South East New Territories (SENT) Landfill Extension

Quarterly Environmental Monitoring & Audit Report No.25

PREPARED FOR

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

Green Valley Landfill Ltd.

DATE
10 December 2025

REFERENCE
0465169

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/D and FEP-01/308/2008/D

Reference Document/Plan

Document/Plan to be Certified/Verified:	Quarterly Environmental Monitoring & Audit Report No. 25 for South East New Territories (SENT) Landfill Extension
Date of Report:	10 December 2025

Reference EP Condition

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.

Terence Fong,
Environmental Team Leader:

(ERM Hong-Kong, Limited)

Date: 10 December 2025

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: 12 December 2025

DOCUMENT DETAILS

DOCUMENT TITLE	South East New Territories (SENT) Landfill Extension
DOCUMENT SUBTITLE	Quarterly Environmental Monitoring & Audit Report No.25
PROJECT NUMBER	0465169
Date	10 December 2025
Version	0
Author	Solana Leung
Client name	Green Valley Landfill Ltd.

DOCUMENT HISTORY

				ERM APPROVAL TO ISSUE		
	REVISION	AUTHOR	REVIEWED BY	NAME	DATE	
	0	Solana Leung	Alex Khawaja Waheed	Terence Fong	10.12.2025	

SIGNATURE PAGE

South East New Territories (SENT) Landfill Extension

Quarterly Environmental Monitoring & Audit Report No.25

0465169

Terence Fong
Partner

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

CONTENTS

EXECUTIVE SUMMARY

The SENT Landfill Extension (SENTX) forms an integral part in the Strategic Plan in maintaining the continuity of landfill capacity in the Hong Kong for the cost-effective and environmentally satisfactory disposal of waste. ERM-Hong Kong, Limited (ERM) is commissioned to undertake the role of Environmental Team (ET) for the construction, operation/restoration and aftercare of SENTX Project ("the Project") in accordance with the requirements specified in the Environmental Permit (EP), updated Environmental Monitoring and Audit (EM&A) Manual, the approved Environmental Impact Assessment (EIA) Report of the Project taking account of the latest design and other relevant statutory requirements. The construction (not including works related to site clearance and preparation) and operation of the Project commenced on 2 January 2019 and 21 November 2021, respectively.

This Quarterly EM&A report presents the EM&A works carried out during the period from 1 January 2025 to 31 March 2025 for the Project in accordance with the updated EM&A Manual.

EXCEEDANCE OF ACTION AND LIMIT LEVELS FOR AIR QUALITY

Three exceedances of the Limit Levels for Total Suspended Particulates (TSP), one exceedance of Limit Levels for thermal oxidizer stack emission (Nitrogen Dioxide (NO2)) and one exceedance Limit Levels for landfill gas flare stack emission (Benzene) were recorded for air quality monitoring in the reporting period. The TSP exceedances at AM2 on 14 January and 20 January 2025 were deemed to Project-related activities upon further investigation, while the TSP exceedance at AM2 on 19 February 2025 was considered non Project-related upon further investigation. The thermal oxidizer stack emission (NO2) and landfill gas flare stack emission (Benzene) exceedances on 10 February 2025 and 11 February 2025, respectively were considered Project-related activities upon further investigation.

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

Two exceedances of the Limit Levels for groundwater (Chemical Oxygen Demand (COD)) and one exceedance of the Limit Levels for groundwater (Ammoniacal-nitrogen) were recorded for water quality monitoring in the reporting period. The groundwater (COD) exceedance at MWX7 on 6 January 2025, and the groundwater (COD and Ammoniacal-nitrogen) exceedances at MWX-7 and MWX-8, respectively on 5 February 2025 were considered non Project related upon further investigation.

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). In February 2024, VEPs (EP-308/2008/C and FEP-01/308/2008/C) were granted to the Environmental Infrastructure Division of EPD and GVL, regarding updates on alternative measures to minimise surface odour emission.

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.

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.

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

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

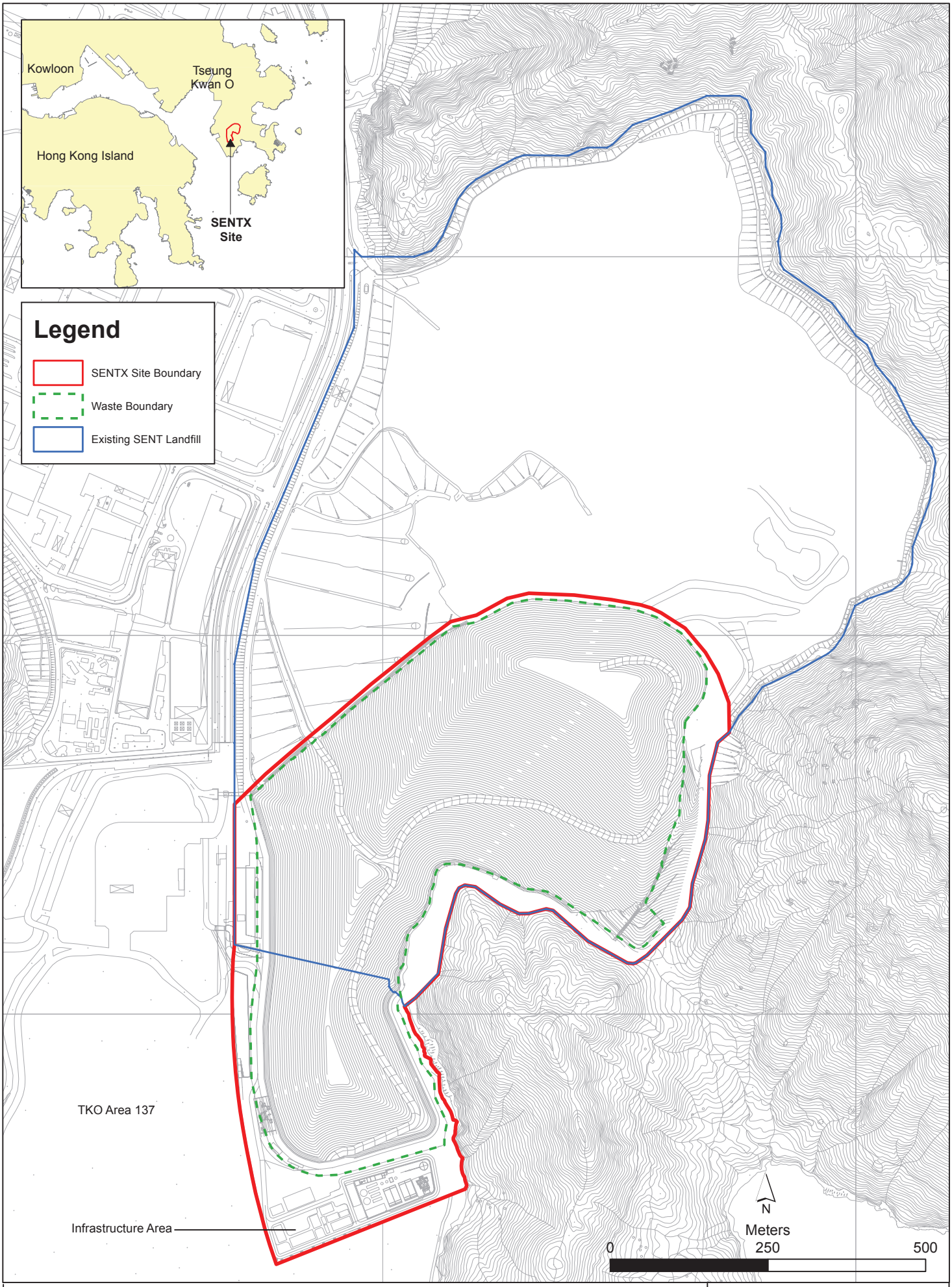


Figure 1.1

Layout Plan of SENTX

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

ERM

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	2059

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.

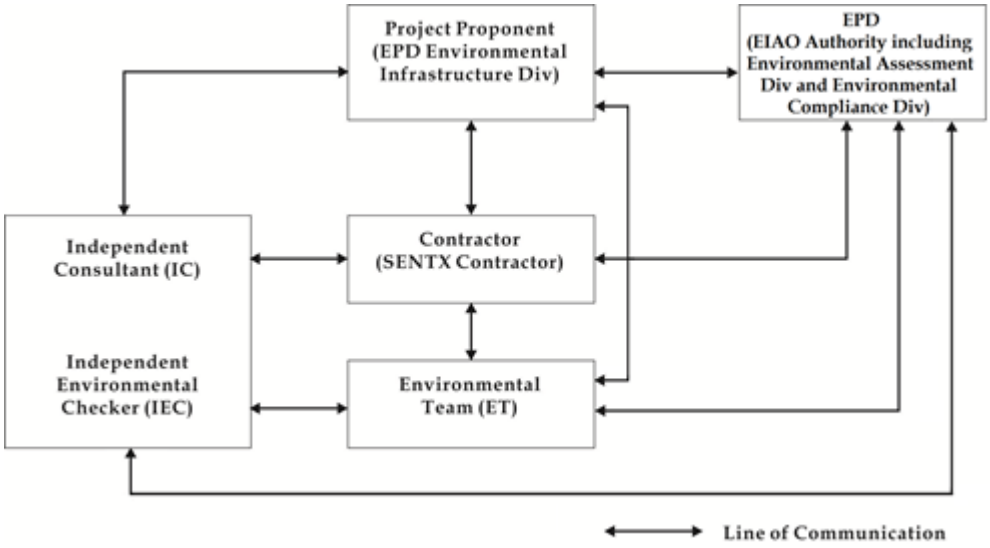
1.3 SCOPE OF THE EM&A REPORT

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 2025 to 31 March 2025 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 summarised 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	Terence Fong	2271 3156
Independent Environmental Checker (IEC) (Meinhardt Infrastructure and Environment Limited)	IEC	Claudine Lee	2859 5409

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 2025

- Maintenance and improvement of temporary surface water drainage; and
- Restoration of Phase 1 and Phase 2 slopes.

February 2025

- Maintenance and improvement of temporary surface water drainage; and
- Restoration of Phase 1 and Phase 2 slopes.

March 2025

- Maintenance and improvement of temporary surface water drainage; and
- Restoration of Phase 1 and Phase 2 slopes.

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

1.6 SUMMARY OF EM&A PROGRAMME REQUIREMENTS

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

TABLE 1.3 SUMMARY OF STATUS FOR THE ENVIRONMENTAL ASPECTS UNDER THE UPDATED EM&A MANUAL

Parameters	Status
Air Quality	
Baseline Monitoring	The results of baseline air quality monitoring were reported in Baseline Monitoring Report and 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
Operation 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 summarized as below:

- Three environmental management meeting was held with the Contractor, ET, IEC and EPD on 22 January 2025, 20 February 2025 and 20 March 2025; and
- Environmental toolbox trainings on the following topics were provided by the Contractor to the workers:
    - VOC and Smog and Green Procurement on 17 January 2025;
    - Cut down Construction Dust and Wastewater management on 25 February 2025; and
    - Trip Ticket System and Quality Powered Mechanical Equipment (QPME) on 26 March 2025.

1.7 STATUS OF STATUTORY ENVIRONMENTAL COMPLIANCE WITH THE ENVIRONMENTAL PERMIT

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

TABLE 1.4 STATUS OF SUBMISSIONS REQUIRED UNDER THE EP AND IMPLEMENTATION STATUS OF MITIGATION MEASURES

EP 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
	EP-308/2008/C	Granted on 29 February 2024
Further Environmental Permit	FEP-01/308/2008/B	Granted on 16 May 2018
	FEP-01/308/2008/C	Granted on 29 February 2024
Water Discharge License under WPCO (Permit Holder: GVL)	Licence No.: WT10003277-2024	Validity from 23 August 2024 to 30 June 2026
Billing Account for Disposal of Construction Waste	Chit Account Number: 5001692	Approved on 28 December 2005
Registration as a Chemical Waste Producer (Permit Holder: GVL)	5296-839-G2228-01	Issued on 31 December 2015
Construction Noise Permit (Permit Holder: GVL) [(a)]	GW-RE1103-24	Validity from 15 September 2024 to 14 March 2025

(a) As per GVL's confirmation, there is no use of powered mechanical equipment in March 2025.

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

2.1.1.1 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 dust 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)	260 μg m-³	260 μg m-³
AM2 - SENTX Site Boundary (West, near DP3)		
AM3 - SENTX Site Boundary (West, near RC15)		
AM4 - SENTX Site Boundary (West, near EPD building)		

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 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 dust monitoring programme and monitoring locations are summarised in **Table 2.2** and illustrated in **Figure 2.1**, respectively.

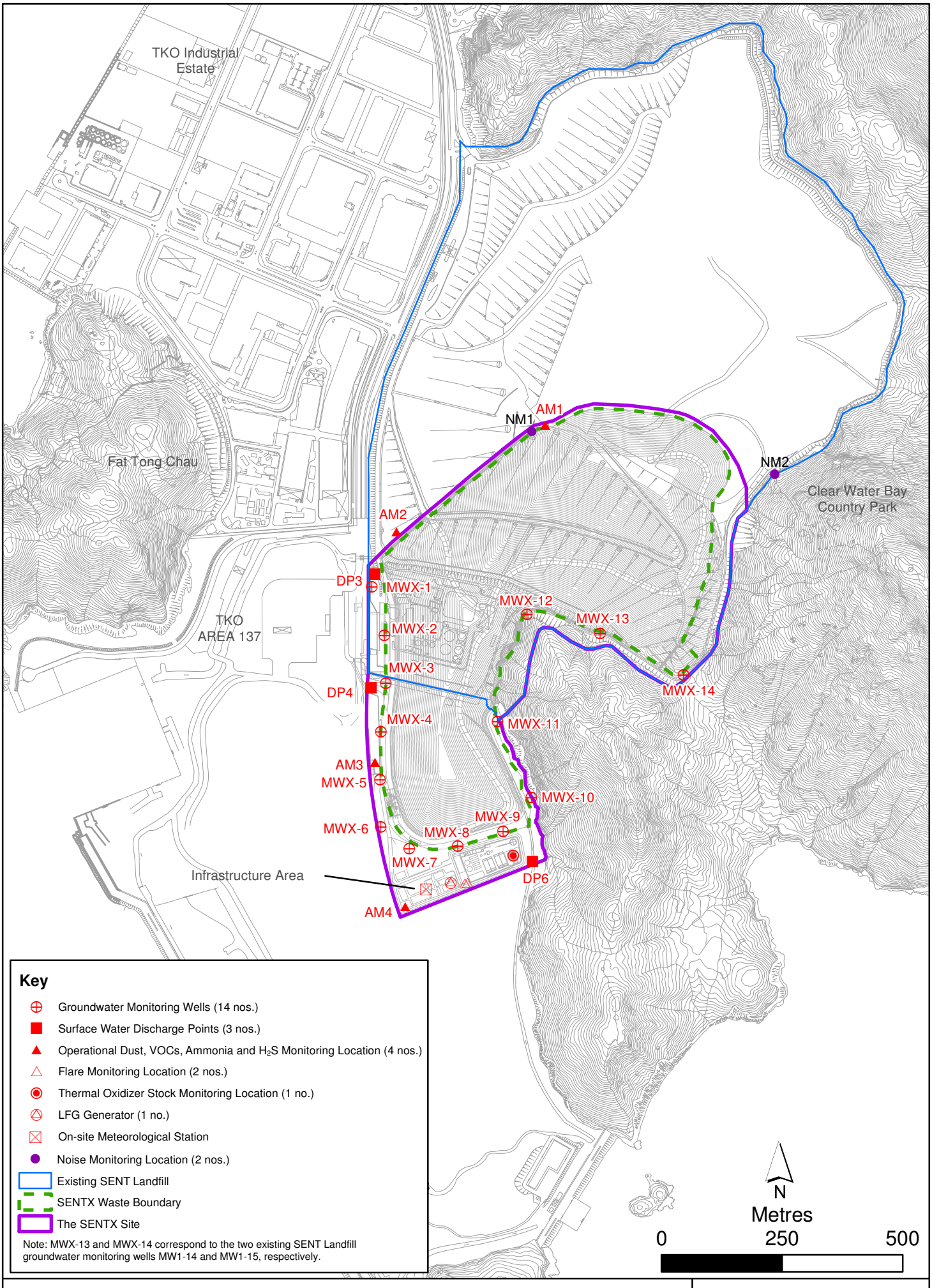


Figure 2.1

Environmental Monitoring Locations

File: T:\GIS\CONTRACT\0465169\mxd\0465169_Environmental_Monitoring_Locations.mxd
Date: 19/11/2019

ERM

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	2, 8, 14, 20, 26, Jan 2025 1, 7, 13, 19, 25 Feb 2025 3, 9, 15, 21, 27 Mar 2025	Tisch TE-5170 (S/N: 3976)
AM2	SENTX Site Boundary (West, near DP3)				Tisch TE-5170 (S/N: 3573)
AM3	SENTX Site Boundary (West, near RC15)				Tisch TE-5170 (S/N: 3572)
AM4	SENTX Site Boundary (West, near EPD building)				Tisch TE-5170 (S/N: 3957)

2.1.1.2 MONITORING SCHEDULE FOR THE REPORTING MONTH

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

2.1.1.3 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	Average 24-hr TSP Concentration (μg m^{-3})		Action Level (μg/m^3)	Limit Level (μg/m^3)
		Average	Range		
January 2025	AM1	172	95 – 228	260	260
	AM2	203	63 – 329	260	260
	AM3	141	59 – 176	260	260
	AM4	103	55 – 116	260	260
February 2025	AM1	132	35 – 331	260	260
	AM2	72	34 – 121	260	260
	AM3	99	58 – 137	260	260
	AM4	84	48 – 117	260	260
March 2025	AM1	118	28 – 187	260	260
	AM2	122	67 – 185	260	260
	AM3	100	73 - 162	260	260
	AM4	63	44 – 100	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 TKO Area 137 Fill Bank.

Action and Limit Levels exceedances were recorded for TSP monitoring in the reporting period and actions in accordance with the Event and Action Plan presented in **Annex D2** were undertaken. Investigation of the Action and Limit Levels exceedances was conducted and the investigation reports are presented in **Annex D7**.

Based on the investigation conducted for the monitoring events with potential Action and Limit Levels exceedances with the Contractor and the IEC, the TSP exceedances at AM2 on 14 January and 20 January 2025 were deemed to Project-related activities, while the TSP exceedance at AM2 on 19 February 2025 was considered non Project-related activities.

The Contractor was reminded to implement all relevant mitigation measures for the construction and operation works and maintain good site practice. The ET will keep track on the monitoring data and ensure Contractor's compliance of the environmental requirements.

2.1.1.4 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

2.1.2.1 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 10 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.

Reduction of odour monitoring frequency from Period 2 (weekly) to Period 3 (monthly) was approved by EPD on 2 June 2022. Monthly odour patrol was conducted jointly by the ET and the IEC from 28 June 2022. In addition, an independent party (ALS Technichem (HK) Pty Ltd.) was appointed to undertake odour patrol together with the ET and IEC quarterly. Furthermore, the odour patrol route has been reviewed against the latest construction/ operation programme and approved by EPD on 17 June 2024.

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.

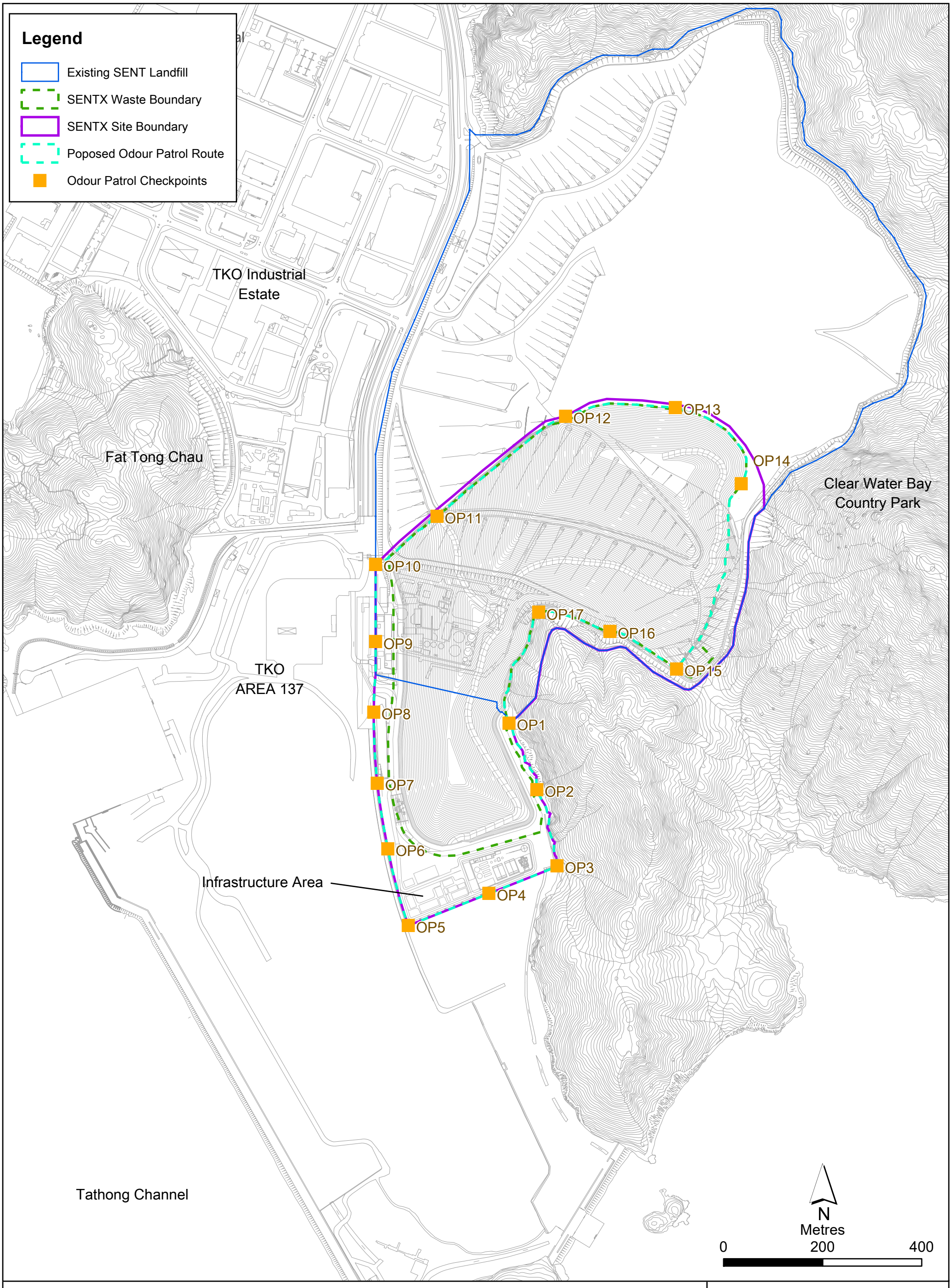


Figure 2.2

Odour Patrol Route for
Operation/ Restoration Phase Odour Monitoring

File: T:\GIS\CONTRACT\0465169\mxd\0465169_Proposed_Odour_Patrol_Route.mxd
Date: 25/3/2024

ERM

TABLE 2.5 ODOUR MONITORING DETAILS

Patrol Locations	Parameters	Patrol Frequency [a]	Monitoring Dates
Patrol along the SENTX Site Boundary (Checkpoints OP1 – OP17)	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 Three times per week on different days conducted by an independent third party together with the ET and IEC [b] Period 2 - Three months following period 1 [c] Weekly conducted by the ET and the IEC 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]	Conducted by ET & IEC: 17 Jan 2025, 21 Feb 2025 Conducted by an independent third party, ET & IEC: 6 Mar 2025

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.

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

2.1.2.2 MONITORING SCHEDULE FOR THE REPORTING MONTH

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

2.1.2.3 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	Action Level	Limit Level
OP1	0	Odour intensity ≥ Class 2 recorded	Odour intensity ≥ Class 3 recorded on 2 consecutive patrol
OP2	0		
OP3	0		
OP4	0 - 1		
OP5	0		
OP6	0		
OP7	0		
OP8	0 - 1		
OP9	0		
OP10	0 - 1		
OP11	0		
OP12	0		
OP13	0		
OP14	0		

Odour Checkpoints	Odour Intensity Class	Action Level	Limit Level
OP15	0		
OP16	0		
OP17	0 - 1		

The potential odour source in the reporting period included the leachate from X10 channel and Leachate Plant (LTP) at SENTX, and the nearby Towngas plant. 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

2.1.3.1 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 and for laboratory analysis for non-methane organic compounds and ammonia (for thermal oxidizer only) at quarterly 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 x 10^{-4} gs^{-1}
Vinyl chloride	2.60 x 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 x 10^{-4} gs^{-1}
Vinyl chloride	1.88 x 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)

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 oxidize 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	8 Jan 2025, 10 Feb 2025, 6 Mar 2025
	Laboratory analysis for • Non-methane organic compounds	Quarterly for the 1st year of operation (b)	10 Feb 2025
	Laboratory analysis for • Ammonia • Gas combustion temperature • Exhaust temperature • Exhaust gas velocity (a)	Quarterly	10 Feb 2025
	• Gas combustion temperature • Exhaust temperature • Exhaust gas velocity (a)	Continuously	1 Jan – 31 Mar 2025
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	9 Jan 2025, 11 Feb 2025, 7 Mar 2025
	Laboratory analysis for • Non-methane organic compounds	Quarterly for the 1st year of operation (b)	11 Feb 2025

Monitoring Location	Parameter	Frequency	Monitoring Date
Stack of Landfill Gas Flare	• Gas combustion temperature • Exhaust temperature • Exhaust gas velocity (a)	Continuously	1 Jan – 31 Mar 2025
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	9 Jan 2025, 10 Feb 2025, 7 Mar 2025
	Laboratory analysis for • Non-methane organic compounds	Quarterly for the 1st year of operation (b)	10 Feb 2025
	• Exhaust temperature • Exhaust gas velocity (a)	Continuously	1 Jan – 31 Mar 2025

Notes:
(a) The exhaust gas velocity is calculated based on the cross-section area of the stack and continuous monitored gas flow and combustion temperature data.
(b) The monitoring results are being reviewed to determine if monitoring of this parameter can be terminated upon agreement by the EIAO Authority, IEC and Project Proponent.

2.1.3.2 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**.

2.1.3.3 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 2025		
NO_2	1.56 gs^{-1}	1.58 gs^{-1}
CO	0.02 gs^{-1}	0.53 gs^{-1}
SO_2	<0.01 gs^{-1}	0.07 gs^{-1}
Benzene	<2.0 x 10^{-4} gs^{-1}	3.01 x 10^{-2} gs^{-1}
Vinyl chloride	<1.5 x 10^{-4} gs^{-1}	2.23 x 10^{-3} gs^{-1}
Gas combustion temperature	900°C (897°C – 907°C)	850°C (minimum)
Exhaust gas exit temperature	1,196K (1,189K – 1,202K)	443K (minimum) [a]
Exhaust gas velocity	8.2 ms^{-1} [b]	7.5 ms^{-1} (minimum) [a]
February 2025		
NO_2	1.59 gs^{-1}	1.58 gs^{-1}
CO	0.03 gs^{-1}	0.53 gs^{-1}
SO_2	<0.01 gs^{-1}	0.07 gs^{-1}
Benzene	0.0018 gs^{-1}	3.01 x 10^{-2} gs^{-1}
Vinyl chloride	<1.5 x 10^{-4} gs^{-1}	2.23 x 10^{-3} gs^{-1}
Non-Methane Organic Carbon	0.004 gs^{-1}	-
Ammonia	0.0945 gs^{-1}	- [c]
Gas combustion temperature	900°C (895°C – 905°C)	850°C (minimum)
Exhaust gas exit temperature	1,183K (1,136K – 1,203K)	443K (minimum) [a]
Exhaust gas velocity	11.0 ms^{-1} [b]	7.5 ms^{-1} (minimum) [a]
March 2025		
NO_2	1.23 gs^{-1}	1.58 gs^{-1}
CO	0.02 gs^{-1}	0.53 gs^{-1}
SO_2	<0.01 gs^{-1}	0.07 gs^{-1}
Benzene	<2.0 x 10^{-4} gs^{-1}	3.01 x 10^{-2} gs^{-1}

Parameters	Monitoring Results (Range in Bracket)	Limit Level
Vinyl chloride	<1.2 x 10^{-4} gs^{-1}	2.23 x 10^{-3} gs^{-1}
Gas combustion temperature	901°C (896°C – 906°C)	850°C (minimum)
Exhaust gas exit temperature	1,194K (1,176K – 1,207K)	443K (minimum) (a)
Exhaust gas velocity	9.3 ms^{-1} (b)	7.5 ms^{-1} (minimum) (a)

Notes:
(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.
(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 2025		
NO_2	0.03 gs^{-1}	0.97 gs^{-1}
CO	0.02 gs^{-1}	2.43 gs^{-1}
SO_2	0.05 gs^{-1}	0.22 gs^{-1}
Benzene	1.4 x 10^{-4} gs^{-1}	4.14 x 10^{-4} gs^{-1}
Vinyl chloride	1.12 x 10^{-4} gs^{-1}	2.60 x 10^{-4} gs^{-1}
Gas combustion temperature	Flare 1: 839°C (820°C – 925°C) Flare 2: 838°C (820°C –880°C)	815°C (minimum)
Exhaust gas exit temperature	Flare 1: 1,147K (1,113K – 1,193K) Flare 2: 1,165K (1,133K – 1,193K)	923 K (minimum) (a)
Exhaust gas velocity	8.0 ms^{-1} (b)	9.0 m s^{-1} (minimum) (a)
February 2025		
NO_2	0.02 gs^{-1}	0.97 gs^{-1}
CO	<0.01 gs^{-1}	2.43 gs^{-1}
SO_2	<0.01 gs^{-1}	0.22 gs^{-1}
Benzene	2.065 x 10^{-3} gs^{-1}	4.14 x 10^{-4} gs^{-1}
Vinyl chloride	<1.13 x 10^{-4} gs^{-1}	2.60 x 10^{-4} gs^{-1}

Parameters	Monitoring Results (Range in Bracket)	Limit Level
Non-Methane Organic Carbon	0.004 gs^{-1}	-
Gas combustion temperature	Flare 1: 877°C (843°C – 930°C) Flare 2: 897°C (863°C – 925°C)	815°C (minimum)
Exhaust gas exit temperature	Flare 1: 1,109K (1,096K – 1,158K) Flare 2: 1,115K (1,096K – 1,156K)	923 K (minimum) (a)
Exhaust gas velocity	7.9 ms^{-1} (b)	9.0 m s^{-1} (minimum) (a)
March 2025		
NO_2	0.02 gs^{-1}	0.97 gs^{-1}
CO	<0.01 gs^{-1}	2.43 gs^{-1}
SO_2	0.01 gs^{-1}	0.22 gs^{-1}
Benzene	<1.42 x 10^{-4} gs^{-1}	4.14 x 10^{-4} gs^{-1}
Vinyl chloride	<1.14 x 10^{-4} gs^{-1}	2.60 x 10^{-4} gs^{-1}
Gas combustion temperature	Flare 1: 895°C (870°C – 920°C) Flare 2: 907°C (883°C – 930°C)	815°C (minimum)
Exhaust gas exit temperature	Flare 1: 1,120K (1,103K – 1,133K) Flare 2: 1,129K (1,113K – 1,143K)	923 K (minimum) (a)
Exhaust gas velocity	8.2 ms^{-1} (b)	9.0 m s^{-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.

TABLE 2.14 SUMMARY OF LANDFILL GAS GENERATOR STACK EMISSION MONITORING IN THE REPORTING PERIOD

Parameters	Monitoring Results (Range in Bracket)	Limit Level
January 2025		
NO_2	0.106 gs^{-1}	1.91 gs^{-1}
CO	1.02 gs^{-1}	2.48 gs^{-1}
SO_2	<0.001 gs^{-1}	0.528 gs^{-1}
Benzene	9.2 x 10^{-5} gs^{-1}	2.47 x 10^{-4} gs^{-1}
Vinyl chloride	<1.02 x 10^{-5} gs^{-1}	1.88 x 10^{-5} gs^{-1}

Parameters	Monitoring Results (Range in Bracket)	Limit Level
Exhaust gas exit temperature	ENGA: 874K (854K – 891K) ENGB: 872K (870K – 874K)	723K (minimum) [(a)]
Exhaust gas velocity	10.0 ms^{-1} [(b)]	30.0 ms^{-1} (minimum) [(a)]
February 2025		
NO_2	0.079 gs^{-1}	1.91 gs^{-1}
CO	1.085 gs^{-1}	2.48 gs^{-1}
SO_2	<0.001 gs^{-1}	0.528 gs^{-1}
Benzene	1.50 x 10^{-4} gs^{-1}	2.47 x 10^{-4} gs^{-1}
Vinyl chloride	<1.0 x 10^{-5} gs^{-1}	1.88 x 10^{-5} gs^{-1}
Non-Methane Organic Carbons	0.0048 gs^{-1}	-
Exhaust gas exit temperature	ENGA: 880K (876K – 883K) ENGB: 876K (860K – 901K)	723K (minimum) [(a)]
Exhaust gas velocity	10.3 ms^{-1} [(b)]	30.0 ms^{-1} (minimum) [(a)]
March 2025		
NO_2	0.103 gs^{-1}	1.91 gs^{-1}
CO	1.014 gs^{-1}	2.48 gs^{-1}
SO_2	0.002 gs^{-1}	0.528 gs^{-1}
Benzene	7.9 x 10^{-5} gs^{-1}	2.47 x 10^{-4} gs^{-1}
Vinyl chloride	<1.06 x 10^{-5} gs^{-1}	1.88 x 10^{-5} gs^{-1}
Exhaust gas exit temperature	ENGA: 874K (868K – 878K) ENGB: 872K (868K – 877K)	723K (minimum) [(a)]
Exhaust gas velocity	10.0 ms^{-1} [(b)]	30.0 ms^{-1} (minimum) [(a)]

Notes:
(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.

Limit Level exceedances were recorded for thermal oxidizer stack and landfill gas flare stack emission monitoring in the reporting period and actions in accordance with the Event and Action Plan presented in **Annex D2** were undertaken. Investigation of the Action and Limit Levels exceedances was conducted and the investigation reports are presented in **Annex D7**.

Based on the investigation conducted for the monitoring events with potential Action and Limit Levels exceedances with the Contractor and the IEC, the thermal oxidizer stack emission

(NO2) and landfill gas flare stack emission (Benzene) exceedances on 10 February 2025 and 11 February 2025, respectively were considered Project-related activities.

The Contractor was reminded to implement all relevant mitigation measures for the construction and operation works and maintain good site practice. The ET will keep track on the monitoring data and ensure Contractor's compliance of the environmental requirements.

2.1.4 AMBIENT VOCS, AMMONIA AND H2S MONITORING

2.1.4.1 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 H2S MONITOIRNG

Parameters	**Limit Level (μg m^{-3})**
Methane	NA [(a)]
Ammonia	180
H_2S	42
Dichlorodifluoro-methane	NA [(a)]
Vinyl Chloride	26
Methanol	2,660
Ethanol	19,200
Dimethylsulphide	8
Carbon Disulphide	150
Methylene Chloride	3,530
Chloroform	99
Methyl propionate	353
Butan-2-ol	667
1.1.1-Trichloroethane	5,550
1.2-Dichloroethane	210
Benzene	33
Carbon Tetrachloride	64
Dipropyl ether	NA [(a)]

Parameters	Limit Level (μg m^{-3})
Heptane	2,746
Trichloroethylene	5,500
Ethyl propionate	29
Methyl butanoate	30
Methanethiol	10
Toluene	1,244
Ethyl butanoate	71
Propyl benzene	19
Octane	7,942
Propyl propionate	276
1.2-Dibromoethane (EDB)	39
Butyl acetate	7,240
Tetrachloroethylene	1,380
Ethyl benzene	738
Nonane	11,540
Ethanethiol	13
Decanes	3,608
Limonene	212
Butyl benzene	47
Undecane	5,562
Butanethiol	4
Terpenes	NA [(a)]
Xylenes	534
Dichlorobenzene	120

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

2.1.4.2 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.

2.1.4.3 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.

2.1.4.4 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.

2.1.4.5 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 H2S MONITOIRNG DETAILS

Monitoring Station	Location	Parameter	Frequency	Monitoring Date
AM1	SENTX Site Boundary (North)	• Methane • Ammonia • A suite of VOCs [(a)] • H_2S	Quarterly	10 Feb 2025
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
- Butyl benzene
- Xylenes
- Decanes
- Undecane
- Limonene
- Dichlorobenzene
- Methyl butanoate
- Dipropyl ether
- Methanethiol

- 1,1,1-trichloroethane
- Carbon tetrachloride
- Tetrachloroethylene
- 1,2-dibromoethane
- Benzene
- Toluene
- Carbon disulphide
- Propyl benzene
- Ethyl benzene
- Terpenes
- Ethanol
- Butan-2-ol
- Dimethylsulphide
- Methyl propionate
- Ethyl propionate
- Propyl propionate
- Butyl acetate
- Ethyl butanoate
- Ethanethiol
- Butanethiol
- Methanol
- Heptanes
- Octanes
- Nonanes
- Dichlorodifluoro-methane
- Methane

2.1.4.6 MONITOIRNG SCHEDULE FOR THE REPORTING MONTH

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

2.1.4.7 RESULTS AND OBSERVATIONS

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

TABLE 2.17 SUMMARY OF AMBIENT VOCS, AMMONIA AND H2S MONITORING RESULTS IN THE REPORTING PERIOD

Parameters	**Limit Level (µg m^{-3})**	**Monitoring Results (µg m^{-3})**			
		AM1	**AM2**	**AM3**	**AM4**
Ammonia	180	19	13	29	21
H_2S	42	<15	<15	<15	<15
Methane	NA [a]	0.0002 %(v/v)	0.00026 %(v/v)	0.00024 %(v/v)	0.0002
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	0.6	0.8	0.7	0.6
Benzene	33	0.9	1	1.1	1.1
Butan-2-ol	667	<0.6	<0.6	<0.6	<0.6
Butanethiol	4	<1.2	<1.2	<1.2	<1.2
Carbon Disulphide	150	<0.5	<0.5	<0.5	<0.5
Carbon Tetrachloride	64	1	1	1	1.1
Chloroform	99	<0.8	<0.8	<0.8	<0.8
Decanes	3,608	<0.7	<0.7	<0.7	<0.7

Parameters	Limit Level (µg m^{-3})	Monitoring Results (µg m^{-3})			
		AM1	AM2	AM3	AM4
Dichlorobenzene	120	<1.0	<1.0	<1.0	<1.0
Dichlorodifluoro-methane	NA [a]	1.7	1.6	2.3	2.6
Dimethylsulphide	8	<0.2	<0.2	<0.2	<0.2
Dipropyl ether	NA [a]	<0.8	<0.8	<0.8	<0.8
Limonene	212	<0.4	0.5	0.5	<0.4
Ethanethiol	13	<0.6	<0.6	<0.6	<0.6
Ethanol	19,200	<3.8	<3.8	<3.8	5.3
Ethyl butanoate	71	<1.0	<1.0	<1.0	<1.0
Ethyl propionate	29	<0.8	<0.8	<0.8	<0.8
Ethyl benzene	738	<0.5	0.6	1.4	<0.5
Heptane	2,746	<0.8	<0.8	<0.8	<0.8
Methanethiol	10	<0.4	<0.4	<0.4	<0.4
Methanol	2,660	<2.6	<2.6	5.1	21.4
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	1.3	2.2	2.1	2.3
Butyl acetate	76	<1.0	<1.0	<1.0	<1.0
Butyl benzene	47	<1.0	<1.0	<1.0	<1.0
Nonane	11,540	<0.9	<0.9	<0.9	<0.9
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]	<0.8	<0.8	<0.8	<0.8
Tetrachloroethylene	1,380	<0.7	<0.7	<0.7	<0.7
Toluene	1,244	1	0.9	1.1	0.8
Trichloroethylene	5,500	<1.1	<1.1	<1.1	<1.1

Parameters	Limit Level (µg m^{-3})	Monitoring Results (µg m^{-3})			
		AM1	AM2	AM3	AM4
Undecane	5,562	<1.2	<1.2	<1.2	<1.2
Vinyl Chloride	26	<0.3	<0.3	<0.3	<0.3
Xylenes	534	0.7	1.5	2.1	0.6

Notes:
(a) No relevant WHO/USEPA/CARB's ambient criteria 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, noise levels at noise monitoring location NM1 and NM2 should be monitored during first 3 years of operation and during the next 3 years of operation until the completion of the Restoration phase, respectively. Impact noise monitoring was conducted weekly at the monitoring location (i.e. at NM1 before 20 November 2024; and at NM2 from 20 November 2024) to obtain one set of 30-minute 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 sound level meter at the designated monitoring station NM1 (see **Figure 2.1**) in accordance with the requirements stipulated in the updated EM&A Manual. Acoustic calibrator was deployed to check the sound level meter at a known sound pressure level. Details of the deployed equipment are provided in **Table 2.19**.

TABLE 2.19 NOISE MONITORING DETAILS

Monitoring Station (1)	Location	Parameter	Frequency and Duration	Monitoring Dates	Equipment
NM2	SENTX Site Boundary (East)	$L_{eq\ (30\ min)}$ measurement between 07:00 and 19:00 hours on normal weekdays (Monday to Saturday)	Once per week for 30 mins during operation of the Project	8, 15, 21, 27 Jan 2025 4, 10, 20, 26 Feb 2025 4, 10, 17, 24 Mar 2025	Sound Level Meter: Rion NL-52 (S/N: 00331806) Acoustic Calibrator: CAL200 (S/N: 11333)

2.2.2 MONITORING SCHEDULE FOR THE REPORTING MONTH

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

2.2.3 RESULTS AND OBSERVATIONS

A total of 13 impact noise monitoring events were scheduled during the reporting period. Results for noise monitoring are summarised in **Table 2.20**. The monitoring results and the graphical presentation of the data are provided in **Annex E1**.

TABLE 2.20 SUMMARY OF OPERATION 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 2025	NM2	48.9	44.5 – 52.3	75
February 2025	NM2	49.3	48.8 – 50.4	75
March 2025	NM2	50.2	46.3 – 53.8	75

Major noise sources identified during the noise monitoring included noise from 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

2.3.1.1 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.

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

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

TABLE 2.21 LIMIT LEVELS FOR SURFACE WATER QUALITY

Parameters	Limit Level
DP3	
Ammoniacal-nitrogen	> 0.5 mg/L
COD	> 80 mg/L
SS	> 30 mg/L
DP4 & DP6	
Ammoniacal-nitrogen	> 7.1 mg/L
COD	> 30 mg/L
SS	> 20 mg/L

Notes:
The limit levels specified for other parameters in *Table 10a of the Technical Memorandum Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters* shall also be followed.

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
DP3	Surface water discharge point DP3	Monthly	7 Jan 2025, 14 Feb 2025, 3 Mar 2025	• 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	Horiba U-52G (S/N: AWE7D2V4
DP4	Surface water discharge point DP4				
DP6	Surface water discharge point DP6				

2.3.1.2 MONITORING SCHEDULE FOR THE REPORTING MONTH

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

2.3.1.3 RESULTS AND OBSERVATIONS

Three regular 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 all monitoring stations from January 2025 to March 2025 due to insufficient flow. Details of impact water quality monitoring event are provided in **Annex F1**.

No action is thus required to be undertaken in accordance with the Event and Action Plan presented in in **Annex F2**.

