South East New Territories (SENT) Landfill Extension

Annual Environmental Monitoring & Audit Report No.5

PREPARED FOR

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

Green Valley Landfill Ltd.

DATE
10 April 2024

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/C and FEP-01/308/2008/C

Reference Document/Plan

Document/Plan to be Certified/Verified:	Annual Environmental Monitoring & Audit Report No. 5 for South East New Territories (SENT) Landfill Extension
Date of Report:	11 April 2024

Reference EM&A Manual Requirement

EM&A Manual: Condition No. 11.5

The Annual EM&A summary report shall be prepared by the ET, certified by the ET Leader and verified by the IEC. The Annual EM&A summary report should contain all information listed under Section 11.5 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: 11 April 2024

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: 17 April 2024

DOCUMENT DETAILS

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South East New Territories (SENT) Landfill Extension

Annual Environmental Monitoring & Audit Report No.5

0465169

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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 Annual EM&A report presents the EM&A works carried out during the period from 1 January 2023 to 31 December 2023 for the Project in accordance with the updated EM&A Manual.

EXCEEDANCE OF ACTION AND LIMIT LEVELS FOR AIR QUALITY

Fourteen exceedances of Action and Limit Levels for dust (TSP), four exceedances of Limit Level for thermal oxidizer stack emission (SO_2) and one exceedance of Limit Level for landfill gas flare stack emission (Benzene) were recorded for air quality monitoring in the reporting period.

The TSP exceedances at AM2 on 7 January 2023, 31 January 2023, 8 March 2023, 14 March 2023, 1 May 2023 and 6 June 2023, and at AM3 on 31 January 2023 were considered Project-related upon further investigation, while the TSP exceedances at AM1 on 31 January 2023, 2 March 2023, 14 March 2023, 13 April 2023, 22 and 28 September 2023, and at AM3 on 21 November 2023 were considered non Project-related upon further investigation.

The thermal oxidiser stack emission (SO_2) exceedances on 18 January 2023, 13 September 2023, 16 October 2023 and 16 November 2023 and the landfill gas flare stack emission (Benzene) exceedance on 12 May 2023 were considered Project-related 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

Nine exceedances of the Limit Level for groundwater (COD), one exceedance of Limit Levels for surface water (SS), one hundred seventy-eight exceedances of the Limit Level for Leachate Level were recorded for water quality impact monitoring in the reporting period.

The SS exceedance at DP4 on 4 August 2023 was found deemed to Project-related upon further investigation.

groundwater (COD) exceedances at MWX-5 on 4 May 2023, at MWX-6 on 7 March 2023, 13 April 2023, 2 August 2023, 14 December 2023, at MWX-7 on 11 July 2023, 22 September

2023, 7 November 2023 and MWX-8 on 4 May 2023 were considered non Project-related upon further investigation.

The leachate level exceedances at Pump Station No. 1X from 8 September to 16 September 2023 and from 9 October to 17 October 2023, at Pump Station No. 2X from 11 October to 23 November 2023, at Pump Station No. 3X from 8 September to 20 September 2023 and from 9 October to 24 November 2023, and at Pump Station No. 4X from 17 June to 22 June 2023 and from 8 September to 20 September 2023, and from 9 October to 14 November 2023 were considered Project-related upon further investigation.

EXCEEDANCE OF ACTION AND LIMIT LEVELS FOR LANDFILL GAS

One exceedance of Limit Levels for perimeter landfill gas (methane) and one exceedance of Limit Levels for perimeter landfill gas (carbon dioxide) were recorded for perimeter landfill gas monitoring in the reporting period.

The landfill gas (methane) exceedance at LFG13 on 13 April 2023 and landfill gas (carbon dioxide) exceedance at LFG24 on 5 June 2023 were considered non Project-related upon further investigation.

ENVIRONMENTAL COMPLAINTS, SUMMONS AND PROSECUTIONS

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

REPORTING CHANGE

There was no reporting change in the reporting period.

1. INTRODUCTION

1.1 BACKGROUND

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

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

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

1.2 PROJECT DESCRIPTION

The SENTX is a piggyback landfill, occupying the southern part of the existing SENT Landfill (including its infrastructure area) and 13 ha of Tseung Kwan O (TKO) Area 137. A layout plan of the SENTX is shown in **Figure 1.1**. Under the latest design, the SENTX has a net void capacity of about 6.5 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

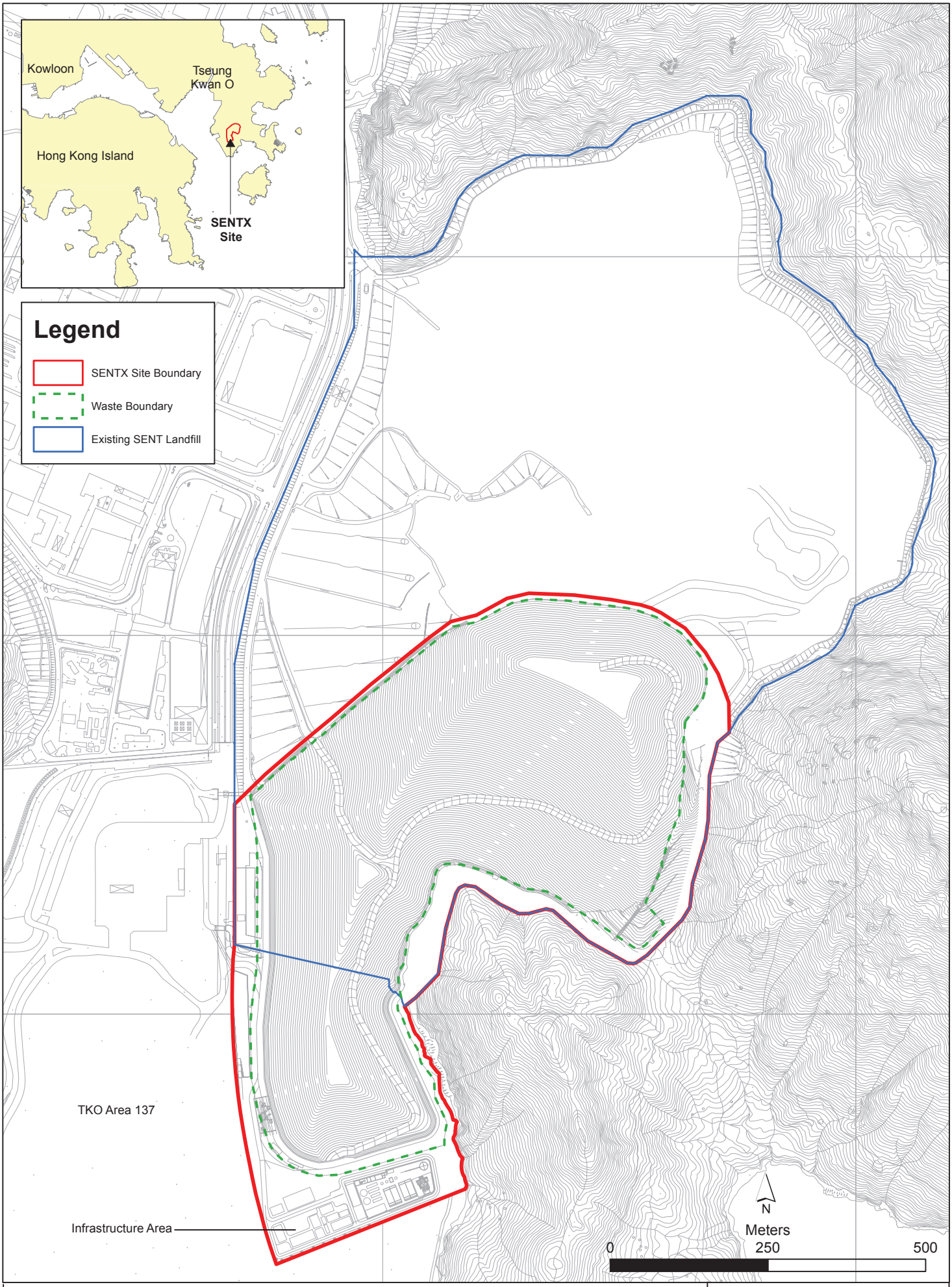

Figure 1.1

Layout Plan of SENTX

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Date: 5/9/2018

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TABLE 1.1 ESTIMATED KEY DATES OF IMPLEMENTATION PROGRAMME

Key Stage of the Project	Indicative Date
Start construction	2 January 2019
Commissioning of new infrastructure facilities	2020
Demolition of existing infrastructure facilities	2021
Start waste intake at SENTX	21 November 2021
Estimated exhaustion date of. SENTX	2027
End of aftercare for SENTX	2057

The major construction works of the SENTX includes:

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

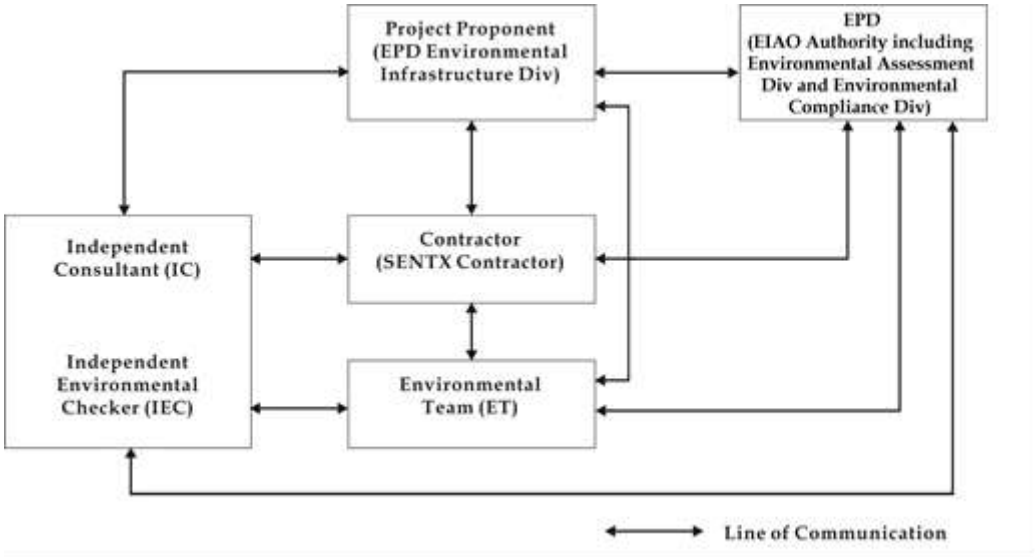
1.3 SCOPE OF THE EM&A REPORT

This is the Annual EM&A Report for the Project which summarises the key findings of the EM&A programme during the reporting period from 1 January 2023 to 31 December 2023 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 2023

- Rectification of defects at Landfill Gas (LFG) Plant, Leachate Treatment Plant (LTP), infrastructure area and waste reception area;
- Construction of overflow weir at Cell 4X;
- Installation of drainage pipes at Cell 4X overflow weir;
- Deployment of liner at Cell 4X (tie-in with SENT Landfill Base Cell) at North side – Landfill;
- Construction of rockwall bench 2;
- Construction of temporary landfill gas pipe connection;
- Maintenance and improvement of temporary surface water drainage; and
- Construction of DP3 leachate pipe connection.

February 2023

- Rectification of defects and latent defects at LFG Plant, LTP and infrastructure area;

- Construction of rockwall bench 2;
- Stone filling at overflow weir;
- Installation of LFG pipes at SENT and SENTX tie-in area;
- Placement of drainage stones at SENT and SENTX tie-in area; and
- Maintenance and improvement of temporary surface water drainage.

March 2023

- Rectification of latent defects at LFG Plant, LTP and infrastructure area;
- Construction of rockwall bench 2;
- Deployment of liner system at rockwall buttress bench 2;
- Installation of ST pipes at Cell 4X;
- Maintenance and improvement of temporary surface water drainage; and
- Rectification of outstanding minor items for weighmaster house and guard house.

April 2023

- Rectification of latent defects at LFG Plant and LTP;
- Construction of rockwall bench 2;
- Deployment of liner system at rockwall buttress bench 2;
- Maintenance and improvement of temporary surface water drainage; and
- Rectification of outstanding minor items for weighmaster house and guard house.

May 2023

- Rectification of latent defects at LFG Plant and LTP;
- Construction of SENT soil bench tie in;
- Deployment of liner system at rockwall buttress bench 2;
- Maintenance and improvement of temporary surface water drainage;
- Civil and E&M works for Diesel Fuel Tank, such as canopy, pumps and equipment installation; and
- Rectification of outstanding minor items for weighmaster house and guard house.

June 2023

- Rectification of latent defects at LFG Plant and LTP;
- Construction of SENT soil bench tie in;
- Maintenance and improvement of temporary surface water drainage;
- Civil and E&M works for Diesel Fuel Tank, such as canopy, pumps and equipment installation; and
- Rectification of outstanding minor items for weighmaster house and guard house.

July 2023

- Rectification of latent defects at LFG Plant and LTP;
- Construction of SENT soil bench tie in;
- Maintenance and improvement of temporary surface water drainage;

- Civil and E&M works for Diesel Fuel Tank, such as canopy, pumps and equipment installation;
- Liner installation at Cell 4X buttress wall;
- Rectification of outstanding minor items for weighmaster house and guard house; and
- Restoration of Phase 1 Cell 1X.

August 2023

- Rectification of latent defects at LFG Plant and LTP;
- Maintenance and improvement of temporary surface water drainage;
- Rectification of outstanding minor items for weighmaster house and guard house;
- E&M works for Diesel Fuel Tank, such as pumps and equipment; and
- Restoration of Phase 1 Cell 1X.

September 2023

- Rectification of latent defects at LFG Plant and LTP;
- Maintenance and improvement of temporary surface water drainage;
- Rectification of outstanding minor items for weighmaster house and guard house; and
- Restoration of Phase 1 Cell 1X.

October 2023

- Testing and commissioning of CCTV system at infrastructure area;
- Maintenance and improvement of temporary surface water drainage;
- Weighbridge enhancement with C-easy; and
- Restoration of Phase 1 Cell 1X.

November 2023

- Maintenance and improvement of temporary surface water drainage;
- Weighbridge enhancement with C-easy; and
- Restoration of Phase 1 Cell 1X and 2X west slopes.

December 2023

- Maintenance and improvement of temporary surface water drainage;
- Weighbridge enhancement with C-easy; and
- Restoration of Phase 1 Cell 1X, 2X and Phase 2 Cell 3X west 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:

- Twelve environmental management meeting was held with the Contractor, ER, ET, IEC and EPD on 19 January 2023, 22 February 2023, 23 March 2023, 19 April 2023, 18 May 2023, 15 June 2023, 20 July 2023, 17 August 2023, 21 September 2023, 19 October 2023, 16 November 2023 and 14 December 2023; and
- Environmental toolbox trainings on the following topics were provided by the Contractor to the workers:
    - Tree Protection Zones on 12 January 2023;
    - Cleaning Recycling on 19 January 2023;
    - Illegal dumping on 8 February 2023;
    - Indoor air quality on 22 February 2023;
    - Persistent Organic Pollutants on 8 March 2023;
    - Wastewater Management on 22 March 2023;
    - Trip Ticket System on 14 April 2023;
    - Noise Control Ordinance on 25 April 2023;
    - Air Pollution (Dark Smoke) on 16 May 2023;
    - Waste Reduction in Construction Industry on 23 May 2023;
    - Mosquito Prevention in Construction Site on 14 June 2023;
    - Non-road Mobile Machinery (NRMM) on 28 June 2023.
    - Good Vehicle Maintenance Practice on 19 July 2023;
    - Renewable Energy on 26 July 2023;
    - Cut Down Construction Dust on 16 August 2023;
    - Chemical Waste Handling on 23 August 2023;
    - Quality Powered Mechanical Equipment (QPME) on 20 September 2023;
    - Cleaning Recycling on 26 September 2023;
    - Wastewater Management in Construction Site on 20 October 2023;
    - Volatile Organic Compounds (VOC) and Smog on 25 October 2023;

- Tree Protection Zone on 14 November 2023;
- Chemical Waste Handling on 23 November 2023;
- Air Pollution and Dark Smoke on 13 December 2023; and
- Illegal Dumping on 20 December 2023.

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
Further Environmental Permit	FEP-01/308/2008/B	Granted on 16 May 2018

Water Discharge License under WPCO (Permit Holder: GVL)	Licence No.: WT00041447-2022	Validity from 17 June 2022 to 30 June 2024
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)	GW-RE0956-22	Validity from 23 September 2022 to 14 March 2023
	GW-RE0245-23	Validity from 15 March 2023 to 14 September 2023
	GW-RE1146-23	Validity from 15 September 2023 to 14 March 2024

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.

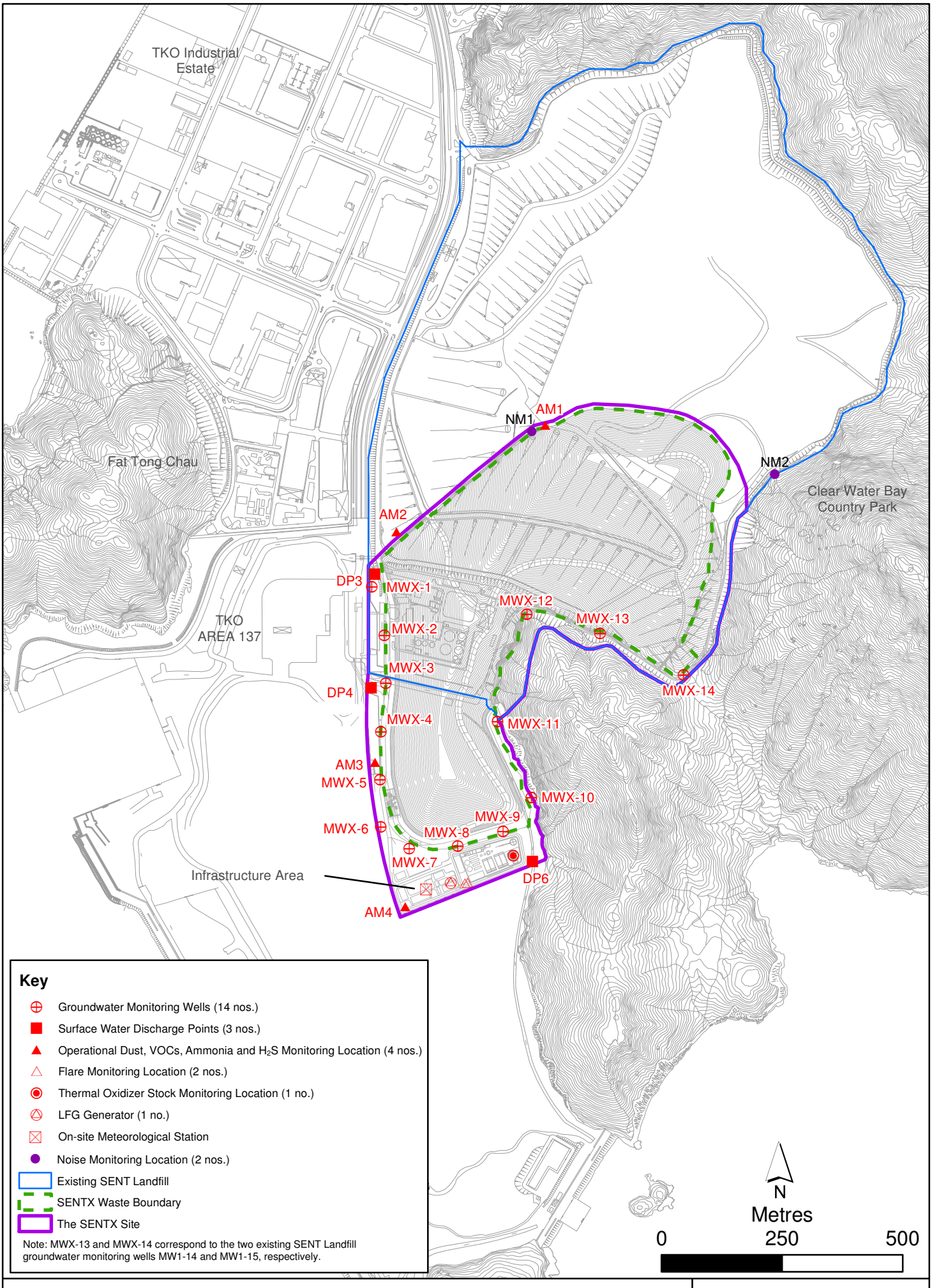


Figure 2.1

Environmental Monitoring Locations

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Date: 19/11/2019

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TABLE 2.2 DUST MONITORING DETAILS

Monitoring Station	Location	Parameter	Frequency and Duration	Monitoring Dates	Equipment
AM1	SENTX Site Boundary (North)	24-hour TSP	Once every 6 days	1, 7, 13, 19, 25, 31 Jan 2023 6, 12, 18, 24 Feb 2023 2, 8, 14, 20, 26 Mar 2023 1, 7, 13, 19, 25 Apr 2023 1, 7, 13, 19, 25, 31 May 2023 6, 12, 18, 20 (Re-measurement at AM2), 24, 30 Jun 2023 6, 12, 18, 24, 30 Jul 2023 5, 11, 17, 23, 29 Aug 2023 4, 10, 16, 22, 28 Sep 2023 4, 10, 16, 22, 28 Oct 2023 3, 9, 15, 21, 27 Nov 2023 3, 9, 15, 21, 27 Dec 2023	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 2023	AM1	173	43 - 509	260	260
	AM2	142	47 - 337	260	260
	AM3	153	78 - 267	260	260
	AM4	122	71 - 158	260	260
February 2023	AM1	116	75 - 192	260	260
	AM2	102	43 - 211	260	260
	AM3	139	62 - 191	260	260
	AM4	109	47 - 169	260	260
March 2023	AM1	220	58 - 401	260	260
	AM2	252	108 - 452	260	260
	AM3	125	41 - 225	260	260
	AM4	102	35 - 145	260	260
April 2023	AM1	146	44 - 365	260	260
	AM2	129	65 - 252	260	260
	AM3	97	29 - 213	260	260
	AM4	98	67 - 168	260	260
May 2023	AM1	150	113 - 221	260	260
	AM2	157	57 - 356	260	260
	AM3	112	59 - 173	260	260
	AM4	97	65 - 119	260	260
June 2023	AM1	77	38 - 155	260	260
	AM2	154	88 - 340	260	260
	AM3	61	31 - 86	260	260
	AM4	57	36 - 72	260	260
July 2023	AM1	118	83 - 157	260	260
	AM2	120	80 - 157	260	260
	AM3	116	81 - 143	260	260
	AM4	80	49 - 133	260	260
August 2023	AM1	70	53 - 112	260	260
	AM2	120	76 - 156	260	260
	AM3	97	56 - 125	260	260

	AM4	79	46 - 105	260	260
September 2023	AM1	176	29 - 357	260	260
	AM2	106	43 - 196	260	260
	AM3	122	33 - 238	260	260
	AM4	85	39 - 189	260	260
October 2023	AM1	97	54 - 177	260	260
	AM2	100	45 - 163	260	260
	AM3	151	80 - 233	260	260
	AM4	106	72 - 158	260	260
November 2023	AM1	158	127 - 186	260	260
	AM2	134	91 - 192	260	260
	AM3	240	212 - 272	260	260
	AM4	119	86 - 141	260	260
December 2023	AM1	133	68 - 186	260	260
	AM2	122	85 - 154	260	260
	AM3	148	109 - 178	260	260
	AM4	151	93 -252	260	260

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

Action and Limit Levels exceedance was 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 exceedance was conducted and the investigation report is presented in **Annex D7**.

