2.5.04.B.3 LTP - Test & Commission			301	11-Aug-20	07-Jun-21	0		
468	5.04.B.3	54-2600	Dry testing	45	11-Aug-20	24-Sep-20	21	54-2300: FS, 54-2400: FS, 54-2500: FS	23-6600: FS -150, 23-6900: SS, 54-2700: FS, M11. 1: FS
469	5.04.B.3	54-2700	Wet testing	75	25-Sep-20	08-Dec-20	21	54-2600: FS, 12-1200: FS, 53-6900: FS, 31-2200: FS, 23-6800: FS	54-2800: FS, M11. 2: FS
470	5.04.B.3	54-2800	Operational testing	160	30-Dec-20	07-Jun-21	0	54-2700: FS, 53-2400: FS, 53-2500: FS, 53-2100: FS, 53-2200: FS, 63-1700: FS, 63-2600: FS, 53-5400: FS, 54-4000: FS	32-1500: FS, M11. 3: FS, M11. 4: FS
471	**SA2.5.04.C Part X1 Area C**			730	31-Dec-18	29-Dec-20	0		
472	SA2.5.04.C.1 LFG - Power Supply Building			530	17-Jan-19	29-Jun-20	5		
473	5.04.C.1	54-2900	LFG Building (with Transformer Room)	335	17-Jan-19	17-Dec-19	0	23-1300: FS, 23-3500: FS, 11-1100: FS, 31-1000: FS	53-5800: FS, 53-5900: FS, 54-3000: FS, 54-3100: FS, M 7. 6: FS
474	5.04.C.1	54-3000	Transformer & HV Swtichgear Installation	60	01-May-20	29-Jun-20	0	54-2900: FS, 41-1200: FS, 53-5800: FS, 53-5700: FS	53-4600: FS, M 7. 4: FS -30, M 7. 5: FS, M 7. 5: FF
475	5.04.C.1	54-3100	MEP Installation, with T&C	75	18-Dec-19	01-Mar-20	125	54-2900: FS	32-1400: FS, 32-2100: FS, 53-4700: FS, 53-4800: FS, M 7. 4: FS -30, M 7. 5: FS
476	SA2.5.04.C.2 LFG Treatment Plant			554	31-Dec-18	06-Jul-20	0		
477	5.04.C.2	54-3200	Main Plant Area included Civil Works	384	31-Dec-18	18-Jan-20	0	23-3500: FS, 11-1100: FS	54-3300: FS, 54-3400: FS, 54-3500: FS, 54-3600: FS, 54-3700: FS, 54-3800: FS, M 7. 1: SF 30, M 7. 2: FS -200, M 7. 3: FS
478	5.04.C.2	54-3300	MEP Installation	170	19-Jan-20	06-Jul-20	0	54-3200: FS, 12-1000: FF	32-2000: FS, 53-4800: FS, 54-3900: FS, M 7. 4: FS -80, M 7. 5: FS
479	5.04.C.2	54-3400	GHS600 Blower 601 A&B Relocation	15	19-Jan-20	02-Feb-20	155	23-5800: FS, 54-3200: FS	54-3900: FS, M 7. 4: FS -8, M 7. 5: FS
480	5.04.C.2	54-3500	Pre-treatment	60	19-Jan-20	18-Mar-20	110	41-3900: FS, 54-3200: FS	54-3900: FS, M 7. 4: FS -30, M 7. 5: FS
481	5.04.C.2	54-3600	Flares (incl. PLC control, interlink to Towngas PF & LTP)	125	19-Jan-20	22-May-20	45	41-3300: FS, 54-3200: FS	54-3900: FS, M 7. 4: FS -60, M 7. 5: FS
482	5.04.C.2	54-3700	LFG Engine (incl. on-grid protection, PLC control, tuning)	110	21-Feb-20	09-Jun-20	27	41-3600: FS, 54-3200: FS	54-3900: FS, M 7. 4: FS -60
483	5.04.C.2	54-3800	Cooling System	45	19-Jan-20	03-Mar-20	125	22-1500: FS, 54-3200: FS	54-3900: FS, M 7. 4: FS -25, M 7. 5: FS
484	SA2.5.04.C.3 LFG - Test & Commission			176	07-Jul-20	29-Dec-20	0		
485	5.04.C.3	54-3900	MEP Testing	65	07-Jul-20	09-Sep-20	0	54-3400: FS, 54-3500: FS, 54-3600: FS, 54-3700: FS, 54-3800: FS, 12-1200: FS, 53-6900: FS, 31-2200: FS, 54-3300: FS	23-7000: SS -150, 23-7300: SS, 54-4000: FS, M11. 1: FS -30, M11. 2: FS
486	5.04.C.3	54-4000	Operational Testing	111	10-Sep-20	29-Dec-20	0	53-1300: FS, 63-2700: FS, 63-1800: FS, 53-2300: FS, 53-1100: FS, 54-3900: FS, 23-7200: FS	32-1500: FS, 54-2800: FS, 63-4800: FF, 63-4900: FS, 63-4600: FS, M11. 3: FS, M11. 4: FS
487	**SA2.5.04.D Part X1 Area D**			374	29-Jun-19	06-Jul-20	6		
488	5.04.D	54-4100	General Area & Access Road	120	09-Mar-20	06-Jul-20	6	23-1300: FS, 53-5500: SS, 53-5600: FF, 53-6200: SS, 53-6300: FF, 12-1000: FF, 11-1100: FS	32-2100: FS, 53-4800: FS, 53-4900: FS, 53-5000: FS, 53-7000: FS, M 8. 5: FS
489	5.04.D	54-4200	VWF Building	120	28-Oct-19	24-Feb-20	63	23-1300: FS, 23-5200: FS, 41-4500: FS, 11-1100: FS, 54-4300: SS 60	32-2100: FS, M 8. 4: FS, M 8. 6: FS -60, M 8. 7: FS, 12-1000: FS, 54-4500: SS 60
490	5.04.D	54-4300	Weighbridge	75	29-Aug-19	11-Nov-19	63	41-4200: FS, 23-1300: FS, 23-5200: FS, 11-1100: FS, 54-4400: SS 60	32-2100: FS, M 8. 6: FS -40, M 8. 7: FS, 54-4200: SS 60
491	5.04.D	54-4400	Weighmaster House	120	29-Jun-19	26-Oct-19	64	23-1300: FS, 23-5200: FS, 11-1100: FS, 54-2000: FS	32-2100: FS, M 8. 1: FS, 12-1000: FS, 54-4300: SS 60
492	5.04.D	54-4500	Wheel Wash Bath	75	27-Dec-19	10-Mar-20	63	23-1300: FS, 23-5200: FS, 41-4500: FS, 11-1100: FS, 54-4200: SS 60	32-2100: FS, M 8. 3: FS, 12-1000: FS, 54-4700: SS 30
493	**SA2.5.04.E Part X1 Area E & Part X2**			163	26-Jan-20	06-Jul-20	6		
494	5.04.E	54-4600	General Area & Access Road	120	09-Mar-20	06-Jul-20	6	53-5500: SS, 53-5600: FF, 53-6200: SS, 53-6300: FF, 12-1000: FF, 11-1100: FS, 11-1200: FS	32-2100: FS, 53-4900: FS, 53-5000: FS, 53-7000: FS
495	5.04.E	54-4700	Guard House & Entrance Gate	100	26-Jan-20	04-May-20	63	23-1300: FS, 23-5200: FS, 11-1100: FS, 11-1200: FS, 54-4500: SS 30	32-2100: FS, M 8. 2: FS, 12-1000: FS
496	**SA2.5.08 Landscape Works - Advance Screen Planting in CWB Country Park**			270	01-Apr-19	26-Dec-19	529		
497	**SA2.5.08.N Area N**			270	01-Apr-19	26-Dec-19	529		
498	5.08.N	58-1000	Advance Screen Planting	90	01-Apr-19*	29-Jun-19	529	23-7900: FS, 31-1100: FS, 11-1500: FS	14-1800: SS -60, 58-1100: SS, 68-1600: SS 30, M 3. 2: FS
499	5.08.N	58-1100	Establishment of Screen Planting	270	01-Apr-19*	26-Dec-19	529	58-1000: SS, 14-1800: FS	32-1500: FS
500	**SA2.5.08.S Area S**			270	01-Apr-19	26-Dec-19	529		
501	5.08.S	58-1200	Advance Screen Planting	90	01-Apr-19*	29-Jun-19	529	23-7900: FS, 31-1100: FS, 11-1500: FS	58-1300: SS, M 3. 2: FS
502	5.08.S	58-1300	Establishment of Screen Planting	270	01-Apr-19*	26-Dec-19	529	58-1200: SS	32-1500: FS
503	**SA2.6 Construction (Remaining Works)**			1474	01-Apr-19	13-Apr-23	30		
504	**SA2.6.02 Advance Works**			80	09-Jul-21	26-Sep-21	339		
505	**SA2.6.02.9 Demolition of SENT Infrastructure Area**			80	09-Jul-21	26-Sep-21	339		
506	6.02.9	62-1000	Existing SENT General Infrastructure Facility & Building	60	09-Jul-21	06-Sep-21	239	32-2100: FS, 12-1300: FS	23-2000: SS -90, 63-2800: FS, 63-2900: FS, 63-3000: FS, 63-4300: FS, M12. 4: FS -30, M12. 5: FS
507	6.02.9	62-1100	Existing SENT LTP	60	29-Jul-21	26-Sep-21	339	32-1500: FS, 12-1300: FS, 23-2200: FS	63-3000: FS, 63-4500: FS, M12. 4: FS -30, M12. 5: FS
508	6.02.9	62-1200	Existing SENT LFG	60	29-Jul-21	26-Sep-21	339	32-1500: FS, 12-1300: FS, 23-2200: FS	63-3000: FS, 63-4500: FS, M12. 4: FS -30, M12. 5: FS



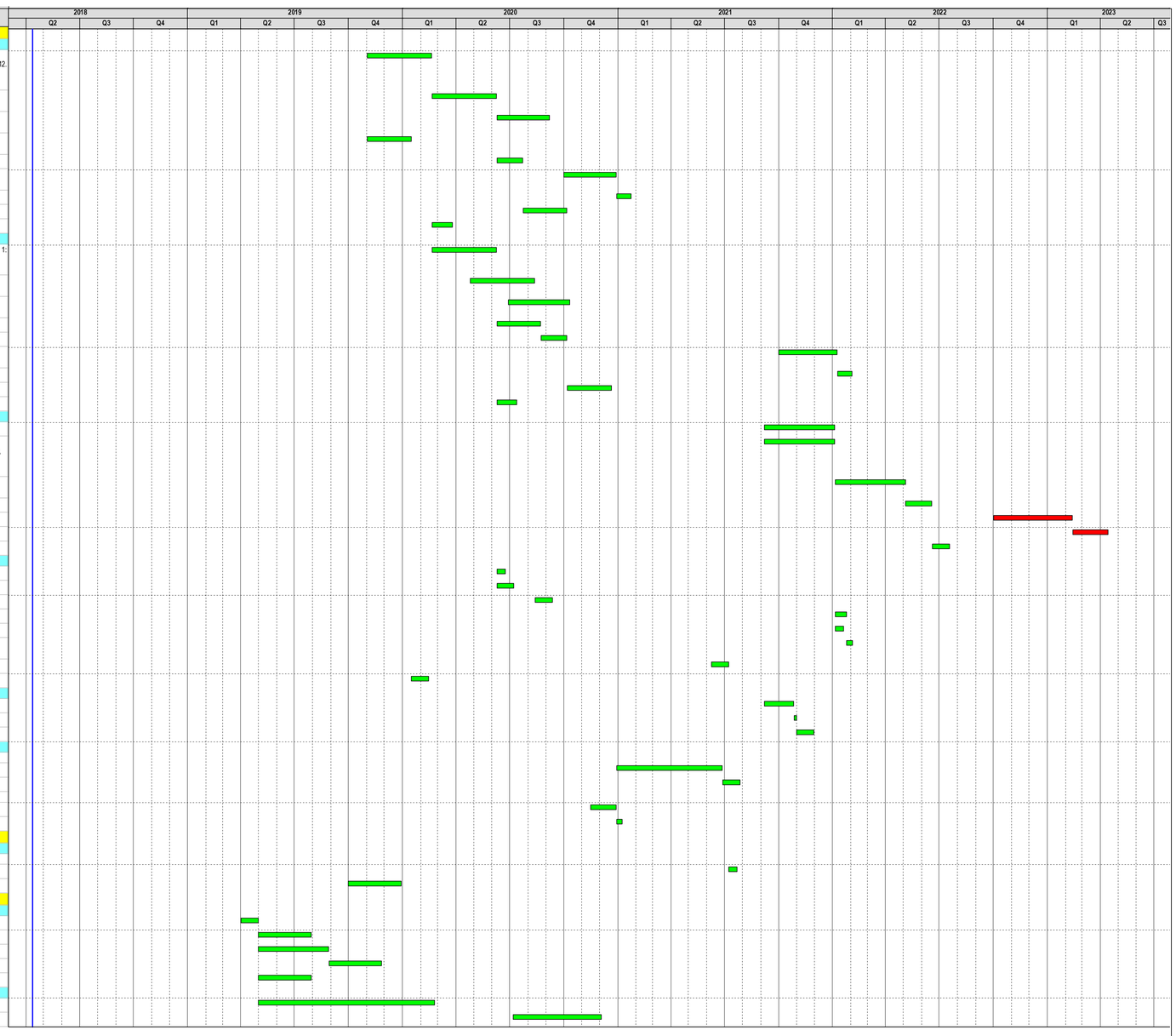
Remaining Work
Critical Remaining Work
Milestone

South-East New Territories Land Fill Extension (SA2-SENTX)
Baseline Programme

GREEN VALLEY LANDFILL, LIMITED

Date	Revision	Checked	Approved
11-May-18	SENTX-GVL-W-PB-ZZ-0001 Rev. I01		
20-Jul-18	SENTX-GVL-W-PB-ZZ-0001 Rev. I02 (Detailed)		

#	WBS Path	Activity ID	Activity Name	Dur	Start	Finish	Total Float	Predecessor Details	Successor Details
509	**SA2.6.03**		**Civil Engineering Works**	1259	02-Nov-19	13-Apr-23	30		
510	**SA2.6.03.2**		**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, 53-4200: FS, 53-1400: FS, 53-2800: FS	53-3500: FS, 63-1500: FS, 63-1800: FS, 63-1900: FS, 63-2000: FS, 63-2100: FS, 63-2200: FS, M12. 1: FS -50, M12. 2: FS, 63-1100: FS
512	6.03.2	63-1100	Earth bund (Western)	110	20-Feb-20	08-Jun-20	84	11-1100: FS, 23-2500: FS, 53-1800: FS, 53-1400: FS, 63-1000: FS	63-1400: FS, 63-1500: FS, 63-1700: FS, 63-3500: FS, 63-3600: FS, 63-1200: FS
513	6.03.2	63-1200	Intercell bund (Cell 2/3)	90	09-Jun-20	06-Sep-20	734	11-1100: FS, 23-2500: FS, 53-1800: FS, 53-1400: FS, 53-4400: 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, 53-1800: FS, 53-1400: FS	63-1400: FS, 63-4200: FS
515	6.03.2	63-1400	Pump Station (PS#2X)	45	09-Jun-20	23-Jul-20	84	63-1300: FS, 63-1100: FS	63-1600: FS, 63-1700: FS
516	6.03.2	63-1500	Lining Works	90	01-Oct-20*	29-Dec-20	710	41-1500: FS, 63-1000: FS, 63-1100: FS, 63-1200: FS	63-1600: FS, M12. 3: FS, 63-2400: FS
517	6.03.2	63-1600	Protective Stone Laying & Leachate Collection Pipe	25	30-Dec-20	23-Jan-21	810	63-1500: FS, 41-1500: FS, 63-1400: FS	32-1600: FS, M12. 3: FS
518	6.03.2	63-1700	Install Leachate Force Main	75	24-Jul-20	06-Oct-20	84	63-1100: FS, 41-1500: FS, 63-1400: FS	54-2800: FS, M12. 3: FS
519	6.03.2	63-1800	Install Landfill Gas Pipe on earth bund	35	20-Feb-20	25-Mar-20	168	41-1500: FS, 63-1000: FS	54-4000: FS, M12. 3: FS
520	**SA2.6.03.3**		**Landfill Cell 3**	714	20-Feb-20	02-Feb-22	435		
521	6.03.3	63-1900	Earth bund (Eastern)	110	20-Feb-20	08-Jun-20	9	11-1100: FS, 53-4200: FS, 63-1000: FS, 53-4300: FS, 53-2800: FS, 63-4200: FS	53-3300: FS, 53-3600: FS, 63-2400: FS, 63-2700: FS, M12. 1: FS -50, M12. 2: FS, 63-2000: FS -45, 63-2200: FS
522	6.03.3	63-2000	Earth bund (Western)	110	25-Apr-20	12-Aug-20	19	11-1100: FS, 63-1000: FS, 63-1900: FS -45	63-2300: FS, 63-2400: FS, 63-2600: FS, 63-3700: FS, 63-2100: FS -45
523	6.03.3	63-2100	Intercell bund (Cell 3/4)	105	29-Jun-20	11-Oct-20	789	11-1100: FS, 63-1000: FS, 63-4200: FS, 63-2000: FS -45	63-2400: FS
524	6.03.3	63-2200	Site Formation	75	09-Jun-20	22-Aug-20	9	11-1100: FS, 63-1000: FS, 63-1900: FS	63-2300: FS
525	6.03.3	63-2300	Pump Station (PS#3X)	45	23-Aug-20	06-Oct-20	9	63-2200: FS, 63-2000: FS	63-2500: FS, 63-2600: FS
526	6.03.3	63-2400	Lining Works	100	01-Oct-21*	08-Jan-22	435	41-1500: FS, 63-1900: 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-22	02-Feb-22	435	63-2400: FS, 41-1500: FS, 63-2300: FS	32-1700: FS, M12. 3: FS
528	6.03.3	63-2600	Install Leachate Force Main	75	07-Oct-20	20-Dec-20	9	63-2000: FS, 41-1500: FS, 63-2300: FS	53-2500: SS -90, 54-2800: FS, M12.3: FS
529	6.03.3	63-2700	Install Landfill Gas Pipe on earth bund	35	09-Jun-20	13-Jul-20	58	41-1500: FS, 63-1900: FS	54-4000: FS, M12. 3: FS
530	**SA2.6.03.4**		**Landfill Cell 4**	584	07-Sep-21	13-Apr-23	30		
531	6.03.4	63-2800	Remaining Portion of Buttress Wall	120	07-Sep-21	04-Jan-22	494	62-1000: FS	
532	6.03.4	63-2900	Earth bund (Western) incl. MSE Wall	120	07-Sep-21	04-Jan-22	239	62-1000: FS	63-3000: FS, 63-3100: FS, 63-3200: FS, 63-3400: FS, 63-3800: FS, 63-3900: FS, 63-4100: SS -90, M 9. 6: FS -60, M 9. 7: FS -30, M 9. 8: FS
533	6.03.4	63-3000	Site Formation	120	05-Jan-22	04-May-22	239	62-1000: FS, 62-1100: FS, 62-1200: FS, 63-2900: FS, 63-4100: FS	63-3100: FS
534	6.03.4	63-3100	Pump Station (PS#4X)	45	05-May-22	18-Jun-22	239	63-3000: FS, 63-2900: FS	63-3300: FS, 63-3400: FS
535	6.03.4	63-3200	Lining Works	135	01-Oct-22*	12-Feb-23	0	41-1500: FS, 63-2900: FS	63-3300: FS, M12. 6: FS
536	6.03.4	63-3300	Protective Stone Laying & Leachate Collection Pipe	60	13-Feb-23	13-Apr-23	0	41-1500: FS, 63-3200: FS, 63-3100: FS	12-1900: FS, 32-1800: FS, M12. 6: FS
537	6.03.4	63-3400	Install Leachate Force Main & Remove Temporary Leachate Pipe	30	19-Jun-22	18-Jul-22	269	41-1500: FS, 63-2900: FS, 63-3100: FS	12-1900: FS, 32-1800: FS, M12. 6: FS
538	**SA2.6.03.5**		**Drainage - Surface Run-Off**	750	16-Jan-20	03-Feb-22	464		
539	6.03.5	63-3500	Perimeter Channel (X9A) at Cell 2 Western Bund	15	09-Jun-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 DP3	10	25-Jan-22	03-Feb-22	464	63-3900: FS, 63-3600: FS, 63-3700: FS, 63-3800: FS	12-1900: FS
545	6.03.5	63-4100	Remove Cut-Off Channel C-7 at bottom of Buttress Wall	30	09-Jun-21	08-Jul-21	419	63-2900: SS -90	63-3000: FS
546	6.03.5	63-4200	Temporary Channel (X7T) at SENT Infrastructure Area	30	16-Jan-20	14-Feb-20	14	63-1300: FS	63-1900: FS, 63-2100: FS
547	**SA2.6.03.6**		**Drainage - Ground Water**	85	07-Sep-21	30-Nov-21	529		
548	6.03.6	63-4300	Construct Temporary Channel (TC-1), from MH-1 to Existing UC-825	50	07-Sep-21	26-Oct-21	529	23-1900: FS, 11-1300: FS, 62-1000: FS	63-4400: FS
549	6.03.6	63-4400	Divert GW at MH-1 to TC-1	5	27-Oct-21	31-Oct-21	529	63-4300: FS	63-4500: FS, M 9. 9: FS
550	6.03.6	63-4500	Reconnection of GWCP across Cell 4	30	01-Nov-21	30-Nov-21	529	62-1100: FS, 62-1200: FS, 63-4400: FS	12-1900: FS
551	**SA2.6.03.8**		**Utilities - Works Associated with Utilities Undertakers**	255	15-Nov-20	27-Jul-21	655		
552		SA2.6.03.8.U1	CLP	210	30-Dec-20	27-Jul-21	655		
553	6.03.8.U1	63-4600	LFG Generator On-grid Testing	180	30-Dec-20	27-Jun-21	655	32-2500: FS, 12-1200: FS, 54-4000: FS	63-4700: FS
554	6.03.8.U1	63-4700	LFG Generator On-grid Inspection & Verify	30	28-Jun-21	27-Jul-21	655	63-4600: FS	12-1900: FS
555		SA2.6.03.8.U6	TownGas	55	15-Nov-20	08-Jan-21	855		
556	6.03.8.U6	63-4800	Laying Gas Mains (from LFG to Town Gas PF)	45	15-Nov-20	29-Dec-20	855	54-4000: FF	63-4900: FS
557	6.03.8.U6	63-4900	Gas Meter Relocation & Connection at LFG	10	30-Dec-20	08-Jan-21	855	63-4800: FS, 54-4000: FS	12-1900: FS
558	**SA2.6.04**		**Building & E&M Works**	661	01-Oct-19	22-Jul-21	660		
559	**SA2.6.04.C**		**Part X1 Area C**	661	01-Oct-19	22-Jul-21	660		
560		SA2.6.04.C.02	LFG Treatment Plant	661	01-Oct-19	22-Jul-21	660		
561	6.04.C.02	64-1000	GHS600 Blower 601 C Relocation	15	08-Jul-21	22-Jul-21	660	32-1500: FS	12-1900: FS
562	6.04.C.02	64-1100	Absorption Chiller (Optional)	90	01-Oct-19	29-Dec-19	1231	54-2200: FS	12-1900: FS
563	**SA2.6.08**		**Landscape Works**	613	01-Apr-19	03-Dec-20	891		
564	**SA2.6.08.1**		**SENT Area - Tree Removal & Transplanting**	240	01-Apr-19	26-Nov-19	1264		
565	6.08.1	68-1000	Access trees condition and select for transplanting	30	01-Apr-19*	30-Apr-19	1264	14-1300: FS	68-1100: FS, 68-1200: FS, 68-1400: FS
566	6.08.1	68-1100	Prepare new site to receive trees	90	01-May-19	29-Jul-19	1264	68-1000: FS	68-1200: SS
567	6.08.1	68-1200	Transplant selected trees	120	01-May-19	28-Aug-19	1264	68-1000: FS, 68-1100: SS	68-1300: FS
568	6.08.1	68-1300	Prune trees prior to removal from Cell 4	90	29-Aug-19	26-Nov-19	1264	68-1200: FS	12-1900: FS
569	6.08.1	68-1400	Tree Felling - Part X3	90	01-May-19	29-Jul-19	1384	23-8200: FS, 31-1600: FS, 68-1000: FS	12-1900: FS
570	**SA2.6.08.2**		**SENTX Area - Trial Nursery & Tree Planting**	583	01-May-19	03-Dec-20	891		
571	6.08.2	68-1600	Trial Nursery	300	01-May-19	24-Feb-20	1174	14-1800: FS, 58-1000: SS 30	12-1900: FS, M 3. 2: FS
572	6.08.2	68-1700	Landscaping in New Infrastructure Area	150	07-Jul-20	03-Dec-20	891	54-1000: FS, 23-7600: FS	12-1900: FS



Remaining Work
Critical Remaining Work
Milestone

South-East New Territories Land Fill Extension (SA2-SENTX)
Baseline Programme

GREEN VALLEY LANDFILL LIMITED

Date	Revision	Checked	Approved
11-May-18	SENTX-GVL-W-PB-ZZ-0001 Rev. I01		
20-Jul-18	SENTX-GVL-W-PB-ZZ-0001 Rev. I02 (Detailed)		

Annex B

Environmental Mitigation Implementation Schedule

Annex B Environmental Mitigation Implementation Schedule

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1) D C O/R A	What requirements or standards for the measure to achieve?	Implementation Status and Remarks
Air Quality – Construction Phase								
4.8.1	AQ1	<u>Blasting</u> • The area within 30m of the blasting area will be wetted prior to blasting. • Blasting will not be carried out when 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	✓	*Air Pollution Control (Construction Dust) Regulations*	Not applicable. Blasting is not required in the latest landfill design
4.8.1	AQ2	<u>Rock Drilling</u> • Watering will be carried out at the rock drilling activities to avoid fugitive dust emissions.	To minimise potential dust nuisance	Rock drilling area	SENTX Contractor	✓	*Air Pollution Control (Construction Dust) Regulations*	Not applicable. Rock drilling is not required in the latest landfill design
4.8.1	AQ3	<u>Site Access Road</u>	To minimise	Main haul	SENTX	✓	*Air Pollution Control*	Implemented

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

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		• 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.	potential dust nuisance	road	Contractor					*(Construction Dust) Regulations* *HKAQO and EIAO-TM Annex 4*	
4.8.1	AQ4	<u>Stockpiling of Dusty Materials</u> • Any stockpile of dusty materials will be covered entirely by impervious sheeting or placed in an area sheltered on the top and three sides or sprayed with water so as to ensure that the entire surface is wet.	To minimise potential dust nuisance	All construction works area	SENTX Contractor		✓			*Air Pollution Control (Construction Dust) Regulations* *HKAQO and EIAO-TM Annex 4*	Reminder was given to the contractor
4.8.1	AQ5	<u>Loading, unloading or transfer of dusty materials</u> • 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		✓			*Air Pollution Control (Construction Dust) Regulations* *HKAQO and EIAO-TM Annex 4*	Implemented
4.8.1	AQ6	<u>Site Boundary and Entrance</u> • 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 ground level will be provided along the entire length of that portion of the site boundary except for the site entrance or exit.	To minimise potential dust nuisance	Site boundary and entrance	SENTX Contractor		✓			*Air Pollution Control (Construction Dust) Regulations* *HKAQO and EIAO-TM Annex 4*	Not applicable
4.8.1	AQ7	<u>Excavation Works</u>	To minimise	All	SENTX		✓			*Air Pollution Control*	Implemented

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		• 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.	potential dust nuisance	construction works area	Contractor					*(Construction Dust) Regulations* *HKAQO and EIAO-TM Annex 4*	
4.8.1	AQ8	<u>Building Demolition</u> • 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		✓			*Air Pollution Control (Construction Dust) Regulations* *HKAQO and EIAO-TM Annex 4*	Implemented
4.8.1	AQ9	<u>Construction of the Superstructure of Building</u> • Effective dust screens, sheeting or netting will be provided to enclose the scaffolding from the ground level up to the highest level of the scaffolding.	To minimise potential dust nuisance	All construction works area	SENTX Contractor		✓			*Air Pollution Control (Construction Dust) Regulations* *HKAQO and EIAO-TM Annex 4*	Implemented
4.8.1	AQ10	Should a stone crushing plant be needed on site, the control measures recommended in the *Best Practicable Means Requirement for Mineral Works (Stone Crushing Plants) BPM 11/1* should be implemented.	To minimise potential dust nuisance	Stone crushing plant/ construction phase	SENTX Contractor		✓			*Best Practicable Means Requirement for Mineral Works (Stone Crushing Plants) BPM 11/1*	Not applicable. Stone crushing plant is not required in the latest landfill design

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? [1] D	C	O/R	A	What requirements or standards for the measure to achieve?	Implementation Status and Remarks
4.8.1	AQ11	Good site practices such as regular maintenance and checking of the diesel powered mechanical equipment will be adopted to avoid any black smoke emissions and to minimize gaseous emissions.	To minimise potential dust nuisance	All construction works area	SENTX Contractor		✓			*HKAQO and EIAO-TM Annex 4*	Implemented
4.10.1	AQ12	Dust monitoring once every 6 days	Ensure the dust generated from the project meets the air quality requirement	At monitoring locations shown in *Figure 3.2a*	SENTX Contractor		✓			*HKAQO and EIAO-TM Annex 4*	Implemented
Air Quality – Operation, Restoration and Aftercare Phases											
4.8.2	AQ13	<u>Odour</u> • Enclosing the weighbridge area	To minimise odour nuisance	Weighbridge area	SENTX Contractor	✓		✓		*EIAO-TM Annex 4*	Not Applicable. As SENTX will receive construction waste only which is significantly less odorous, enclosing the weighbridge area is not necessary
4.8.2	AQ14	• Providing a vehicle washing facility before the exit of SENTX and providing sufficient signage to remind RCV drivers to pass through the facility before leaving SENTX	To minimise odour nuisance	Vehicle washing facility	SENTX Contractor	✓		✓		*EIAO-TM Annex 4*	Implemented
4.8.2	AQ15	• Reminding the RCV drivers to empty the liquor collection sump and close the valve	To minimise odour nuisance	Tipping face	SENTX Contractor			✓		*EIAO-TM Annex 4*	Not Applicable. As SENTX will receive construction waste

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		before leaving the tipping face									only, which is relatively dry, the amount of liquor generated is expected to minimal
4.8.2	AQ16	• Washing down the area where spillage of RCV liquor is discovered promptly	To minimise odour nuisance	SENTX Site	SENTX Contractor			✓		*EIAO-TM Annex 4*	Not Applicable. As SENTX will receive construction waste only, which is relatively dry, the amount of liquor generated is expected to minimal.
4.8.2	AQ17	• Reminding operators to properly maintain their RCVs and ensure that liquor does not leak from the vehicles	To minimise odour nuisance	SENTX Site	SENTX Contractor			✓		*EIAO-TM Annex 4*	Not Applicable. As SENTX will receive construction waste only, which is relatively dry, the amount of liquor generated is expected to minimal.
4.8.2	AQ18	• Installation of landfill gas control system to enhance collection of landfill gas from the waste mass and hence minimise odour associated with fugitive landfill gas emissions	To minimise odour nuisance	SENTX Site	SENTX Contractor	✓		✓	✓	*EIAO-TM Annex 4*	Implemented
4.8.2	AQ19	• Progressive restoration of the areas which	To minimise	SENTX Site	SENTX	✓		✓	✓	*EIAO-TM Annex 4*	Implemented

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		reach the finished profile (a final capping system including an impermeable liner will be put in place) and installation of a permanent landfill gas extraction system	odour nuisance		Contractor						
4.8.2	AQ20	• Installing deodorizers along the site boundary adjacent to the ASRs	To minimise odour nuisance	SENTX Site boundary	SENTX Contractor			✓	✓	*EIAO-TM Annex 4*	Not Applicable. As SENTX will receive construction waste only which is significantly less odorous, installation of deodorizers is not necessary.
4.8.2	AQ21	• Erecting a vertical barrier, wall or structure softened by planting rows of trees/shrubs or landscape feature along the site boundary, particularly in the areas near the ASRs	To minimise odour nuisance	SENTX Site boundary	SENTX Contractor	✓		✓	✓	*EIAO-TM Annex 4*	Implemented
4.8.2 and SENTX latest design	AQ22	• Maintaining the size of the active tipping face not greater than 1,200 m^2	To minimise odour nuisance	Active tipping face	SENTX Contractor			✓		*EIAO-TM Annex 4*	Implemented
4.8.2	AQ23	• Promptly covering the MSW with soil or selected inert materials to control odour emissions	To minimise odour nuisance	Active tipping face	SENTX Contractor			✓		*EIAO-TM Annex 4*	Not Applicable. SENTX will not receive MSW.
4.8.2	AQ24	• Maintaining the size of the special waste trench not greater than 6m (l) × 2.5m (w)	To minimise odour nuisance	Special waste trench	SENTX Contractor			✓		*EIAO-TM Annex 4*	Not Applicable. SENTX will not have

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1) D	C	O/R	A	What requirements or standards for the measure to achieve?	Implementation Status and Remarks
											any special waste trench.
4.8.2 and SENTX latest design	AQ25	• Covering daily covered area with a tarpaulin sheet or 300mm of soil after the landfill operating hours	To minimise odour nuisance	Daily covered area	SENTX Contractor			✓		*EIAO-TM Annex 4*	Implemented
4.8.2	AQ26	• Covering special waste trench with 600 mm of soil and an impervious liner after 5 pm	To minimise odour nuisance	Special waste trench	SENTX Contractor			✓		*EIAO-TM Annex 4*	Not Applicable. SENTX will not have any special waste trench.
4.8.2	AQ27	• Covering the non-active tipping face with 600mm of soil and an impermeable liner (on top of the intermediate cover), which will not only control odour emissions from landfilled waste but also enhance landfill gas extraction by the landfill gas extraction system	To minimise odour nuisance	Intermediate cover	SENTX Contractor			✓		*EIAO-TM Annex 4*	Implemented
4.8.2	AQ28	• Applying deodorizers or odour suppression agents to control odour emissions from the active tipping face and special waste trench, if any, through spraying or fogging equipment	To minimise odour nuisance	Active tipping face and special waste trench	SENTX Contractor			✓		*EIAO-TM Annex 4*	Not Applicable. As SENTX will receive construction waste only which is significantly less odorous, installation of deodorizers is not necessary. Moreover, SENTX will not have any special waste

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1) D	C	O/R	A	What requirements or standards for the measure to achieve?	Implementation Status and Remarks
											trench.
4.8.2	AQ29	• Providing a mobile cover with retractable or suitable opening to cover up the opening of the special waste trench except during waste deposition and a suitable odour removal unit. The mobile cover should be equipped with powered extraction and suitable odour removal unit for purifying the trapped gas inside the trench before release into the atmosphere	To minimise odour nuisance	Special waste trench	SENTX Contractor			✓		*EIAO-TM Annex 4*	Not Applicable. SENTX will not have any special waste trench.
4.8.2 and SENTX latest design	AQ30	• Providing a thermal oxidizer for the leachate treatment plant	To minimise odour nuisance as a result of breakdown of thermal oxidizer	Leachate treatment plant	SENTX Contractor	✓		✓	✓	*EIAO-TM Annex 4*	Implemented
4.8.2 and SENTX latest design	AQ31	• Enclosing all the leachate storage and treatment tanks (except for the Sequential Batch Reactor (SBR) or Membrane Bioreactor (MBR) tanks) and diverting the exhaust air from these tanks to a thermal oxidizer or flare to avoid potential odour emissions from the LTP	To minimise odour nuisance	Leachate treatment plant	SENTX Contractor	✓		✓	✓	*EIAO-TM Annex 4*	Implemented
4.8.2	AQ32	• Rescheduling of waste filling activities on-site by avoiding waste filling activities carrying out at the northern area of the site in the summer months between July to November	To minimise odour nuisance	SENTX Site	SENTX Contractor			✓		*EIAO-TM Annex 4*	Not Applicable. As SENTX will receive construction waste only which is significantly less

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											odorous, rescheduling of waste filling activities is not necessary.
4.8.2 and SENTX latest design	AQ33	<u>Dust, Gaseous Emission and LFG including Volatile Organic Compounds (VOCs)</u> • Keeping the main haul road to the waste filling area wet by regular watering ;	To minimise dust nuisance	SENTX Site	SENTX Contractor			✓		*HKAQO and EIAO-TM Annex 4*	Implemented
4.8.2	AQ34	• Compacting the exposed daily and intermediate covered areas well to avoid fugitive dust emission;	To minimise dust nuisance	SENTX Site	SENTX Contractor			✓		*HKAQO and EIAO-TM Annex 4*	Implemented
4.8.2	AQ35	• Limiting the vehicle speed within SENTX site boundary;	To minimise dust nuisance	SENTX Site	SENTX Contractor			✓		*HKAQO and EIAO-TM Annex 4*	Implemented
4.8.2	AQ36	• Providing vehicle washing bay to avoid vehicles carrying dust to public roads;	To minimise dust nuisance	SENTX Site	SENTX Contractor			✓		*HKAQO and EIAO-TM Annex 4*	Implemented
4.8.2	AQ37	• Switching off the engine when the diesel-driven equipment is idling;	To minimise gaseous emissions	SENTX Site	SENTX Contractor			✓	✓	-	Implemented
4.8.2	AQ38	• Maintaining the construction equipment properly to avoid any black smoke emissions;	To minimise gaseous emissions	SENTX Site	SENTX Contractor			✓	✓	-	Implemented
4.8.2	AQ39	Providing sufficient underground landfill gas collection system to capture the landfill gas	To minimise gaseous	SENTX Site	SENTX Contractor			✓	✓	*EIAO-TM Annex 4*	Implemented

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		generated as much as possible; and	emissions, including LFG and VOCs								
4.8.2	AQ40	Periodic inspections of the final cover should be undertaken to ensure that the capping layer is in good conditions at all times.	To minimise gaseous emissions, including LFG and VOCs	SENTX Site	SENTX Contractor			✓	✓	*EIAO-TM Annex 4*	Implemented
4.10.2	AQ41	Monitoring of ambient TSP once every 6 days	Ensure the dust emission from the project meets the dust requirement	At monitoring locations shown in *Figure 11.3a*	SENTX Contractor		✓	✓		*HKAQO* and *EIAO-TM Annex 4*	Implemented
4.10.2	AQ42	Monitoring of ambient VOCs, ammonia and H_2S, quarterly	Ensure the gaseous emission from the project meets the air quality requirement	At monitoring locations shown in *Figure 11.3a*	SENTX Contractor			✓	✓	Odour thresholds or 1% of Occupational Exposure Limit (OEL) as stipulated in the "*UK Health and Safety Executive (HSE) EH 40/05 Occupational Exposure Limits*", whichever is lower.	Implemented
4.10.2 and SENTX latest	AQ43	Monitoring of parameters for thermal oxidizer, flares and generator in accordance with requirements stated in Tables 3.4a, 3.5a and 3.6a of the EM&A Manual respectively.	Ensure the gaseous emission from the project meets the air	At the flares and thermal oxidizer stacks when they are	SENTX Contractor			✓	✓ (1)	Emission Limits specified in Contract	Implemented

(1) For LFG flare and LFG generator only.

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design			quality requirement	in operation							
4.10.2	AQ44	To confirm design assumption of ammonia, it is recommended that the ammonia concentration in the flue gas of the thermal oxidiser be monitored during the commissioning stage of the thermal oxidiser. If required, an emission standard will be set for ammonia for the thermal oxidiser based on the monitoring results. If no ammonia is detected in the flue gas during the decommissioning stage, the monitoring of ammonia in the flue gas of the thermal oxidiser could be discontinued.	Ensure the gaseous emission from the project meets the air quality requirement	At the thermal oxidizer stack during commissioning. If ammonia is detected during commissioning stage, the monitoring will continue.	SENTX Contractor			✓		Emission Limits determined during commissioning stage	Implemented
4.10.2 and SENTX latest design	AQ45	Odour patrol in accordance with requirements stated in Table 3.7a of the EM&A Manual.	Ensure the odour emission from the project meets the odour requirement	Along SENTX Site boundary	SENTX Contractor			✓		*EIAO-TM Annex 4*	Implemented
4.10.2	AQ46	Monitoring of meteorological station, continuously	Collect site specific meteorological data	At meteorological station shown in *Figure 11.3a*	SENTX Contractor		✓	✓	✓	-	Implemented
Noise – Construction Phase											
5.7.1	N1	Adopt good site practice listed below: • Only well-maintained plant will be	To minimise potential construction	All construction	SENTX Contractor		✓			*Noise Control Ordinance (NCO) and*	Implemented

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		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.	noise nuisance.	works area					*EIAO-TM Annex 5*	
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

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Noise – Operation/Restoration Phase											
5.7.2	N3	Adopt good site practice listed below: • Choose quieter PME;	To minimise potential operational noise nuisance.	Within the SENTX Site	SENTX Contractor			✓		*Noise Control Ordinance (NCO) and EIAO-TM Annex 5*	Implemented
		• Include noise levels specification when ordering new plant items;								-	Implemented
		• Locate fixed plant items or noise emission points away from the NSRs as far as practicable;								-	Implemented
		• Locate noisy machines in completely enclosed plant rooms or buildings; and								-	Implemented
		• Develop and implement a regularly scheduled plant maintenance programme so that plant items are properly operated and serviced. The programme should be implemented by properly trained personnel.								-	Implemented
5.8	N4	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> • Exposed soil areas will be minimised to	To minimise	All	SENTX		✓			*ProPECC PN 1/94*	Implemented

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		reduce the contamination of runoff and erosion.	potential water quality impacts arising from the construction works	construction works area	Contractor					*EIAO-TM Annex 6*	
6.8.1	WQ2	• 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	• 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	• Temporary covers such as tarpaulin will also be provided to minimise the generation of high SS runoff.	To minimise potential water quality impacts arising from the construction works	All construction works area	SENTX Contractor		✓			*ProPECC PN 1/94* *WPCO*	Implemented
6.8.1	WQ5	• The surface runoff contained any oil and grease will pass through the oil interceptors.	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*	Implemented

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6.8.1	WQ6	• 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	• 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	• 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)*	Implemented
6.8.1	WQ9	• 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*	Implemented
6.13	WQ10	• 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	SENTX Site	SENTX Contractor		✓			*WPCO* *Water-TM*	Implemented

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			construction works								
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
Water Quality – Operation/Restoration and Aftercare Phases											
6.9.1	WQ14	<u>Surface Water Management</u>								*WPCO*	Implemented
		• Inspections of the drainage system, sand traps, settlement ponds and surface water channels will be performed regularly to identify areas necessary for maintenance, cleaning or repair.	To minimise potential water quality impacts on surface water arising from the landfill operations.	SENTX Site	SENTX Contractor			✓		*Technical Memorandum Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Inshore Waters (Water-TM)*	

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										EIAO-TM Annex 6	
6.9.1	WQ15	• Regular maintenance and replacement, if required, of the HDPE liner will be conducted to prevent degradation from affecting the performance of the capping system.	To minimise potential water quality impacts on surface water arising from the landfill operations.	SENTX Site	SENTX Contractor			✓		*WPCO* *Water-TM* *EIAO-TM Annex 6*	Implemented
6.9.1	WQ16	• 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 landfill operations.	SENTX Site	SENTX Contractor			✓	✓	*WPCO* *Water-TM*	Implemented
6.9.2 and SENTX latest design	WQ17	<u>Groundwater Management</u> • The groundwater management facilities including the groundwater monitoring wells will be inspected regularly during routine groundwater monitoring programme.	To minimise potential water quality impacts on groundwater arising from the landfill operations.	SENTX Site	SENTX Contractor			✓	✓	*WPCO* *Water-TM* *EIAO-TM Annex 6*	Implemented
6.9.2	WQ18	• Monitoring of groundwater water quality will be conducted on a regular basis as stated in the EM&A Manual.	To minimise potential water quality impacts on groundwater arising from the	SENTX Site	SENTX Contractor			✓	✓	*WPCO* *Water-TM* *EIAO-TM Annex 6*	Implemented

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			landfill operations.								
SENTX latest design	WQ19	<u>Sewage</u> • All sewage from the operation staff will be diverted to the LTP for treatment or public sewer, if available.	To ensure proper handling of sewage	SENTX Site	SENTX Contractor			✓	✓	-	Implemented
6.9.3	WQ20	<u>Leachate Management</u> • The leachate pump houses and related ancillary equipment will be inspected regularly and repairs, if necessary.	To minimise potential water quality impacts on surrounding water bodies arising from the landfill operations.	Leachate pump houses and related ancillary equipment	SENTX Contractor			✓	✓	*WPCO* *Water-TM* *EIAO-TM Annex 6*	Implemented
6.9.3	WQ21	• For equipment such as pumps that require routine scheduled maintenance, the maintenance will be performed following manufacturer's recommended frequency.	To minimise potential water quality impacts on surrounding water bodies arising from the landfill operations.	Leachate pumps	SENTX Contractor			✓	✓	*WPCO* *Water-TM*	Implemented
6.9.3	WQ22	• Preventive maintenance will be implemented so that the possibility for forced shutdown during wet season will be kept to minimal.	To minimise potential water quality impacts on surrounding water bodies	Leachate treatment plant	SENTX Contractor			✓	✓	*WPCO* *Water-TM* *EIAO-TM Annex 6*	Implemented

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			arising from the landfill operations.								
6.9.3	WQ23	• Emergency procedures or a contingency plan will be established when the LTP is malfunctioned.	To minimise potential water quality impacts on surrounding water bodies arising from the landfill operations.	Leachate treatment plant	SENTX Contractor			✓	✓	*WPCO* *Water-TM* *EIAO-TM Annex 6*	Implemented
6.9.3 and SENTX latest design	WQ24	• There will be sufficient redundancy in the system to handle the leachate flow even if one treatment train is down for maintenance. The leachate may be required to temporarily store within the landfill if the leachate storage lagoon are full and leachate cannot be transported to the LTP for treatment.	To minimise potential water quality impacts on surrounding water bodies arising from the landfill operations.	Leachate treatment plant	SENTX Contractor			✓	✓	*WPCO* *Water-TM* *EIAO-TM Annex 6*	Implemented
6.13	WQ25	• Monitor the quality of effluent discharged from the LTP	To ensure discharge quality comply with WPCO requirement	Leachate treatment plant discharge point	SENTX Contractor			✓	✓	*WPCO* *Water-TM*	Implemented
6.10.1	WQ26	<u>Potential Leakage of Leachate</u>									Implemented
		• Regular groundwater quality monitoring will be carried out to monitor the performance of the leachate containment system.	To minimise potential water quality impacts on surrounding	SENTX Site	SENTX Contractor			✓	✓	*WPCO* *Water-TM*	

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			water bodies arising from the landfill operations.								
6.10.1	WQ27	• Maintenance and replacement of the capping system should be carried out, if necessary, to prevent control infiltration and leachate seepage from any damaged cap.	To minimise potential water quality impacts on surrounding water bodies arising from the leachate leakage.	SENTX Site	SENTX Contractor			✓	✓	*WPCO* *Water-TM* *EIAO-TM Annex 6*	Implemented
6.10.1	WQ28	• Maintaining control of the leachate level through extraction	To minimise potential water quality impacts on surrounding water bodies arising from surface breakout of leachate.	SENTX Site	SENTX Contractor			✓	✓	*WPCO* *Water-TM* *EIAO-TM Annex 6*	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	To ensure that adverse environmental	SENTX Site	SENTX Contractor		✓			*WDO* *Waste Disposal (Charges for Disposal*	Implemented

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		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 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. A recording system for the amount of waste generated, recycled and disposed of (including the disposal sites) will be established.	impacts are prevented							*of Construction Waste) Regulation;* *Works Bureau Technical Circular No.31/2004; and* *Annex 5 and Annex 6 of Appendix G of ETWBTC No. 19/2005)*	
7.6.1	WM3	<u>Measures for the Reduction of Construction Waste Generation</u>									
		Inert and non-inert construction waste will be segregated and stored in different containers or skips to facilitate reuse or recycling of the inert waste and proper disposal of the non-inert construction waste. Specific areas of the work site will be designated for such segregation and storage if immediate use is not practicable.	To reduce construction waste generation	SENTX Site	SENTX Contractor		✓			*WDO* *EIAO-TM Annex 7*	Deficiency of mitigation measures but rectified by the Contractor
7.6.1	WM4	<u>Chemical Waste</u>									
							✓			*WDO*	

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		The construction contractor will register as a chemical waste producer with the EPD. Chemical waste will be handled in accordance with the *Code of Practice on the Packaging, Handling and Storage of Chemical Wastes.*	To ensure proper handling of chemical waste	SENTX Site	SENTX Contractor					*Code of Practice on the Packaging, Handling and Storage of Chemical Wastes*	Deficiency of mitigation measures but rectified by the Contractor
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	To ensure that	SENTX Site	SENTX		✓				Implemented

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		works, training will be provided to workers on the concepts of site cleanliness and on appropriate waste management procedures, including waste reduction, reuse and recycling.	adverse environmental impacts are prevented		Contractor						
7.8	WM8	<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
Waste Management – Operation/Restoration Phase											
7.6.2 and SENTX latest design	WM9	<u>Sludge</u> In case off-site disposal is required, the Contractor will ensure that sludge generated from the LTP will be delivered in closed container to other waste disposal facility e.g. other landfills or a sludge treatment facility, for proper disposal on a daily basis.	To ensure proper handling of sludge	SENTX Site	SENTX Contractor			✓		*WDO* *EIAO-TM Annex 7*	Implemented
7.6.2	WM10	<u>Chemical Waste</u> The construction contractor will register as a chemical waste producer with the EPD. Chemical waste will be handled in	To ensure proper handling of chemical waste	SENTX Site	SENTX Contractor			✓		*WDO* *EIAO-TM Annex 7*	Implemented

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		accordance with the *Code of Practice on the Packaging, Handling and Storage of Chemical Wastes.*								*Code of Practice on the Packaging, Handling and Storage of Chemical Wastes*	
7.6.2	WM11	<u>Sewage</u> All sewage from the operation staff will be diverted to the LTP for treatment or public sewer, if available.	To ensure proper handling of sewage	SENTX Site	SENTX Contractor			✓		*WDO* *EIAO-TM Annex 7*	Moved to mitigation measure under water quality WQ19. It is a measure for water quality rather than waste management.
7.6.2 and SENTX latest design	WM12	<u>General Refuse</u> General refuse will be stored in enclosed bins and disposed of at other landfills or transfer station 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*	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 *Landfill Gas Hazard Assessment Guidance Notes (the Guidance Note*).	To protect workers from landfill gas risk	All construction works area	SENTX Contractor		✓			*Paragraphs 8.3 to 8.49 of EPD's Landfill Gas Hazards Assessment Guidance Note* *EIAO-TM Annex 7*	Implemented

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1) D	C	O/R	A	What requirements or standards for the measure to achieve?	Implementation Status and Remarks
		Those precautionary measures applicable to the SENTX will be confirmed in the detailed Qualitative Landfill Gas Hazard Assessment to be submitted by the contractor.									
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 *Guidance Note* will be followed. 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.	To protect workers from landfill gas risk	Confined space within the construction works area	SENTX Contractor		✓				Implemented
8.6.3	LFG4	Implementation of engineering measures according to Contract Specification requirements. These measures will include the placement of liner and installation of landfill gas management system to contain, manage and control landfill gas.	To protect workers from landfill gas risk	SENTX Site	SENTX Contractor	✓	✓	✓	✓	*EIAO-TM Annex 7*	Implemented

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1) D	C	O/R	A	What requirements or standards for the measure to achieve?	Implementation Status and Remarks
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 *Guidance Notes*). Landfill gas monitoring boreholes will be installed at the edge of the waste slope between the waste and the new infrastructure area to monitor the migration of landfill gas, if any.	To protect workers from landfill gas risk	Infrastructure Area	SENTX Contractor	✓	✓			*EPD's Landfill Gas Hazards Assessment Guidance Note* *EIAO-TM Annex 7*	Implemented
Landfill Gas Hazards – Operation, Restoration and Aftercare Phases											
8.6.4	LFG7	To train and ensure staff to take appropriate precautions at all times when entering enclosed spaces or plant rooms. Undertake regular monitoring of landfill gas at the perimeter boreholes to detect if there are any signs of off-site landfill gas migration. Prepare and implement emergency plan in case off-site landfill gas migration is detected. A permanent gas monitoring system with alarm will be installed and operated in all occupied on-site buildings.	To protect workers from landfill gas risk	SENTX Site	SENTX Contractor			✓	✓	*Landfill Gas Hazards Assessment Guidance Note*	Implemented
8.7 and SENTX latest design	LFG8	<u>Environmental Monitoring & Audit Requirements</u> Undertake regular monitoring of landfill gas	To protect workers from landfill gas risk	Within the SENTX and along the SENTX	SENTX Contractor			✓	✓		Implemented

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? [1] D	C	O/R	A	What requirements or standards for the measure to achieve?	Implementation Status and Remarks
		within the SENTX and along the SENTX boundary as required by the Contract Specification.		boundary						*Landfill Gas Hazards Assessment Guidance Note*	
Ecology – Construction Phase											
9.10.2	EC1	Measures to control construction runoff: • Exposed soil areas will be minimised to reduce the contamination of runoff and erosion;	To minimise potential water quality impacts affecting ecological resources	All construction works area	SENTX Contractor		✓			*EIAO-TM Annex 16* *ProPECC PN 1/94* *Water Pollution Control Ordinance (WPCO)* *EIAO-TM Annex 6*	Implemented
		• To prevent stormwater runoff from washing across exposed soil surfaces, perimeter channels will be constructed in advance of site formation works and earthworks and intercepting channels will be provided for example along the edge of excavation;								-	Implemented
		• Silt removal facilities, channels and manholes will be maintained and the deposited silt and grit will be removed regularly to ensure they are functioning properly at all times;								-	Implemented
		• Temporary covers such as tarpaulin will also be provided to minimise the generation of high suspended solids								-	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) D	C	O/R	A	What requirements or standards for the measure to achieve?	Implementation Status and Remarks
		runoff;									
		• The surface runoff contained any oil and grease will pass through the oil interceptors; and,								-	Implemented
		• Control measures, including implementation of excavation schedules, lining and covering of excavated stockpiles will be implemented to minimise contaminated stormwater run-off from the SENTX site.								-	Implemented
9.10.2 and SENTX latest design	EC2	<u>Good Construction Practice</u>: • 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
Ecology – Operation, Restoration and Aftercare Phases											
9.10.2	EC3	<u>Measures for Controlling Leakage of Landfill Leachate</u> Leachate will be contained within the SENTX Site by the proposed impermeable leachate containment system and collected by the	To minimise potential water quality impact affecting the	SENTX Site	SENTX Contractor			✓	✓	*EIAO-TM Annex 16* *WPCO* *Water-TM*	Implemented

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1) D	C	O/R	A	What requirements or standards for the measure to achieve?	Implementation Status and Remarks
		installation of drainage system to prevent potential migration of leachate to habitats in the vicinity.	ecological resources							*EIAO-TM Annex 6*	
9.10.2	EC4	<u>Measures for Controlling Migration of Landfill Gas</u> Disturbance to habitat in the vicinity and associated wildlife due to migration of landfill gas will be prevented by proper management of the landfill gas generated from the SENTX. Ignition fires will be prohibited to occur within the boundary of the SENTX Site. Surface emission and off-site migration of landfill gas will be regularly monitored.	To minimise potential landfill gas migration affecting ecological resources	SENTX Site	SENTX Contractor			✓	✓	*EIAO-TM Annex 16*	Implemented
9.10.3 and SENTX latest design	EC5	The following compensation planting is recommended as the mitigation measures for the habitat affected due to the SENTX: • Provision of 6 ha of mixed woodland planting to compensate the loss of shrubland; and • Provision of a mosaic of grassland and shrubland in the remaining areas of the SENTX Site. Compensatory planting and restoration of the SENTX can be implemented progressively according to the filling plan of SENTX.	Compensation of habitat loss due to the Project	SENTX Site	SENTX Contractor			✓	✓	*EIAO-TM Annex 16*	Implemented
9.10.3	EC6	The mixture of grassland, shrubland and woodland habitats are recommended to diversify the habitats for supporting various wildlife in particular butterflies, birds and	To diversify habitats	SENTX Site	SENTX Contractor			✓	✓	*EIAO-TM Annex 16*	Implemented