2.3.2 LEACHATE MONITORING

2.3.2.1 MONITORING REQUIREMENTS AND EQUIPMENT

According to the updated EM&A Manual, continuous monitoring of leachate level and monthly 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. The reduction of effluent monitoring frequency (wet season) (from daily to monthly) was approved by EPD on 2 August 2022. Monthly effluent quality monitoring (wet season) shall be conducted from 3 August 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	>2,000 m³
Suspended Solids (SS)	> 800 mg/L
Phosphate	> 25 mg/L
Sulphate	> 800 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	> 5 mg/L
Cadmium	> 1 µg/L
Chromium	> 300 µg/L
Copper	> 1,000 µg/L
Nickel	> 700 µg/L
Zinc	> 700 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 2025	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	9 Jan 2025, 6 Feb 2025, 6 Mar 2025	Lutron PH-208 (S/N: TF31039) Lutron PH-208 (S/N: TF64331) Lutron PH-208 (S/N: TF30605)

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

2.3.2.2 MONITORING SCHEDULE FOR THE REPORTING MONTH

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

2.3.2.3 RESULTS AND OBSERVATIONS

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 2025		
Pump Station No. 1X (Cell 1X)		
Meter No. X-1	117 (97 – 119)	> 178
Meter No. X-2	88 (26 – 133)	
Average	103 (71 – 126)	
Pump Station No. 2X (Cell 2X)		
Meter No. X-3	106 (104 – 109)	> 180
Meter No. X-4	116 (93 – 119)	
Average	111 (100 – 113)	
Pump Station No. 3X (Cell 3X)		
Meter No. X-5	111 (99 – 119)	> 175
Meter No. X-6	111 (99 – 119)	
Average	111 (99 – 119)	
Pump Station No. 4X (Cell 4X)		
Meter No. X-7	109 (96 – 120)	> 186
Meter No. X-8	110 (98 – 120)	
Average	109 (98 – 120)	
February 2025		
Pump Station No. 1X (Cell 1X)		
Meter No. X-1	106 (93 – 119)	> 178
Meter No. X-2	107 (91 – 119)	
Average	106 (96 – 119)	
Pump Station No. 2X (Cell 2X)		
Meter No. X-3	106 (104 – 106)	> 180
Meter No. X-4	118 (111 – 119)	
Average	112 (109 – 113)	
Pump Station No. 3X (Cell 3X)		
Meter No. X-5	104 (82 – 119)	> 175
Meter No. X-6	110 (97 – 117)	
Average	107 (90 – 118)	
Pump Station No. 4X (Cell 4X)		
Meter No. X-7	110 (93 – 120)	> 186

Monitoring Location	Average Leachate Head Levels (cm) (Range in Bracket)	Limit Level (cm)
Meter No. X-8	112 (93 – 122)	
Average	111 (93 – 121)	
March 2025		
Pump Station No. 1X (Cell 1X)		
Meter No. X-1	107 (93 – 119)	> 178
Meter No. X-2	104 (88 – 119)	
Average	106 (91 – 119)	
Pump Station No. 2X (Cell 2X)		
Meter No. X-3	106 (104 – 106)	> 180
Meter No. X-4	119 (113 – 119)	
Average	112 (110 – 113)	
Pump Station No. 3X (Cell 3X)		
Meter No. X-5	95 (82 – 104)	> 175
Meter No. X-6	111 (99 – 119)	
Average	103 (91 – 112)	
Pump Station No. 4X (Cell 4X)		
Meter No. X-7	111 (94 – 122)	> 186
Meter No. X-8	114 (103 – 122)	
Average	113 (99 – 121)	

TABLE 2.26 SUMMARY OF EFFLUENT QUALITY MONITORING RESULTS IN THE REPORTING PERIOD

Parameters		Monitoring Results	Limit Level
January 2025			
Temperature	°C	26.5	> 43 °C
pH Value	pH unit	8.3	6 – 10
Volume Discharged	m^3	1,003	>2,000 m^3
Suspended Solids (SS)	mg/L	20.5	> 800 mg/L
Phosphate	mg/L	5.65	> 25 mg/L
Sulphate	mg/L	178	> 800 mg/L
Total Inorganic Nitrogen [a]	mg/L	54.99	> 100 mg/L
BOD	mg/L	12	> 800 mg/L

Parameters		Monitoring Results	Limit Level
COD	mg/L	916	> 2,000 mg/L
Oil & Grease	mg/L	<5	> 20 mg/L
Boron	µg/L	6540	> 7,000 µg/L
Iron	mg/L	2.05	> 5 mg/L
Cadmium	µg/L	<1.0	> 1 µg/L
Chromium	µg/L	144	> 300 µg/L
Copper	µg/L	<10	> 1,000 µg/L
Nickel	µg/L	129	> 700 µg/L
Zinc	µg/L	28	> 700 µg/L
Parameters		**Monitoring Results**	**Limit Level**
February 2025			
Temperature	°C	22.5	> 43 °C
pH Value	pH unit	8.4	6 – 10
Volume Discharged	m^3	1,071	>2,000 m^3
Suspended Solids (SS)	mg/L	59.4	> 800 mg/L
Phosphate	mg/L	4.83	> 25 mg/L
Sulphate	mg/L	206	> 800 mg/L
Total Inorganic Nitrogen [(a)]	mg/L	43.32	> 100 mg/L
BOD	mg/L	10	> 800 mg/L
COD	mg/L	812	> 2,000 mg/L
Oil & Grease	mg/L	<5	> 20 mg/L
Boron	µg/L	5380	> 7,000 µg/L
Iron	mg/L	1.33	> 5 mg/L
Cadmium	µg/L	<1.0	> 1 µg/L
Chromium	µg/L	103	> 300 µg/L
Copper	µg/L	<10	> 1,000 µg/L
Nickel	µg/L	97	> 700 µg/L
Zinc	µg/L	53	> 700 µg/L

Parameters		Monitoring Results	Limit Level
March 2025			
Temperature	°C	19.9	> 43 °C
pH Value	pH unit	8.5	6 – 10
Volume Discharged	m^3	733	>2,000 m^3
Suspended Solids (SS)	mg/L	19.5	> 800 mg/L
Phosphate	mg/L	3.73	> 25 mg/L
Sulphate	mg/L	147	> 800 mg/L
Total Inorganic Nitrogen (a)	mg/L	22.46	> 100 mg/L
BOD	mg/L	10	> 800 mg/L
COD	mg/L	958	> 2,000 mg/L
Oil & Grease	mg/L	<5	> 20 mg/L
Boron	µg/L	5410	> 7,000 µg/L
Iron	mg/L	1.49	> 5 mg/L
Cadmium	µg/L	<1.0	> 1 µg/L
Chromium	µg/L	95	> 300 µg/L
Copper	µg/L	<10	> 1,000 µg/L
Nickel	µg/L	102	> 700 µg/L
Zinc	µg/L	34	> 700 µg/L

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

All 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

2.3.3.1 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 MONITOIRNG DETAILS

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	6 Jan 2025, 5 Feb 2025, 3 Mar 2025	Horiba U-52G (S/N: AWE7D2V4)

2.3.3.2 MONITORING SCHEDULE FOR THE REPORTING MONTH

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

2.3.3.3 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

	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	0.08	<0.01	0.20	5.00	6	5	7	30
MWX-2	0.08	0.06	0.10	5.00	4	<2	5	30
MWX-3	1.55	1.47	1.60	5.00	18	14	21	30
MWX-4	2.87	2.71	3.02	7.63	15	13	19	36
MWX-5	1.20	0.48	2.30	5.00	21	16	28	30
MWX-6	3.62	3.49	3.81	5.00	39	37	42	46
MWX-7	4.75	4.34	5.00	6.55	40	34	48	36
MWX-8	11.43	4.18	16.40	15.85	38	32	48	50
MWX-9	0.54	0.38	0.70	7.30	<20	<20	<20	71

MWX-10 [a]	N/A	N/A	N/A	5.00	N/A	N/A	N/A	30
MWX-11 [b]	0.04	0.04	0.04	5.00	N/A	N/A	N/A	30
MWX-12	<0.01	<0.01	<0.01	5.00	8	8	8	30
MWX-13	0.10	<0.01	0.01	5.00	4	2	6	30
MWX-14	0.01	<0.01	0.02	5.00	4	<2	7	30

Note:
(a) Monitoring well MWX-10 is under maintenance.
(b) Monitoring well MWX-11 is not accessible due to the safety considerations in January and February 2025.

Limit Level 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. Investigation of the Limit Levels exceedances was conducted and the investigation reports are presented in **Annex F6**.

Based on the investigation conducted for the monitoring event with potential Limit Levels exceedance with the Contractor and the IEC, the groundwater (COD) exceedance at MWX-7 on 6 January 2025 , and the groundwater (COD and Ammoniacal-nitrogen) exceedances at MWX7 and MWX-8, respectively on 5 February 2025 were considered non Project related.

The Contractor was reminded to implement all relevant mitigation measures for the construction and operation works and maintain good site practice. The ET will keep track on the monitoring data and ensure Contractor's compliance of the environmental requirements.

2.4 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	3.2
	LFG2	1.0	4.3
	LFG3	1.0	6.3
	LFG4	1.0	7.0
	LFG5	1.0	3.4
	LFG6	1.0	9.1

Parameters	Monitoring Location	Limit Level (% (v/v))	
	LFG7	1.0	1.5
	LFG8	12.6	2.4
	LFG9	2.5	1.7
	LFG10	3.5	1.6
	LFG11	3.0	2.0
	LFG12	13.2	1.5
	LFG13	22.5	2.7
	LFG14	5.2	1.8
	LFG15	18.2	2.0
	LFG16	1.0	2.0
	LFG17	17.8	2.4
	LFG18	2.3	2.1
	LFG19	6.3	3.1
	LFG20	1.0	4.6
	LFG21	1.0	4.8
	LFG22	1.0	4.0
	LFG23	1.0	10.3
	LFG24	1.0	4.7
	GP1	1.0	10.6
	GP2 (shallow)	1.0	11.4
	GP2 (deep)	1.0	10.4
	GP3 (shallow)	1.0	6.9
	GP3 (deep)	1.0	5.6
	GP4 (shallow)	1.0	11.6
	GP4 (deep)	1.0	7.7
	GP5 (shallow)	1.0	10.8
	GP5 (deep)	1.0	7.5
	GP6	1.0	8.4
	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

Parameters	Monitoring Location	Limit Level (% (v/v))
Service Voids, Utilities Pits and Manholes		
Methane (or flammable gas)	Service voids, utilities pits and manholes	1% by volume
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, flammable gas surface emission survey route and service voids, utilities and manholes along the Site boundary within the SENTX site are illustrated in **Figure 2.3 - 2.4** and **Annex G1**, respectively. The flammable gas surface emission survey route has been reviewed and updated against the latest construction/ operation programme and approved by EPD on 17 June 2024.

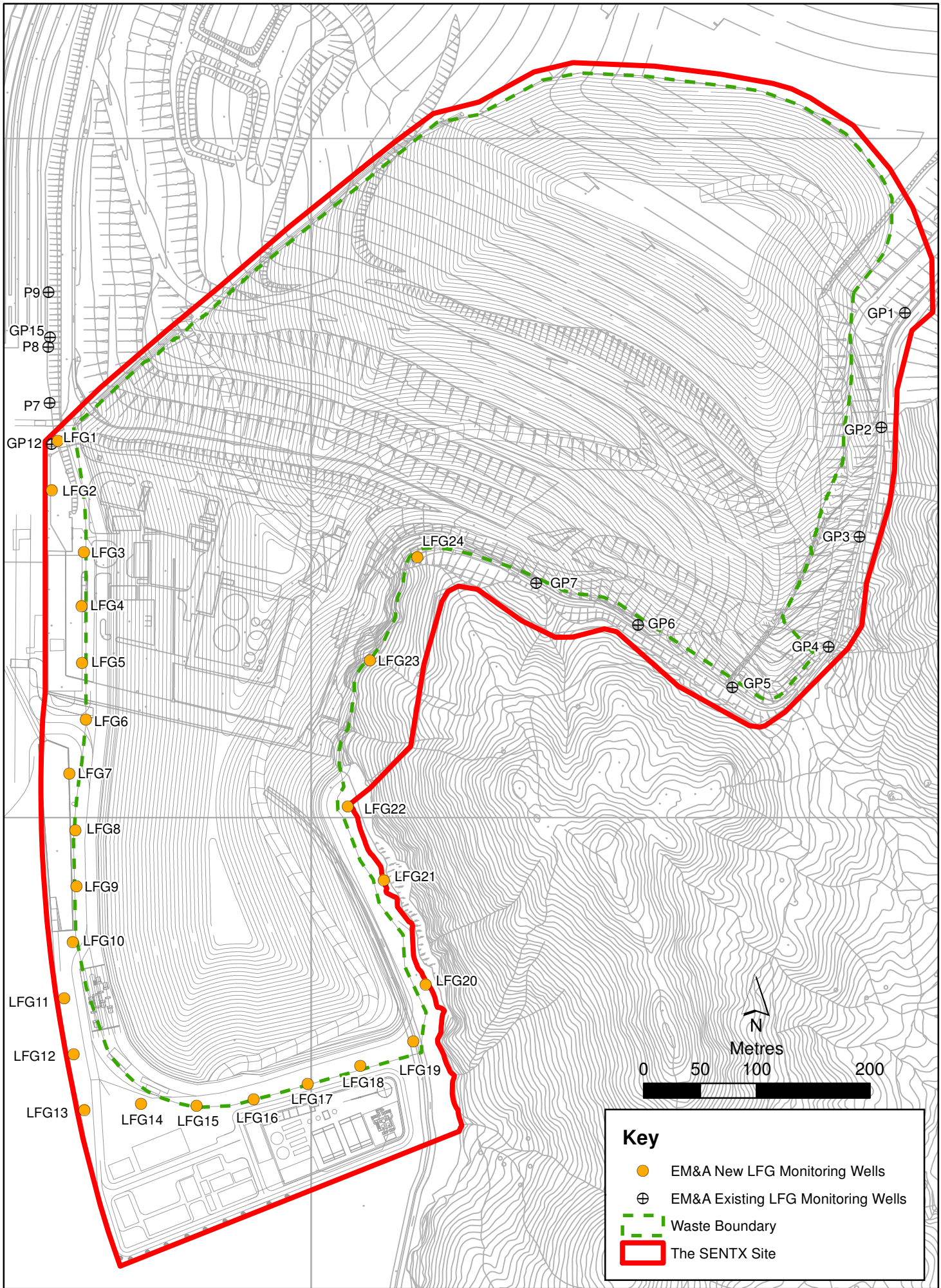


Figure 2.3

Location of Landfill Gas Monitoring Wells

File: T:\GIS\CONTRACT\0465169\mxd\0465169_Landfill_Gas_Monitoring_Wells.mxd
Date: 20/11/2019

ERM

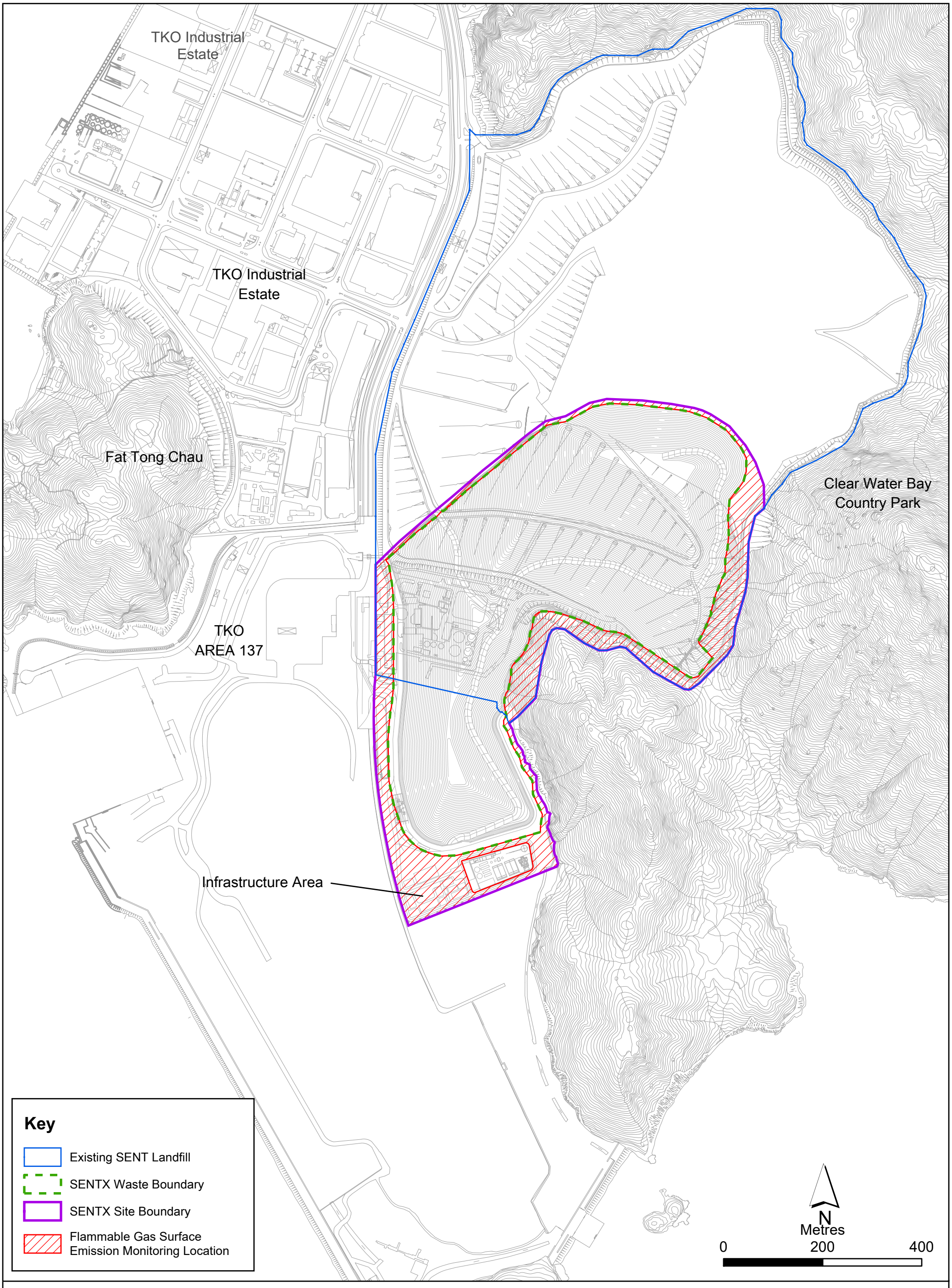


Figure 2.4

Flammable Gas Surface Emission Survey Location

File: T:\GIS\CONTRACT\0465169\mxd\EM&A\0465169_Flammable_Gas_Surface_Emission_Monitoring_Location.mxd
Date: 16/5/2024

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	7 Jan 2025, 13 Feb 2025, 13 Mar 2025	GA5000 (S/N: G508090)
Service voids, utilities and manholes along the Site boundary and within the SENTX Site (UU1 to UU28)	Monthly	• Methane • Carbon dioxide • Oxygen	7 Jan 2025, 14 Feb 2025, 13 Mar 2025	GA5000 (S/N: G508090)
Permanent gas monitoring system in all occupied on-site buildings	Continuous	Methane (or flammable gas) by permanent gas monitoring system	1 Jan – 31 Mar 2025	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	10 Feb 2025	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	13 Feb 2025	Gas sampling pump and Tedlar bags

2.4.2 MONITORING SCHEDULE FOR THE REPORTING MONTH

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

2.4.3 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	0.1	1	0.1	0.1	0.1	3.2
LFG2	0.0	0.0	0.0	1	0.2	0.1	0.2	4.3
LFG3	0.0	0.0	0.1	1	0.9	0.1	1.6	6.3
LFG4	0.0	0.0	0.1	1	0.1	0.1	0.2	7.0

Location	Methane (% (v/v))				Carbon Dioxide (% (v/v))			
	Monitoring Results			Limit Level [a]	Monitoring Results			Limit Level [a]
	Average	Min	Max		Average	Min	Max	
LFG5	0.0	0.0	0.1	1	0.3	0.1	0.5	3.4
LFG6	0.0	0.0	0.1	1	0.1	0.1	0.2	9.1
LFG7	0.0	0.0	0.0	1	0.1	0.1	0.1	1.5
LFG8	0.0	0.0	0.0	12.6	0.1	0.1	0.1	2.4
LFG9	0.0	0.0	0.0	2.5	0.1	0.1	0.1	1.7
LFG10	0.0	0.0	0.1	3.5	0.1	0.1	0.1	1.6
LFG11	0.0	0.0	0.0	3	0.1	0.1	0.2	2.0
LFG12	0.0	0.0	0.1	13.2	0.3	0.1	0.5	1.5
LFG13	3.4	0.0	10.2	22.5	0.2	0.1	0.4	2.7
LFG14	0.0	0.0	0.1	5.2	0.1	0.1	0.1	1.8
LFG15	0.0	0.0	0.1	18.2	0.1	0.1	0.2	2.0
LFG16	0.0	0.0	0.0	1	0.8	0.3	1.6	2.0
LFG17	0.0	0.0	0.0	17.8	0.2	0.1	0.3	2.4
LFG18	0.0	0.0	0.0	2.3	1.1	0.2	1.8	2.1
LFG19	0.0	0.0	0.0	6.3	0.1	0.1	0.2	3.1
LFG20	0.0	0.0	0.0	1	0.2	0.1	0.2	4.6
LFG21	0.0	0.0	0.0	1	0.2	0.1	0.3	4.8
LFG22 [b]	0.0	0.0	0.0	1	0.2	0.2	0.2	4.0
LFG23	0.0	0.0	0.0	1	0.3	0.1	0.7	10.3
LFG24	0.0	0.0	0.0	1	0.1	0.1	0.1	4.7
GP1	0.0	0.0	0.0	1	6.3	4.9	7.0	10.6
GP2 (shallow)	0.0	0.0	0.0	1	0.6	0.3	0.9	11.4
GP2 (deep)	0.0	0.0	0.0	1	0.9	0.1	2.5	10.4
GP3 (shallow)	0.0	0.0	0.0	1	0.1	0.1	0.2	6.9
GP3 (deep)	0.0	0.0	0.0	1	0.2	0.1	0.3	5.6
GP4 (shallow)	0.0	0.0	0.0	1	0.8	0.5	1.2	11.6
GP4 (deep)	0.0	0.0	0.0	1	1.0	0.6	1.6	7.7
GP5 (shallow)	0.0	0.0	0.0	1	0.1	0.1	0.1	10.8

Location	Methane (% (v/v))				Carbon Dioxide (% (v/v))			
	Monitoring Results			Limit Level [a]	Monitoring Results			Limit Level [a]
	Average	Min	Max		Average	Min	Max	
GP5 (deep)	0.0	0.0	0.1	1	0.2	0.1	0.2	7.5
GP6	0.4	0.1	0.8	1	1.0	0.1	2.4	8.4
GP7	0.0	0.0	0.1	1	0.5	0.2	1.2	4.5
GP12	0.0	0.0	0.0	1	0.4	0.2	0.7	2.3
GP15	0.0	0.0	0.1	1	0.1	0.1	0.2	2.2
P7	0.0	0.0	0.1	1	0.5	0.4	0.7	2.5
P8	0.0	0.0	0.0	1	0.3	0.2	0.6	1.7
P9	0.0	0.0	0.1	1	0.1	0.1	0.2	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.
(b) Monitoring well LFG22 is not accessible due to the safety considerations in January 2025.

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	Voided due to latest site programme and on-going operation work			1.0
UU04	0.0	0.0	0.0	1.0
UU05	0.0	0.0	0.0	1.0
UU06	0.0	0.0	0.1	1.0
UU07	0.0	0.0	0.0	1.0
UU08	0.0	0.0	0.1	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

Location	Methane (% (v/v))			
	Monitoring Results			Limit Levels
	Average	Min	Max	
UU14	0.0	0.0	0.0	1.0
UU15	0.1	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	Voided due to latest site programme and on-going operation work			1.0
UU19	Voided due to latest site programme and on-going operation work			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	0.0	0.0	0.0	1.0
UU27	0.0	0.0	0.0	1.0
UU28	0.0	0.0	0.1	1.0

TABLE 2.34 SUMMARY OF LANDFILL GAS BULK SAMPLING MONITORING RESULTS IN THE REPORTING PERIOD

Parameters	Limit Level (LFG4) [a]	LFG4	Limit Level (LFG6) [a]	LFG6
Methane (% (v/v))	1.0	<0.020	1.0	<0.020
Carbon Dioxide (% (v/v))	7.0	0.133	9.1	0.111
Oxygen (% (v/v))	-	20.1	-	20.4
Nitrogen (% (v/v))	-	77.2	-	77.3
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:				

Parameters	Limit Level (LFG4) [a]	LFG4	Limit Level (LFG6) [a]	LFG6

(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 Latitude (N)	Longitude (E)	Monitoring Results (ppm)	Limit Level (ppm)
No flammable gas surface emission detected in the reporting period			30

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 2025 to March 2025.

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 8 January 2025, 20 February 2025 and 28 March 2025 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 summarized 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 regularly to ensure effective screening of views of project works from the High Junk Peak Trail.

2.6 EM&A SITE INSPECTION

Site inspections were carried out on a weekly basis with the Contractor, IEC and EPD to monitor the implementation of proper environmental pollution control and mitigation measures under the Project. In the reporting period, 13 site inspections were carried out on 2, 9, 16, 22 and 27 January 2025, 6, 13, 20 and 27 February 2025 and 6, 13, 20 and 27 March 2025.

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

TABLE 2.36 KEY OBSERVATIONS IDENTIFIED DURING THE SITE INSPECTION IN THIS REPORTING MONTH

Inspection Date	Environmental Observations and Recommendations
2 January 2025	• No observations during the site inspection.
9 January 2025	• The Contractor shall remove the general refuse accumulated at DP3 sediment pit to ensure it is functioning properly at all times.
16 January 2025	• The Contractor shall remove the general refuse accumulated at X10 channel to ensure it is functioning properly at all times.
22 January 2025	• No observations during the site inspection.
27 January 2025	• No observations during the site inspection.
6 February 2025	• No observations during the site inspection.
13 February 2025	• The Contractor shall install extra silt fencing along the DP3 sediment pit to minimize SS runoff to the discharge point. • The Contractor shall repair the silt fencing along X10 channel to minimize SS runoff to the channel. • The Contractor shall remove the deposited silt and grit accumulated at X10 channel to ensure it is functioning properly at all times.
20 February 2025	• The Contractor shall repair the silt fencing along X10 channel to minimize SS runoff to the channel.
27 February 2025	• The Contractor shall remove the general refuse accumulated at X10 channel to ensure it is functioning properly at all times. • The Contractor shall clean up the algae accumulated at DP4 sediment pit to ensure it is functioning properly at all times. • The Contractor shall remove the fallen leaves accumulated at DP6 to ensure it is functioning properly at all times.
6 March 2025	• The Contractor shall clean up the algae accumulated at DP4 sediment pit to ensure it is functioning properly at all times. • The Contractor shall remove the stagnant water and chemicals in the drip trays of Wetseps near DP4 and handle the clean-up materials as chemical waste.
13 March 2025	• The Contractor shall remove the deposited silt and grit accumulated at X10 channel to ensure it is functioning properly at all times. • The Contractor shall clean up the algae accumulated at DP4 sediment pit to ensure it is functioning properly at all times.
20 March 2025	• The Contractor shall remove the deposited silt and grit accumulated at X10 channel to ensure it is functioning properly at all times. • The Contractor shall clean up the algae accumulated at DP4 sediment pit to ensure it is functioning properly at all times.
27 March 2025	• The Contractor shall clean up the algae accumulated at DP4 sediment pit to ensure it is functioning properly at all times. • The Contractor shall remove the stagnant water and chemicals in the drip trays of Wetsep 1 near DP4 and handle the cleanup materials as chemical waste.

The Contractor has rectified all 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 RECTIFICATION ACTIONS

Deficiencies	Rectifications Implemented	Proposed Additional Control Measures
Surface Water		
Intercepting channels & drainage system	• Reviewed drainage plan.	• Addition of 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 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 chemical wastes. 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 summarized in **Table 2.38**.

TABLE 2.38 QUANTITIES OF DIFFERENT WASTE GENERATED 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)	Yard Waste (in '000kg)		Chemical Wastes (in '000kg)
		Rock	Soil				Y Park	SENT	
1 – 31 Jan 25	202.42	0	0	0	0	0	0	0.80	2.84
1 – 28 Feb 25	214.91	0	0	0	0	0	0	0.60	3.19
1 – 31 Mar 25	0	0	0	0	0.34	0	0	0.73	2.91

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 noise and landfill gas monitoring results complied with the Action and Limit Levels in the reporting period.

Three exceedances of the Limit Levels for Total Suspended Particulates (TSP), one exceedance of Limit Levels for thermal oxidizer stack emission (Nitrogen Dioxide (NO2)) and one exceedance Limit Levels for landfill gas flare stack emission (Benzene) were recorded for air quality monitoring in the reporting period. The TSP exceedances at AM2 on 14 January and 20 January 2025 were deemed to Project-related activities upon further investigation, while the TSP exceedance at AM2 on 19 February 2025 was considered non Project-related upon further investigation. The thermal oxidizer stack emission (NO2) and landfill gas flare stack emission (Benzene) exceedances on 10 February 2025 and 11 February 2025, respectively were considered Project-related activities upon further investigation.

Two exceedances of the Limit Levels for groundwater (Chemical Oxygen Demand (COD)) and one exceedance of the Limit Levels for groundwater (Ammoniacal-nitrogen) were recorded for water quality impact monitoring in the reporting period. The groundwater (COD) exceedance at MWX-7 on 6 January 2025, and the groundwater (COD and Ammoniacal-nitrogen) exceedances at MWX-7 and MWX-8, respectively on 5 February 2025 were considered non Project related upon further investigation.

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, successful prosecutions are summarised in **Annex H**.

3. CONCLUSION AND RECOMMENDATIONS

This Quarterly EM&A Report presents the findings of the EM&A activities undertaken during the period from 1 January 2025 to 31 March 2025 in accordance with the updated EM&A Manual and the requirements of the Environmental Permit (*EP-308/2008/C)*.

Air 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 Levels for Total Suspended Particulates (TSP), one exceedance of Limit Levels for thermal oxidizer stack emission (Nitrogen Dioxide (NO2)), one exceedance Limit Levels for landfill gas flare stack emission (Benzene), two exceedance of the Limit Levels for groundwater (Chemical Oxygen Demand (COD)) and one exceedance of the Limit Levels for groundwater (Ammoniacal-nitrogen) 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.

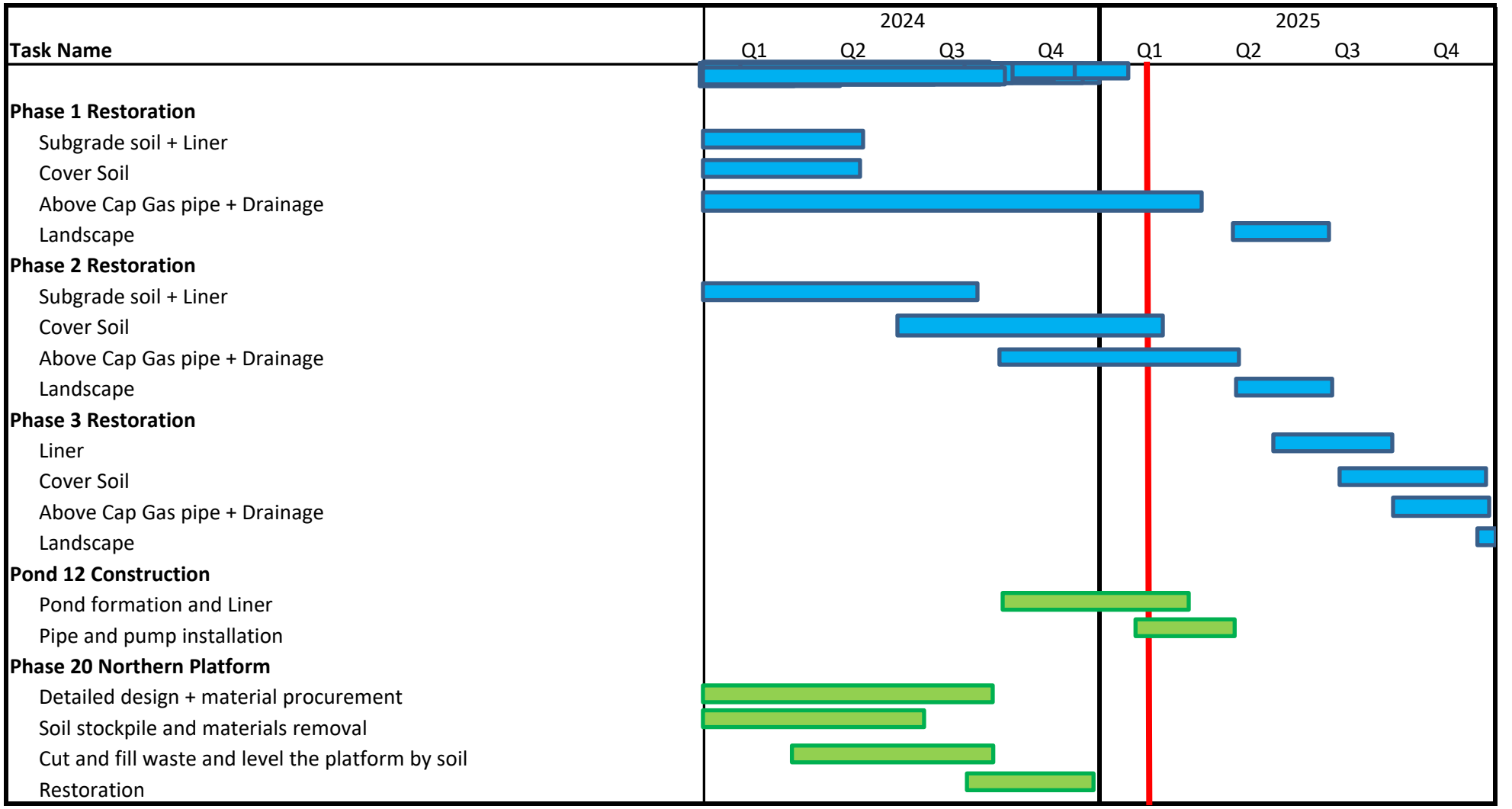
There were no complaints, notification of summons or prosecution recorded in the reporting period.

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

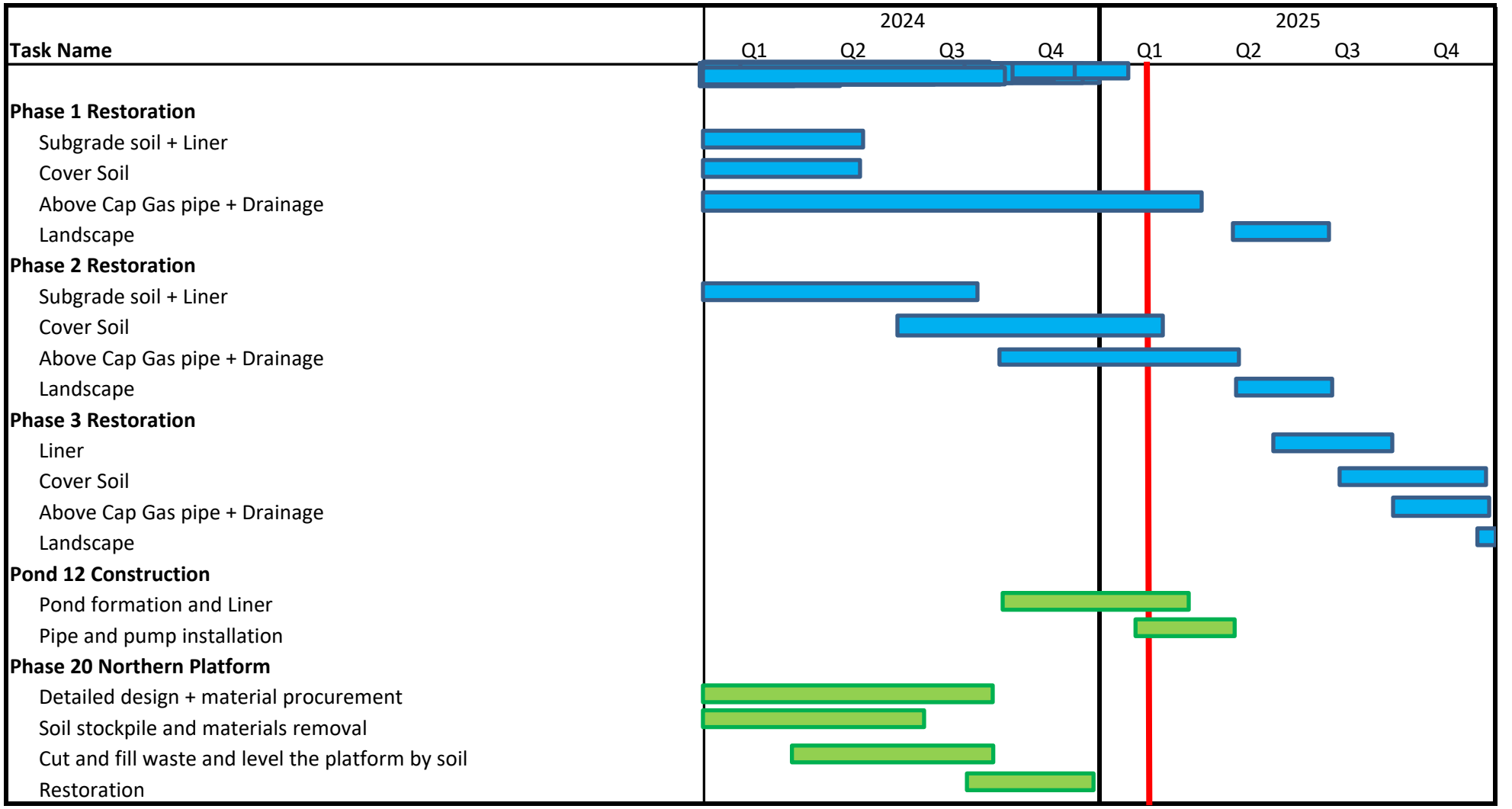
SENT and SENTX - Construction Programme

Update 2 Jan 2025



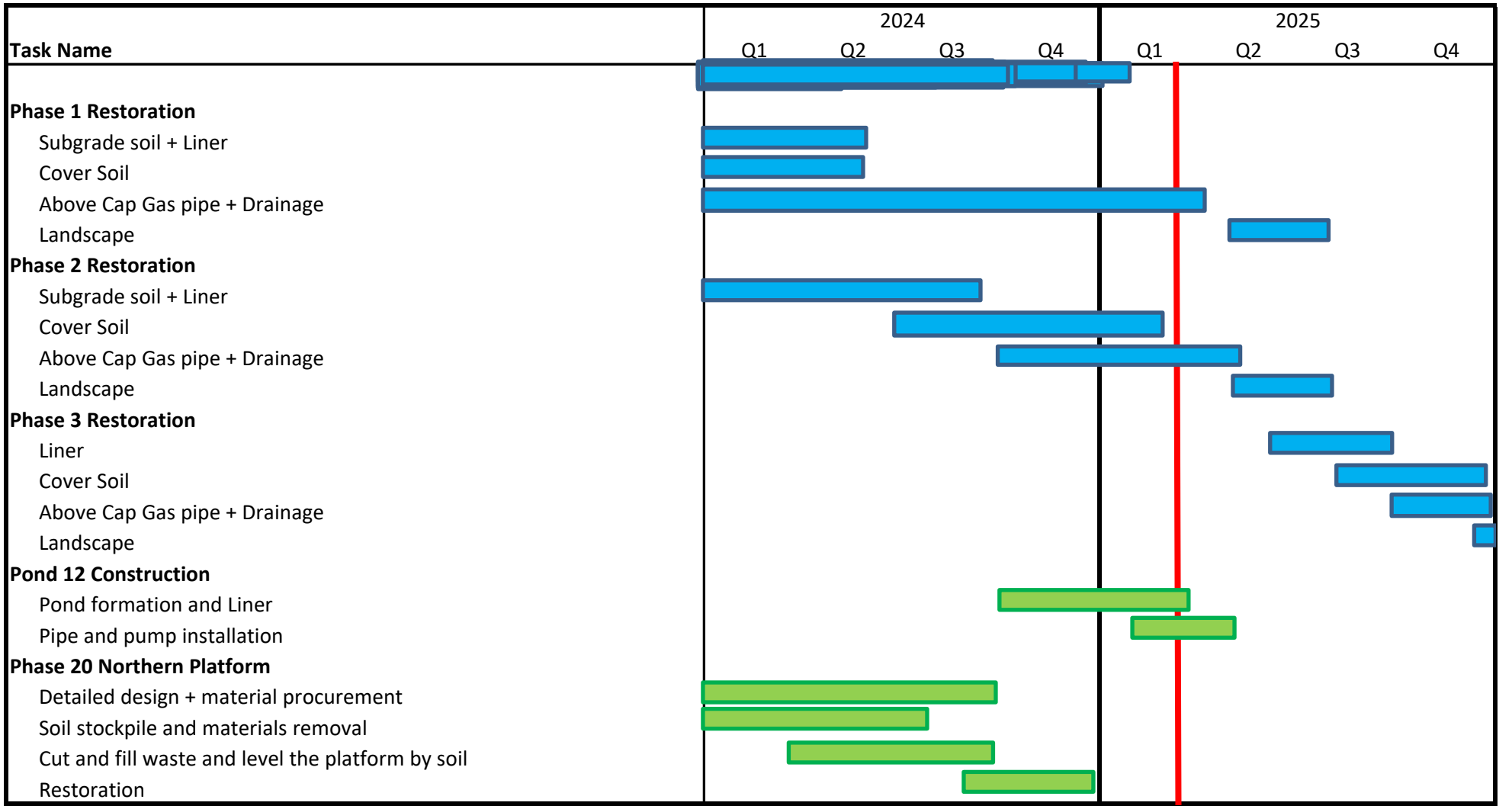
SENT and SENTX - Construction Programme

Update 2 Feb 2025



SENT and SENTX - Construction Programme

Update 2 Mar 2025



ANNEX B ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE

ANNEX B ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1)				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
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	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

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

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1)				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
		fragments and material resulting from blasting									
4.8.1	AQ2	<u>Rock Drilling</u> Watering will be carried out at the rock drilling activities to avoid fugitive dust emissions.	To minimise potential dust nuisance	Rock drilling area	SENTX Contractor		✓			*Air Pollution Control (Construction Dust) Regulations*	Not applicable. Rock drilling is not required in the latest landfill design
4.8.1	AQ3	<u>Site Access Road</u> • The main haul road will be kept clear of dusty materials or sprayed with water. • The main haul road will be paved with aggregate or gravel. • Vehicle speed will be limited to 10kph.	To minimise potential dust nuisance	Main haul road	SENTX Contractor		✓			*Air Pollution Control (Construction Dust) Regulations* *HKAQO and EIAO-TM Annex 4*	Implemented
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	To minimise potential dust nuisance	All construction works area	SENTX Contractor		✓			*Air Pollution Control (Construction Dust) Regulations*	Implemented

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1)				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
		with water so as to ensure that the entire surface is wet.								*HKAQO and EIAO-TM Annex 4*	
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

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1)				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
4.8.1	AQ7	<u>Excavation Works</u> • Working area of any excavation or earth moving operation will be sprayed with water immediately before, during and immediately after the operation so as to ensure that the entire surface is wet.	To minimise potential dust nuisance	All construction works area	SENTX Contractor		✓			*Air Pollution Control (Construction Dust) Regulations* *HKAQO and EIAO-TM Annex 4*	Implemented
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

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1)				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
4.8.1	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
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	To minimise potential dust nuisance	All construction works area	SENTX Contractor		✓			*HKAQO and EIAO-TM Annex 4*	Implemented

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1)				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
		gaseous emissions.									
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 before leaving	To minimise odour nuisance	Tipping face	SENTX Contractor			✓		*EIAO-TM Annex 4*	Not Applicable. As SENTX will receive construction waste only, which

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1)				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
		the tipping face									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

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1)				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
4.8.2	AQ19	• Progressive restoration of the areas which 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	To minimise odour nuisance	SENTX Site	SENTX Contractor	✓		✓	✓	*EIAO-TM Annex 4*	Implemented
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

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1)				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
4.8.2	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 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

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1)				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
4.8.2	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 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.

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1)				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
4.8.2 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 odorous, rescheduling of waste filling activities is not necessary.
4.8.2 and SENTX latest design	AQ33	Dust, Gaseous Emission and LFG including Volatile Organic Compounds (VOCs)	To minimise dust nuisance	SENTX Site	SENTX Contractor			✓		*HKAQO and EIAO-TM Annex 4*	Implemented

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1)				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
		• Keeping the main haul road to the waste filling area wet by regular watering;									
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 emissions,	SENTX Site	SENTX Contractor			✓	✓	*EIAO-TM Annex 4*	Implemented

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1)				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
		generated as much as possible; and	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

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1)				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
4.10.2 and SENTX latest design	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 quality requirement	At the flares and thermal oxidizer stacks when they are in operation	SENTX Contractor			✓	✓ (2)	Emission Limits specified in Contract	Implemented
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	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

(2) For LFG flare and LFG generator only.