Based on the investigation conducted for the monitoring event with potential Limit Levels exceedance with the Contractor and the IEC, the TSP exceedances at AM2 on 7 January 2023, 31 January 2023, 8 March 2023, 14 March 2023, 1 May 2023 and 6 June 2023, and at AM3 on 31 January 2023 were considered Project-related, while the TSP exceedances at AM1 on 31 January 2023, 2 March 2023, 14 March 2023, 13 April 2023, 22 and 28 September 2023, and at AM3 on 21 November 2023 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.

2.1.1.4 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.

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

TABLE 2.4 ACTION AND LIMIT LEVELS FOR ODOUR PATROL

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

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

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

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

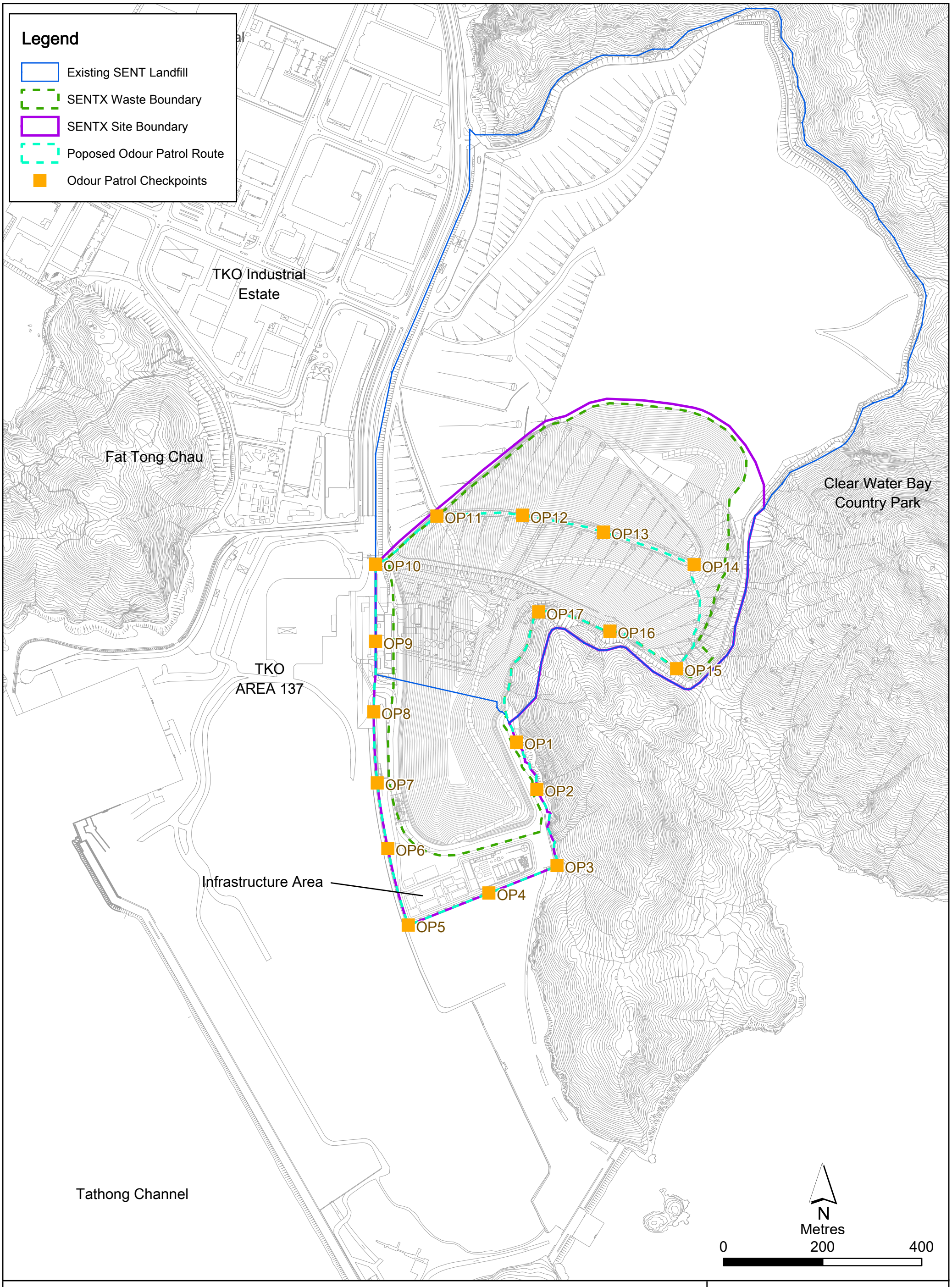

Figure 2.2

Odour Patrol Route for
Operation/ Restoration Phase Odour Monitoring

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Date: 18/8/2022

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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: 26 Jan 2023, 3 Feb 2023, 18 Apr 2023, 22 May 2023, 27 Jul 2023, 17 Aug 2023, 19 Oct 2023, 9 Nov 2023 Conducted by an independent third party, ET & IEC: 22 Mar 2023, 15 Jun 2023, 20 Sep 2023, 15 Dec 2023

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

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

The potential odour source in the reporting period included the LTP, pump truck at LTP, the generator, dump truck, sediment trap, Cell 4X tipping area at SENTX, as well as the nearby Towngas plant, vegetation and the construction works from other project site.

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

2.1.3 THERMAL OXIDISER, LANDFILL GAS FLARE AND LANDFILL GAS GENERATOR STACK EMISSION MONITORING

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 x 10^{-2} gs^{-1}
Vinyl chloride	2.23 x 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	2.47×10^{-4} gs^{-1}
Vinyl chloride	1.88×10^{-5} gs^{-1}
Gas combustion temperature	450°C (minimum)
Exhaust gas exit temperature	723K (minimum) (a)
Exhaust gas velocity	30.0 ms^{-1} (minimum) (a)

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	18 Jan 2023, 21 Feb 2023, 22 Mar 2023, 19 Apr 2023, 11 May 2023, 15 Jun 2023, 12 Jul 2023, 15 Aug 2023, 13 Sep 2023, 16 Oct 2023, 16 Nov 2023, 15 Dec 2023
	Laboratory analysis for • Non-methane organic compounds CO	Quarterly for the 1st year of operation (b)	21 Feb 2023, 11 May 2023, 15 Aug 2023, 16 Nov 2023
	Laboratory analysis for • Ammonia • Gas combustion temperature • Exhaust temperature • Exhaust gas velocity (a)	Quarterly	21 Feb 2023, 11 May 2023, 15 Aug 2023, 16 Nov 2023
	• Gas combustion temperature • Exhaust temperature • Exhaust gas velocity (a)	Continuously	1 Jan – 31 Dec 2023
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	17 Jan 2023, 22 Feb 2023, 23 Mar 2023, 20 Apr 2023, 12 May 2023, 16 Jun 2023, 11 Jul 2023, 16 Aug 2023, 14 Sep 2023, 17 Oct 2023, 15 Nov 2023, 14 Dec 2023
	Laboratory analysis for • Non-methane organic compounds CO	Quarterly for the 1st year of operation (b)	22 Feb 2023, 12 May 2023, 16 Aug 2023, 15 Nov 2023

Monitoring Location	Parameter	Frequency	Monitoring Date
Stack of Landfill Gas Flare	• Gas combustion temperature • Exhaust temperature • Exhaust gas velocity (a)	Continuously	1 Jan – 31 Dec 2023
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	17 Jan 2023, 21 Feb 2023, 23 Mar 2023, 20 Apr 2023, 12 May 2023, 16 Jun 2023, 11 Jul 2023, 16 Aug 2023, 14 Sep 2023, 17 Oct 2023, 15 Nov 2023, 14 Dec 2023
	Laboratory analysis for • Non-methane organic compounds	Quarterly for the 1st year of operation (b)	21 Feb 2023, 12 May 2023, 16 Aug 2023, 15 Nov 2023
	• Exhaust temperature • Exhaust gas velocity (a)	Continuously	1 Jan – 31 Dec 2023

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 2023		
NO_2	1.21 gs^{-1}	1.58 gs^{-1}
CO	<0.01 gs^{-1}	0.53 gs^{-1}
SO_2	0.21 gs^{-1}	0.07 gs^{-1}
Benzene	<2.0 x 10^{-4} gs^{-1}	3.01 x 10^{-2} gs^{-1}
Vinyl chloride	<1.6 x 10^{-4} gs^{-1}	2.23 x 10^{-3} gs^{-1}
Gas combustion temperature	929°C (910°C – 965°C)	850°C (minimum)
Exhaust gas exit temperature	1,236K (1,221K – 1,255K)	443K (minimum) (a)
Exhaust gas velocity	11.4 ms^{-1} (b)	7.5 ms^{-1} (minimum) (a)
February 2023		
NO_2	0.95 gs^{-1}	1.58 gs^{-1}
CO	<0.01 gs^{-1}	0.53 gs^{-1}
SO_2	<0.01 gs^{-1}	0.07 gs^{-1}
Non-Methane Organic Carbons	<2.0 x 10^{-4} gs^{-1}	-
Benzene	<1.3 x 10^{-4} gs^{-1}	3.01 x 10^{-2} gs^{-1}
Vinyl chloride	<3.0 x 10^{-3} gs^{-1}	2.23 x 10^{-3} gs^{-1}
Ammonia	0.0384 gs^{-1}	-(c)
Gas combustion temperature	923°C (895°C – 942°C)	850°C (minimum)
Exhaust gas exit temperature	1,230K (1,198K – 1,256K)	443K (minimum) (a)
Exhaust gas velocity	10.1 ms^{-1} (b)	7.5 ms^{-1} (minimum) (a)
March 2023		
NO_2	1.34 gs^{-1}	1.58 gs^{-1}
CO	<0.01 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	<1.4 x 10^{-4} gs^{-1}	2.23 x 10^{-3} gs^{-1}

Parameters	Monitoring Results (Range in Bracket)	Limit Level
Gas combustion temperature	928ºC (908ºC – 956ºC)	850ºC (minimum)
Exhaust gas exit temperature	1,222K (1,188K – 1,240K)	443K (minimum) [a]
Exhaust gas velocity	11.3 ms^{-1} [b]	7.5 ms^{-1} (minimum) [a]
April 2023		
NO_2	0.98 gs^{-1}	1.58 gs^{-1}
CO	<0.01 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	<1.2 x 10-4 gs^{-1}	2.23 x 10^{-3} gs^{-1}
Gas combustion temperature	925ºC (919ºC – 937ºC)	850ºC (minimum)
Exhaust gas exit temperature	1,236K (1,198K – 1,281K)	443K (minimum) [a]
Exhaust gas velocity	10.4 ms^{-1} [b]	7.5 ms^{-1} (minimum) [a]
May 2023		
NO_2	0.35 gs^{-1}	1.58 gs^{-1}
CO	<0.01 gs^{-1}	0.53 gs^{-1}
SO_2	<0.01 gs^{-1}	0.07 gs^{-1}
Benzene	1.0 x 10^{-4} gs^{-1}	3.01 x 10^{-2} gs^{-1}
Vinyl chloride	<1.0 x 10^{-4} gs^{-1}	2.23 x 10^{-3} gs^{-1}
Non-Methane Organic Carbons	<3.0 x 10^{-3} gs^{-1}	-
Ammonia	0.0227 gs^{-1}	-[c]
Gas combustion temperature	874ºC (855ºC – 922ºC)	850ºC (minimum)
Exhaust gas exit temperature	1,265K (1,246K – 1,282K)	443K (minimum) [a]
Exhaust gas velocity	9.3 ms^{-1} [b]	7.5 ms^{-1} (minimum) [a]
June 2023		
NO_2	0.95 gs^{-1}	1.58 gs^{-1}
CO	<0.01 gs^{-1}	0.53 gs^{-1}
SO_2	<0.01 gs^{-1}	0.07 gs^{-1}
Benzene	<1.0 x 10^{-4} gs^{-1}	3.01 x 10^{-2} gs^{-1}

Parameters	Monitoring Results (Range in Bracket)	Limit Level
Vinyl chloride	<1.0 x 10^{-4} gs^{-1}	2.23 x 10^{-3} gs^{-1}
Gas combustion temperature	904°C (853°C – 940°C)	850°C (minimum)
Exhaust gas exit temperature	1,221K (1,189K – 1,283K)	443K (minimum) (a)
Exhaust gas velocity	8.2 ms^{-1} (b)	7.5 ms^{-1} (minimum) (a)
July 2023		
NO_2	0.92 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	<1.0 x 10^{-4} gs^{-1}	3.01 x 10^{-2} gs^{-1}
Vinyl chloride	<7.0 x 10^{-5} gs^{-1}	2.23 x 10^{-3} gs^{-1}
Gas combustion temperature	922°C (871°C – 959°C)	850°C (minimum)
Exhaust gas exit temperature	1,215K (1,183K – 1,230K)	443K (minimum) (a)
Exhaust gas velocity	5.8 ms^{-1} (b)	7.5 ms^{-1} (minimum) (a)
August 2023		
NO_2	0.14 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	<1.0 x 10^{-4} gs^{-1}	3.01 x 10^{-2} gs^{-1}
Vinyl chloride	<9.0 x 10^{-5} gs^{-1}	2.23 x 10^{-3} gs^{-1}
Non-Methane Organic Carbon	0.009 gs^{-1}	-
Ammonia	0.0361 gs^{-1}	- (c)
Gas combustion temperature	922°C (885°C – 955°C)	850°C (minimum)
Exhaust gas exit temperature	1,212K (1,180K – 1,228K)	443K (minimum) (a)
Exhaust gas velocity	8.7 ms^{-1} (b)	7.5 ms^{-1} (minimum) (a)
September 2023		
NO_2	0.23 gs^{-1}	1.58 gs^{-1}
CO	0.03 gs^{-1}	0.53 gs^{-1}
SO_2	0.92 gs^{-1}	0.07 gs^{-1}

Parameters	Monitoring Results (Range in Bracket)	Limit Level
Benzene	<1.0 x 10^{-4} gs^{-1}	3.01 x 10^{-2} gs^{-1}
Vinyl chloride	<1.0 x 10^{-4} gs^{-1}	2.23 x 10^{-3} gs^{-1}
Gas combustion temperature	919°C (869°C – 939°C)	850°C (minimum)
Exhaust gas exit temperature	1,203K (1,183K – 1,218K)	443K (minimum) (a)
Exhaust gas velocity	8.1 ms^{-1} (b)	7.5 ms^{-1} (minimum) (a)
October 2023		
NO_2	0.17 gs^{-1}	1.58 gs^{-1}
CO	0.03 gs^{-1}	0.53 gs^{-1}
SO_2	0.79 gs^{-1}	0.07 gs^{-1}
Benzene	<2.0 x 10^{-4} gs^{-1}	3.01 x 10^{-2} gs^{-1}
Vinyl chloride	<1.2 x 10^{-4} gs^{-1}	2.23 x 10^{-3} gs^{-1}
Gas combustion temperature	924°C (900°C – 943°C)	850°C (minimum)
Exhaust gas exit temperature	1,201K (1,192K – 1,210K)	443K (minimum) (a)
Exhaust gas velocity	10.5 ms^{-1} (b)	7.5 ms^{-1} (minimum) (a)
November 2023		
NO_2	0.55 gs^{-1}	1.58 gs^{-1}
CO	0.03 gs^{-1}	0.53 gs^{-1}
SO_2	0.45 gs^{-1}	0.07 gs^{-1}
Benzene	<2.0 x 10^{-4} gs^{-1}	3.01 x 10^{-2} gs^{-1}
Vinyl chloride	<1.1 x 10^{-4} gs^{-1}	2.23 x 10^{-3} gs^{-1}
Non-Methane Organic Carbon	0.003 gs^{-1}	-
Ammonia	0.0287 gs^{-1}	- (c)
Gas combustion temperature	925°C (922°C – 930°C)	850°C (minimum)
Exhaust gas exit temperature	1,201K (1,196K – 1,212K)	443K (minimum) (a)
Exhaust gas velocity	9.0 ms^{-1} (b)	7.5 ms^{-1} (minimum) (a)
December 2023		
NO_2	0.68 gs^{-1}	1.58 gs^{-1}
CO	0.03 gs^{-1}	0.53 gs^{-1}

Parameters	Monitoring Results (Range in Bracket)	Limit Level
SO_2	<0.005 gs^{-1}	0.07 gs^{-1}
Benzene	<2.0 x 10^{-4} gs^{-1}	3.01 x 10^{-2} gs^{-1}
Vinyl chloride	<1.0 x 10^{-4} gs^{-1}	2.23 x 10^{-3} gs^{-1}
Gas combustion temperature	926°C (923°C – 935°C)	850°C (minimum)
Exhaust gas exit temperature	1,212K (1,204K – 1,221K)	443K (minimum) (a)
Exhaust gas velocity	7.7 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 2023		
NO_2	0.024 gs^{-1}	0.97 gs^{-1}
CO	0.111 gs^{-1}	2.43 gs^{-1}
SO_2	<0.012 gs^{-1}	0.22 gs^{-1}
Benzene	<1.8 x 10^{-4} gs^{-1}	4.14 x 10^{-4} gs^{-1}
Vinyl chloride	<1.44 x 10^{-4} gs^{-1}	2.60 x 10^{-4} gs^{-1}
Gas combustion temperature	Flare 1: 869°C (820°C – 930°C) Flare 2: 853°C (820°C – 920°C)	815°C (minimum)
Exhaust gas exit temperature	Flare 1: 1,058K (963K – 1,153K) Flare 2: 1,071K (1,028K – 1,113K)	923 K (minimum) (a)
Exhaust gas velocity	12.5 ms^{-1} (b)	9.0 m s^{-1} (minimum) (a)
February 2023		
NO_2	0.02 gs^{-1}	0.97 gs^{-1}
CO	0.16 gs^{-1}	2.43 gs^{-1}
SO_2	0.02 gs^{-1}	0.22 gs^{-1}
Non-Methane Organic Carbons	<1.2 x 10^{-4} gs^{-1}	-