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1) D	C	O/R	A	What requirements or standards for the measure to achieve?	Implementation Status and Remarks
		herpetofauna and blend into the existing undisturbed ecological environment.									
9.10.3	EC7	Indigenous plant species of shallow root system, softwood in nature and adaptive to sea shore habitat are recommended to be used in the restoration plan, which can establish well in coastal area with exposure to strong wind and salt spray, with sand soil base. Taking consideration of the relative poor substrate and the difficulties of establishment of some native trees in Hong Kong, it is recommended to include approximately 20% of non-native tree species in the compensatory woodland. The non-native tree species can serve as a nurse species to facilitate the establishment of the native tree species, especially the shading, and it can be replaced by established native tree species progressively. Plant species can also make reference to food plants of butterfly species (in particularly butterfly species of conservation interests recorded within the CWBCP).	To enhance ecological value of the habitats	SENTX Site	SENTX Contractor			✓	✓	*EIAO-TM Annex 16*	Implemented
9.10.3	EC8	It is also recommended that a trial nursery for native plant species be set up to fine tone the planting matrix and management intensity of the recommended indigenous tree species for the restoration of the SENTX. It should be noted that native shrubs and tree species had been used for restoration of the existing SENT Landfill, native plant species that could not	To select the most suitable indigenous tree species for the SENTX	SENTX Site	SENTX Contractor	✓		✓	✓	*EIAO-TM Annex 16*	Implemented

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1) D	C	O/R	A	What requirements or standards for the measure to achieve?	Implementation Status and Remarks
		successfully be established on the existing SENT Landfill should be reviewed before the preparation of the compensatory planting list. Special care and intensive management of native plant should be implemented in order to ensure proper establishment of the native plants.									
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 construction period.	To ensure that adverse ecological impacts are prevented	SENTX	SENTX Contractor		✓	✓	✓	*EIAO-TM Annex 16*	Implemented
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		✓			*EIAO-TM Annex 18 and ETWBC 3/2006*	Implemented
10.6.5	LV2	CM2 - Topsoil, where identified, will be stripped and stored for re-use in the construction of the soft landscape works, where practical. The Contract Specification will include storage and reuse of topsoil as appropriate.	To minimise the landscape and visual impacts	All construction works area	SENTX Contractor		✓			*EIAO-TM Annex 18*	Not applicable
10.6.5	LV3	CM3 - All existing trees at the edges of the landfill will be carefully protected during	To minimise the landscape and	Potential impacted area	SENTX Contractor		✓			*EIAO-TM Annex 18 and ETWBC 3/2006*	Not applicable

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1) D	C	O/R	A	What requirements or standards for the measure to achieve?	Implementation Status and Remarks
		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.	visual impacts								
10.6.5	LV4	CM4 - Trees unavoidably affected by the works will be transplanted, where necessary and practical. A detailed Tree 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.	To minimise the landscape and visual impacts	Potential impacted area	SENTX Contractor	✓	✓			*EIAO-TM Annex 18 and ETWBC 3/2006*	Implemented
10.6.5 and SENTX latest design	LV5	CM5 - Within 3 months of taking possession of the SENTX Site, the Contractor will plant advance screen planting of native species at Light Standard size at 1.5m centres along the High Junk Peak Trail so as to screen views of the Works from the trail. Tree planting locations will be agreed with AFCD. Works will be completed within 9 months of taking possession of the SENTX Site.	To minimise the landscape and visual impacts	At High Junk Peak Hiking Trail	SENTX Contractor		✓			*EIAO-TM Annex 18*	Implemented
10.6.5	LV6	CM6 - The Contractor's office, leachate treatment plant and laboratory will be given an aesthetic treatment in earth tones to reduce their visual impact and albedo and blend	To minimise the landscape and visual impacts	Infrastructure area	SENTX Contractor	✓	✓			*EIAO-TM Annex 18*	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) D	C	O/R	A	What requirements or standards for the measure to achieve?	Implementation Status and Remarks
		them into the surrounding landscape.									
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 site, along access roads and in and around car parks. This will be supplemented with shrub planting, where appropriate.	To minimise the landscape and visual impacts	Infrastructure area	SENTX Contractor	✓	✓			*EIAO-TM Annex 18 and ETWBC 7/2002*	Not applicable
10.6.5	LV8	CM8 - Planting trials will be carried out in an on-site nursery prior to implementation of the first phase of restoration to establish the best planting matrix and management intensity of the recommended plant materials for the restoration.	To minimise the landscape and visual impacts	SENTX Site	SENTX Contractor		✓			*EIAO-TM Annex 18*	Implemented
11.4.1 and SENTX latest design	LV9	During the preparation of the detailed landscape design plan, the design submission will be audited against the recommendation proposed in the *ER Report* by the Registered Landscape Architect from the ET.	To ensure the implementation of mitigation measures proposed in this EIA Report	SENTX Site	SENTX Contractor/ET	✓	✓			*EIAO-TM Annex 18*	Implemented
Landscape and Visual – Operation/Restoration Phase											
10.6.5 and SENTX	LV10	OM1 - Landfill materials will be covered with general fill material or tarpaulin sheet on a daily basis to reduce visual impact.	To minimise the landscape and visual impacts	Tipping area	SENTX Contractor			✓		*EIAO-TM Annex 18*	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] D	C	O/R	A	What requirements or standards for the measure to achieve?	Implementation Status and Remarks
latest design											
10.6.5 and SENTX latest design	LV11	OM2 - Filling and restoration will be phased during the course of operations in a minimum of 4 phases, the restoration of each phase to commence immediately on the completion of filling in that phase.	To minimise the landscape and visual impacts	Tipping area	SENTX Contractor			✓		*EIAO-TM Annex 18*	Implemented
10.6.5	LV12	OM3 - Catch fences will be erected at the perimeter of the waste boundary, to ensure that all waste stays within the site and is not blown into surrounding areas.	To minimise the landscape and visual impacts	Tipping area	SENTX Contractor			✓		*EIAO-TM Annex 18*	Implemented
10.6.5	LV13	OM4 - All night-time lighting will be reduced to a practical minimum both in terms of number of units and lux level and will be hooded and directional.	To minimise the landscape and visual impacts	Tipping area	SENTX Contractor			✓		*EIAO-TM Annex 18*	Implemented
11.4.2 and SENTX latest design	LV14	The condition of the restoration plantation will be audited at monthly intervals by a Registered Landscape Architect from the ET.	To check the restoration plantation	SENTX Site	SENTX Contractor/ET			✓		*EIAO-TM Annex 18*	Implemented

Annex C

Monitoring Schedule for This Reporting Period

South East New Territories (SENT) Landfill Extension

EM&A Impact Monitoring Schedule during Operation/ Restoration Phase

January 2022

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

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

February 2022

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1 Odour Monitoring	2 Odour Monitoring	3 Odour Monitoring Leachate Monitoring	4 Odour Monitoring Leachate Monitoring	5 Leachate Monitoring Dust Monitoring
6 Leachate Monitoring	7 Leachate Monitoring Noise Monitoring	8 Leachate Monitoring	9 Leachate Monitoring Perimeter LFG Monitoring	10 Leachate Monitoring	11 Leachate Monitoring Dust Monitoring Service Void LFG Monitoring Stack Monitoring Odour Monitoring	12 Leachate Monitoring
13 Leachate Monitoring	14 Leachate Monitoring Noise Monitoring Stack Monitoring	15 Leachate Monitoring Groundwater Monitoring VOCs Monitoring Flammable Gas Monitoring	16 Leachate Monitoring Perimeter LFG Bulk Gas Sampling	17 Leachate Monitoring Dust Monitoring	18 Leachate Monitoring Groundwater Monitoring Odour Monitoring	19 Leachate Monitoring
20 Leachate Monitoring	21 Leachate Monitoring Odour Monitoring	22 Leachate Monitoring	23 Leachate Monitoring Dust Monitoring	24 Leachate Monitoring Surface Water Monitoring Noise Monitoring	25 Leachate Monitoring	26 Leachate Monitoring
27 Leachate Monitoring	28 Leachate Monitoring Odour Monitoring					

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

March 2022

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

Annex D

Air Quality

Annex D1

24-hour TSP Monitoring Results

Table D1.1 24-hour TSP Monitoring Results at AM1

Start Date	Start Time	Finish Date	Finish Time	Weather	24-hour TSP (µg/m3)
6 Jan 22	9:00	7 Jan 22	9:00	Fine	210
12 Jan 22	9:00	13 Jan 22	9:00	Fine	182
18 Jan 22	9:00	19 Jan 22	9:00	Fine	155
24 Jan 22	9:00	25 Jan 22	9:00	Fine	61
30 Jan 22	9:00	31 Jan 22	9:00	Fine	55
5 Feb 22	9:00	6 Feb 22	9:00	Fine	60
11 Feb 22	9:00	12 Feb 22	9:00	Fine	132
17 Feb 22	9:00	18 Feb 22	9:00	Fine	56
23 Feb 22	9:00	24 Feb 22	9:00	Fine	42
1 Mar 22	9:00	2 Mar 22	9:01	Fine	62
7 Mar 22	9:00	8 Mar 22	9:00	Fine	68
13 Mar 22	9:00	14 Mar 22	9:01	Fine	113
19 Mar 22	9:00	20 Mar 22	9:00	Fine	133
25 Mar 22	16:00	26 Mar 22	16:38	Fine	107
31 Mar 22	9:00	1 Apr 22	8:41	Fine	104
				Average	103
				Min	42
				Max	210

Figure D1.1 Graphical Presentation for 24-hr TSP Monitoring at AM1

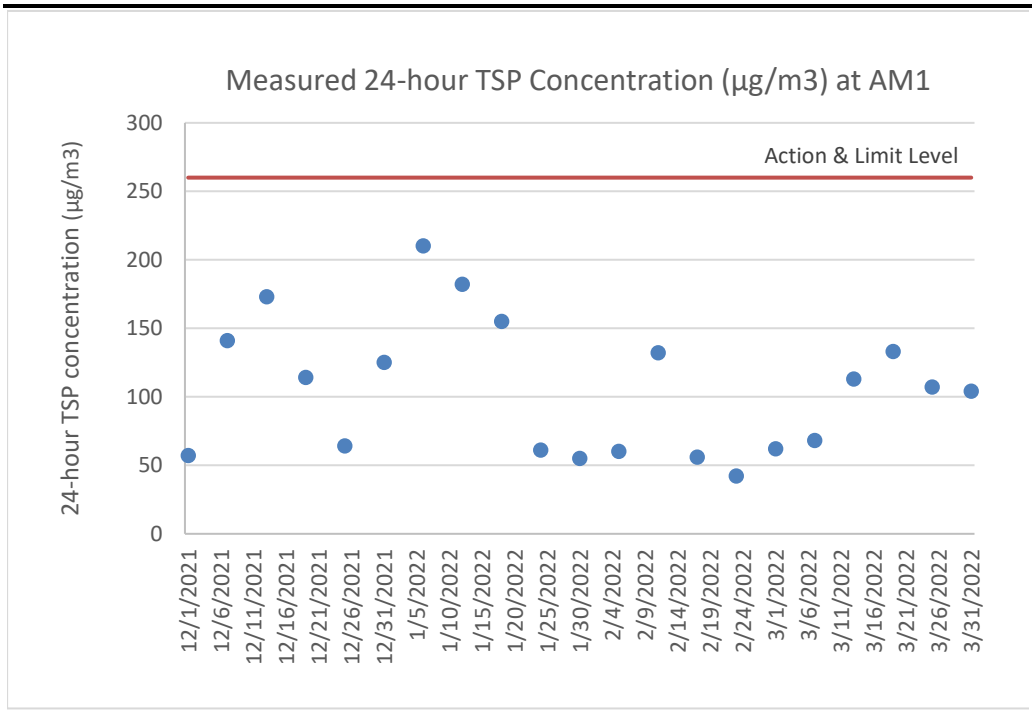


Table D1.2 24-hour TSP Monitoring Results at AM2

Start Date	Start Time	Finish Date	Finish Time	Weather	24-hour TSP (µg/m3)
6 Jan 22	9:00	7 Jan 22	9:00	Fine	102
12 Jan 22	9:00	13 Jan 22	9:00	Fine	91
18 Jan 22	9:00	19 Jan 22	9:00	Fine	64
24 Jan 22	9:00	25 Jan 22	9:00	Fine	41
30 Jan 22	9:00	31 Jan 22	9:00	Fine	32
5 Feb 22	9:00	6 Feb 22	9:00	Fine	32
11 Feb 22	9:00	12 Feb 22	9:01	Fine	85
17 Feb 22	9:00	18 Feb 22	9:00	Fine	40
23 Feb 22	9:00	24 Feb 22	9:01	Fine	65
1 Mar 22	9:00	2 Mar 22	9:03	Fine	84
7 Mar 22	9:00	8 Mar 22	9:01	Fine	69
13 Mar 22	9:00	14 Mar 22	9:00	Fine	106
19 Mar 22	9:00	20 Mar 22	9:00	Fine	72
25 Mar 22	9:00	26 Mar 22	8:45	Fine	50
31 Mar 22	9:00	1 Apr 22	8:47	Fine	39
				Average	65
				Min	32
				Max	106

Figure D1.2 Graphical Presentation for 24-hr TSP Monitoring at AM2

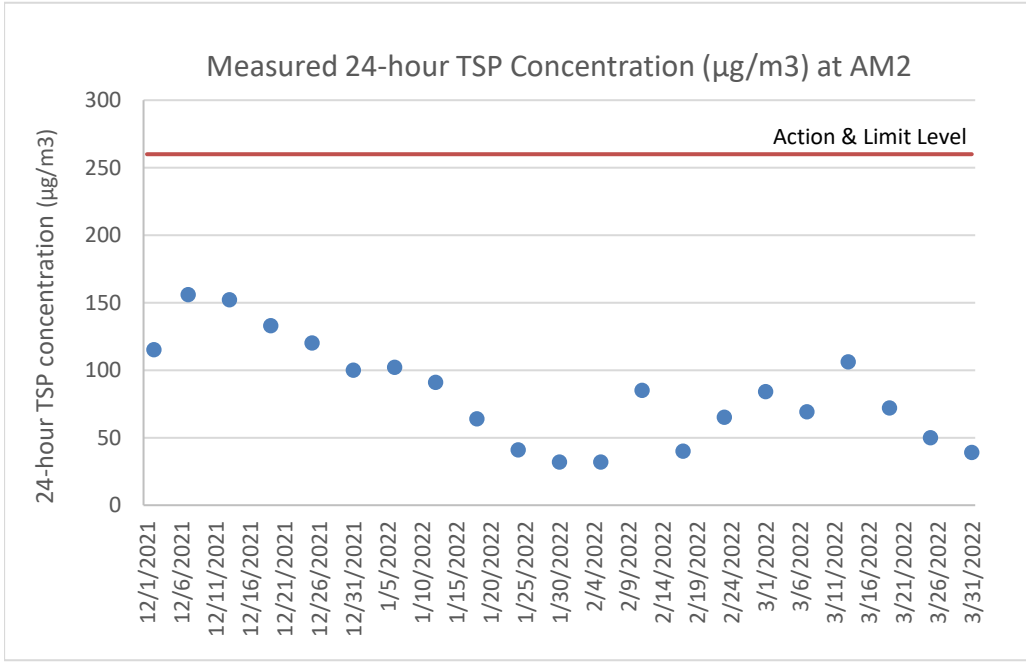


Table D1.3 24-hour TSP Monitoring Results at AM3

Start Date	Start Time	Finish Date	Finish Time	Weather	24-hour TSP (µg/m3)
6 Jan 22	10:17	7 Jan 22	10:17	Fine	179
12 Jan 22	9:00	13 Jan 22	9:00	Fine	218
18 Jan 22	9:00	19 Jan 22	9:00	Fine	136
24 Jan 22	9:00	25 Jan 22	9:00	Fine	117
30 Jan 22	9:00	31 Jan 22	9:00	Fine	100
5 Feb 22	9:00	6 Feb 22	9:01	Fine	131
11 Feb 22	9:00	12 Feb 22	9:00	Fine	140
17 Feb 22	9:00	18 Feb 22	9:00	Fine	71
23 Feb 22	9:00	24 Feb 22	9:01	Fine	57
1 Mar 22	9:00	2 Mar 22	8:52	Fine	171
7 Mar 22	11:35	8 Mar 22	11:28	Fine	146
13 Mar 22	9:00	14 Mar 22	9:12	Fine	198
19 Mar 22	9:00	20 Mar 22	9:00	Fine	211
25 Mar 22	14:11	26 Mar 22	13:58	Fine	35
31 Mar 22	9:00	1 Apr 22	8:19	Fine	224
				Average	142
				Min	35
				Max	224

Figure D1.3 Graphical Presentation for 24-hr TSP Monitoring at AM3

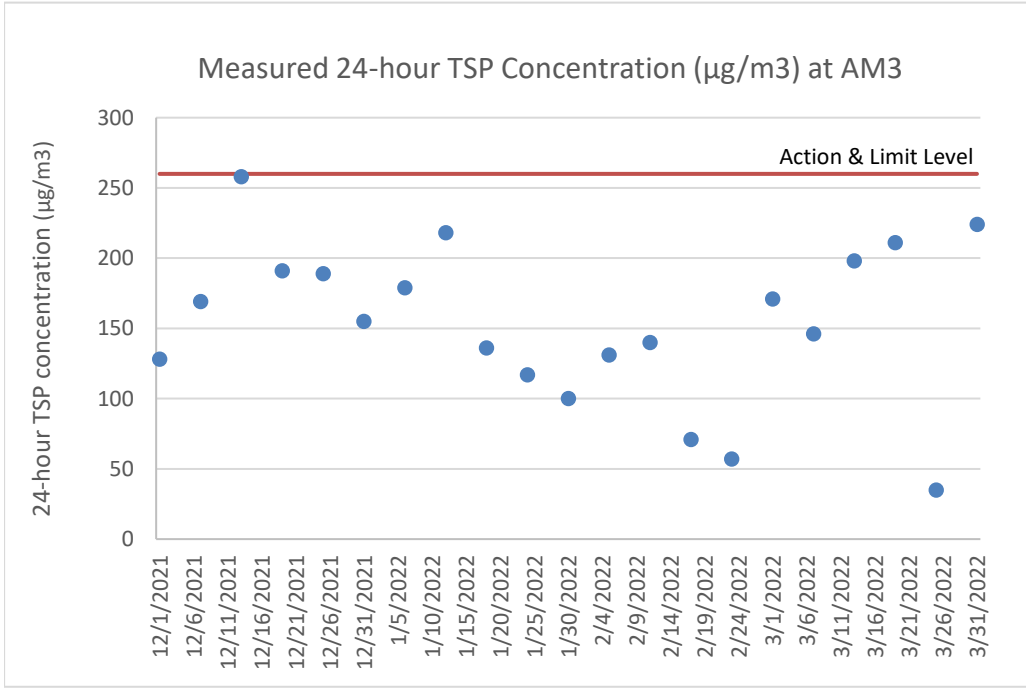
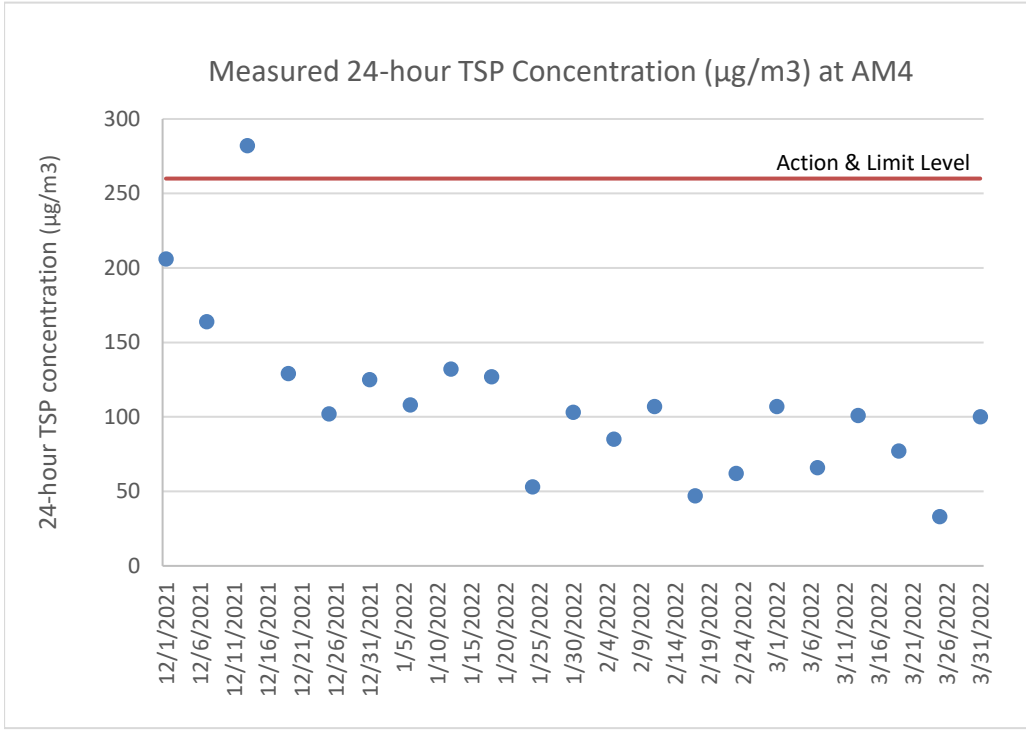


Table D1.4 24-hour TSP Monitoring Results at AM4

Start Date	Start Time	Finish Date	Finish Time	Weather	24-hour TSP (µg/m3)
6 Jan 22	9:00	7 Jan 22	9:00	Fine	108
12 Jan 22	9:00	13 Jan 22	9:00	Fine	132
18 Jan 22	9:00	19 Jan 22	9:00	Fine	127
24 Jan 22	9:00	25 Jan 22	9:00	Fine	53
30 Jan 22	9:00	31 Jan 22	9:00	Fine	103
5 Feb 22	9:00	6 Feb 22	9:01	Fine	85
11 Feb 22	9:00	12 Feb 22	9:00	Fine	107
17 Feb 22	9:00	18 Feb 22	9:00	Fine	47
23 Feb 22	9:00	24 Feb 22	9:00	Fine	62
1 Mar 22	9:00	2 Mar 22	9:00	Fine	107
7 Mar 22	9:00	8 Mar 22	9:00	Fine	66
13 Mar 22	9:00	14 Mar 22	9:01	Fine	101
19 Mar 22	9:00	20 Mar 22	9:00	Fine	77
25 Mar 22	9:00	26 Mar 22	9:15	Fine	33
31 Mar 22	9:00	1 Apr 22	8:59	Fine	100
				Average	102
				Min	33
				Max	132

Figure D1.4 Graphical Presentation for 24-hr TSP Monitoring at AM4



Annex D2

Event and Action Plan for Air Quality Monitoring

Annex D2 Event and Action Plan for Air Quality Monitoring During Operation/ Restoration Phase

	Action		
Event	**ET**	**IEC**	**Contractor**
Exceedance of Action/Limit Level for dust monitoring	• Identify the source(s) and investigate the cause(s) of exceedance • Prepare the Notification of Exceedance within 24 hours • Inform Contractor, IEC, Project Proponent and EPD (EIAO Authority) whether the cause of exceedance is due to the Project • Discuss with Contractor and IEC for remedial measures • Ensure remedial measures are properly implemented • Assess effectiveness of Contractor's remedial measures and keep the Project Proponent and IEC informed of the results • Repeat measurement to confirm finding if exceedance is due to the Project • Increase monitoring frequency to daily and continue until the monitoring results reduce to below action level	• Verify the Notification of Exceedance • Check monitoring data submitted by ET • Check Contractor's working methods • Discuss with ET and Contractor on proposed remedial measures • Review proposals on remedial measures • Audit the implementation of the remedial measures • Audit the effectiveness of the implemented remedial measures	• Take immediate action to avoid further exceedance • Submit proposals for remedial measures to IEC • Implement the agreed proposals • Amend proposal if appropriate
Exceedance of Action Level for odour	• Identify source(s) and investigate the cause(s) of exceedance or complaint • Prepare the odour complaint form or the 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 • Ensure remedial measures are properly implemented • Increase monitoring frequency to daily until odour not being detected for three consecutive days	• Verify the Notification of Exceedance • Check monitoring data submitted by ET • Check Contractor's working methods • Discuss with ET and Contractor on proposed remedial measures • Review proposals on remedial measures • Audit the implementation of the remedial measures • Audit the effectiveness of the implemented remedial measures	• Rectify any unacceptable practice • Amend working methods as required • Implement amended working methods, if necessary

Event	Action		
	ET	IEC	Contractor
Exceedance of Limit Level for odour	• Identify source(s) and investigate the cause(s) of exceedance or complaint • Prepare the odour complaint form or the Notification of Exceedance within 24 hours • Inform Contractor, IEC, Project Proponent and EPD (EIAO Authority) whether the cause of exceedance is due to the Project • Discuss with Contractor and IEC for remedial measures • Ensure remedial measures are properly implemented • Assess effectiveness of Contractor's remedial measures and keep the Project Proponent and IEC informed of the results	• Verify the Notification of Exceedance • Check with Contractor on the operating activities and implementation of odour mitigation measures • 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	• Rectify any unacceptable practice • Submit proposals for remedial measures to IEC within 3 working days of notification • Implement the agreed proposal or amend working methods as required • Resubmit proposals if problem still not under control
Exceedance of Limit Level for ambient VOCs, ammonia and H_2S at the monitoring locations	• Identify the source(s) and investigate the cause(s) of exceedance • Prepare the Notification of Exceedance within 24 hours • Inform Contractor, IEC, Project Proponent and EPD (EIAO Authority) whether the cause of exceedance is due to the Project • Discuss with Contractor and IEC for remedial measures • Ensure remedial measures are properly implemented • Assess effectiveness of Contractor's remedial measures and keep the Project Proponent and IEC informed of the results • Repeat measurement to confirm finding if exceedance is due to the Project • Increase monitoring frequency to monthly and continue until the monitoring results reduce to below limit level	• Verify the Notification of Exceedance • Check with Contractor on the operating activities and implementation of landfill gas control measures • 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	• Rectify any unacceptable practice • Amend working methods as required • Implement amended working methods, if necessary

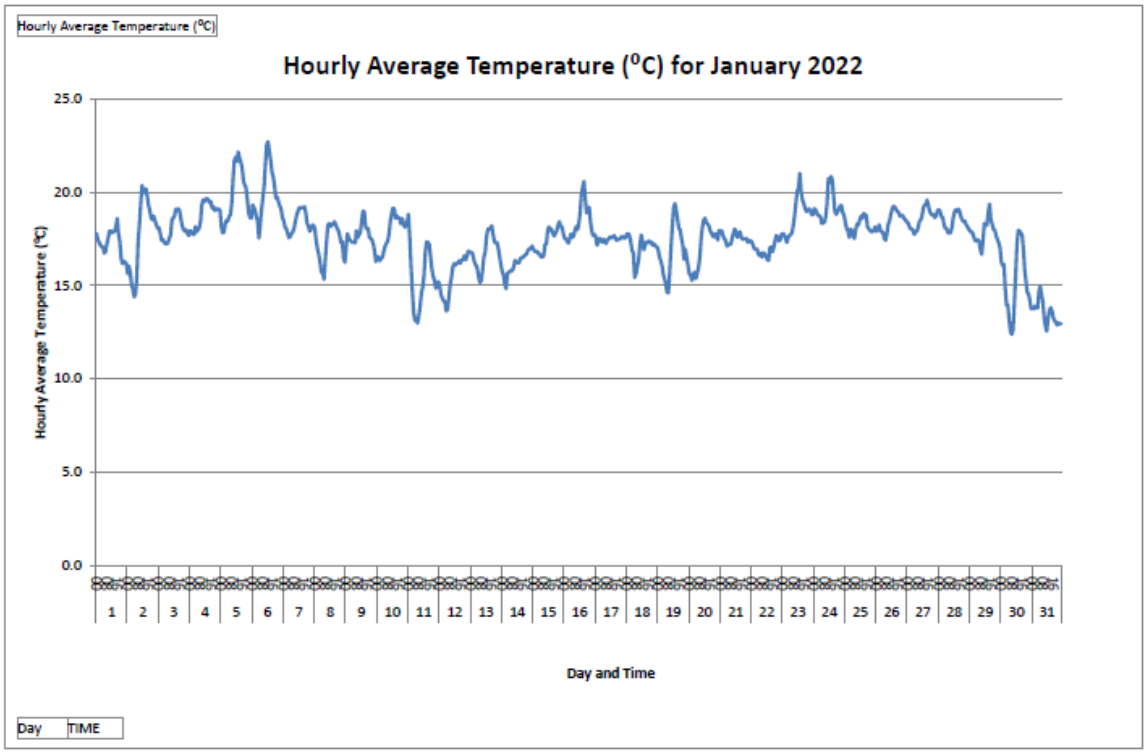
	Action		
Event	**ET**	**IEC**	**Contractor**
Exceedance of Limit Level of stack emission of the thermal oxidizer, flares and generator	• Identify source(s) and investigate the cause(s) of exceedance • Prepare the Notification of Exceedance within 24 hours • Inform Contractor, IEC, Project Proponent and EPD (EIAO Authority) whether the cause of exceedance is due to the Project • Discuss with Contractor and IEC for remedial measures • Ensure remedial measures are properly implemented • Assess effectiveness of Contractor's remedial measures and keep the Project Proponent and IEC informed of the results • Repeat measurement to confirm finding if exceedance is due to the Project • Increase monitoring frequency to monthly when there are two consecutive exceedances and continue until the monitoring results reduce to below limit level	• Verify the Notification of Exceedance • Check with Contractor on the operating performance of the stack • 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	• Rectify any unacceptable performance • Amend design as required • Implement amended design, if necessary

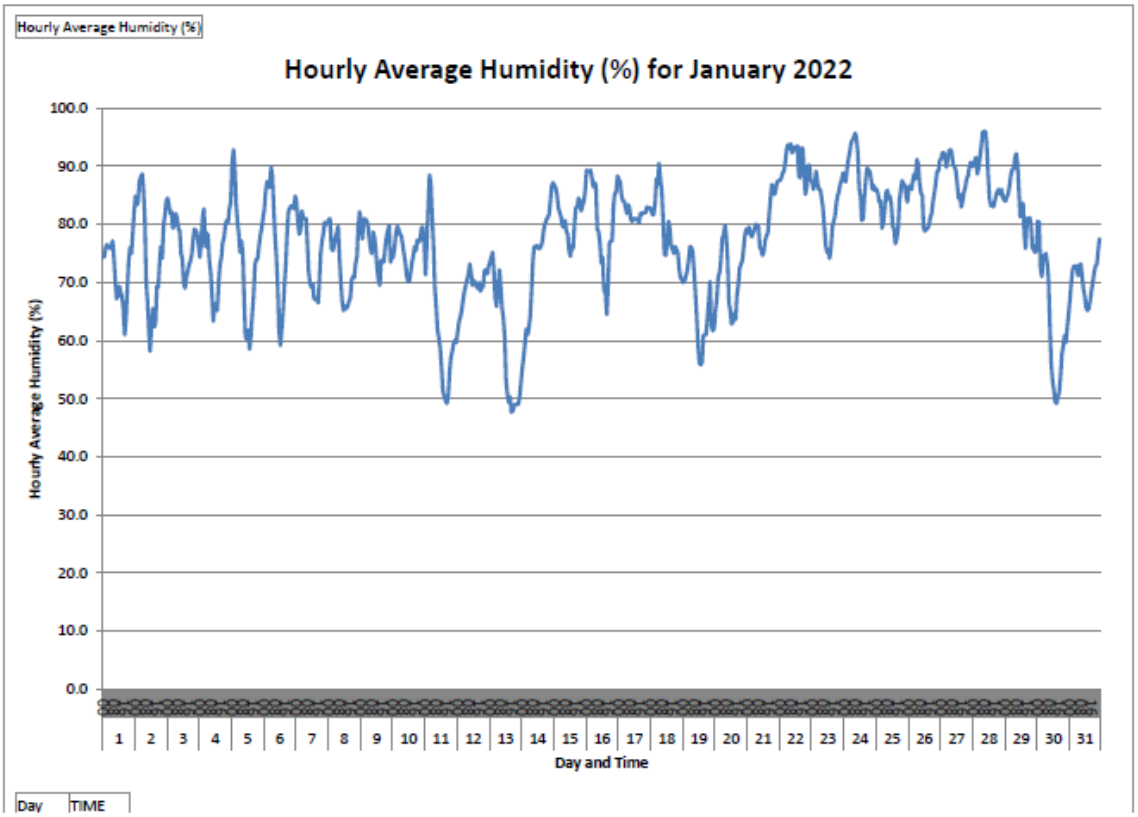
Annex D3

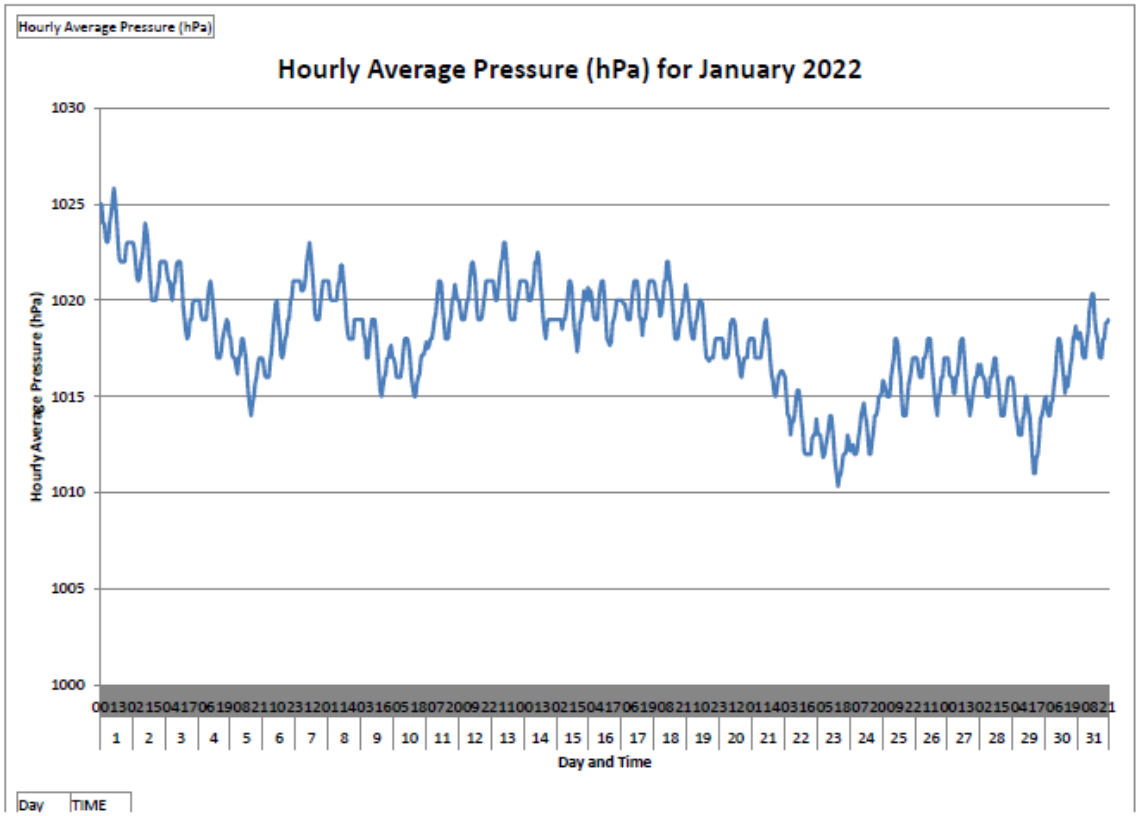
Meteorological Data

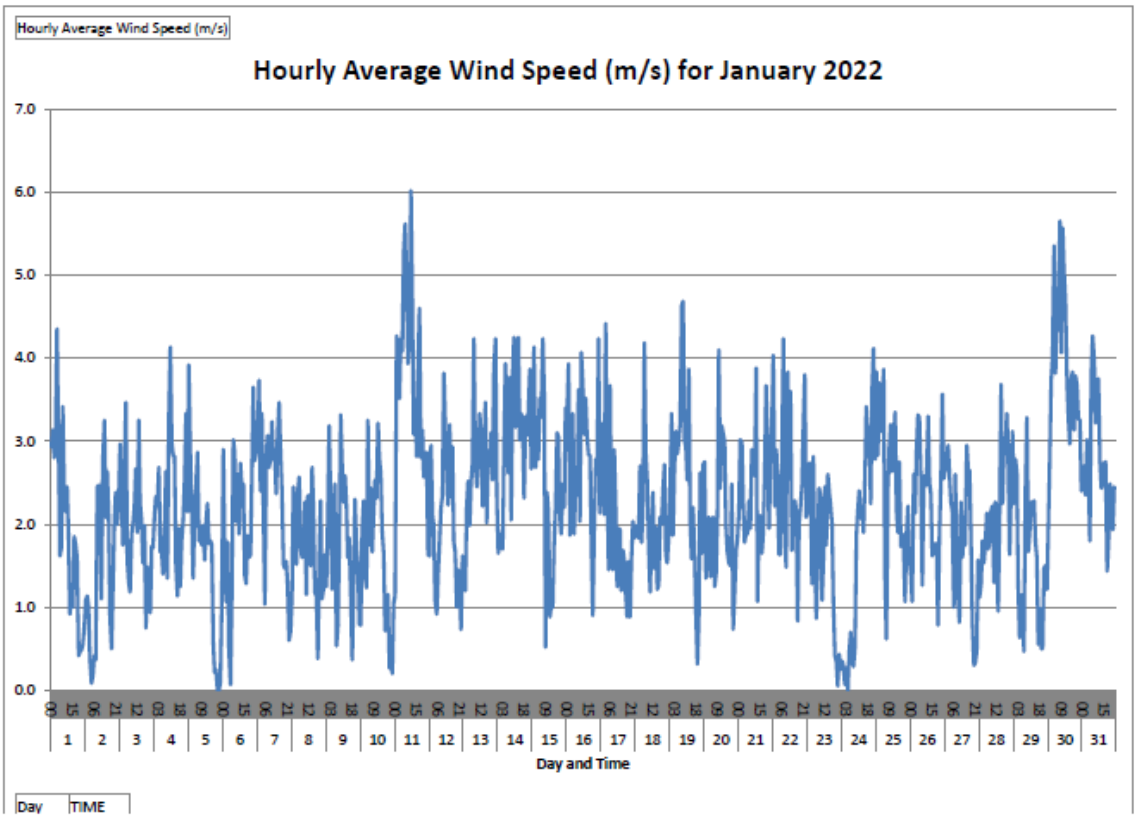
Annex D3 Meteorological Data

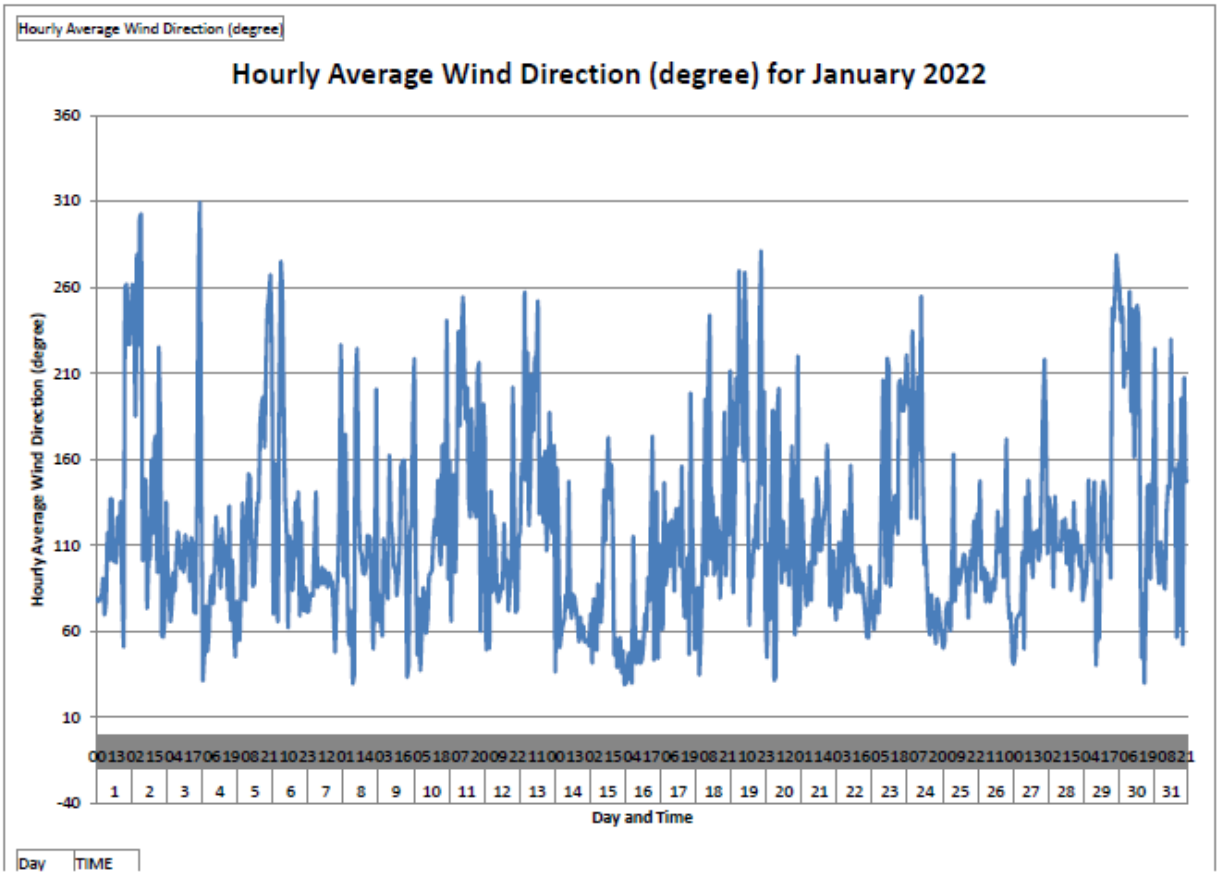
Jan 2022

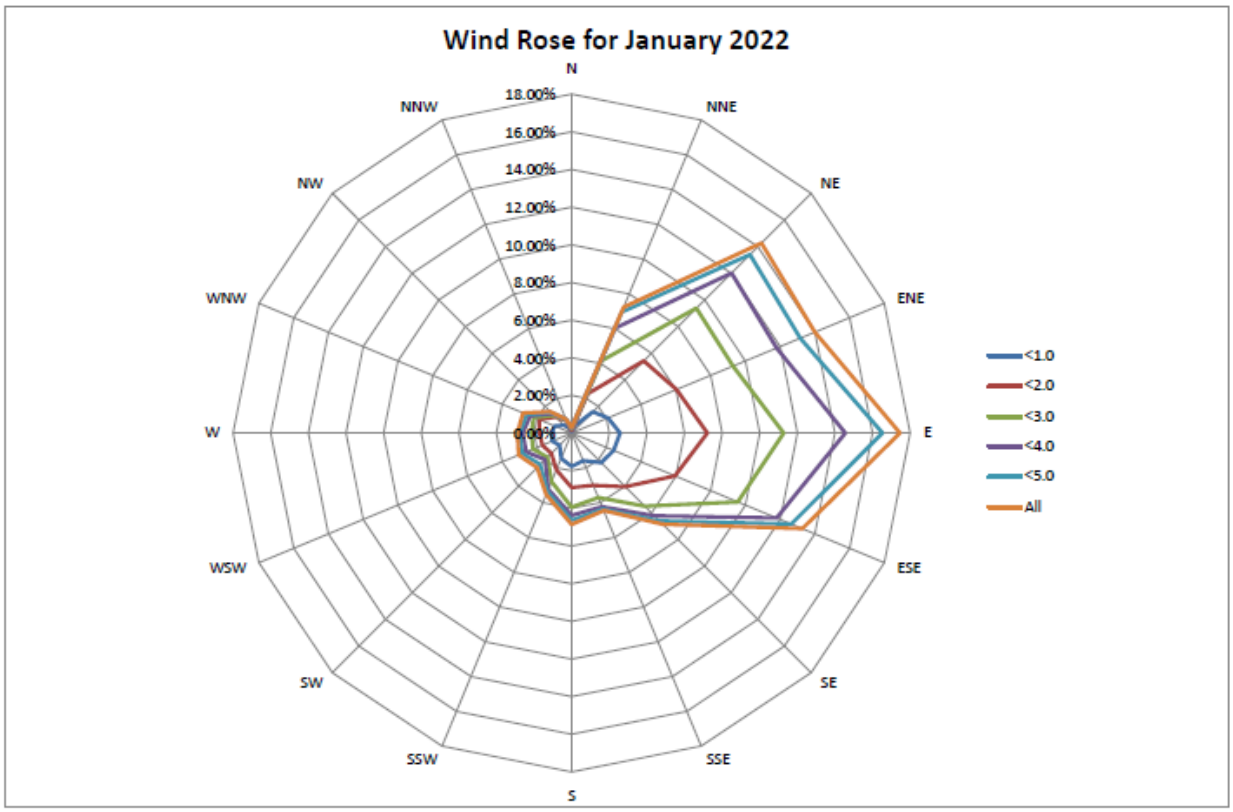


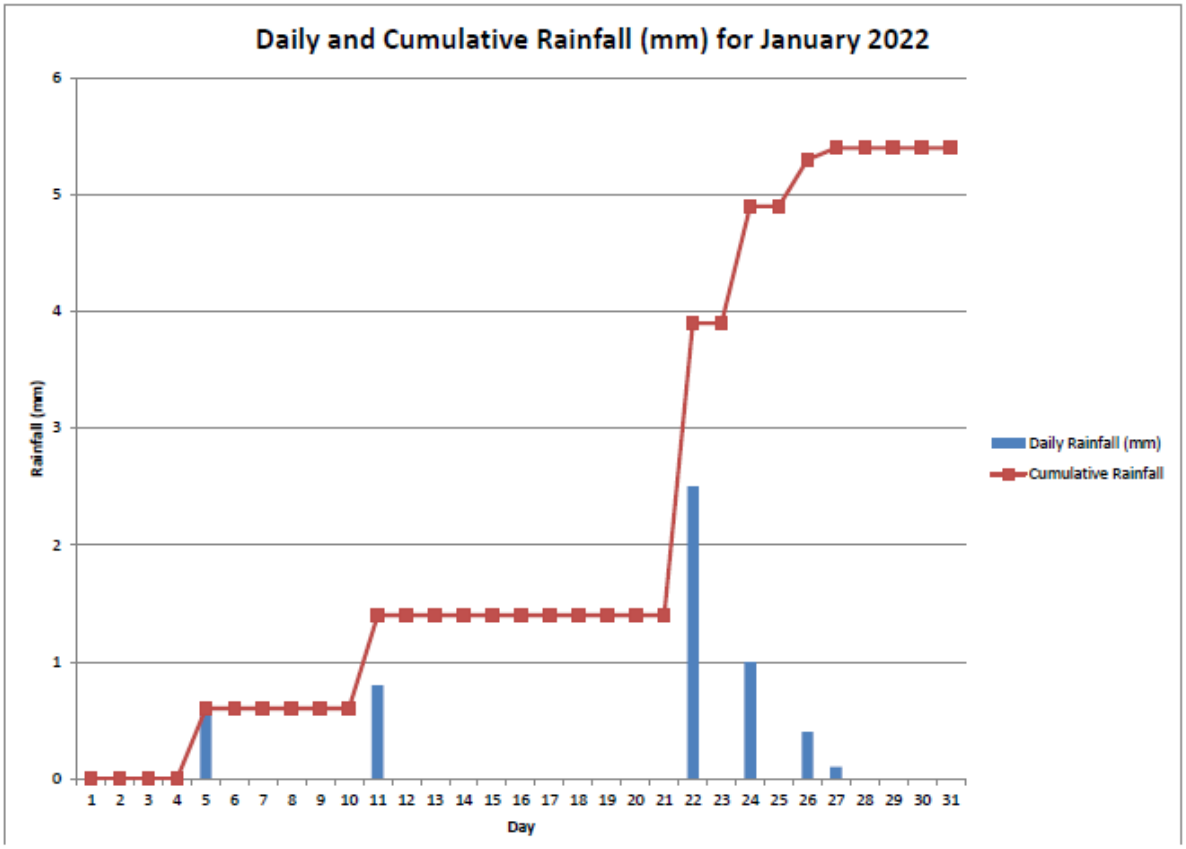



Hourly Average Pressure (hPa)
Hourly Average Pressure (hPa) for January 2022
1030
1025
1020
1015
1010
1005
1000
Hourly Average Pressure (hPa)
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Day and Time
Day
TIME

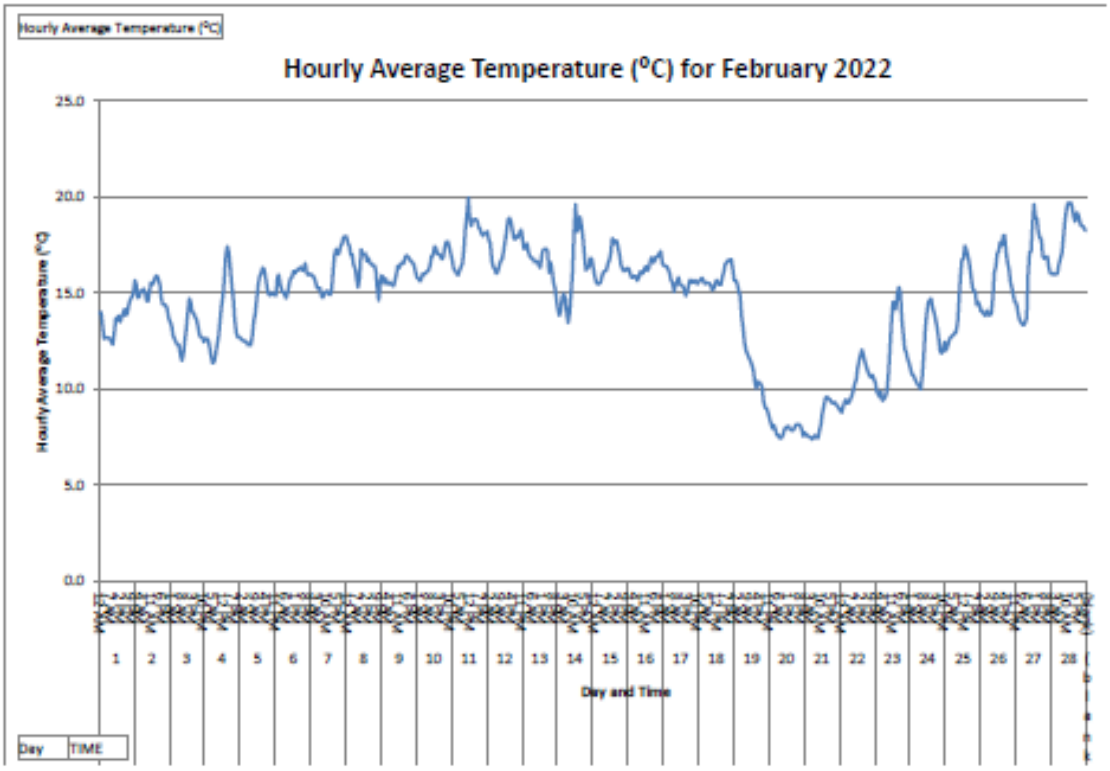

Hourly Average Wind Speed (m/s)
Hourly Average Wind Speed (m/s) for January 2022
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Day and Time
Day
TIME

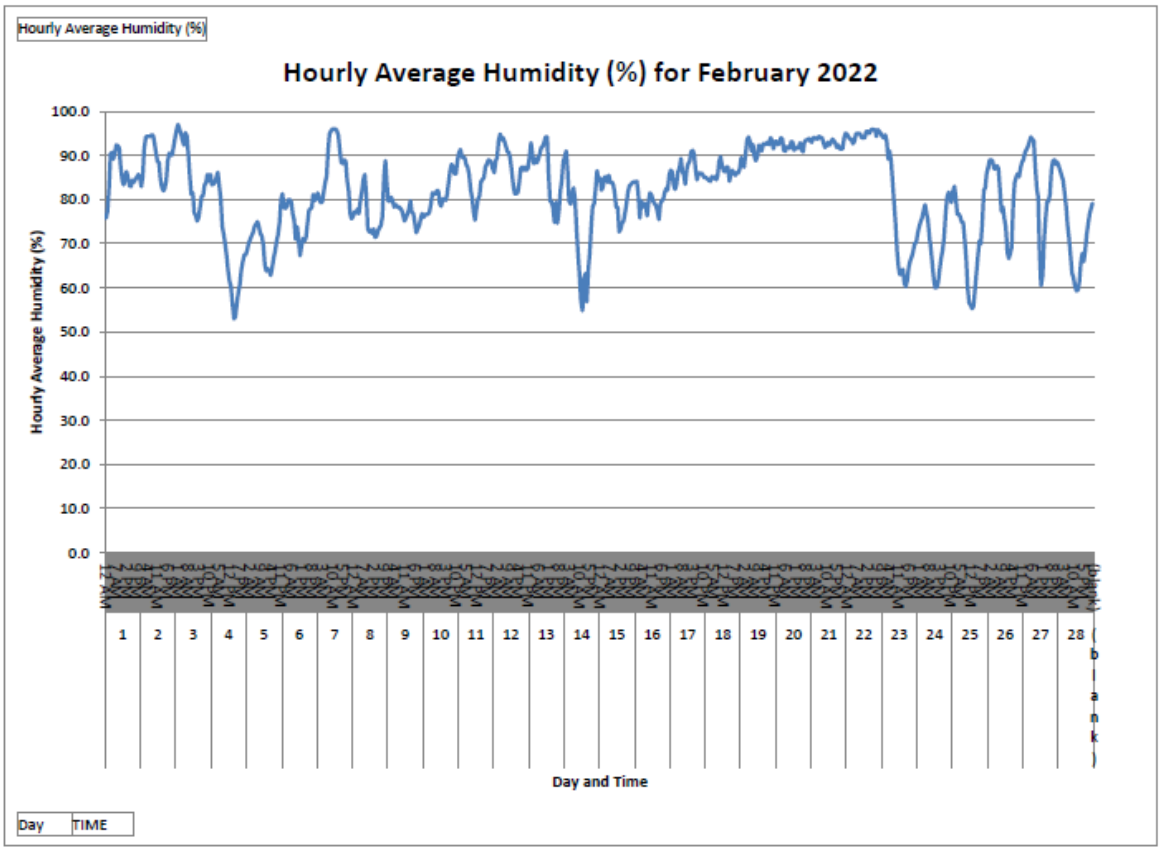

Hourly Average Wind Direction (degree)
Hourly Average Wind Direction (degree) for January 2022
Hourly Average Wind Direction (degree)
360
310
260
210
160
110
60
10
-40
Day and Time
Day
TIME

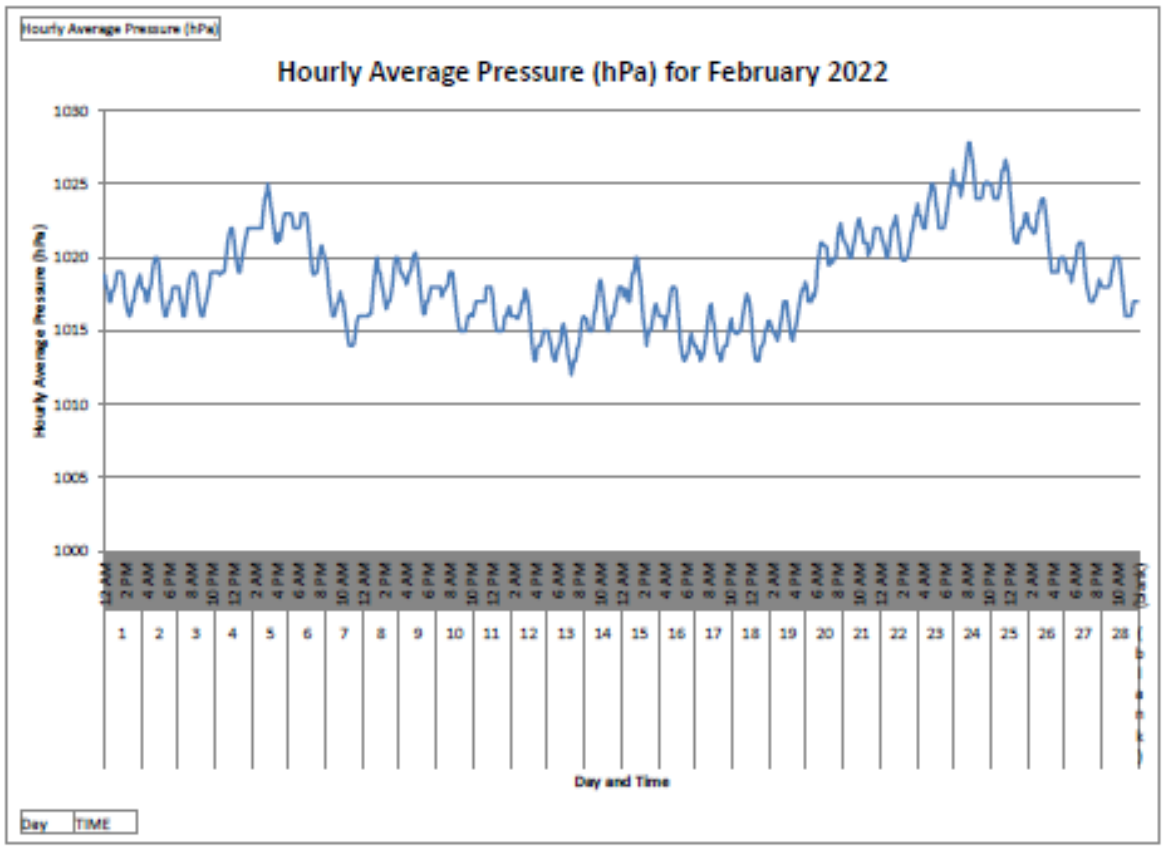

Wind Rose for January 2022
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
18.00%
16.00%
14.00%
12.00%
10.00%
8.00%
6.00%
4.00%
2.00%
0.00%
<1.0
<2.0
<3.0
<4.0
<5.0
All