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1)				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
		of the thermal oxidiser could be discontinued.									
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 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	To minimise potential construction noise nuisance.	All construction works area	SENTX Contractor		✓			*Noise Control Ordinance (NCO) and EIAO-TM Annex 5*	Implemented

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1)				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
		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.									
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

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1)				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
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	At monitoring locations	SENTX Contractor			✓		*Noise Control Ordinance (NCO) and*	Implemented

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1)				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
			meets the criteria	shown in *Figure 6.4a*						*EIAO-TM Annex 5*	
Water Quality – Construction Phase											
6.8.1	WQ1	<u>Construction Runoff</u> • Exposed soil areas will be minimised to reduce the contamination of runoff and erosion.	To minimise potential water quality impacts arising from the construction works	All construction works area	SENTX Contractor		✓			*ProPECC PN 1/94* *EIAO-TM Annex 6*	Implemented
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	To minimise potential water quality impacts arising from the	All construction works area	SENTX Contractor		✓			*ProPECC PN 1/94* *WPCO*	Implemented

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1)				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
		generation of high SS runoff.	construction works								
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
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-	To minimise potential water	SENTX Site	SENTX Contractor		✓			*ProPECC PN 1/94*	Implemented

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1)				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
		site maintenance of machinery and equipment will be collected by a licensed chemical waste collector.	quality impacts arising from improper handling of fuel and oil							*WPCO* *Waste Disposal Ordinance (WDO)*	
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 construction works	SENTX Site	SENTX Contractor		✓			*WPCO* *Water-TM*	Implemented
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	To minimise potential water	SENTX Site	SENTX Contractor		✓			*WPCO*	Implemented

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1)				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
		will be employed to clean the chemical toilets on a regular basis.	quality impacts arising from the sewage effluents							*WDO*	
Water Quality – Operation/Restoration and Aftercare Phases											
6.9.1	WQ14	<u>Surface Water Management</u> • 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			✓		*WPCO Technical Memorandum Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Inshore Waters (Water-TM)* *EIAO-TM Annex 6*	Implemented
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	To minimise potential water quality impacts on surface water	SENTX Site	SENTX Contractor			✓	✓	*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)				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
		basis as stated in the EM&A Manual.	arising from the landfill operations.								
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 landfill operations.	SENTX Site	SENTX Contractor			✓	✓	*WPCO Water-TM EIAO-TM Annex 6*	Implemented
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	To minimise potential water quality impacts on surrounding	Leachate pump houses and related	SENTX Contractor			✓	✓	*WPCO Water-TM EIAO-TM Annex 6*	Implemented

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1)				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
		equipment will be inspected regularly and repairs, if necessary.	water bodies arising from the landfill operations.	ancillary equipment							
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 arising from the landfill operations.	Leachate treatment plant	SENTX Contractor			✓	✓	*WPCO Water-TM EIAO-TM Annex 6*	Implemented
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

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1)				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
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> • 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 water bodies arising from the landfill operations.	SENTX Site	SENTX Contractor			✓	✓	*WPCO Water-TM*	Implemented
6.10.1	WQ27	• Maintenance and replacement of the capping system should be	To minimise potential water quality impacts on surrounding	SENTX Site	SENTX Contractor			✓	✓	*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)				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
		carried out, if necessary, to prevent control infiltration and leachate seepage from any damaged cap.	water bodies arising from the leachate leakage.							*EIAO-TM Annex 6*	
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 transferred to the Government waste	To ensure that adverse environmental impacts are prevented	SENTX Site	SENTX Contractor		✓			*WDO Waste Disposal (Charges for Disposal of Construction Waste) Regulation; Works Bureau Technical Circular*	Implemented

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1)				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
		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.								*No.31/2004; and Annex 5 and Annex 6 of Appendix G of ETWBTC No. 19/2005)*	

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1)				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
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*	Implemented
7.6.1	WM4	<u>Chemical Waste</u> The construction contractor will register as a chemical waste producer with the EPD. Chemical waste will be handled in accordance with the *Code of Practice on the Packaging, Handling and Storage of Chemical Wastes.*	To ensure proper handling of chemical waste	SENTX Site	SENTX Contractor		✓			*WDO Code of Practice on the Packaging, Handling and Storage of Chemical Wastes*	Implemented

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1)				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
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	To ensure proper handling of general refuse	SENTX Site	SENTX Contractor		✓			*WDO 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)				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
		locations to facilitate recovery of aluminium can and waste paper from the SENTX Site. Materials recovered will be sold for recycling.									
7.6.1	WM7	<u>Staff Training</u> At the commencement of the construction works, training will be provided to workers on the concepts of site cleanliness and on appropriate waste management procedures, including waste reduction, reuse and recycling.	To ensure that adverse environmental impacts are prevented	SENTX Site	SENTX Contractor		✓				Implemented
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	To ensure that adverse environmental impacts are prevented	SENTX Site	SENTX Contractor		✓			*WDO*	Implemented

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1)				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
		waste generation, storage, recycling, transport and disposal.									
Waste Management – Operation/Restoration Phase											
7.6.2 and SENTX latest design	WM9	Sludge 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*	Not applicable
7.6.2	WM10	Chemical Waste 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			✓		*WDO EIAO-TM Annex 7* *Code of Practice on the Packaging, Handling and Storage of Chemical Wastes*	Implemented

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1)				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
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

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1)				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
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*). Those precautionary measures applicable to the SENTX will be confirmed in the detailed Qualitative Landfill Gas Hazard Assessment to be submitted by the contractor.	To protect workers from landfill gas risk	All construction works area	SENTX Contractor		✓			*Paragraphs 8.3 to 8.49 of EPD's Landfill Gas Hazards Assessment Guidance Note EIAO-TM Annex 7*	Implemented
8.6.2	LFG2	Monitoring will be undertaken when construction works are carried out in confined space within the consultation zone with reference to the monitoring requirements and procedures specified in	To protect workers from landfill gas risk	Confined space within the construction works area	SENTX Contractor		✓				Implemented

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1)				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
		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.									
8.6.3	LFG4	Implementation of engineering measures	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)				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
		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.									
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	To protect workers from landfill gas risk	Infrastructure Area	SENTX Contractor	✓	✓			*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)				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
		monitor the migration of landfill gas, if any.									
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 within the	To protect workers from landfill gas risk	Within the SENTX and along the SENTX boundary	SENTX Contractor			✓	✓	*Landfill Gas Hazards Assessment Guidance Note*	Implemented

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1)				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
		SENTX and along the SENTX boundary as required by the Contract Specification.									
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

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1)				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
		• Silt removal facilities, channels and manholes will be maintained and the deposited silt and grit will be removed regularly to ensure they are functioning properly at all times;								-	Deficiency of mitigation measures but rectified by the Contractor
		• Temporary covers such as tarpaulin will also be provided to minimise the generation of high suspended solids runoff;								-	Implemented
		• 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

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1)				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
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 installation of drainage system to prevent potential	To minimise potential water quality impact affecting the ecological resources	SENTX Site	SENTX Contractor			✓	✓	*EIAO-TM Annex 16* *WPCO Water-TM* *EIAO-TM Annex 6*	Implemented

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1)				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
		migration of leachate to habitats in the vicinity.									
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	Compensation of habitat loss due to the Project	SENTX Site	SENTX Contractor			✓	✓	*EIAO-TM Annex 16*	Not applicable

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1)				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
		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.									
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 herpetofauna and blend into the existing undisturbed ecological environment.	To diversify habitats	SENTX Site	SENTX Contractor			✓	✓	*EIAO-TM Annex 16*	Not applicable
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	To enhance ecological value of the habitats	SENTX Site	SENTX Contractor			✓	✓	*EIAO-TM Annex 16*	Not applicable

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1)				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
		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									

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1)				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
		recorded within the CWBCP).									
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 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	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)				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
		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	To minimise the landscape and visual impacts	All construction works area	SENTX Contractor		✓			*EIAO-TM Annex 18*	Not applicable

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1)				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
		landscape works, where practical. The Contract Specification will include storage and reuse of topsoil as appropriate.									
10.6.5	LV3	CM3 - All existing trees at the edges of the landfill will be carefully protected during construction. Detailed Tree Protection Specification will be provided in the Contract Specification. Under this Specification, the Contractor will be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in Contractor's works areas.	To minimise the landscape and visual impacts	Potential impacted area	SENTX Contractor		✓			*EIAO-TM Annex 18 and ETWBC 3/2006*	Implemented
10.6.5	LV4	CM4 - Trees unavoidably affected by the works will be transplanted, where	To minimise the landscape and visual impacts	Potential impacted area	SENTX Contractor	✓	✓			*EIAO-TM Annex 18 and ETWBC 3/2006*	Implemented

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1)				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
		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.									
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

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1)				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
10.6.5	LV6	CM6 - The Contractor's office, leachate treatment plant and laboratory will be given an aesthetic treatment in earth tones to reduce their visual impact and albedo and blend them into the surrounding landscape.	To minimise the landscape and visual impacts	Infrastructure area	SENTX Contractor	✓	✓			*EIAO-TM Annex 18*	Implemented
10.6.5	LV7	CM7 - The Contractor's office, leachate treatment plant and laboratory will be surrounded by a minimum of 5m wide and 0.75m high earth bund on the west and south sides planted with a dense screen of tree and shrub vegetation. Additional tree planting will be provided in unused spaces with thin infrastructure 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

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1)				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
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 latest design	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)				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
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	To check the restoration plantation	SENTX Site	SENTX Contractor/ET			✓		*EIAO-TM Annex 18*	Not applicable

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1)				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
		Landscape Architect from the ET.									

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 2025

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

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

February 2025

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

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

March 2025

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

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 ($\mu g/m^3$)
2 Jan 25	8:00	3 Jan 25	8:00	Fine	199
8 Jan 25	8:00	9 Jan 25	8:00	Sunny	187
14 Jan 25	8:00	15 Jan 25	8:00	Sunny	151
20 Jan 25	8:00	21 Jan 25	8:00	Sunny	228
26 Jan 25	8:00	27 Jan 25	8:00	Cloudy	95
1 Feb 25	8:00	2 Feb 25	8:00	Cloudy	53
7 Feb 25	8:00	8 Feb 25	8:00	Cloudy	35
13 Feb 25	8:00	14 Feb 25	8:00	Cloudy	67
19 Feb 25	8:00	20 Feb 25	8:00	Cloudy	331
25 Feb 25	8:00	26 Feb 25	8:00	Cloudy	172
3 Mar 25	8:00	4 Mar 25	8:00	Cloudy	131
9 Mar 25	8:00	10 Mar 25	8:00	Fine	28
15 Mar 25	8:00	16 Mar 25	8:00	Cloudy	99
21 Mar 25	8:00	22 Mar 25	8:00	Sunny	145
27 Mar 25	8:00	28 Mar 25	8:00	Cloudy	187
				Average	141
				Min	28
				Max	331

FIGURE D1.1 GRAPHICAL PRESENTATION FOR 24-HR TSP MONITORING AT AM1

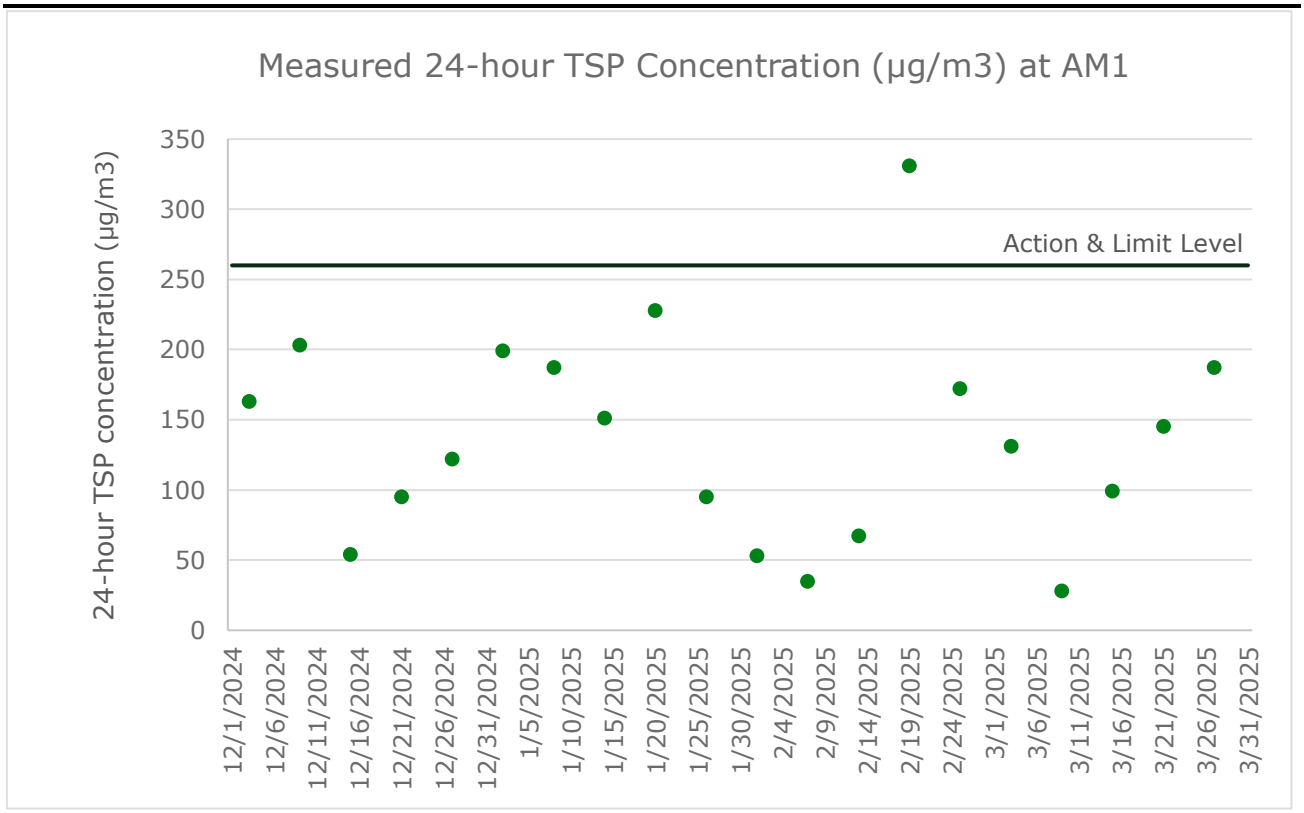


TABLE D1.2 24-HOUR TSP MONITORING RESULTS AT AM2

Start Date	Start Time	Finish Date	Finish Time	Weather	24-hour TSP (μg/m³)
2 Jan 25	8:00	3 Jan 25	8:00	Fine	104
8 Jan 25	8:00	9 Jan 25	8:00	Sunny	191
14 Jan 25	8:00	15 Jan 25	8:00	Sunny	329
20 Jan 25	8:00	21 Jan 25	8:00	Sunny	329
26 Jan 25	8:00	27 Jan 25	8:00	Cloudy	63
1 Feb 25	8:00	2 Feb 25	8:00	Cloudy	34
7 Feb 25	8:00	8 Feb 25	8:00	Cloudy	59
13 Feb 25	8:00	14 Feb 25	8:00	Cloudy	67
19 Feb 25	8:00	20 Feb 25	8:00	Cloudy	80
25 Feb 25	8:00	26 Feb 25	8:00	Cloudy	121
3 Mar 25	8:00	4 Mar 25	8:00	Cloudy	117
9 Mar 25	8:00	10 Mar 25	8:00	Fine	174
15 Mar 25	8:00	16 Mar 25	8:00	Cloudy	68
21 Mar 25	8:00	22 Mar 25	8:00	Sunny	185
27 Mar 25	8:00	28 Mar 25	8:00	Cloudy	67
				Average	133
				Min	34
				Max	329

FIGURE D1.2 GRAPHICAL PRESENTATION FOR 24-HR TSP MONITORING AT AM2

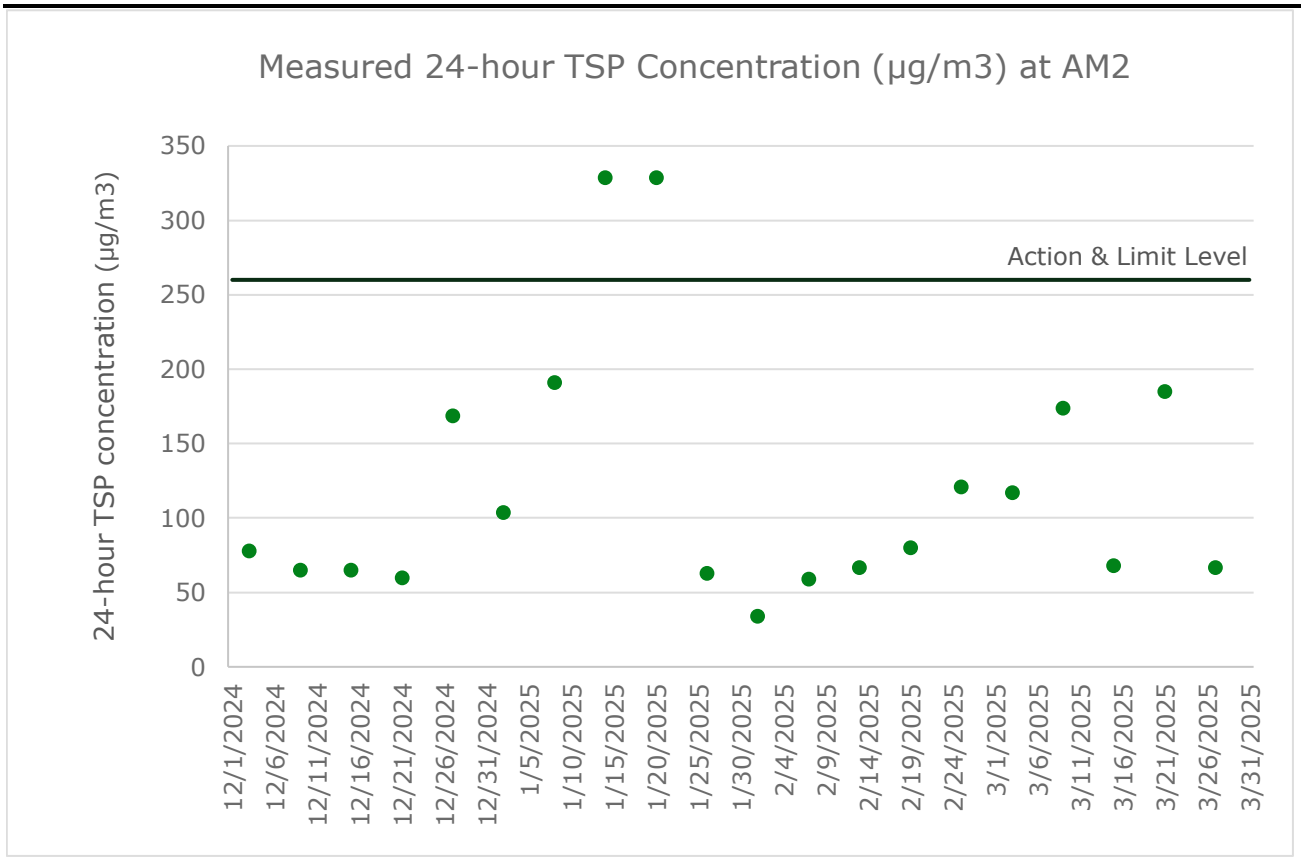


TABLE D1.3 24-HOUR TSP MONITORING RESULTS AT AM3

Start Date	Start Time	Finish Date	Finish Time	Weather	24-hour TSP (μg/m³)
2 Jan 25	8:00	3 Jan 25	8:00	Fine	151
8 Jan 25	8:00	9 Jan 25	8:00	Sunny	155
14 Jan 25	8:00	15 Jan 25	8:00	Sunny	176
20 Jan 25	8:00	21 Jan 25	8:00	Sunny	163
26 Jan 25	8:00	27 Jan 25	8:00	Cloudy	59
1 Feb 25	8:00	2 Feb 25	8:00	Cloudy	58
7 Feb 25	8:00	8 Feb 25	8:00	Cloudy	70
13 Feb 25	8:00	14 Feb 25	8:00	Cloudy	105
19 Feb 25	8:00	20 Feb 25	8:00	Cloudy	137
25 Feb 25	8:00	26 Feb 25	8:00	Cloudy	123
3 Mar 25	8:00	4 Mar 25	8:00	Cloudy	79
9 Mar 25	8:00	10 Mar 25	8:00	Fine	100
15 Mar 25	8:00	16 Mar 25	8:00	Cloudy	73
21 Mar 25	8:00	22 Mar 25	8:00	Sunny	162
27 Mar 25	8:00	28 Mar 25	8:00	Cloudy	84
				Average	113
				Min	58
				Max	176

FIGURE D1.3 GRAPHICAL PRESENTATION FOR 24-HR TSP MONITORING AT AM3

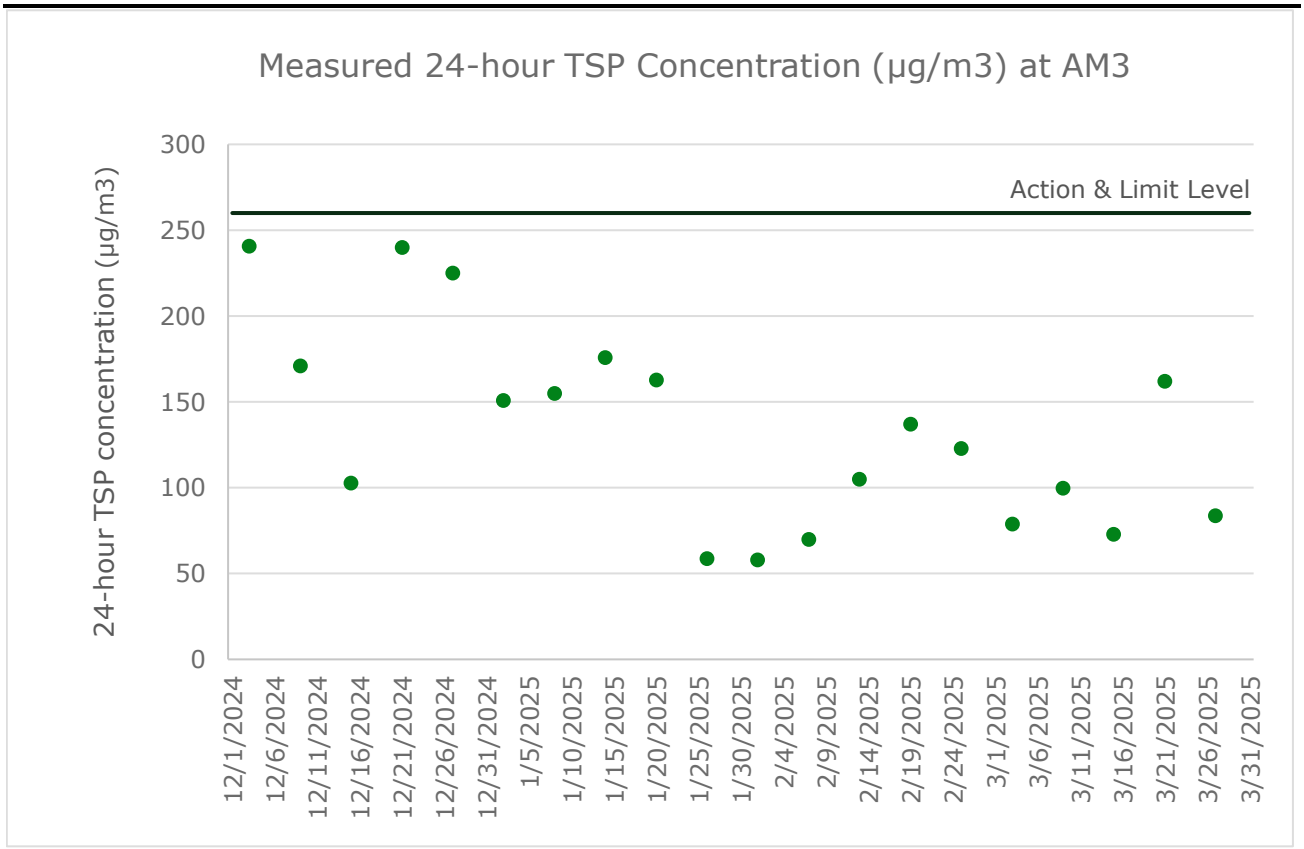
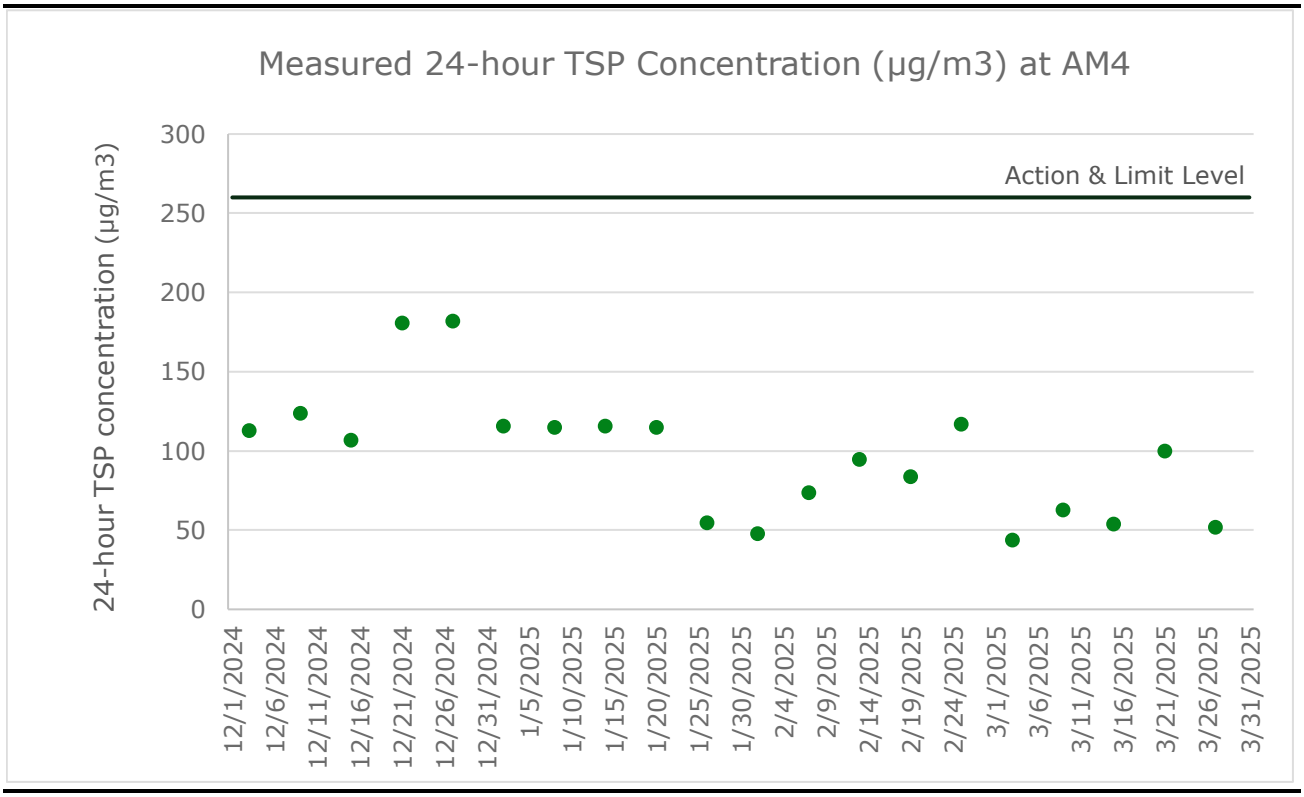


TABLE D1.4 24-HOUR TSP MONITORING RESULTS AT AM4

Start Date	Start Time	Finish Date	Finish Time	Weather	24-hour TSP (μg/m³)
2 Jan 25	8:00	3 Jan 25	8:00	Fine	116
8 Jan 25	8:00	9 Jan 25	8:00	Sunny	115
14 Jan 25	8:00	15 Jan 25	8:00	Sunny	116
20 Jan 25	8:00	21 Jan 25	8:00	Sunny	115
26 Jan 25	8:00	27 Jan 25	8:00	Cloudy	55
1 Feb 25	8:00	2 Feb 25	8:00	Cloudy	48
7 Feb 25	8:00	8 Feb 25	8:00	Cloudy	74
13 Feb 25	8:00	14 Feb 25	8:00	Cloudy	95
19 Feb 25	8:00	20 Feb 25	8:00	Cloudy	84
25 Feb 25	8:00	26 Feb 25	8:00	Cloudy	117
3 Mar 25	8:00	4 Mar 25	8:00	Cloudy	44
9 Mar 25	8:00	10 Mar 25	8:00	Fine	63
15 Mar 25	8:00	16 Mar 25	8:00	Cloudy	54
21 Mar 25	8:00	22 Mar 25	8:00	Sunny	100
27 Mar 25	8:00	28 Mar 25	8:00	Cloudy	52
				Average	83
				Min	44
				Max	117

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	• 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

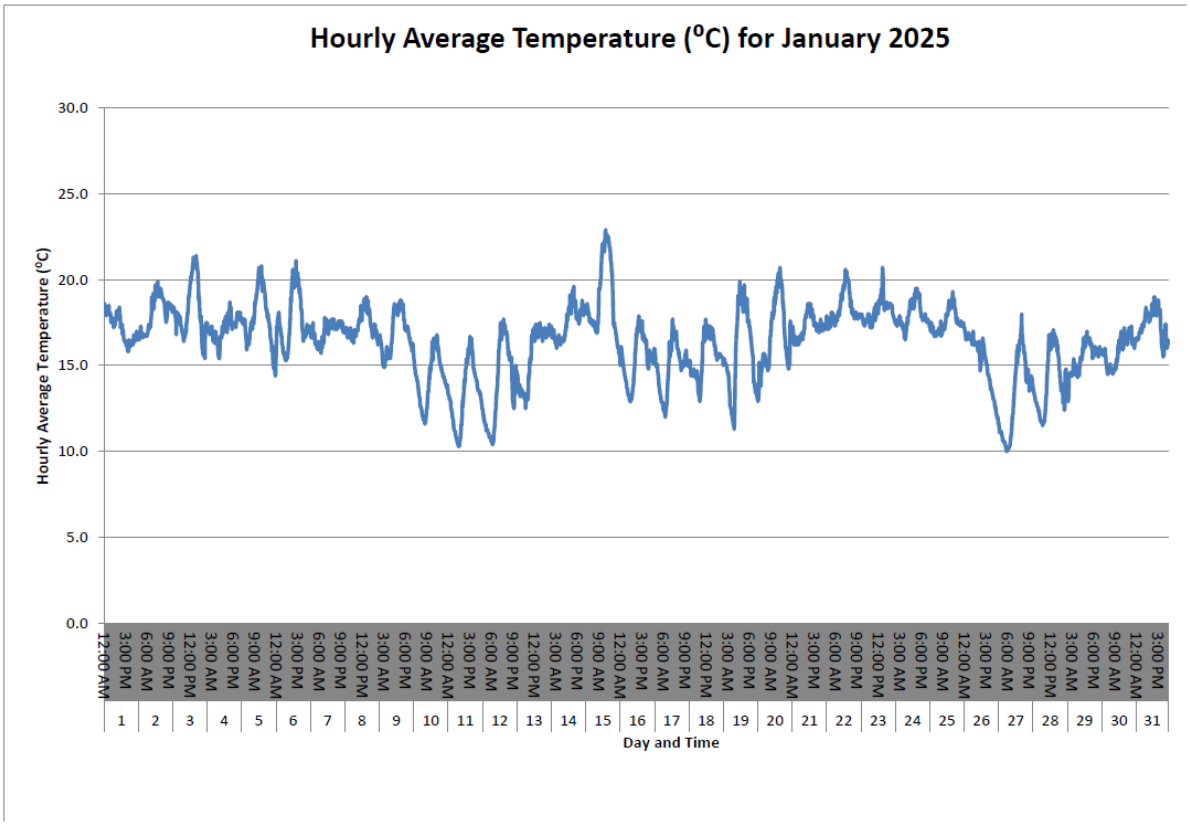
Action			
Event	**ET**	**IEC**	**Contractor**
	until odour not being detected for three consecutive days		
Exceedance of Limit Level for odour	• Identify source(s) and investigate the cause(s) of exceedance or complaint • Prepare the odour complaint form or the Notification of Exceedance within 24 hours • 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	• 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

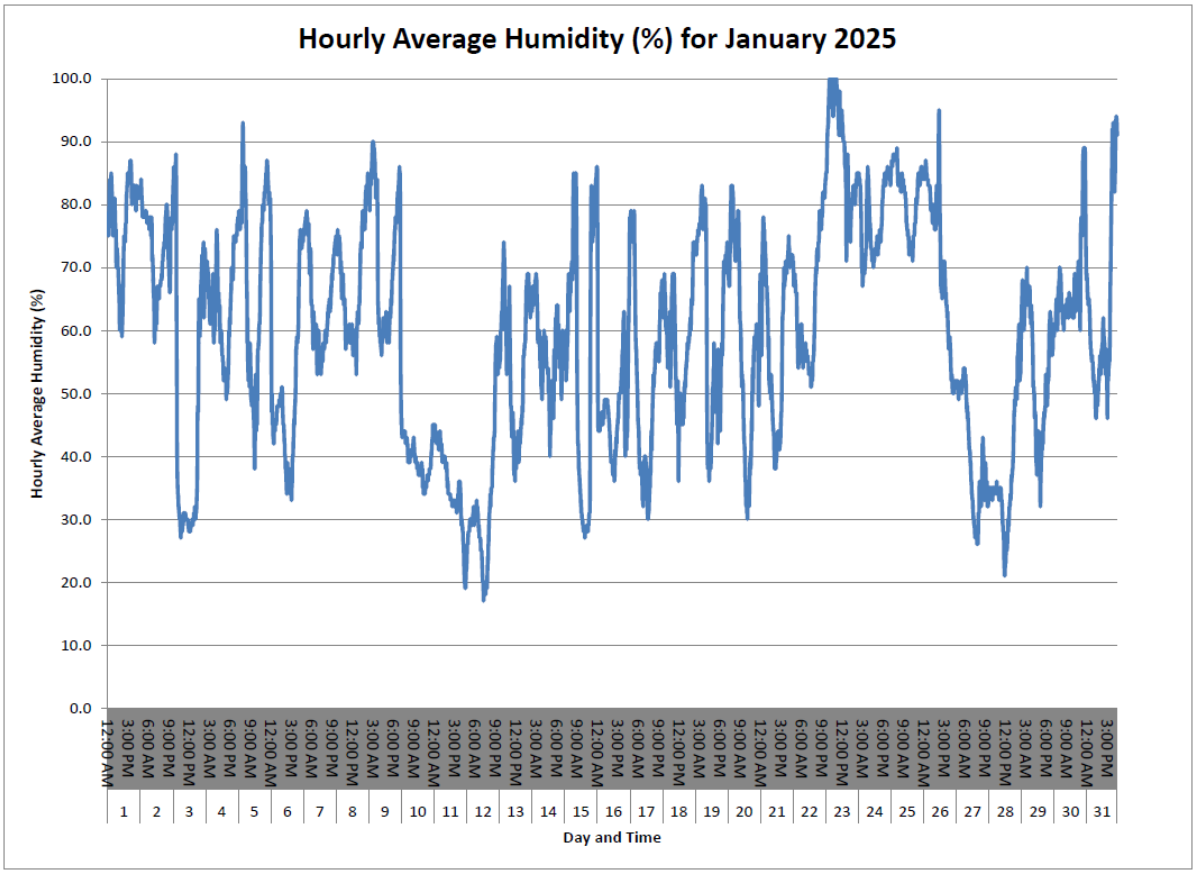
Action			
Event	**ET**	**IEC**	**Contractor**
	results • Repeat measurement to confirm finding if exceedance is due to the Project • Increase monitoring frequency to monthly and continue until the monitoring results reduce to below limit level		
Exceedance of Limit Level of stack emission of the thermal 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