Parameters	Monitoring Results (Range in Bracket)	Limit Level
Benzene	<9.6 x 10^{-5} gs^{-1}	4.14 x 10^{-4} gs^{-1}
Vinyl chloride	0.006 gs^{-1}	2.60 x 10^{-4} gs^{-1}
Gas combustion temperature	Flare 1: 869°C (830°C – 900°C) Flare 2: 860°C (820°C – 900°C)	815°C (minimum)
Exhaust gas exit temperature	Flare 1: 1,049K (1,003K – 1,093K) Flare 2: 1,081K (1,053K – 1,153K)	923 K (minimum) [a]
Exhaust gas velocity	8.9 ms^{-1} [b]	9.0 m s^{-1} (minimum) [a]
March 2023		
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	<9.5 x 10^{-5} gs^{-1}	4.14 x 10^{-4} gs^{-1}
Vinyl chloride	<7.6 x 10^{-5} gs^{-1}	2.60 x 10^{-4} gs^{-1}
Gas combustion temperature	Flare 1: 936°C (870°C – 990°C) Flare 2: 927°C (830°C – 990°C)	815°C (minimum)
Exhaust gas exit temperature	Flare 1: 1,103K (1,053K – 1,193K) Flare 2: 1,128K (993K – 1,203K)	923 K (minimum) [a]
Exhaust gas velocity	6.2 ms^{-1} [b]	9.0 m s^{-1} (minimum) [a]
April 2023		
NO_2	0.02 gs^{-1}	0.97 gs^{-1}
CO	2.16 gs^{-1}	2.43 gs^{-1}
SO_2	0.02 gs^{-1}	0.22 gs^{-1}
Benzene	<1.6 x 10-4 gs^{-1}	4.14 x 10^{-4} gs^{-1}
Vinyl chloride	<1.3 x 10-4 gs^{-1}	2.60 x 10^{-4} gs^{-1}
Gas combustion temperature	Flare 1: 885°C (830°C – 942°C) Flare 2: 857°C (830°C – 890°C)	815°C (minimum)
Exhaust gas exit temperature	Flare 1: 1,070K (1,020K – 1,153K) Flare 2: 1,08K (983K – 1,123K)	923 K (minimum) [a]
Exhaust gas velocity	11.6 ms^{-1} [b]	9.0 m s^{-1} (minimum) [a]
May 2023		
NO_2	0.03 gs^{-1}	0.97 gs^{-1}

Parameters	Monitoring Results (Range in Bracket)	Limit Level
CO	0.33 gs^{-1}	2.43 gs^{-1}
SO_2	<0.01 gs^{-1}	0.22 gs^{-1}
Benzene	<4.47 x 10^{-4} gs^{-1}	4.14 x 10^{-4} gs^{-1}
Vinyl chloride	<1.07 x 10^{-4} gs^{-1}	2.60 x 10^{-4} gs^{-1}
Non-Methane Organic Carbons	0.003 gs^{-1}	-
Gas combustion temperature	Flare 1: 879°C (820°C – 990°C) Flare 2: 878°C (830°C – 920°C)	815°C (minimum)
Exhaust gas velocity	8.7 ms^{-1} (b)	9.0 m s^{-1} (minimum) (a)
June 2023		
NO_2	0.02 gs^{-1}	0.97 gs^{-1}
CO	0.64 gs^{-1}	2.43 gs^{-1}
SO_2	<0.06 gs^{-1}	0.22 gs^{-1}
Benzene	3.30 x 10^{-4} gs^{-1}	4.14 x 10^{-4} gs^{-1}
Vinyl chloride	<1.01 x 10^{-4} gs^{-1}	2.60 x 10^{-4} gs^{-1}
Gas combustion temperature	Flare 1: 869°C (820°C – 920°C) Flare 2: 871°C (830°C – 920°C)	815°C (minimum)
Exhaust gas exit temperature	Flare 1: 1,051K (1,003K – 1,133K) Flare 2: 1,094K (1,063K – 1,163K)	923 K (minimum) (a)
Exhaust gas velocity	8.9 ms^{-1} (b)	9.0 m s^{-1} (minimum) (a)
July 2023		
NO_2	0.02 gs^{-1}	0.97 gs^{-1}
CO	0.04 gs^{-1}	2.43 gs^{-1}
SO_2	0.03 gs^{-1}	0.22 gs^{-1}
Benzene	1.34 x 10^{-4} gs^{-1}	4.14 x 10^{-4} gs^{-1}
Vinyl chloride	<1.07 x 10^{-4} gs^{-1}	2.60 x 10^{-4} gs^{-1}
Gas combustion temperature	Flare 1: 867°C (820°C – 930°C) Flare 2: 854°C (830°C – 900°C)	815°C (minimum)
Exhaust gas exit temperature	Flare 1: 1,072K (1,003K – 1,153K) Flare 2: 1,082K (1,043K – 1,143K)	923 K (minimum) (a)
Exhaust gas velocity	8.5 ms^{-1} (b)	9.0 m s^{-1} (minimum) (a)

Parameters	Monitoring Results (Range in Bracket)	Limit Level
August 2023		
NO_2	<0.02 gs^{-1}	0.97 gs^{-1}
CO	0.08 gs^{-1}	2.43 gs^{-1}
SO_2	0.06 gs^{-1}	0.22 gs^{-1}
Benzene	<1.22 x 10^{-4} gs^{-1}	4.14 x 10^{-4} gs^{-1}
Vinyl chloride	<9.8 x 10^{-5} gs^{-1}	2.60 x 10^{-4} gs^{-1}
Non-Methane Organic Carbon	0.003 gs^{-1}	-
Gas combustion temperature	Flare 1: 878°C (830°C – 980°C) Flare 2: 855°C (820°C – 930°C)	815°C (minimum)
Exhaust gas exit temperature	Flare 1: 1,056K (993K – 1,133K) Flare 2: 1,063K (1,003K – 1,123K)	923 K (minimum) [a]
Exhaust gas velocity	8.9 ms^{-1} [b]	9.0 m s^{-1} (minimum) [a]
September 2023		
NO_2	<0.01 gs^{-1}	0.97 gs^{-1}
CO	0.20 gs^{-1}	2.43 gs^{-1}
SO_2	0.02 gs^{-1}	0.22 gs^{-1}
Benzene	<1.22 x 10^{-4} gs^{-1}	4.14 x 10^{-4} gs^{-1}
Vinyl chloride	<9.7 x 10^{-5} gs^{-1}	2.60 x 10^{-4} gs^{-1}
Gas combustion temperature	Flare 1: 889°C (833°C – 990°C) Flare 2: 936°C (889°C – 988°C)	815°C (minimum)
Exhaust gas exit temperature	Flare 1: 1,046K (979K – 1,151K) Flare 2: 1,112K (1,076K – 1,178K)	923 K (minimum) [a]
Exhaust gas velocity	9.1 ms^{-1} [b]	9.0 m s^{-1} (minimum) [a]
October 2023		
NO_2	0.02 gs^{-1}	0.97 gs^{-1}
CO	0.38 gs^{-1}	2.43 gs^{-1}
SO_2	<0.01 gs^{-1}	0.22 gs^{-1}
Benzene	<3.03 x 10^{-4} gs^{-1}	4.14 x 10^{-4} gs^{-1}
Vinyl chloride	<7.9 x 10^{-5} gs^{-1}	2.60 x 10^{-4} gs^{-1}
Gas combustion temperature	Flare 1: 852°C (824°C – 959°C)	815°C (minimum)

Parameters	Monitoring Results (Range in Bracket)	Limit Level
	Flare 2: 909°C (842°C – 936°C)	
Exhaust gas exit temperature	Flare 1: 1,096K (1,013K – 1,199K) Flare 2: 1,125K (1,060K – 1,159K)	923 K (minimum) (a)
Exhaust gas velocity	5.8 ms^{-1} (b)	9.0 m s^{-1} (minimum) (a)
November 2023		
NO_2	0.02 gs^{-1}	0.97 gs^{-1}
CO	0.032 gs^{-1}	2.43 gs^{-1}
SO_2	0.05 gs^{-1}	0.22 gs^{-1}
Benzene	<8.9 x 10^{-5} gs^{-1}	4.14 x 10^{-4} gs^{-1}
Vinyl chloride	<7.1 x 10^{-5} gs^{-1}	2.60 x 10^{-4} gs^{-1}
Non-Methane Organic Carbon	0.004 gs^{-1}	-
Gas combustion temperature	Flare 1: 909°C (836°C – 993°C) Flare 2: 868°C (828°C – 973°C)	815°C (minimum)
Exhaust gas exit temperature	Flare 1: 1,159K (1,100K – 1,258K) Flare 2: 1,089K (1,023K – 1,147K)	923 K (minimum) (a)
Exhaust gas velocity	6.3 ms^{-1} (b)	9.0 m s^{-1} (minimum) (a)
December 2023		
NO_2	0.03 gs^{-1}	0.97 gs^{-1}
CO	0.02 gs^{-1}	2.43 gs^{-1}
SO_2	<0.01 gs^{-1}	0.22 gs^{-1}
Benzene	<1.26 x 10^{-4} gs^{-1}	4.14 x 10^{-4} gs^{-1}
Vinyl chloride	<1.01 x 10^{-4} gs^{-1}	2.60 x 10^{-4} gs^{-1}
Gas combustion temperature	Flare 1: 918°C (830°C – 990°C) Flare 2: 858°C (750°C – 960°C)	815°C (minimum)
Exhaust gas exit temperature	Flare 1: 1,117K (1,033K – 1,253K) Flare 2: 1,044K (923K – 1,143K)	923 K (minimum) (a)
Exhaust gas velocity	9.0 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 2023		
NO_2	0.044 gs^{-1}	1.91 gs^{-1}
CO	0.731 gs^{-1}	2.48 gs^{-1}
SO_2	<0.001 gs^{-1}	0.528 gs^{-1}
Benzene	<7.0 x 10^{-5} gs^{-1}	2.47 x 10^{-4} gs^{-1}
Vinyl chloride	<9.6 x 10^{-6} gs^{-1}	1.88 x 10^{-5} gs^{-1}
Exhaust gas exit temperature	ENGA: 860K (849K – 869K) ENGB: 859K (834K – 873K)	723K (minimum) [a]
Exhaust gas velocity	10.0 ms^{-1} [b]	30.0 ms^{-1} (minimum) [a]
February 2023		
NO_2	0.053 gs^{-1}	1.91 gs^{-1}
CO	0.973 gs^{-1}	2.48 gs^{-1}
SO_2	<0.002 gs^{-1}	0.528 gs^{-1}
Non-Methane Organic Carbons	<1.0 x 10^{-4} gs^{-1}	-
Benzene	<1.3 x 10^{-5} gs^{-1}	2.47 x 10^{-4} gs^{-1}
Vinyl chloride	<3.3 x 10^{-3} gs^{-1}	1.88 x 10^{-5} gs^{-1}
Exhaust gas exit temperature	ENGA: 869K (860K – 872K) ENGB: 861K (860K – 862K)	723K (minimum) [a]
Exhaust gas velocity	12.1 ms^{-1} [b]	30.0 ms^{-1} (minimum) [a]
March 2023		
NO_2	0.079 gs^{-1}	1.91 gs^{-1}
CO	0.942 gs^{-1}	2.48 gs^{-1}
SO_2	<0.001 gs^{-1}	0.528 gs^{-1}
Benzene	9.7 x 10^{-5} gs^{-1}	2.47 x 10^{-4} gs^{-1}
Vinyl chloride	<1.2 x 10^{-5} gs^{-1}	1.88 x 10^{-5} gs^{-1}
Exhaust gas exit temperature	ENGA: 875K (868K – 881K) ENGB: 864K (859K – 875K)	723K (minimum) [a]
Exhaust gas velocity	13.9 ms^{-1} [b]	30.0 ms^{-1} (minimum) [a]

April 2023		
NO_2	0.018 gs^{-1}	1.91 gs^{-1}
CO	0.694 gs^{-1}	2.48 gs^{-1}
SO_2	0.001 gs^{-1}	0.528 gs^{-1}
Benzene	3.0 x 10-5 gs^{-1}	2.47 x 10^{-4} gs^{-1}
Vinyl chloride	<0.8 x 10-5 gs^{-1}	1.88 x 10^{-5} gs^{-1}
Exhaust gas exit temperature	ENGA: 862K (858K – 865K) ENGB: 866K (847K – 874K)	723K (minimum) [a]
Exhaust gas velocity	9.1 ms^{-1} [b]	30.0 ms^{-1} (minimum) [a]
May 2023		
NO_2	0.030 gs^{-1}	1.91 gs^{-1}
CO	0.853 gs^{-1}	2.48 gs^{-1}
SO_2	<0.001 gs^{-1}	0.528 gs^{-1}
Benzene	5.9 x 10^{-5} gs^{-1}	2.47 x 10^{-4} gs^{-1}
Vinyl chloride	<1.2 x 10^{-5} gs^{-1}	1.88 x 10^{-5} gs^{-1}
Non-Methane Organic Carbons	1.9 x 10^{-3} gs^{-1}	-
Exhaust gas exit temperature	ENGA: 873K (862K – 879K) ENGB: 865K (860K – 870K)	723K (minimum) [a]
Exhaust gas velocity	12.9 ms^{-1} [b]	30.0 ms^{-1} (minimum) [a]
June 2023		
NO_2	0.034 gs^{-1}	1.91 gs^{-1}
CO	1.012 gs^{-1}	2.48 gs^{-1}
SO_2	0.002 gs^{-1}	0.528 gs^{-1}
Benzene	6.6 x 10^{-5} gs^{-1}	2.47 x 10^{-4} gs^{-1}
Vinyl chloride	<1.3 x 10^{-5} gs^{-1}	1.88 x 10^{-5} gs^{-1}
Exhaust gas exit temperature	ENGA: 865K (845K – 880K) ENGB: 849K (841K – 877K)	723K (minimum) [a]
Exhaust gas velocity	13.6 ms^{-1} [b]	30.0 ms^{-1} (minimum) [a]
July 2023		
NO_2	0.032 gs^{-1}	1.91 gs^{-1}
CO	0.678 gs^{-1}	2.48 gs^{-1}

SO_2	<0.001 gs^{-1}	0.528 gs^{-1}
Benzene	3.4 x 10^{-5} gs^{-1}	2.47 x 10^{-4} gs^{-1}
Vinyl chloride	<8.9 x 10^{-6} gs^{-1}	1.88 x 10^{-5} gs^{-1}
Exhaust gas exit temperature	ENGA: 847K (843K – 875K) ENGB: 845K (841K – 872K)	723K (minimum) [a]
Exhaust gas velocity	10.6 ms^{-1} [b]	30.0 ms^{-1} (minimum) [a]
August 2023		
NO_2	0.024 gs^{-1}	1.91 gs^{-1}
CO	0.895 gs^{-1}	2.48 gs^{-1}
SO_2	<0.001 gs^{-1}	0.528 gs^{-1}
Benzene	6.9 x 10^{-5} gs^{-1}	2.47 x 10^{-4} gs^{-1}
Vinyl chloride	<1.1 x 10^{-5} gs^{-1}	1.88 x 10^{-5} gs^{-1}
Non-Methane Organic Carbons	1.9 x 10^{-3} gs^{-1}	-
Exhaust gas exit temperature	ENGA: 865K (846K – 876K) ENGB: 855K (843K – 875K)	723K (minimum) [a]
Exhaust gas velocity	13.1 ms^{-1} [b]	30.0 ms^{-1} (minimum) [a]
September 2023		
NO_2	0.007 gs^{-1}	1.91 gs^{-1}
CO	0.89 gs^{-1}	2.48 gs^{-1}
SO_2	0.001 gs^{-1}	0.528 gs^{-1}
Benzene	1.5 x 10^{-4} gs^{-1}	2.47 x 10^{-4} gs^{-1}
Vinyl chloride	<1.07 x 10^{-5} gs^{-1}	1.88 x 10^{-5} gs^{-1}
Exhaust gas exit temperature	ENGA: 867K (844K – 895K) ENGB: 849K (841K – 871K)	723K (minimum) [a]
Exhaust gas velocity	13.0 ms^{-1} [b]	30.0 ms^{-1} (minimum) [a]
October 2023		
NO_2	0.06 gs^{-1}	1.91 gs^{-1}
CO	1.08 gs^{-1}	2.48 gs^{-1}
SO_2	<0.001 gs^{-1}	0.528 gs^{-1}
Benzene	4.0 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: 857K (837K – 882K) ENGB: 853K (836K – 872K)	723K (minimum) [a]
Exhaust gas velocity	11.6 ms^{-1} [b]	30.0 ms^{-1} (minimum) [a]
November 2023		
NO_2	0.095 gs^{-1}	1.91 gs^{-1}
CO	1.082 gs^{-1}	2.48 gs^{-1}
SO_2	<0.001 gs^{-1}	0.528 gs^{-1}
Benzene	1.01×10^{-4} gs^{-1}	2.47×10^{-4} gs^{-1}
Vinyl chloride	$<1.02 \times 10^{-5}$ gs^{-1}	1.88×10^{-5} gs^{-1}
Non-Methane Organic Carbons	0.0064 gs^{-1}	-
Exhaust gas exit temperature	ENGA: 875K (858K – 885K) ENGB: 868K (868K – 868K)	723K (minimum) [a]
Exhaust gas velocity	11.8 ms^{-1} [b]	30.0 ms^{-1} (minimum) [a]
December 2023		
NO_2	0.075 gs^{-1}	1.91 gs^{-1}
CO	0.994 gs^{-1}	2.48 gs^{-1}
SO_2	$<4.00 \times 10^{-4}$ gs^{-1}	0.528 gs^{-1}
Benzene	1.86×10^{-4} gs^{-1}	2.47×10^{-4} gs^{-1}
Vinyl chloride	$<9.5 \times 10^{-6}$ gs^{-1}	1.88×10^{-5} gs^{-1}
Exhaust gas exit temperature	ENGA: 877K (869K – 884K) ENGB: 869K (868K – 869K)	723K (minimum) [a]
Exhaust gas velocity	10.5 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 Levels exceedances were recorded for thermal oxidizer stack emission (SO_2) and landfill gas flare stack emission (Benezene) in the reporting period and actions in accordance with the Event and Action Plan presented in **Annex D2** were undertaken. Investigation of the Limit Levels exceedances was conducted and the investigation reports are presented in **Annex D7**.

Based on the investigation conducted for the monitoring event with potential Limit Levels exceedance with the Contractor and the IEC, the thermal oxidizer stack emission (SO_2) exceedances on 18 January 2023, 13 September 2023, 16 October 2023 and 16 November 2023 were considered Project related. The landfill gas flare stack emission (Benzene) exceedance on 12 May 2023 was considered 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.

2.1.4 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)]
Heptane	2,746

Parameters	Limit Level (μg m^{-3})
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 H2S

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	2 Feb 2023, 11 May 2023, 15 Aug 2023, 15 Nov 2023
AM2	SENTX Site Boundary (West, near DP3)			
AM3	SENTX Site Boundary (West, near RC15)			
AM4	SENTX Site Boundary (West, near EPD building)			

Notes:

(a) A suite of VOCs includes:

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

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}) (Average)			
		AM1	AM2	AM3	AM4
Ammonia	180	67.8	61.3	49.3	51.3
H_2S	42	<15	<15	<15	<15
Methane	NA [a]	0.00022	0.00017	0.00022	0.00020
1.1.1-Trichloroethane	5,550	<0.8	<0.8	#DIV/0!	<0.8
1.2-Dibromoethane (EDB)	39	<1.0	<1.0	<1.0	<1.0
1.2-Dichloroethane	210	0.7	0.6	0.7	0.5
Benzene	33	0.6	1.0	0.8	0.8
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	1.2	3.1	5.7	1.1
Carbon Tetrachloride	64	0.8	0.8	0.8	0.7
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]	1.8	2.1	2.0	2.0
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	0.4	0.5	0.4
Ethanethiol	13	<0.6	<0.6	<0.6	<0.6
Ethanol	19,200	4.0	4.3	5.0	6.6
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	0.7	1.0	0.6
Heptane	2,746	<0.8	<0.8	<0.8	<0.8
Methanethiol	10	<0.4	<0.4	<0.4	<0.4

Methanol	2,660	12.4	20.6	38.8	25.6
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	1.7	2.0	3.6	3.3
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	1.0	<0.8
Tetrachloroethylene	1,380	<0.7	<0.7	<0.7	<0.7
Toluene	1,244	1.3	1.4	1.9	2.6
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	0.9	2.2	1.4

(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, impact noise monitoring was conducted weekly at the monitoring location (i.e. NM1) 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
NM1	SENTX Site Boundary (North)	$L_{eq\ (30\ min)}$ measurement between 07:00 and 19:00 hours on normal weekdays (Monday to Saturday)	Once per week for 30 mins during operation of the Project	1, 7, 13, 19, 25, 31 Jan 2023 6, 12, 18, 24 Feb 2023 2, 8, 14, 20, 26 Mar 2023 3, 11, 20, 26 Apr 2023 2, 8, 15, 22, 29 May 2023 7, 13, 19, 26 Jun 2023 3, 13, 19, 25, 31 Jul 2023 7, 14, 24, 30 Aug 2023 5, 11, 18, 25 Sep 2023 5, 11, 17, 24, 30 Oct 2023 6, 16, 22, 28 Nov 2023 4, 11, 18, 28 Dec 2023	Sound Level Meter: Rion NL-52 (S/N: 00131627) Rion NL-52 (S/N: 00643049) Acoustic Calibrator: CAL200 (S/N: 15678) CAL200 (S/N: 16878)

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 54 impact noise monitoring events were scheduled during the reporting period. However, noise monitoring on 8 May 2023 and 13 June 2023 were cancelled due to adverse weather. 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 2023	NM1	52.5	51.5 – 53.5	75
February 2023	NM1	52.6	51.3 – 54.3	75
March 2023	NM1	54.5	48.9 – 59.9	75
April 2023	NM1	50.5	47.8 – 51.9	75
May 2023	NM1	55.4	52.0 – 61.3	75
June 2023	NM1	57.8	54.9 – 61.0	75
July 2023	NM1	53.5	51.7 – 55.3	75
August 2023	NM1	54.7	51.4 – 57.2	75
September 2023	NM1	52.2	49.1 – 55.2	75
October 2023	NM1	51.4	49.5 – 54.0	75
November 2023	NM1	51.7	48.4 – 53.9	75
December 2023	NM1	54.4	53.9 – 54.7	75

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

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

2.3 WATER QUALITY MONITORING

2.3.1 SURFACE WATER QUALITY MONITORING

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	4 Jan 2023, 8 Feb 2023, 7 Mar 2023, 11 Apr 2023, 5 May 2023, 9 Jun 2023, 11 Jul 2023, 4 Aug 2023, 15 Aug 2023 (Re-measurement (SS) at DP4), 22 Sep 2023, 20 Oct 2023, 3 Nov 2023, 15 Dec 2023	• pH • Electrical conductivity (EC) • DO • SS • COD • BOD_5 • TOC • Ammoniacal–nitrogen • Nitrate-nitrogen • Nitrite–nitrogen • TKN • TN • Phosphate • Sulphate • Sulphide • Carbonate • Oil & Grease • Bicarbonate • Chloride • Sodium • Potassium • Calcium • Magnesium • Nickel • Manganese • Chromium • Cadmium • Copper • Lead • Iron • Zinc • Mercury • Boron	YSI Professional DSS (S/N: 15G100349) Horiba U-52G (S/N: RSV50V1T) Horiba U-52G (S/N: NVAE080GT)
DP4	Surface water discharge point DP4				
DP6	Surface water discharge point DP6				

Notes:
(a) Impact surface water quality monitoring at DP3 was suspended from the monitoring event on 25 July 2019 until the actual commencement of construction works affecting DP3 in January 2023 to March 2023.