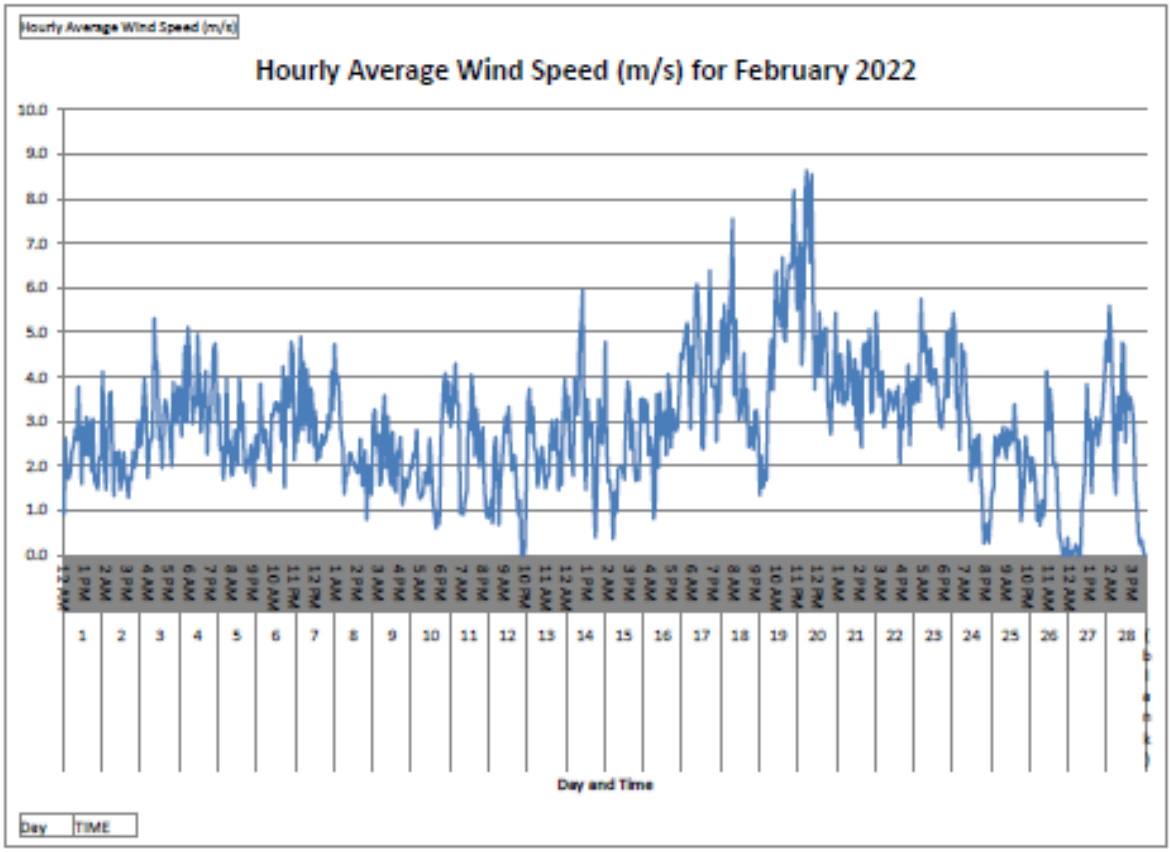

Daily and Cumulative Rainfall (mm) for January 2022
Rainfall (mm)
Day
Daily Rainfall (mm)
Cumulative Rainfall

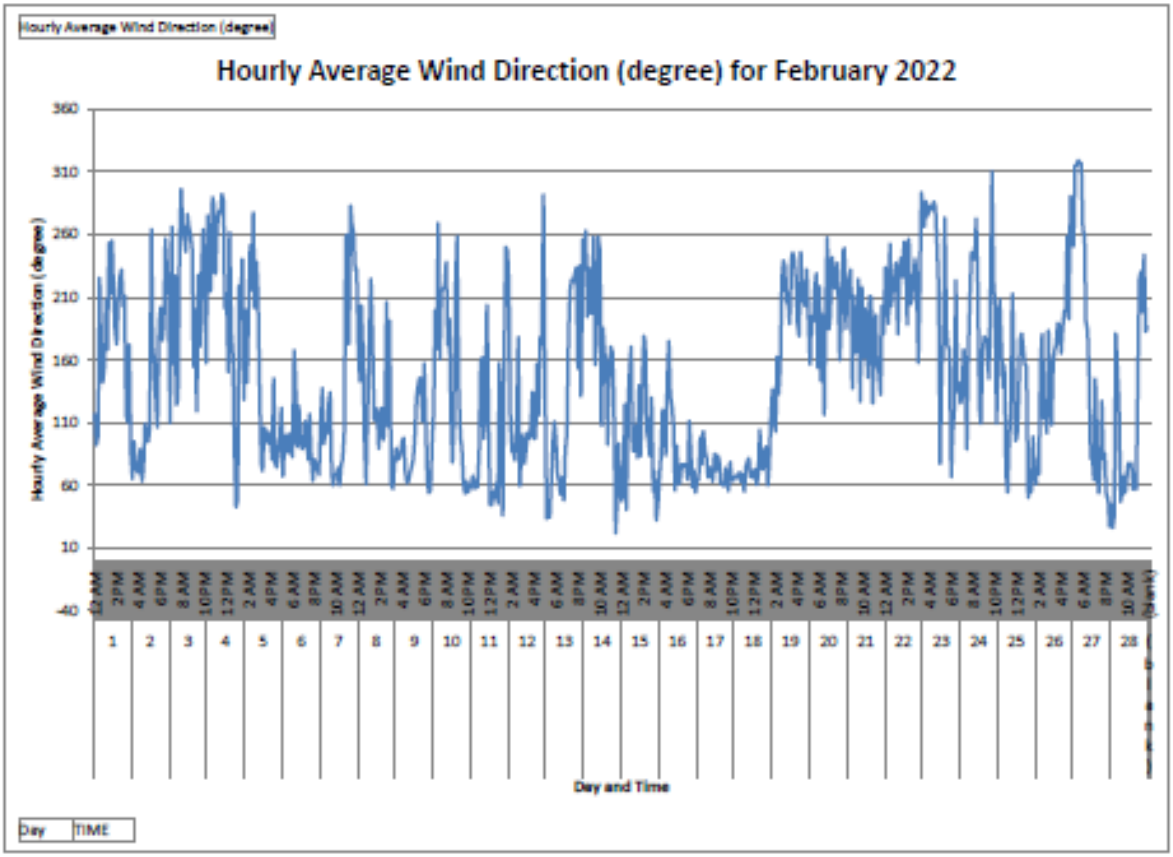
Feb 2022

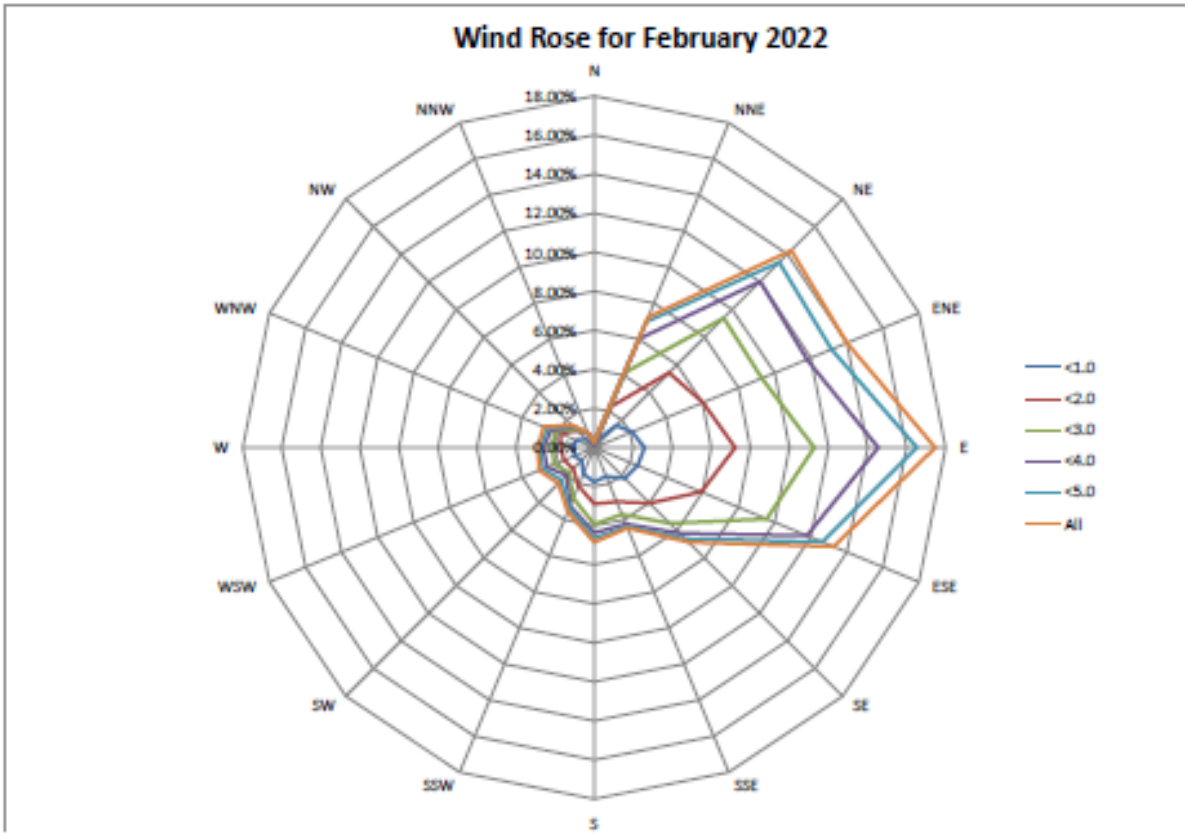

Hourly Average Temperature (°C)
Hourly Average Temperature (°C) for February 2022
Hourly Average Temperature (°C)
Day and Time
Day
TIME

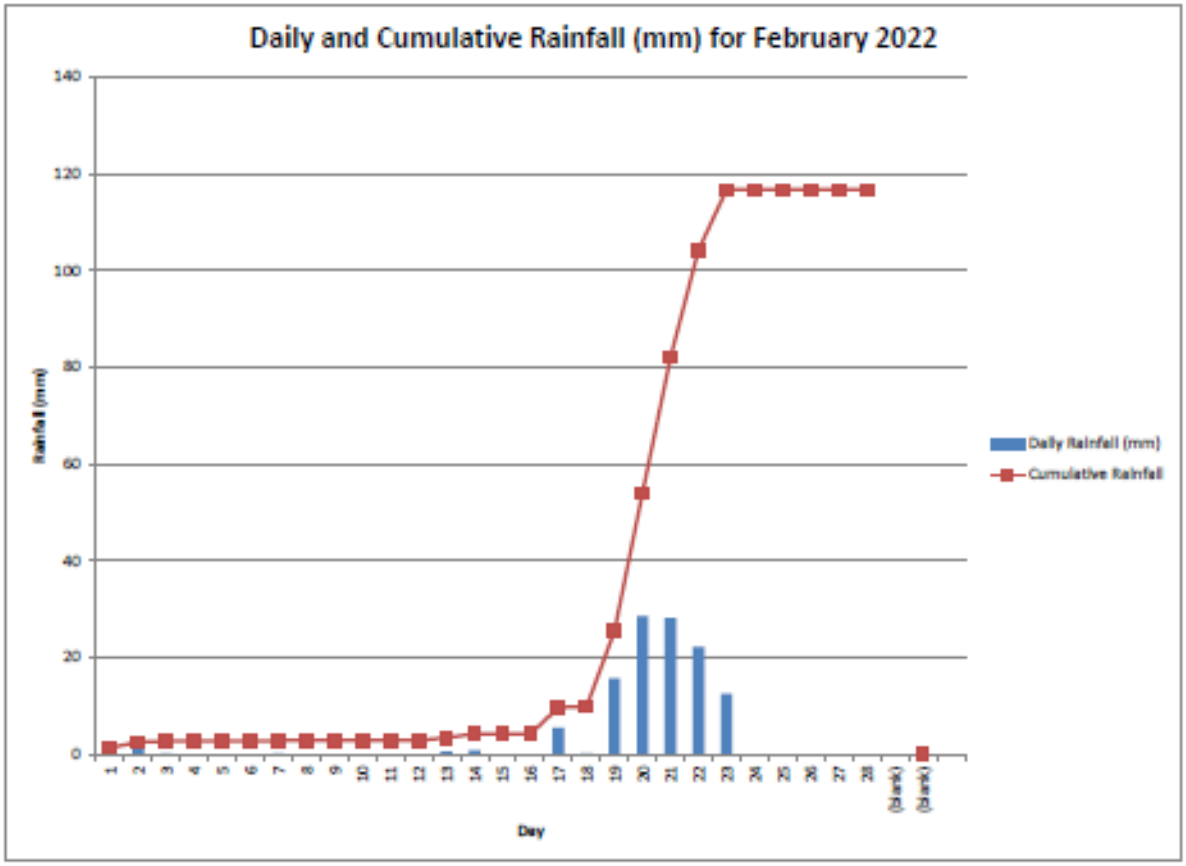

Hourly Average Humidity (%)
Hourly Average Humidity (%) for February 2022
Hourly Average Humidity (%)
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28
Day and Time
Day
TIME


Hourly Average Pressure (hPa)
Hourly Average Pressure (hPa) for February 2022
Hourly Average Pressure (hPa)
1030
1025
1020
1015
1010
1005
1000
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28
Day and Time
Day
TIME

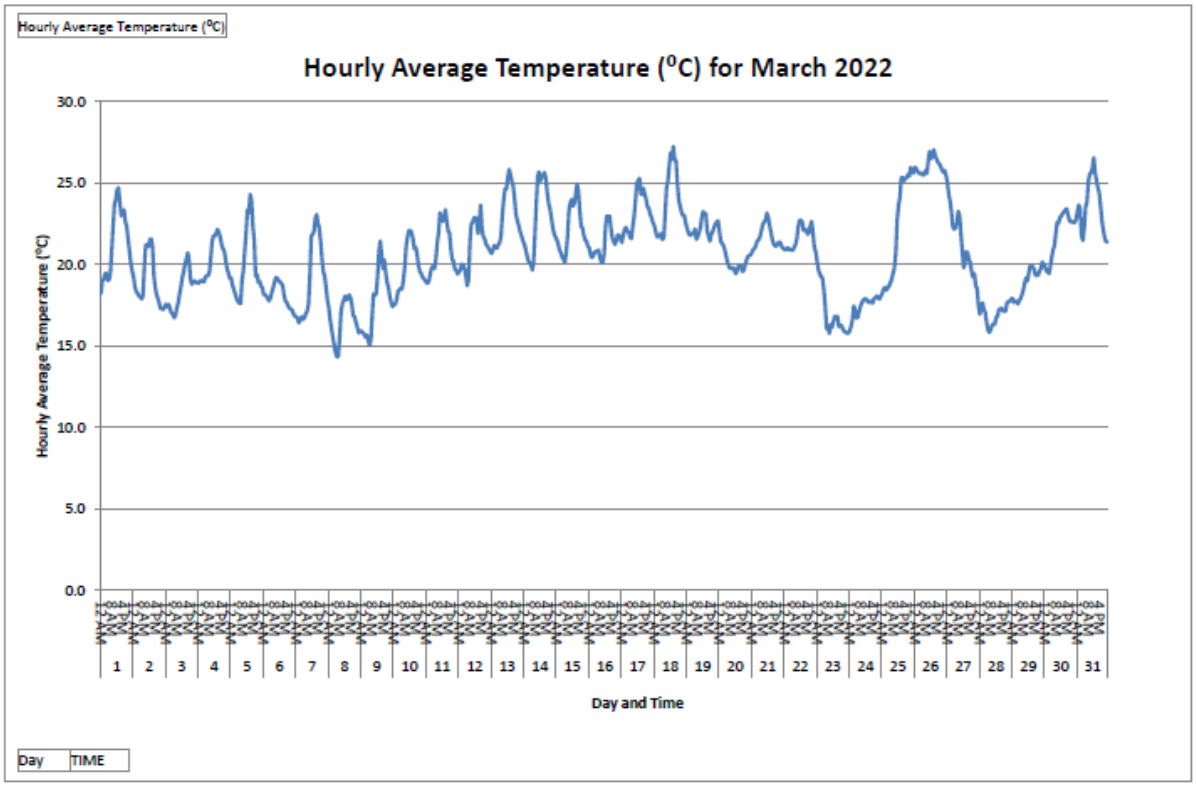

Hourly Average Wind Speed (m/s)
Hourly Average Wind Speed (m/s) for February 2022
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28
Day and Time
Day
TIME

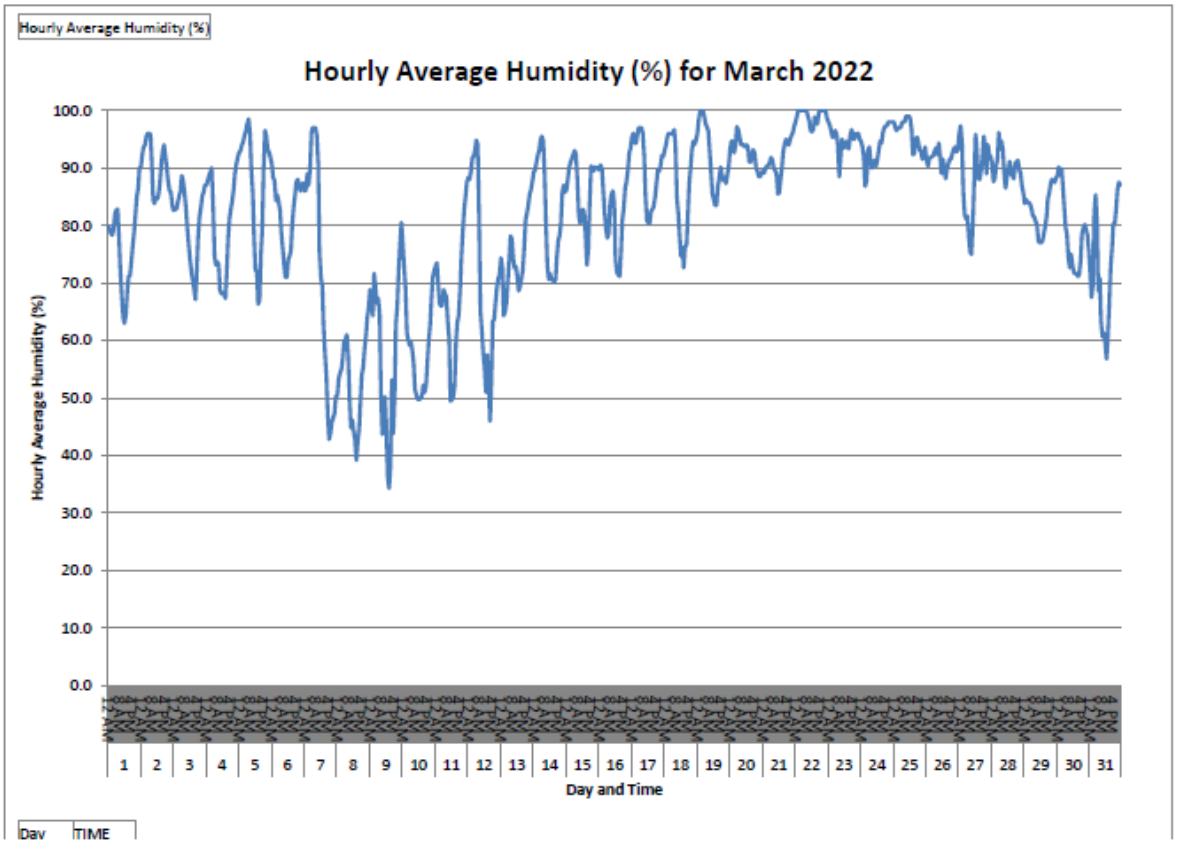

Hourly Average Wind Direction (degree)
Hourly Average Wind Direction (degree) for February 2022
Hourly Average Wind Direction (degree)
360
310
260
210
160
110
60
10
-40
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28
Day and Time
Day
TIME

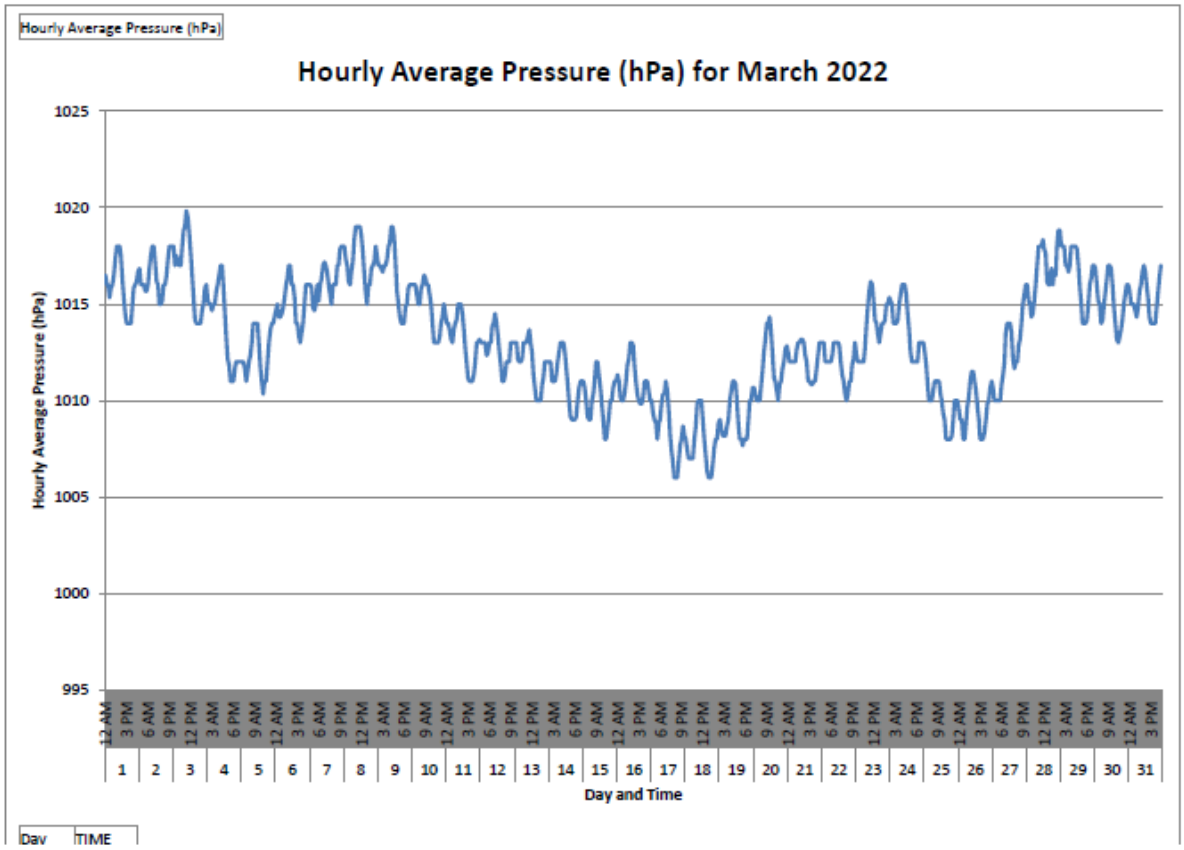

Wind Rose for February 2022
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
18.00%
16.00%
14.00%
12.00%
10.00%
8.00%
6.00%
4.00%
2.00%
<1.0
<2.0
<3.0
<4.0
<5.0
All

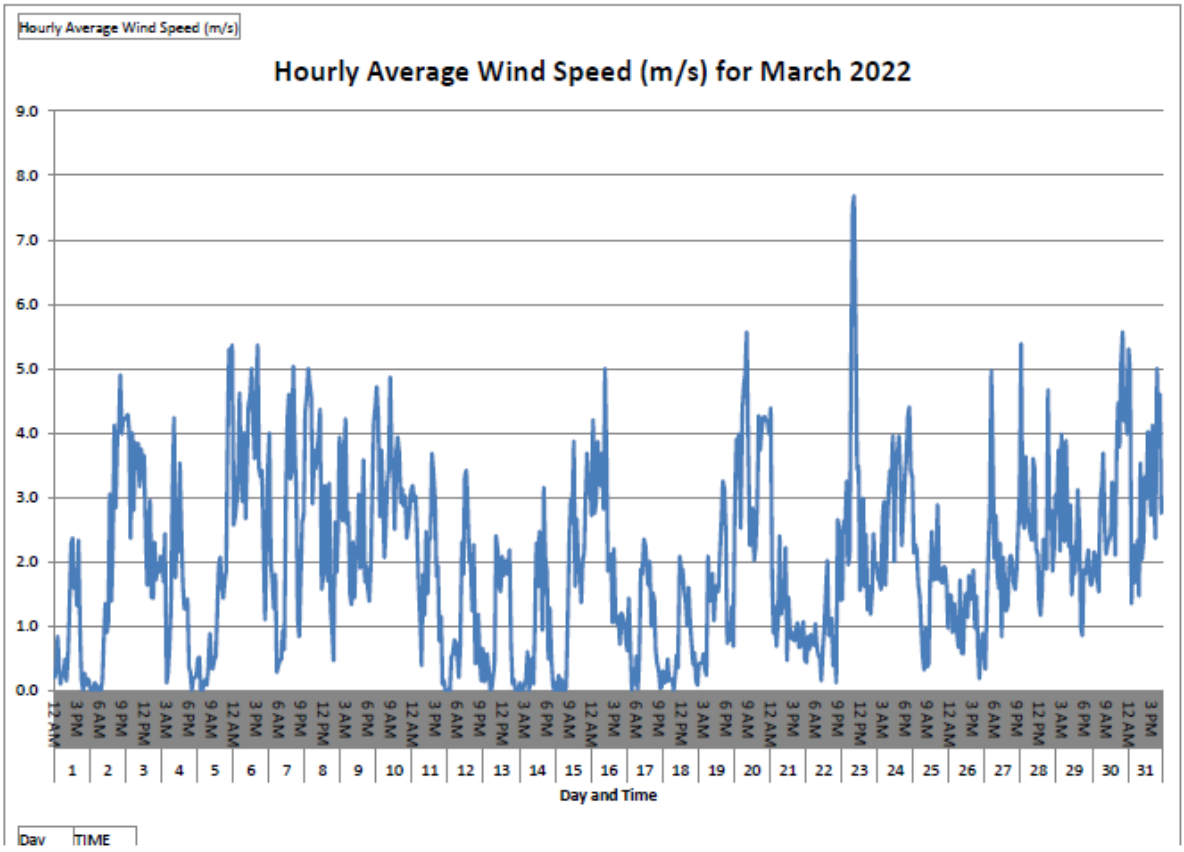

Daily and Cumulative Rainfall (mm) for February 2022
Rainfall (mm)
140
120
100
80
60
40
20
0
Day
Daily Rainfall (mm)
Cumulative Rainfall

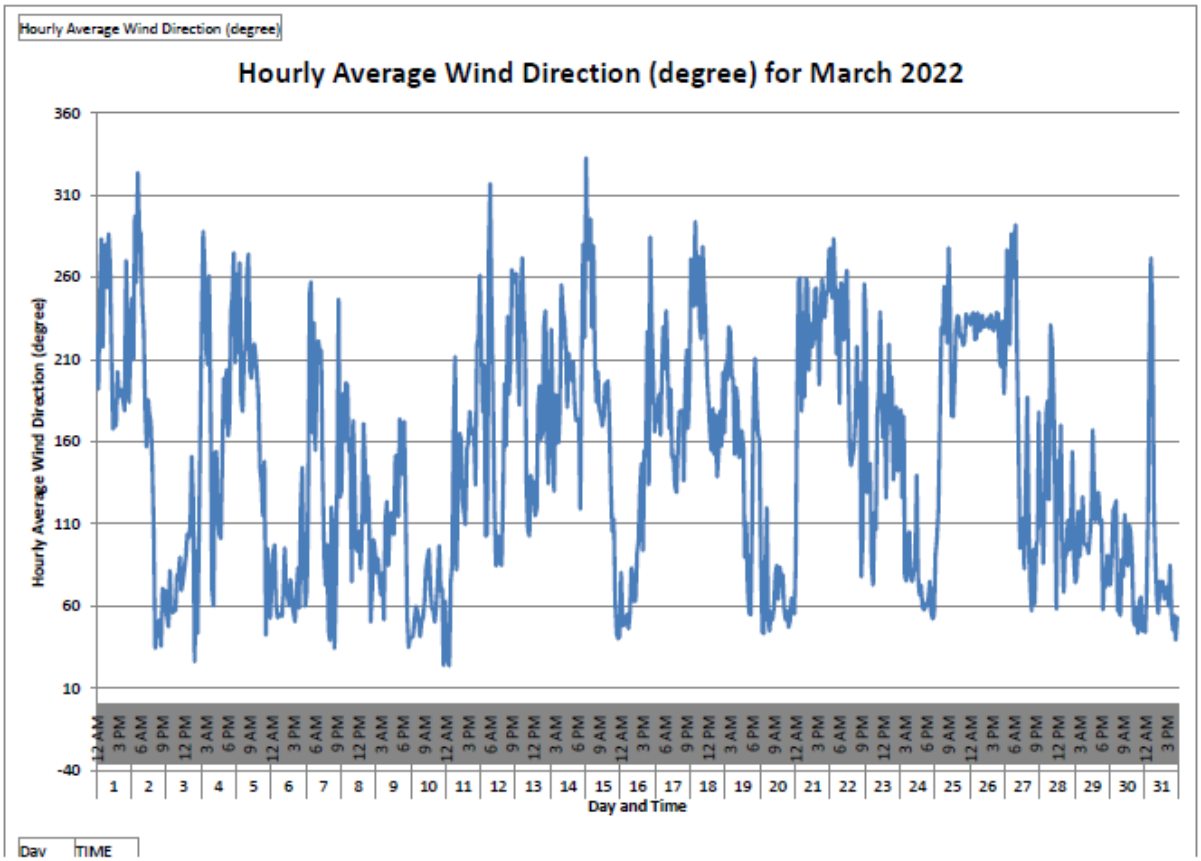
Mar 2022

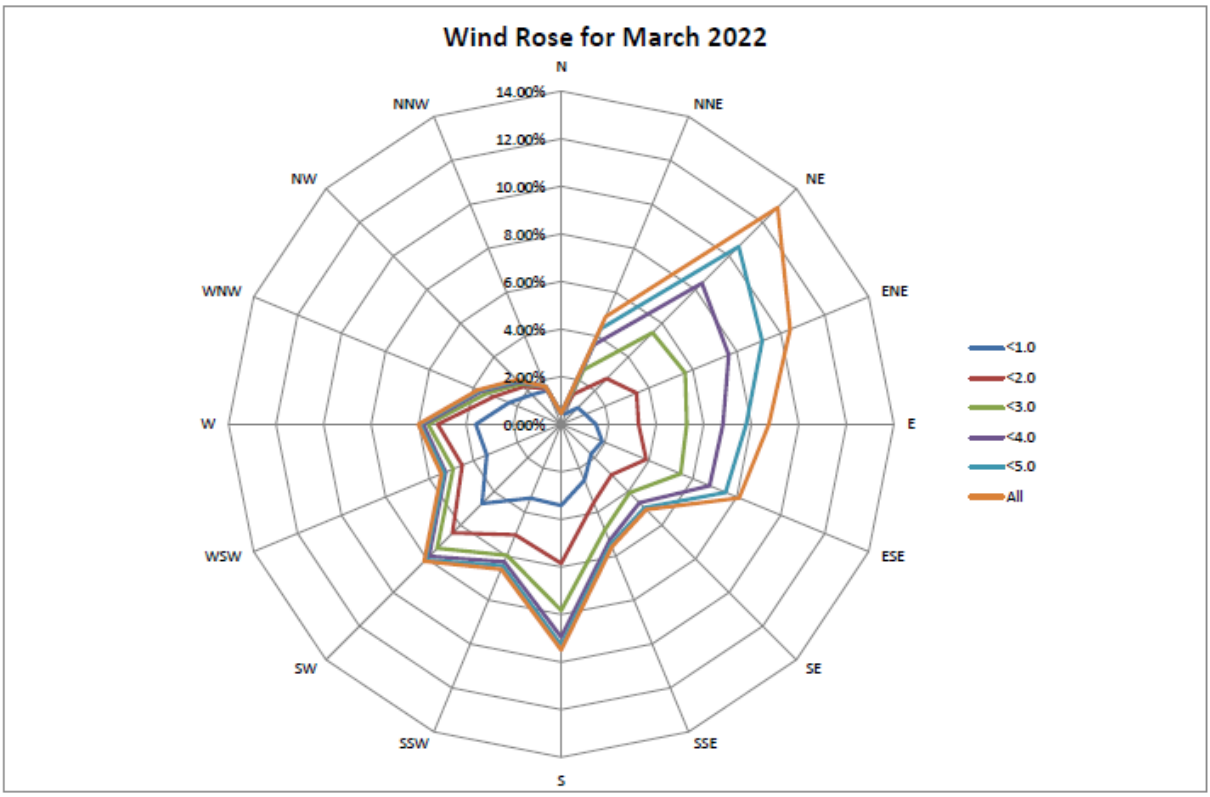

Hourly Average Temperature (°C)
Hourly Average Temperature (°C) for March 2022
30.0
25.0
20.0
15.0
10.0
5.0
0.0
Hourly Average Temperature (°C)
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Day and Time
Day
TIME

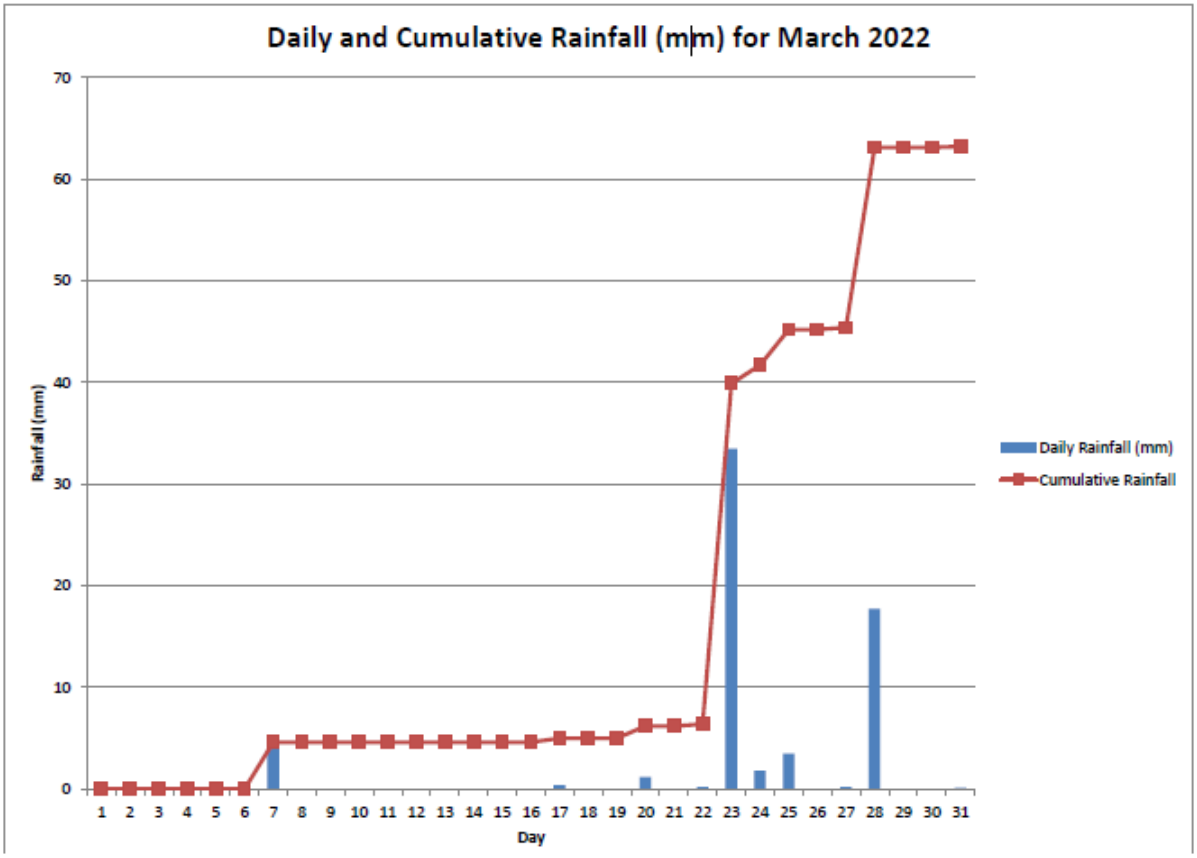

Hourly Average Humidity (%)
Hourly Average Humidity (%) for March 2022
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
Hourly Average Humidity (%)
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Day and Time
Day
TIME


Hourly Average Pressure (hPa)
Hourly Average Pressure (hPa) for March 2022
1025
1020
1015
1010
1005
1000
995
Hourly Average Pressure (hPa)
Day and Time
Dav
TIME


Hourly Average Wind Speed (m/s)
Hourly Average Wind Speed (m/s) for March 2022
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
Day and Time
Dav
TIME


Hourly Average Wind Direction (degree)
Hourly Average Wind Direction (degree) for March 2022
Hourly Average Wind Direction (degree)
Day and Time
Day
TIME


Wind Rose for March 2022
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
14.00%
12.00%
10.00%
8.00%
6.00%
4.00%
2.00%
0.00%
<1.0
<2.0
<3.0
<4.0
<5.0
All


Daily and Cumulative Rainfall (mm) for March 2022
Rainfall (mm)
70
60
50
40
30
20
10
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Day
Daily Rainfall (mm)
Cumulative Rainfall

Annex D4

Odour Monitoring Results

Table D4.1 Odour Monitoring Results

Date	Weather	Location	Time	Temperature (oC)	Wind Speed (m/s)	Wind Direction	From Project Site	Odour Intensity	Odour Characteristic	Possible Source	Remarks
1-Jan-22	Overcast	OP1	10:38	18.5	0.8	N	Yes	0	N/A	N/A	N/A
1-Jan-22	Overcast	OP2	10:41	18.6	1.8	S	No	0	N/A	N/A	N/A
1-Jan-22	Overcast	OP3	10:45	18.3	1.6	S	No	0	N/A	N/A	N/A
1-Jan-22	Overcast	OP4	10:48	18.1	2.4	E	No	1	Acidic	Leachate Treatment Plant	N/A
1-Jan-22	Overcast	OP5	10:52	18.1	2.5	E	No	0	N/A	N/A	N/A
1-Jan-22	Overcast	OP6	10:55	18.5	0.8	N	No	0	N/A	N/A	N/A
1-Jan-22	Overcast	OP7	10:58	18.7	0.7	N	Yes	0	N/A	N/A	N/A
1-Jan-22	Overcast	OP8	11:02	18.6	0.8	N	Yes	0	N/A	N/A	N/A
1-Jan-22	Overcast	OP9	11:06	18.8	1.2	N	No	0	N/A	N/A	N/A
1-Jan-22	Overcast	OP10	11:09	18.5	2.1	N	No	0	N/A	N/A	N/A
1-Jan-22	Overcast	OP11	11:20	18.8	0.4	E	No	0	N/A	N/A	N/A
1-Jan-22	Overcast	OP1	14:38	19.1	0.9	S	No	0	N/A	N/A	N/A
1-Jan-22	Overcast	OP2	14:41	19.7	0.4	S	No	0	N/A	N/A	N/A
1-Jan-22	Overcast	OP3	14:45	19.0	0.5	SW	No	0	N/A	N/A	N/A
1-Jan-22	Overcast	OP4	14:48	18.6	2.3	E	No	0	N/A	N/A	N/A
1-Jan-22	Overcast	OP5	14:52	18.4	2.5	E	No	0	N/A	N/A	N/A
1-Jan-22	Overcast	OP6	14:56	19.0	0.6	N	No	0	N/A	N/A	N/A
1-Jan-22	Overcast	OP7	14:59	18.7	1.5	N	Yes	0	N/A	N/A	N/A
1-Jan-22	Overcast	OP8	15:03	18.9	0.5	N	Yes	0	N/A	N/A	N/A
1-Jan-22	Overcast	OP9	15:07	19.4	0.6	N	No	0	N/A	N/A	N/A
1-Jan-22	Overcast	OP10	15:10	19.6	0.9	NE	Yes	0	N/A	N/A	N/A
1-Jan-22	Overcast	OP11	15:23	20.2	0.7	W	No	0	N/A	N/A	N/A
1-Jan-22	Fine	OP1	18:06	16.7	0.4	N	Yes	0	N/A	N/A	N/A
1-Jan-22	Fine	OP2	18:09	16.1	0.5	S	No	0	N/A	N/A	N/A
1-Jan-22	Fine	OP3	18:13	15.7	0.6	SE	No	0	N/A	N/A	N/A
1-Jan-22	Fine	OP4	18:17	15.5	0.8	E	No	0	N/A	N/A	N/A
1-Jan-22	Fine	OP5	18:20	15.6	1.4	E	No	0	N/A	N/A	N/A
1-Jan-22	Fine	OP6	18:23	15.5	1.4	E	Yes	0	N/A	N/A	N/A
1-Jan-22	Fine	OP7	18:27	15.7	0.7	SW	No	0	N/A	N/A	N/A
1-Jan-22	Fine	OP8	18:30	15.2	0.8	N	Yes	0	N/A	N/A	N/A
1-Jan-22	Fine	OP9	18:34	14.9	0.5	N	No	1	Acidic	Town Gas Plant	N/A
1-Jan-22	Fine	OP10	18:37	15.0	1.1	NE	Yes	0	N/A	N/A	N/A
1-Jan-22	Fine	OP11	18:48	14.8	0.6	E	No	0	N/A	N/A	N/A
2-Jan-22	Sunny	OP1	10:45	23.5	0.7	S	No	0	N/A	N/A	N/A
2-Jan-22	Sunny	OP2	10:49	24.2	0.9	S	No	0	N/A	N/A	N/A

Date	Weather	Location	Time	Temperature (oC)	Wind Speed (m/s)	Wind Direction	From Project Site	Odour Intensity	Odour Characteristic	Possible Source	Remarks
2-Jan-22	Sunny	OP3	10:53	24.8	2.7	SE	No	0	N/A	N/A	N/A
2-Jan-22	Sunny	OP4	10:57	25.0	1.2	E	No	0	N/A	N/A	N/A
2-Jan-22	Sunny	OP5	11:00	25.3	0.8	E	No	0	N/A	N/A	N/A
2-Jan-22	Sunny	OP6	11:04	24.9	1.6	N	No	0	N/A	N/A	N/A
2-Jan-22	Sunny	OP7	11:07	24.6	1.8	N	Yes	0	N/A	N/A	N/A
2-Jan-22	Sunny	OP8	11:11	24.7	1.2	S	No	0	N/A	N/A	N/A
2-Jan-22	Sunny	OP9	11:15	24.9	2.4	N	No	0	N/A	N/A	N/A
2-Jan-22	Sunny	OP10	11:18	24.4	1.4	N	No	0	N/A	N/A	N/A
2-Jan-22	Sunny	OP11	11:29	24.1	4.3	E	No	0	N/A	N/A	N/A
2-Jan-22	Sunny	OP1	15:05	21.7	2.6	S	No	0	N/A	N/A	N/A
2-Jan-22	Sunny	OP2	15:09	21.2	3.7	S	No	0	N/A	N/A	N/A
2-Jan-22	Sunny	OP3	15:13	21.6	1.4	N	Yes	0	N/A	N/A	N/A
2-Jan-22	Sunny	OP4	15:16	22.4	0.5	E	No	0	N/A	N/A	N/A
2-Jan-22	Sunny	OP5	15:20	22.5	1.1	S	No	0	N/A	N/A	N/A
2-Jan-22	Sunny	OP6	15:23	22.8	2.3	S	No	0	N/A	N/A	N/A
2-Jan-22	Sunny	OP7	15:27	21.7	2.6	S	No	0	N/A	N/A	N/A
2-Jan-22	Sunny	OP8	15:30	22.2	2.5	S	No	0	N/A	N/A	N/A
2-Jan-22	Sunny	OP9	15:34	22.9	1.3	E	Yes	0	N/A	N/A	N/A
2-Jan-22	Sunny	OP10	15:38	23.3	2.8	S	No	1	Acidic	Town Gas Plant	N/A
2-Jan-22	Sunny	OP11	15:49	22.9	1.2	E	No	0	N/A	N/A	N/A
2-Jan-22	Fine	OP1	18:00	18.8	1.2	N	Yes	0	N/A	N/A	N/A
2-Jan-22	Fine	OP2	18:03	18.6	0.5	N	Yes	0	N/A	N/A	N/A
2-Jan-22	Fine	OP3	18:07	17.9	0.8	E	No	0	N/A	N/A	N/A
2-Jan-22	Fine	OP4	18:10	18.0	1.5	W	No	0	N/A	N/A	N/A
2-Jan-22	Fine	OP5	18:13	18.2	0.7	S	No	0	N/A	N/A	N/A
2-Jan-22	Fine	OP6	18:17	18.4	1.2	N	No	0	N/A	N/A	N/A
2-Jan-22	Fine	OP7	18:21	18.3	0.8	N	Yes	0	N/A	N/A	N/A
2-Jan-22	Fine	OP8	18:25	17.9	1.0	N	Yes	1	Town Gas	Town Gas Plant	N/A
2-Jan-22	Fine	OP9	18:29	18.3	0.5	N	No	0	N/A	N/A	N/A
2-Jan-22	Fine	OP10	18:32	18.2	1.6	N	No	0	N/A	N/A	N/A
2-Jan-22	Fine	OP11	18:42	17.3	0.6	N	No	0	N/A	N/A	N/A
3-Jan-22	Sunny	OP1	10:40	23.0	0.7	S	No	0	N/A	N/A	N/A
3-Jan-22	Sunny	OP2	10:43	23.3	0.8	S	No	1	Exhaust Gas	Vehicle	N/A
3-Jan-22	Sunny	OP3	10:47	22.8	2.4	W	No	0	N/A	N/A	N/A
3-Jan-22	Sunny	OP4	10:50	23.4	1.3	S	No	0	N/A	N/A	N/A
3-Jan-22	Sunny	OP5	10:54	23.6	2.6	E	No	0	N/A	N/A	N/A
3-Jan-22	Sunny	OP6	10:57	23.2	3.4	E	Yes	0	N/A	N/A	N/A
3-Jan-22	Sunny	OP7	10:59	22.8	2.5	S	No	0	N/A	N/A	N/A

Date	Weather	Location	Time	Temperature (oC)	Wind Speed (m/s)	Wind Direction	From Project Site	Odour Intensity	Odour Characteristic	Possible Source	Remarks
3-Jan-22	Sunny	OP8	11:03	23.3	3.2	E	Yes	0	N/A	N/A	N/A
3-Jan-22	Sunny	OP9	11:07	23.7	2.2	N	No	0	N/A	N/A	N/A
3-Jan-22	Sunny	OP10	11:11	23.9	1.8	E	Yes	0	N/A	N/A	N/A
3-Jan-22	Sunny	OP11	11:21	23.7	2.9	E	No	0	N/A	N/A	N/A
3-Jan-22	Sunny	OP1	14:33	22.3	0.0	N/A	N/A	0	N/A	N/A	N/A
3-Jan-22	Sunny	OP2	14:36	21.5	0.5	S	No	0	N/A	N/A	N/A
3-Jan-22	Sunny	OP3	14:38	20.3	2.5	SW	No	0	N/A	N/A	N/A
3-Jan-22	Sunny	OP4	14:40	19.4	2.0	E	No	0	N/A	N/A	N/A
3-Jan-22	Sunny	OP5	14:42	19.4	2.2	E	No	0	N/A	N/A	N/A
3-Jan-22	Sunny	OP6	14:44	21.8	0.0	N/A	N/A	0	N/A	N/A	N/A
3-Jan-22	Sunny	OP7	14:46	19.8	1.3	N	Yes	0	N/A	N/A	N/A
3-Jan-22	Sunny	OP8	14:49	19.7	2.4	NE	Yes	0	N/A	N/A	N/A
3-Jan-22	Sunny	OP9	14:52	20.5	2.1	N	No	0	N/A	N/A	N/A
3-Jan-22	Sunny	OP10	14:53	22.0	0.7	N	No	0	N/A	N/A	N/A
3-Jan-22	Sunny	OP11	15:00	21.0	0.0	N/A	N/A	0	N/A	N/A	N/A
3-Jan-22	Fine	OP1	18:06	20.1	0.4	S	No	0	N/A	N/A	N/A
3-Jan-22	Fine	OP2	18:09	19.6	0.6	S	No	0	N/A	N/A	N/A
3-Jan-22	Fine	OP3	18:13	19.1	0.9	S	No	1	Oil	Electric Generator	N/A
3-Jan-22	Fine	OP4	18:16	18.6	1.5	S	No	0	N/A	N/A	N/A
3-Jan-22	Fine	OP5	18:20	18.9	1.3	E	No	0	N/A	N/A	N/A
3-Jan-22	Fine	OP6	18:23	18.6	1.7	E	Yes	0	N/A	N/A	N/A
3-Jan-22	Fine	OP7	18:27	18.4	1.1	N	Yes	0	N/A	N/A	N/A
3-Jan-22	Fine	OP8	18:31	18.3	0.5	N	Yes	0	N/A	N/A	N/A
3-Jan-22	Fine	OP9	18:35	18.1	0.6	N	No	1	Town Gas	Town Gas Plant	N/A
3-Jan-22	Fine	OP10	18:38	18.0	0.4	E	Yes	0	N/A	N/A	N/A
3-Jan-22	Fine	OP11	18:47	17.6	0.7	E	No	0	N/A	N/A	N/A
4-Jan-22	Sunny	OP1	10:52	22.0	0.8	N	Yes	0	N/A	N/A	N/A
4-Jan-22	Sunny	OP2	10:55	21.8	4.3	S	No	0	N/A	N/A	N/A
4-Jan-22	Sunny	OP3	10:59	21.6	3.4	S	No	0	N/A	N/A	N/A
4-Jan-22	Sunny	OP4	11:03	21.5	3.6	E	No	0	N/A	N/A	N/A
4-Jan-22	Sunny	OP5	11:07	21.6	2.5	E	No	0	N/A	N/A	N/A
4-Jan-22	Sunny	OP6	11:10	21.5	2.8	S	No	0	N/A	N/A	N/A
4-Jan-22	Sunny	OP7	11:14	21.9	0.9	S	No	0	N/A	N/A	N/A
4-Jan-22	Sunny	OP8	11:17	22.2	1.8	S	No	0	N/A	N/A	N/A
4-Jan-22	Sunny	OP9	11:20	22.1	3.6	N	No	0	N/A	N/A	N/A
4-Jan-22	Sunny	OP10	11:24	22.0	4.2	N	No	0	N/A	N/A	N/A
4-Jan-22	Sunny	OP11	11:34	23.4	0.7	E	No	0	N/A	N/A	N/A
4-Jan-22	Sunny	OP1	14:32	24.2	1.2	W	Yes	0	N/A	N/A	N/A

Date	Weather	Location	Time	Temperature (oC)	Wind Speed (m/s)	Wind Direction	From Project Site	Odour Intensity	Odour Characteristic	Possible Source	Remarks
4-Jan-22	Sunny	OP2	14:35	23.8	1.7	S	No	0	N/A	N/A	N/A
4-Jan-22	Sunny	OP3	14:38	24.1	1.3	SW	No	0	N/A	N/A	N/A
4-Jan-22	Sunny	OP4	14:41	24.2	1.7	E	No	0	N/A	N/A	N/A
4-Jan-22	Sunny	OP5	14:45	24.6	3.0	E	No	0	N/A	N/A	N/A
4-Jan-22	Sunny	OP6	14:49	25.1	0.7	N	No	0	N/A	N/A	N/A
4-Jan-22	Sunny	OP7	14:53	25.9	0.8	W	No	0	N/A	N/A	N/A
4-Jan-22	Sunny	OP8	14:56	26.1	1.5	E	Yes	0	N/A	N/A	N/A
4-Jan-22	Sunny	OP9	15:00	26.3	2.4	N	No	0	N/A	N/A	N/A
4-Jan-22	Sunny	OP10	15:03	26.5	0.8	N	No	0	N/A	N/A	N/A
4-Jan-22	Sunny	OP11	15:13	24.7	0.5	NE	No	0	N/A	N/A	N/A
4-Jan-22	Fine	OP1	18:07	22.3	0.5	S	No	0	N/A	N/A	N/A
4-Jan-22	Fine	OP2	18:10	20.9	0.0	N/A	N/A	0	N/A	N/A	N/A
4-Jan-22	Fine	OP3	18:14	20.3	0.0	N/A	N/A	0	N/A	N/A	N/A
4-Jan-22	Fine	OP4	18:18	20.1	1.1	E	No	0	N/A	N/A	N/A
4-Jan-22	Fine	OP5	18:21	20.3	0.6	NW	No	0	N/A	N/A	N/A
4-Jan-22	Fine	OP6	18:25	19.9	0.8	N	No	0	N/A	N/A	N/A
4-Jan-22	Fine	OP7	18:28	20.0	0.7	N	Yes	0	N/A	N/A	N/A
4-Jan-22	Fine	OP8	18:31	20.1	1.3	N	Yes	0	N/A	N/A	N/A
4-Jan-22	Fine	OP9	18:35	19.8	0.9	N	No	0	N/A	N/A	N/A
4-Jan-22	Fine	OP10	18:38	19.7	1.0	N	No	0	N/A	N/A	N/A
4-Jan-22	Fine	OP11	18:47	20.5	0.9	W	No	0	N/A	N/A	N/A
5-Jan-22	Sunny	OP1	10:55	25.5	1.7	N	Yes	1	Grassy	Nearby Vegetation	N/A
5-Jan-22	Sunny	OP2	10:58	23.1	1.3	SW	Yes	0	N/A	N/A	N/A
5-Jan-22	Sunny	OP3	11:01	22.8	0.6	W	No	1	Diesel	Generator	N/A
5-Jan-22	Sunny	OP4	11:05	23.9	0.4	W	No	0	N/A	N/A	N/A
5-Jan-22	Sunny	OP5	11:08	22.5	2.1	E	No	0	N/A	N/A	N/A
5-Jan-22	Sunny	OP6	11:11	24.2	1.2	N	No	0	N/A	N/A	N/A
5-Jan-22	Sunny	OP7	11:14	22.6	1.9	NE	Yes	0	N/A	N/A	N/A
5-Jan-22	Sunny	OP8	11:18	23.1	1.8	NE	Yes	0	N/A	N/A	N/A
5-Jan-22	Sunny	OP9	11:21	23.1	2.4	E	Yes	0	N/A	N/A	N/A
5-Jan-22	Sunny	OP10	11:24	24.4	2.8	NE	Yes	0	N/A	N/A	N/A
5-Jan-22	Sunny	OP11	11:32	22.7	2.8	SE	No	1	Earthy	From the ground	N/A
5-Jan-22	Sunny	OP1	14:35	25.9	3.0	S	No	0	N/A	N/A	N/A
5-Jan-22	Sunny	OP2	14:38	26.2	3.7	S	No	0	N/A	N/A	N/A
5-Jan-22	Sunny	OP3	14:41	25.4	2.4	SW	No	0	N/A	N/A	N/A
5-Jan-22	Sunny	OP4	14:45	25.1	3.0	S	No	0	N/A	N/A	N/A
5-Jan-22	Sunny	OP5	14:49	24.8	2.6	S	No	0	N/A	N/A	N/A
5-Jan-22	Sunny	OP6	14:52	25.7	2.5	S	No	0	N/A	N/A	N/A