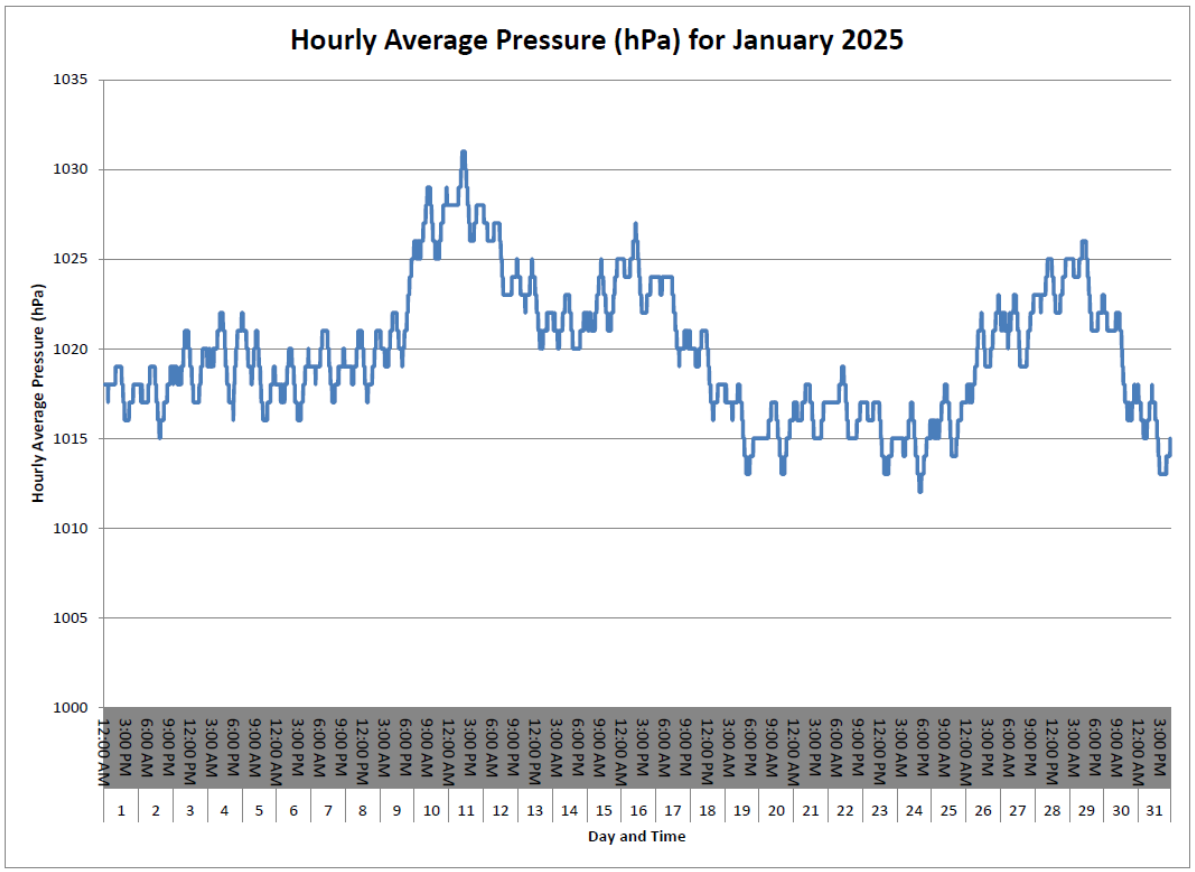
ANNEX D3 METEOROLOGICAL DATA

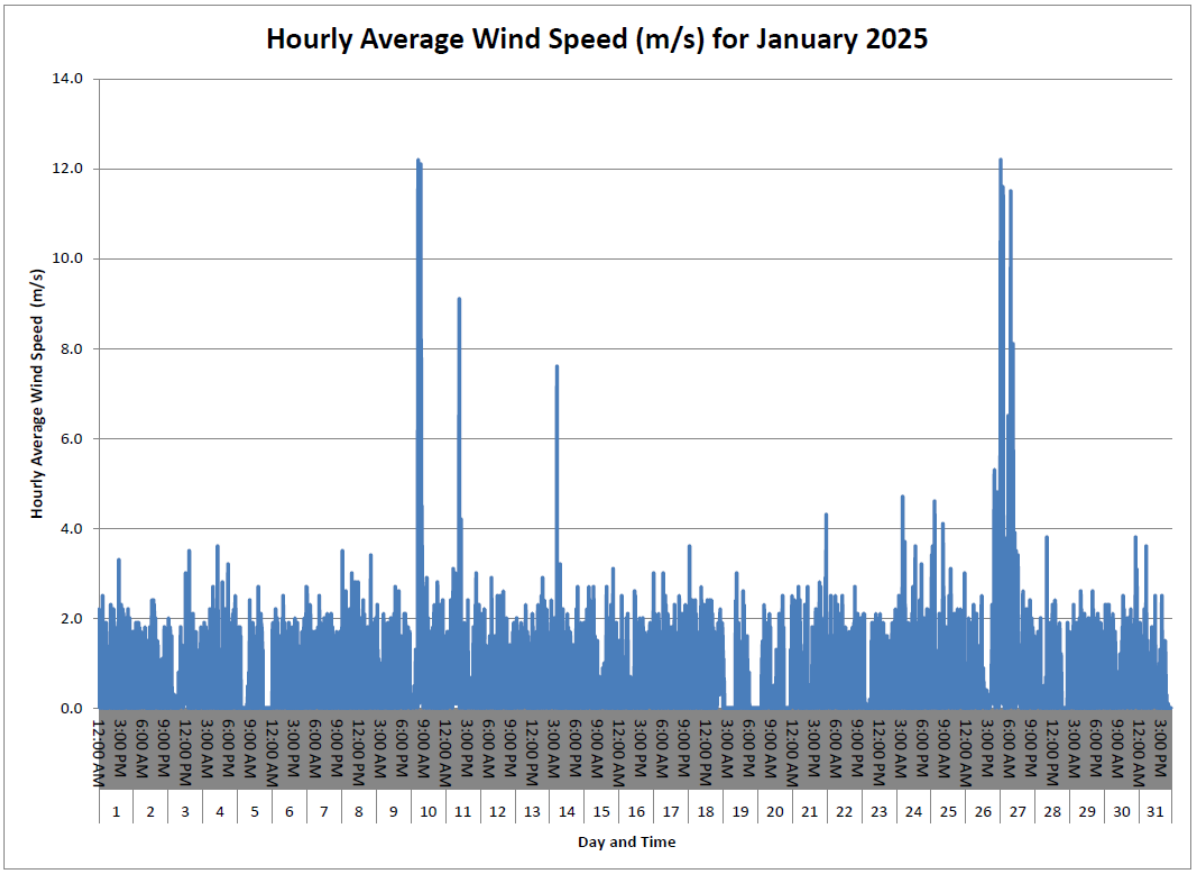
ANNEX D3 METEOROLOGICAL DATA

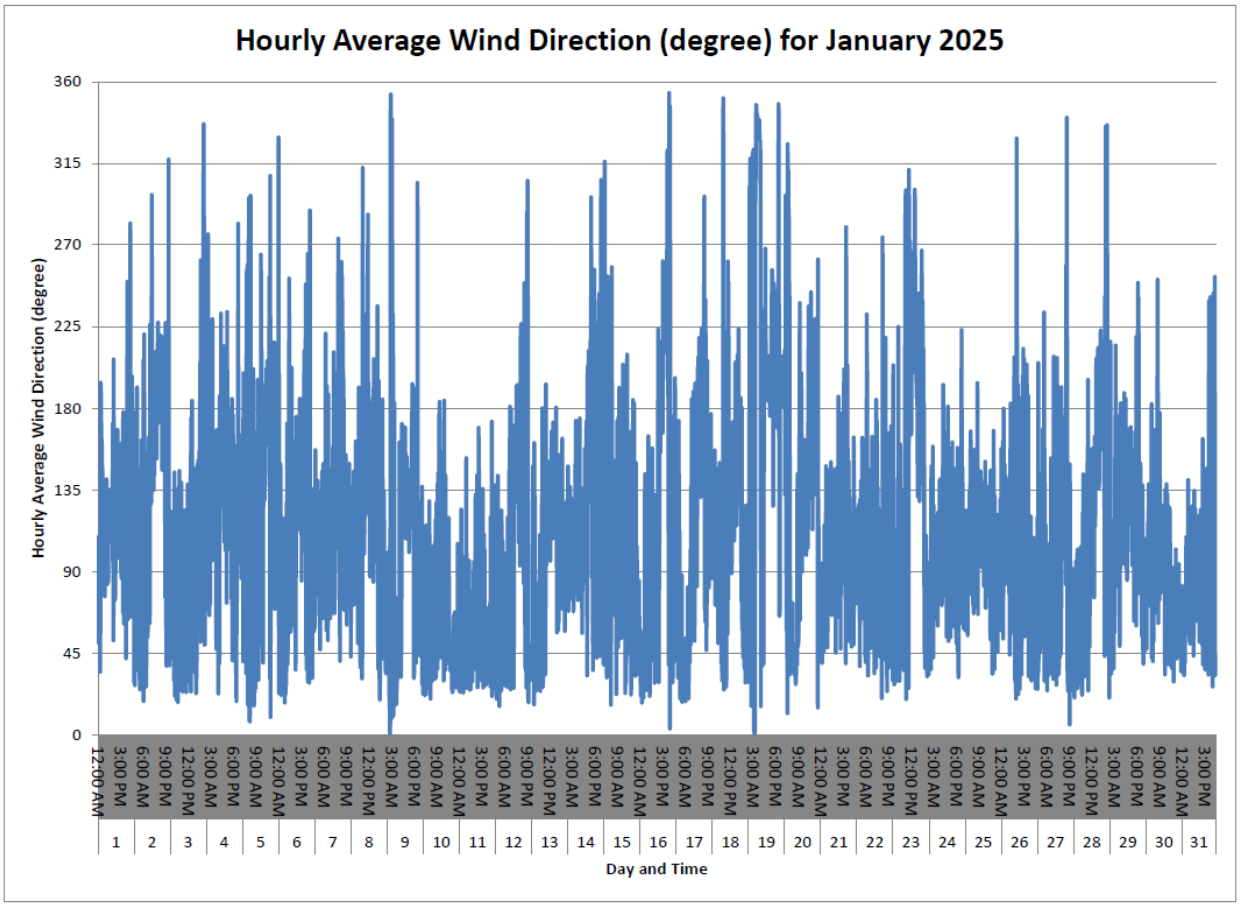
January 2025

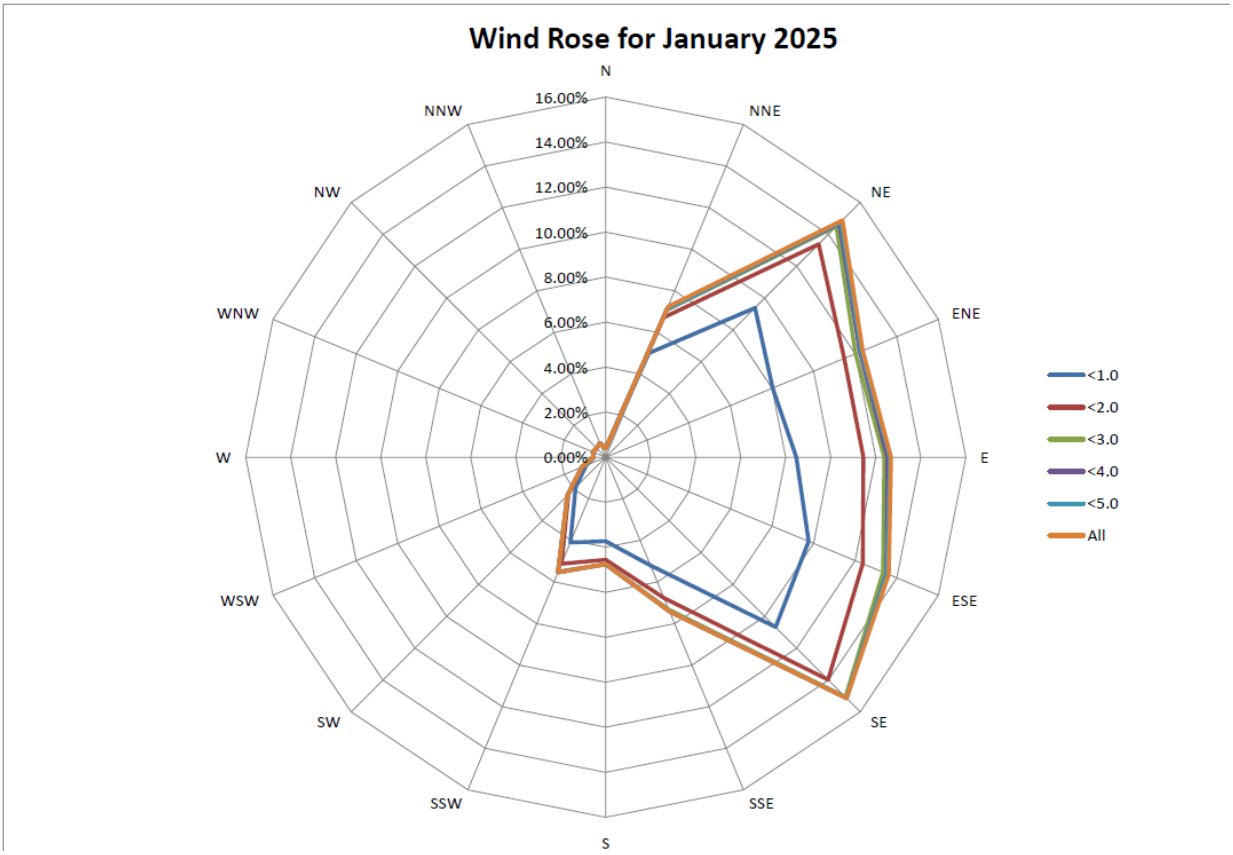


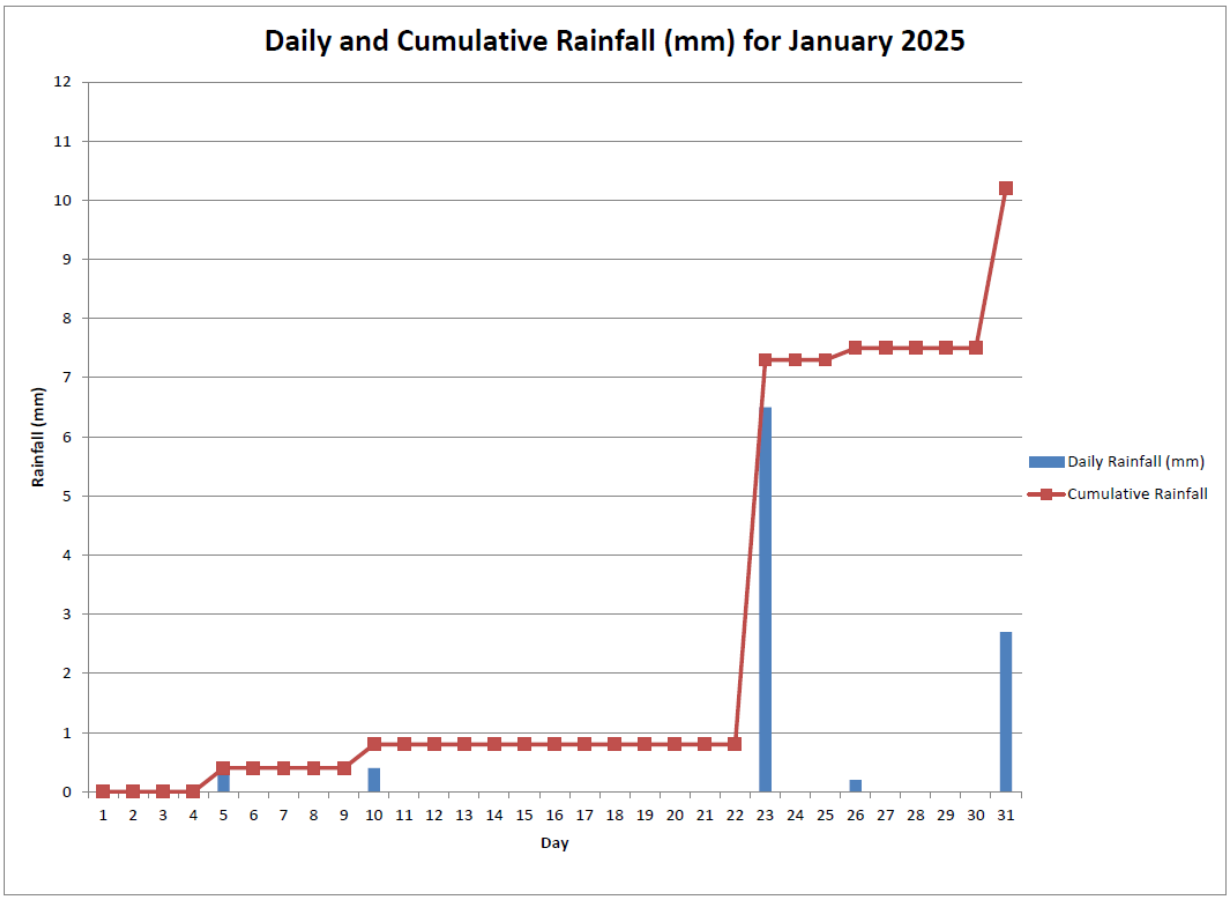



Hourly Average Pressure (hPa) for January 2025
Hourly Average Pressure (hPa)
1035
1030
1025
1020
1015
1010
1005
1000
Day and Time

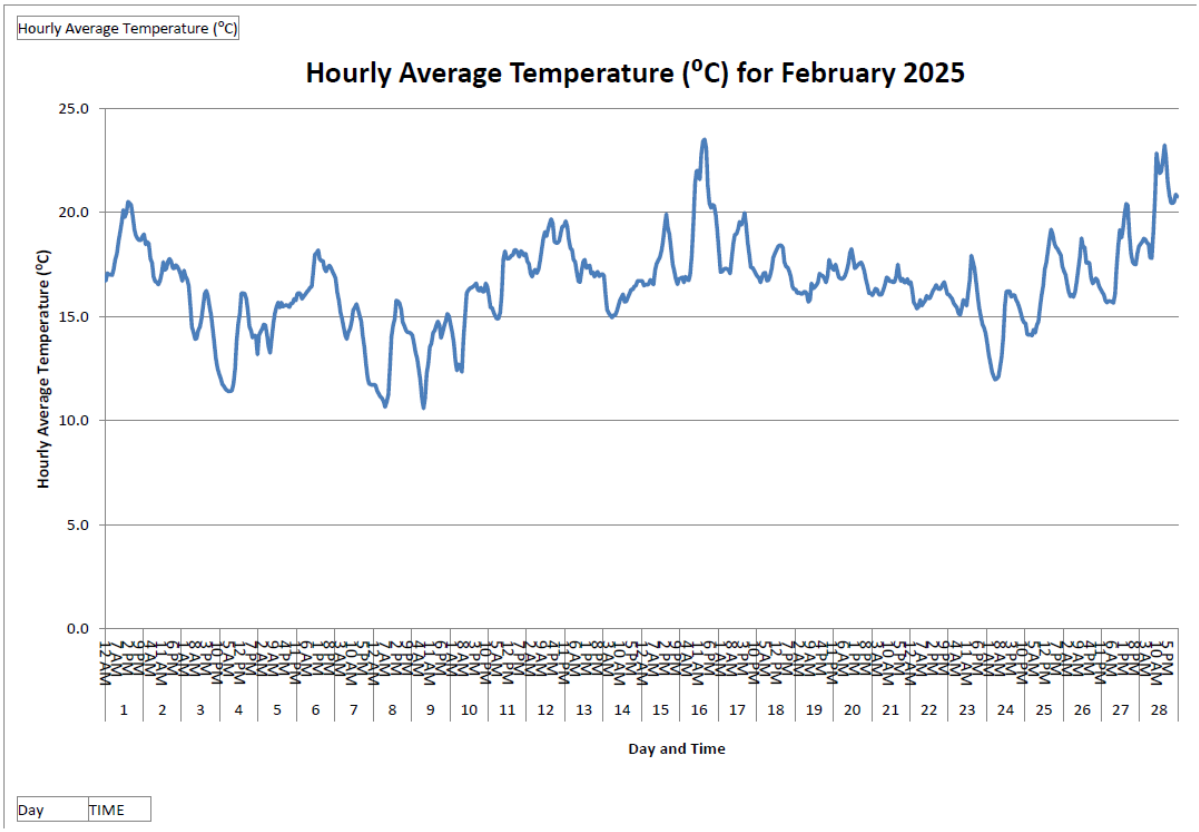

Hourly Average Wind Speed (m/s) for January 2025
Hourly Average Wind Speed (m/s)
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
Day and Time

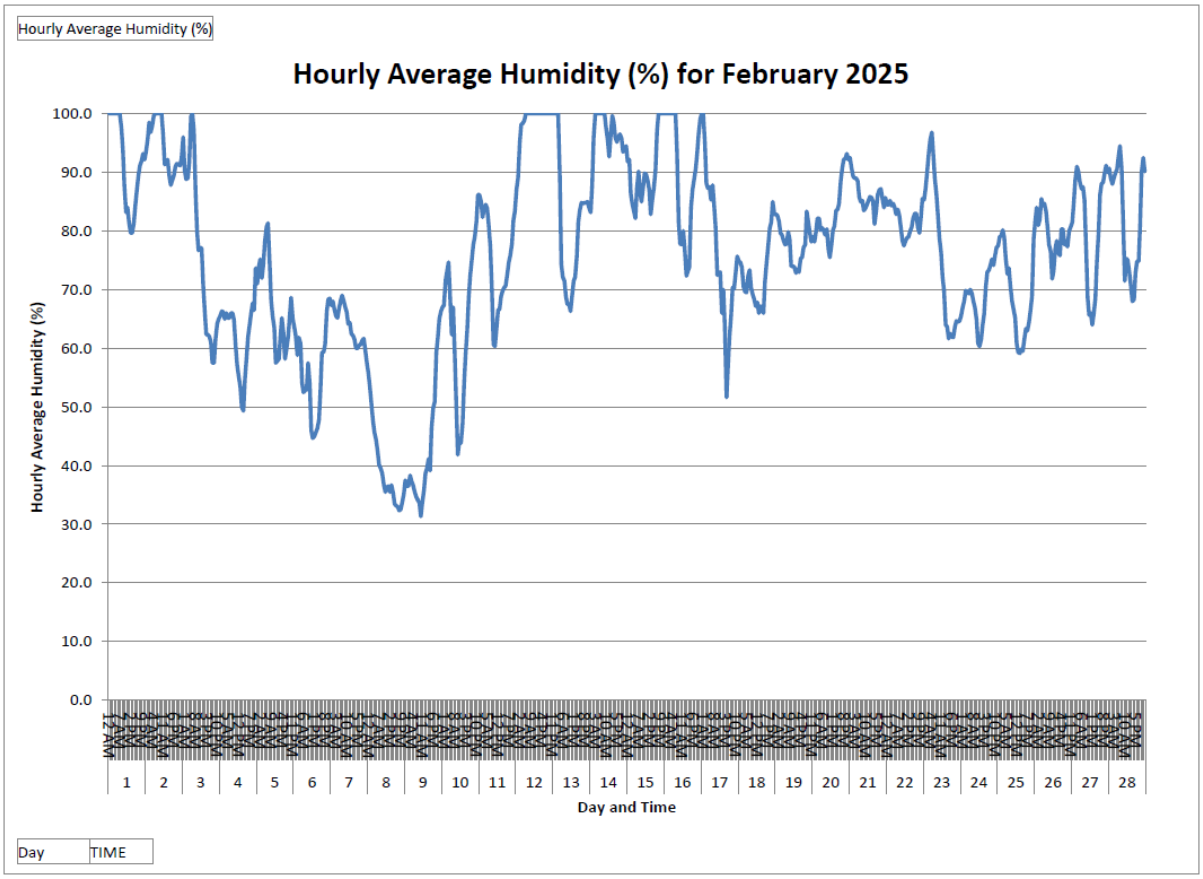

Hourly Average Wind Direction (degree) for January 2025
Hourly Average Wind Direction (degree)
360
315
270
225
180
135
90
45
0
Day and Time
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31

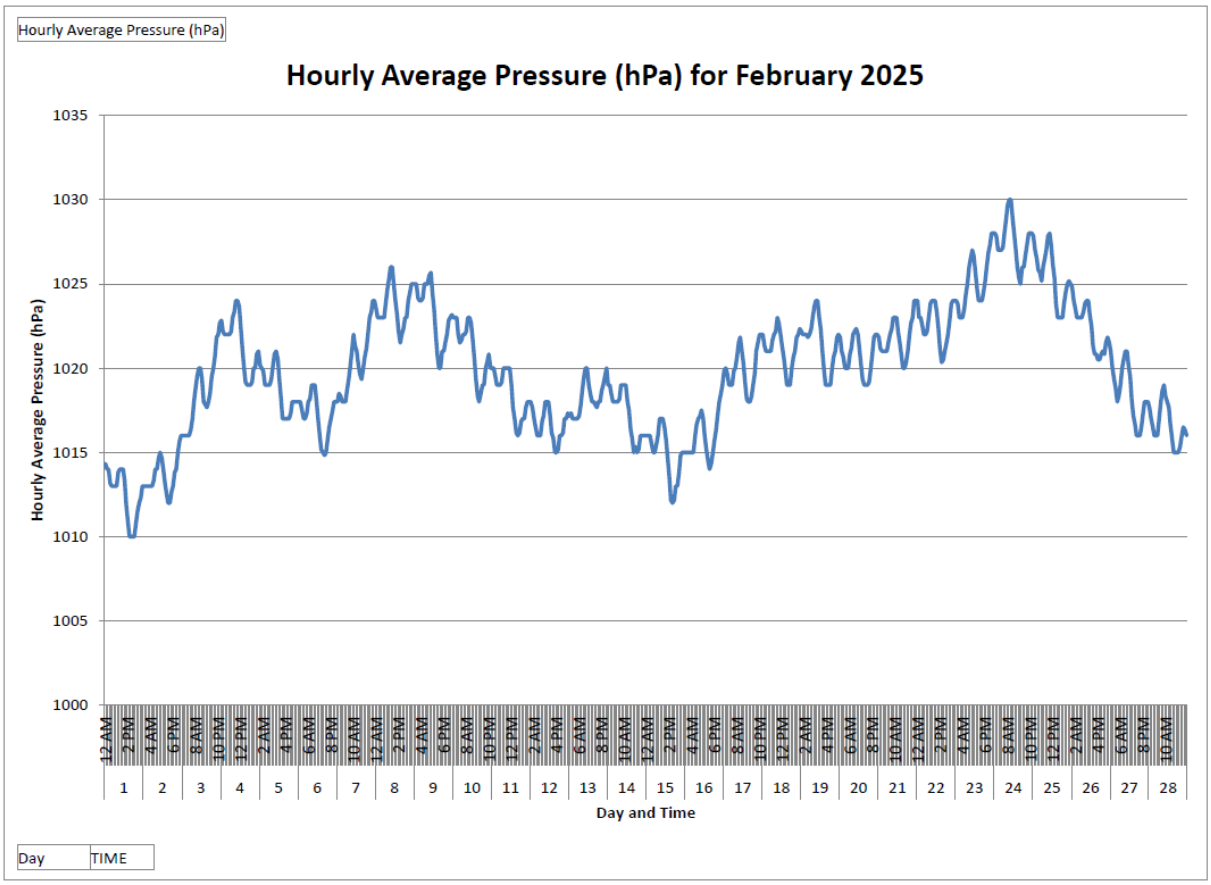

Wind Rose for January 2025
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
16.00%
14.00%
12.00%
10.00%
8.00%
6.00%
4.00%
2.00%
0.00%
<1.0
<2.0
<3.0
<4.0
<5.0
All

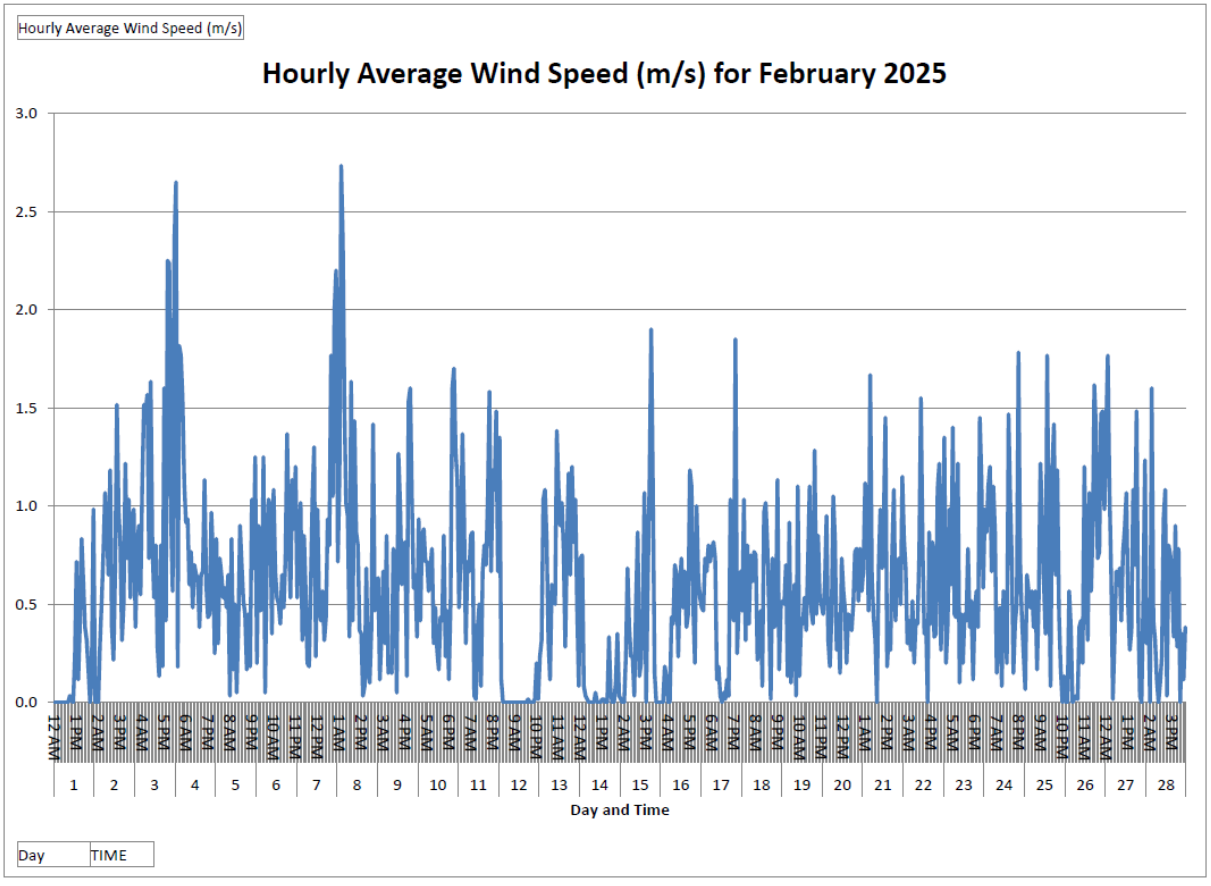

Daily and Cumulative Rainfall (mm) for January 2025
Rainfall (mm)
Day
Daily Rainfall (mm)
Cumulative Rainfall

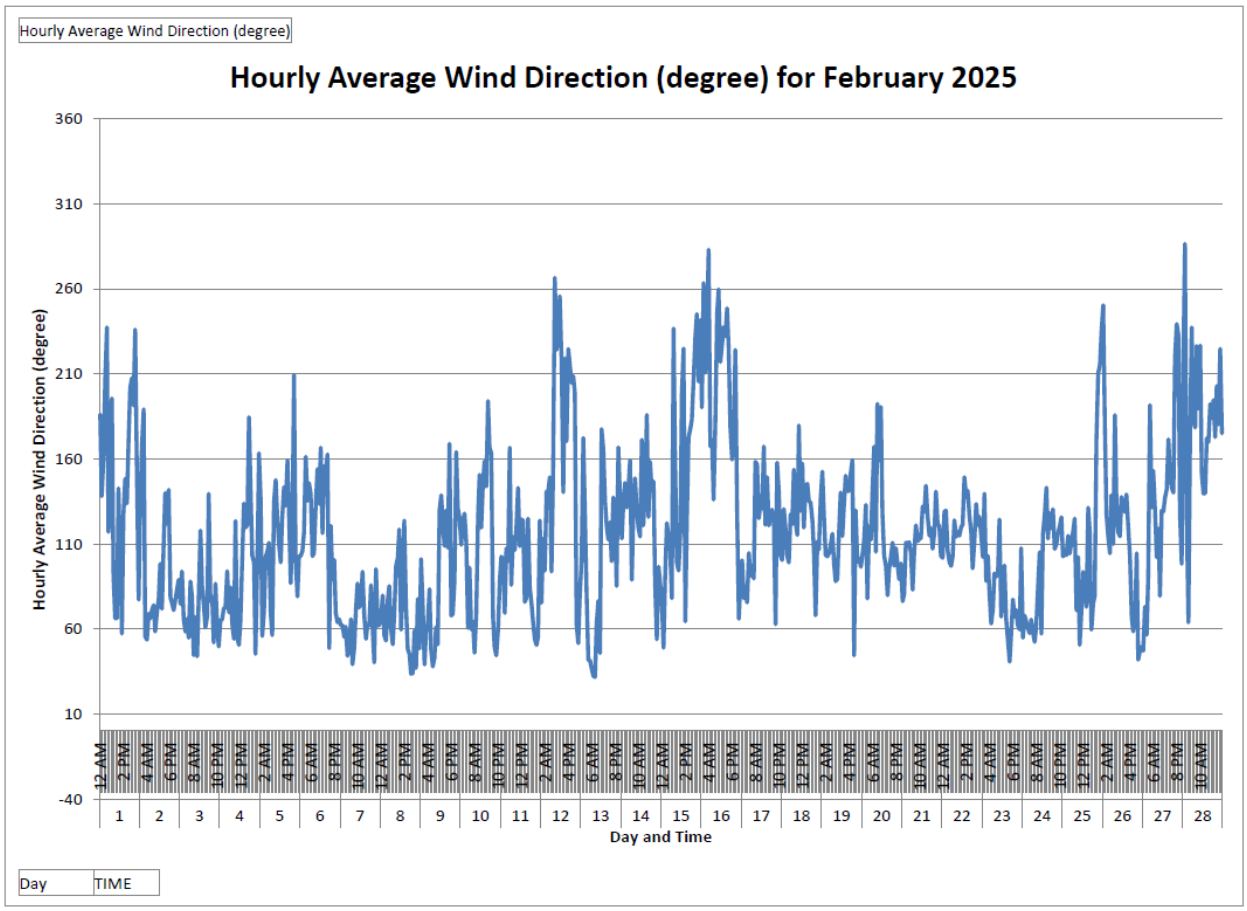
February 2025

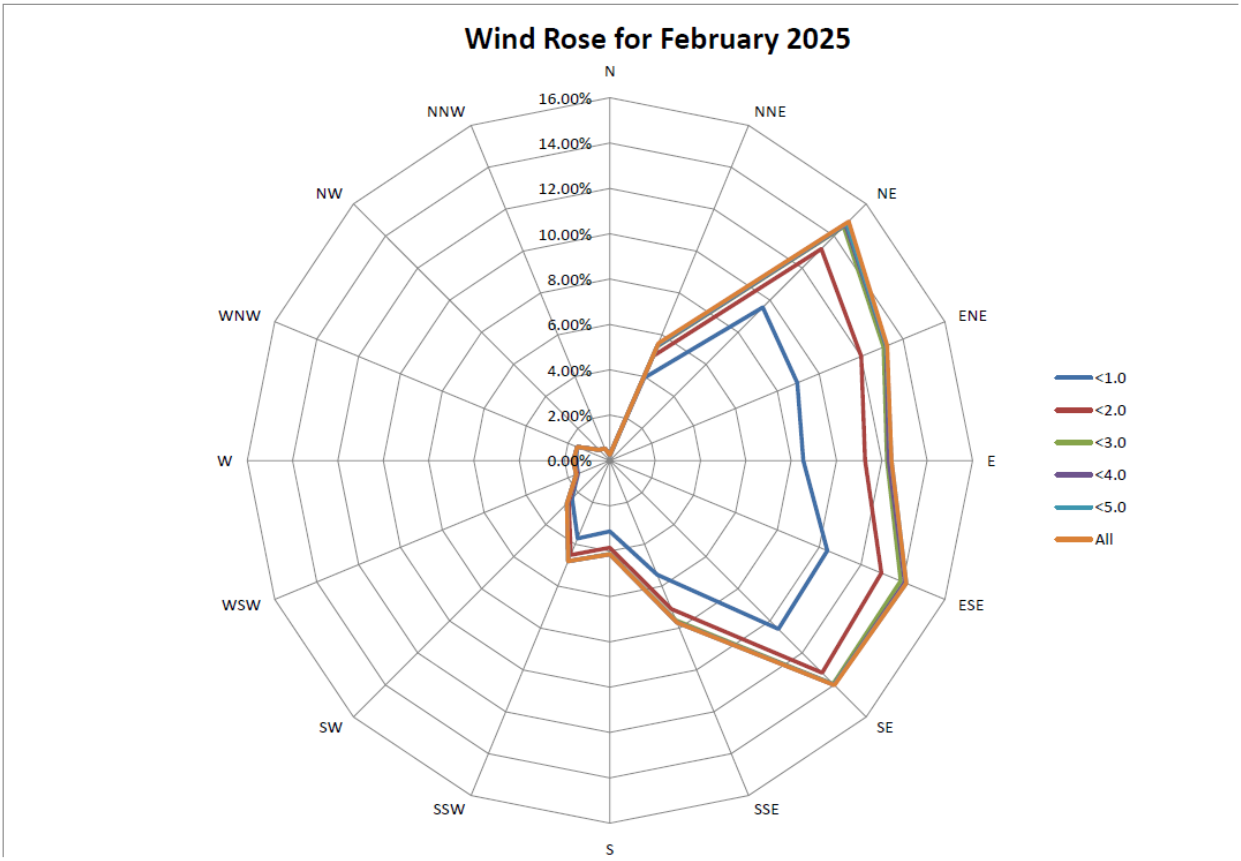


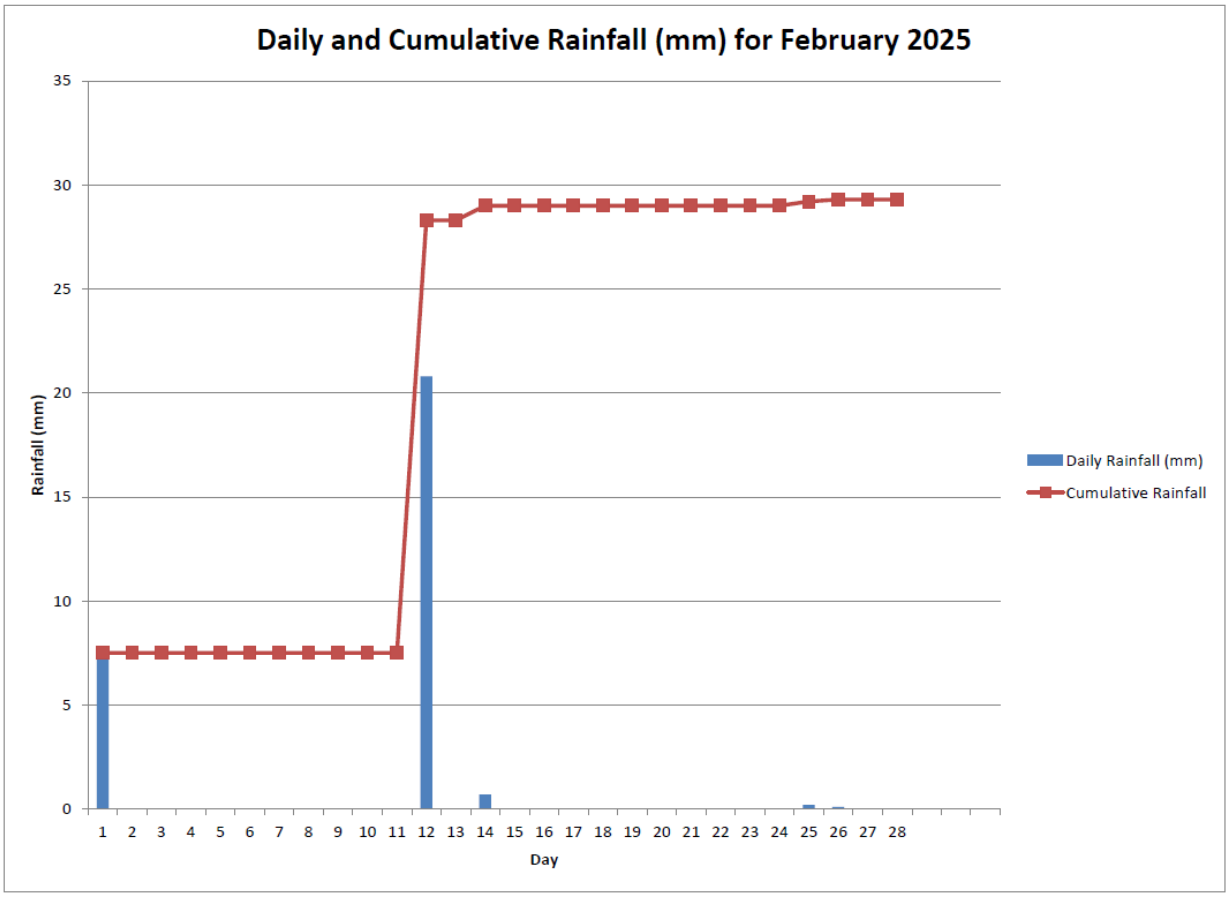



Hourly Average Pressure (hPa)
Hourly Average Pressure (hPa) for February 2025
Hourly Average Pressure (hPa)
1035
1030
1025
1020
1015
1010
1005
1000
Day and Time
Day
TIME

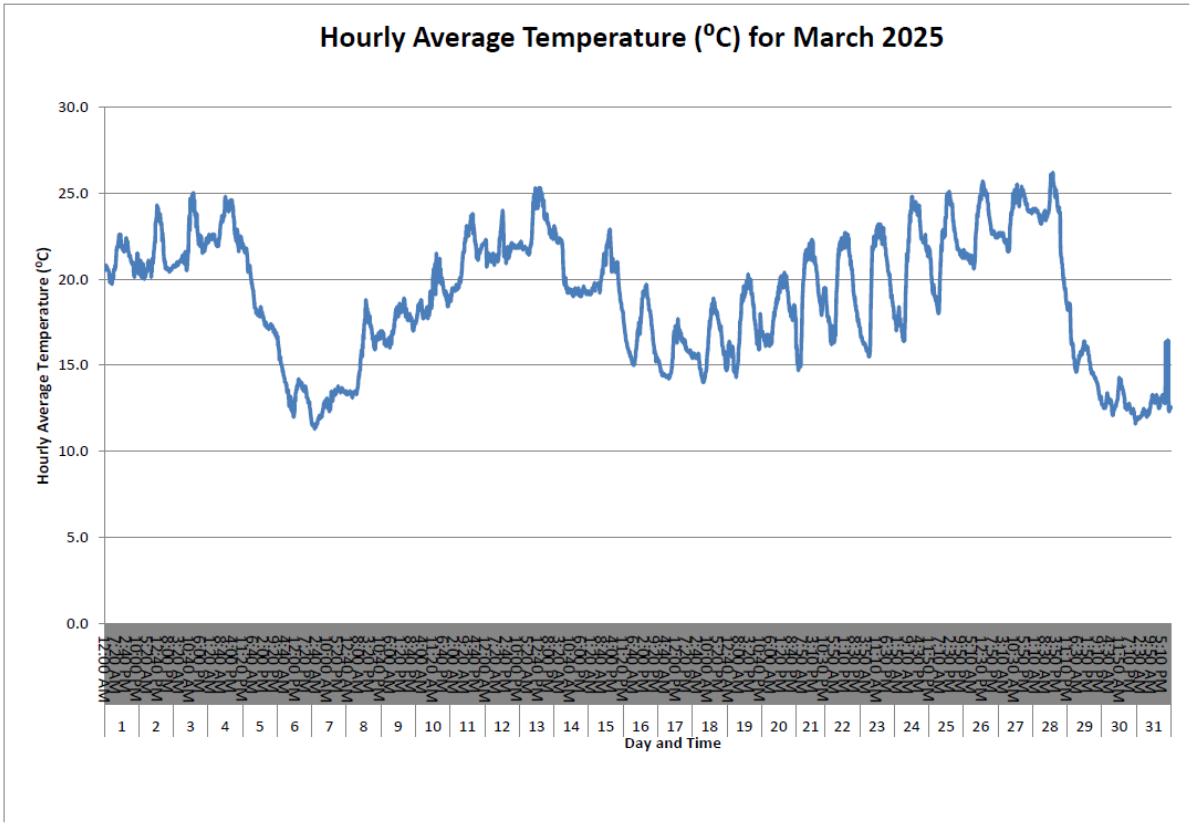

Hourly Average Wind Speed (m/s)
Hourly Average Wind Speed (m/s) for February 2025
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Day and Time
Day
TIME

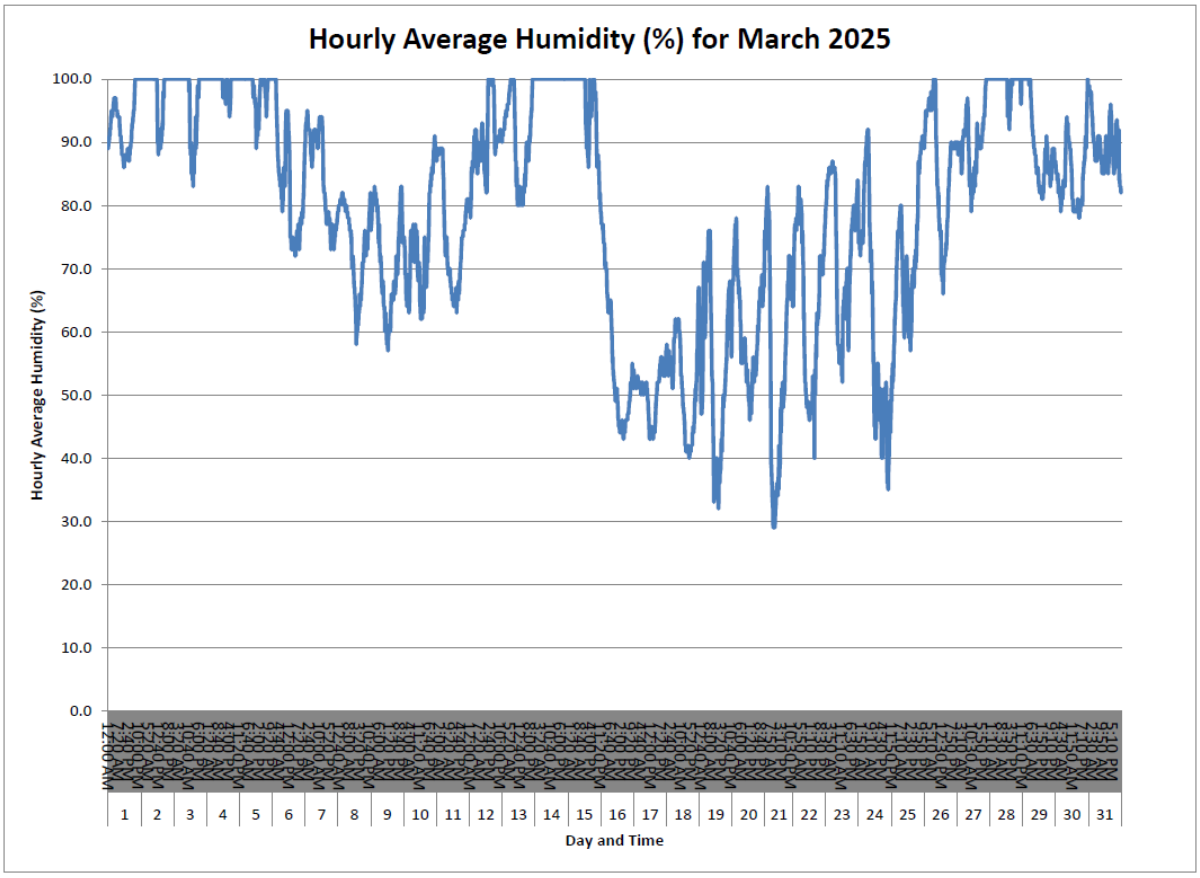

Hourly Average Wind Direction (degree)
Hourly Average Wind Direction (degree) for February 2025
Hourly Average Wind Direction (degree)
360
310
260
210
160
110
60
10
-40
12 AM 2 PM 4 AM 6 PM 8 AM 10 PM 12 PM 2 AM 4 PM 6 AM 8 PM 10 AM 12 AM 2 PM 4 AM 6 PM 8 AM 10 PM 12 PM 2 AM 4 PM 6 AM 8 PM 10 AM 12 AM 2 PM 4 AM 6 PM 8 AM 10 PM 12 PM 2 AM 4 PM 6 AM 8 PM 10 AM 12 AM 2 PM 4 AM 6 PM 8 AM 10 PM 12 PM 2 AM 4 PM 6 AM 8 PM 10 AM
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

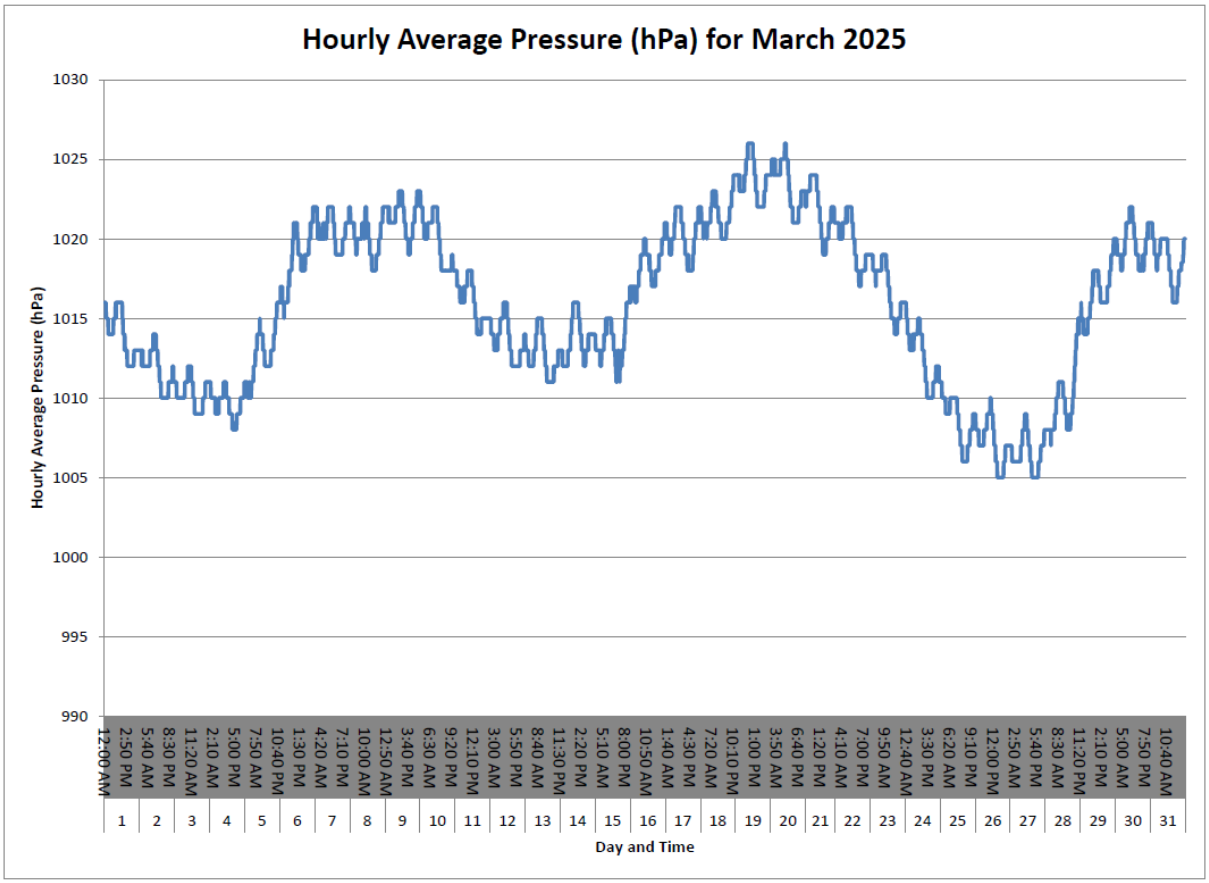

Wind Rose for February 2025
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
16.00%
14.00%
12.00%
10.00%
8.00%
6.00%
4.00%
2.00%
0.00%
<1.0
<2.0
<3.0
<4.0
<5.0
All

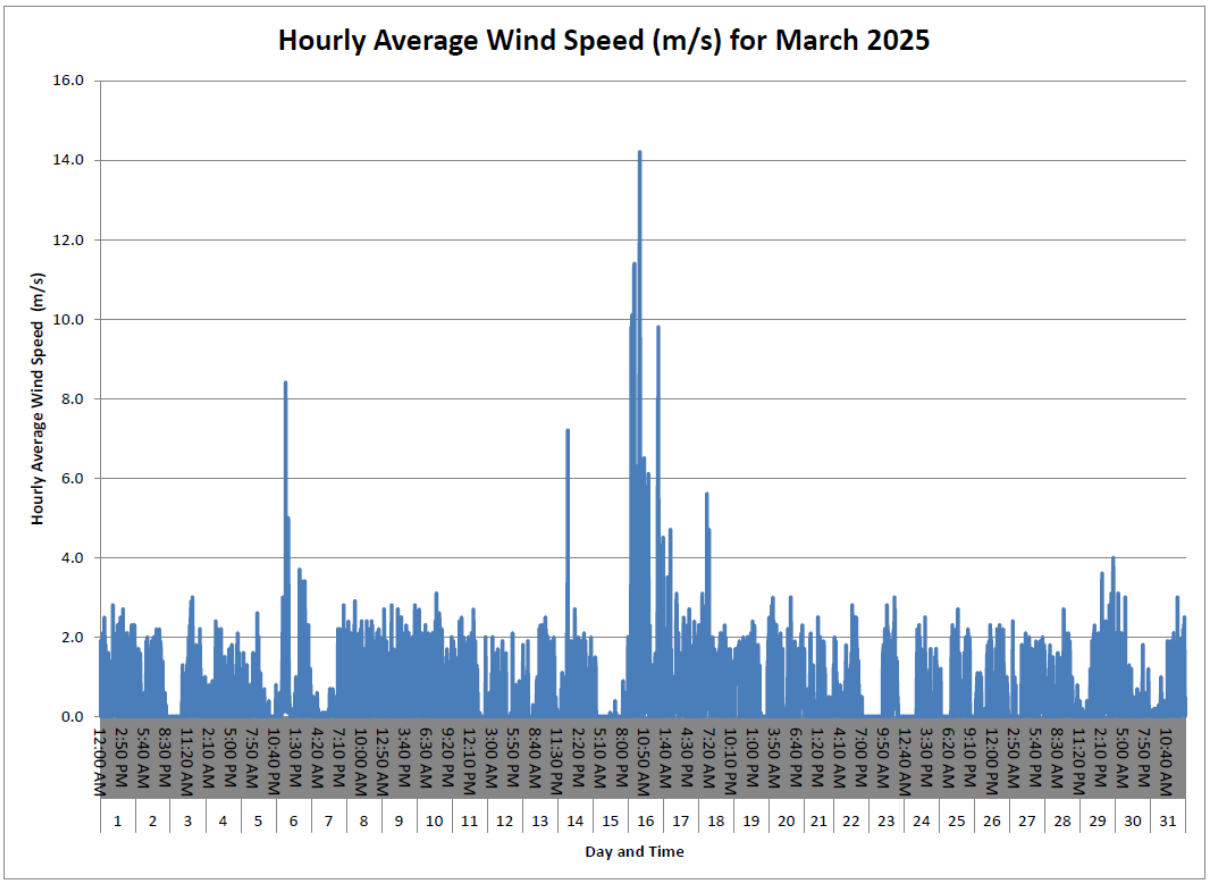

Daily and Cumulative Rainfall (mm) for February 2025
Rainfall (mm)
35
30
25
20
15
10
5
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28
Day
Daily Rainfall (mm)
Cumulative Rainfall