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

Twelve 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 in January to March 2023, May 2023, July 2023, November 2023 and December 2023, and at DP3 and DP6 in April 2023, June 2023, July 2023, August 2023 and September 2023 due to insufficient flow. Details of impact water quality monitoring event are provided in **Annex F1**.

Limit Level exceedance (SS) was recorded for surface water quality impact monitoring on 4 August 2023 at DP4 and actions in accordance with the Event and Action Plan in **Annex F2** were undertaken. Investigation of the Limit Level exceedance was conducted and the investigation report of the exceedance is presented in **Annex F6.**

Based on the investigation conducted for the monitoring event with potential Limit Level exceedance with the Contractor, and the IEC, the SS exceedance at DP4 on 4 August 2023 was considered Project related. The monitoring frequency shall increase to weekly in accordance with Table 4.5b of the updated EM&A Manual until no exceedance of Limit Level. However, the SS results at DP4 of the additional monitoring event conducted on 15 August 2023 are well

below the Limit Level and the weekly surface water monitoring at DP4 was therefore not triggered.

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

2.3.2 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

Parameters	Limit Level
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 Dec 2023	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	4 Jan 2023, 2 Feb 2023, 2 Mar 2023, 4 Apr 2023, 4 May 2023, 1 Jun 2023, 6 Jul 2023, 2 Aug 2023, 7 Sep 2023, 5 Oct 2023, 2 Nov 2023, 6 Dec 2023	TOA HM-30P (S/N: 790332) HORIBA U-52G (S/N: RSV50V1T) Lutron PH-208 (S/N: TF30605)

Location	Frequency	Parameter	Monitoring Dates	Equipment
		• Chromium • Nickel • Cadmium • Boron		

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)
Pump Station No. 1X (Cell 1X)		
Meter No. X-1	95 (64 – 251)	> 178
Meter No. X-2 [(a)]	88 (54 – 237)	
Average	99 (62 – 251)	
Pump Station No. 2X (Cell 2X)		
Meter No. X-3	113 (61 – 366)	> 180
Meter No. X-4	108 (59 – 324)	
Average	110 (62 – 332)	
Pump Station No. 3X (Cell 3X)		
Meter No. X-5	82 (46 – 331)	> 175
Meter No. X-6	110 (50 – 366)	
Average	109 (49 – 366)	
Pump Station No. 4X (Cell 4X)		
Meter No. X-7	105 (48 – 417)	> 186
Meter No. X-8	109 (41 – 404)	
Average	107 (49 – 411)	

Note:
(a) Meter No. X-2 at Pump Station No. 1X and Meter No. X-5 at Pump Station No. 3X are on standby from 8 October to 31 December 2023 and from 4 October to 14 November 2023, respectively.

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

Parameters		**Monitoring Results**			**Limit Level**
		Average	**Min**	**Max**	
Temperature	°C	30.8	22	36.6	> 43 °C
pH Value	pH unit	8.4	8	8.7	6 – 10
Volume Discharged	m³	1005.3	698	1339	>2,000 m³
Suspended Solids (SS)	mg/L	46.7	14.3	158	> 800 mg/L
Phosphate	mg/L	5.5	0.1	9.5	> 25 mg/L
Sulphate	mg/L	216.3	104	451	> 800 mg/L
Total Inorganic Nitrogen [(a)]	mg/L	45.2	21.1	79.2	> 100 mg/L
BOD	mg/L	15.9	9	24	> 800 mg/L
COD	mg/L	906.8	675	1130	> 2,000 mg/L
Oil & Grease	mg/L	<5	<5	<6	> 20 mg/L
Boron	µg/L	5167.5	3850	6000	> 7,000 µg/L
Iron	mg/L	1.8	1.1	2.4	> 5 mg/L
Cadmium	µg/L	<1.0	<1.0	<1.0	> 1 µg/L
Chromium	µg/L	140.4	85	218	> 300 µg/L
Copper	µg/L	11.3	10	12	> 1,000 µg/L
Nickel	µg/L	111.2	65	146	> 700 µg/L
Zinc	µg/L	86.8	43	126	> 700 µg/L

Limit Levels exceedances were recorded for leachate level 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 report is 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 leachate level exceedances at Pump Station No. 1X from 8 September to 16 September 2023 and from 9 October to 17 October 2023, at Pump Station No. 2X from 11 October to 23 November 2023, at Pump Station No. 3X from 8 September to 20 September 2023 and from 9 October to 24 November 2023, and at Pump Station No. 4X from 17 June to 22 June 2023 and from 8 September to 20 September 2023, and from 9 October to 14 November 2023 were considered 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.

All 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	3, 4 Jan 2023, 8 Feb 2023, 7 Mar 2023, 12, 13 Apr 2023, 4 May 2023, 8 Jun 2023, 10, 11 Jul 2023, 1, 2 Aug 2023, 21, 22 Sep 2023, 12 Oct 2023, 7, 8 Nov 2023, 14 Dec 2023	YSI Professional DSS (S/N: 15G100349) Horiba U-52G (S/N: RSV50V1T) Horiba U-52G (S/N: NVAE080GT)

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	0.22	<0.01	0.80	5.00	7	3	15	30
MWX-2	0.24	<0.01	1.20	5.00	7	<2	28	30

	Ammoniacal-nitrogen (mg L^{-1})				COD (mg L^{-1})			
	Monitoring Results			Limit Levels	Monitoring Results			Limit Levels
	Average	Min	Max		Average	Min	Max	
MWX-3	1.29	0.18	1.74	5.00	16	12	19	30
MWX-4	2.84	0.18	6.17	7.63	22	13	34	36
MWX-5	1.74	0.27	2.61	5.00	27	14	38	30
MWX-6	3.34	0.44	4.36	5.00	43	35	54	46
MWX-7	3.73	0.29	6.53	6.55	28	11	41	36
MWX-8	7.19	0.96	13.80	15.85	36	24	70	50
MWX-9	0.94	0.24	1.74	7.30	21	6	54	71
MWX-10	0.02	0.02	0.04	5.00	7	3	10	30
MWX-11	0.08	<0.01	0.17	5.00	5	<2	8	30
MWX-12	0.01	<0.01	0.05	5.00	4	<2	12	30
MWX-13	0.01	<0.01	0.04	5.00	3	<2	8	30
MWX-14	0.01	<0.01	0.06	5.00	3	<2	8	30

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) exceedances at MWX-5 on 4 May 2023, at MWX-6 on 7 March 2023, 13 April 2023, 2 August 2023, 14 December 2023, at MWX-7 on 11 July 2023, 22 September 2023, 7 November 2023 and MWX-8 on 4 May 2023 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
	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

Parameters	Monitoring Location	Limit Level (% (v/v))	
	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
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 and service voids, utilities and manholes along the Site boundary and within the SENTX site are illustrated in **Figure 2.3 - 2.4** and **Annex G1**, respectively.

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	9 Jan 2023, 14 Feb 2023, 1 Mar 2023, 13 Apr 2023, 8, 9 May 2023, 5 Jun 2023, 24 Jul 2023, 3 Aug 2023, 4 Sep 2023, 3 Oct 2023, 9 Nov 2023, 12 Dec 2023	GA5000 (S/N: G507306)
Service voids, utilities and manholes along the Site boundary and within the SENTX Site (UU1 to UU28)	Monthly	• Methane • Carbon dioxide • Oxygen	9 Jan 2023, 15 Feb 2023, 1 Mar 2023, 11 Apr 2023, 9 May 2023, 5 Jun 2023, 24 Jul 2023, 4 Aug 2023, 4 Sep 2023, 3 Oct 2023, 3 Nov 2023, 12 Dec 2023	GA5000 (S/N: G507306)
Permanent gas monitoring system in all occupied on-site buildings	Continuous	Methane (or flammable gas) by permanent gas monitoring system	1 Jan – 31 Dec 2023	Permanent gas monitoring system
Areas between the SENTX	Quarterly	Flammable gas emitted from the ground surface	2 Feb 2023, 12 May 2023, 16 Aug 2023,	GMI Leak Surveyor

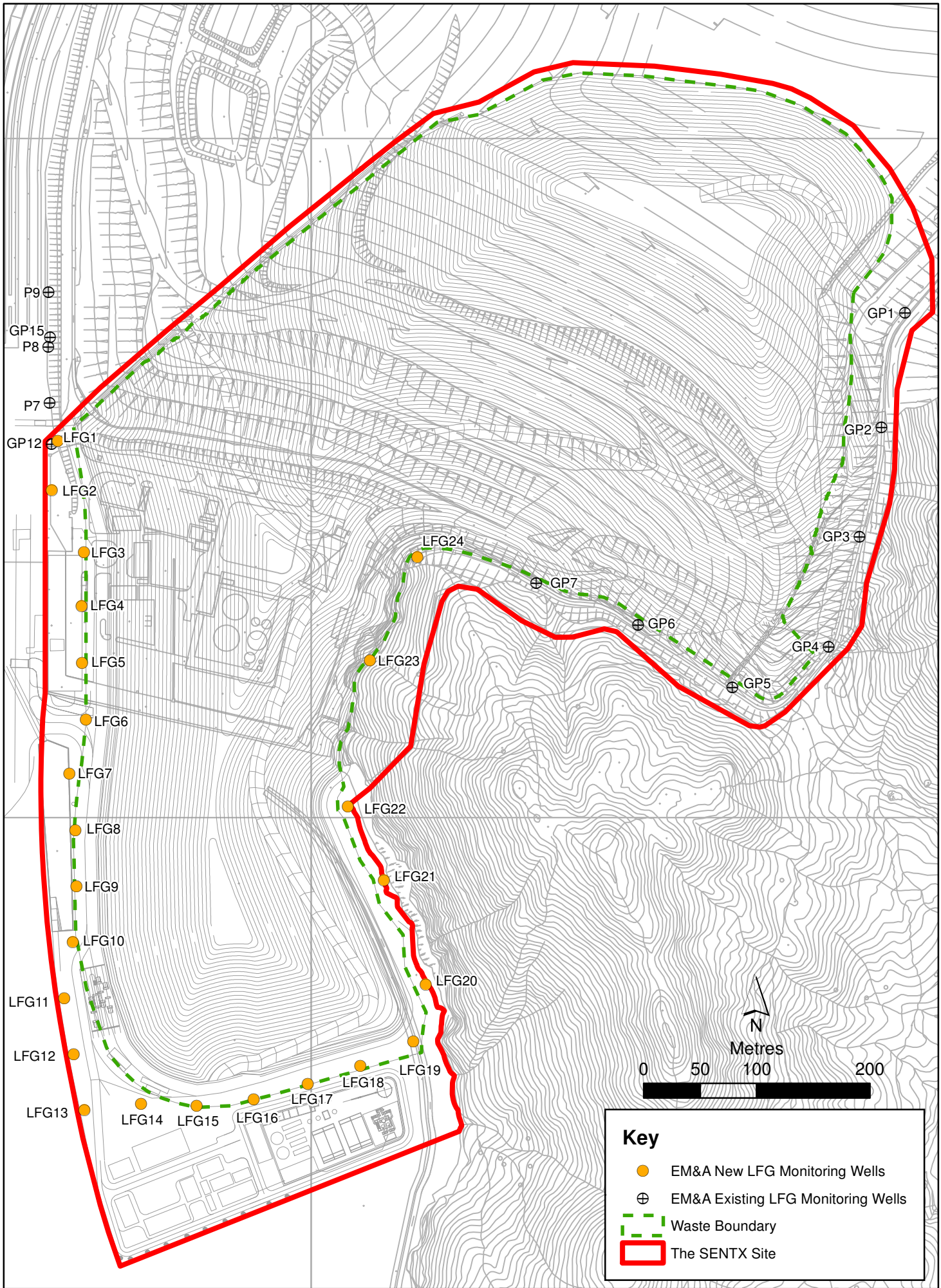


Figure 2.3

Location of Landfill Gas Monitoring Wells

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

ERM

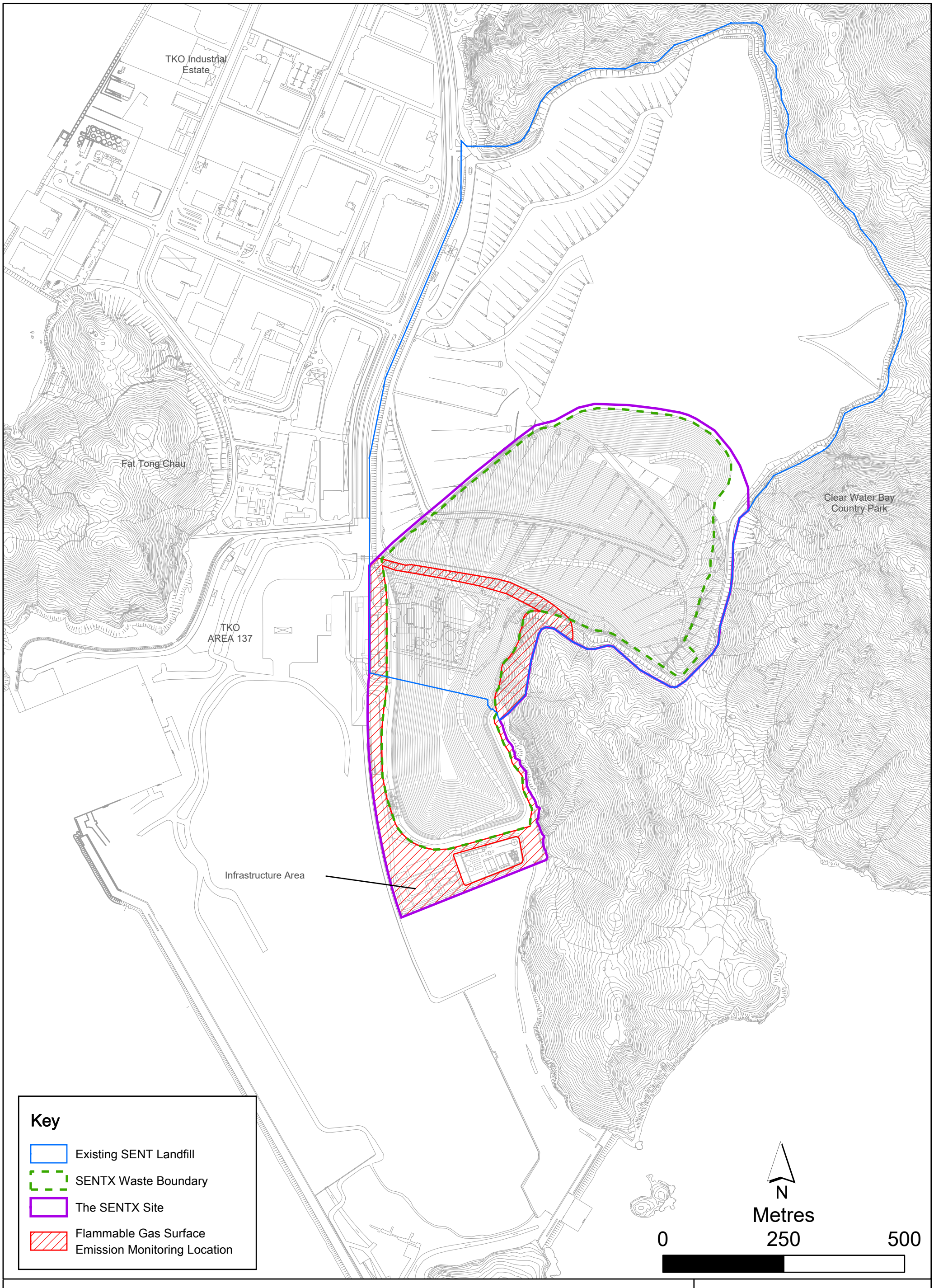


Figure 2.4

Flammable Gas Surface Emission Monitoring Locations

ERM

Monitoring Location	Frequency	Parameter	Monitoring Dates	Equipment
Site boundary and the waste boundary and location of vegetation stress			17 Nov 2023	(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	14 Feb 2023, 8, 9 May 2023, 3 Aug 2023, 9 Nov 2023,	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	0.1	0.0	0.2	1	0.8	0.2	1.8	3.2
LFG2	0.1	0.0	0.2	1	1.1	0.1	2.2	4.3
LFG3	0.1	0.0	0.2	1	1.1	0.0	3.8	6.3
LFG4	0.0	0.0	0.2	1	0.1	0.0	0.1	7.0
LFG5	0.0	0.0	0.2	1	0.2	0.0	0.9	3.4
LFG6	0.1	0.0	0.3	1	0.1	0.0	0.3	9.1
LFG7	0.0	0.0	0.1	1	0.0	0.0	0.0	1.5
LFG8	0.0	0.0	0.0	12.6	0.0	0.0	0.1	2.4
LFG9	0.0	0.0	0.0	2.5	0.2	0.0	0.9	1.7
LFG10	0.0	0.0	0.0	3.5	0.1	0.0	0.2	1.6
LFG11	0.0	0.0	0.0	3	0.1	0.0	0.3	2.0
LFG12	0.0	0.0	0.1	13.2	0.0	0.0	0.0	1.5

Location	Methane (% (v/v))				Carbon Dioxide (% (v/v))			
	Monitoring Results			Limit Level (a)	Monitoring Results			Limit Level (a)
	Average	Min	Max		Average	Min	Max	
LFG13	9.7	0.0	25.8	22.5	0.1	0.0	0.4	2.7
LFG14	0.0	0.0	0.1	5.2	0.1	0.0	0.3	1.8
LFG15	0.1	0.0	0.6	18.2	0.2	0.0	0.9	2.0
LFG16	0.0	0.0	0.1	1	0.1	0.0	0.2	2.0
LFG17	0.3	0.0	2.6	17.8	0.3	0.0	1.5	2.4
LFG18	0.0	0.0	0.1	2.3	0.2	0.0	1.1	2.1
LFG19	0.0	0.0	0.1	6.3	0.1	0.0	0.3	3.1
LFG20	0.0	0.0	0.2	1	0.9	0.0	4.5	4.6
LFG21	0.0	0.0	0.2	1	0.9	0.0	2.6	4.8
LFG22	0.0	0.0	0.2	1	0.3	0.0	1.3	4.0
LFG23	0.0	0.0	0.1	1	0.5	0.0	2.6	10.3
LFG24	0.0	0.0	0.1	1	0.8	0.0	8.4	4.7
GP1	0.1	0.0	0.3	1	5.5	0.1	10.6	10.6
GP2 (shallow)	0.0	0.0	0.2	1	1.1	0.2	3.0	11.4
GP2 (deep)	0.0	0.0	0.2	1	3.5	0.0	8.2	10.4
GP3 (shallow)	0.0	0.0	0.2	1	0.7	0.0	3.5	6.9
GP3 (deep)	0.0	0.0	0.2	1	0.2	0.0	0.6	5.6
GP4 (shallow)	0.0	0.0	0.1	1	0.4	0.0	1.3	11.6
GP4 (deep)	0.0	0.0	0.1	1	0.2	0.1	0.4	7.7
GP5 (shallow)	0.0	0.0	0.1	1	2.9	0.1	9.9	10.8
GP5 (deep)	0.0	0.0	0.1	1	0.1	0.0	0.6	7.5
GP6	0.0	0.0	0.1	1	3.6	0.1	5.6	8.4
GP7	0.0	0.0	0.1	1	0.1	0.0	0.6	4.5
GP12	0.1	0.0	0.2	1	0.1	0.0	0.3	2.3
GP15	0.0	0.0	0.2	1	0.0	0.0	0.1	2.2
P7	0.1	0.0	0.2	1	0.1	0.0	0.4	2.5
P8	0.0	0.0	0.2	1	0.1	0.0	0.4	1.7