Date	Weather	Location	Time	Temperature (oC)	Wind Speed (m/s)	Wind Direction	From Project Site	Odour Intensity	Odour Characteristic	Possible Source	Remarks
5-Jan-22	Sunny	OP7	14:55	25.3	3.4	S	No	0	N/A	N/A	N/A
5-Jan-22	Sunny	OP8	14:59	25.9	2.4	S	No	0	N/A	N/A	N/A
5-Jan-22	Sunny	OP9	15:02	26.0	2.2	S	No	0	N/A	N/A	N/A
5-Jan-22	Sunny	OP10	15:05	25.9	1.9	S	No	0	N/A	N/A	N/A
5-Jan-22	Sunny	OP11	15:15	26.3	0.9	W	Yes	0	N/A	N/A	N/A
5-Jan-22	Fine	OP1	18:00	22.1	0.0	N/A	N/A	0	N/A	N/A	N/A
5-Jan-22	Fine	OP2	18:03	21.7	0.4	E	No	0	N/A	N/A	N/A
5-Jan-22	Fine	OP3	18:06	20.5	0.4	SE	No	0	N/A	N/A	N/A
5-Jan-22	Fine	OP4	18:10	20.3	0.6	E	No	0	N/A	N/A	N/A
5-Jan-22	Fine	OP5	18:14	20.6	0.5	S	No	0	N/A	N/A	N/A
5-Jan-22	Fine	OP6	18:17	20.7	0.9	E	Yes	0	N/A	N/A	N/A
5-Jan-22	Fine	OP7	18:21	20.6	0.4	N	Yes	0	N/A	N/A	N/A
5-Jan-22	Fine	OP8	18:25	20.4	0.6	N	Yes	0	N/A	N/A	N/A
5-Jan-22	Fine	OP9	18:27	20.2	0.5	S	No	0	N/A	N/A	N/A
5-Jan-22	Fine	OP10	18:30	19.8	1.2	NE	Yes	0	N/A	N/A	N/A
5-Jan-22	Fine	OP11	18:40	19.4	0.6	NE	No	0	N/A	N/A	N/A
6-Jan-22	Sunny	OP1	10:35	24.7	1.4	N	Yes	0	N/A	N/A	N/A
6-Jan-22	Sunny	OP2	10:39	25.1	3.2	N	Yes	0	N/A	N/A	N/A
6-Jan-22	Sunny	OP3	10:42	24.9	1.8	W	No	0	N/A	N/A	N/A
6-Jan-22	Sunny	OP4	10:45	24.7	0.8	W	No	0	N/A	N/A	N/A
6-Jan-22	Sunny	OP5	10:48	24.9	1.0	NE	Yes	0	N/A	N/A	N/A
6-Jan-22	Sunny	OP6	10:50	25.2	1.2	N	No	0	N/A	N/A	N/A
6-Jan-22	Sunny	OP7	10:53	25.3	1.5	N	Yes	0	N/A	N/A	N/A
6-Jan-22	Sunny	OP8	10:57	25.1	0.9	NE	Yes	0	N/A	N/A	N/A
6-Jan-22	Sunny	OP9	11:00	25.2	1.8	NE	Yes	0	N/A	N/A	N/A
6-Jan-22	Sunny	OP10	11:02	25.3	0.4	S	No	0	N/A	N/A	N/A
6-Jan-22	Sunny	OP11	11:15	25.2	2.1	E	No	0	N/A	N/A	N/A
6-Jan-22	Sunny	OP1	14:49	25.5	2.3	S	No	0	N/A	N/A	N/A
6-Jan-22	Sunny	OP2	14:52	24.8	2.7	S	No	0	N/A	N/A	N/A
6-Jan-22	Sunny	OP3	14:55	24.2	2.3	S	No	0	N/A	N/A	N/A
6-Jan-22	Sunny	OP4	14:59	24.1	2.2	E	No	0	N/A	N/A	N/A
6-Jan-22	Sunny	OP5	15:03	24.6	3.0	S	No	0	N/A	N/A	N/A
6-Jan-22	Sunny	OP6	15:07	25.3	1.8	S	No	0	N/A	N/A	N/A
6-Jan-22	Sunny	OP7	15:10	26.0	2.4	S	No	0	N/A	N/A	N/A
6-Jan-22	Sunny	OP8	15:14	25.8	4.1	S	No	0	N/A	N/A	N/A
6-Jan-22	Sunny	OP9	15:18	26.3	1.4	S	No	0	N/A	N/A	N/A
6-Jan-22	Sunny	OP10	15:20	26.6	1.6	S	No	0	N/A	N/A	N/A
6-Jan-22	Sunny	OP11	15:30	25.1	0.6	N	No	0	N/A	N/A	N/A

Date	Weather	Location	Time	Temperature (oC)	Wind Speed (m/s)	Wind Direction	From Project Site	Odour Intensity	Odour Characteristic	Possible Source	Remarks
6-Jan-22	Fine	OP1	18:09	20.6	1.2	W	Yes	0	N/A	N/A	N/A
6-Jan-22	Fine	OP2	18:13	20.2	1.7	W	Yes	0	N/A	N/A	N/A
6-Jan-22	Fine	OP3	18:17	20.3	0.6	SW	No	0	N/A	N/A	N/A
6-Jan-22	Fine	OP4	18:20	20.5	2.5	E	No	0	N/A	N/A	N/A
6-Jan-22	Fine	OP5	18:24	20.4	3.2	E	No	0	N/A	N/A	N/A
6-Jan-22	Fine	OP6	18:27	20.3	1.5	E	Yes	0	N/A	N/A	N/A
6-Jan-22	Fine	OP7	18:30	20.2	0.8	S	No	0	N/A	N/A	N/A
6-Jan-22	Fine	OP8	18:34	20.2	0.5	S	No	0	N/A	N/A	N/A
6-Jan-22	Fine	OP9	18:37	20.2	0.5	W	No	0	N/A	N/A	N/A
6-Jan-22	Fine	OP10	18:40	20.0	0.4	N	No	0	N/A	N/A	N/A
6-Jan-22	Fine	OP11	18:51	19.5	0.6	E	No	0	N/A	N/A	N/A
7-Jan-22	Sunny	OP1	10:50	24.5	3.1	S	No	0	N/A	N/A	N/A
7-Jan-22	Sunny	OP2	10:53	25.6	0.8	N	Yes	0	N/A	N/A	N/A
7-Jan-22	Sunny	OP3	10:56	24.6	1.5	N	Yes	1	Oil	Electric Generator	N/A
7-Jan-22	Sunny	OP4	11:00	24.0	1.3	E	No	0	N/A	N/A	N/A
7-Jan-22	Sunny	OP5	11:04	23.9	2.0	E	No	0	N/A	N/A	N/A
7-Jan-22	Sunny	OP6	11:07	23.1	2.4	E	Yes	0	N/A	N/A	N/A
7-Jan-22	Sunny	OP7	11:10	24.3	2.9	S	No	0	N/A	N/A	N/A
7-Jan-22	Sunny	OP8	11:13	25.0	1.4	E	Yes	0	N/A	N/A	N/A
7-Jan-22	Sunny	OP9	11:17	25.5	0.8	S	No	0	N/A	N/A	N/A
7-Jan-22	Sunny	OP10	11:21	24.8	3.3	E	Yes	0	N/A	N/A	N/A
7-Jan-22	Sunny	OP11	11:32	25.6	1.5	E	No	0	N/A	N/A	N/A
7-Jan-22	Sunny	OP1	14:34	22.7	0.0	N/A	N/A	0	N/A	N/A	N/A
7-Jan-22	Sunny	OP2	14:37	21.7	0.9	SE	No	0	N/A	N/A	N/A
7-Jan-22	Sunny	OP3	14:40	20.9	1.1	SW	No	0	N/A	N/A	N/A
7-Jan-22	Sunny	OP4	14:43	21.5	0.8	NW	Yes	0	N/A	N/A	N/A
7-Jan-22	Sunny	OP5	14:46	20.8	0.4	NE	Yes	0	N/A	N/A	N/A
7-Jan-22	Sunny	OP6	14:48	21.0	0.7	SE	Yes	0	N/A	N/A	N/A
7-Jan-22	Sunny	OP7	14:50	20.9	1.9	S	No	0	N/A	N/A	N/A
7-Jan-22	Sunny	OP8	14:54	21.7	0.6	S	No	0	N/A	N/A	N/A
7-Jan-22	Sunny	OP9	14:56	21.8	2.1	N	No	0	N/A	N/A	N/A
7-Jan-22	Sunny	OP10	14:59	20.0	2.2	NE	Yes	0	N/A	N/A	N/A
7-Jan-22	Sunny	OP11	15:08	23.2	0.0	N/A	N/A	0	N/A	N/A	N/A
7-Jan-22	Fine	OP1	18:16	19.0	0.4	S	No	0	N/A	N/A	N/A
7-Jan-22	Fine	OP2	18:19	18.2	0.7	E	No	0	N/A	N/A	N/A
7-Jan-22	Fine	OP3	18:22	17.9	0.9	NE	No	0	N/A	N/A	N/A
7-Jan-22	Fine	OP4	18:26	18.0	1.5	E	No	0	N/A	N/A	N/A
7-Jan-22	Fine	OP5	18:30	18.4	1.1	N	Yes	0	N/A	N/A	N/A

Date	Weather	Location	Time	Temperature (oC)	Wind Speed (m/s)	Wind Direction	From Project Site	Odour Intensity	Odour Characteristic	Possible Source	Remarks
7-Jan-22	Fine	OP6	18:33	18.2	0.9	E	Yes	0	N/A	N/A	N/A
7-Jan-22	Fine	OP7	18:37	18.0	0.6	N	Yes	0	N/A	N/A	N/A
7-Jan-22	Fine	OP8	18:40	17.9	0.5	N	Yes	0	N/A	N/A	N/A
7-Jan-22	Fine	OP9	18:44	17.7	0.7	N	No	0	N/A	N/A	N/A
7-Jan-22	Fine	OP10	18:47	17.6	0.4	E	Yes	0	N/A	N/A	N/A
7-Jan-22	Fine	OP11	18:57	18.0	0.6	E	No	0	N/A	N/A	N/A
8-Jan-22	Sunny	OP1	10:38	22.4	1.4	S	No	0	N/A	N/A	N/A
8-Jan-22	Sunny	OP2	10:41	22.1	2.4	S	No	0	N/A	N/A	N/A
8-Jan-22	Sunny	OP3	10:45	22.5	0.6	SW	No	0	N/A	N/A	N/A
8-Jan-22	Sunny	OP4	10:48	22.6	1.8	E	No	0	N/A	N/A	N/A
8-Jan-22	Sunny	OP5	10:52	22.8	2.9	E	No	0	N/A	N/A	N/A
8-Jan-22	Sunny	OP6	10:55	22.7	1.0	S	No	0	N/A	N/A	N/A
8-Jan-22	Sunny	OP7	10:59	22.9	1.1	S	No	0	N/A	N/A	N/A
8-Jan-22	Sunny	OP8	11:03	22.8	2.6	N	Yes	0	N/A	N/A	N/A
8-Jan-22	Sunny	OP9	11:07	22.7	2.6	N	No	0	N/A	N/A	N/A
8-Jan-22	Sunny	OP10	11:10	22.9	1.3	N	No	0	N/A	N/A	N/A
8-Jan-22	Sunny	OP11	11:22	23.2	2.1	S	No	0	N/A	N/A	N/A
8-Jan-22	Sunny	OP1	14:37	23.2	0.4	S	No	0	N/A	N/A	N/A
8-Jan-22	Sunny	OP2	14:40	22.9	1.4	S	No	0	N/A	N/A	N/A
8-Jan-22	Sunny	OP3	14:44	23.0	0.7	SE	No	0	N/A	N/A	N/A
8-Jan-22	Sunny	OP4	14:47	22.7	3.0	E	No	0	N/A	N/A	N/A
8-Jan-22	Sunny	OP5	14:51	23.3	1.3	E	No	0	N/A	N/A	N/A
8-Jan-22	Sunny	OP6	14:55	23.8	1.4	E	Yes	0	N/A	N/A	N/A
8-Jan-22	Sunny	OP7	14:58	24.0	1.1	E	Yes	0	N/A	N/A	N/A
8-Jan-22	Sunny	OP8	15:01	24.1	1.3	SE	Yes	0	N/A	N/A	N/A
8-Jan-22	Sunny	OP9	15:05	23.6	1.9	W	No	0	N/A	N/A	N/A
8-Jan-22	Sunny	OP10	15:08	23.3	2.0	E	Yes	0	N/A	N/A	N/A
8-Jan-22	Sunny	OP11	15:20	23.0	1.2	E	No	0	N/A	N/A	N/A
8-Jan-22	Fine	OP1	18:07	20.7	0.5	N	Yes	0	N/A	N/A	N/A
8-Jan-22	Fine	OP2	18:10	20.0	0.7	E	No	0	N/A	N/A	N/A
8-Jan-22	Fine	OP3	18:14	19.8	0.5	SE	No	0	N/A	N/A	N/A
8-Jan-22	Fine	OP4	18:17	19.3	1.3	E	No	0	N/A	N/A	N/A
8-Jan-22	Fine	OP5	18:20	20.4	0.7	E	No	0	N/A	N/A	N/A
8-Jan-22	Fine	OP6	18:24	20.2	1.1	N	No	0	N/A	N/A	N/A
8-Jan-22	Fine	OP7	18:27	19.5	1.2	N	Yes	0	N/A	N/A	N/A
8-Jan-22	Fine	OP8	18:30	19.0	1.1	E	Yes	0	N/A	N/A	N/A
8-Jan-22	Fine	OP9	18:34	19.1	1.5	S	No	0	N/A	N/A	N/A
8-Jan-22	Fine	OP10	18:37	18.9	2.1	E	Yes	0	N/A	N/A	N/A

Date	Weather	Location	Time	Temperature (oC)	Wind Speed (m/s)	Wind Direction	From Project Site	Odour Intensity	Odour Characteristic	Possible Source	Remarks
8-Jan-22	Fine	OP11	18:50	19.6	0.4	N	No	0	N/A	N/A	N/A
9-Jan-22	Fine	OP1	10:45	20.9	0.6	N	Yes	0	N/A	N/A	N/A
9-Jan-22	Fine	OP2	10:49	19.9	3.3	SE	No	0	N/A	N/A	N/A
9-Jan-22	Fine	OP3	10:52	20.0	2.8	W	No	0	N/A	N/A	N/A
9-Jan-22	Fine	OP4	10:56	20.2	2.3	E	No	0	N/A	N/A	N/A
9-Jan-22	Fine	OP5	11:00	19.9	3.1	E	No	0	N/A	N/A	N/A
9-Jan-22	Fine	OP6	11:04	20.2	2.5	NE	Yes	0	N/A	N/A	N/A
9-Jan-22	Fine	OP7	11:08	20.8	1.7	SW	No	0	N/A	N/A	N/A
9-Jan-22	Fine	OP8	11:11	20.3	2.3	SW	No	0	N/A	N/A	N/A
9-Jan-22	Fine	OP9	11:15	21.0	0.6	N	No	0	N/A	N/A	N/A
9-Jan-22	Fine	OP10	11:18	20.9	0.5	NW	No	0	N/A	N/A	N/A
9-Jan-22	Fine	OP11	11:28	20.7	0.8	E	No	0	N/A	N/A	N/A
9-Jan-22	Fine	OP1	15:11	20.8	1.7	SE	No	0	N/A	N/A	N/A
9-Jan-22	Fine	OP2	15:07	21.0	0.7	SE	No	0	N/A	N/A	N/A
9-Jan-22	Fine	OP3	15:04	22.3	0.8	N	Yes	0	N/A	N/A	N/A
9-Jan-22	Fine	OP4	15:01	22.3	0.9	S	No	0	N/A	N/A	N/A
9-Jan-22	Fine	OP5	14:57	21.5	1.0	SE	Yes	0	N/A	N/A	N/A
9-Jan-22	Fine	OP6	14:54	21.7	1.1	SE	Yes	0	N/A	N/A	N/A
9-Jan-22	Fine	OP7	14:50	21.5	2.0	S	Yes	0	N/A	N/A	N/A
9-Jan-22	Fine	OP8	14:46	22.3	0.7	S	Yes	0	N/A	N/A	N/A
9-Jan-22	Fine	OP9	14:42	22.0	1.4	S	Yes	0	N/A	N/A	N/A
9-Jan-22	Fine	OP10	14:39	21.7	1.1	N	No	0	N/A	N/A	N/A
9-Jan-22	Fine	OP11	14:30	23.1	0.8	E	No	0	N/A	N/A	N/A
9-Jan-22	Fine	OP1	18:00	20.3	0.4	SE	No	0	N/A	N/A	N/A
9-Jan-22	Fine	OP2	18:04	20.1	0.4	SE	No	0	N/A	N/A	N/A
9-Jan-22	Fine	OP3	18:07	18.2	0.5	W	No	0	N/A	N/A	N/A
9-Jan-22	Fine	OP4	18:11	18.2	4.0	W	No	0	N/A	N/A	N/A
9-Jan-22	Fine	OP5	18:15	18.1	0.5	NW	No	0	N/A	N/A	N/A
9-Jan-22	Fine	OP6	18:18	18.1	0.7	SE	No	0	N/A	N/A	N/A
9-Jan-22	Fine	OP7	18:22	17.9	0.5	SW	No	0	N/A	N/A	N/A
9-Jan-22	Fine	OP8	18:26	17.9	0.7	SW	No	0	N/A	N/A	N/A
9-Jan-22	Fine	OP9	18:30	18.0	0.4	S	No	0	N/A	N/A	N/A
9-Jan-22	Fine	OP10	18:33	17.7	0.5	NE	No	0	N/A	N/A	N/A
9-Jan-22	Fine	OP11	18:42	19.1	0.5	NE	No	0	N/A	N/A	N/A
10-Jan-22	Fine	OP1	10:40	20.4	2.0	N	Yes	0	N/A	N/A	N/A
10-Jan-22	Fine	OP2	10:43	21.0	1.3	S	No	0	N/A	N/A	N/A
10-Jan-22	Fine	OP3	10:47	20.7	0.8	S	No	0	N/A	N/A	N/A
10-Jan-22	Fine	OP4	10:50	20.2	1.7	E	No	0	N/A	N/A	N/A

Date	Weather	Location	Time	Temperature (oC)	Wind Speed (m/s)	Wind Direction	From Project Site	Odour Intensity	Odour Characteristic	Possible Source	Remarks
10-Jan-22	Fine	OP5	10:54	21.4	1.6	E	No	0	N/A	N/A	N/A
10-Jan-22	Fine	OP6	10:57	21.2	2.4	E	Yes	0	N/A	N/A	N/A
10-Jan-22	Fine	OP7	11:01	20.9	2.6	N	Yes	0	N/A	N/A	N/A
10-Jan-22	Fine	OP8	11:04	21.1	1.5	N	Yes	0	N/A	N/A	N/A
10-Jan-22	Fine	OP9	11:07	22.3	0.7	E	Yes	0	N/A	N/A	N/A
10-Jan-22	Fine	OP10	11:10	21.6	2.1	E	Yes	0	N/A	N/A	N/A
10-Jan-22	Fine	OP11	11:19	21.9	1.0	N	No	0	N/A	N/A	N/A
10-Jan-22	Fine	OP1	14:30	19.8	0.5	NW	Yes	0	N/A	N/A	N/A
10-Jan-22	Fine	OP2	14:33	21.4	0.6	S	No	0	N/A	N/A	N/A
10-Jan-22	Fine	OP3	14:36	22.3	0.5	SW	No	0	N/A	N/A	N/A
10-Jan-22	Fine	OP4	14:38	21.6	0.0	N/A	N/A	0	N/A	N/A	N/A
10-Jan-22	Fine	OP5	14:41	20.8	2.2	E	No	0	N/A	N/A	N/A
10-Jan-22	Fine	OP6	14:44	20.4	1.1	NW	No	0	N/A	N/A	N/A
10-Jan-22	Fine	OP7	14:47	20.0	2.4	N	Yes	0	N/A	N/A	N/A
10-Jan-22	Fine	OP8	14:50	20.2	1.7	N	Yes	0	N/A	N/A	N/A
10-Jan-22	Fine	OP9	14:52	21.8	0.9	N	No	0	N/A	N/A	N/A
10-Jan-22	Fine	OP10	14:55	20.4	2.3	NE	Yes	0	N/A	N/A	N/A
10-Jan-22	Fine	OP11	15:03	19.3	1.5	SE	No	0	N/A	N/A	N/A
10-Jan-22	Fine	OP1	18:06	20.4	0.5	W	Yes	0	N/A	N/A	N/A
10-Jan-22	Fine	OP2	18:09	20.3	0.7	W	Yes	0	N/A	N/A	N/A
10-Jan-22	Fine	OP3	18:13	19.6	1.1	SW	No	0	N/A	N/A	N/A
10-Jan-22	Fine	OP4	18:16	19.1	1.4	S	No	0	N/A	N/A	N/A
10-Jan-22	Fine	OP5	18:20	19.3	0.7	E	No	0	N/A	N/A	N/A
10-Jan-22	Fine	OP6	18:23	19.5	1.0	N	Yes	0	N/A	N/A	N/A
10-Jan-22	Fine	OP7	18:27	19.4	0.6	N	Yes	0	N/A	N/A	N/A
10-Jan-22	Fine	OP8	18:30	19.2	0.7	N	Yes	0	N/A	N/A	N/A
10-Jan-22	Fine	OP9	18:34	19.3	0.9	E	Yes	0	N/A	N/A	N/A
10-Jan-22	Fine	OP10	18:37	19.2	0.7	E	Yes	0	N/A	N/A	N/A
10-Jan-22	Fine	OP11	18:47	19.1	0.6	S	Yes	0	N/A	N/A	N/A
11-Jan-22	Sunny	OP1	10:55	18.4	3.3	N	Yes	0	N/A	N/A	N/A
11-Jan-22	Sunny	OP2	10:58	18.3	3.9	N	Yes	0	N/A	N/A	N/A
11-Jan-22	Sunny	OP3	11:02	19.5	1.3	N	Yes	0	N/A	N/A	N/A
11-Jan-22	Sunny	OP4	11:05	20.3	1.8	N	Yes	0	N/A	N/A	N/A
11-Jan-22	Sunny	OP5	11:08	19.6	2.1	E	No	0	N/A	N/A	N/A
11-Jan-22	Sunny	OP6	11:12	19.1	3.3	N	No	0	N/A	N/A	N/A
11-Jan-22	Sunny	OP7	11:15	19.4	3.1	N	Yes	0	N/A	N/A	N/A
11-Jan-22	Sunny	OP8	11:19	19.0	4.4	N	Yes	0	N/A	N/A	N/A
11-Jan-22	Sunny	OP9	11:22	18.8	2.1	N	No	0	N/A	N/A	N/A

Date	Weather	Location	Time	Temperature (oC)	Wind Speed (m/s)	Wind Direction	From Project Site	Odour Intensity	Odour Characteristic	Possible Source	Remarks
11-Jan-22	Sunny	OP10	11:25	18.2	2.4	N	No	0	N/A	N/A	N/A
11-Jan-22	Sunny	OP11	11:34	20.1	1.3	E	No	0	N/A	N/A	N/A
11-Jan-22	Sunny	OP1	14:30	20.0	2.7	NW	Yes	0	N/A	N/A	N/A
11-Jan-22	Sunny	OP2	14:32	19.3	3.3	NW	Yes	0	N/A	N/A	N/A
11-Jan-22	Sunny	OP3	14:35	20.9	0.0	N/A	N/A	0	N/A	N/A	N/A
11-Jan-22	Sunny	OP4	14:37	20.9	0.0	N/A	N/A	0	N/A	N/A	N/A
11-Jan-22	Sunny	OP5	14:43	20.1	2.2	E	No	0	N/A	N/A	N/A
11-Jan-22	Sunny	OP6	14:45	19.4	1.7	NW	No	0	N/A	N/A	N/A
11-Jan-22	Sunny	OP7	14:48	18.6	4.2	N	Yes	0	N/A	N/A	N/A
11-Jan-22	Sunny	OP8	14:51	19.0	2.0	N	Yes	0	N/A	N/A	N/A
11-Jan-22	Sunny	OP9	14:53	18.3	4.2	N	No	0	N/A	N/A	N/A
11-Jan-22	Sunny	OP10	14:55	19.5	2.4	N	No	0	N/A	N/A	N/A
11-Jan-22	Sunny	OP11	15:03	20.1	2.1	SW	Yes	1	Earthy	Ground	N/A
11-Jan-22	Fine	OP1	18:03	17.7	3.6	NW	Yes	0	N/A	N/A	N/A
11-Jan-22	Fine	OP2	18:06	17.5	3.5	NW	Yes	0	N/A	N/A	N/A
11-Jan-22	Fine	OP3	18:10	17.6	1.5	NW	Yes	0	N/A	N/A	N/A
11-Jan-22	Fine	OP4	18:13	17.4	1.8	N	Yes	0	N/A	N/A	N/A
11-Jan-22	Fine	OP5	18:17	17.5	1.2	NW	Yes	0	N/A	N/A	N/A
11-Jan-22	Fine	OP6	18:20	17.4	1.5	N	Yes	0	N/A	N/A	N/A
11-Jan-22	Fine	OP7	18:23	17.3	3.1	N	Yes	0	N/A	N/A	N/A
11-Jan-22	Fine	OP8	18:27	17.4	3.4	N	Yes	0	N/A	N/A	N/A
11-Jan-22	Fine	OP9	18:31	17.5	2.2	N	No	0	N/A	N/A	N/A
11-Jan-22	Fine	OP10	18:33	17.6	0.8	N	No	0	N/A	N/A	N/A
11-Jan-22	Fine	OP11	18:42	17.5	0.6	E	No	0	N/A	N/A	N/A
12-Jan-22	Sunny	OP1	10:50	20.1	2.3	N	Yes	0	N/A	N/A	N/A
12-Jan-22	Sunny	OP2	10:53	21.0	1.9	S	No	0	N/A	N/A	N/A
12-Jan-22	Sunny	OP3	10:57	20.3	2.1	SW	No	0	N/A	N/A	N/A
12-Jan-22	Sunny	OP4	11:00	21.2	2.2	E	No	0	N/A	N/A	N/A
12-Jan-22	Sunny	OP5	11:04	21.0	3.9	E	No	0	N/A	N/A	N/A
12-Jan-22	Sunny	OP6	11:07	20.9	1.4	N	No	0	N/A	N/A	N/A
12-Jan-22	Sunny	OP7	11:10	21.3	1.1	N	Yes	0	N/A	N/A	N/A
12-Jan-22	Sunny	OP8	11:14	20.2	1.1	E	Yes	0	N/A	N/A	N/A
12-Jan-22	Sunny	OP9	11:18	19.4	1.8	N	No	0	N/A	N/A	N/A
12-Jan-22	Sunny	OP10	11:21	19.6	1.7	E	Yes	0	N/A	N/A	N/A
12-Jan-22	Sunny	OP11	11:30	21.0	0.8	E	No	0	N/A	N/A	N/A
12-Jan-22	Overcast	OP1	14:41	20.0	0.8	S	No	0	N/A	N/A	N/A
12-Jan-22	Overcast	OP2	14:45	19.3	1.2	N	Yes	0	N/A	N/A	N/A
12-Jan-22	Overcast	OP3	14:48	19.2	1.8	S	No	0	N/A	N/A	N/A

Date	Weather	Location	Time	Temperature (oC)	Wind Speed (m/s)	Wind Direction	From Project Site	Odour Intensity	Odour Characteristic	Possible Source	Remarks
12-Jan-22	Overcast	OP4	14:51	19.1	0.8	W	No	0	N/A	N/A	N/A
12-Jan-22	Overcast	OP5	14:55	18.4	2.4	E	No	0	N/A	N/A	N/A
12-Jan-22	Overcast	OP6	14:57	18.8	2.6	S	No	0	N/A	N/A	N/A
12-Jan-22	Overcast	OP7	15:00	19.2	0.8	S	No	0	N/A	N/A	N/A
12-Jan-22	Overcast	OP8	15:03	20.0	1.0	S	No	0	N/A	N/A	N/A
12-Jan-22	Overcast	OP9	15:06	19.8	1.5	N	No	0	N/A	N/A	N/A
12-Jan-22	Overcast	OP10	15:09	20.2	1.3	N	No	0	N/A	N/A	N/A
12-Jan-22	Overcast	OP11	15:17	20.1	1.4	E	No	0	N/A	N/A	N/A
12-Jan-22	Overcast	OP1	18:01	17.3	0.5	NW	Yes	0	N/A	N/A	N/A
12-Jan-22	Overcast	OP2	18:04	16.8	1.7	NW	Yes	0	N/A	N/A	N/A
12-Jan-22	Overcast	OP3	18:07	17.0	0.8	SE	No	0	N/A	N/A	N/A
12-Jan-22	Overcast	OP4	18:11	16.8	2.1	E	No	0	N/A	N/A	N/A
12-Jan-22	Overcast	OP5	18:15	16.6	2.5	E	No	0	N/A	N/A	N/A
12-Jan-22	Overcast	OP6	18:17	16.8	1.8	SE	Yes	0	N/A	N/A	N/A
12-Jan-22	Overcast	OP7	18:20	16.9	1.3	N	Yes	0	N/A	N/A	N/A
12-Jan-22	Overcast	OP8	18:24	16.8	1.5	E	Yes	0	N/A	N/A	N/A
12-Jan-22	Overcast	OP9	18:27	17.0	1.2	E	Yes	0	N/A	N/A	N/A
12-Jan-22	Overcast	OP10	18:30	16.9	1.0	N	No	0	N/A	N/A	N/A
12-Jan-22	Overcast	OP11	18:40	16.8	1.4	E	No	0	N/A	N/A	N/A
13-Jan-22	Overcast	OP1	10:30	19.1	3.7	NW	Yes	0	N/A	N/A	N/A
13-Jan-22	Overcast	OP2	10:32	18.2	1.9	N	Yes	0	N/A	N/A	N/A
13-Jan-22	Overcast	OP3	10:34	18.2	2.0	NE	Yes	1	Diesel	Generator	N/A
13-Jan-22	Overcast	OP4	10:38	18.8	0.9	NE	Yes	0	N/A	N/A	N/A
13-Jan-22	Overcast	OP5	10:41	17.1	3.0	N	No	0	N/A	N/A	N/A
13-Jan-22	Overcast	OP6	10:43	17.9	1.2	N	Yes	0	N/A	N/A	N/A
13-Jan-22	Overcast	OP7	10:47	17.2	3.9	N	Yes	0	N/A	N/A	N/A
13-Jan-22	Overcast	OP8	10:50	17.5	2.0	NE	Yes	0	N/A	N/A	N/A
13-Jan-22	Overcast	OP9	10:52	17.7	2.7	N	No	0	N/A	N/A	N/A
13-Jan-22	Overcast	OP10	10:55	17.8	0.6	N	No	0	N/A	N/A	N/A
13-Jan-22	Overcast	OP11	11:03	17.8	0.0	N/A	N/A	0	N/A	N/A	N/A
13-Jan-22	Overcast	OP1	14:45	20.7	1.0	N	Yes	0	N/A	N/A	N/A
13-Jan-22	Overcast	OP2	14:48	20.3	3.0	NW	Yes	0	N/A	N/A	N/A
13-Jan-22	Overcast	OP3	14:51	20.6	1.3	NE	Yes	0	N/A	N/A	N/A
13-Jan-22	Overcast	OP4	14:55	20.3	0.7	NE	Yes	0	N/A	N/A	N/A
13-Jan-22	Overcast	OP5	14:59	19.8	1.1	NE	Yes	0	N/A	N/A	N/A
13-Jan-22	Overcast	OP6	15:03	19.5	2.7	N	Yes	0	N/A	N/A	N/A
13-Jan-22	Overcast	OP7	15:07	19.6	2.5	NE	Yes	0	N/A	N/A	N/A
13-Jan-22	Overcast	OP8	15:11	19.5	1.6	NW	No	0	N/A	N/A	N/A

Date	Weather	Location	Time	Temperature (oC)	Wind Speed (m/s)	Wind Direction	From Project Site	Odour Intensity	Odour Characteristic	Possible Source	Remarks
13-Jan-22	Overcast	OP9	15:15	18.9	2.9	NW	No	0	N/A	N/A	N/A
13-Jan-22	Overcast	OP10	15:19	20.1	0.5	NE	Yes	0	N/A	N/A	N/A
13-Jan-22	Overcast	OP11	15:29	19.8	1.3	NE	No	0	N/A	N/A	N/A
13-Jan-22	Overcast	OP1	18:10	17.1	1.3	N	Yes	0	N/A	N/A	N/A
13-Jan-22	Overcast	OP2	18:13	16.9	1.7	N	Yes	0	N/A	N/A	N/A
13-Jan-22	Overcast	OP3	18:17	17.8	1.1	NE	Yes	0	N/A	N/A	N/A
13-Jan-22	Overcast	OP4	18:20	17.8	2.4	N	Yes	0	N/A	N/A	N/A
13-Jan-22	Overcast	OP5	18:23	17.9	1.2	NE	Yes	0	N/A	N/A	N/A
13-Jan-22	Overcast	OP6	18:26	17.5	1.5	NE	Yes	0	N/A	N/A	N/A
13-Jan-22	Overcast	OP7	18:30	16.8	2.2	N	Yes	0	N/A	N/A	N/A
13-Jan-22	Overcast	OP8	18:33	16.9	1.1	N	Yes	0	N/A	N/A	N/A
13-Jan-22	Overcast	OP9	18:37	16.8	1.0	NW	No	0	N/A	N/A	N/A
13-Jan-22	Overcast	OP10	18:40	17.3	0.5	N	No	0	N/A	N/A	N/A
13-Jan-22	Overcast	OP11	18:49	17.1	1.1	NE	No	0	N/A	N/A	N/A
14-Jan-22	Overcast	OP1	10:40	16.2	3.2	W	Yes	0	N/A	N/A	N/A
14-Jan-22	Overcast	OP2	10:43	15.8	1.1	S	No	0	N/A	N/A	N/A
14-Jan-22	Overcast	OP3	10:47	16.0	1.9	W	No	0	N/A	N/A	N/A
14-Jan-22	Overcast	OP4	10:50	15.8	1.0	E	No	0	N/A	N/A	N/A
14-Jan-22	Overcast	OP5	10:53	15.7	2.6	E	No	0	N/A	N/A	N/A
14-Jan-22	Overcast	OP6	10:57	15.4	2.5	E	Yes	0	N/A	N/A	N/A
14-Jan-22	Overcast	OP7	11:00	15.5	2.9	N	Yes	0	N/A	N/A	N/A
14-Jan-22	Overcast	OP8	11:03	15.3	2.4	E	Yes	0	N/A	N/A	N/A
14-Jan-22	Overcast	OP9	11:07	14.9	3.6	N	No	0	N/A	N/A	N/A
14-Jan-22	Overcast	OP10	11:10	15.3	0.0	N/A	N/A	0	N/A	N/A	N/A
14-Jan-22	Overcast	OP11	11:20	15.1	1.2	E	No	0	N/A	N/A	N/A
14-Jan-22	Overcast	OP1	14:40	16.7	1.3	W	Yes	0	N/A	N/A	N/A
14-Jan-22	Overcast	OP2	14:43	16.6	1.4	N	Yes	0	N/A	N/A	N/A
14-Jan-22	Overcast	OP3	14:47	17.4	1.2	SW	No	1	Oil	Electric Generator	N/A
14-Jan-22	Overcast	OP4	14:50	16.6	3.3	E	No	0	N/A	N/A	N/A
14-Jan-22	Overcast	OP5	14:54	16.0	3.6	N	No	0	N/A	N/A	N/A
14-Jan-22	Overcast	OP6	14:57	15.9	2.5	N	No	0	N/A	N/A	N/A
14-Jan-22	Overcast	OP7	15:01	16.8	1.4	N	Yes	0	N/A	N/A	N/A
14-Jan-22	Overcast	OP8	15:04	16.3	2.1	S	No	0	N/A	N/A	N/A
14-Jan-22	Overcast	OP9	15:07	16.6	2.5	S	No	0	N/A	N/A	N/A
14-Jan-22	Overcast	OP10	15:10	16.2	2.3	E	Yes	0	N/A	N/A	N/A
14-Jan-22	Overcast	OP11	15:20	15.8	1.8	N	No	0	N/A	N/A	N/A
14-Jan-22	Overcast	OP1	18:04	16.4	0.6	N	Yes	0	N/A	N/A	N/A
14-Jan-22	Overcast	OP2	18:07	15.7	0.9	S	No	0	N/A	N/A	N/A

Date	Weather	Location	Time	Temperature (oC)	Wind Speed (m/s)	Wind Direction	From Project Site	Odour Intensity	Odour Characteristic	Possible Source	Remarks
14-Jan-22	Overcast	OP3	18:10	15.6	1.3	N	Yes	0	N/A	N/A	N/A
14-Jan-22	Overcast	OP4	18:13	15.3	2.5	E	No	0	N/A	N/A	N/A
14-Jan-22	Overcast	OP5	18:17	15.4	1.7	E	No	0	N/A	N/A	N/A
14-Jan-22	Overcast	OP6	18:20	15.1	1.3	E	Yes	0	N/A	N/A	N/A
14-Jan-22	Overcast	OP7	18:24	15.1	1.4	N	Yes	0	N/A	N/A	N/A
14-Jan-22	Overcast	OP8	18:27	15.2	0.8	N	Yes	0	N/A	N/A	N/A
14-Jan-22	Overcast	OP9	18:31	14.9	3.3	N	No	0	N/A	N/A	N/A
14-Jan-22	Overcast	OP10	18:34	15.0	1.0	E	Yes	0	N/A	N/A	N/A
14-Jan-22	Overcast	OP11	18:44	15.4	0.7	N	No	0	N/A	N/A	N/A
15-Jan-22	Fine	OP1	10:38	17.8	0.6	N	Yes	0	N/A	N/A	N/A
15-Jan-22	Fine	OP2	10:41	17.6	1.8	N	Yes	0	N/A	N/A	N/A
15-Jan-22	Fine	OP3	10:45	17.7	2.8	SW	No	0	N/A	N/A	N/A
15-Jan-22	Fine	OP4	10:48	17.6	0.9	W	No	0	N/A	N/A	N/A
15-Jan-22	Fine	OP5	10:52	17.8	1.5	E	No	0	N/A	N/A	N/A
15-Jan-22	Fine	OP6	10:55	17.4	2.3	E	Yes	0	N/A	N/A	N/A
15-Jan-22	Fine	OP7	10:59	17.5	2.2	SW	No	0	N/A	N/A	N/A
15-Jan-22	Fine	OP8	11:04	17.6	2.5	N	Yes	0	N/A	N/A	N/A
15-Jan-22	Fine	OP9	11:07	17.9	2.3	N	No	0	N/A	N/A	N/A
15-Jan-22	Fine	OP10	11:10	17.8	2.7	N	No	0	N/A	N/A	N/A
15-Jan-22	Fine	OP11	11:20	18.3	2.6	E	No	0	N/A	N/A	N/A
15-Jan-22	Fine	OP1	14:40	19.2	0.8	N	Yes	0	N/A	N/A	N/A
15-Jan-22	Fine	OP2	14:43	20.0	0.7	S	No	0	N/A	N/A	N/A
15-Jan-22	Fine	OP3	14:47	19.8	0.9	SW	No	0	N/A	N/A	N/A
15-Jan-22	Fine	OP4	14:50	18.8	2.1	E	No	0	N/A	N/A	N/A
15-Jan-22	Fine	OP5	14:53	19.2	3.0	E	No	0	N/A	N/A	N/A
15-Jan-22	Fine	OP6	14:57	19.6	1.6	E	Yes	0	N/A	N/A	N/A
15-Jan-22	Fine	OP7	14:59	20.1	1.3	N	Yes	0	N/A	N/A	N/A
15-Jan-22	Fine	OP8	15:03	20.3	1.0	SE	Yes	0	N/A	N/A	N/A
15-Jan-22	Fine	OP9	15:07	20.8	0.9	E	Yes	0	N/A	N/A	N/A
15-Jan-22	Fine	OP10	15:10	20.3	0.7	W	No	0	N/A	N/A	N/A
15-Jan-22	Fine	OP11	15:20	19.7	2.2	E	No	0	N/A	N/A	N/A
15-Jan-22	Fine	OP1	18:05	17.3	0.6	N	Yes	0	N/A	N/A	N/A
15-Jan-22	Fine	OP2	18:08	17.5	0.5	S	No	0	N/A	N/A	N/A
15-Jan-22	Fine	OP3	18:12	17.4	1.1	SE	No	0	N/A	N/A	N/A
15-Jan-22	Fine	OP4	18:15	17.6	1.0	N	Yes	0	N/A	N/A	N/A
15-Jan-22	Fine	OP5	18:19	17.0	2.9	E	No	0	N/A	N/A	N/A
15-Jan-22	Fine	OP6	18:22	17.1	1.5	N	No	0	N/A	N/A	N/A
15-Jan-22	Fine	OP7	18:26	17.0	1.2	N	Yes	0	N/A	N/A	N/A

Date	Weather	Location	Time	Temperature (oC)	Wind Speed (m/s)	Wind Direction	From Project Site	Odour Intensity	Odour Characteristic	Possible Source	Remarks
15-Jan-22	Fine	OP8	18:29	16.8	1.0	N	Yes	0	N/A	N/A	N/A
15-Jan-22	Fine	OP9	18:33	16.9	1.8	N	No	0	N/A	N/A	N/A
15-Jan-22	Fine	OP10	18:36	17.0	0.9	N	No	0	N/A	N/A	N/A
15-Jan-22	Fine	OP11	18:45	17.0	0.0	N/A	N/A	0	N/A	N/A	N/A
16-Jan-22	Overcast	OP1	11:00	18.8	0.9	N	Yes	0	N/A	N/A	N/A
16-Jan-22	Overcast	OP2	11:03	19.1	0.8	N	Yes	0	N/A	N/A	N/A
16-Jan-22	Overcast	OP3	11:07	18.9	2.5	N	Yes	0	N/A	N/A	N/A
16-Jan-22	Overcast	OP4	11:10	19.5	1.9	E	No	0	N/A	N/A	N/A
16-Jan-22	Overcast	OP5	11:14	19.3	2.4	E	No	0	N/A	N/A	N/A
16-Jan-22	Overcast	OP6	11:17	19.1	2.8	N	No	0	N/A	N/A	N/A
16-Jan-22	Overcast	OP7	11:21	19.7	2.3	N	Yes	0	N/A	N/A	N/A
16-Jan-22	Overcast	OP8	11:24	18.9	2.5	N	Yes	0	N/A	N/A	N/A
16-Jan-22	Overcast	OP9	11:28	18.7	2.2	N	No	0	N/A	N/A	N/A
16-Jan-22	Overcast	OP10	11:31	18.5	2.3	E	Yes	0	N/A	N/A	N/A
16-Jan-22	Overcast	OP11	11:41	19.6	0.7	E	No	0	N/A	N/A	N/A
16-Jan-22	Sunny	OP1	15:18	21.7	3.2	S	No	0	N/A	N/A	N/A
16-Jan-22	Sunny	OP2	15:14	22.0	2.8	S	No	0	N/A	N/A	N/A
16-Jan-22	Sunny	OP3	15:11	21.8	1.7	NW	Yes	0	N/A	N/A	N/A
16-Jan-22	Sunny	OP4	15:08	21.9	2.2	E	No	0	N/A	N/A	N/A
16-Jan-22	Sunny	OP5	15:04	22.1	3.2	E	No	0	N/A	N/A	N/A
16-Jan-22	Sunny	OP6	15:01	22.3	2.8	S	No	0	N/A	N/A	N/A
16-Jan-22	Sunny	OP7	14:58	23.7	1.2	N	Yes	0	N/A	N/A	N/A
16-Jan-22	Sunny	OP8	14:55	23.6	1.0	N	Yes	0	N/A	N/A	N/A
16-Jan-22	Sunny	OP9	14:52	22.7	1.6	N	No	0	N/A	N/A	N/A
16-Jan-22	Sunny	OP10	14:49	22.2	2.2	E	Yes	0	N/A	N/A	N/A
16-Jan-22	Sunny	OP11	14:40	23.1	1.3	N	No	0	N/A	N/A	N/A
16-Jan-22	Fine	OP1	18:02	18.9	0.9	N	Yes	0	N/A	N/A	N/A
16-Jan-22	Fine	OP2	18:05	18.4	1.9	N	Yes	0	N/A	N/A	N/A
16-Jan-22	Fine	OP3	18:09	18.6	0.8	SW	No	0	N/A	N/A	N/A
16-Jan-22	Fine	OP4	18:12	18.4	1.9	W	No	0	N/A	N/A	N/A
16-Jan-22	Fine	OP5	18:15	18.5	0.9	N	No	0	N/A	N/A	N/A
16-Jan-22	Fine	OP6	18:19	18.6	1.1	E	Yes	0	N/A	N/A	N/A
16-Jan-22	Fine	OP7	18:22	18.0	2.0	N	Yes	0	N/A	N/A	N/A
16-Jan-22	Fine	OP8	18:26	18.3	1.3	N	Yes	0	N/A	N/A	N/A
16-Jan-22	Fine	OP9	18:29	17.9	1.0	N	No	0	N/A	N/A	N/A
16-Jan-22	Fine	OP10	18:33	17.7	0.9	N	No	0	N/A	N/A	N/A
16-Jan-22	Fine	OP11	18:43	17.0	0.5	N	No	0	N/A	N/A	N/A
17-Jan-22	Overcast	OP1	10:44	18.5	1.3	N	Yes	0	N/A	N/A	N/A

Date	Weather	Location	Time	Temperature (oC)	Wind Speed (m/s)	Wind Direction	From Project Site	Odour Intensity	Odour Characteristic	Possible Source	Remarks
17-Jan-22	Overcast	OP2	10:47	18.4	1.4	S	No	0	N/A	N/A	N/A
17-Jan-22	Overcast	OP3	10:50	19.2	1.0	SW	No	0	N/A	N/A	N/A
17-Jan-22	Overcast	OP4	10:54	18.7	2.8	E	No	0	N/A	N/A	N/A
17-Jan-22	Overcast	OP5	10:57	19.1	2.3	E	No	0	N/A	N/A	N/A
17-Jan-22	Overcast	OP6	11:00	18.6	3.5	S	No	0	N/A	N/A	N/A
17-Jan-22	Overcast	OP7	11:03	19.1	1.1	N	Yes	0	N/A	N/A	N/A
17-Jan-22	Overcast	OP8	11:07	19.2	1.7	N	Yes	0	N/A	N/A	N/A
17-Jan-22	Overcast	OP9	11:11	18.8	2.8	S	No	0	N/A	N/A	N/A
17-Jan-22	Overcast	OP10	11:15	19.3	1.2	S	No	0	N/A	N/A	N/A
17-Jan-22	Overcast	OP11	11:25	18.7	0.7	E	No	0	N/A	N/A	N/A
17-Jan-22	Overcast	OP1	14:30	18.7	1.5	N	Yes	1	Grassy	Nearby Vegetation	N/A
17-Jan-22	Overcast	OP2	14:34	19.1	0.5	N	Yes	0	N/A	N/A	N/A
17-Jan-22	Overcast	OP3	14:36	18.9	0.5	N	Yes	0	N/A	N/A	N/A
17-Jan-22	Overcast	OP4	14:39	19.0	0.8	NE	Yes	0	N/A	N/A	N/A
17-Jan-22	Overcast	OP5	14:42	18.4	2.0	E	No	0	N/A	N/A	N/A
17-Jan-22	Overcast	OP6	14:45	18.2	3.0	S	No	0	N/A	N/A	N/A
17-Jan-22	Overcast	OP7	14:49	18.8	0.9	E	Yes	0	N/A	N/A	N/A
17-Jan-22	Overcast	OP8	14:52	18.8	1.0	SE	Yes	0	N/A	N/A	N/A
17-Jan-22	Overcast	OP9	14:56	19.3	1.5	SW	No	0	N/A	N/A	N/A
17-Jan-22	Overcast	OP10	14:59	19.5	0.9	NE	Yes	0	N/A	N/A	N/A
17-Jan-22	Overcast	OP11	15:08	18.9	0.7	SW	Yes	0	N/A	N/A	N/A
17-Jan-22	Overcast	OP1	18:10	17.6	0.7	W	Yes	0	N/A	N/A	N/A
17-Jan-22	Overcast	OP2	18:13	17.5	0.8	N	Yes	0	N/A	N/A	N/A
17-Jan-22	Overcast	OP3	18:16	16.3	0.7	N	Yes	0	N/A	N/A	N/A
17-Jan-22	Overcast	OP4	18:20	15.8	1.8	E	No	0	N/A	N/A	N/A
17-Jan-22	Overcast	OP5	18:24	16.5	0.6	E	No	0	N/A	N/A	N/A
17-Jan-22	Overcast	OP6	18:27	15.9	1.4	N	Yes	0	N/A	N/A	N/A
17-Jan-22	Overcast	OP7	18:30	15.7	1.2	N	Yes	0	N/A	N/A	N/A
17-Jan-22	Overcast	OP8	18:34	16.4	1.6	N	Yes	0	N/A	N/A	N/A
17-Jan-22	Overcast	OP9	18:37	16.2	0.8	N	No	0	N/A	N/A	N/A
17-Jan-22	Overcast	OP10	18:40	16.4	0.8	E	Yes	0	N/A	N/A	N/A
17-Jan-22	Overcast	OP11	18:49	16.5	0.9	E	No	0	N/A	N/A	N/A
18-Jan-22	Sunny	OP1	10:35	18.1	1.2	S	No	0	N/A	N/A	N/A
18-Jan-22	Sunny	OP2	10:38	18.5	0.0	N/A	N/A	0	N/A	N/A	N/A
18-Jan-22	Sunny	OP3	10:42	18.4	1.1	SW	No	0	N/A	N/A	N/A
18-Jan-22	Sunny	OP4	10:45	18.7	0.4	W	No	0	N/A	N/A	N/A
18-Jan-22	Sunny	OP5	10:48	18.4	2.4	E	No	0	N/A	N/A	N/A
18-Jan-22	Sunny	OP6	10:51	18.5	1.2	S	No	0	N/A	N/A	N/A

Date	Weather	Location	Time	Temperature (oC)	Wind Speed (m/s)	Wind Direction	From Project Site	Odour Intensity	Odour Characteristic	Possible Source	Remarks
18-Jan-22	Sunny	OP7	10:54	18.6	0.4	S	No	0	N/A	N/A	N/A
18-Jan-22	Sunny	OP8	10:57	18.2	2.6	N	Yes	0	N/A	N/A	N/A
18-Jan-22	Sunny	OP9	11:02	18.4	2.4	N	No	0	N/A	N/A	N/A
18-Jan-22	Sunny	OP10	11:05	18.6	1.7	NE	Yes	0	N/A	N/A	N/A
18-Jan-22	Sunny	OP11	11:15	18.3	1.6	E	No	0	N/A	N/A	N/A
18-Jan-22	Overcast	OP1	14:39	18.4	1.9	N	Yes	1	Grassy	Nearby Vegetation	N/A
18-Jan-22	Overcast	OP2	14:42	18.2	2.2	N	Yes	1	Grassy	Nearby Vegetation	N/A
18-Jan-22	Overcast	OP3	14:45	18.7	0.6	N	Yes	0	N/A	N/A	N/A
18-Jan-22	Overcast	OP4	14:48	19.1	1.1	NW	Yes	0	N/A	N/A	N/A
18-Jan-22	Overcast	OP5	14:52	18.9	0.5	N	No	0	N/A	N/A	N/A
18-Jan-22	Overcast	OP6	14:54	18.5	0.8	N	Yes	0	N/A	N/A	N/A
18-Jan-22	Overcast	OP7	14:57	18.8	1.0	N	Yes	0	N/A	N/A	N/A
18-Jan-22	Overcast	OP8	15:01	18.6	0.7	N	Yes	0	N/A	N/A	N/A
18-Jan-22	Overcast	OP9	15:04	19.0	0.6	N	No	1	Decayed grass	Nearby Vegetation	N/A
18-Jan-22	Overcast	OP10	15:08	19.1	0.4	N	No	0	N/A	N/A	N/A
18-Jan-22	Overcast	OP11	15:18	18.0	2.1	E	No	0	N/A	N/A	N/A
18-Jan-22	Overcast	OP1	18:17	17.5	1.7	N	Yes	0	N/A	N/A	N/A
18-Jan-22	Overcast	OP2	18:20	17.7	1.4	N	Yes	0	N/A	N/A	N/A
18-Jan-22	Overcast	OP3	18:24	17.8	0.6	N	Yes	0	N/A	N/A	N/A
18-Jan-22	Overcast	OP4	18:27	17.7	0.7	N	Yes	0	N/A	N/A	N/A
18-Jan-22	Overcast	OP5	18:30	17.6	0.9	N	No	0	N/A	N/A	N/A
18-Jan-22	Overcast	OP6	18:34	17.4	1.8	N	Yes	0	N/A	N/A	N/A
18-Jan-22	Overcast	OP7	18:37	17.2	2.1	N	Yes	0	N/A	N/A	N/A
18-Jan-22	Overcast	OP8	18:40	17.0	2.8	N	Yes	0	N/A	N/A	N/A
18-Jan-22	Overcast	OP9	18:43	17.3	1.4	N	No	0	N/A	N/A	N/A
18-Jan-22	Overcast	OP10	18:47	17.4	1.5	N	No	0	N/A	N/A	N/A
18-Jan-22	Overcast	OP11	18:56	17.5	1.6	SE	No	0	N/A	N/A	N/A
19-Jan-22	Sunny	OP1	10:55	19.2	1.9	N	Yes	0	N/A	N/A	N/A
19-Jan-22	Sunny	OP2	10:58	20.1	2.2	N	Yes	0	N/A	N/A	N/A
19-Jan-22	Sunny	OP3	11:02	21.7	1.2	N	Yes	0	N/A	N/A	N/A
19-Jan-22	Sunny	OP4	11:05	21.9	1.4	N	Yes	0	N/A	N/A	N/A
19-Jan-22	Sunny	OP5	11:08	22.6	2.5	N	No	0	N/A	N/A	N/A
19-Jan-22	Sunny	OP6	11:11	22.1	1.3	N	No	0	N/A	N/A	N/A
19-Jan-22	Sunny	OP7	11:15	21.8	2.3	N	Yes	0	N/A	N/A	N/A
19-Jan-22	Sunny	OP8	11:19	21.6	3.5	N	Yes	0	N/A	N/A	N/A
19-Jan-22	Sunny	OP9	11:23	21.4	2.3	N	No	0	N/A	N/A	N/A
19-Jan-22	Sunny	OP10	11:26	21.9	0.7	N	No	0	N/A	N/A	N/A
19-Jan-22	Sunny	OP11	11:35	22.3	2.2	E	No	0	N/A	N/A	N/A