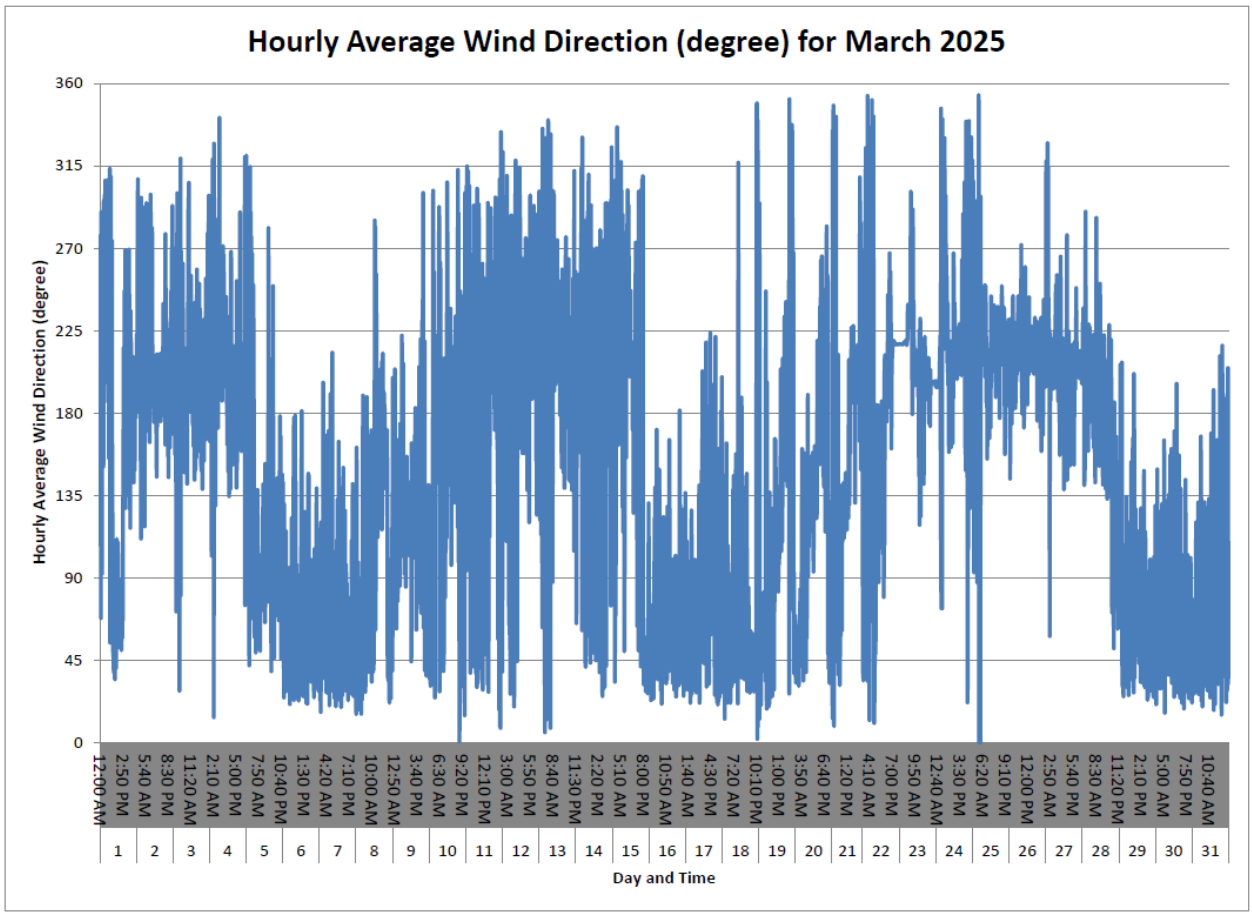
March 2025

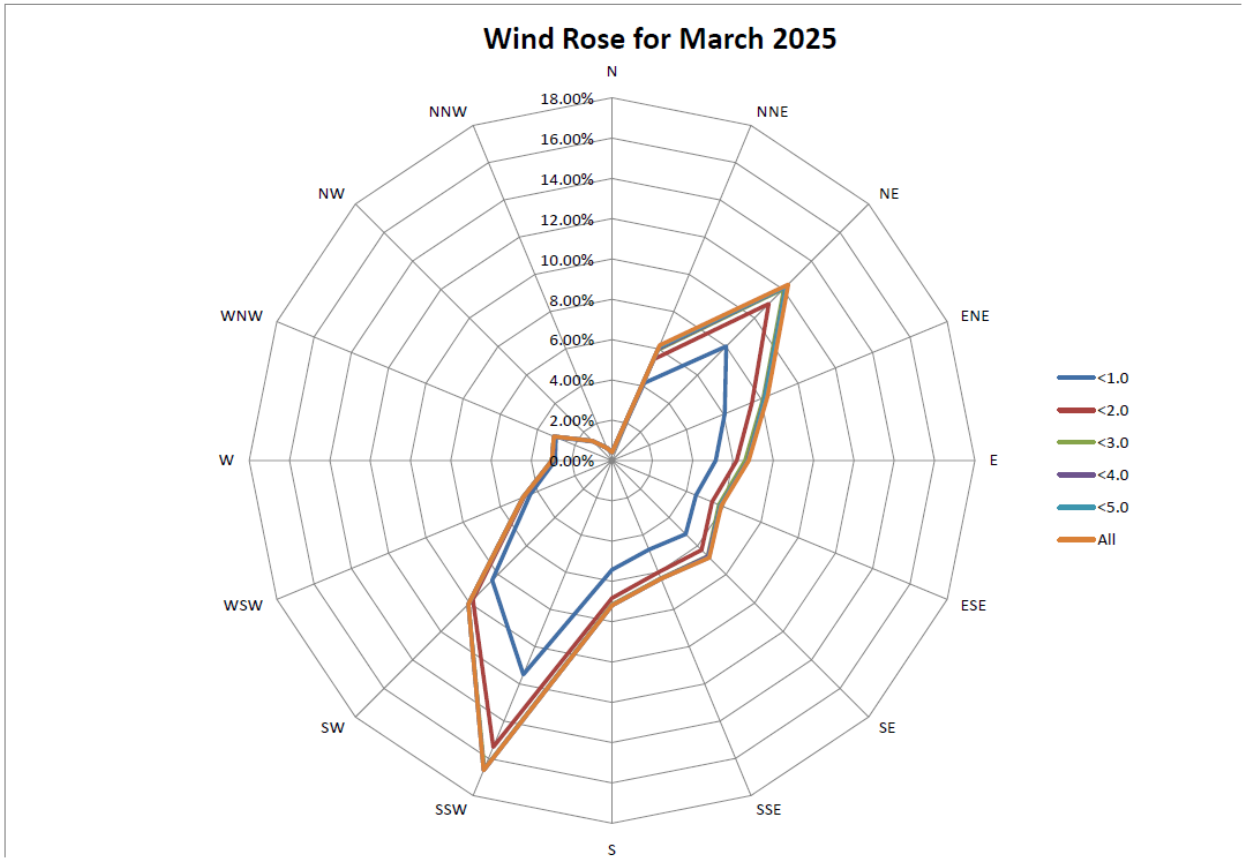

Hourly Average Temperature (°C) for March 2025
Hourly Average Temperature (°C)
30.0
25.0
20.0
15.0
10.0
5.0
0.0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Day and Time

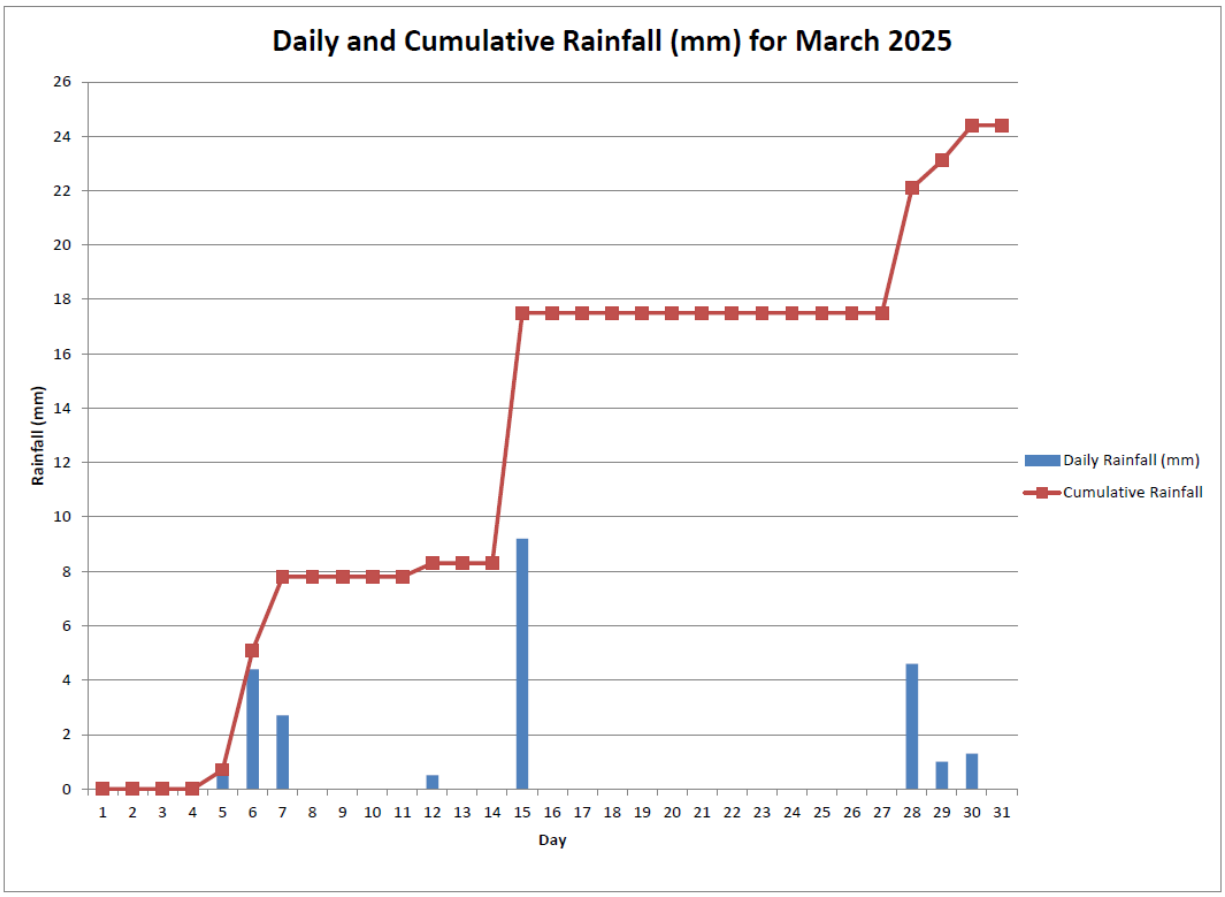

Hourly Average Humidity (%) for March 2025
Hourly Average Humidity (%)
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Day and Time


Hourly Average Pressure (hPa) for March 2025
Hourly Average Pressure (hPa)
1030
1025
1020
1015
1010
1005
1000
995
990
12:00 AM
2:50 PM
5:40 AM
8:30 PM
11:20 AM
2:10 AM
5:00 PM
7:50 AM
10:40 PM
1:30 PM
4:20 AM
7:10 PM
10:00 AM
12:50 AM
3:40 PM
6:30 AM
9:20 PM
12:10 PM
3:00 AM
5:50 PM
8:40 AM
11:30 PM
2:20 PM
5:10 AM
8:00 PM
10:50 AM
1:40 AM
4:30 PM
7:20 AM
10:10 PM
1:00 PM
3:50 AM
6:40 PM
1:20 PM
4:10 AM
7:00 PM
9:50 AM
12:40 AM
3:30 PM
6:20 AM
9:10 PM
12:00 PM
2:50 AM
5:40 PM
8:30 AM
11:20 PM
2:10 PM
5:00 AM
7:50 PM
10:40 AM
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


Hourly Average Wind Speed (m/s) for March 2025
Hourly Average Wind Speed (m/s)
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
12:00 AM
2:50 PM
5:40 AM
8:30 PM
11:20 AM
2:10 AM
5:00 PM
7:50 AM
10:40 PM
1:30 PM
4:20 AM
7:10 PM
10:00 AM
12:50 AM
3:40 PM
6:30 AM
9:20 PM
12:10 PM
3:00 AM
5:50 PM
8:40 AM
11:30 PM
2:20 PM
5:10 AM
8:00 PM
10:50 AM
1:40 AM
4:30 PM
7:20 AM
10:10 PM
1:00 PM
3:50 AM
6:40 PM
1:20 PM
4:10 AM
7:00 PM
9:50 AM
12:40 AM
3:30 PM
6:20 AM
9:10 PM
12:00 PM
2:50 AM
5:40 PM
8:30 AM
11:20 PM
2:10 PM
5:00 AM
7:50 PM
10:40 AM
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


Hourly Average Wind Direction (degree) for March 2025
Hourly Average Wind Direction (degree)
360
315
270
225
180
135
90
45
0
12:00 AM
2:50 PM
5:40 AM
8:30 PM
11:20 AM
2:10 AM
5:00 PM
7:50 AM
10:40 PM
1:30 PM
4:20 AM
7:10 PM
10:00 AM
12:50 AM
3:40 PM
6:30 AM
9:20 PM
12:10 PM
3:00 AM
5:50 PM
8:40 AM
11:30 PM
2:20 PM
5:10 AM
8:00 PM
10:50 AM
1:40 AM
4:30 PM
7:20 AM
10:10 PM
1:00 PM
3:50 AM
6:40 PM
1:20 PM
4:10 AM
7:00 PM
9:50 AM
12:40 AM
3:30 PM
6:20 AM
9:10 PM
12:00 PM
2:50 AM
5:40 PM
8:30 AM
11:20 PM
2:10 PM
5:00 AM
7:50 PM
10:40 AM
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


Wind Rose for March 2025
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 March 2025
Rainfall (mm)
Day
Daily Rainfall (mm)
Cumulative Rainfall

ANNEX D4 ODOUR MONITORING RESULTS

ANNEX D4 ODOUR MONITORING RESULTS

Date	Weather	Location	Time	Temperature (°C)	Wind Speed (m/s)	Wind Direction	From Project Site	Odour Intensity	Odour Characteristic	Possible Source	Remarks
17 Jan 25	Sunny	OP1	14:08	19.0	1.5	NE	Yes	0	N/A	N/A	N/A
17 Jan 25	Sunny	OP2	14:12	18.3	0.6	SE	No	0	N/A	N/A	N/A
17 Jan 25	Sunny	OP3	14:15	20.5	2.5	SE	No	0	N/A	N/A	N/A
17 Jan 25	Sunny	OP4	14:19	17.9	3.7	SE	No	0	N/A	N/A	N/A
17 Jan 25	Sunny	OP5	14:23	20.4	1.8	NE	Yes	0	N/A	N/A	N/A
17 Jan 25	Sunny	OP6	14:25	21.1	2.4	NE	Yes	0	N/A	N/A	N/A
17 Jan 25	Sunny	OP7	14:32	20.0	1.4	SE	No	0	N/A	N/A	N/A
17 Jan 25	Sunny	OP8	14:29	18.7	2.8	E	Yes	1	Leachate	X10 Channel	SENTx
17 Jan 25	Sunny	OP9	14:36	20.1	0.8	E	Yes	0	N/A	N/A	N/A
17 Jan 25	Sunny	OP10	14:39	21.6	0.3	E	Yes	1	Towngas	Towngas plant	N/A
17 Jan 25	Sunny	OP11	14:44	20.0	2.4	E	Yes	0	N/A	N/A	N/A
17 Jan 25	Sunny	OP12	14:51	17.1	3.2	E	Yes	0	N/A	N/A	N/A
17 Jan 25	Sunny	OP13	14:55	15.3	5.6	E	No	0	N/A	N/A	N/A
17 Jan 25	Sunny	OP14	14:58	18.7	3.3	E	No	0	N/A	N/A	N/A
17 Jan 25	Sunny	OP15	15:07	19.0	1.6	E	No	0	N/A	N/A	N/A
17 Jan 25	Sunny	OP16	15:12	18.0	1.3	E	No	0	N/A	N/A	N/A
17 Jan 25	Sunny	OP17	15:14	17.3	2.3	E	No	0	N/A	N/A	N/A

Date	Weather	Location	Time	Temperature (°C)	Wind Speed (m/s)	Wind Direction	From Project Site	Odour Intensity	Odour Characteristic	Possible Source	Remarks
21 Feb 25	Overcast	OP1	14:08	18.3	1.5	NE	Yes	0	N/A	N/A	N/A
21 Feb 25	Overcast	OP2	14:12	20.5	0.8	NE	Yes	0	N/A	N/A	N/A
21 Feb 25	Overcast	OP3	14:15	18.9	0.9	E	No	0	N/A	N/A	N/A
21 Feb 25	Overcast	OP4	14:19	19.6	0	N/A	N/A	0	N/A	N/A	N/A
21 Feb 25	Overcast	OP5	14:23	18.2	0.9	SE	No	0	N/A	N/A	N/A
21 Feb 25	Overcast	OP6	14:25	17.8	0	N/A	N/A	0	N/A	N/A	N/A
21 Feb 25	Overcast	OP7	14:32	18.2	1.1	NE	Yes	0	N/A	N/A	N/A
21 Feb 25	Overcast	OP8	14:29	17.6	1.7	NE	Yes	0	N/A	N/A	N/A
21 Feb 25	Overcast	OP9	14:36	18.2	0.5	E	Yes	0	N/A	N/A	N/A
21 Feb 25	Overcast	OP10	14:39	18.0	0.8	E	Yes	0	N/A	N/A	N/A
21 Feb 25	Overcast	OP11	14:44	17.2	2.0	E	Yes	0	N/A	N/A	N/A
21 Feb 25	Overcast	OP12	14:51	16.4	3.0	E	No	0	N/A	N/A	N/A
21 Feb 25	Overcast	OP13	14:55	16.7	3.7	E	No	0	N/A	N/A	N/A
21 Feb 25	Overcast	OP14	14:58	16.6	3.0	NE	No	0	N/A	N/A	N/A
21 Feb 25	Overcast	OP15	15:07	18.4	0.8	NE	Yes	0	N/A	N/A	N/A
21 Feb 25	Overcast	OP16	15:12	18.2	2.3	NE	Yes	0	N/A	N/A	N/A
21 Feb 25	Overcast	OP17	15:14	18.3	1.7	NE	Yes	0	N/A	N/A	N/A
6 Mar 25	Overcast	OP1	14:08	14.3	1.3	NW	Yes	0	N/A	N/A	N/A

Date	Weather	Location	Time	Temperature (°C)	Wind Speed (m/s)	Wind Direction	From Project Site	Odour Intensity	Odour Characteristic	Possible Source	Remarks
6 Mar 25	Overcast	OP2	14:12	14.2	1.9	NW	Yes	0	N/A	N/A	N/A
6 Mar 25	Overcast	OP3	14:14	14.5	0.5	NW	Yes	0	N/A	N/A	N/A
6 Mar 25	Overcast	OP4	14:16	15.1	0.7	NW	Yes	1	Leachate	Leachate Plant (LTP)	N/A
6 Mar 25	Overcast	OP5	14:19	14.5	2.4	NW	Yes	0	N/A	N/A	N/A
6 Mar 25	Overcast	OP6	14:21	14.6	1.4	NW	Yes	0	N/A	N/A	N/A
6 Mar 25	Overcast	OP7	14:24	14.4	1.5	NW	Yes	0	N/A	N/A	N/A
6 Mar 25	Overcast	OP8	14:26	14.3	3.4	NW	Yes	0	N/A	N/A	N/A
6 Mar 25	Overcast	OP9	14:32	15.7	1.4	NW	No	0	N/A	N/A	N/A
6 Mar 25	Overcast	OP10	14:35	15.4	0.8	NW	No	0	N/A	N/A	N/A
6 Mar 25	Overcast	OP11	14:39	14.8	2.1	NW	No	0	N/A	N/A	N/A
6 Mar 25	Overcast	OP12	14:55	13.8	6.3	NW	No	0	N/A	N/A	N/A
6 Mar 25	Overcast	OP13	15:00	13.2	7.9	NW	No	0	N/A	N/A	N/A
6 Mar 25	Overcast	OP14	14:57	13.3	7.7	NW	No	0	N/A	N/A	N/A
6 Mar 25	Overcast	OP15 [(a)]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
6 Mar 25	Overcast	OP16 [(a)]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
6 Mar 25	Overcast	OP17	15:09	14.8	3.4	NE	Yes	0	N/A	N/A	N/A

Note:
(a) OP15 – OP16 are not accessible due to safety considerations (after heavy rainstorm).

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 2025)**
NO_2	1.56 gs^{-1}
CO	0.02 gs^{-1}
SO_2	<0.01 gs^{-1}
Benzene	<2.0 x 10^{-4} gs^{-1}
Vinyl chloride	<1.5 x 10^{-4} gs^{-1}
Exhaust gas velocity	8.2 ms^{-1}
Parameters	**Monitoring Results (February 2025)**
NO_2	1.59 gs^{-1}
CO	0.03 gs^{-1}
SO_2	<0.01 gs^{-1}
Benzene	0.0018 gs^{-1}
Vinyl chloride	<1.5 x 10^{-4} gs^{-1}
Non-Methane Organic Carbons	0.004 gs^{-1}
Ammonia	0.0945 gs^{-1}
Exhaust gas velocity	11.0 ms^{-1}
Parameters	**Monitoring Results (March 2025)**
NO_2	1.23 gs^{-1}
CO	0.02 gs^{-1}
SO_2	<0.01 gs^{-1}
Benzene	<2.0 x 10^{-4} gs^{-1}
Vinyl chloride	<1.2 x 10^{-4} gs^{-1}
Exhaust gas velocity	9.3 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)
1 Jan 25	898	1200	8.2
2 Jan 25	901	1198	
3 Jan 25	899	1194	
4 Jan 25	900	1194	
5 Jan 25	902	1198	
6 Jan 25	900	1194	
7 Jan 25	902	1195	
8 Jan 25	901	1195	
9 Jan 25	897	1192	
10 Jan 25	897	1189	
11 Jan 25	900	1189	
12 Jan 25	899	1189	
13 Jan 25	898	1200	
14 Jan 25	901	1202	
15 Jan 25	899	1201	
16 Jan 25	901	1199	
17 Jan 25	900	1198	
18 Jan 25	900	1197	
19 Jan 25	899	1200	
20 Jan 25	901	1199	
29 Oct 24	900	922	
21 Jan 25	897	1198	
22 Jan 25	Under Maintenance		
23 Jan 25	900	1198	
24 Jan 25	898	1200	
25 Jan 25	907	1201	
26 Jan 25	902	1200	
27 Jan 25	902	1189	
28 Jan 25	898	1195	
29 Jan 25	901	1195	
30 Jan 25	Under Maintenance		
31 Jan 25	Under Maintenance		
1 Feb 25	902	1161	
2 Feb 25	901	1136	
3 Feb 25	897	1139	
4 Feb 25	901	1157	

Date	Gas Combustion Temperature (°C)	Exhaust Temperature (K)	Exhaust Gas Velocity (ms^{-1}) (a)
5 Feb 25	900	1195	
6 Feb 25	901	1200	
7 Feb 25	900	1203	
8 Feb 25	897	1196	
9 Feb 25	901	1199	
10 Feb 25	898	1197	
11 Feb 25	895	1197	
12 Feb 25	901	1201	
13 Feb 25	900	1189	
14 Feb 25	898	1139	
15 Feb 25	Under Maintenance		11.0
16 Feb 25	Under Maintenance		
17 Feb 25	Under Maintenance		
18 Feb 25	Under Maintenance		
19 Feb 25	Under Maintenance		
20 Feb 25	Under Maintenance		
21 Feb 25	Under Maintenance		
22 Feb 25	Under Maintenance		
23 Feb 25	Under Maintenance		
24 Feb 25	905	1181	
25 Feb 25	899	1193	
26 Feb 25	902	1198	
27 Feb 25	899	1192	
28 Feb 25	898	1200	
1 Mar 25	901	1196	
2 Mar 25	898	1194	
3 Mar 25	906	1177	
4 Mar 25	899	1207	
5 Mar 25	906	1194	
6 Mar 25	902	1183	
7 Mar 25	897	1184	
8 Mar 25	896	1177	
9 Mar 25	901	1189	
10 Mar 25	897	1191	
11 Mar 25	901	1196	
12 Mar 25	900	1202	

Date	Gas Combustion Temperature (°C)	Exhaust Temperature (K)	Exhaust Gas Velocity (ms^{-1}) (a)
13 Mar 25	902	1199	9.3
14 Mar 25	902	1195	
15 Mar 25	904	1183	
16 Mar 25	904	1184	
17 Mar 25	901	1186	
18 Mar 25	904	1200	
19 Mar 25	901	1201	
20 Mar 25	900	1199	
21 Mar 25	899	1198	
22 Mar 25	901	1199	
23 Mar 25	901	1202	
24 Mar 25	904	1192	
25 Mar 25	902	1206	
26 Mar 25	904	1206	
27 Mar 25	900	1193	
28 Mar 25	901	1202	
29 Mar 25	902	1176	
30 Mar 25	902	1198	
31 Mar 25	Under Maintenance		
Average	900	1192	9.5
Min	895	1136	8.2
Max	907	1207	11.0

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 D5.3 LANDFILL GAS FLARE STACK EMISSION MONITORING RESULTS

Parameters	**Monitoring Results (January 2025)**
	Flare 1 – F601
NO_2	0.03 gs^{-1}
CO	0.02 gs^{-1}
SO_2	0.05 gs^{-1}
Benzene	1.4 x 10^{-4} gs^{-1}
Vinyl chloride	1.12 x 10^{-4} gs^{-1}
Exhaust gas velocity	8.0 ms^{-1}
Parameters	**Monitoring Results (February 2025)**
	Flare 1 – F601
NO_2	0.02 gs^{-1}
CO	<0.01 gs^{-1}
SO_2	<0.01 gs^{-1}
Benzene	2.065 x 10^{-3} gs^{-1}
Vinyl chloride	<1.13 x 10^{-4} gs^{-1}
Non-Methane Organic Carbons	0.004 gs^{-1}
Exhaust gas velocity	7.9 ms^{-1}
Parameters	**Monitoring Results (March 2025)**
	Flare 1 – F601
NO_2	0.02 gs^{-1}
CO	<0.01 gs^{-1}
SO_2	0.01 gs^{-1}
Benzene	<1.42 x 10^{-4} gs^{-1}
Vinyl chloride	<1.14 x 10^{-4} gs^{-1}
Exhaust gas velocity	8.2 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				
1 Jan 25	820	1113		In Operation
2 Jan 25	880	1193		In Operation
3 Jan 25	820	1123		In Operation
4 Jan 25	825	1123		In Operation
5 Jan 25	825	1123		In Operation
6 Jan 25	820	1133		In Operation
7 Jan 25	820	1113		In Operation
8 Jan 25	830	1143		In Operation
9 Jan 25	830	1143		In Operation
10 Jan 25	820	1123		In Operation
11 Jan 25	820	1153		In Operation
12 Jan 25	830	1163		In Operation
13 Jan 25	820	1143		In Operation
14 Jan 25	820	1113		In Operation
15 Jan 25	840	1143		In Operation
16 Jan 25	925	1123	8.0	In Operation
17 Jan 25	840	1153		In Operation
18 Jan 25	830	1163		In Operation
19 Jan 25	850	1163		In Operation
20 Jan 25	870	1183		In Operation
21 Jan 25	860	1183		In Operation
22 Jan 25	830	1143		In Operation
23 Jan 25	830	1133		In Operation
24 Jan 25	820	1163		In Operation
25 Jan 25	820	1153		In Operation
26 Jan 25	820	1123		In Operation
27 Jan 25	840	1143		In Operation
28 Jan 25	830	1133		In Operation
29 Jan 25	890	1193		In Operation
30 Jan 25	840	1163		In Operation
31 Jan 25	880	1183		In Operation
1 Feb 25	874	1118		In Operation
2 Feb 25	930	1128		In Operation
3 Feb 25	884	1118		In Operation
4 Feb 25	894	1106		In Operation

Date	Gas Combustion Temperature (°C)	Exhaust Temperature (K)	Exhaust Gas Velocity (ms^{-1}) (a)	Operation Status
5 Feb 25	895	1127		In Operation
6 Feb 25	915	1146		In Operation
7 Feb 25	915	1136		In Operation
8 Feb 25	873	1108		In Operation
9 Feb 25	865	1106		In Operation
10 Feb 25	895	1097		In Operation
11 Feb 25	885	1097		In Operation
12 Feb 25	855	1096		In Operation
13 Feb 25	874	1117		In Operation
14 Feb 25	865	1106	7.9	In Operation
15 Feb 25	845	1096		In Operation
16 Feb 25	923	1158		In Operation
17 Feb 25	855	1096		In Operation
18 Feb 25	855	1101		In Operation
19 Feb 25	854	1101		In Operation
20 Feb 25	863	1097		In Operation
21 Feb 25	843	1097		In Operation
22 Feb 25	875	1107		In Operation
23 Feb 25	873	1106		In Operation
24 Feb 25	855	1096		In Operation
25 Feb 25	884	1096		In Operation
26 Feb 25	895	1108		In Operation
27 Feb 25	874	1097		In Operation
28 Feb 25	843	1098		In Operation
1 Mar 25	915	1128		In Operation
2 Mar 25	904	1110		In Operation
3 Mar 25	893	1116		In Operation
4 Mar 25	870	1133		In Operation
5 Mar 25	874	1117		In Operation
6 Mar 25	896	1132		In Operation
7 Mar 25	879	1125		In Operation
8 Mar 25	902	1110		In Operation
9 Mar 25	893	1118		In Operation
10 Mar 25	913	1112		In Operation
11 Mar 25	872	1106		In Operation
12 Mar 25	913	1103		In Operation
13 Mar 25	920	1112		In Operation

Date	Gas Combustion Temperature (°C)	Exhaust Temperature (K)	Exhaust Gas Velocity (ms^{-1}) (a)	Operation Status
14 Mar 25	889	1124	8.2	In Operation
15 Mar 25	881	1125		In Operation
16 Mar 25	910	1125		In Operation
17 Mar 25	911	1127		In Operation
18 Mar 25	907	1120		In Operation
19 Mar 25	875	1109		In Operation
20 Mar 25	889	1131		In Operation
21 Mar 25	904	1132		In Operation
22 Mar 25	897	1111		In Operation
23 Mar 25	877	1130		In Operation
24 Mar 25	907	1107		In Operation
25 Mar 25	879	1132		In Operation
26 Mar 25	877	1120		In Operation
27 Mar 25	874	1125		In Operation
28 Mar 25	872	1122		In Operation
29 Mar 25	915	1133		In Operation
30 Mar 25	918	1125		In Operation
31 Mar 25	917	1105		In Operation
Average	870	1126	8.0	
Min	820	1096	7.9	
Max	930	1193	8.2	
Flare 2 – F602				
1 Jan 25	824	1163		In Operation
2 Jan 25	820	1163		In Operation
3 Jan 25	830	1173		In Operation
4 Jan 25	820	1133		In Operation
5 Jan 25	830	1153		In Operation
6 Jan 25	870	1183		In Operation
7 Jan 25	830	1173		In Operation
8 Jan 25	860	1183		In Operation
9 Jan 25	870	1193		In Operation
10 Jan 25	870	1173		In Operation
11 Jan 25	870	1193		In Operation
12 Jan 25	880	1193		In Operation
13 Jan 25	850	1183		In Operation
14 Jan 25	820	1163		In Operation
15 Jan 25	820	1133	8.0	In Operation

Date	Gas Combustion Temperature (°C)	Exhaust Temperature (K)	Exhaust Gas Velocity (ms^{-1}) [a]	Operation Status
16 Jan 25	850	1163		In Operation
17 Jan 25	840	1163		In Operation
18 Jan 25	820	1153		In Operation
19 Jan 25	820	1163		In Operation
20 Jan 25	820	1143		In Operation
21 Jan 25	820	1153		In Operation
22 Jan 25	850	1183		In Operation
23 Jan 25	840	1173		In Operation
24 Jan 25	820	1173		In Operation
25 Jan 25	840	1153		In Operation
26 Jan 25	830	1173		In Operation
27 Jan 25	820	1163		In Operation
28 Jan 25	830	1143		In Operation
29 Jan 25	840	1153		In Operation
30 Jan 25	820	1142		In Operation
31 Jan 25	850	1173		In Operation
1 Feb 25	863	1098		In Operation
2 Feb 25	893	1128		In Operation
3 Feb 25	893	1116		In Operation
4 Feb 25	883	1098		In Operation
5 Feb 25	894	1098		In Operation
6 Feb 25	874	1097		In Operation
7 Feb 25	885	1098		In Operation
8 Feb 25	914	1126		In Operation
9 Feb 25	905	1118		In Operation
10 Feb 25	903	1098		In Operation
11 Feb 25	884	1118		In Operation
12 Feb 25	903	1108		In Operation
13 Feb 25	895	1098		In Operation
14 Feb 25	874	1108		In Operation
15 Feb 25	894	1101		In Operation
16 Feb 25	894	1096		In Operation
17 Feb 25	903	1108		In Operation
18 Feb 25	863	1097		In Operation
19 Feb 25	885	1107		In Operation
20 Feb 25	914	1146		In Operation
21 Feb 25	905	1108	7.9	In Operation

Date	Gas Combustion Temperature (°C)	Exhaust Temperature (K)	Exhaust Gas Velocity (ms^{-1}) [a]	Operation Status
22 Feb 25	913	1136		In Operation
23 Feb 25	925	1148		In Operation
24 Feb 25	903	1147		In Operation
25 Feb 25	923	1147		In Operation
26 Feb 25	923	1156		In Operation
27 Feb 25	915	1128		In Operation
28 Feb 25	893	1097		In Operation
1 Mar 25	893	1120		In Operation
2 Mar 25	912	1120		In Operation
3 Mar 25	917	1119		In Operation
4 Mar 25	914	1134		In Operation
5 Mar 25	924	1130		In Operation
6 Mar 25	888	1143		In Operation
7 Mar 25	886	1138		In Operation
8 Mar 25	908	1113		In Operation
9 Mar 25	925	1132		In Operation
10 Mar 25	889	1133		In Operation
11 Mar 25	915	1127		In Operation
12 Mar 25	889	1120		In Operation
13 Mar 25	887	1130		In Operation
14 Mar 25	888	1138	8.2	In Operation
15 Mar 25	930	1114		In Operation
16 Mar 25	906	1127		In Operation
17 Mar 25	903	1138		In Operation
18 Mar 25	912	1132		In Operation
19 Mar 25	895	1141		In Operation
20 Mar 25	911	1129		In Operation
21 Mar 25	883	1114		In Operation
22 Mar 25	921	1139		In Operation
23 Mar 25	899	1127		In Operation
24 Mar 25	905	1136		In Operation
25 Mar 25	911	1124		In Operation
26 Mar 25	928	1114		In Operation
27 Mar 25	922	1116		In Operation
28 Mar 25	889	1136		In Operation
29 Mar 25	924	1137		In Operation
30 Mar 25	927	1122		In Operation

Date	Gas Combustion Temperature (°C)	Exhaust Temperature (K)	Exhaust Gas Velocity (ms^{-1}) (a)	Operation Status
31 Mar 25	922	1140		In Operation
Average	880	1137	8.0	
Min	820	1096	7.9	
Max	930	1193	8.2	

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 2025)**
NO_2	0.106 gs^{-1}
CO	1.02 gs^{-1}
SO_2	<0.001 gs^{-1}
Benzene	9.2 x 10^{-5} gs^{-1}
Vinyl chloride	<1.02 x 10^{-5} gs^{-1}
Exhaust gas velocity	10.0 ms^{-1}
Parameters	**Monitoring Results (February 2025)**
NO_2	0.079 gs^{-1}
CO	1.085 gs^{-1}
SO_2	<0.001 gs^{-1}
Benzene	1.50 x 10^{-4} gs^{-1}
Vinyl chloride	<1.0 x 10^{-5} gs^{-1}
Non-Methane Organic Carbons	0.0048 gs^{-1}
Exhaust gas velocity	10.3 ms^{-1}
Parameters	**Monitoring Results (March 2025)**
NO_2	0.103 gs^{-1}
CO	1.014 gs^{-1}
SO_2	0.002 gs^{-1}
Benzene	7.9 x 10^{-5} gs^{-1}
Vinyl chloride	<1.06 x 10^{-5} gs^{-1}
Non-Methane Organic Carbons	10.1 ms^{-1}
(a) The Landfill Gas Generator was under maintenance in the reporting period.	

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)
ENGA			
1 Jan 25	-		Under Maintenance
2 Jan 25	-		Under Maintenance
3 Jan 25	-		Under Maintenance
4 Jan 25	-		Under Maintenance
5 Jan 25	-		Under Maintenance
6 Jan 25	-		Under Maintenance
7 Jan 25	-		Under Maintenance
8 Jan 25	-		Under Maintenance
9 Jan 25	-		Under Maintenance
10 Jan 25	-		Under Maintenance
11 Jan 25	-		Under Maintenance
12 Jan 25	-		Under Maintenance
13 Jan 25	-		Under Maintenance
14 Jan 25	872		In Operation
15 Jan 25	891		In Operation
16 Jan 25	868		In Operation
17 Jan 25	868		In Operation
18 Jan 25	866		In Operation
19 Jan 25	862		In Operation
20 Jan 25	870	10.0	In Operation
21 Jan 25	871		In Operation
22 Jan 25	854		In Operation
23 Jan 25	879		In Operation
24 Jan 25	878		In Operation
25 Jan 25	879		In Operation
26 Jan 25	879		In Operation
27 Jan 25	875		In Operation
28 Jan 25	877		In Operation
29 Jan 25	878		In Operation
30 Jan 25	877		In Operation
31 Jan 25	880		In Operation
1 Feb 25	872		In Operation
2 Feb 25	861		In Operation

Date	Exhaust temperature (K)	Exhaust gas velocity (ms^{-1}) [a]	Operation Status (Landfill Gas Generator in Operation)
3 Feb 25	871	10.3	In Operation
4 Feb 25	878		In Operation
5 Feb 25	873		In Operation
6 Feb 25	875		In Operation
7 Feb 25	873		In Operation
8 Feb 25	872		In Operation
9 Feb 25	875		In Operation
10 Feb 25	877		In Operation
11 Feb 25	878		In Operation
12 Feb 25	881		In Operation
13 Feb 25	-		Under Maintenance
14 Feb 25	-		Under Maintenance
15 Feb 25	-		Under Maintenance
16 Feb 25	-		Under Maintenance
17 Feb 25	-		Under Maintenance
18 Feb 25	-		Under Maintenance
19 Feb 25	-		Under Maintenance
20 Feb 25	-		Under Maintenance
21 Feb 25	-		Under Maintenance
22 Feb 25	-		Under Maintenance
23 Feb 25	-		Under Maintenance
24 Feb 25	-		Under Maintenance
25 Feb 25	-		Under Maintenance
26 Feb 25	-		Under Maintenance
27 Feb 25	-		Under Maintenance
28 Feb 25	-		Under Maintenance
1 Mar 25	-		Under Maintenance
2 Mar 25	-		Under Maintenance
3 Mar 25	-		Under Maintenance
4 Mar 25	-		Under Maintenance
5 Mar 25	-		Under Maintenance
6 Mar 25	-		Under Maintenance
7 Mar 25	-		Under Maintenance
8 Mar 25	-		Under Maintenance
9 Mar 25	-		Under Maintenance

Date	Exhaust temperature (K)	Exhaust gas velocity (ms^{-1}) [a]	Operation Status (Landfill Gas Generator in Operation)
10 Mar 25	-	10.1	Under Maintenance
11 Mar 25	-		Under Maintenance
12 Mar 25	-		Under Maintenance
13 Mar 25	871		In Operation
14 Mar 25	876		In Operation
15 Mar 25	878		In Operation
16 Mar 25	869		In Operation
17 Mar 25	870		In Operation
18 Mar 25	875		In Operation
19 Mar 25	868		In Operation
20 Mar 25	870		In Operation
21 Mar 25	875		In Operation
22 Mar 25	871		In Operation
23 Mar 25	874		In Operation
24 Mar 25	872		In Operation
25 Mar 25	873		In Operation
26 Mar 25	877		In Operation
27 Mar 25	873		In Operation
28 Mar 25	877		In Operation
29 Mar 25	878		In Operation
30 Mar 25	870		In Operation
31 Mar 25	877		
Average	874	10.1	
Min	854	10.0	
Max	891	10.3	
ENGB			
1 Jan 25	870		In Operation
2 Jan 25	871		In Operation
3 Jan 25	872		In Operation
4 Jan 25	872		In Operation
5 Jan 25	872		In Operation
6 Jan 25	873		In Operation
7 Jan 25	873		In Operation
8 Jan 25	874		In Operation
9 Jan 25	874		In Operation

Date	Exhaust temperature (K)	Exhaust gas velocity (ms^{-1}) [a]	Operation Status (Landfill Gas Generator in Operation)
10 Jan 25	871	10.0	In Operation
11 Jan 25	-		Under Maintenance
12 Jan 25	-		Under Maintenance
13 Jan 25	-		Under Maintenance
14 Jan 25	-		Under Maintenance
15 Jan 25	-		Under Maintenance
16 Jan 25	-		Under Maintenance
17 Jan 25	-		Under Maintenance
18 Jan 25	-		Under Maintenance
19 Jan 25	-		Under Maintenance
20 Jan 25	-		Under Maintenance
21 Jan 25	-		Under Maintenance
22 Jan 25	-		Under Maintenance
23 Jan 25	-		Under Maintenance
24 Jan 25	-		Under Maintenance
25 Jan 25	-		Under Maintenance
26 Jan 25	-		Under Maintenance
27 Jan 25	-		Under Maintenance
28 Jan 25	-		Under Maintenance
29 Jan 25	-		Under Maintenance
30 Jan 25	-		Under Maintenance
31 Jan 25	-		Under Maintenance
1 Feb 25	-	10.3	Under Maintenance
2 Feb 25	-		Under Maintenance
3 Feb 25	-		Under Maintenance
4 Feb 25	-		Under Maintenance
5 Feb 25	-		Under Maintenance
6 Feb 25	-		Under Maintenance
7 Feb 25	-		Under Maintenance
8 Feb 25	-		Under Maintenance
9 Feb 25	-		Under Maintenance
10 Feb 25	-		Under Maintenance
11 Feb 25	-		Under Maintenance
12 Feb 25	-		Under Maintenance
13 Feb 25	-		Under Maintenance

Date	Exhaust temperature (K)	Exhaust gas velocity (ms^{-1}) [a]	Operation Status (Landfill Gas Generator in Operation)
14 Feb 25	-		Under Maintenance
15 Feb 25	-		Under Maintenance
16 Feb 25	-		Under Maintenance
17 Feb 25	-		Under Maintenance
18 Feb 25	-		Under Maintenance
19 Feb 25	-		Under Maintenance
20 Feb 25	-		Under Maintenance
21 Feb 25	-		Under Maintenance
22 Feb 25	-		Under Maintenance
23 Feb 25	-		Under Maintenance
24 Feb 25	863		In Operation
25 Feb 25	865		In Operation
26 Feb 25	865		In Operation
27 Feb 25	867		In Operation
28 Feb 25	870		In Operation
1 Mar 25	870		In Operation
2 Mar 25	877		In Operation
3 Mar 25	873		In Operation
4 Mar 25	875		In Operation
5 Mar 25	868		In Operation
6 Mar 25	873		In Operation
7 Mar 25	868		In Operation
8 Mar 25	870		In Operation
9 Mar 25	872		In Operation
10 Mar 25	875		In Operation
11 Mar 25	869		In Operation
12 Mar 25	876		In Operation
13 Mar 25	875		In Operation
14 Mar 25	872		In Operation
15 Mar 25	-	10.1	Under Maintenance
16 Mar 25	-		Under Maintenance
17 Mar 25	-		Under Maintenance
18 Mar 25	868		In Operation
19 Mar 25	871		In Operation
20 Mar 25	-		Under Maintenance