Location	Methane (% (v/v))				Carbon Dioxide (% (v/v))			
	Monitoring Results			Limit Level (a)	Monitoring Results			Limit Level (a)
	Average	Min	Max		Average	Min	Max	
P9	0.1	0.0	0.2	1	0.1	0.0	0.3	2.7

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

TABLE 2.33 SUMMARY OF LANDFILL GAS MONITORING RESULTS AT SERVICE VOIDS, UTILITIES PITS AND MANHOLES IN THE REPORTING PERIOD

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

Location	Methane (% (v/v))			
	Monitoring Results			Limit Levels
	Average	Min	Max	
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	0.0	1.0

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

Parameters	Limit Level (LFG1) [a]	LFG1	Limit Level (LFG8) [a]	LFG8
February 2023				
Methane (% (v/v))	1.0	<0.0200	12.6	<0.020
Carbon Dioxide (% (v/v))	3.2	0.318	2.4	0.068
Oxygen (% (v/v))	-	19	-	21.1
Nitrogen (% (v/v))	-	80.9	-	78.9
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
Parameters	**Limit Level (LFG1) [a]**	**LFG1**	**Limit Level (LFG8) [a]**	**LFG8**
May 2023				
Methane (% (v/v))	1.0	<0.020	12.6	<0.020
Carbon Dioxide (% (v/v))	3.2	0.549	2.4	0.066
Oxygen (% (v/v))	-	16.1	-	20.0
Nitrogen (% (v/v))	-	81.3	-	77.5
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
Parameters	**Limit Level (LFG2) [a]**	**LFG2**	**Limit Level (LFG8) [a]**	**LFG8**
August 2023				
Methane (% (v/v))	1.0	<0.020	12.6	<0.020
Carbon Dioxide (% (v/v))	4.3	<0.020	2.4	<0.020
Oxygen (% (v/v))	-	20.6	-	20.5
Nitrogen (% (v/v))	-	76.5	-	76.4
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
Parameters	**Limit Level (LFG2) [a]**	**LFG2**	**Limit Level (LFG8) [a]**	**LFG8**
November 2023				
Methane (% (v/v))	1.0	0.750	12.6	0.096
Carbon Dioxide (% (v/v))	4.3	<0.020	2.4	<0.020
Oxygen (% (v/v))	-	19.3	-	20.3
Nitrogen (% (v/v))	-	77	-	76.6
Carbon Monoxide (% (v/v))	-	<0.020	-	<0.020
Hydrogen (% (v/v))	-	<0.020	-	<0.020
Ethane (ppmv)	-	<1.0	-	<1.0
Propane (ppmv)	-	<1.0	-	<1.0
Butane (ppmv)	-	<1.0	-	<1.0

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

TABLE 2.35 SUMMARY OF FLAMMABLE GAS SURFACE EMISSION MONITORING RESULTS IN THE REPORTING PERIOD

GPS Coordinates Latitude (N)	**Longitude (E)**	**Monitoring Results (ppm)**	**Limit Level (ppm)**
February 2023			30
22°16’29”	114°16’35”	16	
May 2023			

GPS Coordinates Latitude (N)	Longitude (E)	Monitoring Results (ppm)	Limit Level (ppm)
22°16'30"	114°16'36"	6	
22°16'28"	114°16'26"	6	
August 2023			
No flammable gas surface emission detected in the reporting period.			
November 2023			
22°16'29"	114°16'10"	12	
22°16'26"	114°16'34"	15	
22°16'19"	114°16'35"	15	
22°16'17"	114°16'33"	17	
22°16'50"	114°16'21"	17	
22°16'20"	114°16'27"	17	
22°16'29"	114°16'27"	5	

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 2023 to December 2023.

Limit Levels exceedances were recorded for landfill gas monitoring in the reporting period and actions in accordance with the Event and Action Plan presented in **Annex G3** were undertaken. Investigation of the Limit Levels exceedances was conducted and the investigation reports are presented in **Annex G4**.

Based on the investigation conducted for the monitoring events with potential Limit Levels exceedances with the Contractor and the IEC, the landfill gas (methane) exceedance at LFG13 on 13 April 2023 and landfill gas (carbon dioxide) exceedance at LFG24 on 5 June 2023 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.

2.5 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 19 January 2023, 16 February 2023, 30 March 2023, 17 April 2023, 17 May 2023, 26 June 2023, 28 July 2023, 24 August 2023, 28 September 2023, 18 October 2023, 23 November 2023 and 7 December 2023 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 ER to monitor the implementation of proper environmental pollution control and mitigation measures under the Project. In the reporting period, 52 site inspections were carried out on the following dates:

- 5, 12, 19 and 26 January 2023;
- 2, 9, 16 and 22 February 2023;
- 2, 9, 16, 23 and 30 March 2023;
- 6, 13, 19 and 27 April 2023;
- 4, 11, 18 and 25 May 2023;
- 1, 8, 15, 21 and 29 June 2023;
- 6, 13, 20 and 27 July 2023;
- 3, 10, 17, 24 and 31 August 2023;
- 7, 14, 21 and 28 September 2023;
- 5, 12, 19 and 26 October 2023;
- 2, 9, 16, 23 and 30 November 2023; and
- 7, 14, 21 and 28 December 2023.

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
5 January 2023	• The Contractor shall remove the deposited silt and grit accumulated at X10a channel and the general refuse in and around the X9 drop inlet regularly to ensure they are functioning properly at all times.
12 January 2023	• The Contractor shall continue to remove the general refuse, deposited silt and grit accumulated at X10a channel to ensure it is functioning properly at all times. • The Contractor shall arrange cleaning and removal of deposits along the main haul road and near site entrance more frequently to minimise mud to be carried on the public road.
19 January 2023	• The Contractor shall remove the general refuse accumulated at X10a channel regularly to ensure it is functioning properly at all times.

Inspection Date	Environmental Observations and Recommendations
26 January 2023	• The Contractor shall display a NRMM label on the excavator near vehicle washing facilities. • The Contractor shall remove the drilling residue near Towngas plant and dispose of the waste regularly.
2 February 2023	• The Contractor shall clean up the oil spillage near sediment trap and handle the clean-up materials as chemical waste. • The Contractor shall remove the general refuse accumulated at X10a channel regularly to ensure it is functioning properly at all times.
9 February 2023	• The Contractor shall remove the general refuse and deposited silt and grit accumulated at X10a channel regularly to ensure it is functioning properly at all times.
16 February 2023	• The Contractor shall remove the general refuse accumulated at X10a channel (esp. near weighbridge) regularly to ensure it is functioning properly at all times.
22 February 2023	• The Contractor shall enhance watering around the site, especially near SENT and SENTX tie-in area, to minimise dust impact. • The Contractor shall remove the general refuse accumulated at X10a channel regularly to ensure it is functioning properly at all times.
2 March 2023	• The Contractor shall remove the general refuse accumulated at DP3 sediment pit and the sediment trap regularly to ensure they are functioning properly at all times. • The Contractor shall remove the general refuse and construction debris accumulated near LFG20 and dispose of the waste regularly.
9 March 2023	• The Contractor shall clean up the oil spillage near Towngas plant and handle the clean-up materials as chemical waste.
16 March 2023	• The Contractor shall remove the stagnant water accumulated at the drainage channel near Towngas plant to ensure it is functioning properly at all times.
23 March 2023	• The Contractor shall remove the stagnant water accumulated at the drainage channel near Towngas plant to ensure it is functioning properly at all times.
30 March 2023	• The Contractor shall replace the faded NRMM label displaced on the generator near DP3. • The Contractor shall arrange cleaning and removal of deposits along the main haul road, especially near site entrance and vehicle washing facilities more frequently to minimise mud to be carried on the public road.
6 April 2023	• The Contractor shall remove the deposited silt and grit accumulated at the channel near guard house regularly to ensure it is functioning properly at all times.
13 April 2023	• The Contractor shall remove the stagnant water accumulated in the drip trap at DP3 Wetsep and handle the clean-up materials as chemical waste.
19 April 2023	• The Contractor shall enhance watering around the site, especially near piggyback and tipping area to minimise dust impact. • The Contractor shall remove the deposited silt and grit accumulated at the channel near guard house regularly to ensure it is functioning properly at all times. • The Contractor shall remove the general refuse accumulated at DP4 outlet and dispose of the waste regularly.

Inspection Date	Environmental Observations and Recommendations
27 April 2023	• The Contractor shall remove the stagnant water accumulated in the drip trays at DP3 and DP4 Wetseps and handle the clean-up materials as chemical waste. • The Contractor shall remove the general refuse accumulated at DP4 outlet and near welfare facilities and dispose of the waste regularly.
4 May 2023	• The Contractor shall remove the deposited silt and grit accumulated at the channel near guardhouse and the general refuse at the channel near weighbridge regularly to ensure they are functioning properly at all times. • The Contractor shall remove the general refuse accumulated near welfare facilities and dispose of the waste regularly.
11 May 2023	• The Contractor shall arrange cleaning and removal of deposits near site entrance and along the main haul road more frequently to minimise mud to be carried on the public road.
18 May 2023	• The Contractor shall remove the stagnant water accumulated in the drip trays at DP3 and DP4 Wetseps and handle the clean-up materials as chemical waste. • The Contractor shall arrange regular cleaning and removal of deposits near site entrance to minimise mud to be carried on the public road.
25 May 2023	• The Contractor shall replace the faded NRMM label displayed on the excavator near buttress area.
1 June 2023	• The Contractor shall arrange regular cleaning and removal of deposits at the main haul road, especially near site entrance to minimise mud to be carried on the public road.
8 June 2023	• The Contractor shall remove the deposited silt and grit and refuse accumulated at X10 channel, especially near weighbridge and DP3 regularly, to ensure it is functioning properly at all times.
15 June 2023	• The Contractor shall remove the branches and general refuse accumulated at DP3 sediment pit regularly to ensure it is functioning properly at all times. • The Contractor shall review the treatment capacity and efficiency of DP4 Wetseps, and ensure all surface water is treated before discharge.
21 June 2023	• The Contractor shall enhance watering around the site, especially near site entrance to minimise dust impact. • The Contractor shall remove the general refuse accumulated at X10 channel near weighbridge regularly to ensure it is functioning properly at all times. • The Contractor shall remove the stagnant water accumulated in the drip trays at DP4 Wetseps and handle the clean-up materials as chemical waste.
29 June 2023	• The Contractor shall arrange regular cleaning and removal of deposits along the main haul road and near site entrance to minimise mud to be carries on the public road.
6 July 2023	• The Contractor shall remove the stagnant water accumulated in the drip tray at DP4 Wetsep and handle the clean-up materials as chemical waste.
13 July 2023	• No observations during the site inspection.

Inspection Date	Environmental Observations and Recommendations
20 July 2023	• The Contractor shall remove the deposited silt and grit accumulated at DP3 sediment pit regularly to ensure it is functioning properly at all times.
27 July 2023	• The Contractor shall remove the stagnant water accumulated in the drip tray at DP4 Wetsep and handle the clean-up materials as chemical waste.
3 August 2023	• The Contractor shall remove the general refuse, deposited silt and grit accumulated at X10 channel regularly to ensure it is functioning properly at all times. • The Contractor shall remove the stagnant water accumulated in the drip tray at DP4 Wetsep and handle the clean-up materials as chemical waste. • The Contractor shall remove the general refuse accumulated near welfare facilities and dispose of the waste regularly.
10 August 2023	• The Contractor shall remove the general refuse and mulch accumulated at the channel and around the planting area near Towngas plant, to ensure it is functioning properly at all times. • The Contractor shall remove the ST pipes residue accumulated near Towngas plant and dispose of the waste regularly.
17 August 2023	• The Contractor shall remove the general refuse, deposited silt and grit accumulated at X10 channel and the drain near site entrance regularly to ensure they are functioning properly at all times. • The Contractor shall provide drip trays for the chemicals stored near diesel fuel tanks.
24 August 2023	• The Contractor shall clean up the oil spill near Towngas plant and handle the clean-up materials as chemical waste. • The Contractor shall remove the stagnant water accumulated in the drip trays at DP4 Wetseps and handle the clean-up materials as chemical waste.
31 August 2023	• The Contractor shall cover the stockpile of dusty materials by impervious sheeting near Towngas plant to minimise dust impact. • The Contractor shall remove the general refuse accumulated near site entrance and dispose of the waste regularly.
7 September 2023	• The Contractor shall replace the faded NRMM label displayed on the excavator at Cell 1X restoration area. • The Contractor shall remove the deposited silt and grit accumulated at X10 channel regularly and maintain the silt fencing along X10 channel to minimise SS runoff to the channel. • The Contractor shall remove the general refuse accumulated at X10 channel drop inlet to ensure it is functioning properly at all times.
14 September 2023	• The Contractor shall remove the deposited silt and grit and general refuse accumulated at X10 channel regularly to ensure it is functioning properly at all times.
21 September 2023	• The Contractor shall remove the deposited silt and grit accumulated at X10 channel and the channel near site entrance regularly to ensure they are functioning properly at all times. • The Contractor shall review the treatment capacity of DP4 Wetsep to ensure all surface water is treated before discharge.

Inspection Date	Environmental Observations and Recommendations
28 September 2023	• The Contractor shall remove the deposited silt and grit and general refuse accumulated at X10 channel regularly to ensure it is functioning properly at all times. • The Contractor shall replace the faded NRMM label displayed on the road roller at Cell 1X restoration area. • The Contractor shall clean up the algae accumulated at DP6 Wetsep to ensure it is functioning properly at all times.
5 October 2023	• The Contractor shall remove the general refuse accumulated at DP3, X10 channel and DP4 outlet regularly to ensure they are functioning properly at all times. • The Contractor shall clean up the algae accumulated at DP6 Wetsep to ensure it is functioning properly at all times. • The Contractor shall remove the general refuse and chemical waste accumulated near Towngas plant and dispose of the chemical waste separately.
12 October 2023	• The Contractor shall cover the stockpile of dusty materials near Towngas plant by impervious sheeting to minimise dust impact. • The Contractor shall remove the deposited silt and grit accumulated at X10 channel and maintain the silt fencing along X10 channel to minimise SS runoff to the channel.
19 October 2023	• The Contractor shall remove the deposited silt, grit and general refuse accumulated at X10 channel and channel near site entrance regularly to ensure they are functioning properly at all times. • The Contractor shall review the treatment capacity of the Wetseps at DP3 and DP4 to ensure all surface water is treated properly before discharge. • The Contractor shall arrange regular cleaning and removal of deposits along the main haul road, especially near site entrance to minimise mud to be carried on the public road.
26 October 2023	• The Contractor shall remove the deposited silt and grit accumulated at X10 channel regularly and maintain the silt fencing along the channel to minimise SS runoff to the channel.
2 November 2023	• The Contractor shall remove the general refuse, deposited silt and grit accumulated at X10 channel and the drain near site entrance regularly to ensure they are functioning properly at all times.
9 November 2023	• The Contractor shall remove the general refuse and deposited silt and grit accumulated at X10 channel to ensure it is functioning properly at all times and minimise odour and pest impact. • The Contractor shall remove the general refuse accumulated near Towngas plant and dispose of the waste regularly.
16 November 2023	• The Contractor shall enhance watering at tipping area to minimise dust impact. • The Contractor shall continue the silt removal work at X10 channel and remove the general refuse accumulated at DP4 outlet to ensure they are functioning properly at all times. • The Contractor shall clean up the oil spillage at DP6 and handle the cleanup material as chemical waste. • The Contractor shall arrange regular cleaning and removal of deposits along the main haul road, especially near the site entrance to minimise mud to be carried on the public road.

Inspection Date	Environmental Observations and Recommendations
	• The Contractor shall remove the general refuse accumulated at the drain near Towngas plant and at the planting area, and dispose of the waste regularly.
23 November 2023	• The Contractor shall remove the general refuse accumulated at X10 channel and DP4 outlet regularly to ensure they are functioning properly at all times.
30 November 2023	• The Contractor shall arrange regular cleaning and removal of deposits along the main haul road, especially near weighbridge, to minimise mud to be carried on the public road.
7 December 2023	• No observations during the site inspection.
14 December 2023	• The Contractor shall replace the faded NRMM label displayed on the grabber at sorting area.
21 December 2023	• The Contractor shall place the NRMM label on the sorting machine at sorting area.
28 December 2023	• The Contractor shall display NRMM labels on the sorting machine and generator at sorting area or display the label "Not in use". • The Contractor shall remove the deposited silt, grit and general refuse accumulated at X10 channel regularly to ensure it is functioning properly at all times.

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	N.A.

Deficiencies	Rectifications Implemented	Proposed Additional Control Measures
	placed in the water zone in the upstream section to pump water to the Wetsep for treatment prior to the discharge to the last section before the weir plate. • DP6: Pipes through the gravel piles between different channel sections were covered with geotextiles to block debris and silt.	
Stockpiles & exposed 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 inert C&D materials, yard waste and 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	
Jan 23	0	0	0	0	0	0	0	0	0.80
Feb 23	0	0	0	0	0	0	0	0	0.80
Mar 23	0	0	0	0	0	0	0	0	0.80
Apr 23	0	0	0	0	0	0	0	0	0.80

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	
May 23	0	0	0	0	0	0	20.55	0	0.80
Jun 23	0	0	0	0	0	0	12.46	0	0.80
Jul 23	0	0	0	0	0	0	11.78	0	0.80
Aug 23	0	0	0	0	0	0	0	0	1.40
Sep 23	0	0	0	0	0	0	0	0	0.89
Oct 23	0	0	0	0	0	0	0	0	1.18
Nov 23	0	0	0	0	0	0	10.61	0	1.04
Dec 23	235.53	0	0	0	0	0	3.95	0	0.80

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

Fourteen exceedances of Action and Limit Levels for dust (TSP), four exceedances of Limit Level for thermal oxidizer stack emission (SO_2), one exceedance of Limit Level for landfill gas flare stack emission (Benzene), nine exceedances of the Limit Level for groundwater (COD), one exceedance of Limit Levels for surface water (SS), one hundred seventy-eight exceedances of the Limit Level for Leachate Level, one exceedance of Limit Levels for perimeter landfill gas (methane) and one exceedance of Limit Levels for perimeter landfill gas (carbon dioxide) were recorded in the reporting period.

The TSP exceedances at AM2 on 7 January 2023, 31 January 2023, 8 March 2023, 14 March 2023, 1 May 2023 and 6 June 2023, and at AM3 on 31 January 2023 were considered Project-related upon further investigation, while the TSP exceedances at AM1 on 31 January 2023, 2 March 2023, 14 March 2023, 13 April 2023, 22 and 28 September 2023, and at AM3 on 21 November 2023 were considered non Project-related upon further investigation.

The thermal oxidiser stack emission (SO_2) exceedances on 18 January 2023, 13 September 2023, 16 October 2023 and 16 November 2023 and the landfill gas flare stack emission (Benzene) exceedance on 12 May 2023 were considered Project-related upon further investigation.

The surface water (SS) exceedance at DP4 on 4 August 2023 was found deemed to Project-related activities upon further investigation.

The groundwater (COD) exceedances at MWX-5 on 4 May 2023, at MWX-6 on 7 March 2023, 13 April 2023, 2 August 2023, 14 December 2023, at MWX-7 on 11 July 2023, 22 September 2023, 7 November 2023 and MWX-8 on 4 May 2023 were considered non Project-related upon further investigation.

The leachate level exceedances at Pump Station No. 1X from 8 September to 16 September 2023 and from 9 October to 17 October 2023, at Pump Station No. 2X from 11 October to 23 November 2023, at Pump Station No. 3X from 8 September to 20 September 2023 and from 9 October to 24 November 2023, and at Pump Station No. 4X from 17 June to 22 June 2023 and from 8 September to 20 September 2023, and from 9 October to 14 November 2023 were considered Project-related upon further investigation.

The landfill gas (methane) exceedance at LFG13 on 13 April 2023 and landfill gas (carbon dioxide) exceedance at LFG24 on 5 June 2023 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 Annual EM&A Report presents the findings of the EM&A activities undertaken during the period from 1 January 2023 to 31 December 2023 in accordance with the updated EM&A Manual and the requirements of the Environmental Permit (*EP-308/2008/B)*.

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

Fourteen exceedances of Action and Limit Levels for dust (TSP), four exceedances of Limit Level for thermal oxidizer stack emission (SO_2), one exceedance of Limit Level for landfill gas flare stack emission (Benzene), nine exceedances of the Limit Level for groundwater (COD), one exceedance of Limit Levels for surface water (SS), one hundred seventy-eight exceedances of the Limit Level for Leachate Level, one exceedance of Limit Levels for perimeter landfill gas (methane) and one exceedance of Limit Levels for perimeter landfill gas (carbon dioxide) were recorded in the reporting period.