Date	Weather	Location	Time	Temperature (oC)	Wind Speed (m/s)	Wind Direction	From Project Site	Odour Intensity	Odour Characteristic	Possible Source	Remarks
19-Jan-22	Sunny	OP1	14:34	24.2	1.2	S	No	0	N/A	N/A	N/A
19-Jan-22	Sunny	OP2	14:37	20.2	3.1	S	No	0	N/A	N/A	N/A
19-Jan-22	Sunny	OP3	14:39	21.1	0.7	N	Yes	0	N/A	N/A	N/A
19-Jan-22	Sunny	OP4	14:42	19.8	3.3	E	No	0	N/A	N/A	N/A
19-Jan-22	Sunny	OP5	14:47	21.4	3.6	E	No	0	N/A	N/A	N/A
19-Jan-22	Sunny	OP6	14:49	20.2	2.3	E	Yes	0	N/A	N/A	N/A
19-Jan-22	Sunny	OP7	14:52	21.8	0.5	SE	Yes	0	N/A	N/A	N/A
19-Jan-22	Sunny	OP8	14:55	20.4	0.6	SE	Yes	1	Diesel	Generator	N/A
19-Jan-22	Sunny	OP9	14:59	20.3	2.0	N	No	1	Decayed grass	Nearby Vegetation	N/A
19-Jan-22	Sunny	OP10	15:07	20.8	3.0	E	Yes	0	N/A	N/A	N/A
19-Jan-22	Sunny	OP11	15:17	19.7	2.9	SE	No	0	N/A	N/A	N/A
19-Jan-22	Fine	OP1	18:03	20.7	0.0	N/A	N/A	0	N/A	N/A	N/A
19-Jan-22	Fine	OP2	18:06	19.7	0.1	S	No	0	N/A	N/A	N/A
19-Jan-22	Fine	OP3	18:10	18.6	0.4	NE	Yes	0	N/A	N/A	N/A
19-Jan-22	Fine	OP4	18:13	18.6	0.4	E	No	0	N/A	N/A	N/A
19-Jan-22	Fine	OP5	18:17	18.4	0.9	E	Yes	0	N/A	N/A	N/A
19-Jan-22	Fine	OP6	18:20	18.5	0.7	S	No	0	N/A	N/A	N/A
19-Jan-22	Fine	OP7	18:24	18.4	0.4	S	No	0	N/A	N/A	N/A
19-Jan-22	Fine	OP8	18:27	18.3	0.3	NW	No	0	N/A	N/A	N/A
19-Jan-22	Fine	OP9	18:31	18.2	0.5	NE	Yes	0	N/A	N/A	N/A
19-Jan-22	Fine	OP10	18:35	18.1	0.6	E	Yes	0	N/A	N/A	N/A
19-Jan-22	Fine	OP11	18:44	18.2	0.4	E	No	0	N/A	N/A	N/A
20-Jan-22	Sunny	OP1	10:30	18.3	1.2	NE	Yes	0	N/A	N/A	N/A
20-Jan-22	Sunny	OP2	10:33	18.1	3.1	S	No	0	N/A	N/A	N/A
20-Jan-22	Sunny	OP3	10:37	18.5	1.7	W	Yes	0	N/A	N/A	N/A
20-Jan-22	Sunny	OP4	10:40	18.4	2.5	SE	No	0	N/A	N/A	N/A
20-Jan-22	Sunny	OP5	10:43	18.3	4.3	E	Yes	0	N/A	N/A	N/A
20-Jan-22	Sunny	OP6	10:47	18.7	1.5	N	Yes	0	N/A	N/A	N/A
20-Jan-22	Sunny	OP7	10:50	18.6	1.9	S	No	0	N/A	N/A	N/A
20-Jan-22	Sunny	OP8	10:54	18.3	2.8	N	Yes	0	N/A	N/A	N/A
20-Jan-22	Sunny	OP9	10:57	18.8	1.3	N	No	0	N/A	N/A	N/A
20-Jan-22	Sunny	OP10	11:00	18.7	2.7	N	No	0	N/A	N/A	N/A
20-Jan-22	Sunny	OP11	11:10	18.9	1.7	E	No	0	N/A	N/A	N/A
20-Jan-22	Sunny	OP1	14:48	21.2	1.1	S	No	0	N/A	N/A	N/A
20-Jan-22	Sunny	OP2	14:51	20.5	1.5	S	No	0	N/A	N/A	N/A
20-Jan-22	Sunny	OP3	14:55	20.2	1.9	SW	No	1	Oil	Electric Generator	N/A
20-Jan-22	Sunny	OP4	14:58	20.4	1.5	E	No	0	N/A	N/A	N/A
20-Jan-22	Sunny	OP5	15:02	20.8	2.2	E	Yes	0	N/A	N/A	N/A

Date	Weather	Location	Time	Temperature (oC)	Wind Speed (m/s)	Wind Direction	From Project Site	Odour Intensity	Odour Characteristic	Possible Source	Remarks
20-Jan-22	Sunny	OP6	15:05	20.0	1.2	E	Yes	0	N/A	N/A	N/A
20-Jan-22	Sunny	OP7	15:08	21.2	1.1	S	No	0	N/A	N/A	N/A
20-Jan-22	Sunny	OP8	15:11	20.6	3.3	SE	Yes	0	N/A	N/A	N/A
20-Jan-22	Sunny	OP9	15:15	21.0	0.7	E	Yes	0	N/A	N/A	N/A
20-Jan-22	Sunny	OP10	15:18	21.7	1.0	E	Yes	0	N/A	N/A	N/A
20-Jan-22	Sunny	OP11	15:27	20.6	1.6	E	No	0	N/A	N/A	N/A
20-Jan-22	Fine	OP1	18:03	18.7	0.5	N	Yes	0	N/A	N/A	N/A
20-Jan-22	Fine	OP2	18:07	18.6	0.8	S	No	0	N/A	N/A	N/A
20-Jan-22	Fine	OP3	18:11	18.8	1.2	SW	No	0	N/A	N/A	N/A
20-Jan-22	Fine	OP4	18:15	18.7	1.6	E	No	0	N/A	N/A	N/A
20-Jan-22	Fine	OP5	18:18	18.9	1.5	E	Yes	0	N/A	N/A	N/A
20-Jan-22	Fine	OP6	18:21	18.6	1.3	NE	Yes	0	N/A	N/A	N/A
20-Jan-22	Fine	OP7	18:24	18.5	2.1	N	Yes	0	N/A	N/A	N/A
20-Jan-22	Fine	OP8	18:27	18.7	1.8	NE	Yes	0	N/A	N/A	N/A
20-Jan-22	Fine	OP9	18:31	18.9	1.1	E	Yes	0	N/A	N/A	N/A
20-Jan-22	Fine	OP10	18:34	18.8	1.6	NE	Yes	0	N/A	N/A	N/A
20-Jan-22	Fine	OP11	18:44	18.7	1.4	E	No	0	N/A	N/A	N/A
21-Jan-22	Sunny	OP1	11:00	20.3	0.9	N	Yes	0	N/A	N/A	N/A
21-Jan-22	Sunny	OP2	11:03	20.5	0.0	N/A	N/A	0	N/A	N/A	N/A
21-Jan-22	Sunny	OP3	11:07	20.2	1.9	S	No	0	N/A	N/A	N/A
21-Jan-22	Sunny	OP4	11:10	19.3	2.5	W	No	0	N/A	N/A	N/A
21-Jan-22	Sunny	OP5	11:14	20.2	2.7	E	Yes	0	N/A	N/A	N/A
21-Jan-22	Sunny	OP6	11:17	19.5	2.5	E	Yes	0	N/A	N/A	N/A
21-Jan-22	Sunny	OP7	11:20	20.2	2.2	S	No	0	N/A	N/A	N/A
21-Jan-22	Sunny	OP8	11:24	19.4	3.0	E	Yes	0	N/A	N/A	N/A
21-Jan-22	Sunny	OP9	11:28	20.8	2.2	S	No	0	N/A	N/A	N/A
21-Jan-22	Sunny	OP10	11:31	20.5	2.7	E	Yes	0	N/A	N/A	N/A
21-Jan-22	Sunny	OP11	11:41	20.8	2.5	E	No	0	N/A	N/A	N/A
21-Jan-22	Fine	OP1	14:39	19.6	2.8	N	Yes	0	N/A	N/A	N/A
21-Jan-22	Fine	OP2	14:42	20.5	1.4	E	No	0	N/A	N/A	N/A
21-Jan-22	Fine	OP3	14:45	20.8	1.9	SW	No	0	N/A	N/A	N/A
21-Jan-22	Fine	OP4	14:48	20.1	1.4	S	No	0	N/A	N/A	N/A
21-Jan-22	Fine	OP5	14:51	20.7	2.2	E	Yes	0	N/A	N/A	N/A
21-Jan-22	Fine	OP6	14:55	20.0	2.5	S	No	0	N/A	N/A	N/A
21-Jan-22	Fine	OP7	14:58	20.3	2.1	S	No	0	N/A	N/A	N/A
21-Jan-22	Fine	OP8	15:02	21.3	1.2	E	Yes	0	N/A	N/A	N/A
21-Jan-22	Fine	OP9	15:05	21.9	1.0	E	Yes	0	N/A	N/A	N/A
21-Jan-22	Fine	OP10	15:08	21.1	1.5	N	No	0	N/A	N/A	N/A

Date	Weather	Location	Time	Temperature (oC)	Wind Speed (m/s)	Wind Direction	From Project Site	Odour Intensity	Odour Characteristic	Possible Source	Remarks
21-Jan-22	Fine	OP11	15:17	20.6	1.4	E	No	0	N/A	N/A	N/A
21-Jan-22	Fine	OP1	18:04	17.3	4.3	N	Yes	0	N/A	N/A	N/A
21-Jan-22	Fine	OP2	18:07	17.8	2.3	N	Yes	0	N/A	N/A	N/A
21-Jan-22	Fine	OP3	18:10	17.8	1.9	SW	No	0	N/A	N/A	N/A
21-Jan-22	Fine	OP4	18:14	17.6	2.8	W	No	0	N/A	N/A	N/A
21-Jan-22	Fine	OP5	18:17	17.9	1.5	E	No	0	N/A	N/A	N/A
21-Jan-22	Fine	OP6	18:20	17.6	2.1	NE	Yes	0	N/A	N/A	N/A
21-Jan-22	Fine	OP7	18:23	17.6	1.4	NE	Yes	0	N/A	N/A	N/A
21-Jan-22	Fine	OP8	18:27	17.1	4.6	NE	Yes	0	N/A	N/A	N/A
21-Jan-22	Fine	OP9	18:31	17.3	3.7	E	Yes	0	N/A	N/A	N/A
21-Jan-22	Fine	OP10	18:34	17.6	1.4	E	Yes	0	N/A	N/A	N/A
21-Jan-22	Fine	OP11	18:43	17.9	0.6	E	No	0	N/A	N/A	N/A
22-Jan-22	Shower	OP1	10:38	17.8	2.1	NW	Yes	0	N/A	N/A	N/A
22-Jan-22	Shower	OP2	10:42	17.5	2.5	SW	No	0	N/A	N/A	N/A
22-Jan-22	Shower	OP3	10:45	17.5	2.8	W	No	0	N/A	N/A	N/A
22-Jan-22	Shower	OP4	10:49	17.2	3.8	SW	No	0	N/A	N/A	N/A
22-Jan-22	Shower	OP5	10:54	17.1	3.2	NE	Yes	0	N/A	N/A	N/A
22-Jan-22	Shower	OP6	10:59	17.5	1.5	N	No	0	N/A	N/A	N/A
22-Jan-22	Shower	OP7	11:02	17.8	0.6	NW	No	0	N/A	N/A	N/A
22-Jan-22	Shower	OP8	11:05	17.7	2.1	SE	No	0	N/A	N/A	N/A
22-Jan-22	Shower	OP9	11:09	17.9	0.6	W	No	0	N/A	N/A	N/A
22-Jan-22	Shower	OP10	11:12	17.9	1.2	S	No	0	N/A	N/A	N/A
22-Jan-22	Shower	OP11	11:23	18.0	0.6	S	Yes	0	N/A	N/A	N/A
22-Jan-22	Overcast	OP1	15:00	19.1	0.6	N	Yes	0	N/A	N/A	N/A
22-Jan-22	Overcast	OP2	15:03	19.2	0.4	S	No	0	N/A	N/A	N/A
22-Jan-22	Overcast	OP3	15:07	19.1	0.5	N	Yes	0	N/A	N/A	N/A
22-Jan-22	Overcast	OP4	15:10	18.7	1.3	W	No	0	N/A	N/A	N/A
22-Jan-22	Overcast	OP5	15:14	18.8	0.8	NE	Yes	0	N/A	N/A	N/A
22-Jan-22	Overcast	OP6	15:17	18.2	2.9	N	Yes	0	N/A	N/A	N/A
22-Jan-22	Overcast	OP7	15:21	18.3	1.2	NE	Yes	0	N/A	N/A	N/A
22-Jan-22	Overcast	OP8	15:24	18.1	1.9	S	Yes	0	N/A	N/A	N/A
22-Jan-22	Overcast	OP9	15:28	18.0	1.0	N	No	0	N/A	N/A	N/A
22-Jan-22	Overcast	OP10	15:31	17.9	1.4	NE	Yes	0	N/A	N/A	N/A
22-Jan-22	Overcast	OP11	15:40	19.1	0.5	NE	No	0	N/A	N/A	N/A
22-Jan-22	Overcast	OP1	18:00	18.8	0.6	N	Yes	0	N/A	N/A	N/A
22-Jan-22	Overcast	OP2	18:03	18.5	0.8	N	Yes	0	N/A	N/A	N/A
22-Jan-22	Overcast	OP3	18:07	18.4	0.6	N	Yes	0	N/A	N/A	N/A
22-Jan-22	Overcast	OP4	18:10	17.9	0.6	SW	No	0	N/A	N/A	N/A

Date	Weather	Location	Time	Temperature (oC)	Wind Speed (m/s)	Wind Direction	From Project Site	Odour Intensity	Odour Characteristic	Possible Source	Remarks
22-Jan-22	Overcast	OP5	18:14	17.7	1.7	E	No	0	N/A	N/A	N/A
22-Jan-22	Overcast	OP6	18:17	17.6	0.4	NE	Yes	0	N/A	N/A	N/A
22-Jan-22	Overcast	OP7	18:21	17.5	1.4	S	No	0	N/A	N/A	N/A
22-Jan-22	Overcast	OP8	18:25	17.6	1.1	SE	Yes	0	N/A	N/A	N/A
22-Jan-22	Overcast	OP9	18:28	17.6	1.2	NE	Yes	0	N/A	N/A	N/A
22-Jan-22	Overcast	OP10	18:32	17.5	1.0	NE	Yes	0	N/A	N/A	N/A
22-Jan-22	Overcast	OP11	18:41	17.1	2.9	E	No	0	N/A	N/A	N/A
23-Jan-22	Overcast	OP1	11:00	20.4	0.0	N/A	N/A	0	N/A	N/A	N/A
23-Jan-22	Overcast	OP2	11:03	21.0	0.0	N/A	N/A	0	N/A	N/A	N/A
23-Jan-22	Overcast	OP3	11:07	21.5	1.0	S	No	0	N/A	N/A	N/A
23-Jan-22	Overcast	OP4	11:10	21.7	1.4	S	No	0	N/A	N/A	N/A
23-Jan-22	Overcast	OP5	11:13	21.4	1.1	S	No	0	N/A	N/A	N/A
23-Jan-22	Overcast	OP6	11:16	21.9	1.3	W	No	0	N/A	N/A	N/A
23-Jan-22	Overcast	OP7	11:20	22.2	1.1	N	Yes	0	N/A	N/A	N/A
23-Jan-22	Overcast	OP8	11:24	21.9	1.2	N	Yes	0	N/A	N/A	N/A
23-Jan-22	Overcast	OP9	11:27	21.7	2.8	N	No	0	N/A	N/A	N/A
23-Jan-22	Overcast	OP10	11:31	22.1	2.5	E	Yes	0	N/A	N/A	N/A
23-Jan-22	Overcast	OP11	11:40	21.5	1.4	E	No	0	N/A	N/A	N/A
23-Jan-22	Overcast	OP1	14:30	21.6	1.5	S	No	0	N/A	N/A	N/A
23-Jan-22	Overcast	OP2	14:33	20.9	2.3	S	No	0	N/A	N/A	N/A
23-Jan-22	Overcast	OP3	14:36	21.3	1.4	S	No	0	N/A	N/A	N/A
23-Jan-22	Overcast	OP4	14:40	21.5	1.8	E	No	0	N/A	N/A	N/A
23-Jan-22	Overcast	OP5	14:43	21.2	0.7	N	No	0	N/A	N/A	N/A
23-Jan-22	Overcast	OP6	14:47	21.1	1.6	SE	Yes	0	N/A	N/A	N/A
23-Jan-22	Overcast	OP7	14:50	21.4	1.2	N	Yes	0	N/A	N/A	N/A
23-Jan-22	Overcast	OP8	14:54	22.0	2.0	N	Yes	0	N/A	N/A	N/A
23-Jan-22	Overcast	OP9	14:57	22.1	1.2	N	No	0	N/A	N/A	N/A
23-Jan-22	Overcast	OP10	15:00	22.4	1.1	N	No	0	N/A	N/A	N/A
23-Jan-22	Overcast	OP11	15:11	22.9	0.0	N/A	N/A	0	N/A	N/A	N/A
23-Jan-22	Fine	OP1	18:00	18.8	1.1	S	No	0	N/A	N/A	N/A
23-Jan-22	Fine	OP2	18:03	18.9	1.1	S	No	0	N/A	N/A	N/A
23-Jan-22	Fine	OP3	18:07	18.5	2.3	SW	No	0	N/A	N/A	N/A
23-Jan-22	Fine	OP4	18:10	18.2	3.1	E	No	0	N/A	N/A	N/A
23-Jan-22	Fine	OP5	18:14	18.6	0.9	E	No	0	N/A	N/A	N/A
23-Jan-22	Fine	OP6	18:17	18.9	0.3	S	No	0	N/A	N/A	N/A
23-Jan-22	Fine	OP7	18:20	18.4	1.1	SW	No	0	N/A	N/A	N/A
23-Jan-22	Fine	OP8	18:24	18.8	0.4	SW	No	0	N/A	N/A	N/A
23-Jan-22	Fine	OP9	18:28	18.5	0.6	NE	Yes	0	N/A	N/A	N/A

Date	Weather	Location	Time	Temperature (oC)	Wind Speed (m/s)	Wind Direction	From Project Site	Odour Intensity	Odour Characteristic	Possible Source	Remarks
23-Jan-22	Fine	OP10	18:31	18.6	0.5	NE	Yes	0	N/A	N/A	N/A
23-Jan-22	Fine	OP11	18:42	18.7	0.6	E	No	0	N/A	N/A	N/A
24-Jan-22	Sunny	OP1	11:10	23.2	0.6	N	Yes	0	N/A	N/A	N/A
24-Jan-22	Sunny	OP2	11:07	22.9	2.5	N	Yes	0	N/A	N/A	N/A
24-Jan-22	Sunny	OP3	11:03	23.1	0.6	W	No	0	N/A	N/A	N/A
24-Jan-22	Sunny	OP4	11:00	22.7	1.3	N	Yes	0	N/A	N/A	N/A
24-Jan-22	Sunny	OP5	11:16	23.8	1.8	E	No	0	N/A	N/A	N/A
24-Jan-22	Sunny	OP6	11:19	23.3	2.2	N	No	0	N/A	N/A	N/A
24-Jan-22	Sunny	OP7	11:22	22.0	1.6	N	Yes	0	N/A	N/A	N/A
24-Jan-22	Sunny	OP8	11:25	23.4	3.2	N	Yes	0	N/A	N/A	N/A
24-Jan-22	Sunny	OP9	11:29	23.0	3.1	N	No	0	N/A	N/A	N/A
24-Jan-22	Sunny	OP10	11:32	23.2	1.0	N	No	0	N/A	N/A	N/A
24-Jan-22	Sunny	OP11	11:42	23.5	1.1	N	No	0	N/A	N/A	N/A
24-Jan-22	Fine	OP1	14:33	22.2	0.5	S	No	1	Grassy	Nearby Vegetation	N/A
24-Jan-22	Fine	OP2	14:37	22.3	0.0	N/A	N/A	0	N/A	N/A	N/A
24-Jan-22	Fine	OP3	14:40	21.6	3.4	W	W	0	N/A	N/A	N/A
24-Jan-22	Fine	OP4	14:42	21.9	1.4	NE	NE	0	N/A	N/A	N/A
24-Jan-22	Fine	OP5	14:46	21.8	2.6	E	E	0	N/A	N/A	N/A
24-Jan-22	Fine	OP6	14:49	21.1	3.7	SE	SE	0	N/A	N/A	N/A
24-Jan-22	Fine	OP7	14:51	22.3	0.0	N/A	N/A	0	N/A	N/A	N/A
24-Jan-22	Fine	OP8	14:55	21.4	0.7	N	N	0	N/A	N/A	N/A
24-Jan-22	Fine	OP9	14:58	21.7	1.8	N	N	0	N/A	N/A	N/A
24-Jan-22	Fine	OP10	15:01	22.1	0.7	N	N	0	N/A	N/A	N/A
24-Jan-22	Fine	OP11	15:11	23.4	0.0	N/A	N/A	0	N/A	N/A	N/A
24-Jan-22	Fine	OP1	18:00	19.1	0.8	S	No	0	N/A	N/A	N/A
24-Jan-22	Fine	OP2	18:03	19.3	0.6	N	Yes	0	N/A	N/A	N/A
24-Jan-22	Fine	OP3	18:07	19.1	1.1	NE	Yes	0	N/A	N/A	N/A
24-Jan-22	Fine	OP4	18:10	19.0	1.2	NE	Yes	0	N/A	N/A	N/A
24-Jan-22	Fine	OP5	18:14	18.9	3.0	SE	No	0	N/A	N/A	N/A
24-Jan-22	Fine	OP6	18:17	18.7	3.4	N	No	0	N/A	N/A	N/A
24-Jan-22	Fine	OP7	18:20	19.1	0.7	SW	No	0	N/A	N/A	N/A
24-Jan-22	Fine	OP8	18:23	19.1	0.8	SW	No	0	N/A	N/A	N/A
24-Jan-22	Fine	OP9	18:27	18.9	1.8	N	No	0	N/A	N/A	N/A
24-Jan-22	Fine	OP10	18:30	19.2	0.7	NE	Yes	0	N/A	N/A	N/A
24-Jan-22	Fine	OP11	18:41	19.2	0.6	E	No	0	N/A	N/A	N/A
25-Jan-22	Fine	OP1	11:07	18.3	1.2	N	Yes	0	N/A	N/A	N/A
25-Jan-22	Fine	OP2	11:10	18.4	1.8	S	No	0	N/A	N/A	N/A
25-Jan-22	Fine	OP3	11:13	18.6	1.5	S	No	0	N/A	N/A	N/A

Date	Weather	Location	Time	Temperature (oC)	Wind Speed (m/s)	Wind Direction	From Project Site	Odour Intensity	Odour Characteristic	Possible Source	Remarks
25-Jan-22	Fine	OP4	11:16	18.7	0.5	E	No	0	N/A	N/A	N/A
25-Jan-22	Fine	OP5	11:20	18.5	3.6	E	No	0	N/A	N/A	N/A
25-Jan-22	Fine	OP6	11:23	18.3	1.8	E	Yes	0	N/A	N/A	N/A
25-Jan-22	Fine	OP7	11:26	18.4	0.5	S	No	0	N/A	N/A	N/A
25-Jan-22	Fine	OP8	11:30	18.7	0.6	E	Yes	0	N/A	N/A	N/A
25-Jan-22	Fine	OP9	11:34	18.9	1.4	N	No	0	N/A	N/A	N/A
25-Jan-22	Fine	OP10	11:37	18.6	1.6	E	Yes	0	N/A	N/A	N/A
25-Jan-22	Fine	OP11	11:47	18.9	0.9	E	No	0	N/A	N/A	N/A
25-Jan-22	Sunny	OP1	14:33	21.9	0.7	SE	No	1	Grassy	Nearby Vegetation	N/A
25-Jan-22	Sunny	OP2	14:36	20.7	1.9	SE	No	0	N/A	N/A	N/A
25-Jan-22	Sunny	OP3	14:39	21.2	0.8	NW	Yes	0	N/A	N/A	N/A
25-Jan-22	Sunny	OP4	14:42	21.3	0.8	E	No	0	N/A	N/A	N/A
25-Jan-22	Sunny	OP5	14:45	20.6	2.0	E	No	0	N/A	N/A	N/A
25-Jan-22	Sunny	OP6	14:47	20.0	2.2	SE	Yes	0	N/A	N/A	N/A
25-Jan-22	Sunny	OP7	14:50	21.9	0.8	SE	Yes	0	N/A	N/A	N/A
25-Jan-22	Sunny	OP8	14:54	20.6	1.5	SW	No	0	N/A	N/A	N/A
25-Jan-22	Sunny	OP9	14:56	20.2	2.9	NE	Yes	0	N/A	N/A	N/A
25-Jan-22	Sunny	OP10	14:59	21.9	0.4	N	No	0	N/A	N/A	N/A
25-Jan-22	Sunny	OP11	15:08	20.3	2.0	E	No	0	N/A	N/A	N/A
25-Jan-22	Fine	OP1	18:00	19.1	1.6	S	No	0	N/A	N/A	N/A
25-Jan-22	Fine	OP2	18:03	18.7	0.6	S	No	0	N/A	N/A	N/A
25-Jan-22	Fine	OP3	18:06	18.7	0.7	N	Yes	0	N/A	N/A	N/A
25-Jan-22	Fine	OP4	18:09	18.4	3.7	E	No	0	N/A	N/A	N/A
25-Jan-22	Fine	OP5	18:13	18.5	2.4	E	No	0	N/A	N/A	N/A
25-Jan-22	Fine	OP6	18:17	18.7	1.1	NE	Yes	0	N/A	N/A	N/A
25-Jan-22	Fine	OP7	18:20	18.9	0.5	S	No	0	N/A	N/A	N/A
25-Jan-22	Fine	OP8	18:24	18.9	0.8	E	Yes	0	N/A	N/A	N/A
25-Jan-22	Fine	OP9	18:27	18.8	0.8	N	No	0	N/A	N/A	N/A
25-Jan-22	Fine	OP10	18:31	18.6	2.1	NE	Yes	0	N/A	N/A	N/A
25-Jan-22	Fine	OP11	18:41	18.9	0.1	S	Yes	0	N/A	N/A	N/A
26-Jan-22	Overcast	OP1	10:36	19.2	1.9	S	No	0	N/A	N/A	N/A
26-Jan-22	Overcast	OP2	10:39	19.3	1.4	S	No	0	N/A	N/A	N/A
26-Jan-22	Overcast	OP3	10:42	19.1	1.3	W	No	0	N/A	N/A	N/A
26-Jan-22	Overcast	OP4	10:44	19.5	2.6	E	No	0	N/A	N/A	N/A
26-Jan-22	Overcast	OP5	10:47	19.2	3.4	E	No	0	N/A	N/A	N/A
26-Jan-22	Overcast	OP6	10:49	19.2	1.4	NE	Yes	0	N/A	N/A	N/A
26-Jan-22	Overcast	OP7	10:52	20.2	0.0	N/A	N/A	0	N/A	N/A	N/A
26-Jan-22	Overcast	OP8	10:55	19.6	1.0	N	Yes	0	N/A	N/A	N/A

Date	Weather	Location	Time	Temperature (oC)	Wind Speed (m/s)	Wind Direction	From Project Site	Odour Intensity	Odour Characteristic	Possible Source	Remarks
26-Jan-22	Overcast	OP9	10:57	19.6	2.8	N	Yes	0	N/A	N/A	N/A
26-Jan-22	Overcast	OP10	11:00	19.9	1.6	E	Yes	0	N/A	N/A	N/A
26-Jan-22	Overcast	OP11	11:08	19.7	3.2	SE	No	1	Vehicle Exhaust	Heavy Vehicles	N/A
26-Jan-22	Fine	OP1	14:45	22.1	0.9	NW	Yes	0	N/A	N/A	N/A
26-Jan-22	Fine	OP2	14:48	22.7	0.4	N	Yes	0	N/A	N/A	N/A
26-Jan-22	Fine	OP3	14:52	22.7	1.3	N	Yes	0	N/A	N/A	N/A
26-Jan-22	Fine	OP4	14:55	22.4	1.1	SW	No	0	N/A	N/A	N/A
26-Jan-22	Fine	OP5	14:58	22.2	3.3	E	No	0	N/A	N/A	N/A
26-Jan-22	Fine	OP6	15:02	22.6	1.0	S	No	0	N/A	N/A	N/A
26-Jan-22	Fine	OP7	15:05	22.8	0.0	N/A	N/A	0	N/A	N/A	N/A
26-Jan-22	Fine	OP8	15:09	22.1	2.6	NW	No	0	N/A	N/A	N/A
26-Jan-22	Fine	OP9	15:13	22.4	2.2	N	No	0	N/A	N/A	N/A
26-Jan-22	Fine	OP10	15:17	22.3	1.2	NE	Yes	0	N/A	N/A	N/A
26-Jan-22	Fine	OP11	15:28	22.5	0.9	NE	No	0	N/A	N/A	N/A
26-Jan-22	Fine	OP1	18:00	19.7	0.6	N	Yes	0	N/A	N/A	N/A
26-Jan-22	Fine	OP2	18:04	19.6	0.7	S	No	0	N/A	N/A	N/A
26-Jan-22	Fine	OP3	18:07	19.7	0.5	N	Yes	0	N/A	N/A	N/A
26-Jan-22	Fine	OP4	18:11	19.6	0.5	N	No	0	N/A	N/A	N/A
26-Jan-22	Fine	OP5	18:14	19.4	0.4	E	No	0	N/A	N/A	N/A
26-Jan-22	Fine	OP6	18:17	19.3	0.8	NE	Yes	0	N/A	N/A	N/A
26-Jan-22	Fine	OP7	18:21	19.1	0.7	NW	No	0	N/A	N/A	N/A
26-Jan-22	Fine	OP8	18:25	18.9	1.5	N	Yes	0	N/A	N/A	N/A
26-Jan-22	Fine	OP9	18:28	19.0	1.2	NE	Yes	0	N/A	N/A	N/A
26-Jan-22	Fine	OP10	18:31	18.9	1.9	NE	Yes	0	N/A	N/A	N/A
26-Jan-22	Fine	OP11	18:41	19.1	1.3	E	No	0	N/A	N/A	N/A
27-Jan-22	Overcast	OP1	10:30	19.2	0.6	N	Yes	0	N/A	N/A	N/A
27-Jan-22	Overcast	OP2	10:33	19.0	2.3	N	Yes	0	N/A	N/A	N/A
27-Jan-22	Overcast	OP3	10:36	19.3	0.7	N	Yes	0	N/A	N/A	N/A
27-Jan-22	Overcast	OP4	10:39	19.2	1.5	E	No	0	N/A	N/A	N/A
27-Jan-22	Overcast	OP5	10:43	19.5	0.5	E	No	0	N/A	N/A	N/A
27-Jan-22	Overcast	OP6	10:47	19.4	1.5	N	No	0	N/A	N/A	N/A
27-Jan-22	Overcast	OP7	10:50	19.6	0.4	N	Yes	0	N/A	N/A	N/A
27-Jan-22	Overcast	OP8	10:53	19.5	1.4	N	Yes	0	N/A	N/A	N/A
27-Jan-22	Overcast	OP9	10:57	19.2	2.1	N	No	0	N/A	N/A	N/A
27-Jan-22	Overcast	OP10	11:01	19.7	0.5	N	No	0	N/A	N/A	N/A
27-Jan-22	Overcast	OP11	11:10	19.6	1.7	SE	No	0	N/A	N/A	N/A
27-Jan-22	Sunny	OP1	14:45	20.9	3.6	S	No	1	Dead Body	Wild Animal	N/A
27-Jan-22	Sunny	OP2	14:48	21.7	0.9	S	No	0	N/A	N/A	N/A

Date	Weather	Location	Time	Temperature (oC)	Wind Speed (m/s)	Wind Direction	From Project Site	Odour Intensity	Odour Characteristic	Possible Source	Remarks
27-Jan-22	Sunny	OP3	14:51	21.6	1.4	SW	No	0	N/A	N/A	N/A
27-Jan-22	Sunny	OP4	14:55	21.8	1.8	W	No	0	N/A	N/A	N/A
27-Jan-22	Sunny	OP5	14:58	22.1	1.7	S	No	0	N/A	N/A	N/A
27-Jan-22	Sunny	OP6	15:01	22.3	0.6	E	Yes	0	N/A	N/A	N/A
27-Jan-22	Sunny	OP7	15:04	22.2	1.5	SW	No	0	N/A	N/A	N/A
27-Jan-22	Sunny	OP8	15:08	22.3	1.2	SE	Yes	0	N/A	N/A	N/A
27-Jan-22	Sunny	OP9	15:11	22.1	1.9	SE	Yes	0	N/A	N/A	N/A
27-Jan-22	Sunny	OP10	15:14	22.1	2.2	E	Yes	0	N/A	N/A	N/A
27-Jan-22	Sunny	OP11	15:23	21.9	2.0	E	No	0	N/A	N/A	N/A
27-Jan-22	Fine	OP1	18:05	19.1	0.5	S	No	0	N/A	N/A	N/A
27-Jan-22	Fine	OP2	18:08	19.0	0.6	S	No	0	N/A	N/A	N/A
27-Jan-22	Fine	OP3	18:11	19.1	1.0	N	Yes	0	N/A	N/A	N/A
27-Jan-22	Fine	OP4	18:15	18.9	1.1	E	No	0	N/A	N/A	N/A
27-Jan-22	Fine	OP5	18:18	19.0	0.9	NE	Yes	0	N/A	N/A	N/A
27-Jan-22	Fine	OP6	18:21	19.1	0.7	N	Yes	0	N/A	N/A	N/A
27-Jan-22	Fine	OP7	18:25	19.1	1.3	N	Yes	0	N/A	N/A	N/A
27-Jan-22	Fine	OP8	18:28	18.9	0.9	N	Yes	0	N/A	N/A	N/A
27-Jan-22	Fine	OP9	18:31	19.1	0.4	NW	No	0	N/A	N/A	N/A
27-Jan-22	Fine	OP10	18:34	19.0	1.2	E	Yes	0	N/A	N/A	N/A
27-Jan-22	Fine	OP11	18:42	19.0	0.3	NE	No	0	N/A	N/A	N/A
28-Jan-22	Shower	OP1	10:45	18.8	2.9	N	Yes	1	Dead Body	Boar	N/A
28-Jan-22	Shower	OP2	10:48	19.1	0.7	N	Yes	0	N/A	N/A	N/A
28-Jan-22	Shower	OP3	10:51	18.8	2.4	W	No	0	N/A	N/A	N/A
28-Jan-22	Shower	OP4	10:54	19.0	0.5	SW	No	0	N/A	N/A	N/A
28-Jan-22	Shower	OP5	10:58	19.2	1.0	E	No	0	N/A	N/A	N/A
28-Jan-22	Shower	OP6	11:01	18.7	3.9	NE	Yes	0	N/A	N/A	N/A
28-Jan-22	Shower	OP7	11:04	19.2	2.1	N	Yes	0	N/A	N/A	N/A
28-Jan-22	Shower	OP8	11:07	19.0	1.3	S	No	0	N/A	N/A	N/A
28-Jan-22	Shower	OP9	11:10	18.9	2.7	E	Yes	0	N/A	N/A	N/A
28-Jan-22	Shower	OP10	11:13	18.9	3.3	SE	Yes	0	N/A	N/A	N/A
28-Jan-22	Shower	OP11	11:23	19.3	0.7	SE	No	0	N/A	N/A	N/A
28-Jan-22	Fine	OP1	14:45	18.9	1.9	N	Yes	1	Dead Body	Boar	N/A
28-Jan-22	Fine	OP2	14:48	19.0	2.0	N	Yes	0	N/A	N/A	N/A
28-Jan-22	Fine	OP3	14:51	18.8	2.7	SW	No	0	N/A	N/A	N/A
28-Jan-22	Fine	OP4	14:54	18.9	1.8	SW	No	0	N/A	N/A	N/A
28-Jan-22	Fine	OP5	14:57	18.7	3.2	E	No	0	N/A	N/A	N/A
28-Jan-22	Fine	OP6	15:01	18.9	1.2	NW	No	0	N/A	N/A	N/A
28-Jan-22	Fine	OP7	15:04	19.0	1.1	W	No	0	N/A	N/A	N/A

Date	Weather	Location	Time	Temperature (oC)	Wind Speed (m/s)	Wind Direction	From Project Site	Odour Intensity	Odour Characteristic	Possible Source	Remarks
28-Jan-22	Fine	OP8	15:07	19.1	1.3	SW	No	0	N/A	N/A	N/A
28-Jan-22	Fine	OP9	15:11	18.9	2.4	SE	Yes	0	N/A	N/A	N/A
28-Jan-22	Fine	OP10	15:15	19.2	1.5	NW	No	0	N/A	N/A	N/A
28-Jan-22	Fine	OP11	15:25	19.1	1.8	W	No	0	N/A	N/A	N/A
28-Jan-22	Fine	OP1	18:00	19.2	0.4	N	Yes	1	Dead Body	Boar	N/A
28-Jan-22	Fine	OP2	18:03	18.8	1.1	NW	Yes	0	N/A	N/A	N/A
28-Jan-22	Fine	OP3	18:07	18.8	2.4	NW	Yes	0	N/A	N/A	N/A
28-Jan-22	Fine	OP4	18:10	18.2	4.3	E	No	0	N/A	N/A	N/A
28-Jan-22	Fine	OP5	18:14	18.3	3.1	SE	No	0	N/A	N/A	N/A
28-Jan-22	Fine	OP6	18:17	18.3	2.0	S	No	0	N/A	N/A	N/A
28-Jan-22	Fine	OP7	18:20	18.5	1.9	N	Yes	0	N/A	N/A	N/A
28-Jan-22	Fine	OP8	18:23	18.4	1.6	S	No	0	N/A	N/A	N/A
28-Jan-22	Fine	OP9	18:27	18.4	1.7	NE	Yes	0	N/A	N/A	N/A
28-Jan-22	Fine	OP10	18:30	19.0	0.4	E	Yes	0	N/A	N/A	N/A
28-Jan-22	Fine	OP11	18:41	18.8	2.5	E	No	0	N/A	N/A	N/A
29-Jan-22	Overcast	OP1	10:38	18.7	1.1	N	Yes	0	N/A	N/A	N/A
29-Jan-22	Overcast	OP2	10:41	18.5	2.0	N	Yes	0	N/A	N/A	N/A
29-Jan-22	Overcast	OP3	10:45	18.8	0.5	SE	No	0	N/A	N/A	N/A
29-Jan-22	Overcast	OP4	10:48	18.5	1.3	N	Yes	0	N/A	N/A	N/A
29-Jan-22	Overcast	OP5	10:52	18.6	2.9	E	No	0	N/A	N/A	N/A
29-Jan-22	Overcast	OP6	10:55	18.4	1.2	N	No	0	N/A	N/A	N/A
29-Jan-22	Overcast	OP7	10:58	18.5	1.1	N	Yes	0	N/A	N/A	N/A
29-Jan-22	Overcast	OP8	11:02	18.7	0.8	N	Yes	0	N/A	N/A	N/A
29-Jan-22	Overcast	OP9	11:06	19.0	0.6	N	No	0	N/A	N/A	N/A
29-Jan-22	Overcast	OP10	11:09	18.9	1.5	E	Yes	0	N/A	N/A	N/A
29-Jan-22	Overcast	OP11	11:20	19.1	0.4	E	No	0	N/A	N/A	N/A
29-Jan-22	Sunny	OP1	15:00	22.2	1.1	S	No	0	N/A	N/A	N/A
29-Jan-22	Sunny	OP2	15:03	22.1	5.1	S	No	0	N/A	N/A	N/A
29-Jan-22	Sunny	OP3	15:07	22.3	0.7	SW	No	0	N/A	N/A	N/A
29-Jan-22	Sunny	OP4	15:11	22.1	2.5	E	No	0	N/A	N/A	N/A
29-Jan-22	Sunny	OP5	15:14	22.7	0.6	E	No	0	N/A	N/A	N/A
29-Jan-22	Sunny	OP6	15:17	22.5	1.6	SE	Yes	0	N/A	N/A	N/A
29-Jan-22	Sunny	OP7	15:21	23.0	0.5	S	No	0	N/A	N/A	N/A
29-Jan-22	Sunny	OP8	15:25	22.9	1.8	NW	No	0	N/A	N/A	N/A
29-Jan-22	Sunny	OP9	15:28	21.9	1.6	N	No	0	N/A	N/A	N/A
29-Jan-22	Sunny	OP10	15:31	21.6	2.1	NE	Yes	0	N/A	N/A	N/A
29-Jan-22	Sunny	OP11	15:41	20.8	2.7	NE	No	0	N/A	N/A	N/A
29-Jan-22	Fine	OP1	18:00	19.7	0.3	S	No	0	N/A	N/A	N/A

Date	Weather	Location	Time	Temperature (oC)	Wind Speed (m/s)	Wind Direction	From Project Site	Odour Intensity	Odour Characteristic	Possible Source	Remarks
29-Jan-22	Fine	OP2	18:03	19.3	1.1	S	No	0	N/A	N/A	N/A
29-Jan-22	Fine	OP3	18:06	19.1	0.5	NE	No	0	N/A	N/A	N/A
29-Jan-22	Fine	OP4	18:10	19.0	1.1	E	No	0	N/A	N/A	N/A
29-Jan-22	Fine	OP5	18:14	18.9	1.9	E	No	0	N/A	N/A	N/A
29-Jan-22	Fine	OP6	18:17	19.4	0.6	SE	Yes	0	N/A	N/A	N/A
29-Jan-22	Fine	OP7	18:21	19.3	0.8	N	Yes	0	N/A	N/A	N/A
29-Jan-22	Fine	OP8	18:24	19.2	0.7	E	Yes	0	N/A	N/A	N/A
29-Jan-22	Fine	OP9	18:28	19.0	1.5	N	No	0	N/A	N/A	N/A
29-Jan-22	Fine	OP10	18:31	19.3	1.2	E	Yes	0	N/A	N/A	N/A
29-Jan-22	Fine	OP11	18:42	19.2	0.1	E	No	0	N/A	N/A	N/A
30-Jan-22	Sunny	OP1	10:30	14.6	2.4	N	Yes	0	N/A	N/A	N/A
30-Jan-22	Sunny	OP2	10:33	14.4	3.8	N	Yes	0	N/A	N/A	N/A
30-Jan-22	Sunny	OP3	10:36	14.7	1.4	NE	No	0	N/A	N/A	N/A
30-Jan-22	Sunny	OP4	10:40	14.6	1.8	NE	Yes	0	N/A	N/A	N/A
30-Jan-22	Sunny	OP5	10:43	14.5	3.4	NE	Yes	0	N/A	N/A	N/A
30-Jan-22	Sunny	OP6	10:46	14.8	1.7	N	No	0	N/A	N/A	N/A
30-Jan-22	Sunny	OP7	10:50	14.7	2.6	N	Yes	0	N/A	N/A	N/A
30-Jan-22	Sunny	OP8	10:53	14.9	1.3	N	Yes	0	N/A	N/A	N/A
30-Jan-22	Sunny	OP9	10:57	15.0	1.6	N	No	0	N/A	N/A	N/A
30-Jan-22	Sunny	OP10	11:00	15.1	1.3	N	No	0	N/A	N/A	N/A
30-Jan-22	Sunny	OP11	11:10	15.3	3.2	S	Yes	0	N/A	N/A	N/A
30-Jan-22	Sunny	OP1	15:11	18.5	3.0	N	Yes	0	N/A	N/A	N/A
30-Jan-22	Sunny	OP2	15:07	18.7	2.5	N	Yes	0	N/A	N/A	N/A
30-Jan-22	Sunny	OP3	15:03	18.9	1.2	N	Yes	0	N/A	N/A	N/A
30-Jan-22	Sunny	OP4	15:00	19.0	0.6	W	No	0	N/A	N/A	N/A
30-Jan-22	Sunny	OP5	14:57	18.8	3.2	E	No	0	N/A	N/A	N/A
30-Jan-22	Sunny	OP6	14:54	18.7	2.7	N	No	0	N/A	N/A	N/A
30-Jan-22	Sunny	OP7	14:50	18.6	3.2	N	Yes	0	N/A	N/A	N/A
30-Jan-22	Sunny	OP8	14:47	18.4	2.8	N	Yes	0	N/A	N/A	N/A
30-Jan-22	Sunny	OP9	14:43	18.7	2.6	N	No	0	N/A	N/A	N/A
30-Jan-22	Sunny	OP10	14:40	18.5	1.4	N	No	0	N/A	N/A	N/A
30-Jan-22	Sunny	OP11	14:30	18.9	1.7	S	No	0	N/A	N/A	N/A
30-Jan-22	Fine	OP1	18:00	16.7	2.0	N	Yes	0	N/A	N/A	N/A
30-Jan-22	Fine	OP2	18:03	16.7	2.4	N	Yes	0	N/A	N/A	N/A
30-Jan-22	Fine	OP3	18:06	16.8	1.1	NE	No	0	N/A	N/A	N/A
30-Jan-22	Fine	OP4	18:10	16.9	0.9	E	No	0	N/A	N/A	N/A
30-Jan-22	Fine	OP5	18:13	16.6	1.3	NE	Yes	0	N/A	N/A	N/A
30-Jan-22	Fine	OP6	18:17	16.3	2.4	NE	Yes	0	N/A	N/A	N/A

Date	Weather	Location	Time	Temperature (oC)	Wind Speed (m/s)	Wind Direction	From Project Site	Odour Intensity	Odour Characteristic	Possible Source	Remarks
30-Jan-22	Fine	OP7	18:20	16.0	2.0	N	Yes	0	N/A	N/A	N/A
30-Jan-22	Fine	OP8	18:24	15.9	1.7	NW	No	0	N/A	N/A	N/A
30-Jan-22	Fine	OP9	18:28	16.0	0.6	N	No	0	N/A	N/A	N/A
30-Jan-22	Fine	OP10	18:31	15.9	1.3	NE	Yes	0	N/A	N/A	N/A
30-Jan-22	Fine	OP11	18:42	15.6	1.1	E	No	0	N/A	N/A	N/A
31-Jan-22	Fine	OP1	11:05	12.1	2.6	N	Yes	0	N/A	N/A	N/A
31-Jan-22	Fine	OP2	11:08	12.4	3.5	N	Yes	0	N/A	N/A	N/A
31-Jan-22	Fine	OP3	11:11	12.3	1.4	N	Yes	0	N/A	N/A	N/A
31-Jan-22	Fine	OP4	11:14	12.3	1.0	N	Yes	0	N/A	N/A	N/A
31-Jan-22	Fine	OP5	11:17	12.5	1.7	N	No	0	N/A	N/A	N/A
31-Jan-22	Fine	OP6	11:20	12.2	2.2	N	No	0	N/A	N/A	N/A
31-Jan-22	Fine	OP7	11:24	12.0	3.0	N	Yes	0	N/A	N/A	N/A
31-Jan-22	Fine	OP8	11:27	12.3	2.6	N	Yes	0	N/A	N/A	N/A
31-Jan-22	Fine	OP9	11:30	12.4	3.4	N	No	0	N/A	N/A	N/A
31-Jan-22	Fine	OP10	11:33	12.5	2.2	N	No	0	N/A	N/A	N/A
31-Jan-22	Fine	OP11	11:44	12.4	1.5	E	No	0	N/A	N/A	N/A
31-Jan-22	Fine	OP1	15:11	14.5	2.1	N	Yes	0	N/A	N/A	N/A
31-Jan-22	Fine	OP2	15:14	14.7	2.4	NW	Yes	0	N/A	N/A	N/A
31-Jan-22	Fine	OP3	15:16	15.2	0.5	W	No	0	N/A	N/A	N/A
31-Jan-22	Fine	OP4	15:19	14.6	1.3	E	No	0	N/A	N/A	N/A
31-Jan-22	Fine	OP5	15:22	14.2	1.6	SE	No	1	Cooking Smell	EPD Office Building	N/A
31-Jan-22	Fine	OP6	15:25	15.4	0.0	N/A	N/A	0	N/A	N/A	N/A
31-Jan-22	Fine	OP7	15:28	14.5	2.2	N	Yes	0	N/A	N/A	N/A
31-Jan-22	Fine	OP8	15:31	14.3	0.8	NE	Yes	0	N/A	N/A	N/A
31-Jan-22	Fine	OP9	15:34	14.5	1.8	E	Yes	0	N/A	N/A	N/A
31-Jan-22	Fine	OP10	15:36	14.9	0.6	SE	Yes	0	N/A	N/A	N/A
31-Jan-22	Fine	OP11	15:45	14.2	1.1	SE	No	0	N/A	N/A	N/A
31-Jan-22	Fine	OP1	18:00	13.8	2.4	N	Yes	0	N/A	N/A	N/A
31-Jan-22	Fine	OP2	18:03	14.1	2.1	N	Yes	0	N/A	N/A	N/A
31-Jan-22	Fine	OP3	18:07	14.2	1.0	N	Yes	0	N/A	N/A	N/A
31-Jan-22	Fine	OP4	18:10	14.2	2.0	N	Yes	0	N/A	N/A	N/A
31-Jan-22	Fine	OP5	18:14	14.0	2.1	NE	Yes	0	N/A	N/A	N/A
31-Jan-22	Fine	OP6	18:18	14.4	0.0	N/A	N/A	0	N/A	N/A	N/A
31-Jan-22	Fine	OP7	18:21	14.6	2.2	E	Yes	0	N/A	N/A	N/A
31-Jan-22	Fine	OP8	18:25	14.0	0.6	N	Yes	0	N/A	N/A	N/A
31-Jan-22	Fine	OP9	18:28	14.2	0.8	N	No	0	N/A	N/A	N/A
31-Jan-22	Fine	OP10	18:31	14.3	0.6	N	No	0	N/A	N/A	N/A
31-Jan-22	Fine	OP11	18:42	14.0	1.4	E	No	0	N/A	N/A	N/A

Date	Weather	Location	Time	Temperature (oC)	Wind Speed (m/s)	Wind Direction	From Project Site	Odour Intensity	Odour Characteristic	Possible Source	Remarks
1-Feb-22	Fine	OP1	10:55	14.9	2.0	N	Yes	0	N/A	N/A	N/A
1-Feb-22	Fine	OP2	10:58	14.6	1.8	N	Yes	0	N/A	N/A	N/A
1-Feb-22	Fine	OP3	11:01	14.5	2.3	N	Yes	0	N/A	N/A	N/A
1-Feb-22	Fine	OP4	11:04	14.5	2.4	W	No	0	N/A	N/A	N/A
1-Feb-22	Fine	OP5	11:08	15.1	0.7	N	No	0	N/A	N/A	N/A
1-Feb-22	Fine	OP6	11:11	14.9	0.9	N	No	0	N/A	N/A	N/A
1-Feb-22	Fine	OP7	11:15	15.2	1.4	N	Yes	0	N/A	N/A	N/A
1-Feb-22	Fine	OP8	11:19	15.4	2.2	N	Yes	0	N/A	N/A	N/A
1-Feb-22	Fine	OP9	11:23	14.6	2.7	N	No	0	N/A	N/A	N/A
1-Feb-22	Fine	OP10	11:27	14.0	1.5	N	No	0	N/A	N/A	N/A
1-Feb-22	Fine	OP11	11:38	13.8	2.9	E	No	0	N/A	N/A	N/A
1-Feb-22	Overcast	OP1	15:47	13.5	1.8	N	Yes	0	N/A	N/A	N/A
1-Feb-22	Overcast	OP2	15:44	14.7	0.4	W	Yes	0	N/A	N/A	N/A
1-Feb-22	Overcast	OP3	15:39	14.5	0.8	NW	Yes	0	N/A	N/A	N/A
1-Feb-22	Overcast	OP4	15:35	14.3	N/A	N/A	N/A	0	N/A	N/A	N/A
1-Feb-22	Overcast	OP5	15:32	14.2	1.4	N	No	0	N/A	N/A	N/A
1-Feb-22	Overcast	OP6	15:28	13.7	2.2	N	No	0	N/A	N/A	N/A
1-Feb-22	Overcast	OP7	15:24	13.5	2.1	N	Yes	0	N/A	N/A	N/A
1-Feb-22	Overcast	OP8	15:20	13.4	1.8	N	Yes	0	N/A	N/A	N/A
1-Feb-22	Overcast	OP9	15:17	13.5	1.7	N	No	0	N/A	N/A	N/A
1-Feb-22	Overcast	OP10	15:14	13.7	2.2	N	No	0	N/A	N/A	N/A
1-Feb-22	Overcast	OP11	15:04	14.0	N/A	N/A	N/A	0	N/A	N/A	N/A
1-Feb-22	Fine	OP1	18:00	14.0	1.1	N	Yes	0	N/A	N/A	N/A
1-Feb-22	Fine	OP2	18:04	13.9	0.8	N	Yes	0	N/A	N/A	N/A
1-Feb-22	Fine	OP3	18:07	13.6	0.9	N	Yes	0	N/A	N/A	N/A
1-Feb-22	Fine	OP4	18:10	13.4	0.6	S	No	0	N/A	N/A	N/A
1-Feb-22	Fine	OP5	18:14	12.8	0.8	N	No	0	N/A	N/A	N/A
1-Feb-22	Fine	OP6	18:17	12.3	2.1	N	No	0	N/A	N/A	N/A
1-Feb-22	Fine	OP7	18:21	12.2	2.6	N	No	0	N/A	N/A	N/A
1-Feb-22	Fine	OP8	18:24	11.7	1.0	N	Yes	0	N/A	N/A	N/A
1-Feb-22	Fine	OP9	18:27	11.9	1.2	N	No	0	N/A	N/A	N/A
1-Feb-22	Fine	OP10	18:31	11.7	1.3	N	No	0	N/A	N/A	N/A
1-Feb-22	Fine	OP11	18:42	11.5	1.8	E	No	0	N/A	N/A	N/A
2-Feb-22	Overcast	OP1	10:45	15.3	1.3	N	Yes	0	N/A	N/A	N/A
2-Feb-22	Overcast	OP2	10:48	15.4	0.7	NW	Yes	0	N/A	N/A	N/A
2-Feb-22	Overcast	OP3	10:51	15.3	1.0	N	Yes	0	N/A	N/A	N/A
2-Feb-22	Overcast	OP4	10:54	15.2	1.1	SW	No	0	N/A	N/A	N/A
2-Feb-22	Overcast	OP5	10:57	15.0	3.1	E	No	0	N/A	N/A	N/A

Date	Weather	Location	Time	Temperature (oC)	Wind Speed (m/s)	Wind Direction	From Project Site	Odour Intensity	Odour Characteristic	Possible Source	Remarks
2-Feb-22	Overcast	OP6	11:01	15.1	1.4	SW	No	0	N/A	N/A	N/A
2-Feb-22	Overcast	OP7	11:05	15.0	2.1	N	Yes	0	N/A	N/A	N/A
2-Feb-22	Overcast	OP8	11:08	15.2	0.7	SW	No	0	N/A	N/A	N/A
2-Feb-22	Overcast	OP9	11:12	15.0	0.8	NW	No	1	Acidic	Town Gas Plant	N/A
2-Feb-22	Overcast	OP10	11:15	14.9	1.3	NE	Yes	0	N/A	N/A	N/A
2-Feb-22	Overcast	OP11	11:26	15.3	0.9	SW	Yes	0	N/A	N/A	N/A
2-Feb-22	Overcast	OP1	14:55	16.8	1.1	NW	Yes	0	N/A	N/A	N/A
2-Feb-22	Overcast	OP2	14:58	16.6	0.8	N	Yes	0	N/A	N/A	N/A
2-Feb-22	Overcast	OP3	15:02	16.7	0.5	NE	No	0	N/A	N/A	N/A
2-Feb-22	Overcast	OP4	15:05	16.8	0.9	N	Yes	0	N/A	N/A	N/A
2-Feb-22	Overcast	OP5	15:09	16.4	1.2	N	Yes	0	N/A	N/A	N/A
2-Feb-22	Overcast	OP6	15:12	16.9	0.5	N	Yes	0	N/A	N/A	N/A
2-Feb-22	Overcast	OP7	15:16	17.0	0.1	N	Yes	0	N/A	N/A	N/A
2-Feb-22	Overcast	OP8	15:19	16.6	1.5	NE	Yes	0	N/A	N/A	N/A
2-Feb-22	Overcast	OP9	15:23	16.5	0.6	NW	No	0	N/A	N/A	N/A
2-Feb-22	Overcast	OP10	15:26	16.9	0.3	NW	No	0	N/A	N/A	N/A
2-Feb-22	Overcast	OP11	15:36	16.1	1.4	NE	No	0	N/A	N/A	N/A
2-Feb-22	Overcast	OP1	18:00	14.6	0.9	N	Yes	0	N/A	N/A	N/A
2-Feb-22	Overcast	OP2	18:03	14.2	1.5	N	Yes	0	N/A	N/A	N/A
2-Feb-22	Overcast	OP3	18:06	14.1	1.2	NE	No	0	N/A	N/A	N/A
2-Feb-22	Overcast	OP4	18:10	14.8	0.5	E	No	0	N/A	N/A	N/A
2-Feb-22	Overcast	OP5	18:13	14.6	0.7	E	No	0	N/A	N/A	N/A
2-Feb-22	Overcast	OP6	18:16	14.3	1.6	N	Yes	0	N/A	N/A	N/A
2-Feb-22	Overcast	OP7	18:20	13.9	1.0	NE	Yes	0	N/A	N/A	N/A
2-Feb-22	Overcast	OP8	18:24	14.1	2.1	N	Yes	0	N/A	N/A	N/A
2-Feb-22	Overcast	OP9	18:27	14.2	1.4	N	No	0	N/A	N/A	N/A
2-Feb-22	Overcast	OP10	18:30	14.6	0.8	N	No	0	N/A	N/A	N/A
2-Feb-22	Overcast	OP11	18:41	14.1	0.9	NE	No	0	N/A	N/A	N/A
3-Feb-22	Overcast	OP1	10:30	13.5	2.1	N	Yes	0	N/A	N/A	N/A
3-Feb-22	Overcast	OP2	10:33	13.6	2.0	N	Yes	0	N/A	N/A	N/A
3-Feb-22	Overcast	OP3	10:37	13.6	2.1	N	Yes	0	N/A	N/A	N/A
3-Feb-22	Overcast	OP4	10:40	13.8	1.1	NE	Yes	0	N/A	N/A	N/A
3-Feb-22	Overcast	OP5	10:43	14.0	1.2	E	No	0	N/A	N/A	N/A
3-Feb-22	Overcast	OP6	10:47	13.9	1.6	E	Yes	0	N/A	N/A	N/A
3-Feb-22	Overcast	OP7	10:50	14.1	1.4	N	Yes	0	N/A	N/A	N/A
3-Feb-22	Overcast	OP8	10:53	13.7	2.0	N	Yes	0	N/A	N/A	N/A
3-Feb-22	Overcast	OP9	10:57	13.7	0.6	N	No	0	N/A	N/A	N/A
3-Feb-22	Overcast	OP10	11:00	13.8	0.4	N	No	0	N/A	N/A	N/A