Date	Exhaust temperature (K)	Exhaust gas velocity (ms^{-1}) [a]	Operation Status (Landfill Gas Generator in Operation)
21 Mar 25	-		Under Maintenance
22 Mar 25	-		Under Maintenance
23 Mar 25	-		Under Maintenance
24 Mar 25	869		In Operation
25 Mar 25	-		Under Maintenance
26 Mar 25	-		Under Maintenance
27 Mar 25	-		Under Maintenance
28 Mar 25	-		Under Maintenance
29 Mar 25	-		Under Maintenance
30 Mar 25	-		Under Maintenance
31 Mar 25	-		Under Maintenance
Average	871	10.1	
Min	863	10.0	
Max	877	10.3	

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 H2S MONITORING RESULTS

TABLE D6.1 AMBIENT VOCS, AMMONIA AND H_2S MONITORING RESULTS

Parameters	Limit Level	Monitoring Results (µg m^{-3})			
		AM1	AM2	AM3	AM4
Ammonia	180	19	13	29	21
H_2S	42	<15	<15	<15	<15
Methane	NA [a]	0.0002 %(v/v)	0.00026 %(v/v)	0.00024 %(v/v)	0.0002 %(v/v)
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	0.6	0.8	0.7	0.6
Benzene	33	0.9	1	1.1	1.1
Butan-2-ol	667	<0.6	<0.6	<0.6	<0.6
Butanethiol	4	<1.2	<1.2	<1.2	<1.2
Carbon Disulphide	150	<0.5	<0.5	<0.5	<0.5
Carbon Tetrachloride	64	1	1	1	1.1
Chloroform	99	<0.8	<0.8	<0.8	<0.8
Decanes	3,608	<0.7	<0.7	<0.7	<0.7
Dichlorobenzene	120	<1.0	<1.0	<1.0	<1.0
Dichlorodifluoro-methane	NA [a]	1.7	1.6	2.3	2.6
Dimethylsulphide	8	<0.2	<0.2	<0.2	<0.2
Dipropyl ether	NA [a]	<0.8	<0.8	<0.8	<0.8
Limonene	212	<0.4	0.5	0.5	<0.4
Ethanethiol	13	<0.6	<0.6	<0.6	<0.6
Ethanol	19,200	<3.8	<3.8	<3.8	5.3
Ethyl butanoate	71	<1.0	<1.0	<1.0	<1.0
Ethyl propionate	29	<0.8	<0.8	<0.8	<0.8
Ethyl benzene	738	<0.5	0.6	1.4	<0.5
Heptane	2,746	<0.8	<0.8	<0.8	<0.8

Parameters	Limit Level	Monitoring Results (μg m^{-3})			
		AM1	AM2	AM3	AM4
Methanethiol	10	<0.4	<0.4	<0.4	<0.4
Methanol	2,660	<2.6	<2.6	5.1	21.4
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	1.3	2.2	2.1	2.3
Butyl acetate	76	<1.0	<1.0	<1.0	<1.0
Butyl benzene	47	<1.0	<1.0	<1.0	<1.0
Nonane	11,540	<0.9	<0.9	<0.9	<0.9
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)]	<0.8	<0.8	<0.8	<0.8
Tetrachloroethylene	1,380	<0.7	<0.7	<0.7	<0.7
Toluene	1,244	1	0.9	1.1	0.8
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	534	0.7	1.5	2.1	0.6

Notes:

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

ANNEX D7 INVESTIGATION REPORTS OF ENVIRONMENTAL QUALITY LIMIT EXCEEDANCE

Investigation Report of Environmental Quality Limit Exceedance	
Project	South East New Territories (SENT) Landfill Extension
Date	14 January 2025
Time	8:00 (14 January 2025) – 8:00 (15 January 2025)
Monitoring Location	AM2
Parameter	24-hour Total Suspended Particulates (TSP)
Limit Level	Action level: >260 µg/ m^3 Limit level: >260 µg /m^3
Measured Level	329 µg /m^3
Possible reason	From the meteorological data obtained from the SENTX on-site meteorological monitoring station, a predominantly southeasterly to southerly wind with highest wind speed 1.8 m/s was recorded on 14 and 15 January 2025 during the sampling event. On 14 and 15 January 2025 (during the sampling event), the ET site representative observed construction works (e.g. active stockpiling and excavation works) at Cell 4X area in the vicinity dust monitoring station AM2. This could be the potential cause for the exceedance. Based on this observation, the TSP exceedance at AM2 was deemed to be Project-related activities. In accordance with Table 3.8b of the updated EM&A Manual, repeat measurement was conducted at AM2 on 20 January 2025 to confirm findings. Exceedance of 24-hour TSP Action/Limit Levels was recorded at AM2 (329 µg/m^3) during the sampling event, which showed consecutive dust impact at AM2.
Action Taken / Action to be Taken	In accordance with Table 3.8b of the updated EM&A Manual, the monitoring frequency at AM2 shall be increased to daily, until no exceedance of the Action/Limit Level. It should be noted that the turnaround time for the laboratory analysis of the dust filter paper is 5-10 working days and the preliminary results for the monitoring event conducted on 14 and 15 January 2025 were available on 23 January 2025. Repeat measurement was conducted on 20 January and 26 January 2025, respectively. The TSP monitoring result at AM2 on 20 January 2024 exceeded the Action/Limit Level. Therefore, daily TSP monitoring was commenced on 4 February 2025 for additional TSP monitoring and terminated on 5 February 2025 after receipt of the lab monitoring results, showing that 63 µg/m^3 (below Action/Limit Levels) was measured during the regular TSP monitoring event on 26 January 2025 at AM2. 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/Limit Levels. The Contractor has increased the watering

	frequency on active works area and applied Posi-shell as cover on exposed area to minimize dust impacts. ET will continue to closely monitor the dust monitoring results and collect additional data for investigation and further review, if necessary.
Remarks	-

Prepared by:	Solana Leung
Designation:	Environmental Team
Date	6 February 2025

Investigation Report of Environmental Quality Limit Exceedance	
Project	South East New Territories (SENT) Landfill Extension
Date	20 January 2025
Time	8:00 (20 January 2025) – 8:00 (21 January 2025)
Monitoring Location	AM2
Parameter	24-hour Total Suspended Particulates (TSP)
Limit Level	Action level: >260 µg/ m^3 Limit level: >260 µg /m^3
Measured Level	329 µg /m^3
Possible reason	From the meteorological data obtained from the SENTX on-site meteorological monitoring station, a predominantly easterly to southeasterly wind with highest wind speed 1.4 m/s was recorded on 20 and 21 January 2025 during the sampling event. On 20 and 21 January 2025 (during the sampling event), the ET site representative observed construction works (e.g. active stockpiling and excavation works) at Cell 4X area in the vicinity dust monitoring station AM2. This could be the potential cause for the exceedance. Based on this observation, the TSP exceedance at AM2 was deemed to Project-related activities. In accordance with Table 3.8b of the updated EM&A Manual, repeat measurement was conducted on 26 January 2025 to confirm findings. 24-hour TSP level of 63 µg/m^3 (below Action and Limit Levels) was measured during the sampling event, which demonstrate no consecutive dust impact at AM2.
Action Taken / Action to be Taken	In accordance with Table 3.8b of the updated EM&A Manual, the monitoring frequency at AM2 shall be increased to daily, until no exceedance of the Action/Limit Level. It should be noted that the turnaround time for the laboratory analysis of the dust filter paper is 5-10 working days and the preliminary results for the monitoring event conducted on 20 to 21 January 2025 were available on 5 February 2025. Repeat measurement was conducted on 26 January 2025 and the TSP monitoring results at AM2 is well below the Action/Limit Level. Hence, the daily TSP monitoring at AM2 shall not be triggered. 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/Limit Levels. The Contractor has increased the watering frequency on active works area and applied Posi-shell as cover on exposed area to minimize dust impacts.

Investigation Report of Environmental Quality Limit Exceedance	
	ET will continue to closely monitor the dust monitoring results and collect additional data for investigation and further review, if necessary.
Remarks	-

Prepared by:	Solana Leung
Designation:	Environmental Team
Date	6 February 2025

Investigation Report of Environmental Quality Limit Exceedance	
Project	South East New Territories (SENT) Landfill Extension
Date	10 February 2025
Time	10:43 – 11:13
Monitoring Location	Thermal Oxidiser
Parameter	Nitrogen Dioxide (NO_2)
Limit Level	1.58 g/s
Measured Level	1.59 g/s
Possible reason	As confirmed by the Contractor, the thermal oxidiser was under normal operating conditions during the sampling event. The thermal oxidiser stack emission monitoring results (CO, SO_2, Benzene, Vinyl chloride, gas combustion temperature, exhaust temperature and exhaust gas velocity) on 10 February 2025 were well within the respective limit levels. It is possible that the slight exceedances of NO_2 limit level measured on 10 February 2025 could be due to some short-term system instability (e.g. insufficient air, short gas residence time or ineffective mixing of landfill gas and air during the combustion). Hence, the NO_2 exceedance at the thermal oxidizer on 10 February 2025 is considered Project related. In accordance with Table 3.8b of the updated EM&A Manual, repeat measurement was conducted on 6 March 2025 (it should be noted that the turnaround time of the laboratory analysis of the flue gas sample is 3 weeks and the results were available on 20 March 2025) to confirm findings. The NO_2 concentration (1.23 g/s) measured on 6 March 2025 is well below Limit Level. There is no consecutive exceedance of NO_2 concentrations in the flue gas emission of the thermal oxidiser. It should be noted that although the measured NO_2 level exceeded the limit level of the EM&A programme (which was set based on the stack design parameters), the exceedance of NO_2 on 10 February 2025 will not cause adverse air quality impact to the identified ASRs as the anticipated NO_2 concentrations at the identified ASRs will still be well below the respective AQO criteria with reference to the findings of the operational air quality impact assessment of the SENTX Environmental Review Report.
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 air quality monitoring results and collect additional data for investigation and further review, if necessary.

Investigation Report of Environmental Quality Limit Exceedance	
Remarks	-

Prepared by:	Solana Leung
Designation:	Environmental Team
Date	17 April 2025

Investigation Report of Environmental Quality Limit Exceedance	
Project	South East New Territories (SENT) Landfill Extension
Date	11 February 2025
Time	10:22– 10:52
Monitoring Location	Landfill Gas Flare 1 (F601)
Parameter	Benzene
Limit Level	0.000414 g/s
Measured Level	0.002065 g/s
Possible reason	As confirmed by the Contractor, Landfill Gas Flare 1 (F601) was under normal operating conditions during the sampling event. The landfill gas flare emission monitoring results (NO_2, CO, SO_2, Vinyl chloride, gas combustion temperature, exhaust temperature and exhaust gas velocity) at Landfill Gas Flare 1 (F601) on 11 February 2025 were well within the respective limit levels. It is possible that the slight exceedances of Benzene limit level measured on 11 February 2025 could be due to some short-term system instability (e.g. insufficient air, short gas residence time or ineffective mixing of landfill gas and air during the combustion). Hence, the Benzene exceedance at Landfill Gas Flare 1 (F601) on 11 February 2025 is considered Project related. In accordance with Table 3.8b of the updated EM&A Manual, repeat measurement was conducted on 7 March 2025 (it should be noted that the turnaround time of the laboratory analysis of the flue gas sample is 3 weeks and the results were available on 20 March 2025) to confirm findings. The Benzene concentration (<0.000142 g/s) measured on 7 March 2025 is well below Limit Level. There is no consecutive exceedance of Benzene concentrations in the flue gas emission of Landfill Gas Flare 1 (F601). It should be noted that although the measured Benzene level exceeded the limit level of the EM&A programme (which was set based on the stack design parameters), the exceedance of Benzene on 11 February 2025 will not cause adverse air quality impact to the identified ASRs as the anticipated Benzene concentrations at the identified ASRs will be below the Limit Level set with reference to the findings of the operational air quality impact assessment of the SENTX Environmental Review Report.
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 air quality monitoring results and collect additional data for investigation and further review, if necessary.

Investigation Report of Environmental Quality Limit Exceedance	
Remarks	-

Prepared by:	Solana Leung
Designation:	Environmental Team
Date	17 April 2025

Investigation Report of Environmental Quality Limit Exceedance	
Project	South East New Territories (SENT) Landfill Extension
Date	19 February 2025
Time	8:00 (19 February 2025) – 8:00 (20 February 2025)
Monitoring Location	AM1
Parameter	24-hour Total Suspended Particulates (TSP)
Limit Level	Action level: >260 µg/ m^3 Limit level: >260 µg /m^3
Measured Level	331 µg /m^3
Possible reason	From the meteorological data obtained from the SENTX on-site meteorological monitoring station, a predominantly east-southeasterly to southeasterly wind with highest wind speed 1.3 m/s was recorded on 19 and 20 February 2025 during the sampling event. On 19 February 2025, dust and traffic emission from the SENT landfill in vicinity and located at the east of dust monitoring station AM1 were observed. The sample taken at AM1 on the day might not represent the operation dust emission from SENTX. In addition, no SENTX works which may lead to potential dust emission was conducted in the vicinity of dust monitoring location AM1 on the sampling day based on ET's representative on-site observations and construction and operation activities as described by the Contractor. Environmental deficiency was not observed during the weekly site inspection on 20 February 2025. The Contractor has implemented the dust control and mitigation measures recommended in the updated EM&A Manual. In accordance with Table 3.8b of the updated EM&A Manual, repeat measurement was conducted on 25 February 2025 to confirm findings. 24-hour TSP level of 172 µg/m^3 (below Action and Limit Levels) was measured during the sampling event, which demonstrate no consecutive dust impact at AM1. Due to the presence of the influencing factors i.e. SENT landfill and no potential source from the Project-related activities in the vicinity of AM1 which may lead to the high TSP level identified, there is not adequate evidence to show that the TSP exceedance at AM1 was due 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/Limit Levels.

Investigation Report of Environmental Quality Limit Exceedance	
	The Contractor is also reminded to implement additional dust control measures to minimize the dust impact from SENT Landfill to the SENTX boundary.
Remarks	-

Prepared by:	Solana Leung
Designation:	Environmental Team
Date	10 March 2025

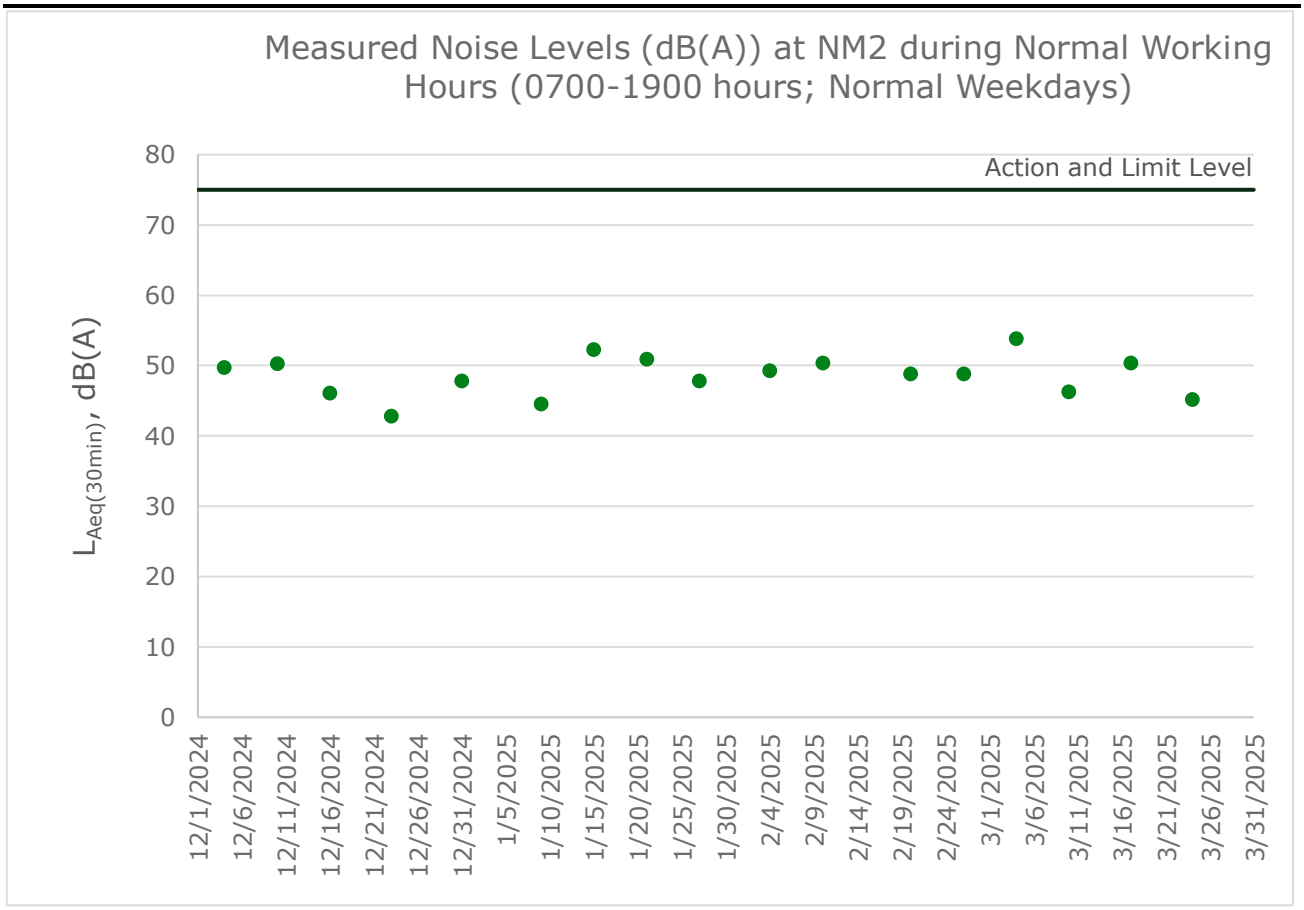
ANNEX E NOISE

ANNEX E1 NOISE MONITORING RESULTS

TABLE E1.1 MEASURED NOISE LEVELS (DB(A)) AT NM2 DURING NORMAL WORKING HOURS (0700-1900 HOURS; NORMAL WEEKDAYS)

Date	Start Time	Finish Time	Weather	$L_{10\ (30min)}$	$L_{90\ (30min)}$	$L_{eq\ (30min)}$
9 Jan 25	14:42	15:12	Sunny	45	39.7	44.5
15 Jan 25	10:30	11:00	Sunny	55.5	44.1	52.3
21 Jan 25	10:25	10:55	Sunny	54.2	44.3	50.9
27 Jan 25	10:27	10:57	Sunny	51	40.6	47.8
4 Feb 25	10:38	11:08	Sunny	52.4	41.7	49.3
10 Feb 25	10:27	10:57	Sunny	53.8	43.8	50.4
20 Feb 25	13:39	14:09	Cloudy	52.2	42.7	48.8
26 Feb 25	10:42	11:12	Cloudy	53.5	34.4	48.8
4 Mar 25	10:35	11:05	Cloudy	57	43.3	53.8
10 Mar 25	10:36	11:06	Cloudy	49	41.3	46.3
17 Mar 25	10:29	10:59	Sunny	53.7	43.1	50.4
24 Mar 25	14:18	14:48	Sunny	47.2	42.2	45.2
					Average	46.9
					Min	42.8
					Max	50.3

FIGURE E1.1 GRAPHICAL PRESENTATION FOR NOISE MONITORING AT NM2



ANNEX E2 EVENT AND ACTION PLAN FOR NOISE MONITORING

ANNEX E2 EVENT AND ACTION PLAN FOR OPERATIONAL NOISE MONITORING

Action			
Event	**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

Action			
Event	**ET**	**IEC**	**Contractor**
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 DP3

Date	Time	Weather Condition	Water Appearance	Water Condition	Water Temperature (°C)	Ammoniacal-nitrogen (mg/L)	COD (mg/L)	Suspended Solids (SS) (mg/L)	Remarks
7 Jan 2025	09:38	Sunny	Unable to collect water sample due to insufficient flow						
14 Feb 2025	09:39	Cloudy	Unable to collect water sample due to insufficient flow						
3 Mar 2025	09:35	Cloudy	Unable to collect water sample due to insufficient flow						
					Average	-	-	-	-
					Min	-	-	-	-
					Max	-	-	-	-

TABLE F1.2 SURFACE WATER QUALITY MONITORING RESULTS AT DP4

Date	Time	Weather Condition	Water Appearance	Water Condition	Water Temperature (°C)	Ammoniacal-nitrogen (mg/L)	COD (mg/L)	Suspended Solids (SS) (mg/L)	Remarks
7 Jan 2025	09:42	Sunny	Unable to collect water sample due to insufficient flow						
14 Feb 2025	09:43	Cloudy	Unable to collect water sample due to insufficient flow						
3 Mar 2025	09:41	Cloudy	Unable to collect water sample due to insufficient flow						
					Average	-	-	-	-
					Min	-	-	-	-
					Max	-	-	-	-

TABLE F1.3 SURFACE WATER QUALITY MONITORING RESULTS AT DP6

Date	Time	Weather Condition	Water Appearance	Water Condition	Water Temperature (°C)	Ammoniacal-nitrogen (mg/L)	COD (mg/L)	Suspended Solids (SS) (mg/L)	Remarks
7 Jan 2025	09:47	Sunny	Unable to collect water sample due to insufficient flow						
14 Feb 2025	09:48	Cloudy	Unable to collect water sample due to insufficient flow						
3 Mar 2025	09:47	Cloudy	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

Action			
Event	**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	• 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

Action			
Event	**ET**	**IEC**	**Contractor**
	• 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		
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	• 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

Action			
Event	**ET**	**IEC**	**Contractor**
	• Increase monitoring frequency to weekly until no exceedance of Limit Level		

ANNEX F3 LEACHATE LEVELS MONITORING RESULTS

TABLE F3.1 LEACHATE LEVEL 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)			
1 Jan 25	119	107	113
2 Jan 25	119	99	109
3 Jan 25	117	102	110
4 Jan 25	119	91	105
5 Jan 25	119	97	108
6 Jan 25	117	91	104
7 Jan 25	119	97	108
8 Jan 25	119	88	104
9 Jan 25	117	97	107
10 Jan 25	117	91	104
11 Jan 25	117	93	105
12 Jan 25	117	94	106
13 Jan 25	117	95	106
14 Jan 25	119	91	105
15 Jan 25	119	106	113
16 Jan 25	119	66	93
17 Jan 25	113	59	86
18 Jan 25	119	42	81
19 Jan 25	99	42	71
20 Jan 25	119	70	95
21 Jan 25	119	46	83
22 Jan 25	119	26	73
23 Jan 25	119	133	126
24 Jan 25	119	93	106
25 Jan 25	119	99	109
26 Jan 25	117	99	108
27 Jan 25	115	99	107
28 Jan 25	97	102	100
29 Jan 25	117	102	110
30 Jan 25	118	108	113
31 Jan 25	119	115	117
1 Feb 25	104	119	112
2 Feb 25	104	111	108
3 Feb 25	104	102	103
4 Feb 25	102	95	99

Date	Meter No.X1 (cm)	Meter No.X2 (cm)	Average (cm)
5 Feb 25	108	113	111
6 Feb 25	97	106	102
7 Feb 25	102	108	105
8 Feb 25	111	119	115
9 Feb 25	99	93	96
10 Feb 25	113	117	115
11 Feb 25	111	113	112
12 Feb 25	93	117	105
13 Feb 25	95	115	105
14 Feb 25	97	95	96
15 Feb 25	99	117	108
16 Feb 25	119	119	119
17 Feb 25	103	97	100
18 Feb 25	99	102	101
19 Feb 25	115	102	109
20 Feb 25	115	99	107
21 Feb 25	102	93	98
22 Feb 25	117	91	104
23 Feb 25	116	97	107
24 Feb 25	115	102	109
25 Feb 25	108	115	112
26 Feb 25	97	115	106
27 Feb 25	113	119	116
28 Feb 25	115	91	103
1 Mar 25	111	99	105
2 Mar 25	115	99	107
3 Mar 25	119	99	109
4 Mar 25	108	108	108
5 Mar 25	115	102	109
6 Mar 25	106	111	109
7 Mar 25	102	119	111
8 Mar 25	93	99	96
9 Mar 25	105	105	105
10 Mar 25	117	111	114
11 Mar 25	97	115	106
12 Mar 25	97	93	95
13 Mar 25	115	91	103

Date	Meter No.X1 (cm)	Meter No.X2 (cm)	Average (cm)
14 Mar 25	93	88	91
15 Mar 25	111	104	108
16 Mar 25	113	108	111
17 Mar 25	119	119	119
18 Mar 25	99	108	104
19 Mar 25	95	102	99
20 Mar 25	106	119	113
21 Mar 25	119	119	119
22 Mar 25	117	102	110
23 Mar 25	102	117	110
24 Mar 25	99	111	105
25 Mar 25	113	93	103
26 Mar 25	108	91	100
27 Mar 25	102	106	104
28 Mar 25	111	99	105
29 Mar 25	106	91	99
30 Mar 25	106	91	99
31 Mar 25	106	113	110
Average	110	99	105
Min	93	26	71
Max	119	133	126

TABLE F3.2 LEACHATE LEVEL MONITORING RESULTS (PUMP STATION NO.2X (CELL 2X))

Date	Meter No.X3 (cm)	Meter No.X4 (cm)	Average (cm)
Pump Station No. 2X (Cell 2X)			
1 Jan 25	105	119	112
2 Jan 25	106	119	113
3 Jan 25	106	117	112
4 Jan 25	106	117	112
5 Jan 25	106	93	100
6 Jan 25	106	119	113
7 Jan 25	106	117	112
8 Jan 25	106	117	112
9 Jan 25	106	119	113
10 Jan 25	106	115	111
11 Jan 25	106	97	102
12 Jan 25	105	108	107
13 Jan 25	104	119	112
14 Jan 25	106	115	111
15 Jan 25	106	119	113
16 Jan 25	106	117	112
17 Jan 25	106	119	113
18 Jan 25	106	119	113
19 Jan 25	109	104	107
20 Jan 25	106	119	113
21 Jan 25	106	119	113
22 Jan 25	106	119	113
23 Jan 25	106	119	113
24 Jan 25	106	119	113
25 Jan 25	106	119	113
26 Jan 25	106	119	113
27 Jan 25	106	119	113
28 Jan 25	104	119	112
29 Jan 25	106	119	113
30 Jan 25	106	119	113
31 Jan 25	106	119	113
1 Feb 25	106	119	113
2 Feb 25	106	119	113
3 Feb 25	106	119	113
4 Feb 25	104	115	110

Date	Meter No.X3 (cm)	Meter No.X4 (cm)	Average (cm)
5 Feb 25	106	119	113
6 Feb 25	106	115	111
7 Feb 25	106	111	109
8 Feb 25	106	119	113
9 Feb 25	106	119	113
10 Feb 25	106	119	113
11 Feb 25	106	119	113
12 Feb 25	106	119	113
13 Feb 25	106	119	113
14 Feb 25	106	119	113
15 Feb 25	106	119	113
16 Feb 25	106	119	113
17 Feb 25	106	119	113
18 Feb 25	106	119	113
19 Feb 25	106	119	113
20 Feb 25	106	119	113
21 Feb 25	106	119	113
22 Feb 25	106	119	113
23 Feb 25	106	119	113
24 Feb 25	106	119	113
25 Feb 25	106	119	113
26 Feb 25	106	119	113
27 Feb 25	106	119	113
28 Feb 25	106	119	113
1 Mar 25	106	119	113
2 Mar 25	106	119	113
3 Mar 25	106	119	113
4 Mar 25	104	119	112
5 Mar 25	106	113	110
6 Mar 25	106	119	113
7 Mar 25	106	119	113
8 Mar 25	106	119	113
9 Mar 25	106	119	113
10 Mar 25	106	119	113
11 Mar 25	106	119	113
12 Mar 25	104	119	112
13 Mar 25	104	117	111

Date	Meter No.X3 (cm)	Meter No.X4 (cm)	Average (cm)
14 Mar 25	106	119	113
15 Mar 25	106	119	113
16 Mar 25	106	119	113
17 Mar 25	106	119	113
18 Mar 25	106	119	113
19 Mar 25	106	119	113
20 Mar 25	106	119	113
21 Mar 25	106	119	113
22 Mar 25	106	119	113
23 Mar 25	106	119	113
24 Mar 25	106	119	113
25 Mar 25	106	119	113
26 Mar 25	106	119	113
27 Mar 25	106	119	113
28 Mar 25	106	119	113
29 Mar 25	104	119	112
30 Mar 25	106	119	113
31 Mar 25	104	117	111
Average	106	118	112
Min	104	93	100
Max	109	119	113

TABLE F3.3 LEACHATE LEVEL MONITORING RESULTS (PUMP STATION NO.3X (CELL 3X))

Date	Meter No.X5 (cm)	Meter No.X6 (cm)	Average (cm)
Pump Station No. 3X (Cell 3X)			
1 Jan 25	114	115	115
2 Jan 25	115	117	116
3 Jan 25	102	102	102
4 Jan 25	113	113	113
5 Jan 25	119	117	118
6 Jan 25	104	102	103
7 Jan 25	111	111	111
8 Jan 25	117	117	117
9 Jan 25	99	99	99
10 Jan 25	111	108	110
11 Jan 25	115	113	114
12 Jan 25	109	108	109
13 Jan 25	102	102	102
14 Jan 25	111	111	111
15 Jan 25	115	115	115
16 Jan 25	119	119	119
17 Jan 25	106	106	106
18 Jan 25	113	113	113
19 Jan 25	113	113	113
20 Jan 25	106	106	106
21 Jan 25	117	117	117
22 Jan 25	106	106	106
23 Jan 25	117	115	116
24 Jan 25	106	106	106
25 Jan 25	117	117	117
26 Jan 25	118	117	118
27 Jan 25	119	117	118
28 Jan 25	108	108	108
29 Jan 25	117	117	117
30 Jan 25	111	114	113
31 Jan 25	106	111	109
1 Feb 25	115	115	115
2 Feb 25	104	106	105
3 Feb 25	93	97	95
4 Feb 25	117	117	117

Date	Meter No.X5 (cm)	Meter No.X6 (cm)	Average (cm)
5 Feb 25	111	108	110
6 Feb 25	99	97	98
7 Feb 25	117	117	117
8 Feb 25	111	111	111
9 Feb 25	104	102	103
10 Feb 25	117	117	117
11 Feb 25	111	111	111
12 Feb 25	104	102	103
13 Feb 25	119	117	118
14 Feb 25	113	113	113
15 Feb 25	105	105	105
16 Feb 25	104	104	104
17 Feb 25	113	115	114
18 Feb 25	90	106	98
19 Feb 25	102	117	110
20 Feb 25	99	111	105
21 Feb 25	93	108	101
22 Feb 25	102	117	110
23 Feb 25	100	115	108
24 Feb 25	97	113	105
25 Feb 25	102	113	108
26 Feb 25	97	113	105
27 Feb 25	82	97	90
28 Feb 25	102	117	110
1 Mar 25	93	112	103
2 Mar 25	99	116	108
3 Mar 25	104	119	112
4 Mar 25	102	117	110
5 Mar 25	97	113	105
6 Mar 25	104	119	112
7 Mar 25	104	115	110
8 Mar 25	84	99	92
9 Mar 25	89	104	97
10 Mar 25	93	108	101
11 Mar 25	95	113	104
12 Mar 25	97	113	105
13 Mar 25	97	115	106

Date	Meter No.X5 (cm)	Meter No.X6 (cm)	Average (cm)
14 Mar 25	99	115	107
15 Mar 25	93	106	100
16 Mar 25	99	115	107
17 Mar 25	84	99	92
18 Mar 25	93	106	100
19 Mar 25	102	117	110
20 Mar 25	88	106	97
21 Mar 25	97	115	106
22 Mar 25	97	117	107
23 Mar 25	95	115	105
24 Mar 25	93	106	100
25 Mar 25	88	106	97
26 Mar 25	88	106	97
27 Mar 25	86	104	95
28 Mar 25	82	99	91
29 Mar 25	102	119	111
30 Mar 25	97	115	106
31 Mar 25	99	117	108
Average	104	111	107
Min	82	97	90
Max	119	119	119

TABLE F3.4 LEACHATE LEVEL MONITORING RESULTS (PUMP STATION NO.4X (CELL 4X))

Date	Meter No.X7 (cm)	Meter No.X8 (cm)	Average (cm)
Pump Station No. 4X (Cell 4X)			
1 Jan 25	109	109	109
2 Jan 25	107	107	107
3 Jan 25	120	120	120
4 Jan 25	114	114	114
5 Jan 25	100	100	100
6 Jan 25	120	120	120
7 Jan 25	114	114	114
8 Jan 25	105	105	105
9 Jan 25	111	116	114
10 Jan 25	118	116	117
11 Jan 25	111	111	111
12 Jan 25	106	106	106
13 Jan 25	100	100	100
14 Jan 25	96	100	98
15 Jan 25	98	98	98
16 Jan 25	105	105	105
17 Jan 25	105	105	105
18 Jan 25	105	105	105
19 Jan 25	109	109	109
20 Jan 25	105	105	105
21 Jan 25	105	105	105
22 Jan 25	100	100	100
23 Jan 25	103	107	105
24 Jan 25	103	114	109
25 Jan 25	111	118	115
26 Jan 25	115	118	117
27 Jan 25	118	118	118
28 Jan 25	114	116	115
29 Jan 25	111	114	113
30 Jan 25	113	115	114
31 Jan 25	116	116	116
1 Feb 25	111	111	111
2 Feb 25	111	111	111
3 Feb 25	111	114	113
4 Feb 25	114	114	114

Date	Meter No.X7 (cm)	Meter No.X8 (cm)	Average (cm)
5 Feb 25	111	111	111
6 Feb 25	111	111	111
7 Feb 25	105	107	106
8 Feb 25	103	105	104
9 Feb 25	103	105	104
10 Feb 25	107	114	111
11 Feb 25	109	116	113
12 Feb 25	118	120	119
13 Feb 25	116	116	116
14 Feb 25	109	109	109
15 Feb 25	105	105	105
16 Feb 25	111	111	111
17 Feb 25	103	105	104
18 Feb 25	107	109	108
19 Feb 25	111	114	113
20 Feb 25	114	116	115
21 Feb 25	118	118	118
22 Feb 25	120	120	120
23 Feb 25	113	114	114
24 Feb 25	105	107	106
25 Feb 25	116	116	116
26 Feb 25	120	122	121
27 Feb 25	93	93	93
28 Feb 25	107	109	108
1 Mar 25	114	114	114
2 Mar 25	117	117	117
3 Mar 25	120	120	120
4 Mar 25	120	122	121
5 Mar 25	118	120	119
6 Mar 25	118	120	119
7 Mar 25	111	114	113
8 Mar 25	102	105	104
9 Mar 25	108	110	109
10 Mar 25	114	114	114
11 Mar 25	103	114	109
12 Mar 25	109	109	109
13 Mar 25	118	118	118

Date	Meter No.X7 (cm)	Meter No.X8 (cm)	Average (cm)
14 Mar 25	100	107	104
15 Mar 25	114	116	115
16 Mar 25	122	120	121
17 Mar 25	118	120	119
18 Mar 25	109	109	109
19 Mar 25	120	120	120
20 Mar 25	107	109	108
21 Mar 25	109	111	110
22 Mar 25	120	120	120
23 Mar 25	100	107	104
24 Mar 25	94	103	99
25 Mar 25	120	122	121
26 Mar 25	118	118	118
27 Mar 25	109	111	110
28 Mar 25	100	109	105
29 Mar 25	116	118	117
30 Mar 25	103	105	104
31 Mar 25	103	105	104
Average	110	112	111
Min	93	93	93
Max	122	122	121

FIGURE F3.1 GRAPHICAL PRESENTATION FOR LEACHATE LEVEL MONITORING RESULTS (PUMP STATION NO.1X (CELL 1X))

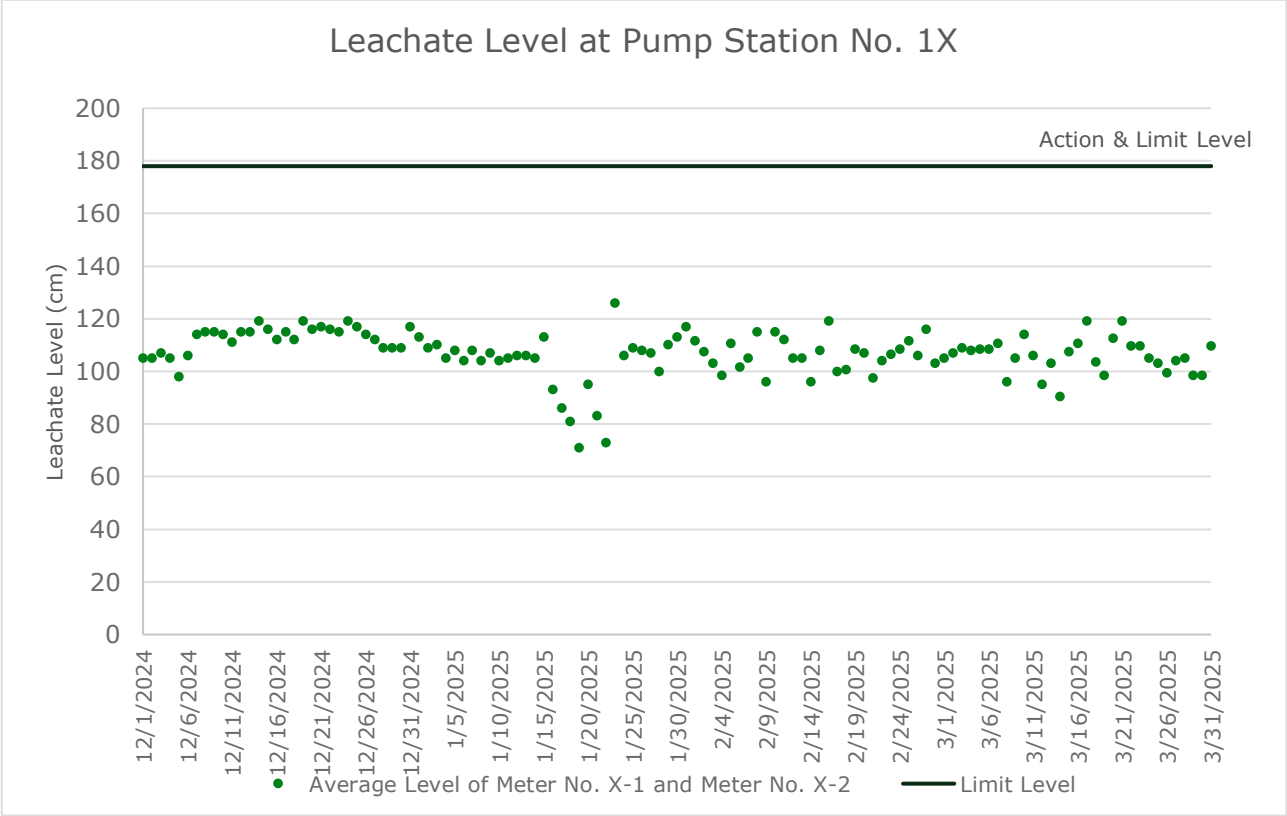


FIGURE F3.2 GRAPHICAL PRESENTATION FOR LEACHATE LEVEL MONITORING RESULTS (PUMP STATION NO.2X (CELL 2X))

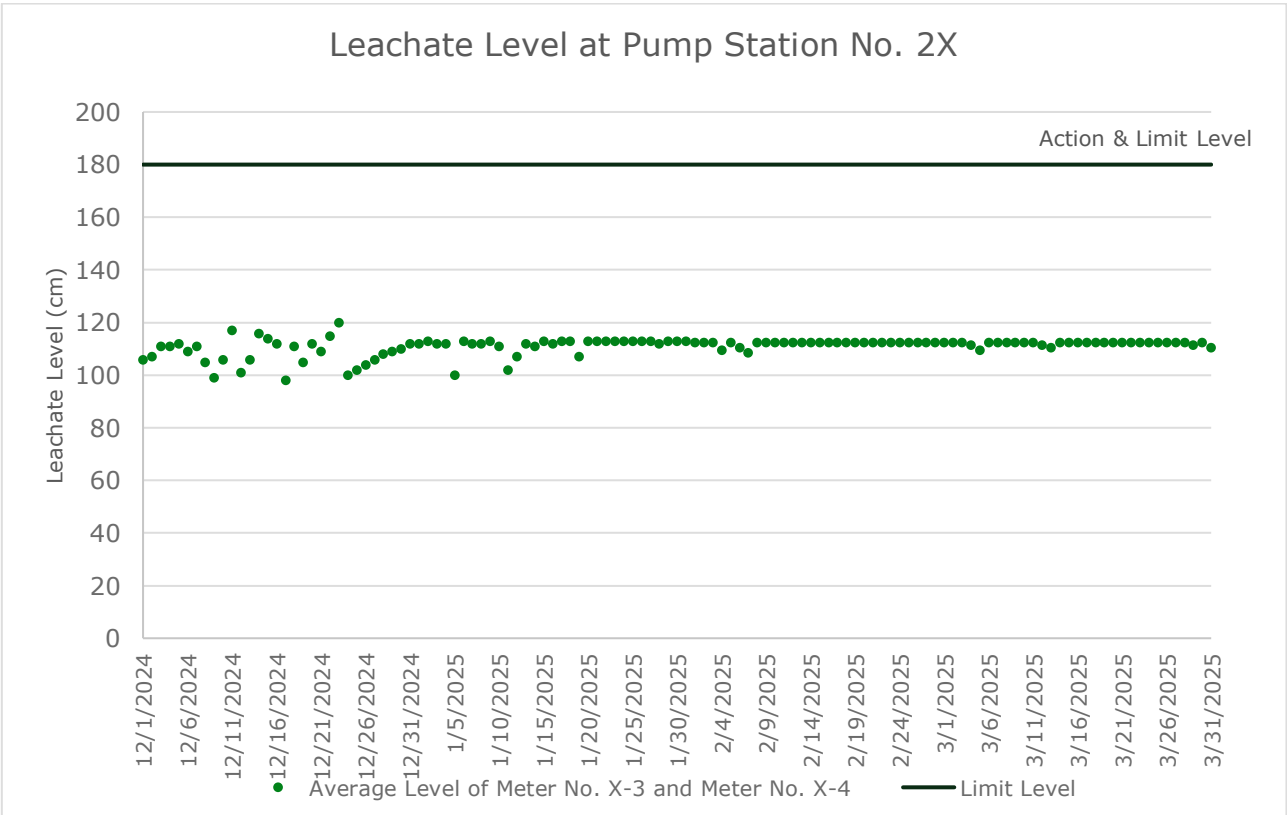


FIGURE F3.3 GRAPHICAL PRESENTATION FOR LEACHATE LEVEL MONITORING RESULTS (PUMP STATION NO.3X (CELL 3X))