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

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

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

ANNEX A WORK PROGRAMME

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

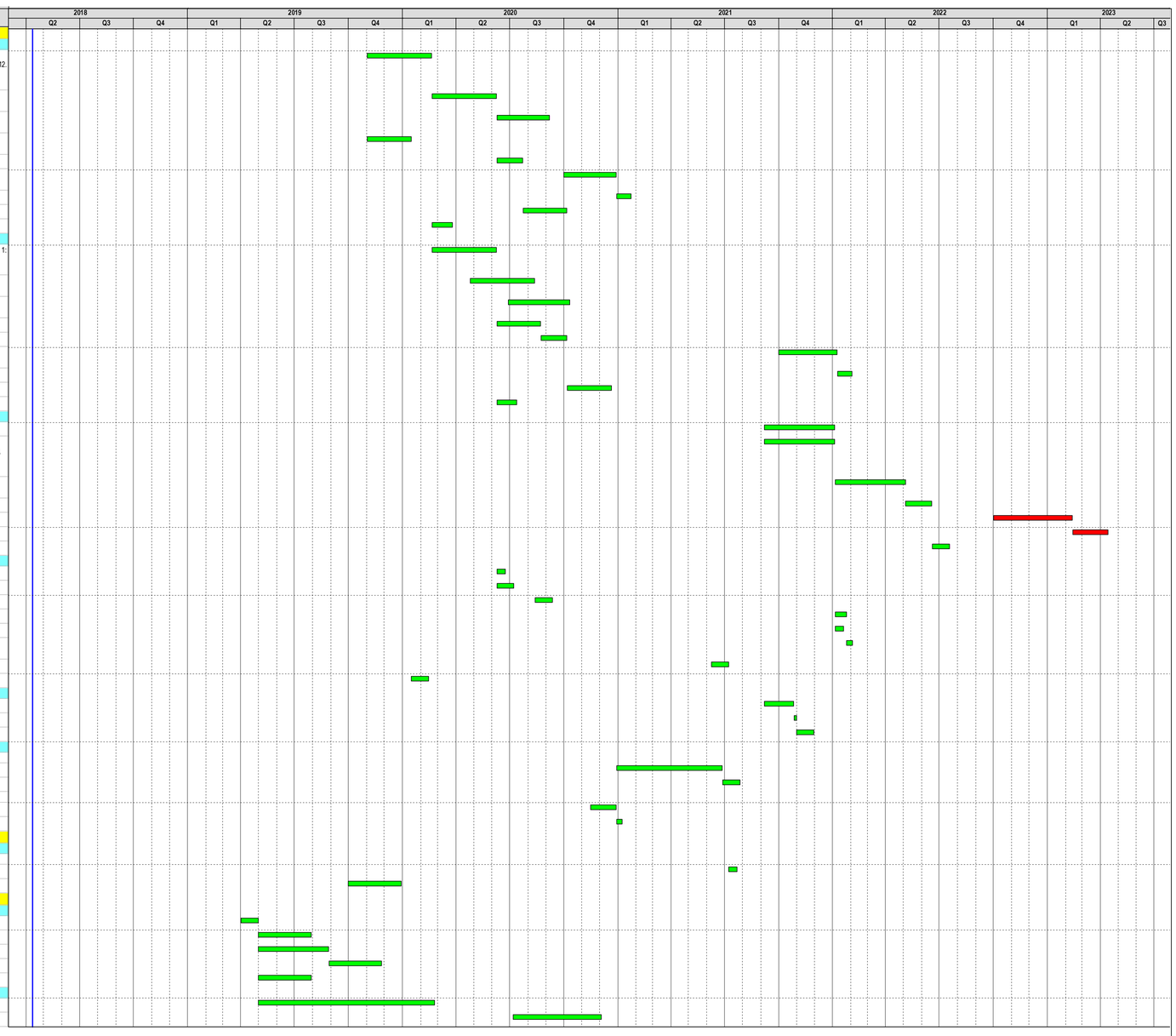
Remaining Work
Critical Remaining Work
◆ Milestone

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

GREEN VALLEY LANDFILL, LIMITED

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

#	WBS Path	Activity ID	Activity Name	Dur	Start	Finish	Total Float	Predecessor Details	Successor Details
509			**SA2.6.03 Civil Engineering Works**	1259	02-Nov-19	13-Apr-23	30		
510			**SA2.6.03.2 Landfill Cell 2**	449	02-Nov-19	23-Jan-21	810		
511	6.03.2	63-1000	Earth bund (Eastern)	110	02-Nov-19	19-Feb-20	9	11-1100: FS, 23-2500: FS, 53-4200: FS, 53-1400: FS, 53-2800: FS	53-3500: FS, 63-1500: FS, 63-1800: FS, 63-1900: FS, 63-2000: FS, 63-2100: FS, 63-2200: FS, M12. 1: FS -50, M12. 2: FS, 63-1100: FS
512	6.03.2	63-1100	Earth bund (Western)	110	20-Feb-20	08-Jun-20	84	11-1100: FS, 23-2500: FS, 53-1800: FS, 53-1400: FS, 63-1000: FS	63-1400: FS, 63-1500: FS, 63-1700: FS, 63-3500: FS, 63-3600: FS, 63-1200: FS
513	6.03.2	63-1200	Intercell bund (Cell 2/3)	90	09-Jun-20	06-Sep-20	734	11-1100: FS, 23-2500: FS, 53-1800: FS, 53-1400: FS, 53-4400: FS, 63-1100: FS	63-1500: FS
514	6.03.2	63-1300	Site Formation	75	02-Nov-19	15-Jan-20	14	11-1100: FS, 23-2500: FS, 53-1800: FS, 53-1400: FS	63-1400: FS, 63-4200: FS
515	6.03.2	63-1400	Pump Station (PS#2X)	45	09-Jun-20	23-Jul-20	84	63-1300: FS, 63-1100: FS	63-1600: FS, 63-1700: FS
516	6.03.2	63-1500	Lining Works	90	01-Oct-20*	29-Dec-20	710	41-1500: FS, 63-1000: FS, 63-1100: FS, 63-1200: FS	63-1600: FS, M12. 3: FS, 63-2400: FS
517	6.03.2	63-1600	Protective Stone Laying & Leachate Collection Pipe	25	30-Dec-20	23-Jan-21	810	63-1500: FS, 41-1500: FS, 63-1400: FS	32-1600: FS, M12. 3: FS
518	6.03.2	63-1700	Install Leachate Force Main	75	24-Jul-20	06-Oct-20	84	63-1100: FS, 41-1500: FS, 63-1400: FS	54-2800: FS, M12. 3: FS
519	6.03.2	63-1800	Install Landfill Gas Pipe on earth bund	35	20-Feb-20	25-Mar-20	168	41-1500: FS, 63-1000: FS	54-4000: FS, M12. 3: FS
520			**SA2.6.03.3 Landfill Cell 3**	714	20-Feb-20	02-Feb-22	435		
521	6.03.3	63-1900	Earth bund (Eastern)	110	20-Feb-20	08-Jun-20	9	11-1100: FS, 53-4200: FS, 63-1000: FS, 53-4300: FS, 53-2800: FS, 63-4200: FS	53-3300: FS, 53-3600: FS, 63-2400: FS, 63-2700: FS, M12. 1: FS -50, M12. 2: FS, 63-2000: FS -45, 63-2200: FS
522	6.03.3	63-2000	Earth bund (Western)	110	25-Apr-20	12-Aug-20	19	11-1100: FS, 63-1000: FS, 63-1900: FS -45	63-2300: FS, 63-2400: FS, 63-2600: FS, 63-3700: FS, 63-2100: FS -45
523	6.03.3	63-2100	Intercell bund (Cell 3/4)	105	29-Jun-20	11-Oct-20	789	11-1100: FS, 63-1000: FS, 63-4200: FS, 63-2000: FS -45	63-2400: FS
524	6.03.3	63-2200	Site Formation	75	09-Jun-20	22-Aug-20	9	11-1100: FS, 63-1000: FS, 63-1900: FS	63-2300: FS
525	6.03.3	63-2300	Pump Station (PS#3X)	45	23-Aug-20	06-Oct-20	9	63-2200: FS, 63-2000: FS	63-2500: FS, 63-2600: FS
526	6.03.3	63-2400	Lining Works	100	01-Oct-21*	08-Jan-22	435	41-1500: FS, 63-1900: FS, 63-2000: FS, 63-2100: FS, 63-1500: FS	63-2500: FS, M12. 3: FS
527	6.03.3	63-2500	Protective Stone Laying & Leachate Collection Pipe	25	09-Jan-22	02-Feb-22	435	63-2400: FS, 41-1500: FS, 63-2300: FS	32-1700: FS, M12. 3: FS
528	6.03.3	63-2600	Install Leachate Force Main	75	07-Oct-20	20-Dec-20	9	63-2000: FS, 41-1500: FS, 63-2300: FS	53-2500: SS -90, 54-2800: FS, M12.3: FS
529	6.03.3	63-2700	Install Landfill Gas Pipe on earth bund	35	09-Jun-20	13-Jul-20	58	41-1500: FS, 63-1900: FS	54-4000: FS, M12. 3: FS
530			**SA2.6.03.4 Landfill Cell 4**	584	07-Sep-21	13-Apr-23	30		
531	6.03.4	63-2800	Remaining Portion of Buttress Wall	120	07-Sep-21	04-Jan-22	494	62-1000: FS	
532	6.03.4	63-2900	Earth bund (Western) incl. MSE Wall	120	07-Sep-21	04-Jan-22	239	62-1000: FS	63-3000: FS, 63-3100: FS, 63-3200: FS, 63-3400: FS, 63-3800: FS, 63-3900: FS, 63-4100: SS -90, M 9. 6: FS -60, M 9. 7: FS -30, M 9. 8: FS
533	6.03.4	63-3000	Site Formation	120	05-Jan-22	04-May-22	239	62-1000: FS, 62-1100: FS, 62-1200: FS, 63-2900: FS, 63-4100: FS	63-3100: FS
534	6.03.4	63-3100	Pump Station (PS#4X)	45	05-May-22	18-Jun-22	239	63-3000: FS, 63-2900: FS	63-3300: FS, 63-3400: FS
535	6.03.4	63-3200	Lining Works	135	01-Oct-22*	12-Feb-23	0	41-1500: FS, 63-2900: FS	63-3300: FS, M12. 6: FS
536	6.03.4	63-3300	Protective Stone Laying & Leachate Collection Pipe	60	13-Feb-23	13-Apr-23	0	41-1500: FS, 63-3200: FS, 63-3100: FS	12-1900: FS, 32-1800: FS, M12. 6: FS
537	6.03.4	63-3400	Install Leachate Force Main & Remove Temporary Leachate Pipe	30	19-Jun-22	18-Jul-22	269	41-1500: FS, 63-2900: FS, 63-3100: FS	12-1900: FS, 32-1800: FS, M12. 6: FS
538			**SA2.6.03.5 Drainage - Surface Run-Off**	750	16-Jan-20	03-Feb-22	464		
539	6.03.5	63-3500	Perimeter Channel (X9A) at Cell 2 Western Bund	15	09-Jun-20	23-Jun-20	1054	63-1100: FS	12-1900: FS
540	6.03.5	63-3600	Perimeter Channel (X10A) at Cell 2 Western Bund	30	09-Jun-20	08-Jul-20	1029	63-1100: FS	63-4000: FS
541	6.03.5	63-3700	Perimeter Channel (X10A) at Cell 3 Western Bund	30	13-Aug-20	11-Sep-20	964	63-2000: FS	63-4000: FS
542	6.03.5	63-3800	Perimeter Channel (X10A) at Cell 4 Western Bund	20	05-Jan-22	24-Jan-22	464	63-2900: FS	63-4000: FS
543	6.03.5	63-3900	Perimeter Channel (X10C) at Cell 4 Western Bund	15	05-Jan-22	19-Jan-22	469	63-2900: FS	63-4000: FS
544	6.03.5	63-4000	Connection to Existing DP3	10	25-Jan-22	03-Feb-22	464	63-3900: FS, 63-3600: FS, 63-3700: FS, 63-3800: FS	12-1900: FS
545	6.03.5	63-4100	Remove Cut-Off Channel C-7 at bottom of Buttress Wall	30	09-Jun-21	08-Jul-21	419	63-2900: SS -90	63-3000: FS
546	6.03.5	63-4200	Temporary Channel (X7T) at SENT Infrastructure Area	30	16-Jan-20	14-Feb-20	14	63-1300: FS	63-1900: FS, 63-2100: FS
547			**SA2.6.03.6 Drainage - Ground Water**	85	07-Sep-21	30-Nov-21	529		
548	6.03.6	63-4300	Construct Temporary Channel (TC-1), from MH-1 to Existing UC-825	50	07-Sep-21	26-Oct-21	529	23-1900: FS, 11-1300: FS, 62-1000: FS	63-4400: FS
549	6.03.6	63-4400	Divert GW at MH-1 to TC-1	5	27-Oct-21	31-Oct-21	529	63-4300: FS	63-4500: FS, M 9. 9: FS
550	6.03.6	63-4500	Reconnection of GWCP across Cell 4	30	01-Nov-21	30-Nov-21	529	62-1100: FS, 62-1200: FS, 63-4400: FS	12-1900: FS
551			**SA2.6.03.8 Utilities - Works Associated with Utilities Undertakes**	255	15-Nov-20	27-Jul-21	655		
552			SA2.6.03.8.U1 CLP	210	30-Dec-20	27-Jul-21	655		
553	6.03.8.U1	63-4600	LFG Generator On-grid Testing	180	30-Dec-20	27-Jun-21	655	32-2500: FS, 12-1200: FS, 54-4000: FS	63-4700: FS
554	6.03.8.U1	63-4700	LFG Generator On-grid Inspection & Verify	30	28-Jun-21	27-Jul-21	655	63-4600: FS	12-1900: FS
555			SA2.6.03.8.U6 TownGas	55	15-Nov-20	08-Jan-21	855		
556	6.03.8.U6	63-4800	Laying Gas Mains (from LFG to Town Gas PF)	45	15-Nov-20	29-Dec-20	855	54-4000: FF	63-4900: FS
557	6.03.8.U6	63-4900	Gas Meter Relocation & Connection at LFG	10	30-Dec-20	08-Jan-21	855	63-4800: FS, 54-4000: FS	12-1900: FS
558			**SA2.6.04 Building & E&M Works**	661	01-Oct-19	22-Jul-21	660		
559			**SA2.6.04.C Part X1 Area C**	661	01-Oct-19	22-Jul-21	660		
560			SA2.6.04.C.02 LFG Treatment Plant	661	01-Oct-19	22-Jul-21	660		
561	6.04.C.02	64-1000	GHS600 Blower 601 C Relocation	15	08-Jul-21	22-Jul-21	660	32-1500: FS	12-1900: FS
562	6.04.C.02	64-1100	Absorption Chiller (Optional)	90	01-Oct-19	29-Dec-19	1231	54-2200: FS	12-1900: FS
563			**SA2.6.08 Landscape Works**	613	01-Apr-19	03-Dec-20	891		
564			**SA2.6.08.1 SENT Area - Tree Removal & Transplanting**	240	01-Apr-19	26-Nov-19	1264		
565	6.08.1	68-1000	Access trees condition and select for transplanting	30	01-Apr-19*	30-Apr-19	1264	14-1300: FS	68-1100: FS, 68-1200: FS, 68-1400: FS
566	6.08.1	68-1100	Prepare new site to receive trees	90	01-May-19	29-Jul-19	1264	68-1000: FS	68-1200: SS
567	6.08.1	68-1200	Transplant selected trees	120	01-May-19	28-Aug-19	1264	68-1000: FS, 68-1100: SS	68-1300: FS
568	6.08.1	68-1300	Prune trees prior to removal from Cell 4	90	29-Aug-19	26-Nov-19	1264	68-1200: FS	12-1900: FS
569	6.08.1	68-1400	Tree Felling - Part X3	90	01-May-19	29-Jul-19	1384	23-8200: FS, 31-1600: FS, 68-1000: FS	12-1900: FS
570			**SA2.6.08.2 SENTX Area - Trial Nursery & Tree Planting**	583	01-May-19	03-Dec-20	891		
571	6.08.2	68-1600	Trial Nursery	300	01-May-19	24-Feb-20	1174	14-1800: FS, 58-1000: SS 30	12-1900: FS, M 3. 2: FS
572	6.08.2	68-1700	Landscaping in New Infrastructure Area	150	07-Jul-20	03-Dec-20	891	54-1000: FS, 23-7600: FS	12-1900: FS



Remaining Work
Critical Remaining Work
Milestone

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

GREEN VALLEY LANDFILL LIMITED

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

ANNEX B ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE

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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

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						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*	Deficiency of mitigation measures but rectified by the Contractor
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*	Deficiency of mitigation measures but rectified by the Contractor

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						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

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						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

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						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.

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						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*	Deficiency of mitigation measures but rectified by the Contractor
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*	Deficiency of mitigation measures but rectified by the Contractor
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

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						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

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						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

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						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

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						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

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						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*	Deficiency of mitigation measures but rectified by the Contractor

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	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

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						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*	Reminder was given to the Contractor
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 2023

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

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

February 2023

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

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

March 2023

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

April 2023

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

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

May 2023

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

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

June 2023

Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1 Leachate Monitoring	2	3
4	5 Perimeter LFG Monitoring Service voids LFG Monitoring	6 Dust Monitoring	7 Noise Monitoring	8 Groundwater Monitoring	9 Groundwater Monitoring Surface Water Monitoring	10
11	12 Dust Monitoring	13 Noise Monitoring	14	15 Stack Monitoring Odour Monitoring	16 Stack Monitoring	17
18 Dust Monitoring (AM2 - AM4)	19 Noise Monitoring Dust Monitoring (AM1)	20 Dust Monitoring (AM2 Re-measurement)	21	22	23	24 Dust Monitoring
25	26 Noise Monitoring	27	28	29	30 Dust Monitoring	

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

July 2023

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

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

August 2023

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1 Groundwater Monitoring	2 Groundwater Monitoring Leachate Monitoring	3 Perimeter LFG Monitoring Perimeter LFG Bulk Gas Sampling	4 Service voids LFG Monitoring Surface Water Monitoring	5 Dust Monitoring
6	7 Noise Monitoring (10:00 - 10:30)	8	9	10	11 Dust Monitoring	12
13	14 Noise Monitoring	15 Stack Monitoring VOCs Monitoring	16 Stack Monitoring Flammable gas monitoring	17 Dust Monitoring Odour Monitoring	18	19
20	21	22	23 Dust Monitoring	24 Noise Monitoring	25	26
27	28	29 Dust Monitoring	30 Noise Monitoring	31		

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

September 2023

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

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

October 2023

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

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

November 2023

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

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

December 2023

Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	2
3 Dust Monitoring	4 Noise Monitoring	5	6 Leachate Monitoring	7	8	9 Dust Monitoring
10	11 Noise Monitoring	12 Perimeter LFG Monitoring Service voids LFG Monitoring	13	14 Groundwater Monitoring Stack Monitoring	15 Dust Monitoring Surface Water Monitoring Stack Monitoring Odour Monitoring	16
17	18 Noise Monitoring	19	20	21 Dust Monitoring	22	23
24	25	26	27 Dust Monitoring	28 Noise Monitoring	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 (μg/m³)
1 Jan 23	8:00	2 Jan 23	7:33	Sunny	50
7 Jan 23	8:00	8 Jan 23	7:37	Cloudy	178
13 Jan 23	8:00	14 Jan 23	7:48	Cloudy	43
19 Jan 23	8:00	20 Jan 23	7:36	Cloudy	140
25 Jan 23	8:00	26 Jan 23	8:06	Cloudy	118
31 Jan 23	8:00	1 Feb 23	7:48	Sunny	509
6 Feb 23	8:00	7 Feb 23	7:36	Sunny	109
12 Feb 23	8:00	13 Feb 23	7:45	Fine	75
18 Feb 23	8:00	19 Feb 23	8:11	Fine	89
24 Feb 23	8:00	25 Feb 23	8:11	Sunny	192
2 Mar 23	8:00	3 Mar 23	7:58	Sunny	401
8 Mar 23	8:00	9 Mar 23	8:02	Sunny	165
14 Mar 23	8:00	15 Mar 23	7:46	Cloudy	306
20 Mar 23	8:00	21 Mar 23	7:46	Cloudy	171
26 Mar 23	8:00	27 Mar 23	8:17	Rainy	58
1 Apr 23	8:00	2 Apr 23	8:00	Cloudy	68
7 Apr 23	8:00	8 Apr 23	8:00	Cloudy	111
13 Apr 23	8:00	14 Apr 23	8:00	Sunny	365
19 Apr 23	8:00	20 Apr 23	8:00	Cloudy	142
25 Apr 23	8:00	26 Apr 23	8:00	Cloudy	44
1 May 23	8:00	2 May 23	8:00	Cloudy	153
7 May 23	8:00	8 May 23	8:00	Cloudy	145
13 May 23	8:00	14 May 23	8:00	Cloudy	221
19 May 23	8:00	20 May 23	8:00	Sunny	113
25 May 23	8:00	26 May 23	8:00	Sunny	141
31 May 23	8:00	1 Jun 23	8:00	Sunny	128
6 Jun 23	8:00	7 Jun 23	8:00	Cloudy	155
12 Jun 23	8:00	13 Jun 23	8:00	Cloudy	64
19 Jun 23	8:00	20 Jun 23	8:00	Fine	57
25 May 23	8:00	26 May 23	8:00	Sunny	141
31 May 23	8:00	1 Jun 23	8:00	Sunny	128
6 Jun 23	8:00	7 Jun 23	8:00	Cloudy	155
12 Jun 23	8:00	13 Jun 23	8:00	Cloudy	64
19 Jun 23	8:00	20 Jun 23	8:00	Fine	57
24 Jun 23	8:00	25 Jun 23	8:00	Cloudy	38