Date	Weather	Location	Time	Temperature (oC)	Wind Speed (m/s)	Wind Direction	From Project Site	Odour Intensity	Odour Characteristic	Possible Source	Remarks
3-Feb-22	Overcast	OP11	11:11	13.5	3.0	E	No	0	N/A	N/A	N/A
3-Feb-22	Overcast	OP1	15:44	14.0	3.2	N	Yes	0	N/A	N/A	N/A
3-Feb-22	Overcast	OP2	15:41	14.1	1.4	N	Yes	0	N/A	N/A	N/A
3-Feb-22	Overcast	OP3	15:37	13.9	2.7	N	Yes	0	N/A	N/A	N/A
3-Feb-22	Overcast	OP4	15:34	14.2	1.0	N	Yes	0	N/A	N/A	N/A
3-Feb-22	Overcast	OP5	15:30	14.5	2.1	N	No	0	N/A	N/A	N/A
3-Feb-22	Overcast	OP6	15:27	14.0	3.0	NW	No	0	N/A	N/A	N/A
3-Feb-22	Overcast	OP7	15:24	14.2	2.1	N	Yes	0	N/A	N/A	N/A
3-Feb-22	Overcast	OP8	15:20	14.6	0.6	N	Yes	0	N/A	N/A	N/A
3-Feb-22	Overcast	OP9	15:17	14.5	0.7	NE	Yes	0	N/A	N/A	N/A
3-Feb-22	Overcast	OP10	15:14	14.6	0.8	NE	Yes	0	N/A	N/A	N/A
3-Feb-22	Overcast	OP11	15:03	14.3	3.0	E	No	0	N/A	N/A	N/A
3-Feb-22	Overcast	OP1	18:00	14.2	0.6	N	Yes	0	N/A	N/A	N/A
3-Feb-22	Overcast	OP2	18:02	14.3	0.8	N	Yes	0	N/A	N/A	N/A
3-Feb-22	Overcast	OP3	18:06	13.9	0.5	NE	Yes	0	N/A	N/A	N/A
3-Feb-22	Overcast	OP4	18:10	13.7	0.9	NE	Yes	0	N/A	N/A	N/A
3-Feb-22	Overcast	OP5	18:14	14.0	1.2	N	No	0	N/A	N/A	N/A
3-Feb-22	Overcast	OP6	18:17	14.1	1.1	NE	Yes	0	N/A	N/A	N/A
3-Feb-22	Overcast	OP7	18:19	13.9	0.9	N	Yes	0	N/A	N/A	N/A
3-Feb-22	Overcast	OP8	18:22	13.8	2.0	N	Yes	0	N/A	N/A	N/A
3-Feb-22	Overcast	OP9	18:26	13.9	1.3	N	No	0	N/A	N/A	N/A
3-Feb-22	Overcast	OP10	18:29	14.2	1.4	N	No	0	N/A	N/A	N/A
3-Feb-22	Overcast	OP11	18:42	13.7	2.0	E	No	0	N/A	N/A	N/A
4-Feb-22	Fine	OP1	10:33	14.3	2.1	NE	Yes	0	N/A	N/A	N/A
4-Feb-22	Fine	OP2	10:36	14.0	2.1	NE	Yes	0	N/A	N/A	N/A
4-Feb-22	Fine	OP3	10:38	14.3	1.9	NE	No	0	N/A	N/A	N/A
4-Feb-22	Fine	OP4	10:40	15.1	1.0	E	No	0	N/A	N/A	N/A
4-Feb-22	Fine	OP5	10:43	14.6	2.0	NE	Yes	0	N/A	N/A	N/A
4-Feb-22	Fine	OP6	10:45	14.5	3.2	NE	Yes	0	N/A	N/A	N/A
4-Feb-22	Fine	OP7	10:48	14.3	3.6	NE	Yes	0	N/A	N/A	N/A
4-Feb-22	Fine	OP8	10:50	14.4	2.7	NE	Yes	0	N/A	N/A	N/A
4-Feb-22	Fine	OP9	10:52	14.9	0.8	NE	Yes	0	N/A	N/A	N/A
4-Feb-22	Fine	OP10	10:54	15.1	0.0	N/A	N/A	0	N/A	N/A	N/A
4-Feb-22	Fine	OP11	11:02	14.6	2.2	SE	No	0	N/A	N/A	N/A
4-Feb-22	Sunny	OP1	14:48	17.3	3.2	N	Yes	0	N/A	N/A	N/A
4-Feb-22	Sunny	OP2	14:51	17.6	1.4	N	Yes	0	N/A	N/A	N/A
4-Feb-22	Sunny	OP3	14:54	17.2	1.7	W	No	0	N/A	N/A	N/A
4-Feb-22	Sunny	OP4	14:57	17.5	1.2	E	No	0	N/A	N/A	N/A

Date	Weather	Location	Time	Temperature (oC)	Wind Speed (m/s)	Wind Direction	From Project Site	Odour Intensity	Odour Characteristic	Possible Source	Remarks
4-Feb-22	Sunny	OP5	15:01	18.1	2.2	N	No	0	N/A	N/A	N/A
4-Feb-22	Sunny	OP6	15:05	18.3	2.9	N	No	0	N/A	N/A	N/A
4-Feb-22	Sunny	OP7	15:09	18.5	2.4	N	Yes	0	N/A	N/A	N/A
4-Feb-22	Sunny	OP8	15:13	18.4	2.3	N	Yes	0	N/A	N/A	N/A
4-Feb-22	Sunny	OP9	15:17	18.1	2.1	N	No	0	N/A	N/A	N/A
4-Feb-22	Sunny	OP10	15:20	18.6	0.9	N	No	0	N/A	N/A	N/A
4-Feb-22	Sunny	OP11	15:30	18.8	1.8	E	No	0	N/A	N/A	N/A
4-Feb-22	Fine	OP1	18:00	15.3	3.3	N	Yes	0	N/A	N/A	N/A
4-Feb-22	Fine	OP2	18:03	15.6	1.7	N	Yes	0	N/A	N/A	N/A
4-Feb-22	Fine	OP3	18:06	14.9	0.5	NW	Yes	0	N/A	N/A	N/A
4-Feb-22	Fine	OP4	18:10	14.8	1.4	E	No	0	N/A	N/A	N/A
4-Feb-22	Fine	OP5	18:14	14.4	2.9	NE	Yes	0	N/A	N/A	N/A
4-Feb-22	Fine	OP6	18:17	14.3	1.8	N	Yes	0	N/A	N/A	N/A
4-Feb-22	Fine	OP7	18:21	14.2	1.6	NE	Yes	0	N/A	N/A	N/A
4-Feb-22	Fine	OP8	18:25	14.5	1.7	N	Yes	0	N/A	N/A	N/A
4-Feb-22	Fine	OP9	18:29	14.6	1.4	NE	Yes	0	N/A	N/A	N/A
4-Feb-22	Fine	OP10	18:32	14.8	1.0	NE	Yes	0	N/A	N/A	N/A
4-Feb-22	Fine	OP11	18:43	14.1	2.7	E	No	0	N/A	N/A	N/A
11-Feb-22	Overcast	OP1	14:55	20.2	1.9	NW	Yes	0	N/A	N/A	N/A
11-Feb-22	Overcast	OP2	14:58	20.8	2.0	NW	Yes	0	N/A	N/A	N/A
11-Feb-22	Overcast	OP3	15:00	20.1	1.0	N	Yes	0	N/A	N/A	N/A
11-Feb-22	Overcast	OP4	15:02	20.3	2.2	NE	Yes	0	N/A	N/A	N/A
11-Feb-22	Overcast	OP5	15:04	19.5	3.2	E	No	0	N/A	N/A	N/A
11-Feb-22	Overcast	OP6	15:06	20.3	3.4	NW	No	0	N/A	N/A	N/A
11-Feb-22	Overcast	OP7	15:09	20.3	1.2	N	Yes	0	N/A	N/A	N/A
11-Feb-22	Overcast	OP8	15:11	19.8	2.0	N	Yes	0	N/A	N/A	N/A
11-Feb-22	Overcast	OP9	15:13	20.8	N/A	N/A	N/A	0	N/A	N/A	N/A
11-Feb-22	Overcast	OP10	15:16	21.2	0.8	NE	Yes	0	N/A	N/A	N/A
11-Feb-22	Overcast	OP11	15:24	19.7	3.0	SE	No	1	Exhaust gas	Generator	N/A
18-Feb-22	Overcast	OP1	14:28	16.7	4.3	SE	No	0	N/A	N/A	N/A
18-Feb-22	Overcast	OP2	14:31	16.1	3.0	SE	No	0	N/A	N/A	N/A
18-Feb-22	Overcast	OP3	14:33	15.8	9.0	N	Yes	0	N/A	N/A	N/A
18-Feb-22	Overcast	OP4	14:36	16.1	2.0	N	Yes	0	N/A	N/A	N/A
18-Feb-22	Overcast	OP5	14:38	16.2	8.8	E	No	0	N/A	N/A	N/A
18-Feb-22	Overcast	OP6	14:41	16.5	4.7	N	No	0	N/A	N/A	N/A
18-Feb-22	Overcast	OP7	14:44	16.7	5.6	NW	No	0	N/A	N/A	N/A
18-Feb-22	Overcast	OP8	14:46	16.8	1.0	E	Yes	0	N/A	N/A	N/A
18-Feb-22	Overcast	OP9	14:49	16.2	10.1	N	No	0	N/A	N/A	N/A

Date	Weather	Location	Time	Temperature (oC)	Wind Speed (m/s)	Wind Direction	From Project Site	Odour Intensity	Odour Characteristic	Possible Source	Remarks
18-Feb-22	Overcast	OP10	14:51	17.9	1.2	N	No	0	N/A	N/A	N/A
18-Feb-22	Overcast	OP11	14:59	17.8	0.7	E	No	0	N/A	N/A	N/A
21-Feb-22	Rainy	OP1	14:44	8.7	1.3	NW	Yes	0	N/A	N/A	N/A
21-Feb-22	Rainy	OP2	14:48	8.9	1.8	NW	Yes	0	N/A	N/A	N/A
21-Feb-22	Rainy	OP3	14:51	9.2	0.8	NE	No	0	N/A	N/A	N/A
21-Feb-22	Rainy	OP4	14:53	10.6	N/A	N/A	N/A	0	N/A	N/A	N/A
21-Feb-22	Rainy	OP5	14:56	9.9	1.0	NW	Yes	0	N/A	N/A	N/A
21-Feb-22	Rainy	OP6	14:58	9.9	2.0	NW	Yes	0	N/A	N/A	N/A
21-Feb-22	Rainy	OP7	15:00	9.8	1.2	N	Yes	0	N/A	N/A	N/A
21-Feb-22	Rainy	OP8	15:03	9.8	1.4	N	No	0	N/A	N/A	N/A
21-Feb-22	Rainy	OP9	15:06	9.8	1.2	N	No	0	N/A	N/A	N/A
21-Feb-22	Rainy	OP10	15:13	9.7	1.4	N	No	0	N/A	N/A	N/A
21-Feb-22	Rainy	OP11	15:20	9.6	0.8	SE	No	0	N/A	N/A	N/A
28-Feb-22	Sunny	OP1	13:43	23.3	3.9	N	Yes	0	N/A	N/A	N/A
28-Feb-22	Sunny	OP2	13:46	20.4	9.6	N	Yes	0	N/A	N/A	N/A
28-Feb-22	Sunny	OP3	13:49	22.3	0.9	N	Yes	0	N/A	N/A	N/A
28-Feb-22	Sunny	OP4	13:52	22.8	11.7	NE	Yes	0	N/A	N/A	N/A
28-Feb-22	Sunny	OP5	13:55	20.1	6.2	E	Yes	0	N/A	N/A	N/A
28-Feb-22	Sunny	OP6	13:59	21.8	2.3	NW	Yes	0	N/A	N/A	N/A
28-Feb-22	Sunny	OP7	14:03	21.0	4.2	NW	No	0	N/A	N/A	N/A
28-Feb-22	Sunny	OP8	14:07	21.7	3.1	NW	No	0	N/A	N/A	N/A
28-Feb-22	Sunny	OP9	14:10	23.2	3.8	NE	No	0	N/A	N/A	N/A
28-Feb-22	Sunny	OP10	14:13	24.2	4.0	NE	Yes	0	N/A	N/A	N/A
28-Feb-22	Sunny	OP11	14:24	21.4	2.9	NE	No	0	N/A	N/A	N/A
7-Mar-22	Fine	OP1	11:20	22.4	2.5	NW	Yes	0	N/A	N/A	N/A
7-Mar-22	Fine	OP2	11:23	22.4	2.4	NW	Yes	0	N/A	N/A	N/A
7-Mar-22	Fine	OP3	11:25	23.7	1.0	NE	No	0	N/A	N/A	N/A
7-Mar-22	Fine	OP4	11:27	24.3	1.0	E	No	0	N/A	N/A	N/A
7-Mar-22	Fine	OP5	11:30	23.5	3.0	E	No	0	N/A	N/A	N/A
7-Mar-22	Fine	OP6	11:32	23.8	0.8	NW	No	0	N/A	N/A	N/A
7-Mar-22	Fine	OP7	11:34	23.1	2.1	N	Yes	0	N/A	N/A	N/A
7-Mar-22	Fine	OP8	11:40	24.0	1.3	N	No	0	N/A	N/A	N/A
7-Mar-22	Fine	OP9	11:44	23.5	1.8	N	No	0	N/A	N/A	N/A
7-Mar-22	Fine	OP10	11:46	23.1	2.3	N	No	0	N/A	N/A	N/A
7-Mar-22	Fine	OP11	11:55	23.1	1.1	SE	No	0	N/A	N/A	N/A
16-Mar-22	Sunny	OP1	13:26	24.6	6.5	S	No	0	N/A	N/A	N/A
16-Mar-22	Sunny	OP2	13:30	24.9	1.8	S	No	0	N/A	N/A	N/A
16-Mar-22	Sunny	OP3	13:33	26.1	1.6	S	No	0	N/A	N/A	N/A

Date	Weather	Location	Time	Temperature (oC)	Wind Speed (m/s)	Wind Direction	From Project Site	Odour Intensity	Odour Characteristic	Possible Source	Remarks
16-Mar-22	Sunny	OP4	13:35	25.4	1.5	W	No	0	N/A	N/A	N/A
16-Mar-22	Sunny	OP5	13:39	24.8	2.9	E	No	0	N/A	N/A	N/A
16-Mar-22	Sunny	OP6	13:41	24.8	3.2	N	Yes	0	N/A	N/A	N/A
16-Mar-22	Sunny	OP7	13:45	24.7	0.0	N/A	N/A	1	Acidic	Slurry Truck	N/A
16-Mar-22	Sunny	OP8	13:50	23.8	7.1	N	No	0	N/A	N/A	N/A
16-Mar-22	Sunny	OP9	13:54	25.0	2.6	E	Yes	0	N/A	N/A	N/A
16-Mar-22	Sunny	OP10	13:56	23.8	3.2	N	No	0	N/A	N/A	N/A
16-Mar-22	Sunny	OP11	14:06	26.6	0.0	N/A	N/A	0	N/A	N/A	N/A
21-Mar-22	Overcast	OP1	13:39	23.0	2.4	N	Yes	0	N/A	N/A	N/A
21-Mar-22	Overcast	OP2	13:41	22.8	2.1	N	Yes	0	N/A	N/A	N/A
21-Mar-22	Overcast	OP3	13:44	23.1	1.6	W	No	0	N/A	N/A	N/A
21-Mar-22	Overcast	OP4	13:46	23.3	0.8	N	Yes	0	N/A	N/A	N/A
21-Mar-22	Overcast	OP5	13:49	22.4	2.0	NW	No	0	N/A	N/A	N/A
21-Mar-22	Overcast	OP6	13:51	22.4	2.2	N	Yes	0	N/A	N/A	N/A
21-Mar-22	Overcast	OP7	13:53	22.3	1.0	N	Yes	0	N/A	N/A	N/A
21-Mar-22	Overcast	OP8	13:56	22.4	2.8	N	No	0	N/A	N/A	N/A
21-Mar-22	Overcast	OP9	13:59	22.3	1.5	E	Yes	0	N/A	N/A	N/A
21-Mar-22	Overcast	OP10	14:02	22.6	1.8	NE	Yes	0	N/A	N/A	N/A
21-Mar-22	Overcast	OP11	14:10	22.3	0.8	SE	No	0	N/A	N/A	N/A
29-Mar-22	Fine	OP1	13:27	22.3	4.7	N	Yes	0	N/A	N/A	N/A
29-Mar-22	Fine	OP2	13:31	22.5	2.0	S	No	0	N/A	N/A	N/A
29-Mar-22	Fine	OP3	13:34	23.5	5.0	SW	No	0	N/A	N/A	N/A
29-Mar-22	Fine	OP4	13:37	21.2	3.7	E	No	0	N/A	N/A	N/A
29-Mar-22	Fine	OP5	13:40	21.6	4.9	E	No	0	N/A	N/A	N/A
29-Mar-22	Fine	OP6	13:42	21.2	5.4	E	Yes	0	N/A	N/A	N/A
29-Mar-22	Fine	OP7	13:44	21.5	1.3	N	Yes	0	N/A	N/A	N/A
29-Mar-22	Fine	OP8	13:48	22.7	6.2	N	No	1	Diesel	Generator	N/A
29-Mar-22	Fine	OP9	13:53	22.3	8.3	E	Yes	0	N/A	N/A	N/A
29-Mar-22	Fine	OP10	13:55	22.6	5.9	N	No	0	N/A	N/A	N/A
29-Mar-22	Fine	OP11	14:04	21.1	3.8	E	No	1	Exhaust Gas	Excavator	N/A

Annex D5

Thermal Oxidizer, Landfill Gas Flare and Landfill Gas Generator Stack Emission Monitoring Results

Table D5.1 Thermal Oxidiser Stack Emission Monitoring Results

Parameters	**Monitoring Results (January 2022)**
NO_2	0.38 gs^{-1}
CO	0.047 gs^{-1}
SO_2	<0.015 gs^{-1}
Benzene	<4 x 10^{-5} gs^{-1}
Vinyl chloride	<3 x 10^{-5} gs^{-1}
Exhaust gas velocity	9.9 ms^{-1}
Parameters	**Monitoring Results (February 2022)**
NO_2	1.17 gs^{-1}
CO	0.06 gs^{-1}
SO_2	0.02 gs^{-1}
Benzene	<3 x 10^{-5} gs^{-1}
Vinyl chloride	<3 x 10^{-5} gs^{-1}
Non-methane Organic Carbons	3.6 x 10^{-3} gs^{-1}
Ammonia	6.52 x 10^{-2} gs^{-1}
Exhaust gas velocity	9.9 ms^{-1}
Parameters	**Monitoring Results (March 2022)**
NO_2	1.54 gs^{-1}
CO	0.04 gs^{-1}
SO_2	<0.01 gs^{-1}
Benzene	<3 x 10^{-5} gs^{-1}
Vinyl chloride	<2 x 10^{-5} gs^{-1}
Exhaust gas velocity	9.1 ms^{-1}

Table D5.2 Thermal Oxidiser Stack Continuous Monitoring Results

Date	**Gas Combustion Temperature (°C)**	**Exhaust temperature (K)**	**Exhaust gas velocity (ms^{-1}) [a]**
01 Jan 22	983	1246	
02 Jan 22	963	1236	
03 Jan 22	975	1231	
04 Jan 22	971	1234	
05 Jan 22	971	1242	
06 Jan 22	974	1243	
07 Jan 22	993	1265	
08 Jan 22	982	1242	
09 Jan 22	964	1235	
10 Jan 22	973	1232	
11 Jan 22	966	1230	
12 Jan 22	966	1223	
13 Jan 22	952	1226	
14 Jan 22	987	1241	
15 Jan 22	959	1223	
16 Jan 22	963	1223	9.9
17 Jan 22	975	1243	
18 Jan 22	968	1233	
19 Jan 22	956	1218	
20 Jan 22	979	1244	
21 Jan 22	968	1241	
22 Jan 22	975	1241	
23 Jan 22	970	1247	

Date	Gas Combustion Temperature (°C)	Exhaust temperature (K)	Exhaust gas velocity (ms^{-1}) [a]
24 Jan 22	987	1235	
25 Jan 22	971	1232	
26 Jan 22	994	1264	
27 Jan 22	967	1232	
28 Jan 22	975	1242	
29 Jan 22	968	1230	
30 Jan 22	973	1236	
31 Jan 22	968	1234	
01 Feb 22	- [b]	- [b]	
02 Feb 22	- [b]	- [b]	
03 Feb 22	963	1221	
04 Feb 22	976	1232	
05 Feb 22	970	1227	
06 Feb 22	984	1234	
07 Feb 22	968	1231	
08 Feb 22	970	1236	
09 Feb 22	969	1228	
10 Feb 22	977	1239	
11 Feb 22	972	1232	
12 Feb 22	984	1241	
13 Feb 22	965	1231	
14 Feb 22	972	1220	9.9
15 Feb 22	969	1234	
16 Feb 22	966	1234	
17 Feb 22	975	1238	
18 Feb 22	975	1235	
19 Feb 22	969	1230	
20 Feb 22	958	1222	
21 Feb 22	975	1225	
22 Feb 22	963	1229	
23 Feb 22	980	1221	
24 Feb 22	964	1227	
25 Feb 22	976	1239	
26 Feb 22	981	1233	
27 Feb 22	964	1226	
28 Feb 22	1013	1219	
1 Mar 22	970	1230	
2 Mar 22	971	1221	
3 Mar 22	983	1244	
4 Mar 22	969	1223	
5 Mar 22	975	1234	
6 Mar 22	964	1219	
7 Mar 22	1015	1222	
8 Mar 22	983	1230	
9 Mar 22	974	1231	
10 Mar 22	972	1221	
11 Mar 22	969	1235	9.1
12 Mar 22	979	1237	
13 Mar 22	959	1223	
14 Mar 22	981	1232	
15 Mar 22	993	1248	
16 Mar 22	978	1227	
17 Mar 22	971	1232	
18 Mar 22	978	1233	
19 Mar 22	974	1228	
20 Mar 22	968	1222	
21 Mar 22	967	1225	

Date	Gas Combustion Temperature (°C)	Exhaust temperature (K)	Exhaust gas velocity (ms^{-1}) [(a)]
22 Mar 22	1028	1276	
23 Mar 22	Under maintenance		
24 Mar 22	1035	1246	
25 Mar 22	962	1214	
26 Mar 22	967	1217	
27 Mar 22	960	1218	
28 Mar 22	984	1236	
29 Mar 22	982	1223	
30 Mar 22	977	1234	
31 Mar 22	967	1228	
Average	975	1233	9.6
Min	952	1214	9.1
Max	1035	1276	9.9

Notes:
(a) The exhaust gas velocity was calculated based on the cross-section area of the stack and the gas flow and combustion temperature data measured during the stack emission monitoring.
(b) Stack emission monitoring was suspended on 1 and 2 Feb 2022 as the thermal oxidiser was not in operation.

Table D5.3 Landfill Gas Flare Stack Emission Monitoring Results

Parameters	Monitoring Results (January 2022)	
	Flare 1 – F601	**Flare 2 – F602**
NO_2	<0.01 gs^{-1}	<0.01 gs^{-1}
CO	0.032 gs^{-1}	0.04 gs^{-1}
SO_2	0.09 gs^{-1}	0.10 gs^{-1}
Benzene	1.3×10^{-5} gs^{-1}	1.6×10^{-5} gs^{-1}
Vinyl chloride	$<1.1 \times 10^{-5}$ gs^{-1}	$<1.3 \times 10^{-5}$ gs^{-1}
Exhaust gas velocity	4.3 ms^{-1}	2.0 ms^{-1}
Parameters	**Monitoring Results (February 2022) (Flare 1 – F601)**	
NO_2	<0.01 gs^{-1}	
CO	0.027 gs^{-1}	
SO_2	0.110 gs^{-1}	
Benzene	5.1×10^{-5} gs^{-1}	
Vinyl chloride	$<1.1 \times 10^{-5}$ gs^{-1}	
Non-methane Organic Carbons	4.1×10^{-3} gs^{-1}	
Exhaust gas velocity	4.4 ms^{-1}	
Parameters	**Monitoring Results (March 2022) (Flare 2 – F602)**	
NO_2	0.02 gs^{-1}	
CO	0.056 gs^{-1}	
SO_2	0.007 gs^{-1}	
Benzene	$<1.2 \times 10^{-5}$ gs^{-1}	
Vinyl chloride	$<1 \times 10^{-5}$ gs^{-1}	
Exhaust gas velocity	3.9 ms^{-1}	

Table D5.4 Landfill Gas Flare Stack Continuous Monitoring Results

Date	Gas Combustion Temperature (°C)	Exhaust temperature (K)	Exhaust gas velocity (ms^{-1}) [(a)]	Operation Status
Flare 1 – F601				
01 Jan 22	-	-		Standby
02 Jan 22	-	-		Standby
03 Jan 22	1072	1115		In Operation
04 Jan 22	907	1143		In Operation
05 Jan 22	920	1133		In Operation
06 Jan 22	931	1163		In Operation
07 Jan 22	891	1023		In Operation
08 Jan 22	929	1143		In Operation
09 Jan 22	-	-		Standby
10 Jan 22	1077	1183		In Operation
11 Jan 22	-	-		Standby
12 Jan 22	854	1028		In Operation
13 Jan 22	1156	1184		In Operation
14 Jan 22	968	1133		In Operation
15 Jan 22	999	1133		In Operation
16 Jan 22	1051	1133	4.3	In Operation
17 Jan 22	1171	1133		In Operation
18 Jan 22	-	-		Standby
19 Jan 22	1076	1189		In Operation
20 Jan 22	-	-		Standby
21 Jan 22	1064	1223		In Operation
22 Jan 22	1037	1163		In Operation
23 Jan 22	1087	1163		In Operation
24 Jan 22	992	1123		In Operation
25 Jan 22	1015	1223		In Operation
26 Jan 22	-	-		Standby
27 Jan 22	-	-		Standby
28 Jan 22	-	-		Standby
29 Jan 22	-	-		Standby
30 Jan 22	-	-		Standby
31 Jan 22	-	-		Standby
01 Feb 22	-	-		Standby
02 Feb 22	-	-		Standby
03 Feb 22	-	-		Standby
04 Feb 22	-	-		Standby
05 Feb 22	-	-		Standby
06 Feb 22	-	-		Standby
07 Feb 22	-	-		Standby
08 Feb 22	-	-		Standby
09 Feb 22	995	1213		In Operation
10 Feb 22	-	-		Standby
11 Feb 22	-	-		Standby
12 Feb 22	930	1181		In Operation
13 Feb 22	-	-		Standby
14 Feb 22	816	1083	4.4	In Operation
15 Feb 22	-	-		Standby
16 Feb 22	-	-		Standby
17 Feb 22	-	-		Standby
18 Feb 22	-	-		Standby
19 Feb 22	-	-		Standby
20 Feb 22	-	-		Standby
21 Feb 22	832	1093		In Operation
22 Feb 22	-	-		Standby
23 Feb 22	-	-		Standby
24 Feb 22	-	-		Standby

Date	Gas Combustion Temperature (°C)	Exhaust temperature (K)	Exhaust gas velocity (ms^{-1}) [a]	Operation Status
25 Feb 22	-	-		Standby
26 Feb 22	-	-		Standby
27 Feb 22	-	-		Standby
28 Feb 22	-	-	-	Standby
1 Mar 22	-	-		Standby
2 Mar 22	-	-		Standby
3 Mar 22	-	-		Standby
4 Mar 22	986	1181		In operation
5 Mar 22	-	-		Standby
6 Mar 22	-	-		Standby
7 Mar 22	-	-		Standby
8 Mar 22	-	-		Standby
9 Mar 22	880	1133		In operation
10 Mar 22	-	-		Standby
11 Mar 22	-	-		Standby
12 Mar 22	-	-		Standby
13 Mar 22	-	-		Standby
14 Mar 22	-	-		Standby
15 Mar 22	-	-		Standby
16 Mar 22	-	-	3.9	Standby
17 Mar 22	-	-		Standby
18 Mar 22	-	-		Standby
19 Mar 22	-	-		Standby
20 Mar 22	-	-		Standby
21 Mar 22	-	-		Standby
22 Mar 22	-	-		Standby
23 Mar 22	-	-		Standby
24 Mar 22	-	-		Standby
25 Mar 22	-	-		Standby
26 Mar 22	990	1223		In operation
27 Mar 22	830	1093		In operation
28 Mar 22	880	1113		In operation
29 Mar 22	860	1073		In operation
30 Mar 22	-	-		Standby
31 Mar 22	950	1173		In operation
Average	972	1143		
Min	816	1023	3.9	
Max	1171	1223	4.4	
Flare 2 – F602				
01 Jan 22	824	1058		In Operation
02 Jan 22	820	1060		In Operation
03 Jan 22	822	1061		In Operation
04 Jan 22	827	1071		In Operation
05 Jan 22	824	1049		In Operation
06 Jan 22	826	1069		In Operation
07 Jan 22	828	1069		In Operation
08 Jan 22	826	1074		In Operation
09 Jan 22	1082	1226		In Operation
10 Jan 22	908	1119		In Operation
11 Jan 22	970	1148		In Operation
12 Jan 22	905	1102		In Operation
13 Jan 22	923	1062		In Operation
14 Jan 22	904	1093		In Operation
15 Jan 22	1171	1099		In Operation
16 Jan 22	877	1283	2.0	In Operation
17 Jan 22	874	1061		In Operation
18 Jan 22	872	1067		In Operation
19 Jan 22	873	1060		In Operation

Date	Gas Combustion Temperature (°C)	Exhaust temperature (K)	Exhaust gas velocity (ms^{-1}) [a]	Operation Status
20 Jan 22	843	1045		In Operation
21 Jan 22	900	1120		In Operation
22 Jan 22	873	1096		In Operation
23 Jan 22	1080	1241		In Operation
24 Jan 22	933	1204		In Operation
25 Jan 22	905	1132		In Operation
26 Jan 22	965	1142		In Operation
27 Jan 22	997	1120		In Operation
28 Jan 22	939	1134		In Operation
29 Jan 22	967	1160		In Operation
30 Jan 22	957	1153		In Operation
31 Jan 22	1090	1223		In Operation
01 Feb 22	-	-		Standby
02 Feb 22	-	-		Standby
03 Feb 22	-	-		Standby
04 Feb 22	924	1015		In Operation
05 Feb 22	845	1083		In Operation
06 Feb 22	830	1073		In Operation
07 Feb 22	870	1113		In Operation
08 Feb 22	850	1093		In Operation
09 Feb 22	850	1083		In Operation
10 Feb 22	840	1063		In Operation
11 Feb 22	850	1068		In Operation
12 Feb 22	850	1068		In Operation
13 Feb 22	880	1123		In Operation
14 Feb 22	870	1073		In Operation
15 Feb 22	850	1073	4.4	In Operation
16 Feb 22	850	1037		In Operation
17 Feb 22	860	1083		In Operation
18 Feb 22	860	1080		In Operation
19 Feb 22	850	1039		In Operation
20 Feb 22	-	-		Standby
21 Feb 22	890	1113		In Operation
22 Feb 22	830	1038		In Operation
23 Feb 22	900	1083		In Operation
24 Feb 22	830	1066		In Operation
25 Feb 22	850	1053		In Operation
26 Feb 22	870	1063		In Operation
27 Feb 22	850	1057		In Operation
28 Feb 22	830	1076		In Operation
1 Mar 22	850	1043		In operation
2 Mar 22	850	1043		In operation
3 Mar 22	850	1055		In operation
4 Mar 22	850	1053		In operation
5 Mar 22	860	1083		In operation
6 Mar 22	830	1053		In operation
7 Mar 22	850	1083	3.9	In operation
8 Mar 22	840	1073		In operation
9 Mar 22	880	1033		In operation
10 Mar 22	880	1103		In operation
11 Mar 22	860	1093		In operation
12 Mar 22	850	1113		In operation
13 Mar 22	870	1073		In operation
14 Mar 22	880	1123		In operation
15 Mar 22	830	1073		In operation
16 Mar 22	840	1083		In operation
17 Mar 22	830	1073		In operation
18 Mar 22	880	1093		In operation

Date	Gas Combustion Temperature (°C)	Exhaust temperature (K)	Exhaust gas velocity (ms^{-1}) [(a)]	Operation Status
19 Mar 22	840	1073		In operation
20 Mar 22	830	1093		In operation
21 Mar 22	850	1093		In operation
22 Mar 22	-	-		Standby
23 Mar 22	820	1043		In operation
24 Mar 22	880	1083		In operation
25 Mar 22	850	1063		In operation
26 Mar 22	880	1083		In operation
27 Mar 22	840	1073		In operation
28 Mar 22	-	-		Standby
29 Mar 22	-	-		Standby
30 Mar 22	840	1083		In operation
31 Mar 22	890	1113		In operation
Average	878	1090	4.2	
Min	820	1015	3.9	
Max	1171	1283	4.4	

Notes:

(a) The exhaust gas velocity was calculated based on the cross-section area of the stack and the gas flow and combustion temperature data measured during the stack emission monitoring.

Table D5.5 Landfill Gas Generator Stack Emission Monitoring Results

Parameters	Monitoring Results (January 2022)
NO_2	0.008 gs^{-1}
CO	0.050 gs^{-1}
SO_2	0.009 gs^{-1}
Benzene	2×10^{-6} gs^{-1}
Vinyl chloride	$<1.3 \times 10^{-6}$ gs^{-1}
Exhaust gas velocity	7.8 ms^{-1}
Parameters	**Monitoring Results (February 2022)**
NO_2	0.016 gs^{-1}
CO	0.056 gs^{-1}
SO_2	0.002 gs^{-1}
Benzene	$<3 \times 10^{-6}$ gs^{-1}
Vinyl chloride	$<2 \times 10^{-6}$ gs^{-1}
Non-methane Organic Carbons	2×10^{-4} gs^{-1}
Exhaust gas velocity	11.9 ms^{-1}
Parameters	**Monitoring Results (March 2022)**
NO_2	1.54 gs^{-1}
CO	0.04 gs^{-1}
SO_2	<0.01 gs^{-1}
Benzene	$<3 \times 10^{-5}$ gs^{-1}
Vinyl chloride	$<2 \times 10^{-5}$ gs^{-1}
Exhaust gas velocity	9.1 ms^{-1}

Table D5.6 Landfill Gas Generator Stack Continuous Monitoring Results

Date	Exhaust temperature (K)	Exhaust gas velocity (ms^{-1}) [a]	Operation Status (Landfill Gas Generator in Operation)
01 Jan 22	840		In Operation (ENGB)
02 Jan 22	839		In Operation (ENGB)
03 Jan 22	839		In Operation (ENGB)
04 Jan 22	842		In Operation (ENGB)
05 Jan 22	842		In Operation (ENGB)
06 Jan 22	841		In Operation (ENGB)
07 Jan 22	841		In Operation (ENGB)
08 Jan 22	835		In Operation (ENGB)
09 Jan 22	840		In Operation (ENGB)
10 Jan 22	839		In Operation (ENGB)
11 Jan 22	841		In Operation (ENGB)
12 Jan 22	839		In Operation (ENGB)
13 Jan 22	-		Under maintenance
14 Jan 22	845		In Operation (ENGA)
15 Jan 22	838		In Operation (ENGA)
16 Jan 22	853	7.8	In Operation (ENGA)
17 Jan 22	836		In Operation (ENGA)
18 Jan 22	844		In Operation (ENGA)
19 Jan 22	843		In Operation (ENGA)
20 Jan 22	846		In Operation (ENGA)
21 Jan 22	846		In Operation (ENGA)
22 Jan 22	849		In Operation (ENGA)
23 Jan 22	840		In Operation (ENGA)
24 Jan 22	846		In Operation (ENGA)
25 Jan 22	846		In Operation (ENGA)

Date	Exhaust temperature (K)	Exhaust gas velocity (ms^{-1}) [a]	Operation Status (Landfill Gas Generator in Operation)
26 Jan 22	847		In Operation (ENGA)
27 Jan 22	848		In Operation (ENGA)
28 Jan 22	847		In Operation (ENGA)
29 Jan 22	847		In Operation (ENGA)
30 Jan 22	843		In Operation (ENGA)
31 Jan 22	847		In Operation (ENGA)
01 Feb 22	836		In Operation (ENGB)
02 Feb 22	842		In Operation (ENGB)
03 Feb 22	841		In Operation (ENGB)
04 Feb 22	841		In Operation (ENGB)
05 Feb 22	843		In Operation (ENGB)
06 Feb 22	844		In Operation (ENGB)
07 Feb 22	845		In Operation (ENGB)
08 Feb 22	836		In Operation (ENGB)
09 Feb 22	844		In Operation (ENGB)
10 Feb 22	847		In Operation (ENGB)
11 Feb 22	847		In Operation (ENGB)
12 Feb 22	846		In Operation (ENGB)
13 Feb 22	845		In Operation (ENGB)
14 Feb 22	846	11.9	In Operation (ENGA)
15 Feb 22	845		In Operation (ENGA)
16 Feb 22	846		In Operation (ENGA)
17 Feb 22	844		In Operation (ENGA)
18 Feb 22	845		In Operation (ENGA)
19 Feb 22	841		In Operation (ENGA)
20 Feb 22	843		In Operation (ENGA)
21 Feb 22	841		In Operation (ENGA)
22 Feb 22	841		In Operation (ENGA)
23 Feb 22	840		In Operation (ENGA)
24 Feb 22	840		In Operation (ENGA)
25 Feb 22	841		In Operation (ENGA)
26 Feb 22	841		In Operation (ENGA)
27 Feb 22	842		In Operation (ENGA)
28 Feb 22	842		In Operation (ENGA)
1 Mar 22	842		In Operation (ENGA)
2 Mar 22	844		In Operation (ENGA)
3 Mar 22	841		In Operation (ENGB)
4 Mar 22	843		In Operation (ENGB)
5 Mar 22	845		In Operation (ENGB)
6 Mar 22	844		In Operation (ENGB)
7 Mar 22	841		In Operation (ENGB)
8 Mar 22	840		In Operation (ENGB)
9 Mar 22	842		In Operation (ENGB)
10 Mar 22	842		In Operation (ENGB)
11 Mar 22	842		In Operation (ENGB)
12 Mar 22	844	9.1	In Operation (ENGB)
13 Mar 22	844		In Operation (ENGB)
14 Mar 22	844		In Operation (ENGB)
15 Mar 22	845		In Operation (ENGB)
16 Mar 22	846		In Operation (ENGB)
17 Mar 22	846		In Operation (ENGB)
18 Mar 22	847		In Operation (ENGB)
19 Mar 22	847		In Operation (ENGB)
20 Mar 22	848		In Operation (ENGB)
21 Mar 22	847		In Operation (ENGB)
22 Mar 22	849		In Operation (ENGB)
23 Mar 22	846		In Operation (ENGB)

Date	Exhaust temperature (K)	Exhaust gas velocity (ms^{-1}) [a]	Operation Status (Landfill Gas Generator in Operation)
24 Mar 22	842		In Operation (ENGB)
25 Mar 22	844		In Operation (ENGB)
26 Mar 22	850		In Operation (ENGB)
27 Mar 22	850		In Operation (ENGB)
28 Mar 22	843		In Operation (ENGB)
29 Mar 22	841		In Operation (ENGB)
30 Mar 22	846		In Operation (ENGB)
31 Mar 22	846		In Operation (ENGB)
Average	844	9.5	
Min	835	7.8	
Max	853	11.9	

Notes:

(a) The exhaust gas velocity was calculated based on the cross-section area of the stack and the gas flow and combustion temperature data measured during the stack emission monitoring.

Annex D6

Ambient VOCs, Ammonia and H_2S Monitoring Results

Table D6.1 Ambient VOCs, Ammonia and H_2S Monitoring Results

Parameters	Monitoring Results (µg m^{-3})			
	AM1	**AM2**	**AM3**	**AM4**
Methane	0.00068% (v/v)	0.00031% (v/v)	0.00020% (v/v)	0.00020% (v/v)
Ammonia	<10	<10	<10	<10
H_2S	<14	<14	<14	<14
1.1.1-Trichloroethane	<0.8	<0.8	<0.8	<0.8
1.2-Dibromoethane (EDB)	<1.0	<1.0	<1.0	<1.0
1.2-Dichloroethane	0.5	0.5	0.5	0.6
Benzene	2.0	1.5	1.2	1.5
Butan-2-ol	<0.6	<0.6	<0.6	<0.6
Butanethiol	<1.2	<1.2	<1.2	<1.2
Carbon Disulphide	1.8	1.2	0.8	1.2
Carbon Tetrachloride	0.7	0.8	0.7	0.8
Chloroform	<0.8	<0.8	<0.8	<0.8
Decanes	0.7	<0.7	1.8	<0.7
Dichlorobenzene	<1.0	<1.0	<1.0	<1.0
Dichlorodifluoro-methane	1.3	1.8	1.3	1.9
Dimethylsulphide	<0.2	<0.2	<0.2	<0.2
Dipropyl ether	<0.8	<0.8	<0.8	<0.8
d-Limonene	0.8	<0.4	0.9	<0.4
Ethanethiol	<0.6	<0.6	<0.6	<0.6
Ethanol	8.2	<3.8	<3.8	<3.8
Ethyl butanoate	<1.0	<1.0	<1.0	<1.0
Ethyl propionate	<0.8	<0.8	<0.8	<0.8
Ethylbenzene	0.9	0.6	1.5	0.6
Heptane	<0.8	<0.8	<0.8	<0.8
Methanethiol	<0.4	<0.4	<0.4	<0.4
Methanol	13.3	29.9	37.2	22.0

Methyl butanoate	<0.8	<0.8	<0.8	<0.8
Methyl propionate	<0.7	<0.7	<0.7	<0.7
Methylene Chloride	2.4	3.0	2.9	3.2
n-Butyl acetate	<1.0	<1.0	<1.0	<1.0
n-Butyl benzene	<1.0	<1.0	<1.0	<1.0
Nonane	<0.9	<0.9	<0.9	<0.9
n-Propyl benzene	<0.8	<0.8	<0.8	<0.8
Octane	<0.9	<0.9	<0.9	<0.9
Propyl propionate	<1.0	<1.0	<1.0	<1.0
Terpenes	2.3	0.9	0.9	<0.8
Tetrachloroethylene	0.7	0.7	0.7	<0.7
Toluene	1.7	1.5	2.8	1.9
Trichloroethylene	<1.1	<1.1	<1.1	<1.1
Undecane	<1.2	<1.2	<1.2	<1.2
Vinyl Chloride	<0.3	<0.3	<0.3	<0.3
Xylenes	2.3	1.6	3.5	1.0

Annex E

Noise

Annex E1

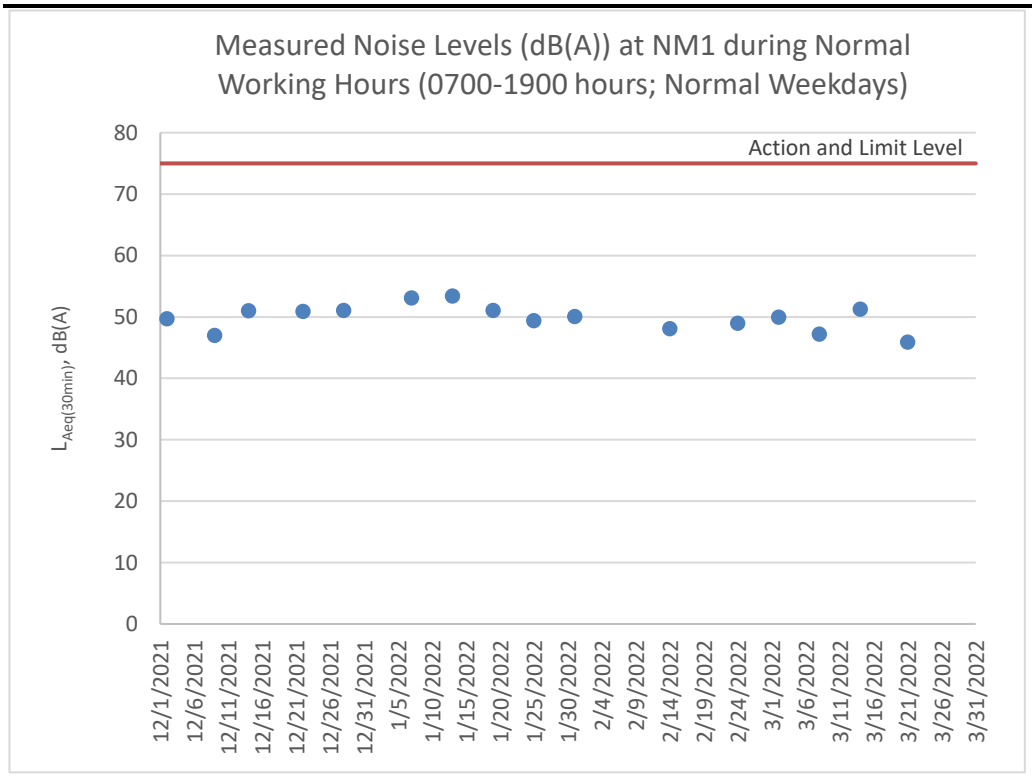
Noise Monitoring Results

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	$L_{10\ (30min)}$	$L_{90\ (30min)}$	$L_{eq\ (30min)}$
7 Jan 22	10:15	10:45	Sunny	53.5	47.0	53.1
13 Jan 22	14:33	15:03	Sunny	55.0	48.5	53.4
19 Jan 22	10:15	10:45	Sunny	52.0	49.0	51.1
25 Jan 22	10:36	11:06	Cloudy	50.5	46.5	49.4
31 Jan 22	10:17	10:47	Cloudy	51.6	48.3	50.1
7 Feb 22	NA	NA	Drizzle	Monitoring was cancelled due to adverse weather.		
14 Feb 22	15:06	15:36	Sunny	49.0	43.8	48.1
24 Feb 22	15:39	16:09	Sunny	49.9	44.9	49.0
2 Mar 22	9:50	10:20	Sunny	51.0	46.7	50.0
8 Mar 22	13:41	14:11	Sunny	49.0	45.4	47.2
14 Mar 22	14:05	14:35	Sunny	53.7	48.8	51.3
21 Mar 22	15:14	15:44	Cloudy	47.1	43.6	45.9
28 Mar 22	NA	NA	Drizzle	Monitoring was cancelled due to adverse weather.		
					Average	49.9
					Min	45.9
					Max	53.4

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 Operational Noise Monitoring

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

Annex F

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 (oC)	Ammoniacal-nitrogen (mg/L)	COD	Suspended Solids (SS) (mg/L)	Remarks
25 Jan 22	10:02	Cloudy	Unable to collect water sample due to insufficient flow						-
24 Feb 22	16:11	Sunny	Unable to collect water sample due to insufficient flow						-
21 Mar 22	14:31	Overcast	Unable to collect water sample due to insufficient flow						
					Average	-	-	-	-
					Min	-	-	-	-
					Max	-	-	-	-

Table F1.2 Surface Water Quality Monitoring Results at DP6

Date	Time	Weather Condition	Water Appearance	Water Condition	Water Temperature (oC)	Ammoniacal-nitrogen (mg/L)	COD	Suspended Solids (SS) (mg/L)	Remarks
25 Jan 22	10:16	Cloudy	Unable to collect water sample due to insufficient flow						-
24 Feb 22	15:54	Sunny	Unable to collect water sample due to insufficient flow						-
21 Mar 22	14:37	Overcast	Unable to collect water sample due to insufficient flow						
					Average	-	-	-	-
					Min	-	-	-	-
					Max	-	-	-	-

Annex F2

Event and Action Plan for Water Quality Monitoring

Annex F2 Event and Action Plan for Water Quality Monitoring During Operation/ Restoration Phase

Event	Action		
	ET	**IEC**	**Contractor**
Exceedance of Limit Level for surface water monitoring	• Identify source(s) of impact and investigate the cause(s) of exceedance • Prepare Notification of Exceedance within 24 hours • Inform Contractor, IEC, Project Proponent and EPD (EIAO Authority) 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 weekly if exceedance is due to the Project until no exceedance of Limit Level •	• Verify the Notification of Exceedance • Check monitoring data submitted by ET • Check Contractor's working methods • Discuss with ET and Contractor on proposed remedial measures • Review proposals on remedial measures • Audit the implementation of the remedial measures • Audit the effectiveness of the implemented remedial measures	• Take immediate action to avoid further exceedance • Submit proposals for remedial measures to IEC • Implement the agreed proposals • Amend proposal if appropriate
Exceedance of Limit Level for groundwater monitoring	• Identify source(s) of impact and investigate the cause(s) of exceedance • Prepare Notification of Exceedance within 24 hours • Inform Contractor, IEC, Project Proponent and EPD (EIAO Authority) 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 weekly if exceedance is due to the Project until no exceedance of Limit Level	• Verify the Notification of Exceedance • Check monitoring data submitted by ET • Check Contractor's working methods • Discuss with ET and Contractor on proposed remedial measures • Review proposals on remedial measures • Audit the implementation of the remedial measures • Audit the effectiveness of the implemented remedial measures	• Divert groundwater collected at the collection sumps to the leachate treatment plant • Submit proposals for remedial measures to IEC • Rectify any unacceptable practice or design • Amend working methods as required • Implement amended working methods, if necessary

Event	Action		
	ET	IEC	Contractor
Exceedance of Limit Level for leachate level	• Investigate the cause(s) of exceedance • Prepare Notification of Exceedance within 24 hours • Inform Contractor, IEC, Project Proponent and EPD (EIAO Authority) 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	• Verify the Notification of Exceedance • Check with Contractor on the operating activities and performance of the leachate collection system • 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	• Check the performance of the leachate collection system • Rectify any unacceptable practice; • Amend leachate collection design if required • Implement amended leachate collection system, if necessary
Exceedance of Limit Level of effluent discharge from LTP	• Investigate the cause(s) of exceedance • Prepare Notification of Exceedance within 24 hours • Inform Contractor, IEC, Project Proponent and EPD (EIAO Authority) 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 weekly until no exceedance of Limit Level	• Verify the Notification of Exceedance • Check with Contractor on the operation performance of the LTP • 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	• Rectify any unacceptable practice; • Carry out remedial measures or amend design as required • Implement amended design, if necessary

Annex F3

Leachate Levels Monitoring Results

Table F3.1 Leachate Levels Monitoring Results (Pump Station No.1X (Cell 1X))

Date	Meter No.X1 (cm)	Meter No.X2 (cm)	Average (cm)
Pump Station No. 1X (Cell 1X)			
01 Jan 22	28	48	38
02 Jan 22	28	48	38
03 Jan 22	28	48	38
04 Jan 22	30	50	40
05 Jan 22	53	33	43
06 Jan 22	35	55	45
07 Jan 22	39	59	49
08 Jan 22	42	62	52
09 Jan 22	48	68	58
10 Jan 22	48	68	58
11 Jan 22	50	70	60
12 Jan 22	53	73	63
13 Jan 22	57	77	67
14 Jan 22	66	66	66
15 Jan 22	70	91	81
16 Jan 22	75	95	85
17 Jan 22	75	95	85
18 Jan 22	77	97	87
19 Jan 22	77	97	87
20 Jan 22	79	99	89
21 Jan 22	53	73	63
22 Jan 22	57	77	67
23 Jan 22	64	82	73
24 Jan 22	64	82	73
25 Jan 22	66	86	76
26 Jan 22	68	88	78
27 Jan 22	72	91	82
28 Jan 22	73	93	83
29 Jan 22	75	95	85
30 Jan 22	77	97	87
31 Jan 22	77	97	87
01 Feb 22	59	79	69
02 Feb 22	59	79	69
03 Feb 22	59	79	69
04 Feb 22	82	62	72
05 Feb 22	68	88	78
06 Feb 22	68	88	78
07 Feb 22	70	91	81
08 Feb 22	70	91	81
09 Feb 22	93	73	83
10 Feb 22	75	95	85
11 Feb 22	77	97	87
12 Feb 22	53	73	63
13 Feb 22	73	53	63
14 Feb 22	57	77	67
15 Feb 22	62	82	72
16 Feb 22	64	84	74
17 Feb 22	68	86	77
18 Feb 22	70	91	81
19 Feb 22	77	97	87
20 Feb 22	77	97	87
21 Feb 22	77	97	87
22 Feb 22	97	117	107
23 Feb 22	66	86	76
24 Feb 22	73	95	84

Date	Meter No.X1 (cm)	Meter No.X2 (cm)	Average (cm)
25 Feb 22	77	97	87
26 Feb 22	64	84	74
27 Feb 22	64	84	74
28 Feb 22	77	97	87
1 Mar 22	64	84	74
2 Mar 22	75	95	85
3 Mar 22	53	73	63
4 Mar 22	66	86	76
5 Mar 22	79	99	89
6 Mar 22	79	99	89
7 Mar 22	50	70	60
8 Mar 22	59	79	69
9 Mar 22	68	88	78
10 Mar 22	46	68	57
11 Mar 22	55	77	66
12 Mar 22	42	62	52
13 Mar 22	42	62	52
14 Mar 22	50	70	60
15 Mar 22	57	77	67
16 Mar 22	64	84	74
17 Mar 22	42	62	52
18 Mar 22	48	70	59
19 Mar 22	62	82	72
20 Mar 22	62	82	72
21 Mar 22	66	88	77
22 Mar 22	46	66	56
23 Mar 22	44	64	54
24 Mar 22	48	68	58
25 Mar 22	57	77	67
26 Mar 22	68	48	58
27 Mar 22	68	48	58
28 Mar 22	44	64	54
29 Mar 22	62	82	72
30 Mar 22	46	66	56
31 Mar 22	48	68	58
Average	62	79	70
Min	28	33	38
Max	97	117	107

Table F3.2 Leachate Levels Monitoring Results (Pump Station No.2X (Cell 2X))

Date	Meter No.X1 (cm)	Meter No.X2 (cm)	Average (cm)
Pump Station No. 2X (Cell 2X)			
01 Jan 22	125	39	82
02 Jan 22	125	39	82
03 Jan 22	125	39	82
04 Jan 22	125	39	82
05 Jan 22	125	39	82
06 Jan 22	125	39	82
07 Jan 22	125	39	82
08 Jan 22	125	39	82
09 Jan 22	125	39	82
10 Jan 22	125	39	82
11 Jan 22	125	39	82
12 Jan 22	125	39	82
13 Jan 22	125	45	85
14 Jan 22	125	45	85
15 Jan 22	125	45	85
16 Jan 22	125	50	88
17 Jan 22	125	50	88
18 Jan 22	125	50	88
19 Jan 22	125	50	88
20 Jan 22	125	56	91
21 Jan 22	125	56	91
22 Jan 22	125	56	91
23 Jan 22	125	56	91
24 Jan 22	125	56	91
25 Jan 22	125	61	93
26 Jan 22	125	61	93
27 Jan 22	125	61	93
28 Jan 22	125	61	93
29 Jan 22	125	61	93
30 Jan 22	125	61	93
31 Jan 22	125	61	93
01 Feb 22	86	88	87
02 Feb 22	86	88	87
03 Feb 22	86	88	87
04 Feb 22	91	93	92
05 Feb 22	86	90	88
06 Feb 22	86	90	88
07 Feb 22	75	77	76
08 Feb 22	79	82	81
09 Feb 22	84	88	86
10 Feb 22	88	90	89
11 Feb 22	93	97	95
12 Feb 22	75	77	76
13 Feb 22	75	77	76
14 Feb 22	79	84	82
15 Feb 22	84	88	86
16 Feb 22	91	93	92
17 Feb 22	95	97	96
18 Feb 22	70	75	73
19 Feb 22	97	97	97
20 Feb 22	97	97	97
21 Feb 22	91	95	93
22 Feb 22	102	104	103
23 Feb 22	82	84	83
24 Feb 22	86	88	87
25 Feb 22	73	75	74