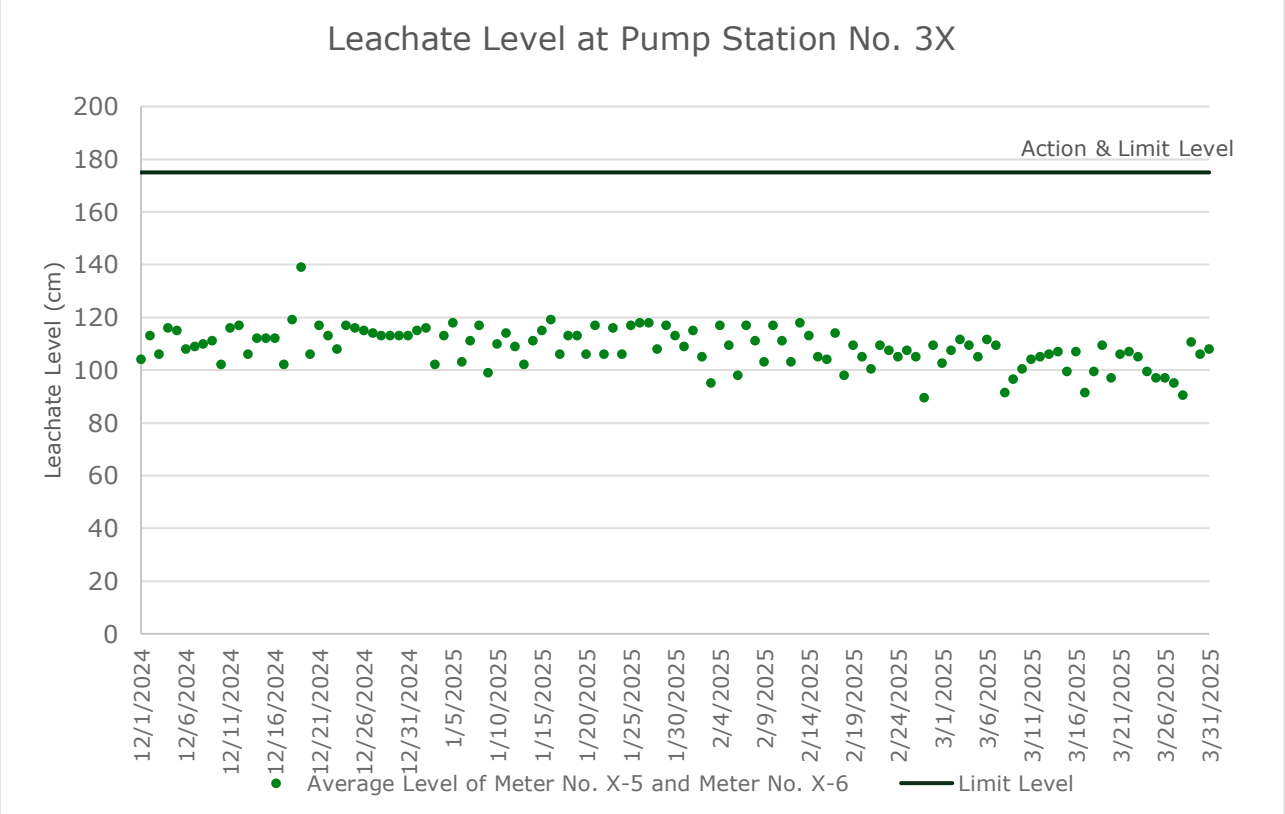
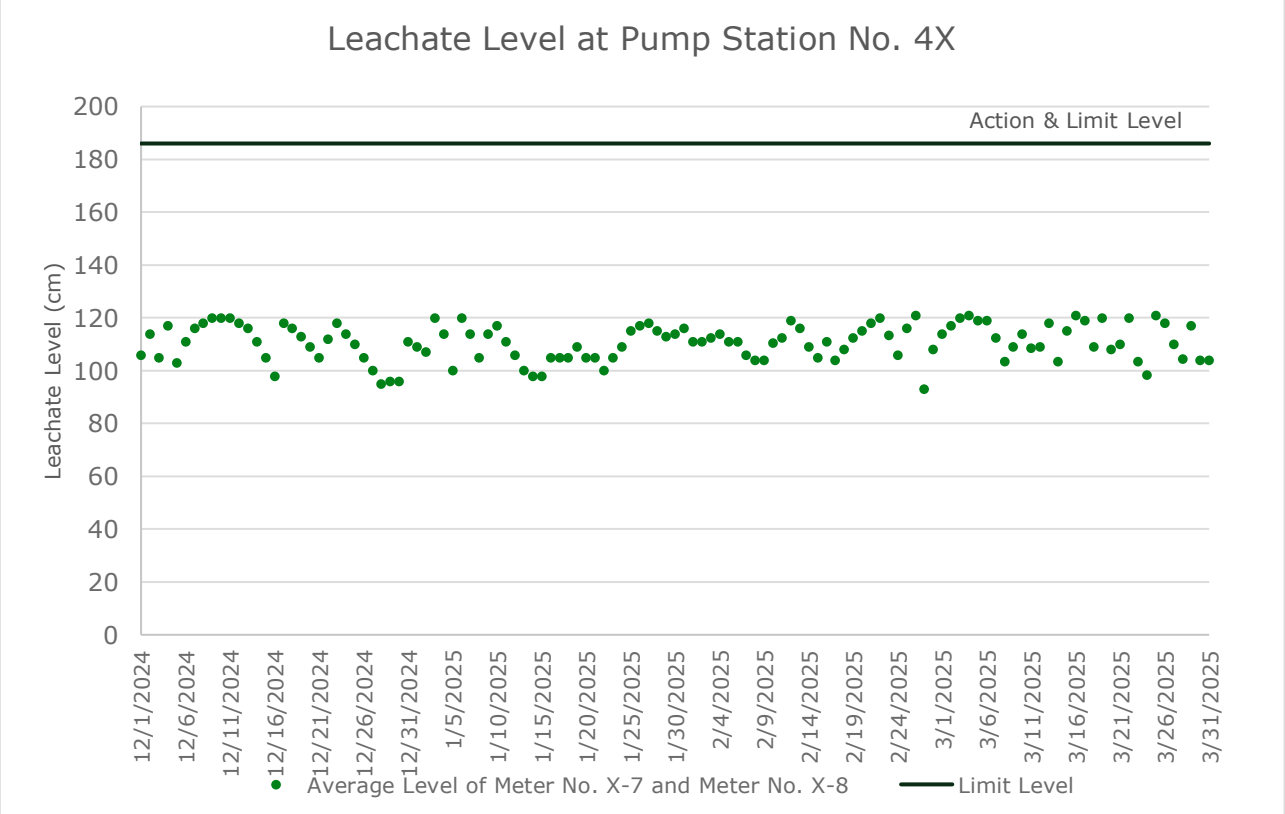


FIGURE F3.4 GRAPHICAL PRESENTATION FOR LEACHATE LEVEL MONITORING RESULTS (PUMP STATION NO.4X (CELL 4X))



ANNEX F4 EFFLUENT QUALITY MONITORING RESULTS

TABLE F4.1 EFFLUENT MONITORING RESULTS

Date		9 Jan 25	6 Feb 25	6 Mar 25
On-site Measurements				
Temperature	°C	26.5	22.5	19.9
pH Value	pH Unit	8.3	8.4	8.5
Volume Discharged	m^3	1,003	1,071	733
Laboratory Analysis				
Suspended Solids (SS)	mg/L	20.5	59.4	19.5
Alkalinity	mg/L	2390	1830	2040
Ammoniacal-nitrogen	mg/L	0.79	0.02	0.26
Chloride	mg/L	2290	2020	1860
Nitrite-nitrogen	mg/L	<0.10	<0.10	<0.10
Phosphate	mg/L	5.65	4.83	3.73
Sulphate	mg/L	178	206	147
Total Nitrogen	mg/L	110	86.4	67.7
Nitrate-nitrogen	mg/L	54.2	43.3	22.2
Total Inorganic Nitrogen	mg/L	54.99	43.32	22.46
Biochemical Oxygen Demand (BOD)	mg/L	12	10	10
Chemical Oxygen Demand (COD)	mg/L	916	812	958
Oil & Grease	mg/L	<5	<5	<5
Total Organic Carbon (TOC)	mg/L	365	290	281
Boron	µg/L	6540	5380	5410
Calcium	mg/L	40.6	41.3	46.8
Iron	mg/L	2.05	1.33	1.49
Magnesium	mg/L	36.4	44.2	37.9
Potassium	mg/L	862	722	705
Cadmium	µg/L	<1.0	<1.0	<1.0
Chromium	µg/L	144	103	95
Copper	µg/L	<10	<10	<10
Nickel	µg/L	129	97	102
Zinc	µg/L	28	53	34

ANNEX F5 GROUNDWATER MONITORING RESULTS

TABLE F5.1 GROUNDWATER MONITORING RESULTS (JANUARY 2025)

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	3.03	2.97	3.22	3.74	3.3	3.44	2.97	N/A [a]	3.41	N/A [b]	N/A [c]	6.86	36.18	44.29
Bicarbonate Alkalinity as CaCO3	mg/L	156	290	140	<1	90	<1	<1	34	159	N/A	N/A	56	14	10
Carbonate Alkalinity as CaCO3	mg/L	<1	<1	<1	80	5	134	96	13	<1	N/A	N/A	<1	<1	<1
Total Alkalinity as CaCO3	mg/L	156	290	140	90	96	173	118	47	159	N/A	N/A	56	14	10
pH Value	pH Unit	7.8	7.9	7.9	10.6	8.6	11.1	10.8	9.2	8	N/A	N/A	6.9	5.6	5.5
Electrical Conductivity	µS/cm	1020	1120	1140	617	791	1080	1260	1780	21300	N/A	N/A	300	92	97
Ammonia	mg/L	<0.01	0.06	1.47	2.87	0.48	3.49	4.91	4.18	0.38	N/A	N/A	<0.01	<0.01	<0.01
Chloride	mg/L	198	46	221	100	117	152	228	398	6920	N/A	N/A	19	14	18
Nitrite	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	N/A	N/A	<0.01	<0.01	<0.01
Phosphorus	mg/L	<0.01	0.01	0.02	0.01	<0.01	<0.01	<0.01	<0.01	0.07	N/A	N/A	0.04	<0.01	<0.01
Sulphate	mg/L	57	265	84	57	88	75	143	139	1070	N/A	N/A	59	3	3
Sulphide	mg/L	<0.1	<0.1	0.1	4	0.4	12.3	5.9	4.3	<0.1	N/A	N/A	<0.1	<0.1	<0.1
Total Kjeldahl Nitrogen	mg/L	0.1	0.3	1.7	2.9	0.8	4	6.2	5.1	0.7	N/A	N/A	<0.1	<0.1	<0.1
Nitrate	mg/L	0.09	2.92	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	N/A	N/A	<0.01	0.08	0.12
Total Nitrogen	mg/L	0.2	3.2	1.7	2.9	0.8	4	6.2	5.1	0.7	N/A	N/A	<0.1	0.1	0.2
Boron	µg/L	230	380	250	220	240	200	270	230	3350	N/A	N/A	30	20	10
Calcium	mg/L	47.8	86.9	69.2	20	14.1	19.8	14	20.4	180	N/A	N/A	23	0.75	0.83
Mercury	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	N/A	N/A	<0.20	<0.20	<0.20
Magnesium	mg/L	11.1	55.5	4.61	0.09	0.54	<0.05	<0.05	0.06	397	N/A	N/A	3.97	0.92	0.81

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
Sodium	mg/L	112	57.5	120	79.6	106	140	186	262	3470	N/A	N/A	23.6	12.2	12.8
Iron	mg/L	<0.04	<0.04	0.13	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	N/A	N/A	0.36	<0.04	<0.04
Potassium	mg/L	17.6	19	27.3	19.8	45.5	52.1	53	64	175	N/A	N/A	2.94	3.74	3.47
Cadmium	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	N/A	N/A	<0.2	<0.2	<0.2
Chromium	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	N/A	N/A	<1	<1	<1
Copper	µg/L	<1	<1	<1	<1	<1	1	<1	<1	<1	N/A	N/A	<1	3	2
Lead	µg/L	<1	<1	<1	<1	<1	1	<1	<1	<1	N/A	N/A	<1	<1	<1
Manganese	µg/L	232	212	769	<1	4	<1	<1	<1	374	N/A	N/A	672	20	7
Nickel	µg/L	<1	<1	<1	<1	<1	2	2	3	<1	N/A	N/A	<1	<1	<1
Zinc	µg/L	<10	<10	104	<10	<10	<10	<10	<10	<10	N/A	N/A	17	14	10
Biochemical Oxygen Demand	mg/L	<2	<2	<2	<2	<2	6	2	2	<2	N/A	N/A	<2	<2	<2
Chemical Oxygen Demand	mg/L	5	5	21	19	16	42	48	33	<20	N/A	N/A	5	3	4
Total Organic Carbon	mg/L	3	3	8	7	7	11	15	11	<5	N/A	N/A	2	2	2

Note:

(a) The dip level of Monitoring well MWX-8 could not be measured due to thick grass layer.

(b) Monitoring well MWX-10 is under maintenance.

(c) Monitoring well MWX-11 is not accessible due to the safety considerations.

TABLE F5.2 GROUNDWATER MONITORING RESULTS (FEBRUARY 2025)

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	3.52	3.19	2.98	3.33	3.51	2.87	3.01	N/A [a]	3.18	N/A [b]	N/A [c]	5.83	35.92	41.82
Bicarbonate Alkalinity as CaCO3	mg/L	156	292	132	<1	48	<1	<1	<1	158	N/A	N/A	57	14	10
Carbonate Alkalinity as CaCO3	mg/L	<1	<1	<1	79	45	131	81	86	<1	N/A	N/A	<1	<1	<1
Total Alkalinity as CaCO3	mg/L	156	292	132	100	93	187	105	126	158	N/A	N/A	57	14	10
pH Value	pH Unit	7.6	7.8	7.8	10.6	9.6	11.1	10.5	10.4	7.9	N/A	N/A	6.9	5.6	5.6
Electrical Conductivity	µS/cm	1090	1110	1110	591	843	1130	1320	3550	21900	N/A	N/A	297	92	97
Ammonia	mg/L	0.02	0.08	1.59	2.71	0.83	3.81	5	16.4	0.54	N/A	N/A	<0.01	0.01	0.02
Chloride	mg/L	218	56	206	88	139	174	230	1050	7040	N/A	N/A	20	14	18
Nitrite	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	N/A	N/A	<0.01	<0.01	<0.01
Phosphorus	mg/L	<0.01	0.01	0.01	0.01	<0.01	<0.01	<0.01	0.01	0.07	N/A	N/A	0.03	<0.01	<0.01
Sulphate	mg/L	56	251	75	44	91	75	163	53	1010	N/A	N/A	55	3	3
Sulphide	mg/L	<0.1	<0.1	0.3	4.1	4.1	16.1	0.4	17.7	0.1	N/A	N/A	<0.1	<0.1	<0.1
Total Kjeldahl Nitrogen	mg/L	0.1	0.2	1.8	2.8	1.4	4.6	5.9	16.8	0.8	N/A	N/A	<0.1	0.1	<0.1
Nitrate	mg/L	0.13	2.25	0.01	<0.01	<0.01	<0.01	0.02	<0.01	<0.01	N/A	N/A	<0.01	0.08	0.12
Total Nitrogen	mg/L	0.3	2.5	1.8	2.8	1.4	4.6	5.9	16.8	0.8	N/A	N/A	<0.1	0.2	0.2
Boron	µg/L	210	360	210	210	220	170	270	460	2750	N/A	N/A	70	30	20
Calcium	mg/L	52.4	82.8	65.9	19.1	6.96	25.7	16.5	94.2	201	N/A	N/A	23.4	0.77	0.81
Mercury	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	N/A	N/A	<0.20	<0.20	<0.20

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
Magnesium	mg/L	12.1	54.2	4.26	<0.05	0.47	<0.05	<0.05	<0.05	407	N/A	N/A	4.04	0.93	0.78
Sodium	mg/L	125	59.3	117	73.2	120	138	195	511	3430	N/A	N/A	23.8	12.3	12.9
Iron	mg/L	<0.04	<0.04	0.18	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	N/A	N/A	0.09	<0.04	<0.04
Potassium	mg/L	19.1	18.2	25.2	19.8	46.8	49.2	52	70.4	198	N/A	N/A	2.82	3.58	3.24
Cadmium	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	N/A	N/A	<0.2	<0.2	<0.2
Chromium	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	N/A	N/A	<1	<1	<1
Copper	µg/L	<1	<1	<1	<1	<1	<1	1	<1	<1	N/A	N/A	3	4	5
Lead	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	N/A	N/A	<1	<1	<1
Manganese	µg/L	192	264	618	<1	<1	<1	<1	<1	373	N/A	N/A	650	16	6
Nickel	µg/L	<1	<1	<1	<1	<1	1	1	<1	<1	N/A	N/A	<1	<1	<1
Zinc	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	N/A	N/A	12	11	11
Biochemical Oxygen Demand	mg/L	<2	<2	2	3	2	8	<2	6	<2	N/A	N/A	<2	<2	<2
Chemical Oxygen Demand	mg/L	6	5	18	14	19	37	39	48	<20	N/A	N/A	2	<2	3
Total Organic Carbon	mg/L	2	3	6	6	7	10	14	13	<5	N/A	N/A	1	1	1

Note:

(a) The dip level of Monitoring well MWX-8 could not be measured due to thick grass layer.

(b) Monitoring well MWX-10 is under maintenance.

(c) Monitoring well MWX-11 is not accessible due to the safety considerations.

TABLE F5.3 GROUNDWATER MONITORING RESULTS (MARCH 2025)

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	3.27	2.94	2.96	2.84	2.74	2.69	2.91	N/A [a]	3.04	N/A [b]	3.2	6.66	35.59	36.81
Bicarbonate Alkalinity as CaCO3	mg/L	156	292	139	<1	<1	<1	<1	<1	152	N/A	152	58	15	10
Carbonate Alkalinity as CaCO3	mg/L	<1	<1	<1	70	102	137	84	67	<1	N/A	<1	<1	<1	<1
Total Alkalinity as CaCO3	mg/L	156	292	139	78	139	183	100	67	152	N/A	152	58	15	10
pH Value	pH Unit	7.8	7.9	8	10.2	10.8	11	10.3	9.5	7.9	N/A	7.8	7.1	5.7	5.7
Electrical Conductivity	µS/cm	1140	1120	1100	586	992	1090	1360	3580	20600	N/A	1410	288	92	100
Ammonia	mg/L	0.2	0.1	1.6	3.02	2.3	3.56	4.34	13.7	0.7	N/A	0.04	<0.01	<0.01	<0.01
Chloride	mg/L	198	52	192	93	131	160	209	1020	5850	N/A	298	18	13	17
Nitrite	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.08	<0.01	<0.01	N/A	<0.01	<0.01	<0.01	<0.01
Phosphorus	mg/L	<0.01	0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.05	N/A	<0.01	0.03	<0.01	<0.01
Sulphate	mg/L	51	240	61	45	72	71	139	48	961	N/A	59	49	3	4
Sulphide	mg/L	<0.1	<0.1	0.2	4	10.7	14.1	<0.1	6.8	0.2	N/A	<0.1	<0.1	<0.1	<0.1
Total Kjeldahl Nitrogen	mg/L	0.3	<1.0	1.8	3.5	2.8	4.5	5.4	14.9	0.8	N/A	<0.1	0.2	<0.1	<0.1
Nitrate	mg/L	<0.01	2.45	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	N/A	<0.01	<0.01	0.08	0.08
Total Nitrogen	mg/L	0.3	2.9	1.8	3.5	2.8	4.5	5.5	14.9	0.8	N/A	<0.1	0.2	0.1	<0.1
Boron	µg/L	190	340	210	190	190	160	240	440	2680	N/A	100	20	10	10
Calcium	mg/L	52.4	78.8	59.4	15.8	22.2	26.1	17	67.7	195	N/A	90.6	22.6	0.74	0.89
Mercury	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	N/A	<0.20	<0.20	<0.20	<0.20

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
Magnesium	mg/L	12.7	54.2	4.12	0.06	<0.05	<0.05	<0.05	0.06	345	N/A	8.02	3.86	0.94	0.82
Sodium	mg/L	130	57.8	116	76.4	122	134	193	470	3000	N/A	150	22.7	12.3	13.3
Iron	mg/L	<0.04	<0.04	0.15	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	N/A	<0.04	0.17	<0.04	<0.04
Potassium	mg/L	18.2	18.6	26	19.5	47	48.8	51.7	65.1	179	N/A	9.96	2.87	3.76	3.44
Cadmium	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	N/A	<0.2	<0.2	<0.2	<0.2
Chromium	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	N/A	<1	<1	<1	<1
Copper	µg/L	<1	<1	<1	<1	<1	<1	2	<1	<1	N/A	<1	2	<1	3
Lead	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	N/A	<1	<1	<1	<1
Manganese	µg/L	275	303	582	<1	<1	<1	<1	1	467	N/A	662	612	13	7
Nickel	µg/L	<1	<1	<1	<1	1	1	2	1	<1	N/A	<1	<1	<1	<1
Zinc	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	N/A	<10	20	11	41
Biochemical Oxygen Demand	mg/L	<2	<2	<2	<2	4	12	<2	14	<2	N/A	<2	<2	<2	<2
Chemical Oxygen Demand	mg/L	7	<2	14	13	28	39	34	32	<20	N/A	8	6	7	5
Total Organic Carbon	mg/L	2	<1	6	7	8	11	14	13	<5	N/A	2	1	4	1

Note:

(a) The dip level of Monitoring well MWX-8 could not be measured due to thick grass layer.

(b) Monitoring well MWX-10 is under maintenance.

FIGURE F5.1 GRAPHICAL PRESENTATION FOR GROUNDWATER MONITORING (MWX-1)

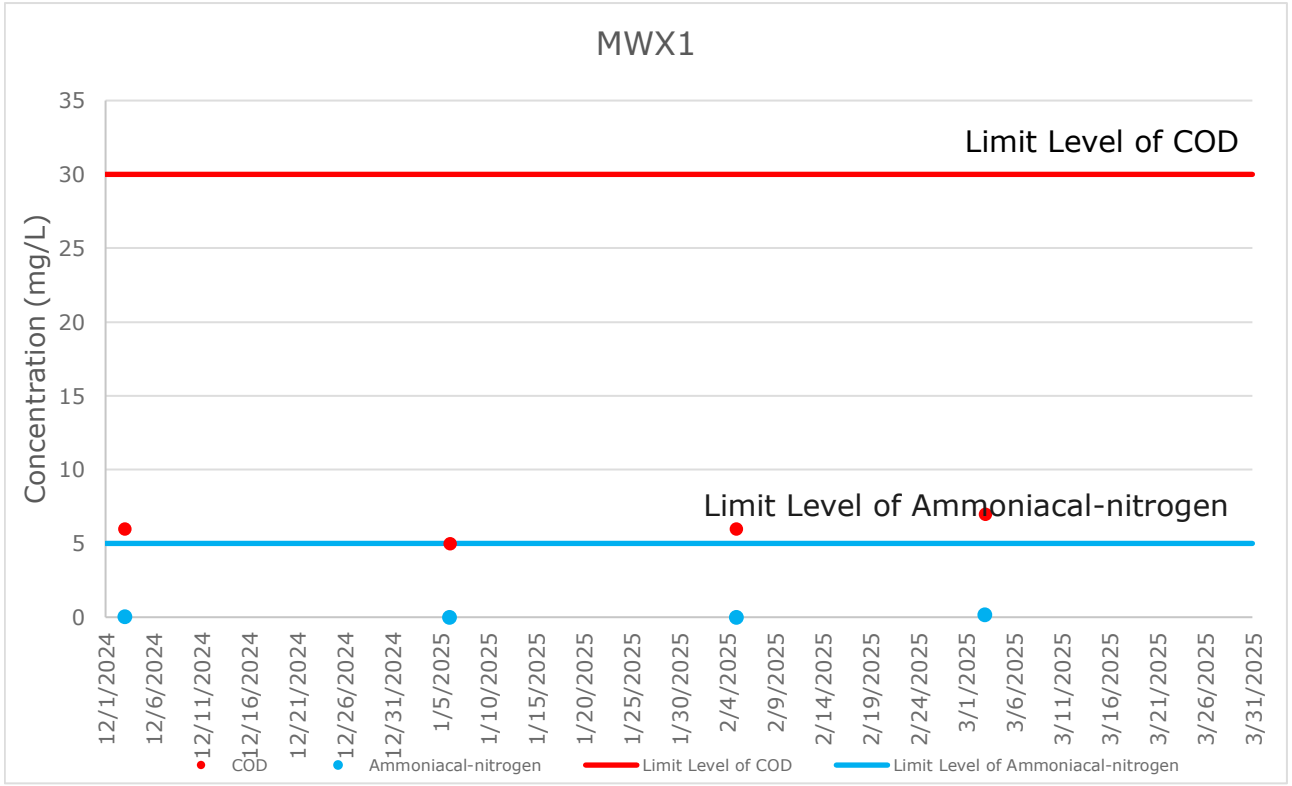


FIGURE F5.2 GRAPHICAL PRESENTATION FOR GROUNDWATER MONITORING (MWX-2)

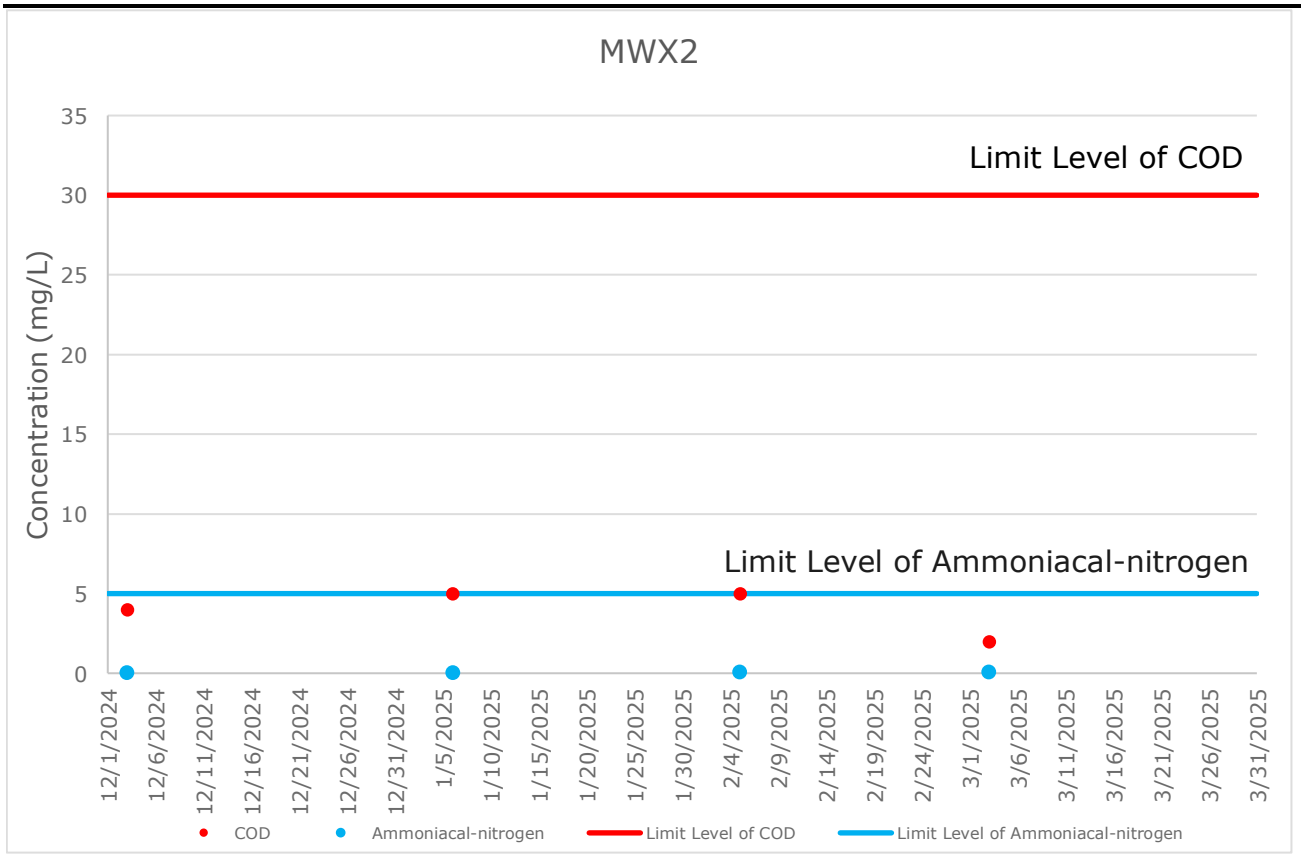


FIGURE F5.3 GRAPHICAL PRESENTATION FOR GROUNDWATER MONITORING (MWX-3)

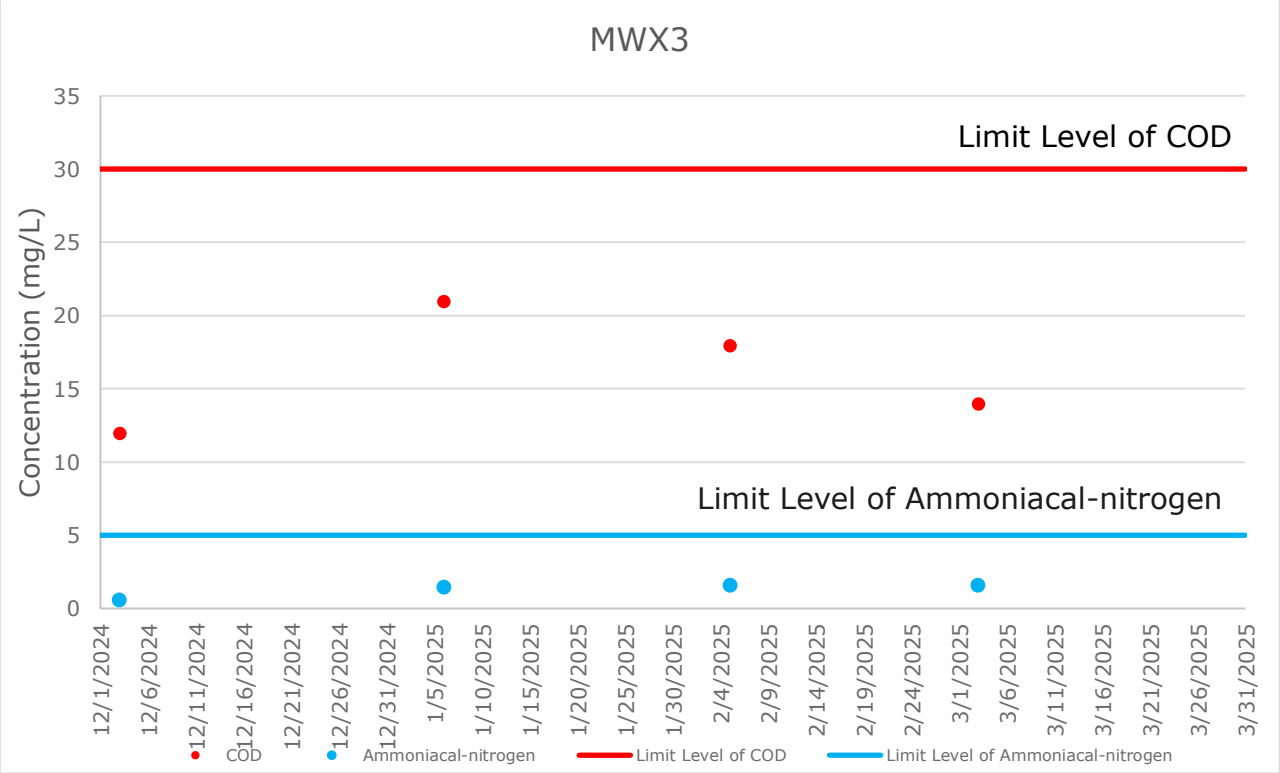


FIGURE F5.4 GRAPHICAL PRESENTATION FOR GROUNDWATER MONITORING (MWX-4)

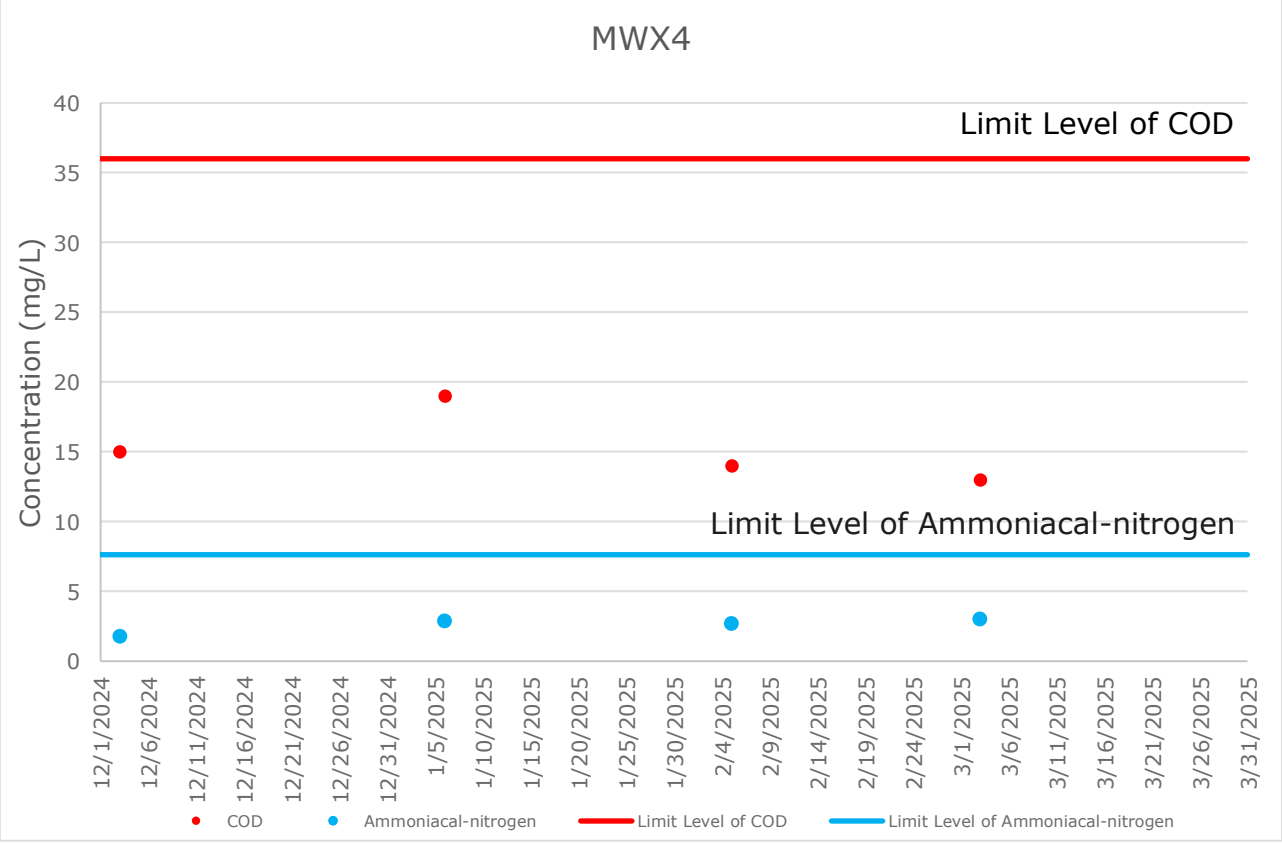


FIGURE F5.5 GRAPHICAL PRESENTATION FOR GROUNDWATER MONITORING (MWX-5)

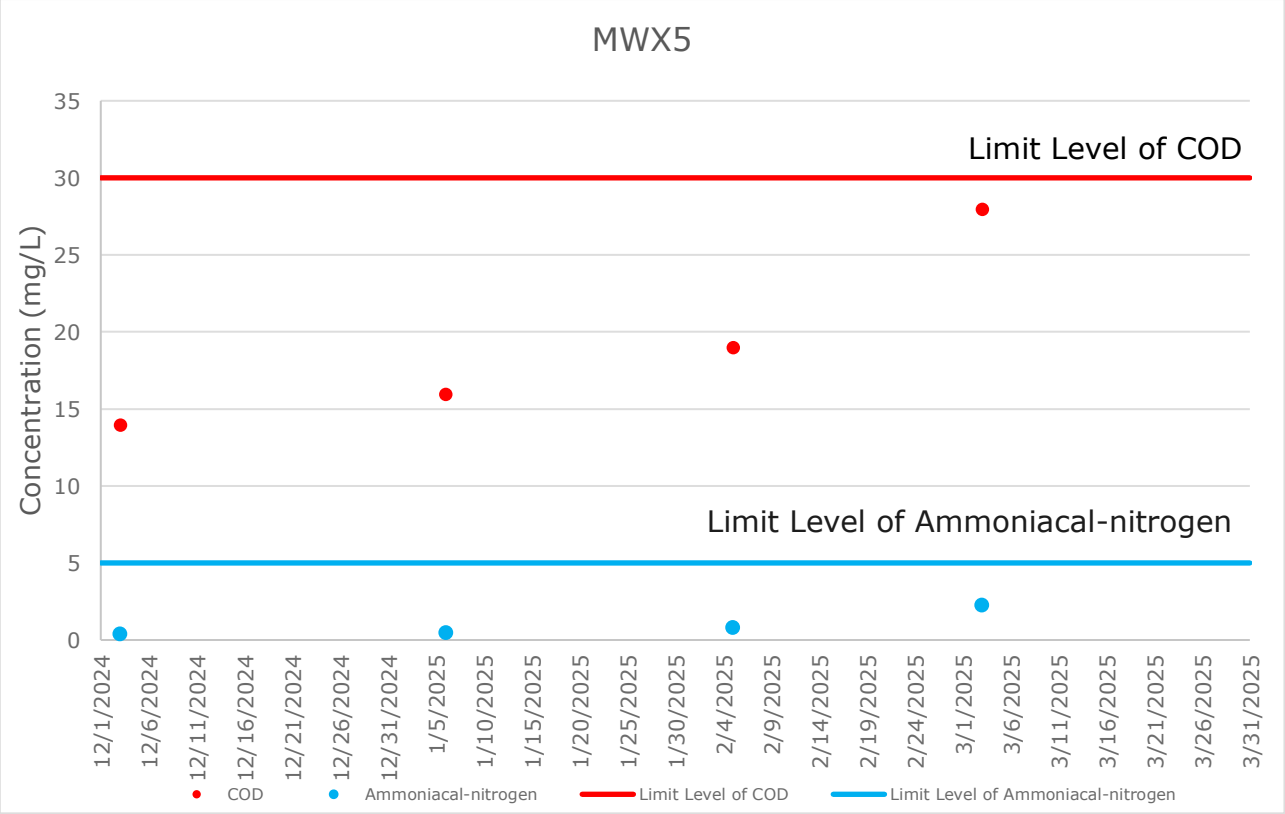


FIGURE F5.6 GRAPHICAL PRESENTATION FOR GROUNDWATER MONITORING (MWX-6)

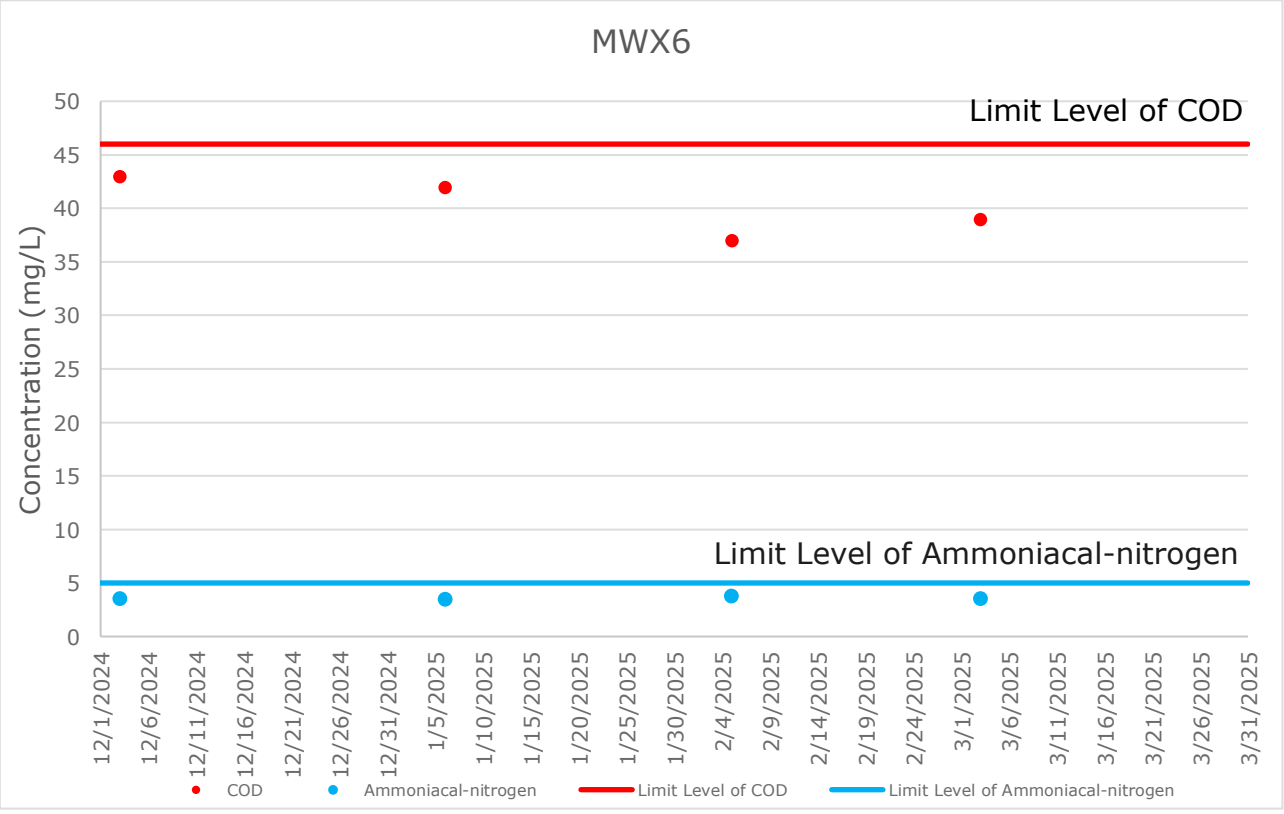


FIGURE F5.7 GRAPHICAL PRESENTATION FOR GROUNDWATER MONITORING (MWX-7)

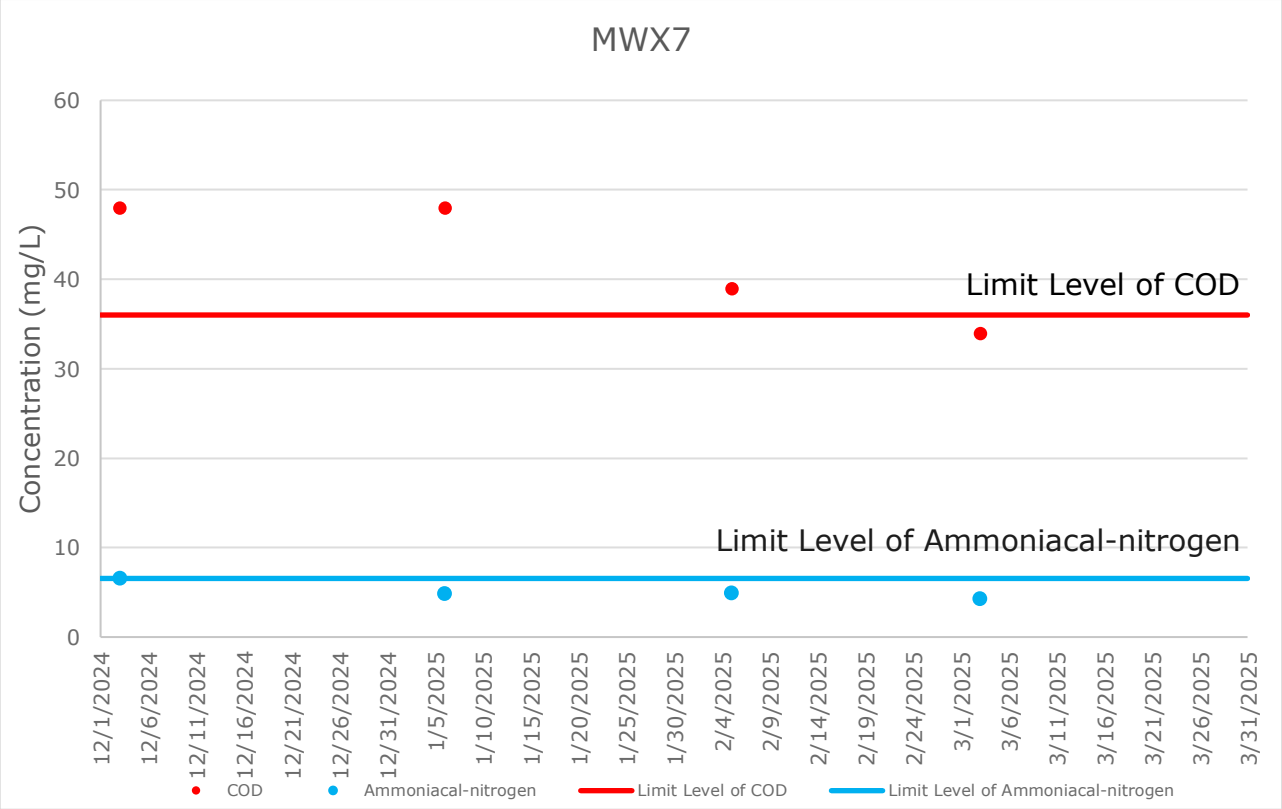


FIGURE F5.8 GRAPHICAL PRESENTATION FOR GROUNDWATER MONITORING (MWX-8)

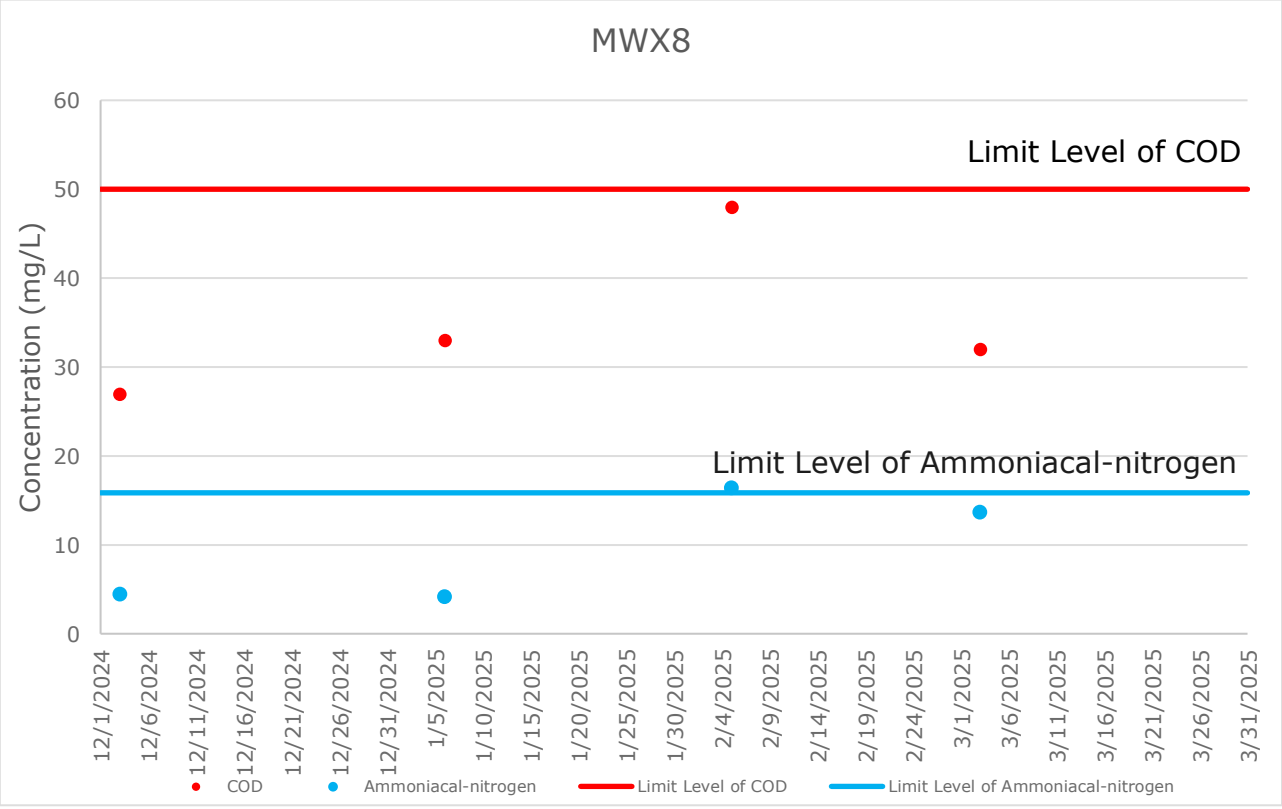


FIGURE F5.9 GRAPHICAL PRESENTATION FOR GROUNDWATER MONITORING (MWX-9)

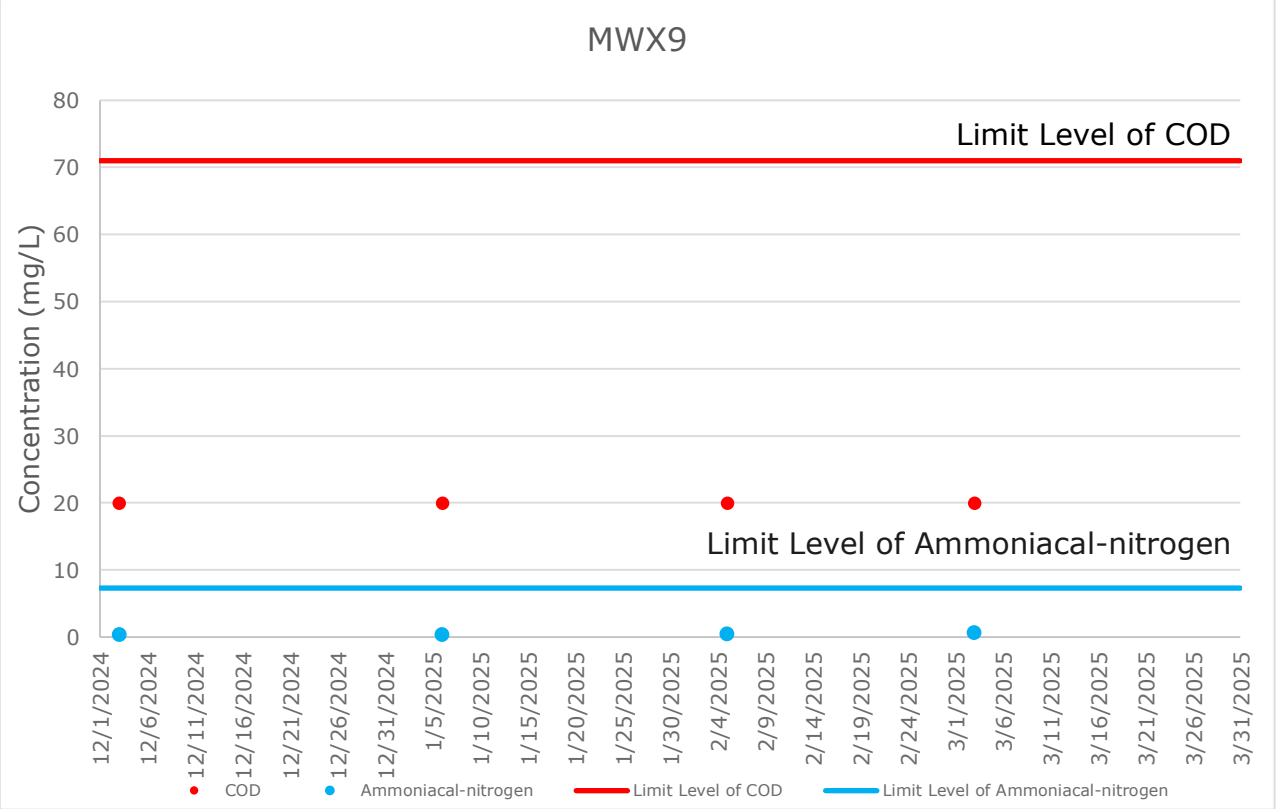


FIGURE F5.10 GRAPHICAL PRESENTATION FOR GROUNDWATER MONITORING (MWX-10)

No groundwater data for MWX-10 due to monitoring well MWX-10 is under maintenance.