Start Date	Start Time	Finish Date	Finish Time	Weather	24-hour TSP (μg/m³)
30 Jun 23	8:00	1 Jul 23	8:00	Fine	71
6 Jul 23	8:00	7 Jul 23	8:00	Sunny	142
12 Jul 23	8:00	13 Jul 23	8:00	Sunny	117
18 Jul 23	8:00	19 Jul 23	8:00	Cloudy	157
24 Jul 23	8:00	25 Jul 23	8:00	Sunny	90
30 Jul 23	8:00	31 Jul 23	8:00	Cloudy	83
5 Aug 23	8:00	6 Aug 23	8:00	Sunny	112
11 Aug 23	8:00	12 Aug 23	8:00	Cloudy	68
17 Aug 23	8:00	18 Aug 23	8:00	Sunny	59
23 Aug 23	8:00	24 Aug 23	8:00	Fine	53
29 Aug 23	8:00	30 Aug 23	8:00	Cloudy	56
4 Sep 23	8:00	5 Sep 23	8:00	Sunny	113
10 Sep 23	8:00	11 Sep 23	8:00	Cloudy	29
16 Sep 23	8:00	17 Sep 23	8:00	Cloudy	37
22 Sep 23	8:00	23 Sep 23	8:00	Sunny	357
28 Sep 23	8:00	29 Sep 23	8:00	Sunny	343
4 Oct 23	8:00	5 Oct 23	8:00	Sunny	76
10 Oct 23	8:00	11 Oct 23	8:00	Cloudy	54
16 Oct 23	8:00	17 Oct 23	8:00	Fine	177
22 Oct 23	8:00	23 Oct 23	8:00	Fine	70
28 Oct 23	8:00	29 Oct 23	8:00	Cloudy	107
3 Nov 23	8:00	4 Nov 23	8:00	Sunny	211
9 Nov 23	8:00	10 Nov 23	8:00	Fine	139
15 Nov 23	8:00	16 Nov 23	8:00	Fine	127
21 Nov 23	8:00	22 Nov 23	8:00	Sunny	186
27 Nov 23	8:00	28 Nov 23	8:00	Sunny	181
3 Dec 23	8:00	4 Dec 23	8:00	Fine	102
9 Dec 23	8:00	10 Dec 23	8:00	Sunny	143
15 Dec 23	8:00	16 Dec 23	8:00	Sunny	164
21 Dec 23	8:00	22 Dec 23	8:00	Cloudy	68
27 Dec 23	8:00	28 Dec 23	8:00	Cloudy	186
				Average	138
				Min	29
				Max	509

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

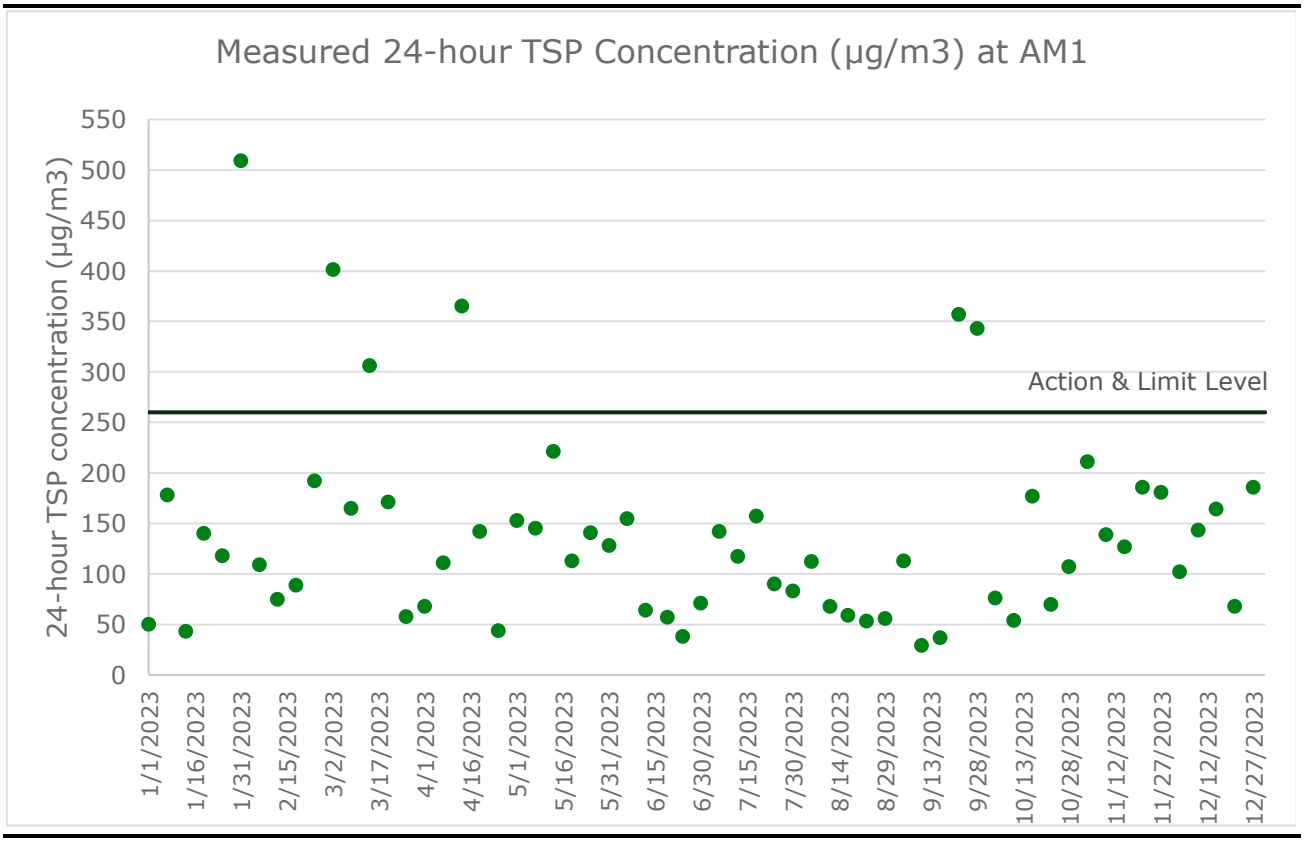


TABLE D1.2 24-HOUR TSP MONITORING RESULTS AT AM2

Start Date	Start Time	Finish Date	Finish Time	Weather	24-hour TSP ($\mu g/m^3$)
1 Jan 23	8:00	2 Jan 23	7:42	Sunny	56
7 Jan 23	8:00	8 Jan 23	7:38	Cloudy	337
13 Jan 23	8:00	14 Jan 23	7:58	Cloudy	47
19 Jan 23	8:00	20 Jan 23	7:33	Cloudy	84
25 Jan 23	8:00	26 Jan 23	7:39	Cloudy	64
31 Jan 23	8:00	1 Feb 23	7:33	Sunny	266
6 Feb 23	8:00	7 Feb 23	7:33	Sunny	61
12 Feb 23	8:00	13 Feb 23	8:07	Fine	43
18 Feb 23	8:00	19 Feb 23	7:43	Fine	93
24 Feb 23	8:00	25 Feb 23	7:56	Sunny	211
2 Mar 23	8:00	3 Mar 23	7:53	Sunny	236
8 Mar 23	8:00	9 Mar 23	8:13	Sunny	313
14 Mar 23	8:00	15 Mar 23	7:39	Cloudy	452
20 Mar 23	8:00	21 Mar 23	7:48	Cloudy	151
26 Mar 23	8:00	27 Mar 23	8:25	Rainy	108
1 Apr 23	8:00	2 Apr 23	7:53	Cloudy	76
7 Apr 23	8:00	8 Apr 23	8:13	Cloudy	97
13 Apr 23	8:00	14 Apr 23	7:39	Sunny	252
19 Apr 23	8:00	20 Apr 23	7:48	Cloudy	154
25 Apr 23	8:00	26 Apr 23	8:25	Cloudy	65
1 May 23	8:00	2 May 23	8:00	Cloudy	356
7 May 23	8:00	8 May 23	8:00	Cloudy	103
13 May 23	8:00	14 May 23	8:00	Cloudy	57
19 May 23	8:00	20 May 23	8:00	Sunny	83
25 May 23	8:00	26 May 23	8:00	Sunny	126
31 May 23	8:00	1 Jun 23	8:00	Sunny	219
6 Jun 23	8:00	7 Jun 23	8:00	Cloudy	340
12 Jun 23	8:00	13 Jun 23	8:00	Cloudy	Discarded due to abnormal condition of the filter paper
20 Jun 23	8:00	21 Jun 23	8:00	Fine	94
24 Jun 23	8:00	25 Jun 23	8:00	Cloudy	92
30 Jun 23	8:00	1 Jul 23	8:00	Fine	88
6 Jul 23	8:00	7 Jul 23	8:00	Sunny	157
12 Jul 23	8:00	13 Jul 23	8:00	Sunny	118
18 Jul 23	8:00	19 Jul 23	8:00	Cloudy	108

Start Date	Start Time	Finish Date	Finish Time	Weather	24-hour TSP (µg/m³)
24 Jul 23	8:00	25 Jul 23	8:00	Sunny	135
30 Jul 23	8:00	31 Jul 23	8:00	Cloudy	80
5 Aug 23	8:00	6 Aug 23	8:00	Sunny	156
11 Aug 23	8:00	12 Aug 23	8:00	Cloudy	76
17 Aug 23	8:00	18 Aug 23	8:00	Sunny	103
23 Aug 23	8:00	24 Aug 23	8:00	Fine	113
29 Aug 23	8:00	30 Aug 23	8:00	Cloudy	154
6 Sep 23	8:00	7 Sep 23	8:00	Cloudy	123
10 Sep 23	8:00	11 Sep 23	8:00	Cloudy	51
16 Sep 23	8:00	17 Sep 23	8:00	Cloudy	43
22 Sep 23	8:00	23 Sep 23	8:00	Sunny	119
28 Sep 23	8:00	29 Sep 23	8:00	Sunny	196
4 Oct 23	8:00	5 Oct 23	8:00	Sunny	163
10 Oct 23	8:00	11 Oct 23	8:00	Cloudy	45
16 Oct 23	8:00	17 Oct 23	8:00	Fine	85
22 Oct 23	8:00	23 Oct 23	8:00	Fine	62
28 Oct 23	8:00	29 Oct 23	8:00	Cloudy	146
3 Nov 23	8:00	4 Nov 23	8:00	Sunny	104
9 Nov 23	8:00	10 Nov 23	8:00	Fine	105
15 Nov 23	8:00	16 Nov 23	8:00	Fine	91
21 Nov 23	8:00	22 Nov 23	8:00	Sunny	192
27 Nov 23	8:00	28 Nov 23	8:00	Sunny	180
3 Dec 23	8:00	4 Dec 23	8:00	Fine	128
9 Dec 23	8:00	10 Dec 23	8:00	Sunny	85
15 Dec 23	8:00	16 Dec 23	8:00	Sunny	154
21 Dec 23	8:00	22 Dec 23	8:00	Cloudy	108
27 Dec 23	8:00	28 Dec 23	8:00	Cloudy	137
				Average	137
				Min	43
				Max	452

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

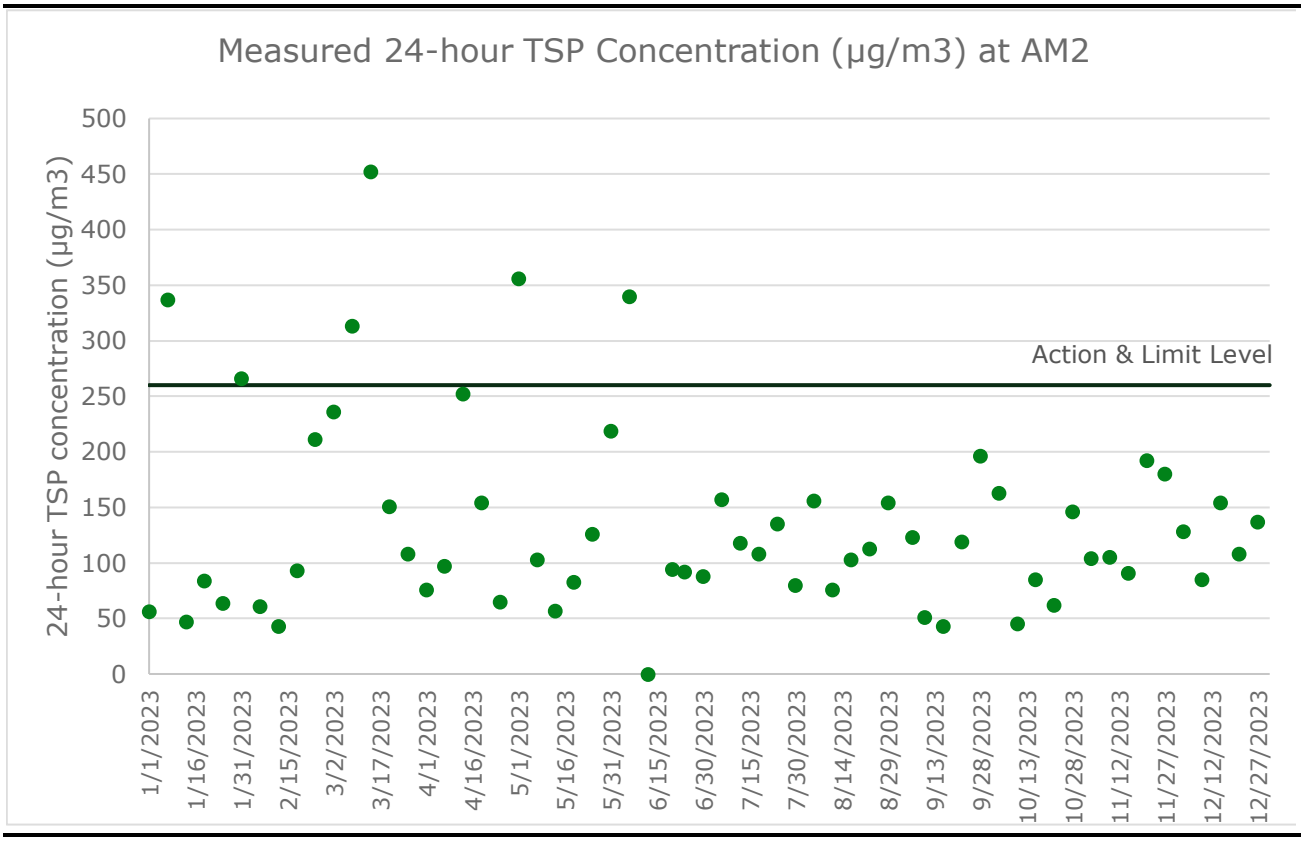


TABLE D1.3 24-HOUR TSP MONITORING RESULTS AT AM3

Start Date	Start Time	Finish Date	Finish Time	Weather	24-hour TSP (μg/m³)
1 Jan 23	8:00	2 Jan 23	7:44	Sunny	80
7 Jan 23	8:00	8 Jan 23	7:52	Cloudy	134
13 Jan 23	8:00	14 Jan 23	7:55	Cloudy	78
19 Jan 23	8:00	20 Jan 23	7:33	Cloudy	224
25 Jan 23	8:00	26 Jan 23	7:42	Cloudy	137
31 Jan 23	8:00	1 Feb 23	7:45	Sunny	267
6 Feb 23	8:00	7 Feb 23	8:05	Sunny	115
12 Feb 23	8:00	13 Feb 23	7:32	Fine	62
18 Feb 23	8:00	19 Feb 23	7:56	Fine	191
24 Feb 23	8:00	25 Feb 23	8:01	Sunny	187
2 Mar 23	8:00	3 Mar 23	8:05	Sunny	225
8 Mar 23	8:00	9 Mar 23	8:04	Sunny	129
14 Mar 23	8:00	15 Mar 23	7:50	Cloudy	106
20 Mar 23	8:00	21 Mar 23	8:02	Cloudy	124
26 Mar 23	8:00	27 Mar 23	8:07	Rainy	41
1 Apr 23	8:00	2 Apr 23	8:05	Cloudy	73
7 Apr 23	8:00	8 Apr 23	8:04	Cloudy	94
13 Apr 23	8:00	14 Apr 23	7:50	Sunny	213
19 Apr 23	8:00	20 Apr 23	8:02	Cloudy	74
25 Apr 23	8:00	26 Apr 23	8:07	Cloudy	29
1 May 23	8:00	2 May 23	8:00	Cloudy	99
7 May 23	8:00	8 May 23	8:00	Cloudy	73
13 May 23	8:00	14 May 23	8:00	Cloudy	59
19 May 23	8:00	20 May 23	8:00	Sunny	135
25 May 23	8:00	26 May 23	8:00	Sunny	130
31 May 23	8:00	1 Jun 23	8:00	Sunny	173
6 Jun 23	8:00	7 Jun 23	8:00	Cloudy	84
12 Jun 23	8:00	13 Jun 23	8:00	Cloudy	86
18 Jun 23	8:00	19 Jun 23	8:00	Fine	31
24 Jun 23	8:00	25 Jun 23	8:00	Cloudy	35
30 Jun 23	8:00	1 Jul 23	8:00	Fine	68
6 Jul 23	8:00	7 Jul 23	8:00	Sunny	90
12 Jul 23	8:00	13 Jul 23	8:00	Sunny	137
18 Jul 23	8:00	19 Jul 23	8:00	Cloudy	130
24 Jul 23	8:00	25 Jul 23	8:00	Sunny	143
30 Jul 23	8:00	31 Jul 23	8:00	Cloudy	81

Start Date	Start Time	Finish Date	Finish Time	Weather	24-hour TSP (μg/m³)
5 Aug 23	8:00	6 Aug 23	8:00	Sunny	112
11 Aug 23	8:00	12 Aug 23	8:00	Cloudy	56
17 Aug 23	8:00	18 Aug 23	8:00	Sunny	125
23 Aug 23	8:00	24 Aug 23	8:00	Fine	75
29 Aug 23	8:00	30 Aug 23	8:00	Cloudy	115
4 Sep 23	8:00	5 Sep 23	8:00	Sunny	238
10 Sep 23	8:00	11 Sep 23	8:00	Cloudy	33
16 Sep 23	8:00	17 Sep 23	8:00	Cloudy	52
22 Sep 23	8:00	23 Sep 23	8:00	Sunny	144
28 Sep 23	8:00	29 Sep 23	8:00	Sunny	141
4 Oct 23	8:00	5 Oct 23	8:00	Sunny	183
10 Oct 23	8:00	11 Oct 23	8:00	Cloudy	80
16 Oct 23	8:00	17 Oct 23	8:00	Fine	233
22 Oct 23	8:00	23 Oct 23	8:00	Fine	120
28 Oct 23	8:00	29 Oct 23	8:00	Cloudy	139
3 Nov 23	8:00	4 Nov 23	8:00	Sunny	260
9 Nov 23	8:00	10 Nov 23	8:00	Fine	212
15 Nov 23	8:00	16 Nov 23	8:00	Fine	232
21 Nov 23	8:00	22 Nov 23	8:00	Sunny	272
27 Nov 23	8:00	28 Nov 23	8:00	Sunny	223
3 Dec 23	8:00	4 Dec 23	8:00	Fine	138
9 Dec 23	8:00	10 Dec 23	8:00	Sunny	164
15 Dec 23	8:00	16 Dec 23	8:00	Sunny	150
21 Dec 23	8:00	22 Dec 23	8:00	Cloudy	109
27 Dec 23	8:00	28 Dec 23	8:00	Cloudy	178
				Average	130
				Min	29
				Max	272