Date	Meter No.X1 (cm)	Meter No.X2 (cm)	Average (cm)
26 Feb 22	88	90	89
27 Feb 22	88	90	89
28 Feb 22	75	77	76
1 Mar 22	88	90	89
2 Mar 22	75	77	76
3 Mar 22	73	75	74
4 Mar 22	84	86	85
5 Mar 22	73	75	74
6 Mar 22	73	75	74
7 Mar 22	82	84	83
8 Mar 22	88	90	89
9 Mar 22	66	68	67
10 Mar 22	75	79	77
11 Mar 22	84	86	85
12 Mar 22	66	70	68
13 Mar 22	66	70	68
14 Mar 22	75	77	76
15 Mar 22	82	84	83
16 Mar 22	86	90	88
17 Mar 22	77	79	78
18 Mar 22	66	68	67
19 Mar 22	77	79	78
20 Mar 22	77	79	78
21 Mar 22	84	86	85
22 Mar 22	66	68	67
23 Mar 22	84	86	85
24 Mar 22	84	86	85
25 Mar 22	77	79	78
26 Mar 22	79	79	79
27 Mar 22	79	79	79
28 Mar 22	84	84	84
29 Mar 22	75	75	75
30 Mar 22	73	73	73
31 Mar 22	88	90	89
Average	96	72	84
Min	66	39	67
Max	125	104	103

Table F3.3 Leachate Levels Monitoring Results (Pump Station No.3X (Cell 3X))

Date	Meter No.X1 (cm)	Meter No.X2 (cm)	Average (cm)
Pump Station No. 3X (Cell 3X)			
01 Jan 22	93	93	93
02 Jan 22	93	93	93
03 Jan 22	93	93	93
04 Jan 22	93	93	93
05 Jan 22	93	93	93
06 Jan 22	95	95	95
07 Jan 22	95	95	95
08 Jan 22	97	95	96
09 Jan 22	97	97	97
10 Jan 22	97	97	97
11 Jan 22	97	97	97
12 Jan 22	97	97	97
13 Jan 22	97	97	97
14 Jan 22	97	97	97
15 Jan 22	97	97	97
16 Jan 22	97	97	97
17 Jan 22	97	97	97
18 Jan 22	97	97	97
19 Jan 22	97	97	97
20 Jan 22	97	97	97
21 Jan 22	97	97	97
22 Jan 22	97	97	97
23 Jan 22	99	99	99
24 Jan 22	99	99	99
25 Jan 22	93	95	94
26 Jan 22	95	95	95
27 Jan 22	75	75	75
28 Jan 22	84	84	84
29 Jan 22	82	85	84
30 Jan 22	88	88	88
31 Jan 22	88	88	88
01 Feb 22	90	90	90
02 Feb 22	90	90	90
03 Feb 22	90	90	90
04 Feb 22	90	90	90
05 Feb 22	93	93	93
06 Feb 22	93	93	93
07 Feb 22	93	93	93
08 Feb 22	90	90	90
09 Feb 22	90	90	90
10 Feb 22	90	90	90
11 Feb 22	93	93	93
12 Feb 22	93	93	93
13 Feb 22	93	93	93
14 Feb 22	93	93	93
15 Feb 22	93	93	93
16 Feb 22	93	93	93
17 Feb 22	75	75	75
18 Feb 22	77	77	77
19 Feb 22	144	144	144
20 Feb 22	144	144	144
21 Feb 22	108	108	108
22 Feb 22	102	102	102
23 Feb 22	75	75	75
24 Feb 22	75	75	75
25 Feb 22	93	93	93

Date	Meter No.X1 (cm)	Meter No.X2 (cm)	Average (cm)
26 Feb 22	68	67	68
27 Feb 22	68	67	68
28 Feb 22	62	62	62
1 Mar 22	168	168	168
2 Mar 22	128	128	128
3 Mar 22	102	102	102
4 Mar 22	64	64	64
5 Mar 22	88	88	88
6 Mar 22	88	88	88
7 Mar 22	59	59	59
8 Mar 22	70	70	70
9 Mar 22	79	79	79
10 Mar 22	86	86	86
11 Mar 22	90	90	90
12 Mar 22	66	66	66
13 Mar 22	66	66	66
14 Mar 22	73	73	73
15 Mar 22	79	79	79
16 Mar 22	84	84	84
17 Mar 22	88	88	88
18 Mar 22	53	53	53
19 Mar 22	68	68	68
20 Mar 22	68	68	68
21 Mar 22	75	75	75
22 Mar 22	57	57	57
23 Mar 22	90	90	90
24 Mar 22	90	90	90
25 Mar 22	64	64	64
26 Mar 22	77	77	77
27 Mar 22	77	77	77
28 Mar 22	88	88	88
29 Mar 22	79	79	79
30 Mar 22	73	73	73
31 Mar 22	53	53	53
Average	89	89	89
Min	53	53	53
Max	168	168	168

Figure F3.1 *Graphical Presentation for Leachate Levels Monitoring (Pump Station No.1X (Cell 1X))*

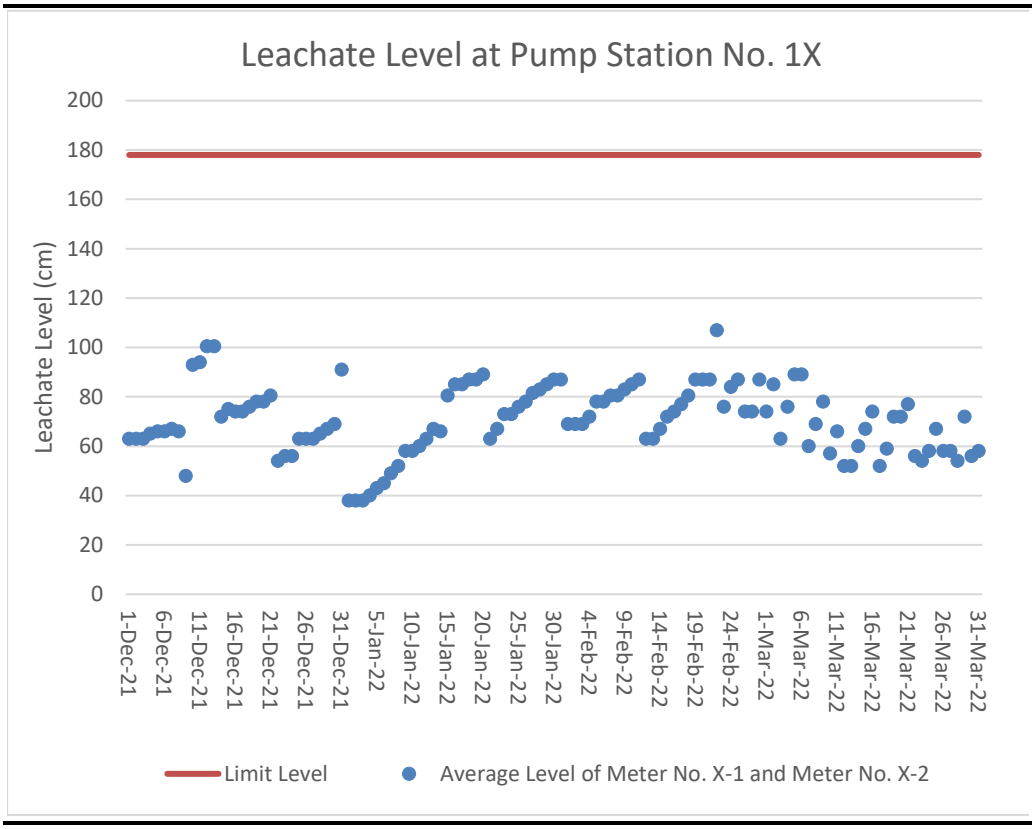


Figure F3.2 *Graphical Presentation for Leachate Levels Monitoring (Pump Station No.2X (Cell 2X))*

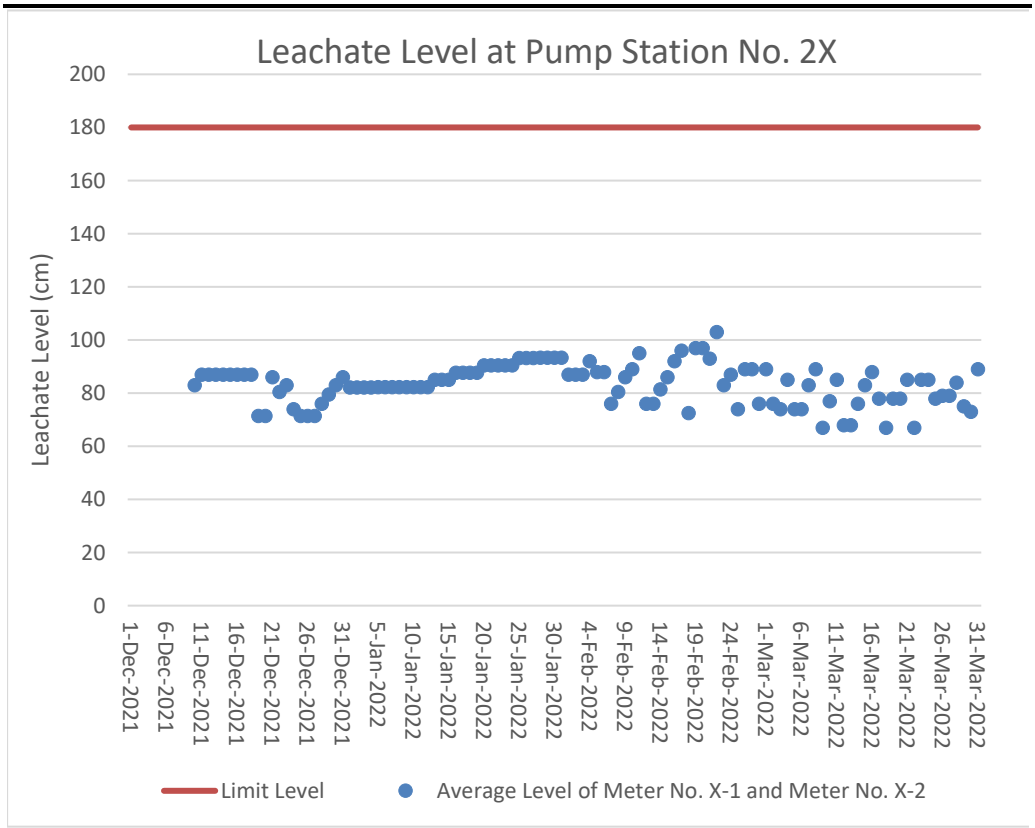
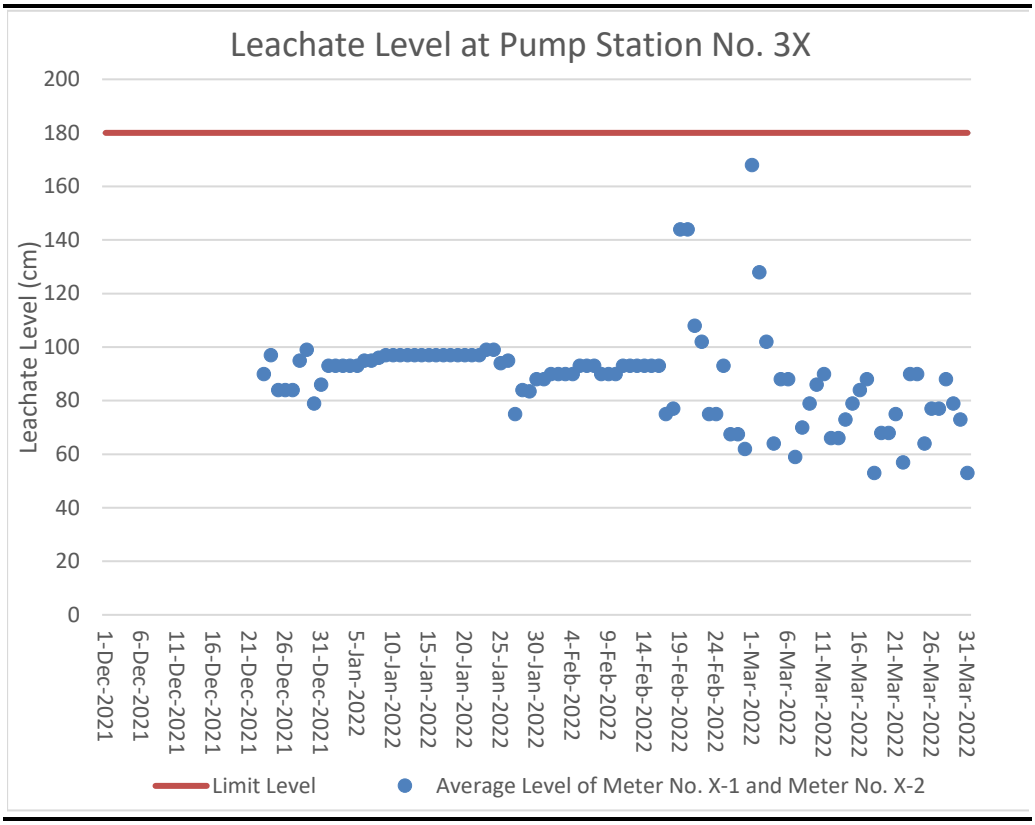


Figure F3.3 *Graphical Presentation for Leachate Levels Monitoring (Pump Station No.3X (Cell 3X))*



Annex F4

Effluent Quality Monitoring Results

Table F4.1 Effluent Monitoring Results

		1 Jan 22	2 Jan 22	3 Jan 22	4 Jan 22	5 Jan 22	6 Jan 22	7 Jan 22	8 Jan 22	9 Jan 22	10 Jan 22	11 Jan 22
On-site Measurements												
Temperature	°C	27.2	28.1	27.1	28.2	26.8	29.4	29.5	29	28.7	21.0	25.7
pH Value	pH Unit	8.4	8.4	8.4	8.4	8.4	8.5	8.4	8.4	8.6	8.6	8.5
Volume Discharged	m^3	1194	810	588	1363	1230	1235	1392	1273	804	616	1229
Laboratory Analysis												
Suspended Solids (SS)	mg/L	75	24.7	23.8	24.2	22.1	22.9	21.1	29.1	23.6	16.2	21.6
Alkalinity	mg/L	2240	2260	2300	2330	2310	2240	2250	2270	2260	2270	2280
Ammoniacal-nitrogen	mg/L	0.3	0.27	0.56	0.43	0.46	0.49	0.47	0.51	0.36	1.2	0.3
Chloride	mg/L	2070	2110	2080	1980	2320	2130	2290	2230	2280	2370	2410
Nitrite-nitrogen	mg/L	0.14	0.17	0.55	0.19	0.32	0.19	0.23	0.37	0.39	0.88	0.2
Phosphate	mg/L	7.99	8.34	8.82	8.7	8.31	9.53	8.95	8.45	7.76	8.13	8.07
Sulphate	mg/L	92	94	94	100	103	108	108	100	94	97	96
Total Nitrogen	mg/L	114	99.3	98.4	93.1	101	105	119	124	121	118	114
Nitrate-nitrogen	mg/L	56.6	50.2	52.5	48.3	52.7	59.2	61.9	66.9	65.1	61.2	57.9
Total Inorganic Nitrogen	mg/L	57.0	50.6	53.6	48.9	53.5	59.9	62.6	67.8	65.9	63.3	58.4
Biochemical Oxygen Demand (BOD)	mg/L	14	10	8	9	9	15	9	14	9	20	6
Chemical Oxygen Demand (COD)	mg/L	1090	999	1010	1090	892	957	948	1080	984	993	1010
Oil & Grease	mg/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Total Organic Carbon (TOC)	mg/L	360	391	356	349	358	375	385	373	394	366	359
Boron	µg/L	5680	5440	5590	5760	5730	5380	5400	5240	5760	5380	5160
Calcium	mg/L	13.4	15.4	15.3	14.2	16.5	17.3	16.5	16.4	15.1	14.8	18.1
Iron	mg/L	1.04	1.25	1.26	1.15	1.64	1.35	1.43	1.47	1.19	1.26	1.56
Magnesium	mg/L	14.9	16.1	16.1	16.7	25.2	23.2	24.8	26.2	22.4	22.9	28.9
Potassium	mg/L	890	883	888	845	907	930	971	975	899	892	828
Cadmium	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chromium	µg/L	131	125	125	127	143	134	133	130	123	121	144
Copper	µg/L	22	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Nickel	µg/L	118	115	113	122	132	127	122	122	120	118	128
Zinc	µg/L	64	46	50	52	64	57	50	48	54	48	52

		12 Jan 22	13 Jan 22	14 Jan 22	15 Jan 22	16 Jan 22	17 Jan 22	18 Jan 22	19 Jan 22	20 Jan 22	21 Jan 22	22 Jan 22
On-site Measurements												
Temperature	°C	24.6	25	25.5	25.3	29.8	27	27	27.8	28	21.7	28.3
pH Value	pH Unit	8.5	8.6	8.5	8.5	8.6	8.6	8.5	8.5	8.5	8.5	8.5
Volume Discharged	m^3	1041	825	1052	1144	1182	1090	1251	1186	1444	836	1034
Laboratory Analysis												
Suspended Solids (SS)	mg/L	22.7	13.8	23.5	15.4	24.9	17.6	13.6	17.9	17.7	16.2	35.8
Alkalinity	mg/L	2270	2270	2300	2290	2250	2270	2280	2290	2280	2360	2310
Ammoniacal-nitrogen	mg/L	0.35	0.36	0.34	0.3	0.34	0.35	0.35	0.32	0.3	4.74	0.38
Chloride	mg/L	2310	2220	2320	2360	2370	2330	2250	2230	2310	2270	2360
Nitrite-nitrogen	mg/L	0.23	0.3	0.2	0.15	0.28	0.36	0.29	0.3	0.21	0.63	0.19
Phosphate	mg/L	7.56	8.9	9.81	9.52	8.98	9.32	9.48	8.5	8.64	9.6	8.37
Sulphate	mg/L	100	94	94	102	101	96	97	101	100	106	102
Total Nitrogen	mg/L	112	114	118	110	117	120	120	119	125	123	109
Nitrate-nitrogen	mg/L	59.3	60.2	57	58.9	63.3	65	68.4	66.3	72.1	61.5	56.4
Total Inorganic Nitrogen	mg/L	59.9	60.9	57.5	59.4	63.9	65.7	69.0	66.9	72.6	66.9	57.0
Biochemical Oxygen Demand (BOD)	mg/L	8	7	9	8	10	8	8	13	13	18	15
Chemical Oxygen Demand (COD)	mg/L	1040	1020	989	943	1010	943	1050	1070	1050	1090	1050
Oil & Grease	mg/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Total Organic Carbon (TOC)	mg/L	373	353	376	337	391	354	351	356	363	392	379
Boron	µg/L	5300	5610	5540	5400	5830	6380	6060	5990	5890	6100	6220
Calcium	mg/L	20	15.8	15.3	16.8	14.4	15.4	16.7	12.5	13.5	22	19.8
Iron	mg/L	1	1.3	1.27	1.23	1.34	1.34	1.24	1.25	1.26	1.58	1.36
Magnesium	mg/L	30	26.6	25.6	26.2	26.6	27.6	27.4	20.4	21.1	26.9	25.1
Potassium	mg/L	990	962	879	906	1010	996	944	696	706	1010	974
Cadmium	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chromium	µg/L	144	125	130	121	144	136	131	139	130	139	132
Copper	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Nickel	µg/L	128	118	122	119	126	126	124	127	122	129	129
Zinc	µg/L	49	45	51	47	49	50	50	49	48	51	49

		23 Jan 22	24 Jan 22	25 Jan 22	26 Jan 22	27 Jan 22	28 Jan 22	29 Jan 22	30 Jan 22	31 Jan 22
On-site Measurements										
Temperature	°C	33.5	28.9	29.5	27.1	30.7	27.9	32.6	27.2	25.5
pH Value	pH Unit	8.5	8.4	8.5	8.5	8.3	8.5	8.5	8.5	8.5
Volume Discharged	m^3	819	597	930	1220	1109	1136	1089	1059	791
Laboratory Analysis										
Suspended Solids (SS)	mg/L	38.5	20.5	19.2	36.1	23.4	19.8	30	38.2	20.5
Alkalinity	mg/L	2310	2380	2310	2290	2310	2290	2280	2320	2300
Ammoniacal-nitrogen	mg/L	0.57	0.59	0.4	0.34	0.45	0.98	0.39	0.42	0.38
Chloride	mg/L	2440	2430	2200	2230	2310	2290	2290	2260	2290
Nitrite-nitrogen	mg/L	0.27	0.41	0.25	0.22	0.3	0.55	0.19	0.22	0.26
Phosphate	mg/L	8.27	8.22	7.96	8.41	8.43	9.25	8.89	9.47	8.94
Sulphate	mg/L	113	113	113	127	98	100	98	86	99
Total Nitrogen	mg/L	117	110	98.1	99.9	119	122	127	128	119
Nitrate-nitrogen	mg/L	57.7	55	47.7	48.6	62.8	67.3	66.6	66.5	62.3
Total Inorganic Nitrogen	mg/L	58.5	56.0	48.4	49.2	63.6	68.8	67.2	67.1	62.9
Biochemical Oxygen Demand (BOD)	mg/L	13	13	9	10	9	13	14	16	9
Chemical Oxygen Demand (COD)	mg/L	1040	1000	948	975	992	993	1050	1080	1000
Oil & Grease	mg/L	<5	<5	<5	<5	<5	<5	<5	<5	<5
Total Organic Carbon (TOC)	mg/L	369	370	380	406	445	438	394	386	381
Boron	µg/L	5640	5840	5190	5270	4830	4720	5040	5100	5010
Calcium	mg/L	21.4	22	19.8	19.7	16.8	16.5	19.2	16.6	14.3
Iron	mg/L	1.38	1.34	1.4	1.52	1.52	1.5	1.47	1.56	1.43
Magnesium	mg/L	26.1	26.1	28.8	31.2	28.4	28.2	29.3	28.2	25.9
Potassium	mg/L	979	1000	913	891	887	862	937	807	875
Cadmium	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chromium	µg/L	130	132	129	143	130	132	127	128	127
Copper	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10
Nickel	µg/L	130	132	122	138	122	122	122	123	121
Zinc	µg/L	50	47	51	57	43	43	49	47	50

		3 Feb 22	4 Feb 22	5 Feb 22	6 Feb 22	7 Feb 22	8 Feb 22	9 Feb 22	10 Feb 22	11 Feb 22	12 Feb 22	13 Feb 22
On-site Measurements												
Temperature	°C	23.5	23.8	25	22.7	22.3	24.5	24.8	28.1	27	28.6	24.2
pH Value	pH Unit	8.5	8.6	8.6	8.6	8.5	8.6	8.5	8.6	8.5	8.5	8.5
Volume Discharged	m^3	508	1256	819	772	385	1297	1235	1346	1495	1386	762
Laboratory Analysis												
Suspended Solids (SS)	mg/L	35.1	35.2	49.2	52.9	30.7	24.9	17.1	21.4	23.6	33.1	27.6
Alkalinity	mg/L	2360	2390	2360	2330	2350	2370	2330	2260	2250	2200	2070
Ammoniacal-nitrogen	mg/L	2.73	0.31	0.3	0.26	0.4	0.36	0.38	0.27	0.44	0.3	0.3
Chloride	mg/L	2160	2230	2250	2240	2210	2150	2380	2250	2270	2220	2160
Nitrite-nitrogen	mg/L	0.67	0.19	0.18	0.25	0.17	0.18	0.19	0.18	0.1	0.17	0.17
Phosphate	mg/L	9.32	9.41	8	8.06	8.01	7.9	7.88	7.92	8.52	8.74	8.38
Sulphate	mg/L	100	109	116	115	112	123	118	119	112	110	126
Total Nitrogen	mg/L	118	101	98.2	95.8	92.9	92.3	101	103	111	120	126
Nitrate-nitrogen	mg/L	56.8	45.2	43.7	41.6	41.7	39.1	47.1	53.1	59.8	65.2	67.8
Total Inorganic Nitrogen	mg/L	60.2	45.7	44.2	42.1	42.3	39.6	47.7	53.6	60.3	65.7	68.3
Biochemical Oxygen Demand (BOD)	mg/L	22	9	12	10	10	10	9	10	9	15	10
Chemical Oxygen Demand (COD)	mg/L	1070	1050	1090	1030	984	1040	1030	856	967	893	800
Oil & Grease	mg/L	<5	<5	<5	<5	<5	6	6	<5	<5	<5	<5
Total Organic Carbon (TOC)	mg/L	398	424	407	389	389	409	477	457	498	469	416
Boron	µg/L	5790	5410	6180	5750	5830	5690	6010	5890	5470	5310	5030
Calcium	mg/L	16.9	18	19.1	17.8	17.6	16.8	16.1	16.8	20.3	20	19
Iron	mg/L	1.53	1.65	1.66	1.62	1.48	1.65	1.61	1.4	1.49	1	1.2
Magnesium	mg/L	27.2	31.2	33.2	32.2	30.7	32.3	32.2	28.1	30.8	29	25.6
Potassium	mg/L	801	877	880	906	855	832	928	852	977	856	807
Cadmium	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chromium	µg/L	142	140	139	140	137	139	137	128	132	127	122
Copper	µg/L	<10	<10	<10	68	<10	<10	<10	<10	<10	<10	56
Nickel	µg/L	125	123	123	121	122	127	128	126	123	118	112
Zinc	µg/L	54	62	59	92	60	57	57	52	53	54	79

Notes:

Effluent monitoring was suspended on 1 and 2 Feb 2022 as the Leachate Treatment Plant (LTP) was not in operation and no treated effluent was discharged from the on-site LTP to the foul sewer leading to Tseung Kwan O Sewage Treatment Works (TKO STW) on 1 and 2 Feb 2022.

		14 Feb 22	15 Feb 22	16 Feb 22	17 Feb 22	18 Feb 22	19 Feb 22	20 Feb 22	21 Feb 22	22 Feb 22	23 Feb 22	24 Feb 22
On-site Measurements												
Temperature	°C	26	26.3	27.4	26.7	24.5	26.3	15.3	13.2	18.2	21	21.8
pH Value	pH Unit	8.5	8.5	8.5	8.6	8.6	8.3	8.4	8.6	8.4	8.3	8.3
Volume Discharged	m^3	821	1221	1434	1475	1352	1445	1274	747	1492	1492	1492
Laboratory Analysis												
Suspended Solids (SS)	mg/L	22.3	28.5	26.4	49.6	40.1	40.4	16.5	13.6	32	20.3	20.3
Alkalinity	mg/L	2250	2080	2320	2240	2180	2210	1940	2030	1650	20.3	20.3
Ammoniacal-nitrogen	mg/L	0.32	0.22	0.28	0.25	0.3	0.26	0.25	0.26	0.14	20.3	20.3
Chloride	mg/L	2280	1820	2170	2120	2120	2090	1660	1920	1670	20.3	20.3
Nitrite-nitrogen	mg/L	0.33	0.19	0.21	0.21	0.24	0.22	0.18	0.29	0.14	20.3	20.3
Phosphate	mg/L	9.39	8.58	8.84	8.93	8.63	8.52	7.17	8.33	6.55	20.3	20.3
Sulphate	mg/L	106	130	127	121	120	96	138	107	121	20.3	20.3
Total Nitrogen	mg/L	132	124	121	129	134	128	106	119	102	20.3	20.3
Nitrate-nitrogen	mg/L	72.8	65.2	63.7	67.5	71.3	63.7	53.4	71	58.8	20.3	20.3
Total Inorganic Nitrogen	mg/L	73.5	65.6	64.2	68.0	71.8	64.2	53.8	71.6	59.1	45.2	38.9
Biochemical Oxygen Demand (BOD)	mg/L	9	10	11	15	14	15	8	15	9	20.3	20.3
Chemical Oxygen Demand (COD)	mg/L	837	982	1040	1040	1060	1000	718	915	753	20.3	20.3
Oil & Grease	mg/L	5	<5	<5	<5	<5	<5	<5	<5	<5	20.3	20.3
Total Organic Carbon (TOC)	mg/L	470	426	490	449	431	449	363	421	325	20.3	20.3
Boron	µg/L	5560	5280	5780	5390	5570	5720	4770	4980	4560	20.3	20.3
Calcium	mg/L	17.2	19.5	18.7	20.1	20	18.4	20.1	17.1	24.1	20.3	20.3
Iron	mg/L	1.36	1.37	1.54	1.73	1.68	1.54	1.24	1.29	1.05	20.3	20.3
Magnesium	mg/L	26.7	26.3	28.8	29	28.4	27.2	24	24	22	20.3	20.3
Potassium	mg/L	895	790	908	893	919	812	755	825	699	20.3	20.3
Cadmium	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	20.3	20.3
Chromium	µg/L	129	126	138	135	132	135	115	118	102	20.3	20.3
Copper	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	21	20.3	20.3
Nickel	µg/L	116	112	124	119	123	120	105	107	92	20.3	20.3
Zinc	µg/L	47	48	55	50	53	56	58	67	85	20.3	20.3

		25 Feb 22	26 Feb 22	27 Feb 22	28 Feb 22
On-site Measurements					
Temperature	°C	26.5	25.1	25.6	27.5
pH Value	pH Unit	8.2	8.3	8.3	8.3
Volume Discharged	m^3	1496	1495	1495	1140
Laboratory Analysis					
Suspended Solids (SS)	mg/L	20	44	33.7	20.2
Alkalinity	mg/L	1400	1540	1560	1560
Ammoniacal-nitrogen	mg/L	0.32	0.25	0.28	0.27
Chloride	mg/L	1330	1470	1500	1480
Nitrite-nitrogen	mg/L	0.2	0.11	0.1	0.1
Phosphate	mg/L	4.09	4.37	4.2	4.61
Sulphate	mg/L	203	194	196	192
Total Nitrogen	mg/L	84.5	86.4	87.9	72
Nitrate-nitrogen	mg/L	39.7	38.9	37.4	35.6
Total Inorganic Nitrogen	mg/L	40.2	39.3	37.8	36.0
Biochemical Oxygen Demand (BOD)	mg/L	9	11	9	6
Chemical Oxygen Demand (COD)	mg/L	910	1000	764	619
Oil & Grease	mg/L	<5	<5	<5	<5
Total Organic Carbon (TOC)	mg/L	288	302	296	284
Boron	µg/L	3680	3870	4100	4030
Calcium	mg/L	55	54.3	58.9	54.6
Iron	mg/L	0.86	1.06	1.46	0.93
Magnesium	mg/L	21.4	24.4	24.4	21.5
Potassium	mg/L	544	640	670	633
Cadmium	µg/L	<1.0	<1.0	<1.0	<1.0
Chromium	µg/L	80	92	100	94
Copper	µg/L	<10	<10	<10	<10
Nickel	µg/L	77	89	93	92
Zinc	µg/L	68	76	76	62

		1 Mar 22	2 Mar 22	3 Mar 22	4 Mar 22	5 Mar 22	6 Mar 22	7 Mar 22	8 Mar 22	9 Mar 22	10 Mar 22	11 Mar 22
On-site Measurements												
Temperature	°C	30.1	30	27.8	30.1	28.9	24.9	27.7	28.7	28.5	32.7	32.6
pH Value	pH Unit	8.3	8.4	8.4	8.4	8.4	8.5	8.5	8.5	8.4	8.4	8.5
Volume Discharged	m^3	1341	1496	1496	1498	1372	678	644	1367	1497	1380	950
Laboratory Analysis												
Suspended Solids (SS)	mg/L	27	38.7	16.7	18.3	19.2	17.1	14.2	23.9	20.4	31.5	22.6
Alkalinity	mg/L	1460	1540	1520	1470	1530	1750	1830	1670	1980	2070	2260
Ammoniacal-nitrogen	mg/L	0.35	0.29	0.35	0.31	0.35	0.38	0.47	0.31	0.34	0.37	0.33
Chloride	mg/L	1420	1550	1400	1390	1520	1690	1780	1610	1850	1700	1910
Nitrite-nitrogen	mg/L	0.11	0.11	0.11	0.13	0.16	0.15	0.44	0.11	0.14	0.14	0.16
Phosphate	mg/L	4.41	4.98	5.29	5.47	5.98	6.82	7.25	6.95	9	9.8	10.1
Sulphate	mg/L	199	157	181	182	181	163	164	175	164	128	122
Total Nitrogen	mg/L	69.6	96.4	87.9	96.3	98.6	91.4	84.2	78.5	84.7	100	116
Nitrate-nitrogen	mg/L	32.3	46.7	49.6	56	57.2	45	37.5	37.6	37.3	48.7	61.4
Total Inorganic Nitrogen	mg/L	32.8	47.1	50.1	56.4	57.7	45.5	38.4	38.0	37.8	49.2	61.9
Biochemical Oxygen Demand (BOD)	mg/L	8	9	13	13	10	6	7	9	6	7	7
Chemical Oxygen Demand (COD)	mg/L	710	692	983	619	856	902	826	790	826	1190	544
Oil & Grease	mg/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Total Organic Carbon (TOC)	mg/L	334	314	313	311	326	334	333	341	390	395	387
Boron	µg/L	3560	4380	4190	4330	4520	4690	4590	4340	5140	5040	5200
Calcium	mg/L	56.5	56	53.7	58.5	51.6	50.9	47.2	37.4	29.4	32.4	26.7
Iron	mg/L	0.86	1.08	0.99	1.01	1.05	1.19	1.08	1.14	1.14	1.24	1.31
Magnesium	mg/L	21.3	22.6	22.3	22.4	21.6	24.9	23.8	21.1	21.2	24	23.9
Potassium	mg/L	561	665	686	689	691	709	776	652	697	777	877
Cadmium	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chromium	µg/L	88	88	88	86	90	105	102	92	106	126	134
Copper	µg/L	<10	23	<10	<10	<10	<10	<10	<10	<10	<10	<10
Nickel	µg/L	85	85	84	80	86	107	108	100	110	118	125
Zinc	µg/L	59	76	52	46	48	56	54	61	61	54	56

		12 Mar 22	13 Mar 22	14 Mar 22	15 Mar 22	16 Mar 22	17 Mar 22	18 Mar 22	19 Mar 22	20 Mar 22	21 Mar 22	22 Mar 22	23 Mar 22
On-site Measurements													
Temperature	°C	29.3	30.9	31.7	29.7	28.9	31.9	31.9	29.1	25.8	29.9	29.7	25.1
pH Value	pH Unit	8.5	8.4	8.4	8.5	8.4	8.5	8.5	8.4	8.4	8.5	8.5	8.5
Volume Discharged	m^3	730	665	366	764	1143	1141	1125	1178	793	357	1033	1341
Laboratory Analysis													
Suspended Solids (SS)	mg/L	23.4	84.8	10.7	14.6	20.4	21.8	31.6	12.5	14.7	19.5	19.2	20.2
Alkalinity	mg/L	2300	2310	2310	2100	1750	1860	2020	1950	2040	2320	2170	2230
Ammoniacal-nitrogen	mg/L	0.34	0.31	1.39	0.59	0.33	0.37	0.33	0.32	0.34	0.39	0.36	0.35
Chloride	mg/L	1970	2060	2080	1800	1570	1650	1720	1690	1740	2150	1910	1950
Nitrite-nitrogen	mg/L	0.19	0.23	1.12	1.18	0.14	0.16	0.18	0.18	0.18	0.29	0.18	0.18
Phosphate	mg/L	10.2	9.97	10.4	9.55	8.23	8.3	8.5	8.1	7.89	9.96	8.53	8.43
Sulphate	mg/L	121	118	116	140	177	170	152	153	139	114	133	130
Total Nitrogen	mg/L	112	120	112	104	78	83.9	102	96.7	94.4	107	106.0	110.0
Nitrate-nitrogen	mg/L	57.3	61.1	60.8	55	37.8	39.2	45.7	47.7	45.6	51.5	53.8	55.4
Total Inorganic Nitrogen	mg/L	57.8	61.6	63.3	56.8	38.3	39.7	46.2	48.2	46.1	52.2	54.3	55.9
Biochemical Oxygen Demand (BOD)	mg/L	7	12	8	8	11	9	12	8	7	8	7	10
Chemical Oxygen Demand (COD)	mg/L	516	590	982	1010	892	964	903	1050	1090	1130	993	1050
Oil & Grease	mg/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Total Organic Carbon (TOC)	mg/L	488	418	410	350	332	355	394	372	418	497	412	404
Boron	µg/L	5370	5530	5320	5170	3830	4390	4900	4950	4930	5530	5480	5570
Calcium	mg/L	26	24.6	22.9	23.9	26.3	22.9	21.8	21.5	20.3	18.9	19.5	20.4
Iron	mg/L	1	1.42	1.27	1.28	1.18	1.19	1.4	1.33	1.46	1.46	1.54	1.63
Magnesium	mg/L	24	24.4	23.2	24	24.2	22.6	23.9	24.7	24.5	26.9	25.9	27.6
Potassium	mg/L	882	888	900	820	622	707	784	735	774	922	836	874
Cadmium	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chromium	µg/L	140	143	141	127	104	107	121	109	112	126	123	134
Copper	µg/L	<10	23	<10	<10	<10	<10	15	<10	<10	<10	<10	<10
Nickel	µg/L	130	130	127	119	98	103	112	101	107	122	115	119
Zinc	µg/L	62	100	67	73	97	102	113	106	104	69	99	102

Annex F5

Groundwater Monitoring Results

Table F5.1 Groundwater Monitoring Results (January 2022)

Parameters	Units	MWX-1	MWX-2	MWX-3	MWX-4	MWX-5	MWX-6	MWX-7	MWX-8	MWX-9	MWX-10	MWX-11	MWX-12	MWX-13	MWX-14
Water Level	mPD	2.61	2.72	2.70	2.61	2.58	2.51	2.48	2.37	2.68	2.66	2.98	6.29	35.86	43.21
Bicarbonate Alkalinity as CaCO3	mg/L	134	301	161	<1	<1	<1	50	<1	74	163	146	59	15	10
Carbonate Alkalinity as CaCO3	mg/L	<1	<1	<1	91	75	94	15	79	16	<1	<1	<1	<1	<1
Total Alkalinity as CaCO3	mg/L	134	301	161	144	106	211	65	110	90	163	146	59	15	10
pH Value	pH Unit	7.7	7.8	7.8	10.9	10.6	11.1	8.8	10.3	8.7	7.7	8	6.6	5.4	5.5
Electrical Conductivity @ 25Â°C	µS/cm	752	786	1060	1220	1210	1400	2770	3070	2330	1150	374	311	95	92
Ammonia as N	mg/L	0.17	<0.01	1.07	7.6	1.9	3.83	6.26	13.3	6.42	<0.01	0.11	<0.01	0.02	<0.01
Chloride	mg/L	118	30	181	270	215	183	889	983	658	231	26	23	16	18
Nitrite as N	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Reactive Phosphorus as P	mg/L	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	0.02	<0.01	0.03	0.04	0.02	0.04	<0.01	<0.01
Sulphate as SO4 - Turbidimetric	mg/L	59	85	95	55	158	96	45	43	152	82	7	54	3	3
Sulphide as S2-	mg/L	<0.1	<0.1	<0.1	6.4	3.3	11	1	10.9	0.5	<0.1	<0.1	<0.1	<0.1	<0.1
Total Kjeldahl Nitrogen as N	mg/L	0.2	0.1	1.2	7.8	2	4.3	6.6	14	6.5	<0.1	0.2	0.1	<0.1	0.1
Nitrate as N	mg/L	0.05	0.29	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.1	0.12
Total Nitrogen as N	mg/L	0.3	0.4	1.2	7.8	2	4.3	6.6	14	6.5	<0.1	0.2	0.2	0.2	0.2
Boron	µg/L	120	200	170	160	180	170	630	530	500	100	50	20	10	10
Calcium	mg/L	56.5	59.3	84.2	55.4	32	33.5	34.6	67.5	39	86.4	46.8	27.1	0.87	0.86
Mercury	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Magnesium	mg/L	5.68	52.4	5.58	<0.05	<0.05	<0.05	8.86	0.05	12.6	11.4	2.97	4.18	0.98	0.74
Sodium	mg/L	92.4	36.9	102	144	172	166	484	439	352	133	29.4	25.4	14	13.6
Iron	mg/L	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.14	0.59	<0.04	<0.04
Potassium	mg/L	20.3	10.5	26.2	37.1	58.8	59.3	54.3	45.8	43.5	11.2	7.15	2.95	4	3.51
Cadmium	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chromium	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Copper	µg/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1	<1
Lead	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Manganese	µg/L	554	142	974	<1	<1	<1	4	<1	9	2550	567	770	28	7
Nickel	µg/L	<1	<1	<1	2	<1	2	<1	<1	<1	<1	<1	<1	<1	<1
Zinc	µg/L	<10	2930	<10	<10	<10	<10	27	<10	<10	<10	<10	14	11	<10
Biochemical Oxygen Demand	mg/L	<2	<2	<2	4	4	9	<2	5	2	<2	<2	<2	<2	<2
Chemical Oxygen Demand	mg/L	9	<2	15	34	25	44	15	20	26	20	2	7	<2	<2
Total Organic Carbon	mg/L	4	2	10	13	8	12	6	10	11	6	3	2	2	1

Table F5.2 Groundwater Monitoring Results (February 2022)

Parameters	Units	MWX-1	MWX-2	MWX-3	MWX-4	MWX-5	MWX-6	MWX-7	MWX-8	MWX-9	MWX-10	MWX-11	MWX-12	MWX-13	MWX-14
Water Level	mPD	2.59	2.66	2.62	2.54	2.53	2.34	2.18	2.23	2.33	2.20	2.71	6.11	35.31	41
Bicarbonate Alkalinity as CaCO3	mg/L	152	307	92	<1	<1	<1	66	<1	78	160	166	62	15	11
Carbonate Alkalinity as CaCO3	mg/L	<1	<1	<1	91	54	147	10	89	8	<1	<1	<1	<1	<1
Total Alkalinity as CaCO3	mg/L	152	307	92	141	64	201	76	121	87	160	166	62	15	11
pH Value	pH Unit	7.8	7.8	7.9	10.7	10.3	11.2	8.6	10.7	8.5	7.7	7.8	6.5	5.5	5.4
Electrical Conductivity @ 25Â°C	µS/cm	851	800	1010	1250	1510	1230	2900	3160	1200	1280	406	307	95	97
Ammonia as N	mg/L	0.34	<0.01	1.25	7.29	2.39	3.86	5.7	14.2	5.14	0.03	0.12	<0.01	<0.01	<0.01
Chloride	mg/L	136	31	209	277	366	192	917	1010	287	282	25	23	16	19
Nitrite as N	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Reactive Phosphorus as P	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.02	0.01	0.02	0.04	0.02	0.04	<0.01	<0.01
Sulphate as SO4 - Turbidimetric	mg/L	65	92	82	52	110	79	42	39	78	88	5	46	3	4
Sulphide as S2-	mg/L	<0.1	<0.1	0.2	7.8	2.8	9	0.8	6.9	0.8	<0.1	<0.1	<0.1	<0.1	<0.1
Total Kjeldahl Nitrogen as N	mg/L	0.3	<0.1	1.5	8.4	2.8	4.8	6.3	15	5.3	<0.1	0.2	0.2	<0.1	<0.1
Nitrate as N	mg/L	0.07	0.27	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.09	0.07
Total Nitrogen as N	mg/L	0.4	0.3	1.5	8.4	2.8	4.8	6.3	15	5.3	<0.1	0.2	0.2	0.1	0.1
Boron	µg/L	140	210	190	170	180	180	680	560	390	110	60	20	10	10
Calcium	mg/L	43.4	58.9	68.3	60	26.3	33.2	30.3	71	22.9	88.8	46.5	28.2	0.95	1.23
Mercury	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Magnesium	mg/L	7.35	48.1	3.5	<0.05	0.06	<0.05	12.6	<0.05	6.58	11.5	3.38	4.09	1.04	0.99
Sodium	mg/L	91.8	35	125	160	215	153	477	525	182	156	29.6	27.2	15.4	17.2
Iron	mg/L	<0.04	<0.04	0.08	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.41	<0.04	<0.04
Potassium	mg/L	18.8	10.7	26	39	54.1	53.9	47.4	54.5	29.5	10.7	6.8	2.78	3.91	3.9
Cadmium	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chromium	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Copper	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1	1
Lead	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Manganese	µg/L	952	144	564	<1	<1	<1	8	<1	10	3130	371	718	18	9
Nickel	µg/L	<1	<1	<1	2	<1	1	<1	<1	<1	<1	<1	<1	<1	<1
Zinc	µg/L	<10	50	<10	<10	<10	<10	<10	<10	<10	<10	<10	11	<10	<10
Biochemical Oxygen Demand	mg/L	<2	<2	<2	<2	<2	2	<2	2	<2	<2	<2	<2	<2	<2
Chemical Oxygen Demand	mg/L	10	4	16	43	24	50	14	45	18	10	2	4	5	4
Total Organic Carbon	mg/L	4	6	7	12	5	9	4	8	6	6	6	<1	1	1

Table F5.3 Groundwater Monitoring Results (March 2022)

Parameters	Units	MWX-1	MWX-2	MWX-3	MWX-4	MWX-5	MWX-6	MWX-7	MWX-8	MWX-9	MWX-10	MWX-11	MWX-12	MWX-13	MWX-14
Water Level	mPD	2.27	2.41	2.3	2.36	2.34	2.43	2.12	2.21	2.36	2.43	2.66	6.19	35.2	40.94
Bicarbonate Alkalinity as CaCO3	mg/L	136	333	138	<1	<1	<1	61	<1	85	187	81	59	15	11
Carbonate Alkalinity as CaCO3	mg/L	<1	<1	<1	81	87	128	12	67	2	<1	<1	<1	<1	<1
Total Alkalinity as CaCO3	mg/L	136	333	138	155	163	217	72	104	87	187	81	59	15	11
pH Value	pH Unit	8	7.8	8.1	11.2	11.2	11.3	8.7	10.5	8.4	7.6	8.1	6.8	5.5	5.3
Electrical Conductivity	µS/cm	939	920	945	1160	1330	1310	2900	2720	1460	1700	395	306	95	99
Ammonia as N	mg/L	0.17	0.02	1.45	5.91	3.8	3.95	6.18	11.8	3.29	0.02	0.06	<0.01	0.11	<0.01
Chloride	mg/L	172	34	212	220	211	192	828	697	296	312	33	23	15	18
Nitrite as N	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.55	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Reactive Phosphorus as P	mg/L	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	0.01	0.02	0.01	0.04	<0.01	<0.01
Sulphate as SO4 - Turbidimetric	mg/L	65	120	81	52	119	80	41	73	178	216	56	53	3	4
Sulphide as S2	mg/L	<0.1	<0.1	<0.1	6.6	4.6	9.9	0.6	6.1	0.8	<0.1	<0.1	<0.1	<0.1	<0.1
Total Kjeldahl Nitrogen as N	mg/L	0.3	0.1	1.7	6.8	4.4	5	6.4	12.3	3.8	0.2	0.2	<0.1	0.2	<0.1
Nitrate as N	mg/L	<0.01	0.88	<0.01	<0.01	<0.01	<0.01	<0.01	0.09	<0.01	<0.01	<0.01	<0.01	0.1	0.08
Total Nitrogen as N	mg/L	0.3	1	1.7	6.8	4.4	5	6.4	12.9	3.8	0.2	0.2	<0.1	0.2	0.2
Boron	µg/L	140	220	200	170	180	180	690	470	320	160	70	20	20	20
Calcium	mg/L	48.2	43.8	61.1	51.8	44.5	31.9	31.3	42.1	63.8	124	38	22.4	0.7	0.91
Mercury	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Magnesium	mg/L	8.33	41.9	3.8	<0.05	<0.05	<0.05	14.3	0.05	6.43	11.6	2.23	3.78	0.84	0.9
Sodium	mg/L	119	35	116	140	159	167	513	378	206	192	31.1	23	12.9	14.5
Iron	mg/L	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.07	<0.04	<0.04	0.29	0.11	<0.04
Potassium	mg/L	21.3	9	26.9	36.3	56.6	58.3	50.5	47	36.5	14.5	8.72	2.41	3.32	3.7
Cadmium	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chromium	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Copper	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1	<1
Lead	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Manganese	µg/L	804	355	777	1	<1	<1	10	<1	35	1850	207	764	122	8
Nickel	µg/L	<1	<1	<1	1	1	2	<1	1	<1	<1	<1	<1	<1	<1
Zinc	µg/L	<10	192	<10	<10	<10	<10	<10	<10	<10	<10	168	<10	18	<10
Biochemical Oxygen Demand	mg/L	<2	<2	<2	<2	<2	<2	<2	5	<2	<2	<2	2	<2	<2
Chemical Oxygen Demand	mg/L	4	<2	17	38	28	46	11	29	17	9	8	5	5	3
Total Organic Carbon	mg/L	4	4	11	11	9	12	4	11	9	7	4	3	3	3

Figure F5.1 Graphical Presentation for Groundwater Monitoring (MWX-1)

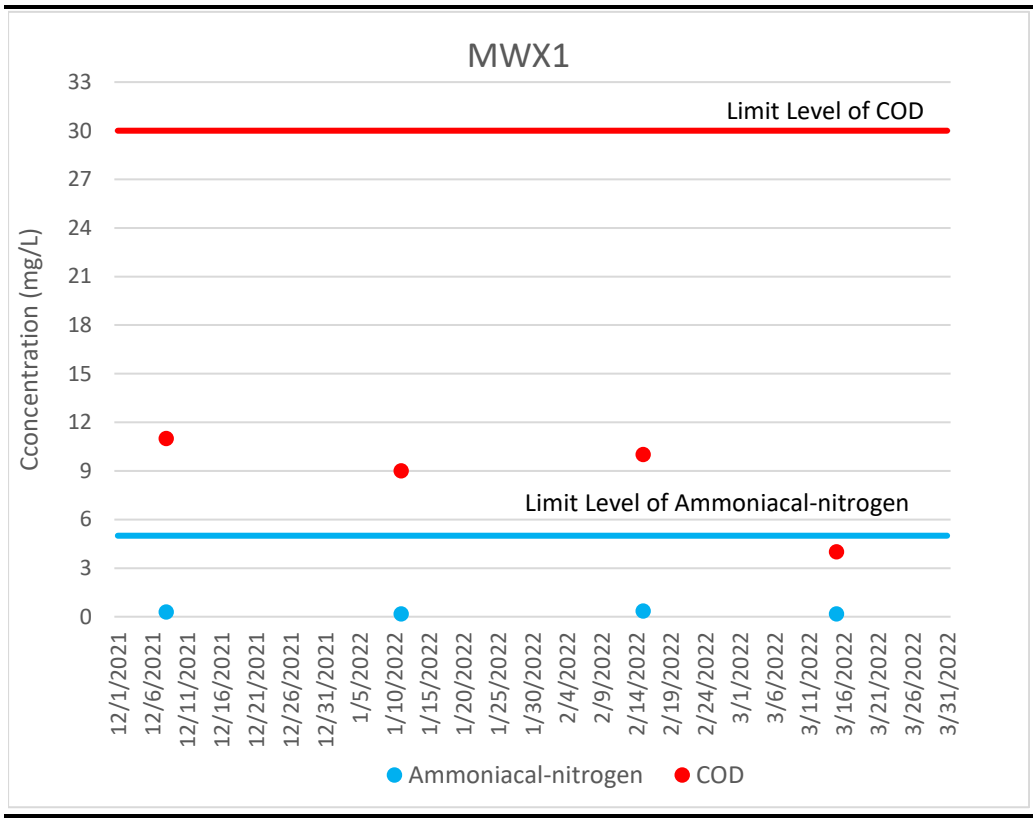


Figure F5.2 Graphical Presentation for Groundwater Monitoring (MWX-2)

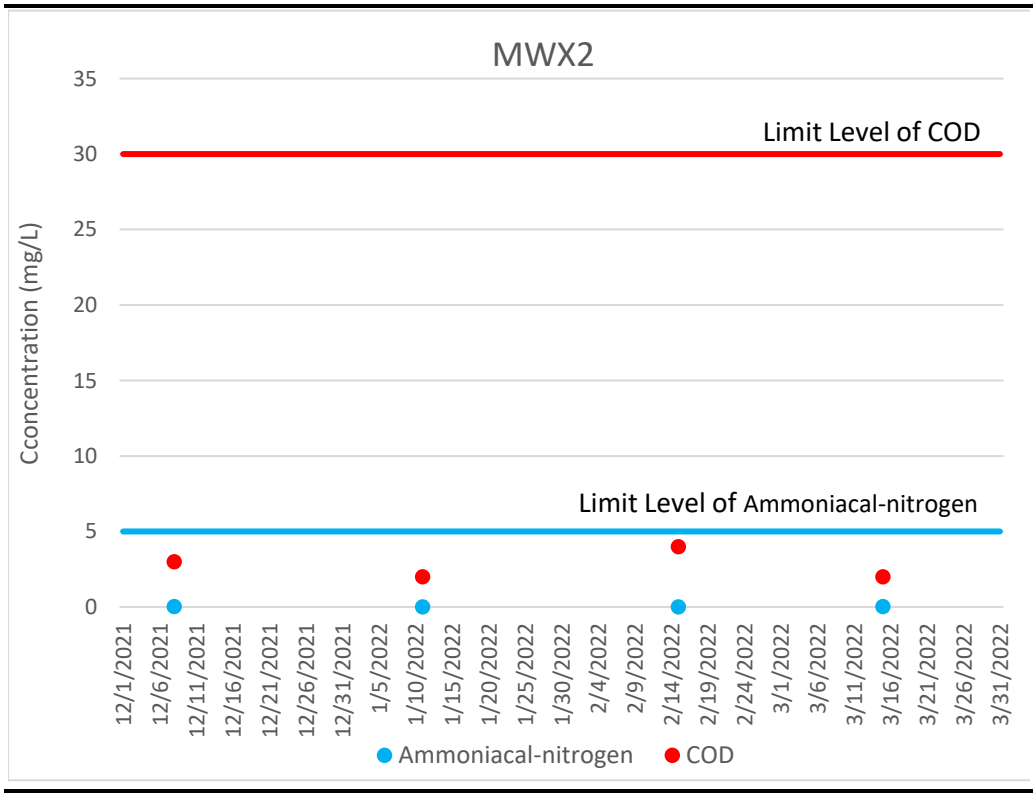


Figure F5.3 Graphical Presentation for Groundwater Monitoring (MWX-3)

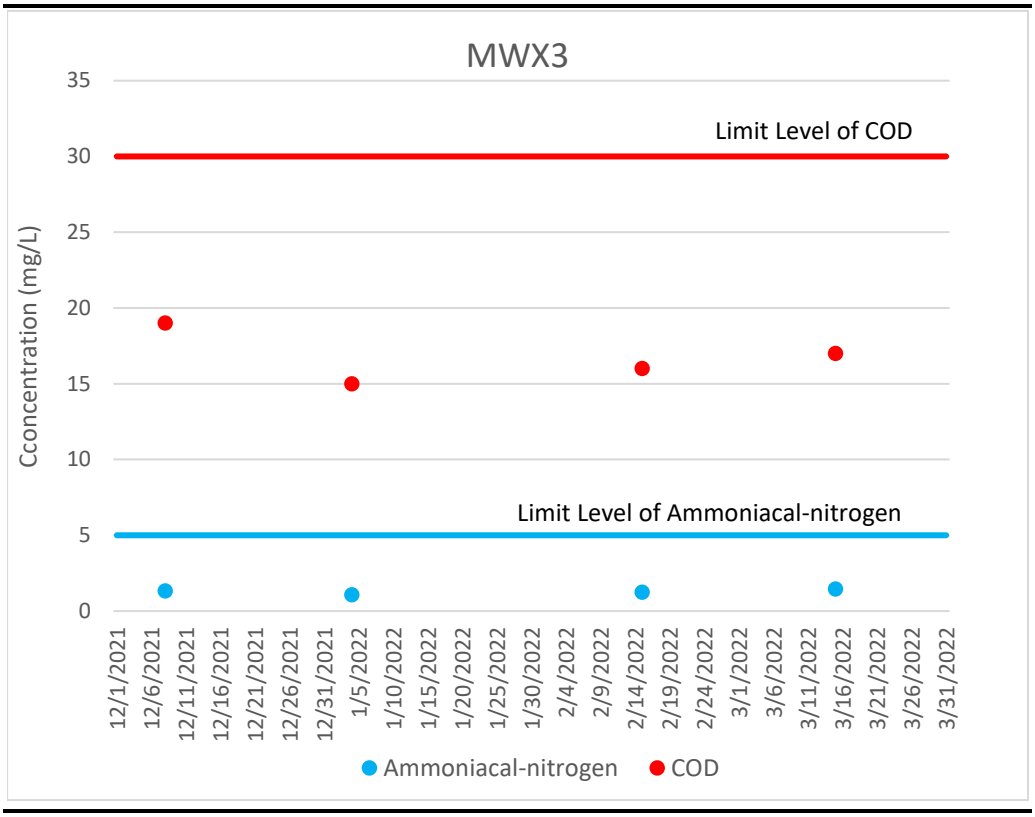


Figure F5.4 Graphical Presentation for Groundwater Monitoring (MWX-4)