FIGURE F5.11 GRAPHICAL PRESENTATION FOR GROUNDWATER MONITORING (MWX-11)

No groundwater data for MWX-10 due to monitoring well MWX-11 is not accessible for safety considerations in January and February 2025.

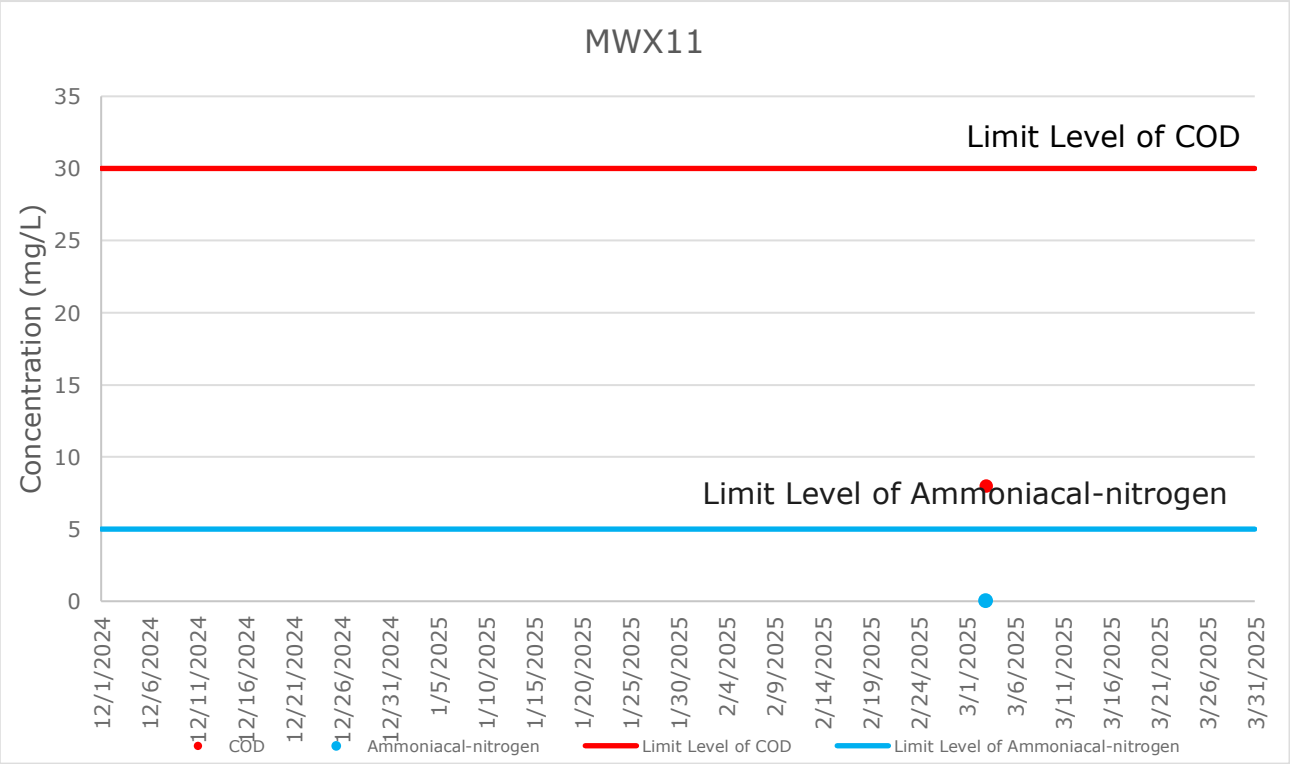


FIGURE F5.12 GRAPHICAL PRESENTATION FOR GROUNDWATER MONITORING (MWX-12)

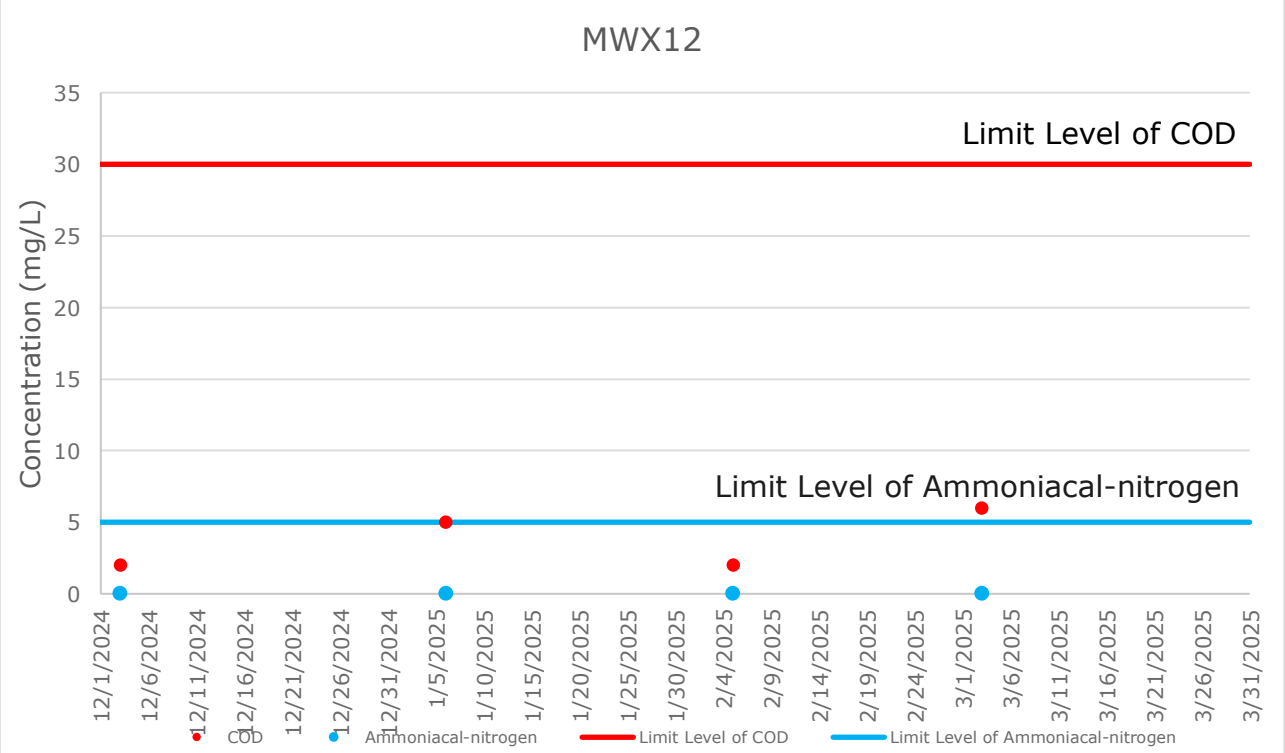


FIGURE F5.13 GRAPHICAL PRESENTATION FOR GROUNDWATER MONITORING (MWX-13)

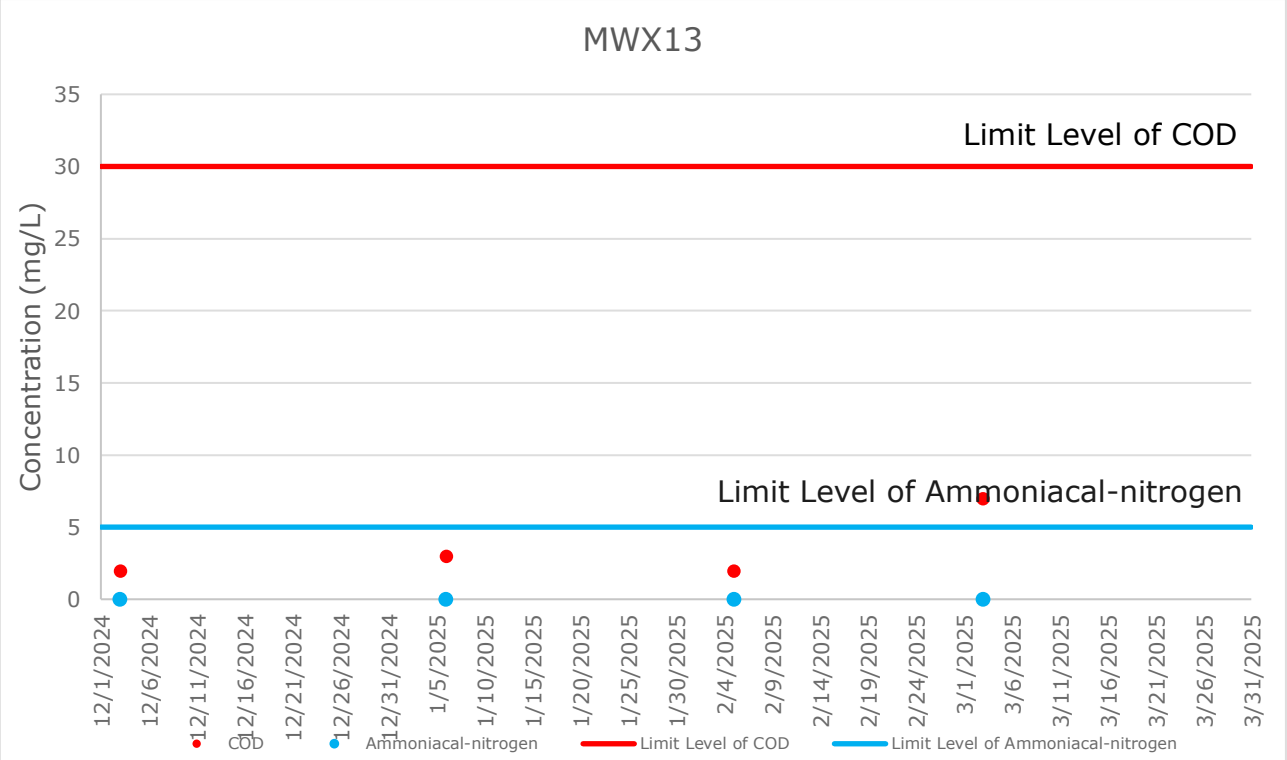
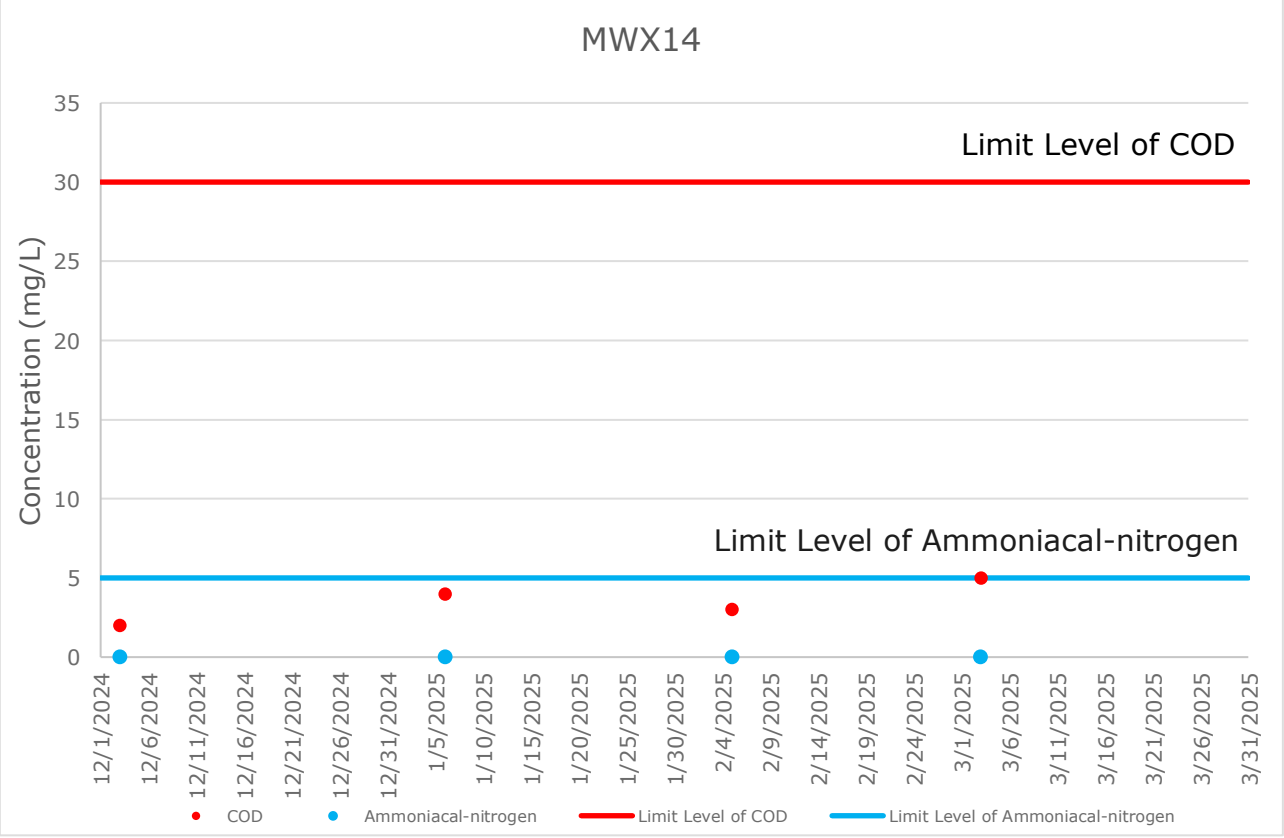


FIGURE F5.14 GRAPHICAL PRESENTATION FOR GROUNDWATER MONITORING (MWX-14)



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	6 January 2025
Time	09:50
Monitoring Location	MWX-7
Parameter	Chemical Oxygen Demand (COD)
Limit Level	COD: >36 mg /L
Measured Level	COD: 48 mg /L
Possible reason	Groundwater contaminated with leachate is commonly characterized by high COD levels as a result of degradation of organic matters in the waste. The ammoniacal-nitrogen monitoring result at groundwater monitoring wells MWX-7 (4.91 mg/L) and the COD monitoring results of the groundwater monitoring wells adjacent to MWX-7 (MWX-6: 42 mg/L and MWX-8: 33 mg/L) are well within the respective limit levels. Hence, there is a low possibility of the elevation of COD level at MWX-7 is 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 5 February 2025 to confirm findings. COD concentration of 39 mg/L was measured at MWX-7 during the sampling event. MWX-7 showed consecutive exceedance of 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-7 on 6 January 2025 could be due to localised organic matters within or around the monitoring well and background fluctuation. Due to the presence of influencing factor from non-project source, there is no adequate evidence showing that the COD level exceedances measured at MWX-7 on 6 January 2025 should be deemed as 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

Investigation Report of Environmental Quality Limit Exceedance	
	at MWX-7 on 6 January 2025 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:	Solana Leung
Designation:	Environmental Team
Date	20 February 2025

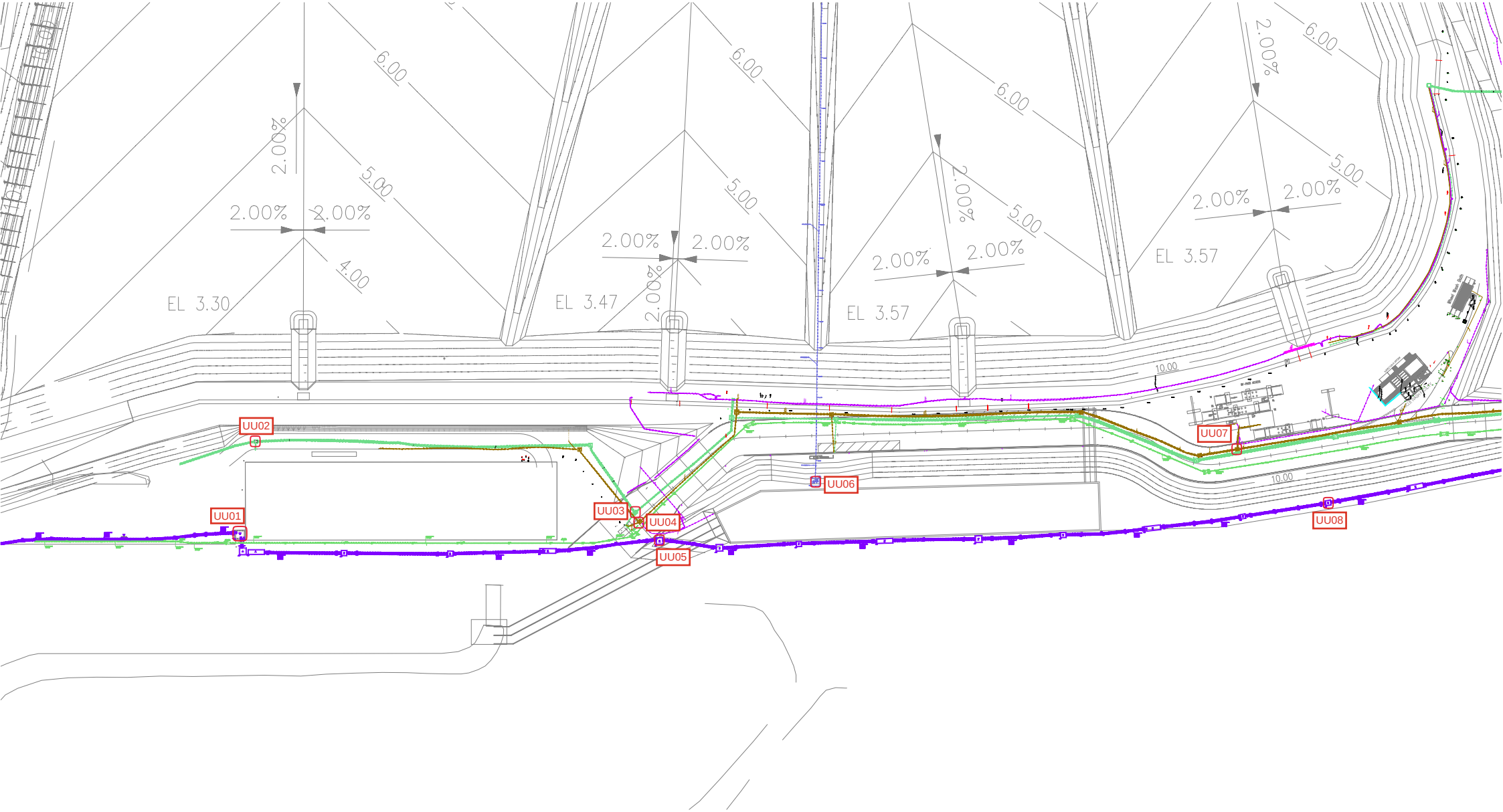
Investigation Report of Environmental Quality Limit Exceedance	
Project	South East New Territories (SENT) Landfill Extension
Date	5 February 2025
Time	MWX-7: 11:35 MWX-8: 11:22
Monitoring Location	MWX-7, MWX-8
Parameter	MWX-7: Chemical Oxygen Demand (COD) MWX-8: Ammoniacal-nitrogen
Limit Level	COD: MWX-7: >36 mg /L Ammoniacal-nitrogen: MWX-8: >15.85 mg /L
Measured Level	COD: MWX-7: 39 mg /L Ammoniacal-nitrogen: MWX-8: 16.4 mg /L
Possible reason	Groundwater contaminated with leachate is commonly characterized by high ammoniacal-nitrogen and COD levels as a result of degradation of organic matters in the waste. The ammoniacal-nitrogen monitoring result at groundwater monitoring wells MWX-7 (5.0 mg/L) and the COD monitoring results of the groundwater monitoring wells adjacent to MWX-7 (MWX-6: 37 mg/L and MWX-8: 48 mg/L) are well within the respective limit levels. The ammoniacal-nitrogen monitoring results of the groundwater monitoring wells adjacent to MWX-8 (MWX-9: 0.54 mg/L) is well within the respective limit levels. Hence, there are a low possibility of the elevation of ammoniacal-nitrogen level at MWX-8 and the elevation of COD level at MWX-7 are due to leachate contamination from SENTX operation or at least they are 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 3 March 2025 to confirm findings. Ammoniacal-nitrogen concentration of 13.7 mg/L (below the Limit Level) was measured at MWX-8 and COD concentration of 34 mg/L (below the Limit Level) was measured at MWX-7 during the sampling event, which demonstrate no consecutive groundwater quality impact at the monitoring locations. 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 ammoniacal-nitrogen at MWX-8 and COD concentration measured at MWX-7 on 5 February 2025 could be due to localised organic matters within or around the monitoring well and background fluctuation.

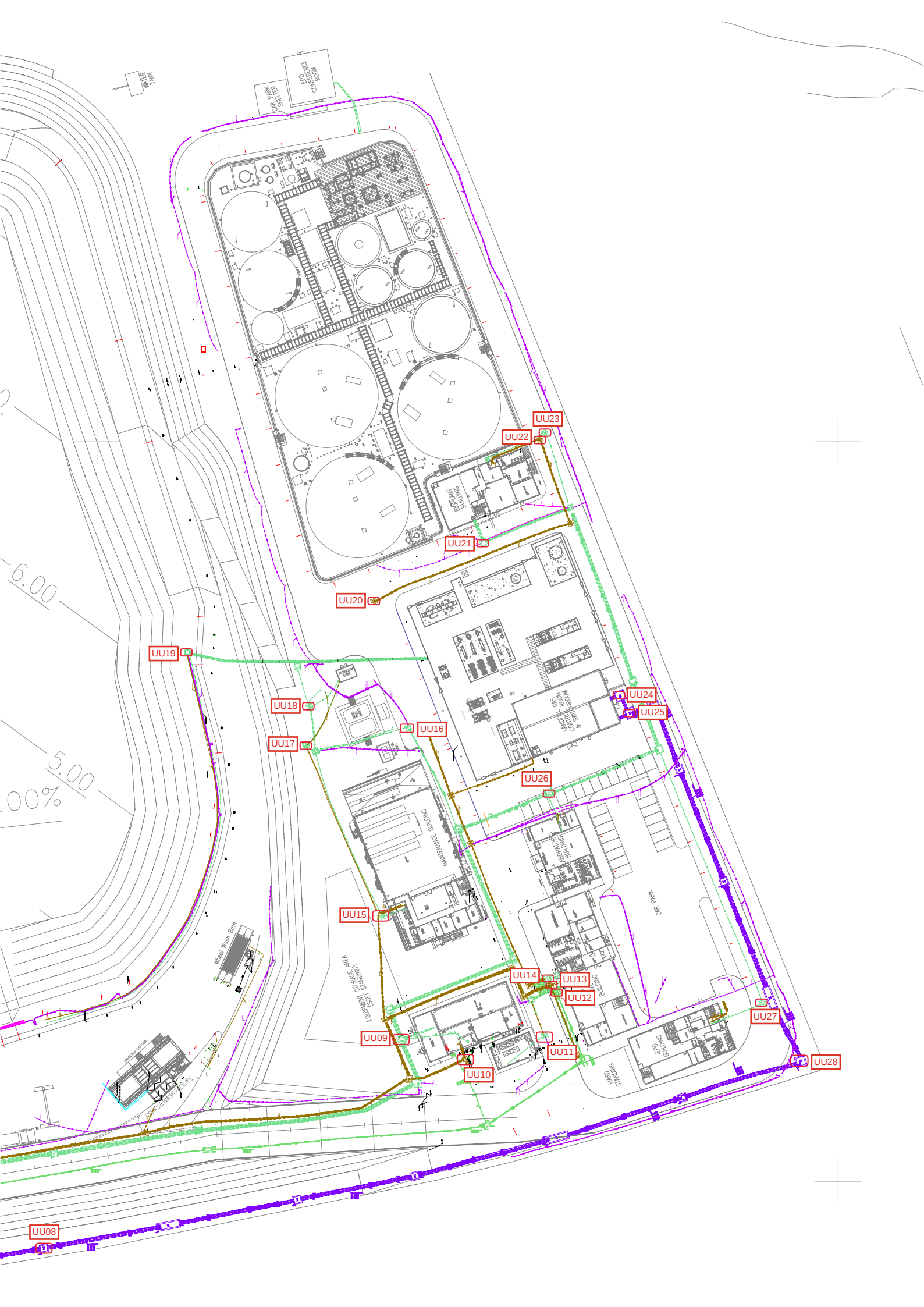
Investigation Report of Environmental Quality Limit Exceedance	
	Due to the presence of influencing factor from non-project source, there is no adequate evidence showing that the ammoniacal-nitrogen measured at MWX-8 and COD level exceedances measured at MWX-7 on 5 February 2025 should be deemed as Project-related 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 ammoniacal-nitrogen at MWX-8 and COD at MWX-7 on 5 February 2025 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:	Solana Leung
Designation:	Environmental Team
Date	17 March 2025

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


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


UU08
UU09
UU10
UU11
UU12
UU13
UU14
UU15
UU16
UU17
UU18
UU19
UU20
UU21
UU22
UU23
UU24
UU25
UU26
UU27
UU28
CAR PARK
Wheel Wash Bath
6.00
5.00

ANNEX G2 LANDFILL GAS MONITORING RESULTS

TABLE G2.1 LANDFILL GAS MONITORING RESULTS AT PERIMETER LFG MONITORING WELLS (JANUARY 2025)

Location	Water Level (mPD)	Methane (% (v/v))	Carbon Dioxide (% (v/v))	Oxygen (% (v/v))
LFG1	2.91	0.0	0.1	20.8
LFG2	2.81	0.0	0.2	20.6
LFG3	2.82	0.0	1.6	18.9
LFG4	2.5	0.0	0.1	20.4
LFG5	2.93	0.0	0.1	20.7
LFG6	2.6	0.0	0.1	20.0
LFG7	3.31	0.0	0.1	20.8
LFG8	3.31	0.0	0.1	20.7
LFG9	2.87	0.0	0.1	19.5
LFG10	2.51	0.0	0.1	20.6
LFG11	2.57	0.0	0.2	19.2
LFG12	2.68	0.0	0.5	18.8
LFG13	2.44	0.0	0.1	20.7
LFG14	2.47	0.0	0.1	20.7
LFG15	2.37	0.0	0.1	20.4
LFG16	N/A [a]	0.0	1.6	19.5
LFG17	N/A [a]	0.0	0.3	20.2
LFG18	2.98	0.0	1.8	18.2
LFG19	3.2	0.0	0.1	20.6
LFG20	3.37	0.0	0.2	20.5
LFG21	3.16	0.0	0.3	20.1
LFG22 [b]	N/A	N/A	N/A	N/A
LFG23	12.72	0.0	0.1	21.5
LFG24	6.49	0.0	0.1	21.5
GP1	Probe Bent	0.0	7.0	10.8
GP2 (shallow)	Probe Bent	0.0	0.5	20.5
GP2 (deep)	Probe Bent	0.0	0.1	20.9
GP3 (shallow)	Probe Bent	0.0	0.1	21.0
GP3 (deep)	Probe Bent	0.0	0.1	20.9
GP4 (shallow)	Probe Bent	0.0	0.5	20.7
GP4 (deep)	Probe Bent	0.0	0.7	20.4
GP5 (shallow)	Probe Bent	0.0	0.1	20.8
GP5 (deep)	39.22	0.0	0.2	21.0
GP6	37.23	0.1	0.4	20.1

Location	Water Level (mPD)	Methane (% (v/v))	Carbon Dioxide (% (v/v))	Oxygen (% (v/v))
GP7	36.12	0.0	1.2	20.0
GP12	2.35	0.0	0.2	20.6
GP15	2.81	0.0	0.2	20.5
P7	2.72	0.0	0.4	19.2
P8	2.76	0.0	0.2	20.4
P9	2.79	0.0	0.2	20.5

Note:
(a) The dip level of Monitoring well LFG16 and LFG17 could not be measured due to thick grass layer.
(b) Monitoring well LFG22 is not accessible due to safety considerations.

TABLE G2.2 LANDFILL GAS MONITORING RESULTS AT PERIMETER LFG MONITORING WELLS (FEBRUARY 2025)

Location	Water Level (mPD)	Methane (% (v/v))	Carbon Dioxide (% (v/v))	Oxygen (% (v/v))
LFG1	2.58	0.0	0.1	20.6
LFG2	2.63	0.0	0.2	20.2
LFG3	2.69	0.0	0.9	19.9
LFG4	2.56	0.0	0.2	20.2
LFG5	2.88	0.0	0.5	14.5
LFG6	2.65	0.0	0.2	20.4
LFG7	3.08	0.0	0.1	20.2
LFG8	2.98	0.0	0.1	20.4
LFG9	2.79	0.0	0.1	20.1
LFG10	2.46	0.0	0.1	20.3
LFG11	2.68	0.0	0.1	20.3
LFG12	2.58	0.0	0.1	18.3
LFG13	2.12	0.0	0.1	20.3
LFG14	2.33	0.0	0.1	20.3
LFG15	2.22	0.0	0.2	20.2
LFG16	N/A [(a)]	0.0	0.3	18.5
LFG17	N/A [(a)]	0.0	0.1	20.5
LFG18	3.4	0.0	0.2	20.4
LFG19	3.02	0.0	0.1	20.3
LFG20	3.28	0.0	0.2	20.4
LFG21	3.02	0.0	0.1	20.4
LFG22	2.93	0.0	0.2	20.3
LFG23	12.83	0.0	0.1	20.5
LFG24	6.26	0.0	0.1	20.9
GP1	Probe Bent	0.0	6.9	13.1
GP2 (shallow)	Probe Bent	0.0	0.9	18.3
GP2 (deep)	Probe Bent	0.0	2.5	15.0
GP3 (shallow)	Probe Bent	0.0	0.1	20.8
GP3 (deep)	Probe Bent	0.0	0.1	20.8
GP4 (shallow)	Probe Bent	0.0	1.2	18.9
GP4 (deep)	Probe Bent	0.0	1.6	19.4
GP5 (shallow)	Probe Bent	0.0	0.1	20.9
GP5 (deep)	38.6	0.0	0.1	20.9
GP6	36.83	0.2	0.1	18.7

Location	Water Level (mPD)	Methane (% (v/v))	Carbon Dioxide (% (v/v))	Oxygen (% (v/v))
GP7	26.13	0.0	0.2	18.2
GP12	2.25	0.0	0.2	20.7
GP15	2.67	0.0	0.1	20.1
P7	2.71	0.0	0.7	17.1
P8	2.73	0.0	0.6	20.0
P9	2.74	0.0	0.1	20.7

Note:

(a) The dip level of Monitoring well LFG16 and LFG17 could not be measured due to thick grass layer.

TABLE G2.3 LANDFILL GAS MONITORING RESULTS AT PERIMETER LFG MONITORING WELLS (MARCH 2025)

Location	Water Level (mPD)	Methane (% (v/v))	Carbon Dioxide (% (v/v))	Oxygen (% (v/v))
LFG1	2.67	0.1	0.1	19.4
LFG2	2.56	0.0	0.1	19.3
LFG3	2.75	0.1	0.1	19.5
LFG4	2.6	0.1	0.1	19.3
LFG5	2.9	0.1	0.2	19.6
LFG6	2.17	0.1	0.1	19.3
LFG7	2.66	0.0	0.1	19.1
LFG8	2.6	0.0	0.1	19.1
LFG9	2.60	0.0	0.1	18.1
LFG10	2.56	0.1	0.1	18.0
LFG11	2.47	0.0	0.1	18.2
LFG12	2.34	0.1	0.2	17.7
LFG13	2.38	10.2	0.4	6.8
LFG14	2.06	0.1	0.1	19.0
LFG15	2.17	0.1	0.1	19.0
LFG16	N/A [(a)]	0.0	0.4	18.4
LFG17	N/A [(a)]	0.0	0.1	19.0
LFG18	2.81	0.0	1.3	17.0
LFG19	2.84	0.0	0.2	19.1
LFG20	2.93	0.0	0.1	19.4
LFG21	2.93	0.0	0.2	19.7
LFG22	2.65	0.0	0.2	19.4
LFG23	12.85	0.0	0.7	18.2
LFG24	6.34	0.0	0.1	19.1
GP1	Probe Bent	0.0	4.9	3.6
GP2 (shallow)	Probe Bent	0.0	0.3	18.3
GP2 (deep)	Probe Bent	0.0	0.2	19.1
GP3 (shallow)	Probe Bent	0.0	0.2	19.2
GP3 (deep)	Probe Bent	0.0	0.3	19.5
GP4 (shallow)	Probe Bent	0.0	0.7	18.5
GP4 (deep)	Probe Bent	0.0	0.6	18.6
GP5 (shallow)	Probe Bent	0.0	0.1	18.8
GP5 (deep)	38.3	0.1	0.2	18.2
GP6	36.62	0.8	2.4	15.1

Location	Water Level (mPD)	Methane (% (v/v))	Carbon Dioxide (% (v/v))	Oxygen (% (v/v))
GP7	35.87	0.1	0.2	18.2
GP12	2.21	0.0	0.7	18.7
GP15	2.44	0.1	0.1	19.4
P7	2.52	0.1	0.5	19.0
P8	2.63	0.0	0.2	19.4
P9	2.42	0.1	0.1	19.4

Note:

(a) The dip level of Monitoring well LFG16 and LFG17 could not be measured due to thick grass layer.

TABLE G2.4 LANDFILL GAS MONITORING AT SERVICE VOIDS, UTILITIES PITS AND MANHOLE (JANUARY 2025)

Location	Methane (% (v/v))	Carbon Dioxide (% (v/v))	Oxygen (% (v/v))
UU01	0.0	0.1	20.6
UU02	0.0	0.1	20.5
UU03	Voided due to latest site programme and on-going operation work		
UU04	0.0	0.1	20.8
UU05	0.0	0.1	20.8
UU06	0.0	0.1	20.6
UU07	0.0	0.1	20.7
UU08	0.0	0.1	20.7
UU09	0.0	0.1	20.8
UU10	0.0	0.1	20.8
UU11	0.0	0.1	21.6
UU12	Voided due to latest site programme and on-going operation work		
UU13	0.0	0.1	21.4
UU14	0.0	0.1	21.4
UU15	0.0	0.1	20.5
UU16	0.0	0.1	21.4
UU17	Voided due to latest site programme and on-going operation work		
UU18	Voided due to latest site programme and on-going operation work		
UU19	Voided due to latest site programme and on-going operation work		
UU20	0.0	0.1	21.3
UU21	0.0	0.1	21.4
UU22	0.0	0.1	21.4
UU23	0.0	0.1	21.4
UU24	0.0	0.1	21.4
UU25	0.0	0.1	21.4
UU26	0.0	0.1	21.4
UU27	0.0	0.1	21.5
UU28	0.0	0.1	21.5

TABLE G2.5 LANDFILL GAS MONITORING AT SERVICE VOIDS, UTILITIES PITS AND MANHOLE (FEBRUARY 2025)

Location	Methane (% (v/v))	Carbon Dioxide (% (v/v))	Oxygen (% (v/v))
UU01	0.0	0.2	20.5
UU02	0.0	0.2	20.4
UU03	Voided due to latest site programme and on-going operation work		
UU04	0.0	0.2	20.4
UU05	0.0	0.2	20
UU06	0.0	0.2	20.2
UU07	0.0	0.2	20.4
UU08	0.0	0.2	20.2
UU09	0.0	0.2	20.3
UU10	0.0	0.2	20.3
UU11	0.0	0.2	20.2
UU12	Voided due to latest site programme and on-going operation work		
UU13	0.0	0.2	20.4
UU14	0.0	0.2	20
UU15	0.0	0.2	20.2
UU16	0.0	0.2	20.4
UU17	Voided due to latest site programme and on-going operation work		
UU18	Voided due to latest site programme and on-going operation work		
UU19	Voided due to latest site programme and on-going operation work		
UU20	0.0	0.2	20.4
UU21	0.0	0.2	20.3
UU22	0.0	0.2	20.3
UU23	0.0	0.1	20.3
UU24	0.0	0.1	20.4
UU25	0.0	0.1	20.3
UU26	0.0	0.1	20.3
UU27	0.0	0.1	20.4
UU28	0.0	0.1	20.3

TABLE G2.6 LANDFILL GAS MONITORING AT SERVICE VOIDS, UTILITIES PITS AND MANHOLE (MARCH 2025)

Location	Methane (% (v/v))	Carbon Dioxide (% (v/v))	Oxygen (% (v/v))
UU01	0.1	0.1	19.5
UU02	0.1	0.1	19.5
UU03	Voided due to latest site programme and on-going operation work		
UU04	0.0	0.2	20.7
UU05	0.0	0.1	19.0
UU06	0.1	0.1	19.1
UU07	0.0	0.1	19.0
UU08	0.1	0.1	18.8
UU09	0.0	0.1	19.5
UU10	0.0	0.1	19.5
UU11	0.0	0.1	19.5
UU12	Voided due to latest site programme and on-going operation work		
UU13	0.0	0.1	19.4
UU14	0.0	0.1	19.5
UU15	0.0	0.1	19.6
UU16	0.0	0.1	19.6
UU17	Voided due to latest site programme and on-going operation work		
UU18	Voided due to latest site programme and on-going operation work		
UU19	Voided due to latest site programme and on-going operation work		
UU20	0.0	0.1	19.5
UU21	0.0	0.1	19.5
UU22	0.0	0.1	19.5
UU23	0.0	0.1	19.5
UU24	0.0	0.1	19.6
UU25	0.0	0.1	19.5
UU26	0.0	0.1	19.6
UU27	0.0	0.1	19.7
UU28	0.1	0.1	19.6

TABLE G2.7 LANDFILL GAS BULK GAS SAMPLING MONITORING RESULTS

Parameters	LFG4	LFG6
Methane (% (v/v))	<0.020	<0.020
Carbon Dioxide (% (v/v))	0.133	0.111
Oxygen (% (v/v))	20.1	20.4
Nitrogen (% (v/v))	77.2	77.3
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)
No flammable gas surface emission detected in the reporting period							

ANNEX G3 EVENT AND ACTION PLAN FOR LANDFILL GAS MONITORING

ANNEX G3 EVENT AND ACTION PLAN FOR LANDFILL GAS MONITORING

Action			
Event	**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	• Verify the findings by ET	• Nil

Action			
Event	**ET**	**IEC**	**Contractor**
	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		
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	• 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

Action			
Event	**ET**	**IEC**	**Contractor**
	• 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		
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 PROSECUTION

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	3	24
Air Quality (Odour)	Action	0	0
	Limit	0	0
Air Quality (Emissions of Thermal Oxidiser)	Limit	1	5
Air Quality (Emissions of Landfill Gas Flare)	Limit	1	9
Air Quality (Emissions of Landfill Gas Generator)	Limit	0	0
Noise	Action	0	0
	Limit	0	0
Water Quality (Surface Water)	Limit	0	64
Water Quality (Leachate)	Limit	0	1
Water Quality (Leachate Level)	Limit	0	194
Water Quality (Groundwater)	Limit	3	37
Landfill Gas (Perimeter Landfill Gas Monitoring Wells)	Limit	0	5
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 (1 Jan – 31 Mar 2025)	0	0	0
Total no. received since project commencement	1	0	0

ERM HAS OVER 160 OFFICES ACROSS THE FOLLOWING COUNTRIES AND TERRITORIES WORLDWIDE

Argentina
Australia
Belgium
Brazil
Canada
China
Colombia
France
Germany
Ghana
Guyana
Hong Kong
India
Indonesia
Ireland
Italy
Japan
Kazakhstan
Kenya
Malaysia
Mexico
Mozambique
The Netherlands
New Zealand
Peru
Poland
Portugal
Puerto Rico
Romania
Senegal
Singapore
South Africa
South Korea
Spain
Switzerland
Taiwan
Tanzania
Thailand
UAE
UK
US
Vietnam

ERM
2507 One Harbourfront
18 Tak Fung Street
Hunghom, Kowloon
Hong Kong
T: +852 22713000
F: +852 3015 8052

www.erm.com