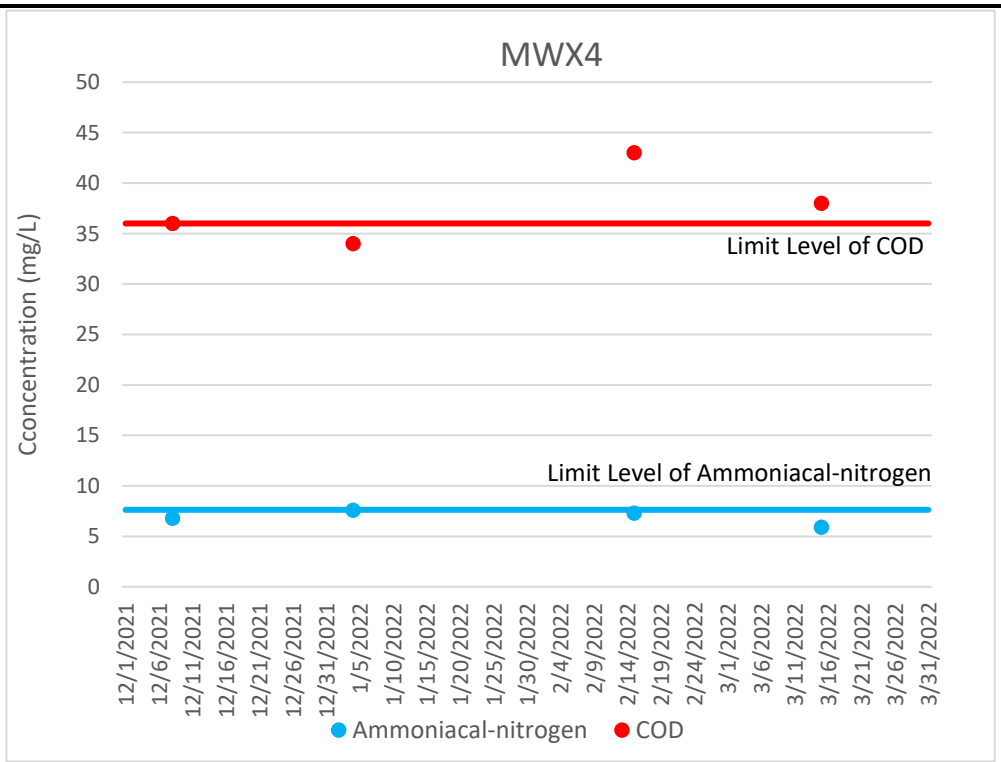


Figure F5.5 Graphical Presentation for Groundwater Monitoring (MWX-5)

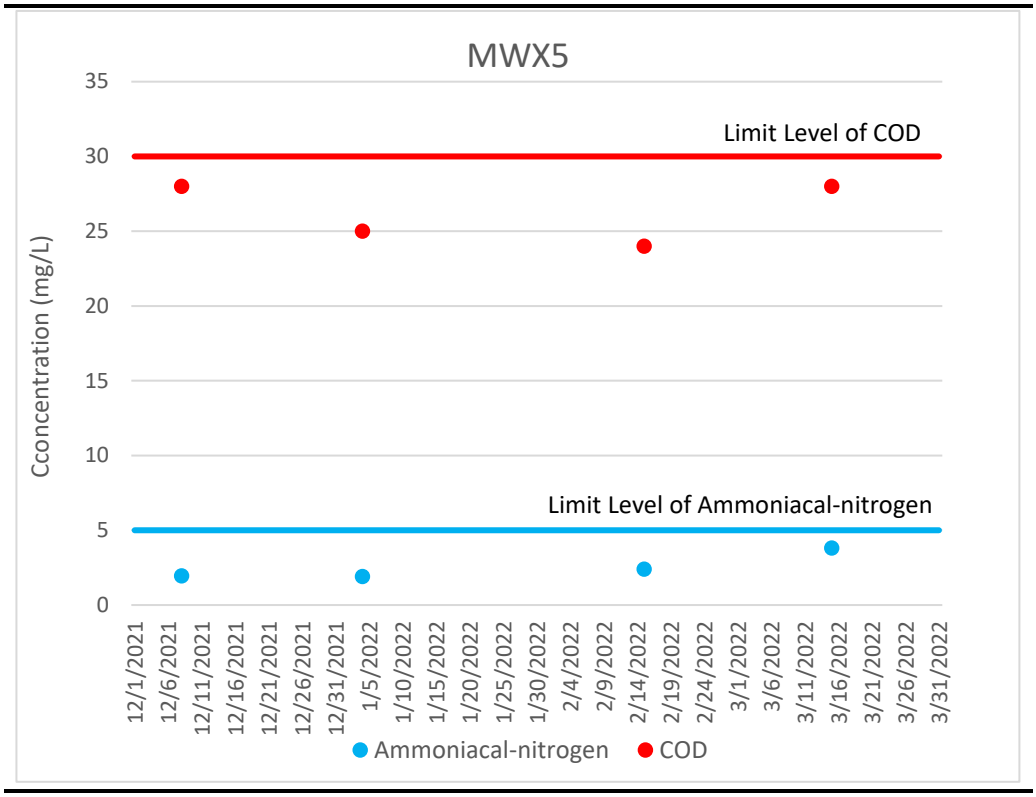


Figure F5.6 Graphical Presentation for Groundwater Monitoring (MWX-6)

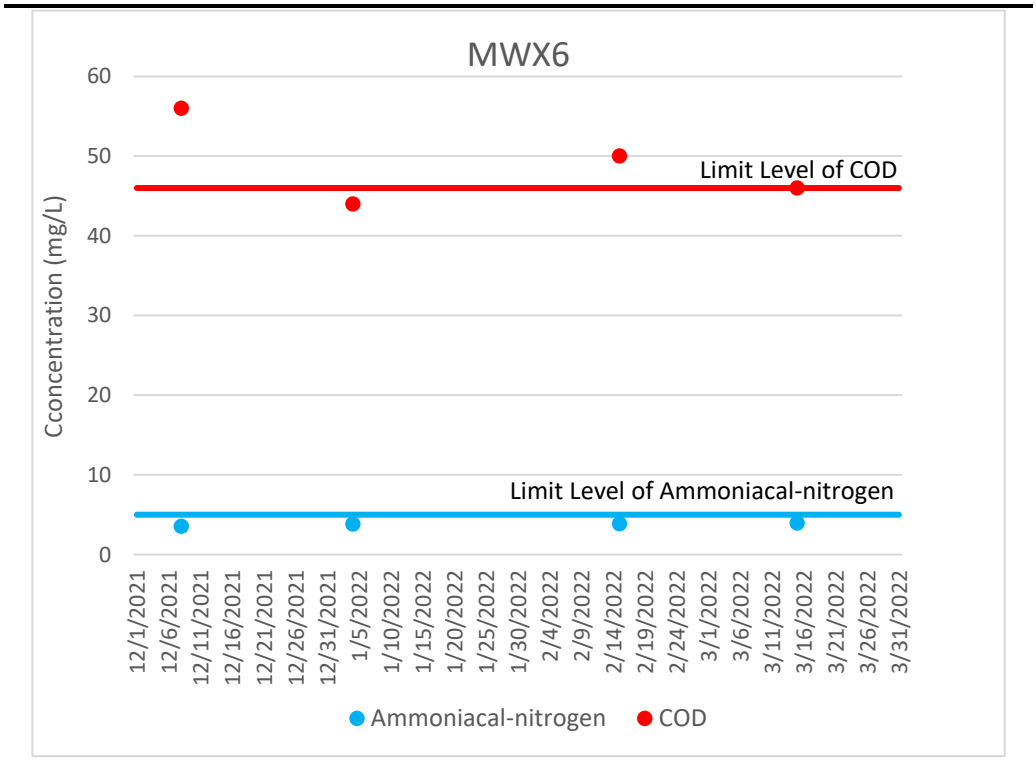


Figure F5.7 Graphical Presentation for Groundwater Monitoring (MWX-7)

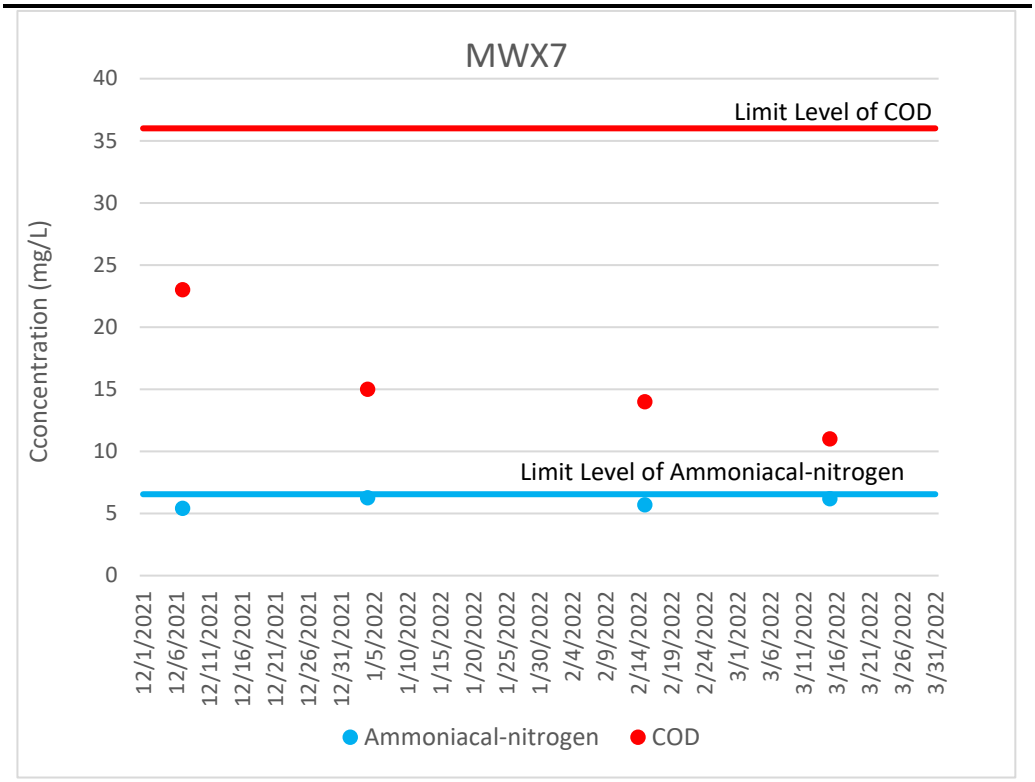


Figure F5.8 Graphical Presentation for Groundwater Monitoring (MWX-8)

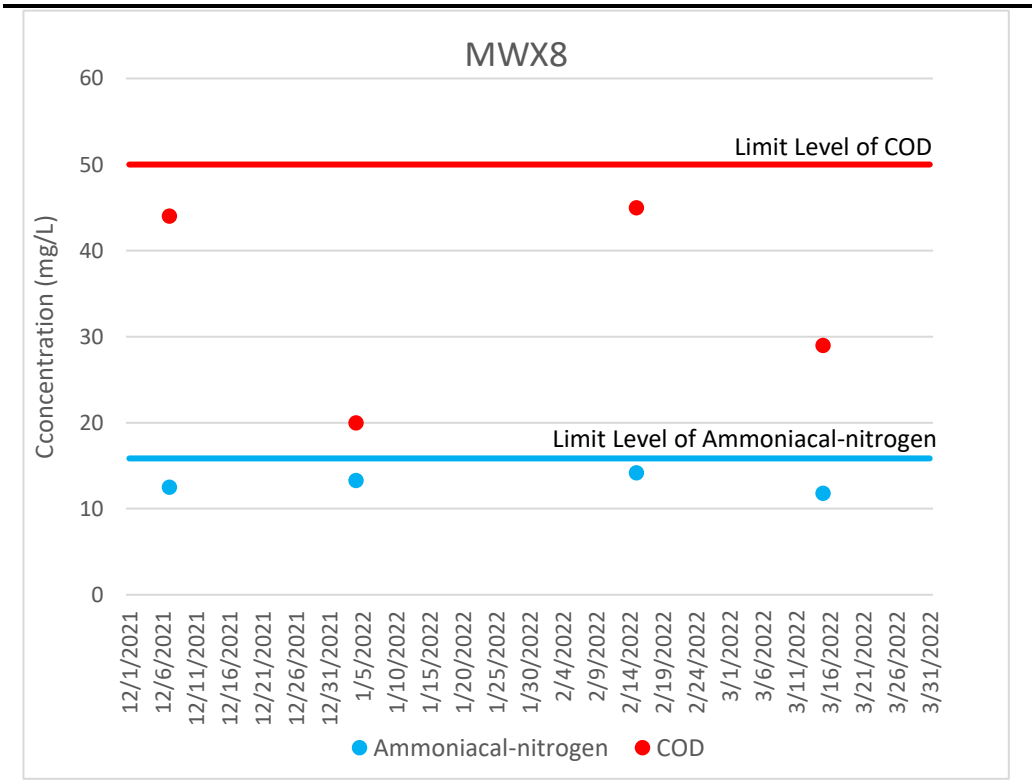


Figure F5.9 Graphical Presentation for Groundwater Monitoring (MWX-9)

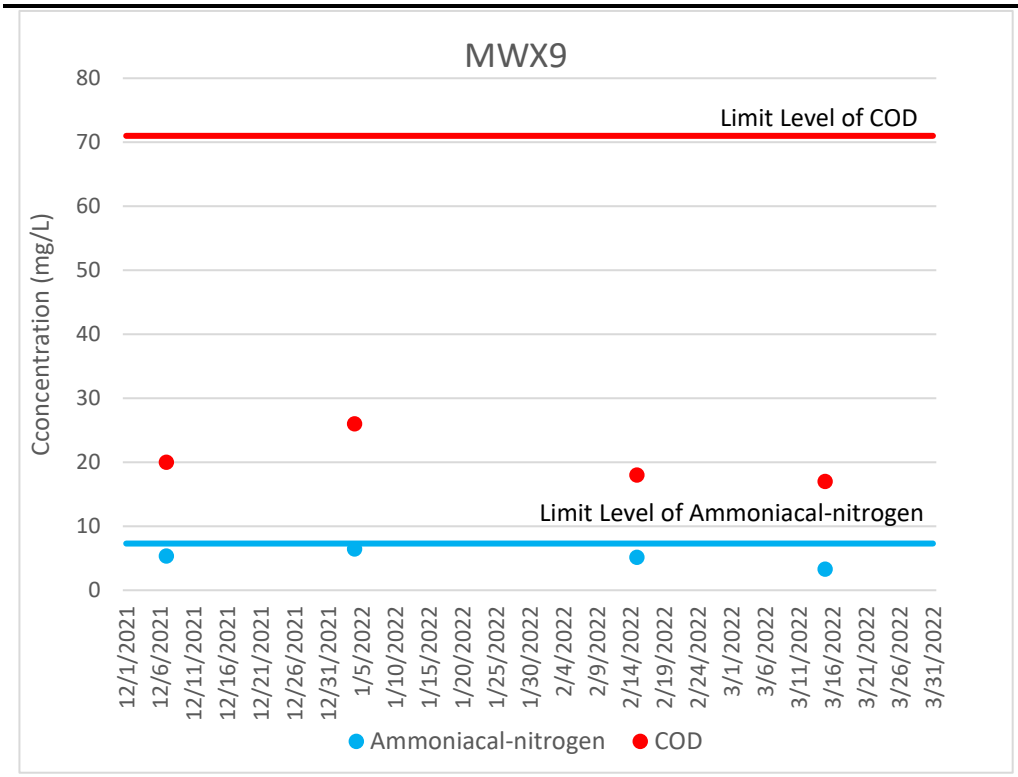


Figure F5.10 Graphical Presentation for Groundwater Monitoring (MWX-10)

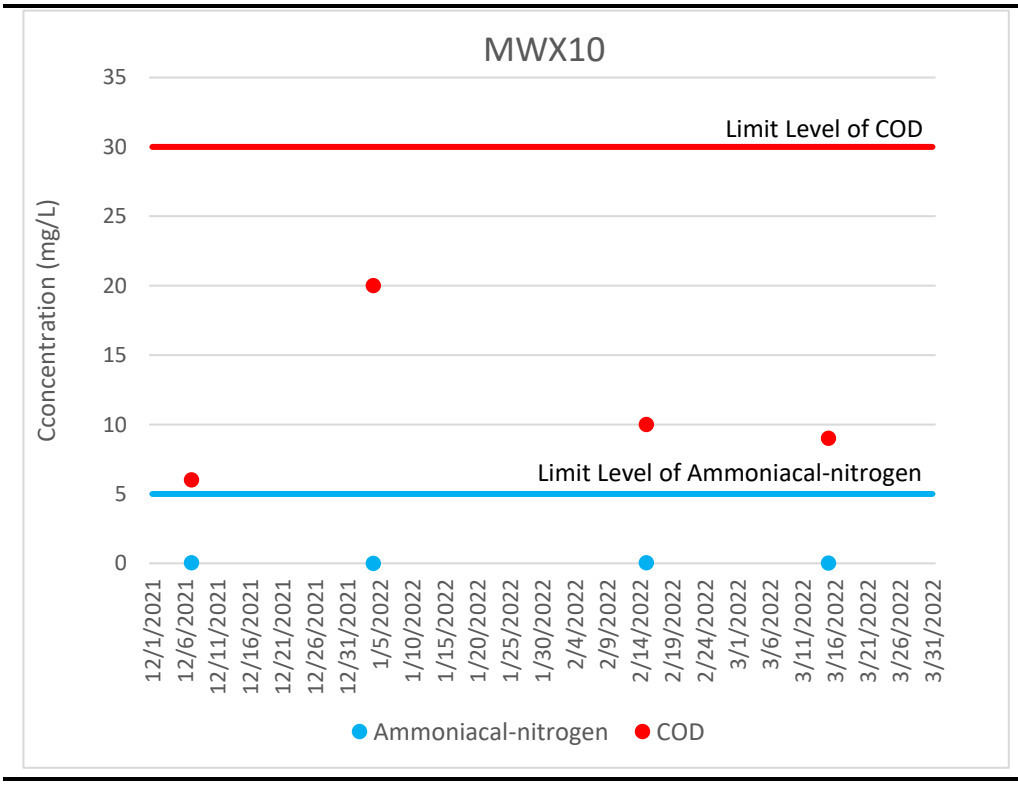


Figure F5.11 Graphical Presentation for Groundwater Monitoring (MWX-11)

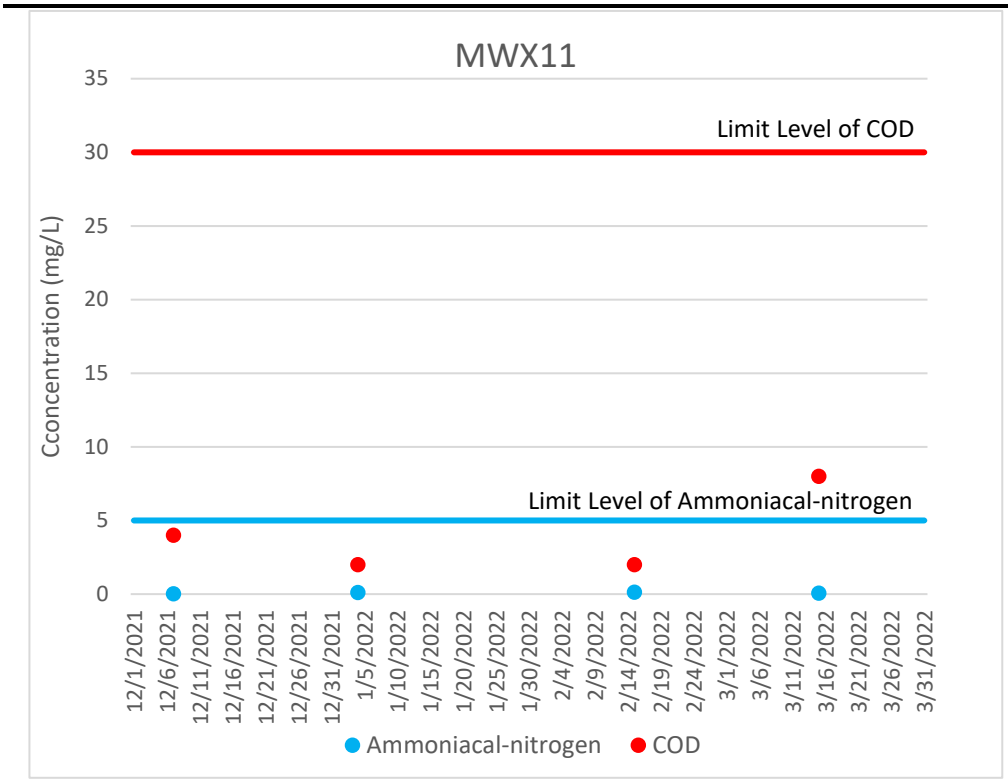


Figure F5.12 Graphical Presentation for Groundwater Monitoring (MWX-12)

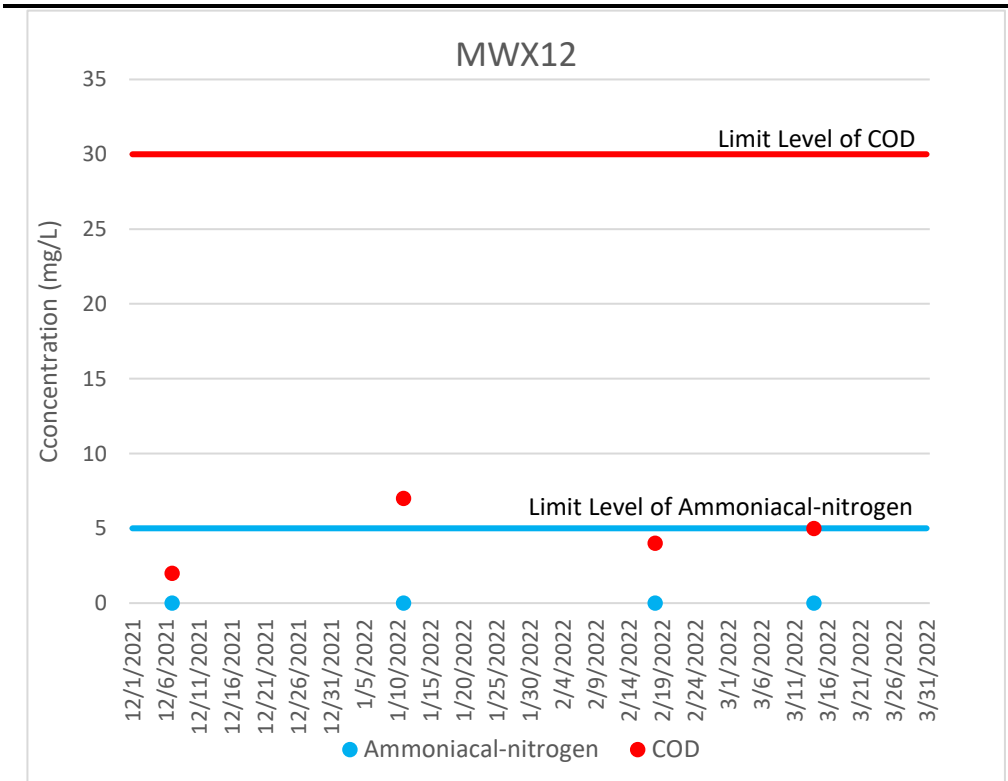


Figure F5.13 Graphical Presentation for Groundwater Monitoring (MWX-13)

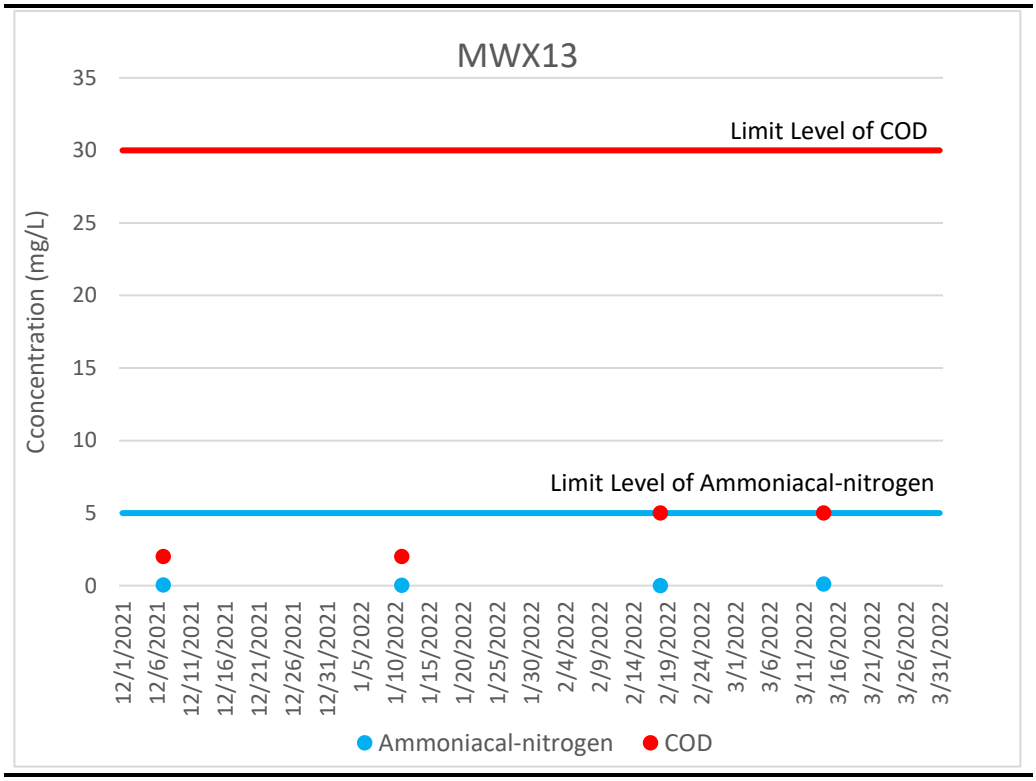
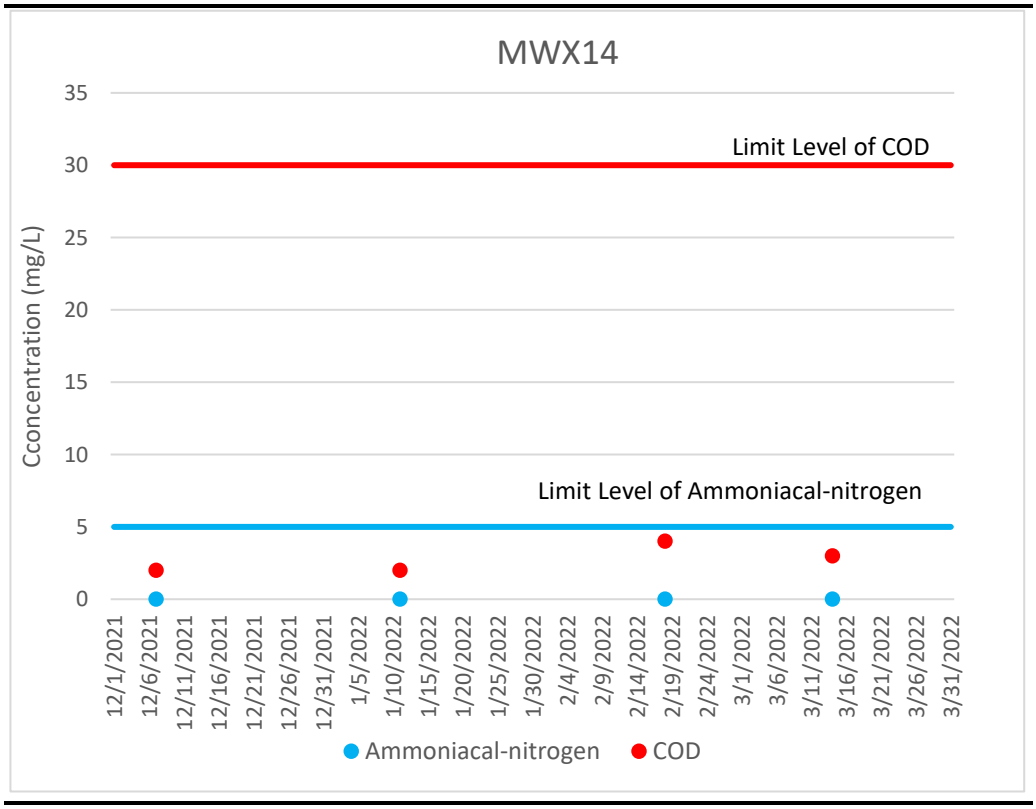


Figure F5.14 Graphical Presentation for Groundwater Monitoring (MWX-14)



Annex F6

Investigation Reports of Environmental Quality Limit Exceedance

Investigation Report of Environmental Quality Limit Exceedance

Project	South East New Territories (SENT) Landfill Extension
Date	15 February 2022
Time	MWX-4: 14:30 MWX-6: 11:29
Monitoring Location	MWX-4, MWX-6
Parameter	Chemical Oxygen Demand (COD)
Limit Levels	MWX-4: >36 mg /L MWX-6: >46 mg /L
Measured Level	MWX-4: 43 mg /L MWX-6: 50 mg /L
Possible reason	Groundwater contaminated with leachate is commonly characterized by high COD and ammoniacal-nitrogen levels as a result of degradation of organic matters in the waste. The groundwater quality (ammoniacal-nitrogen) monitoring results at MWX-4 (7.29 mg/L) and MWX-6 (3.86 mg/L) and groundwater quality (COD) monitoring results of the groundwater monitoring wells adjacent to MWX-4 and MWX-6 (MWX-3: 16 mg/L, MWX-5: 24 mg/L and MWX-7: 14 mg/L) are well within the respective limit levels. Hence, there is a low possibility of the elevation of COD levels at MWX-4 and MWX-6 are due to leachate contamination from SENTX operation or at least it is not conclusive to base on these results to demonstrate exceedances were due to leachate contamination. In accordance with Table 4.5b of the updated EM&A Manual, repeat measurement was conducted on 15 March 2022 to confirm findings. Exceedance of COD Limit Level was recorded at MWX-4 (38 mg/L) but no exceedance of COD concentration at MWX-6 (46 mg/L) was measured during the sampling event. MWX-4 show consecutive exceedance of the groundwater quality limit. According to the findings of the desktop review commissioned by GVL and EPD (the Employer) in May 2021 to investigate the potential sources of the elevated methane levels at the perimeter landfill gas monitoring wells at SENTX, pockets of organic matters are identified in the fill materials of the SENTX site upon review of the historical site investigation borehole logs at the Project Site area. It is possible that the elevated COD concentration measured at MWX-4 (with detection of elevated levels of methane (up to 11.6% v/v)) and MWX-6 (with detection of elevated levels of methane (up to 12.2% v/v) and in close proximity to LFG13, which shows elevated methane levels continuous) on 15 February 2022 could be due to localised organic matters within or around the monitoring wells.

	Due to the presence of influencing factor from non-project source and the COD levels at all other groundwater monitoring wells are within the respective limit level, there is no adequate evidence showing that the COD level exceedances measured at MWX-4 and MWX-6 on 15 February 2022 were deemed to Project-related activities.
Action Taken / Action to be Taken	Examination of environmental performance of the Project will be continued during the weekly inspections. The Contractor is reminded to implement relevant and appropriate mitigation measures according to the updated EM&A Manual to avoid any exceedance of the Action and Limit Levels. ET will continue to closely monitor the groundwater quality monitoring results and collect additional data for investigation and further review, if necessary.
Remarks	-

Prepared by: Abbey Lau
Designation: Environmental Team
Date: 21 April 2022

Investigation Report of Environmental Quality Limit Exceedance

Project	South East New Territories (SENT) Landfill Extension
Date	15 March 2022
Time	13:04
Monitoring Location	MWX-4
Parameter	Chemical Oxygen Demand (COD)
Limit Levels	>36 mg /L
Measured Level	38 mg /L
Possible reason	Groundwater contaminated with leachate is commonly characterized by high COD and ammoniacal-nitrogen levels as a result of degradation of organic matters in the waste. The groundwater quality (ammoniacal-nitrogen) monitoring result at MWX-4 (5.91 mg/L) and groundwater quality (COD) monitoring results of the groundwater monitoring wells adjacent to MWX-4 (MWX-3: 17 mg/L and MWX-5: 28 mg/L) are well within the respective limit levels. Hence, there is a low possibility of the elevation of COD level at MWX-4 is due to leachate contamination from SENTX operation or at least it is not conclusive to base on these results to demonstrate exceedance was due to leachate contamination. In accordance with Table 4.5b of the updated EM&A Manual, repeat measurement was conducted on 11 April 2022 to confirm findings. Exceedance of COD Limit Level was recorded at MWX-4 (40 mg/L) during the sampling event. MWX-4 showed consecutive exceedance of the groundwater quality limit. According to the findings of the desktop review commissioned by GVL and EPD (the Employer) in May 2021 to investigate the potential sources of the elevated methane levels at the perimeter landfill gas monitoring wells at SENTX, pockets of organic matters are identified in the fill materials of the SENTX site upon review of the historical site investigation borehole logs at the Project Site area. It is possible that the elevated COD concentration measured at MWX-4 (with detection of elevated levels of methane (up to 11.6% v/v)) on 15 March 2022 could be due to localised organic matters within or around the monitoring wells and background fluctuation. Due to the presence of influencing factor from non-project source and the COD levels at all other groundwater monitoring wells are within the respective limit level, there is no adequate evidence showing that the COD level exceedance measured at MWX-4 on 15 March 2022 was deemed to Project-related activities. It should also be noted that although the COD level exceeded the limit level of the EM&A programme, it is still well within the

	WPCO effluent discharge limit of COD (80 mg/L) and the standard for effluents discharged into the inshore waters of the Junk Bay Water Control Zone as stipulated under Technical Memorandum Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters (80 mg/L). The slight exceedance of COD at MWX-4 on 15 March 2022 will not cause adverse water quality impact to the Junk Bay Water Control Zone.
Action Taken / Action to be Taken	Examination of environmental performance of the Project will be continued during the weekly inspections. The Contractor is reminded to implement relevant and appropriate mitigation measures according to the updated EM&A Manual to avoid any exceedance of the Action and Limit Levels. ET will continue to closely monitor the groundwater quality monitoring results and collect additional data for investigation and further review, if necessary.
Remarks	-

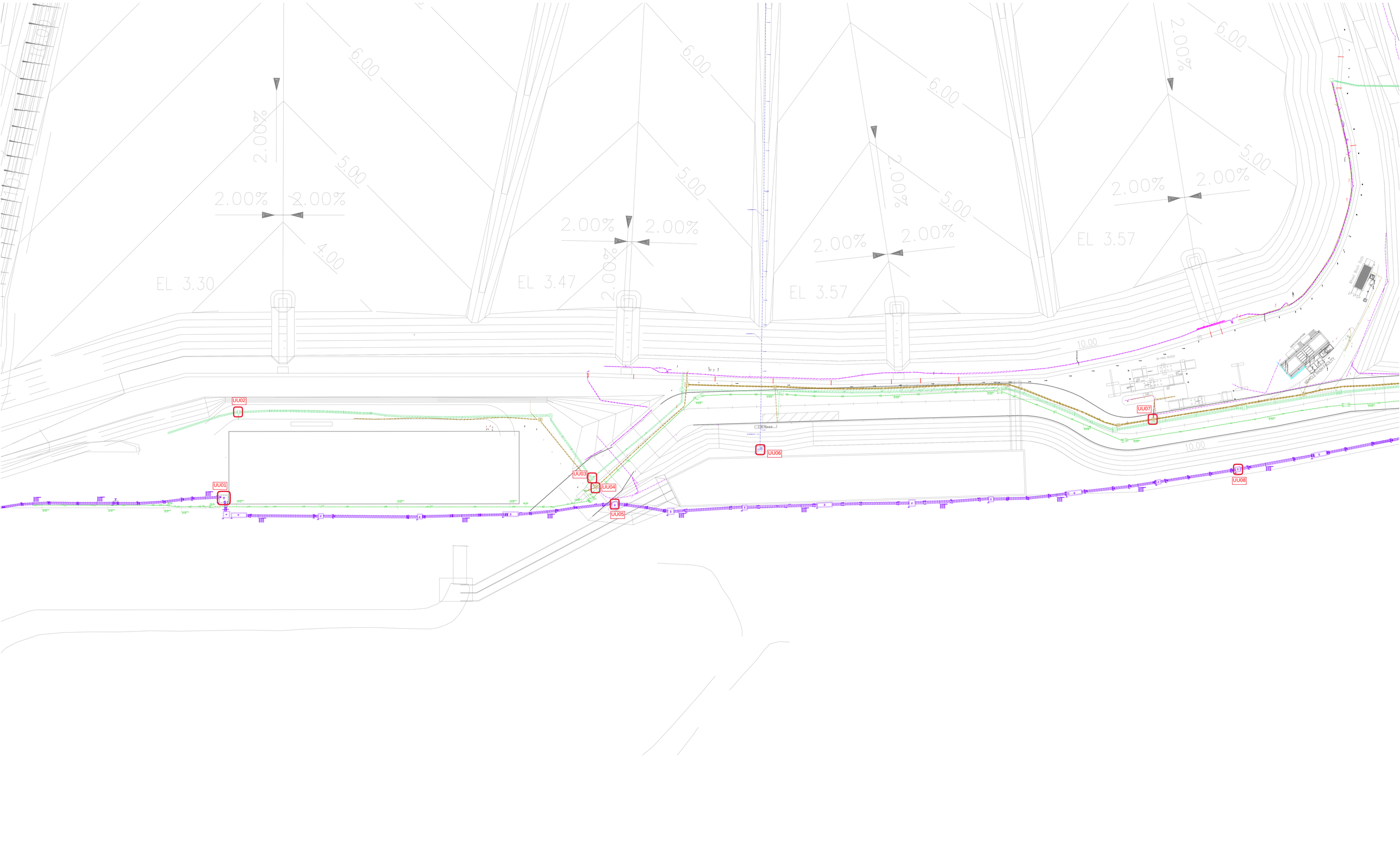
Prepared by: Abbey Lau
Designation: Environmental Team
Date: 17 May 2022

Annex G

Landfill Gas

Annex G1

Landfill Gas Monitoring Locations for Service Voids, Utilities and Manholes along the Site Boundary and Within the SENTX Site


6.00
5.00
2.00%
4.00
EL 3.30
EL 3.47
EL 3.57
EL 3.57
10.00
UU01
UU02
UU03
UU04
UU05
UU06
UU07
UU08

WATER TANK
CAR PARK SHELTER
EPD CONFERENCE ROOM
BOPAM BUILDING
UU23
UU22
UU21
UU20
UU19
PETROLEUM STORE
UU18
DIESEL TANKS
UU16
UU17
WATER TANKS
UU24
UU25
LANDFILL GAS CONTROL ROOM & SWITCHROOM
UU26
MAINTENANCE BUILDING
LABORATORY BUILDING
CAR PARK
UU15
EQUIPMENT STORAGE AREA (OPEN STANDING)
UU14
UU13
UU12
GVA BUILDING
UU27
EPD BUILDING
HARD STANDING
UU09
UU11
UU10
UU28
Wheel Wash Bath
INSPECTION PLATFORM
VEHICLE WASH FACILITY
UU08

Annex G2

Landfill Gas Monitoring Results

Table G2.1 Landfill Gas Monitoring Results at Perimeter LFG Monitoring Wells (January 2022)

Location	Water Level (mPD)	Methane (% (v/v))	Carbon Dioxide (% (v/v))	Oxygen (% (v/v))
LFG1	2.33	0.0	0.0	20.4
LFG2	2.22	0.0	0.0	20.4
LFG3	2.38	0.0	0.1	20.2
LFG4	2.2	0.0	0.0	20.2
LFG5	2.49	0.0	0.2	10.9
LFG6	2.16	0.0	0.0	20.3
LFG7	2.29	0.0	0.0	20.2
LFG8	2.25	0.0	0.0	20.2
LFG9	2.22	0.0	0.0	20.3
LFG10	1.94	0.0	0.0	20.3
LFG11	2.06	0.0	0.3	11.8
LFG12	2.02	0.0	0.0	20.0
LFG13	1.86	17.4	0.3	0.4
LFG14	1.63	0.0	0.0	19.8
LFG15	1.87	0.0	0.1	19.5
LFG16	1.9	0.0	0.1	19.6
LFG17	2.08	0.0	0.0	20.1
LFG18	2.21	0.0	0.1	20.1
LFG19	2.27	0.0	0.0	20.1
LFG20	2.37	0.0	2.5	13.6
LFG21	2.53	0.0	2.3	12.5
LFG22	2.21	0.0	1.4	15.6
LFG23	11.65	0.0	2.1	18.3
LFG24	5.99	0.0	0.7	19.4
GP1	Probe bent	0.0	0.1	19.9
GP2 (shallow)	Probe bent	0.1	0.1	20.0
GP2 (deep)	Probe bent	0.1	0.1	20.0
GP3 (shallow)	Probe bent	0.0	0.1	20.1
GP3 (deep)	Probe bent	0.0	0.1	20.1
GP4 (shallow)	Probe bent	0.0	0.2	20.2
GP4 (deep)	Probe bent	0.0	0.1	20.2
GP5 (shallow)	Probe bent	0.0	0.1	20.2
GP5 (deep)	37.47	0.0	0.1	20.2
GP6	36.70	0.0	6.5	14.4
GP7	35.48	0.0	0.1	20.1
GP12	Dry	0.0	0.6	19.4
GP15	2.28	0.0	0.0	20.4
P7	2.26	0.0	0.0	20.3
P8	2.38	0.0	0.0	20.4
P9	2.25	0.0	0.0	20.4

Table G2.2 Landfill Gas Monitoring Results at Perimeter LFG Monitoring Wells (February 2022)

Location	Water Level (mPD)	Methane (% (v/v))	Carbon Dioxide (% (v/v))	Oxygen (% (v/v))
LFG1	2.33	0.0	0.1	20.9
LFG2	2.27	0.0	0.1	20.9
LFG3	2.31	0.0	0.9	19.6
LFG4	2.23	0.0	0.1	20.9
LFG5	2.49	0.0	0.3	11.9
LFG6	2.18	0.0	0.1	20.8
LFG7	2.30	0.0	0.1	20.9
LFG8	2.24	0.0	0.1	21.0
LFG9	2.24	0.0	0.1	20.9
LFG10	1.97	0.0	0.1	20.7
LFG11	1.97	0.0	0.2	13.9
LFG12	1.86	0.0	0.1	20.1
LFG13	1.90	6.2	0.9	0.9
LFG14	1.67	0.0	0.1	20.6
LFG15	1.93	0.0	0.3	18.9
LFG16	1.98	0.0	0.1	20.5
LFG17	2.04	0.0	0.1	20.9
LFG18	3.13	0.0	0.1	20.6
LFG19	3.15	0.0	0.1	20.8
LFG20	2.05	0.0	0.7	19.2
LFG21	2.24	0.0	2.1	13.3
LFG22	2.15	0.0	1.8	12.6
LFG23	12.41	0.0	0.9	20.0
LFG24	5.76	0.0	0.8	19.8
GP1	Probe bent	0.0	0.1	20.5
GP2 (shallow)	Probe bent	0.0	0.1	20.6
GP2 (deep)	Probe bent	0.0	0.1	20.6
GP3 (shallow)	Probe bent	0.0	0.1	20.7
GP3 (deep)	Probe bent	0.0	0.7	19.4
GP4 (shallow)	Probe bent	0.0	0.2	20.7
GP4 (deep)	Probe bent	0.0	0.1	20.7
GP5 (shallow)	Probe bent	0.0	0.1	20.8
GP5 (deep)	38.03	0.0	0.1	20.8
GP6	35.98	0.0	6.7	15.2
GP7	35.86	0.0	0.2	20.9
GP12	1.60	0.0	0.2	20.9
GP15	2.34	0.0	0.1	20.9
P7	2.18	0.0	0.1	20.9
P8	2.37	0.0	0.1	20.9
P9	2.24	0.0	0.1	20.9

Table G2.3 Landfill Gas Monitoring Results at Perimeter LFG Monitoring Wells (March 2022)

Location	Water Level (mPD)	Methane (% (v/v))	Carbon Dioxide (% (v/v))	Oxygen (% (v/v))
LFG1	2.05	0.0	0.1	19.1
LFG2	1.96	0.0	0.4	19.3
LFG3	2.1	0.0	0.0	20.5
LFG4	2.06	0.0	0.0	20.6
LFG5	2.45	0.0	0.0	20.5
LFG6	1.96	0.0	0.0	20.4
LFG7	2.38	0.0	0.0	20.4
LFG8	2.24	0.0	0.0	20.5
LFG9	2.17	0.0	0.0	20.4
LFG10	1.93	0.0	0.0	20.4
LFG11	2.25	0.0	0.0	20.3
LFG12	2.19	0.0	0.0	20.2
LFG13	2.05	0.0	0.0	19.7
LFG14	1.81	0.0	0.0	20.1
LFG15	2	0.0	0.0	20.2
LFG16	2.1	0.0	0.0	20.0
LFG17	2.28	0.0	0.0	20.0
LFG18	2.45	0.0	0.1	19.2
LFG19	2.52	0.0	0.0	19.7
LFG20	2.54	0.0	0.4	18.5
LFG21	2.69	0.0	2.0	7.5
LFG22	2.38	0.0	0.5	18.2
LFG23	12.53	0.0	1.4	18.4
LFG24	5.96	0.0	0.8	18.4
GP1	Probe bent	0.0	3.1	15.8
GP2 (shallow)	Probe bent	0.0	0.1	20.2
GP2 (deep)	Probe bent	0.0	0.1	20.2
GP3 (shallow)	Probe bent	0.0	3.3	17.3
GP3 (deep)	Probe bent	0.0	0.1	20.3
GP4 (shallow)	Probe bent	0.0	0.2	20.3
GP4 (deep)	Probe bent	0.0	0.1	21.5
GP5 (shallow)	Probe bent	0.0	0.1	20.4
GP5 (deep)	38	0.0	0.1	20.4
GP6	36.15	0.0	0.4	19.9
GP7	35.89	0.0	0.1	19.9
GP12	1.48	0.0	0.6	18.7
GP15	2.03	0.0	0.0	20.5
P7	1.99	0.0	0.0	20.4
P8	2.11	0.0	0.0	20.4
P9	1.99	0.0	0.0	20.5

Table G2.4 Landfill Gas Monitoring Results at Service Voids, Utilities Pits and Manholes (January 2022)

Location	Methane (% (v/v))	Carbon Dioxide (% (v/v))	Oxygen (% (v/v))
UU01	0.1	0.0	20.6
UU02	0.1	0.0	20.7
UU03	0.2	0.0	20.6
UU04	0.2	0.0	20.3
UU05	0.2	0.0	20.2
UU06	0.2	0.0	20.1
UU07	0.1	0.0	20.7
UU08	0.3	0.0	20.2
UU09	0.0	0.0	20.6
UU10	0.0	0.0	20.7
UU11	0.0	0.0	20.6
UU12	Voided due to latest site programme and on-going operation work		
UU13	0.0	0.0	20.4
UU14	0.0	0.0	20.5
UU15	0.0	0.0	20.3
UU16	0.0	0.0	20.0
UU17	Voided due to latest site programme and on-going operation work		
UU18	0.0	0.0	20.0
UU19	0.1	0.0	20.6
UU20	0.0	0.0	20.0
UU21	0.0	0.0	19.2
UU22	0.0	0.1	19.9
UU23	0.0	0.1	19.5
UU24	0.0	0.0	19.6
UU25	0.0	0.0	19.7
UU26	Inaccessible due to on-going construction work		
UU27	0.1	0.0	20.3
UU28	0.0	0.0	19.9

Table G2.5 Landfill Gas Monitoring Results at Service Voids, Utilities Pits and Manholes (February 2022)

Location	Methane (% (v/v))	Carbon Dioxide (% (v/v))	Oxygen (% (v/v))
UU01	0.0	0.0	21.0
UU02	0.0	0.0	20.9
UU03	0.0	0.0	21.2
UU04	0.0	0.0	21.3
UU05	0.1	0.0	20.8
UU06	0.1	0.0	20.8
UU07	0.0	0.0	21.1
UU08	0.1	0.0	20.9
UU09	0.0	0.0	20.4
UU10	0.0	0.0	20.5
UU11	0.0	0.0	20.8
UU12	Voided due to latest site programme and on-going operation work		
UU13	0.0	0.0	19.9
UU14	0.0	0.0	20.4
UU15	0.0	0.0	20.9
UU16	0.0	0.0	20.3
UU17	Voided due to latest site programme and on-going operation work		
UU18	0.0	0.0	21.0
UU19	0.0	0.0	21.2
UU20	0.0	0.1	20.4
UU21	0.0	0.1	20.4
UU22	0.0	0.1	20.4
UU23	0.0	0.1	20.1
UU24	0.0	0.1	20.0
UU25	0.0	0.0	20.0
UU26	0.2	0.0	21.0
UU27	0.0	0.0	20.1
UU28	0.0	0.0	19.9

Table G2.6 Landfill Gas Monitoring Results at Service Voids, Utilities Pits and Manholes (March 2022)

Location	Methane (% (v/v))	Carbon Dioxide (% (v/v))	Oxygen (% (v/v))
UU01	0.0	0.0	20.7
UU02	0.0	0.0	20.9
UU03	0.1	0.0	20.2
UU04	0.1	0.0	20.2
UU05	0.0	0.0	20.8
UU06	0.0	0.0	20.9
UU07	0.3	0.0	20.7
UU08	0.0	0.0	20.3
UU09	0.0	0.0	20.6
UU10	0.0	0.0	20.3
UU11	0.0	0.0	20.2
UU12	Voided due to latest site programme and on-going operation work		
UU13	0.0	0.0	20.0
UU14	0.0	0.0	19.6
UU15	0.0	0.0	19.8
UU16	0.0	0.0	19.7
UU17	Voided due to latest site programme and on-going operation work		
UU18	0.0	0.0	20.4
UU19	0.2	0.0	20.4
UU20	0.0	0.0	19.8
UU21	0.0	0.0	19.7
UU22	0.0	0.1	19.8
UU23	0.0	0.1	20.0
UU24	0.0	0.0	20.3
UU25	0.0	0.0	20.2
UU26	0.0	0.0	19.7
UU27	0.0	0.0	19.4
UU28	0.0	0.0	19.5

Table G2.7 Landfill Gas Bulk Gas Sampling Monitoring Results

Parameters	LFG14	LFG15
Methane (% (v/v))	0.0	0.0
Carbon Dioxide (% (v/v))	0.119	0.110
Oxygen (% (v/v))	10.2	20.1
Nitrogen (% (v/v))	90.5	80.3
Carbon Monoxide (% (v/v))	<0.020	<0.020
Hydrogen (% (v/v))	<0.020	<0.020
Ethane (ppmv)	<1.0	<1.0
Propane (ppmv)	<1.0	<1.0
Butane (ppmv)	<1.0	<1.0

Table G2.8 Flammable Gas Surface Emission Monitoring Results

Time	GPS Coordinates Latitude (N)	Longitude (E)	Weather Condition	Temperature (°C)	Wind Direction (Deg)	Wind Speed (m/s)	Monitoring Results (ppm)
14:40	22°16′36″	114°16′36″	Sunny	18.8	161	3.6	3
14:50	22°16′24″	114°16′36″	Sunny	21.0	155	3.6	6

Annex G3

Event and Action Plan for Landfill Gas Monitoring

Annex G3 Event and Action Plan for Landfill Gas Monitoring

Event	Action		
	ET	**IEC**	**Contractor**
Limit Level being exceeded for field monitoring at the perimeter monitoring wells	• Investigate the cause(s) of exceedance • Prepare the Notification of Exceedance within 24 hours • Check monitoring data, all plant, equipment and the Contractor's working methods • Inform Contractor, IEC, Project Proponent and EPD (EIAO Authority) 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 for monitoring wells in the areas where there is development within 250m of the SENTX Site Boundary and to weekly for other monitoring wells, until no exceedance of limit level	• Verify the Notification of Exceedance • 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	• Repeat field measurement to confirm findings • Check the performance of landfill gas management system • Rectify unacceptable practice • Discuss with the ET and IEC and submit proposals for remedial measures to IEC • Implement the agreed proposals • Amend proposal if appropriate
Limit Level being exceeded for the bulk gas sampling at the perimeter monitoring wells	• Check and compare the results of field monitoring and laboratory analyse of bulk samples • If the results of field monitoring also show exceedance, the action(s) for limit level being exceeded for field monitoring would have been triggered • If the results of field monitoring does not show exceedance, the sampling procedures should be checked and if deems necessary, to repeat the monitoring and recalibrate the portable monitoring instruments • Notify the above findings to Contractor and IEC	• Verify the findings by ET	• Nil

Event	Action		
	ET	IEC	Contractor
Limit Level being exceeded at the permanent gas monitoring system	• Investigate the cause(s) of exceedance • Prepare the Notification of Exceedance within 24 hours • Check the methane gas level at the perimeter monitoring wells, manholes or utilities duct • Check monitoring data, all plant, equipment and the Contractor's working methods • Inform Contractor, IEC, Project Proponent and EPD (EIAO Authority) 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	• Verify the Notification of Exceedance • 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	• Evacuate all staff in the concerned building • Open the doors and window of all rooms on the ground floor • Do not allow staff to go back to the room if methane level is higher than 1% gas • Check the performance of the landfill gas management system • Rectify unacceptable practice • Consider changes of working methods • Discuss with the ET and IEC and submit proposals for remedial measures to IEC • Implement the agreed proposals • Amend proposal if appropriate
Limit Level being exceeded during surface emission monitoring	• Repeat the measurement to confirm findings • Investigate the cause(s) of exceedance • Prepare the Notification of Exceedance within 24 hours • Check monitoring data, all plant, equipment and the Contractor's working methods • Inform Contractor, IEC, Project Proponent and EPD (EIAO Authority) 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 monthly if exceedance is due to the Project until no exceedance of limit level	• Verify the Notification of Exceedance • 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	• Check landfill gas management system • Rectify unacceptable practice • Consider changes of working methods • Discuss with the ET and IEC and submit proposals for remedial measures to IEC • Implement the agreed proposals • Amend proposal if appropriate

Event	Action		
	ET	IEC	Contractor
Limit Level being exceeded at the service voids, utilities pits, manholes and location of vegetation stress	• Repeat the measurement to confirm findings • Investigate the cause(s) of exceedance • Prepare the Notification of Exceedance within 24 hours • Check monitoring data, all plant, equipment and the Contractor's working methods • Inform Contractor, IEC, Project Proponent and EPD (EIAO Authority) 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 weekly if exceedance is due to the Project until no exceedance of limit level	• Verify the Notification of Exceedance • Discuss with ET and Contractor on proposed remedial measures • Review proposals on remedial measures • Audit the implementation of the remedial measures • the effectiveness of the implemented remedial measures	• Check landfill gas management system • Rectify unacceptable practice • Discuss with the ET and IEC and submit proposals for remedial measures to IEC • Implement the agreed proposals • Amend proposal if appropriate

Annex H

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

Table H1 Cumulative Statistics on Exceedances

		Total No. recorded in this reporting period	Total No. recorded since project commencement
Air Quality (Dust)	Action	0	0
	Limit	0	1
Air Quality (Odour)	Action	0	0
	Limit	0	0
Air Quality (Emissions of Thermal Oxidiser)	Limit	0	0
Air Quality (Emissions of Landfill Gas Flare)	Limit	0	1
Air Quality (Emissions of Landfill Gas Generator)	Limit	0	0
Noise	Action	0	0
	Limit	0	0
Water Quality (Surface Water)	Limit	0	57
Water Quality (Leachate)	Limit	0	0
Water Quality (Groundwater)	Limit	3	4
Landfill Gas (Perimeter Landfill Gas Monitoring Wells)	Limit	0	0
Landfill Gas (Service Void, Utilities and Manholes)	Limit	0	0
Landfill Gas (Permanent Gas Monitoring System)	Limit	0	0

Table H2 Cumulative Statistics on Complaints, Notifications of Summons and Successful Prosecutions

Reporting Period	Cumulative Statistics		
	Complaints	Notifications of Summons	Prosecutions
This Reporting Period (Jan - Mar 2022)	0	0	0
Total no. received since project commencement	1	0	0