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

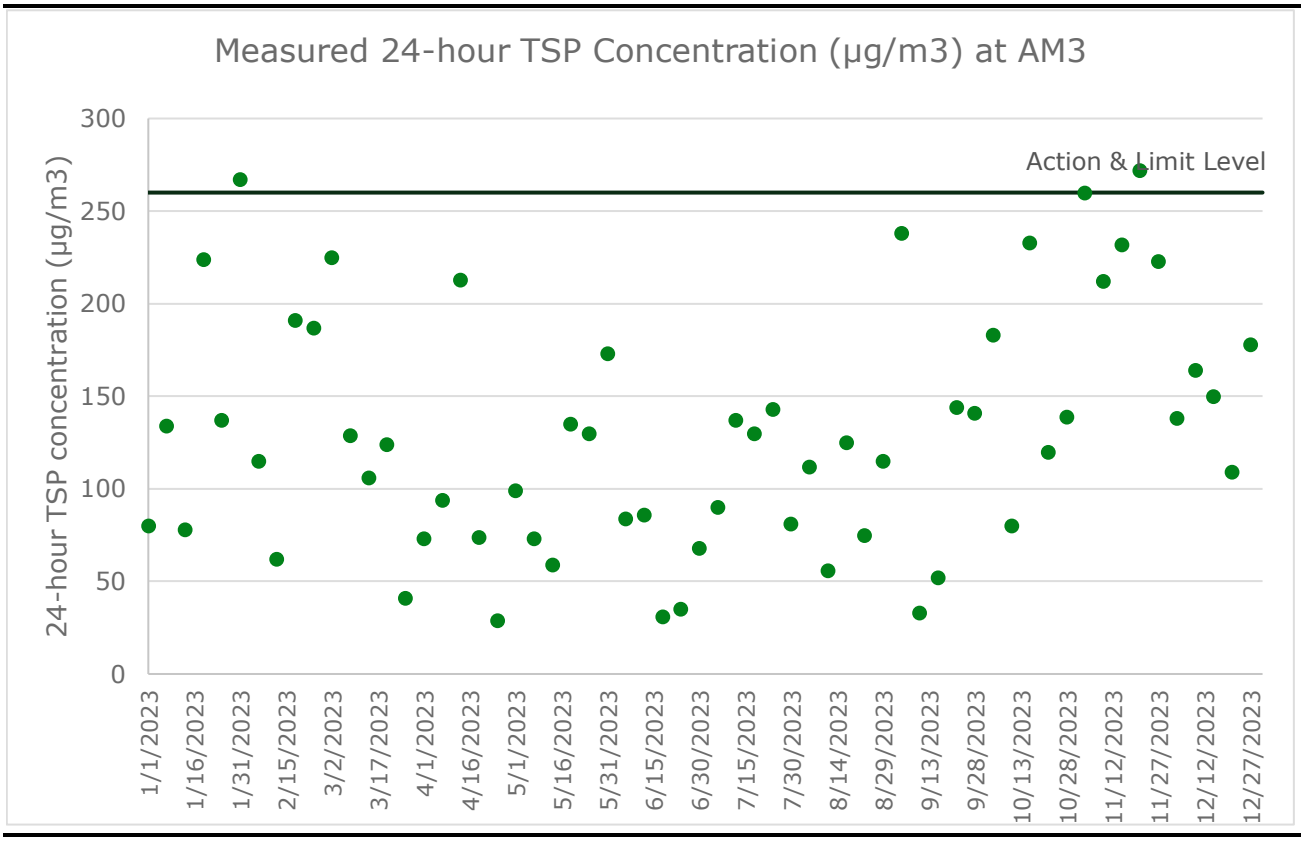
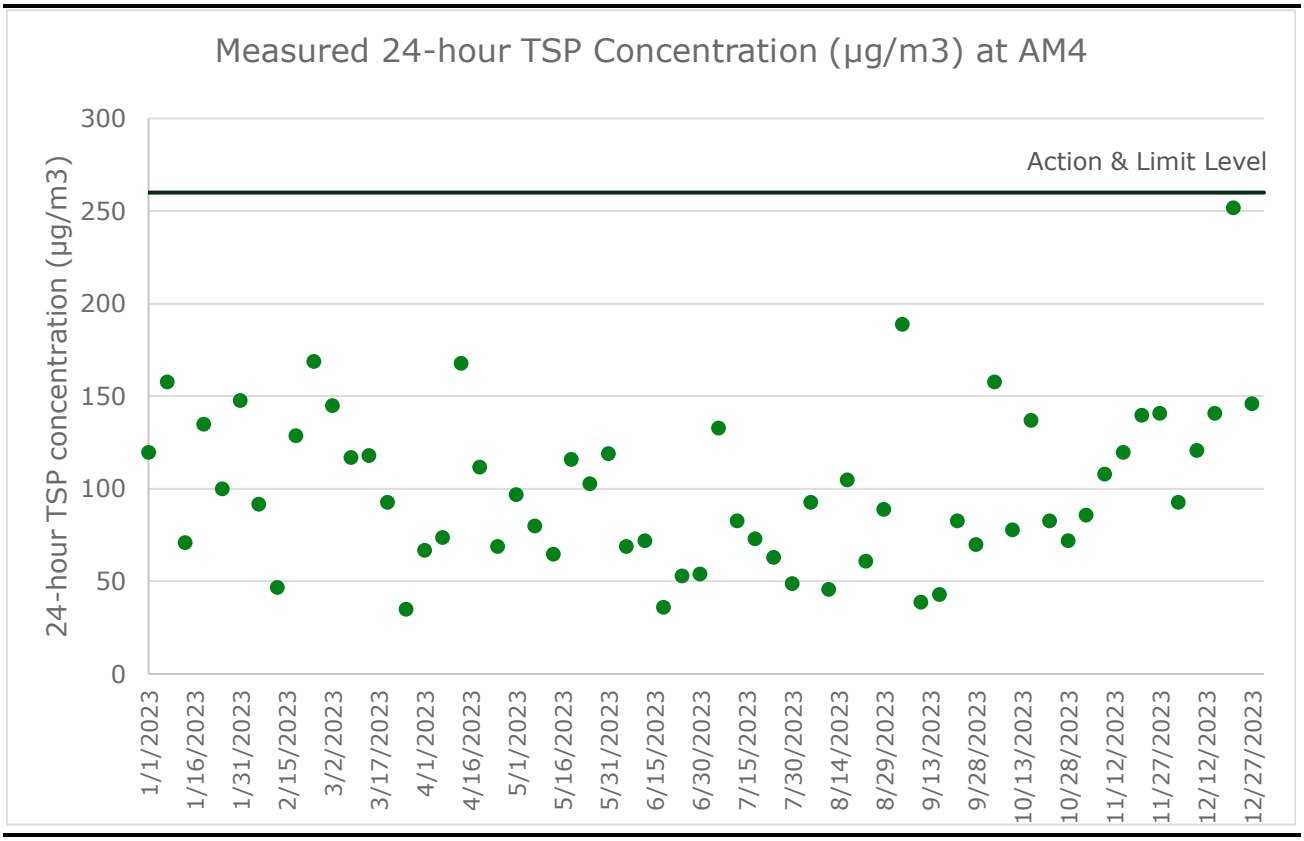


TABLE D1.4 24-HOUR TSP MONITORING RESULTS AT AM4

Start Date	Start Time	Finish Date	Finish Time	Weather	24-hour TSP (μg/m³)
1 Jan 23	8:00	2 Jan 23	7:38	Sunny	120
7 Jan 23	8:00	8 Jan 23	7:52	Cloudy	158
13 Jan 23	8:00	14 Jan 23	7:37	Cloudy	71
19 Jan 23	8:00	20 Jan 23	7:41	Cloudy	135
25 Jan 23	8:00	26 Jan 23	7:51	Cloudy	100
31 Jan 23	8:00	1 Feb 23	7:36	Sunny	148
6 Feb 23	8:00	7 Feb 23	7:33	Sunny	92
12 Feb 23	8:00	13 Feb 23	7:40	Fine	47
18 Feb 23	8:00	19 Feb 23	7:59	Fine	129
24 Feb 23	8:00	25 Feb 23	7:45	Sunny	169
2 Mar 23	8:00	3 Mar 23	7:38	Sunny	145
8 Mar 23	8:00	9 Mar 23	8:16	Sunny	117
14 Mar 23	8:00	15 Mar 23	7:32	Cloudy	118
20 Mar 23	8:00	21 Mar 23	7:41	Cloudy	93
26 Mar 23	8:00	27 Mar 23	8:19	Rainy	35
1 Apr 23	8:00	2 Apr 23	7:38	Cloudy	67
7 Apr 23	8:00	8 Apr 23	8:16	Cloudy	74
13 Apr 23	8:00	14 Apr 23	7:32	Sunny	168
19 Apr 23	8:00	20 Apr 23	7:41	Cloudy	112
25 Apr 23	8:00	26 Apr 23	8:19	Cloudy	69
1 May 23	8:00	2 May 23	8:00	Cloudy	97
7 May 23	8:00	8 May 23	8:00	Cloudy	80
13 May 23	8:00	14 May 23	8:00	Cloudy	65
19 May 23	8:00	20 May 23	8:00	Sunny	116
25 May 23	8:00	26 May 23	8:00	Sunny	103
31 May 23	8:00	1 Jun 23	8:00	Sunny	119
6 Jun 23	8:00	7 Jun 23	8:00	Cloudy	69
12 Jun 23	8:00	13 Jun 23	8:00	Cloudy	72
18 Jun 23	8:00	19 Jun 23	8:00	Fine	36
24 Jun 23	8:00	25 Jun 23	8:00	Cloudy	53
30 Jun 23	8:00	1 Jul 23	8:00	Fine	54
6 Jul 23	8:00	7 Jul 23	8:00	Sunny	133
12 Jul 23	8:00	13 Jul 23	8:00	Sunny	83
18 Jul 23	8:00	19 Jul 23	8:00	Cloudy	73
24 Jul 23	8:00	25 Jul 23	8:00	Sunny	63
30 Jul 23	8:00	31 Jul 23	8:00	Cloudy	49

Start Date	Start Time	Finish Date	Finish Time	Weather	24-hour TSP (μg/m³)
5 Aug 23	8:00	6 Aug 23	8:00	Sunny	93
11 Aug 23	8:00	12 Aug 23	8:00	Cloudy	46
17 Aug 23	8:00	18 Aug 23	8:00	Sunny	105
23 Aug 23	8:00	24 Aug 23	8:00	Fine	61
29 Aug 23	8:00	30 Aug 23	8:00	Cloudy	89
4 Sep 23	8:00	5 Sep 23	8:00	Sunny	189
10 Sep 23	8:00	11 Sep 23	8:00	Cloudy	39
16 Sep 23	8:00	17 Sep 23	8:00	Cloudy	43
22 Sep 23	8:00	23 Sep 23	8:00	Sunny	83
28 Sep 23	8:00	29 Sep 23	8:00	Sunny	70
4 Oct 23	8:00	5 Oct 23	8:00	Sunny	158
10 Oct 23	8:00	11 Oct 23	8:00	Cloudy	78
16 Oct 23	8:00	17 Oct 23	8:00	Fine	137
22 Oct 23	8:00	23 Oct 23	8:00	Fine	83
28 Oct 23	8:00	29 Oct 23	8:00	Cloudy	72
3 Nov 23	8:00	4 Nov 23	8:00	Sunny	86
9 Nov 23	8:00	10 Nov 23	8:00	Fine	108
15 Nov 23	8:00	16 Nov 23	8:00	Fine	120
21 Nov 23	8:00	22 Nov 23	8:00	Sunny	140
27 Nov 23	8:00	28 Nov 23	8:00	Sunny	141
3 Dec 23	8:00	4 Dec 23	8:00	Fine	93
9 Dec 23	8:00	10 Dec 23	8:00	Sunny	121
15 Dec 23	8:00	16 Dec 23	8:00	Sunny	141
21 Dec 23	8:00	22 Dec 23	8:00	Cloudy	252
27 Dec 23	8:00	28 Dec 23	8:00	Cloudy	146
				Average	100
				Min	35
				Max	252

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

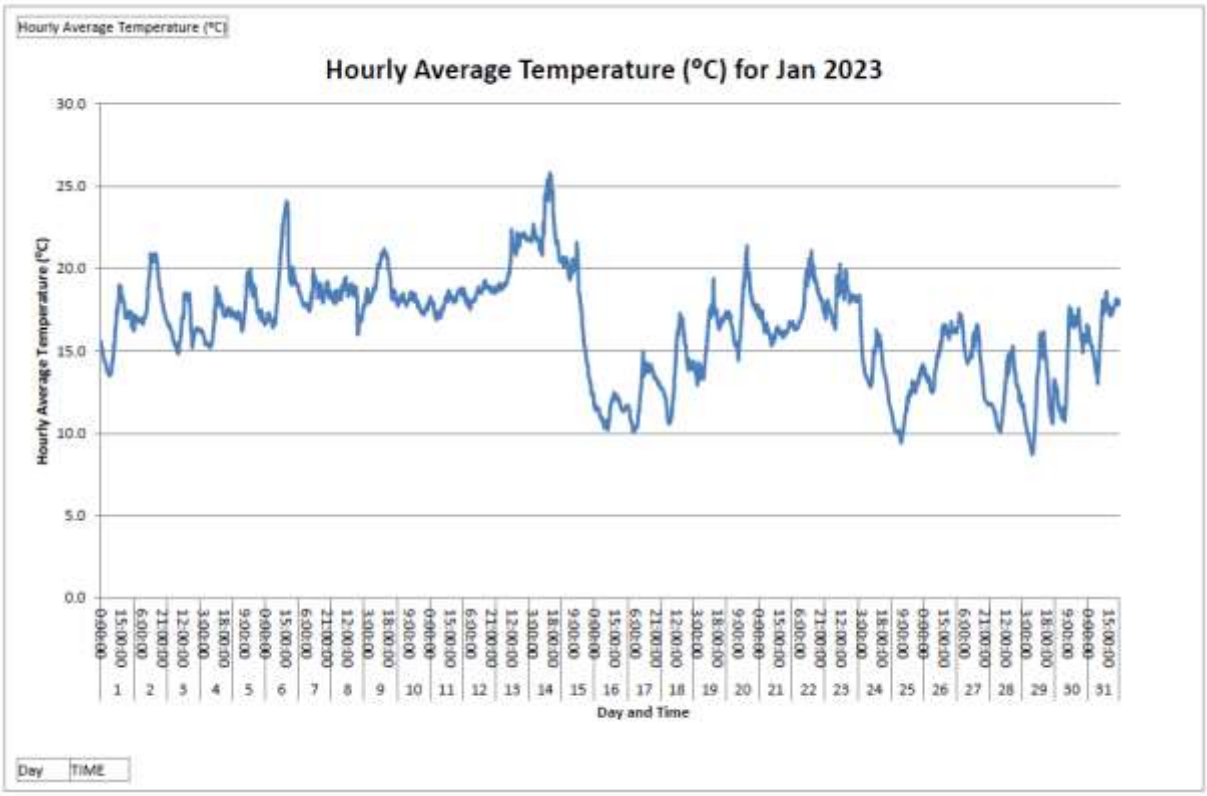
Action			
Event	**ET**	**IEC**	**Contractor**
	until odour not being detected for three consecutive days		
Exceedance of Limit Level for odour	• Identify source(s) and investigate the cause(s) of exceedance or complaint • Prepare the odour complaint form or the Notification of Exceedance within 24 hours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

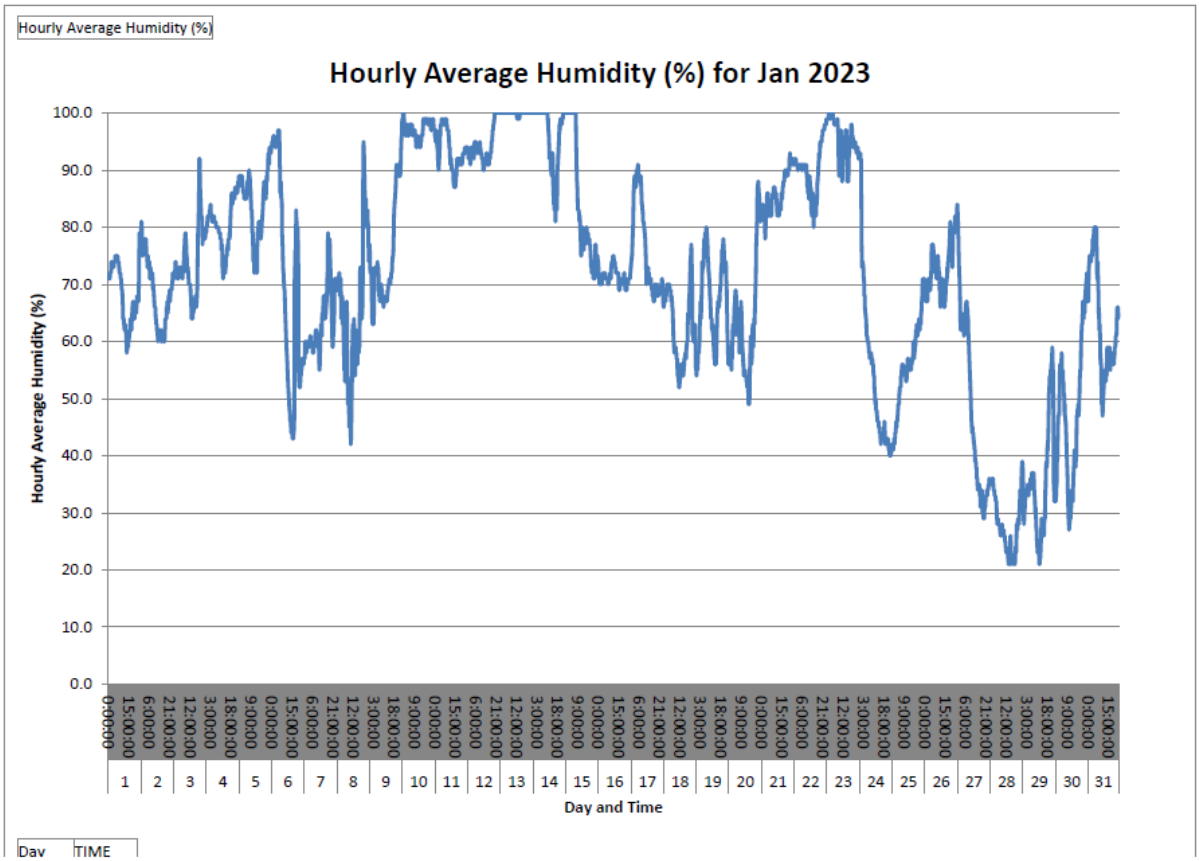
Action			
Event	**ET**	**IEC**	**Contractor**
	results • Repeat measurement to confirm finding if exceedance is due to the Project • Increase monitoring frequency to monthly and continue until the monitoring results reduce to below limit level		
Exceedance of Limit Level of stack emission of the thermal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

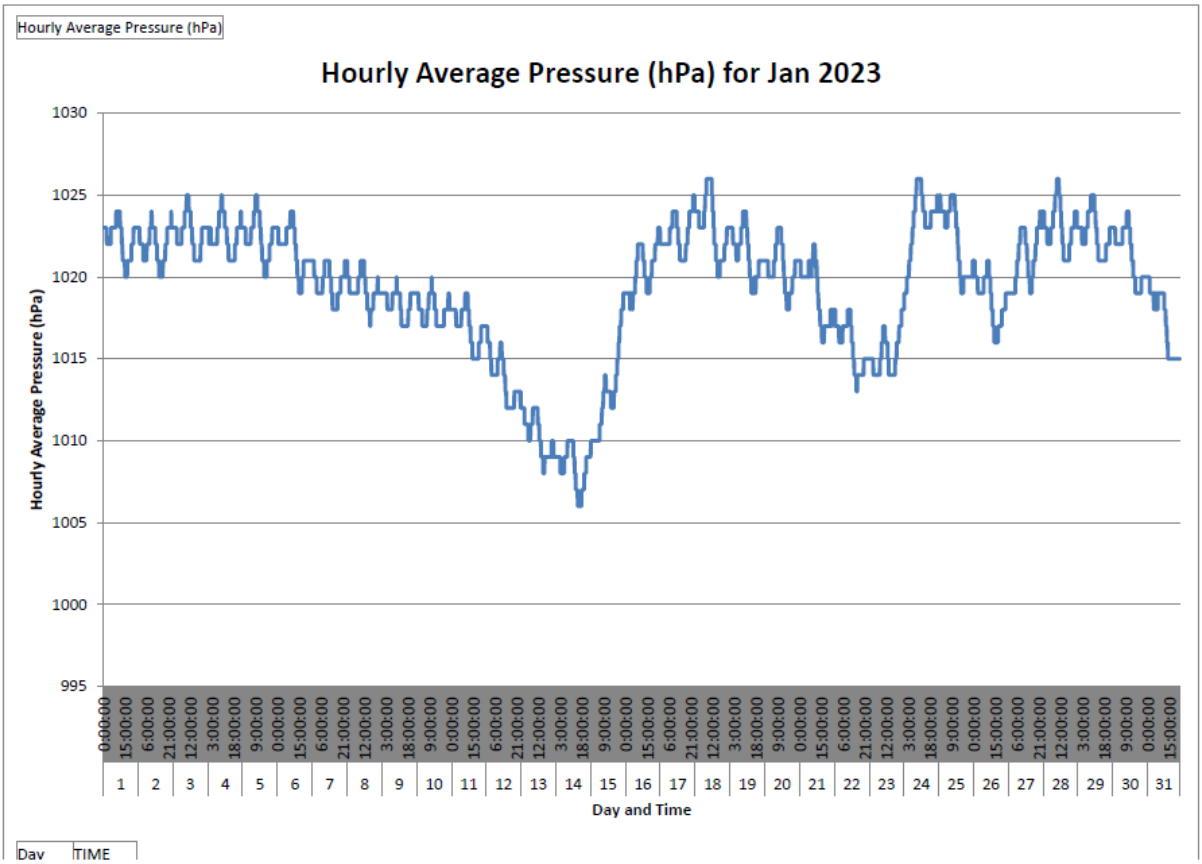
ANNEX D3 METEOROLOGICAL DATA

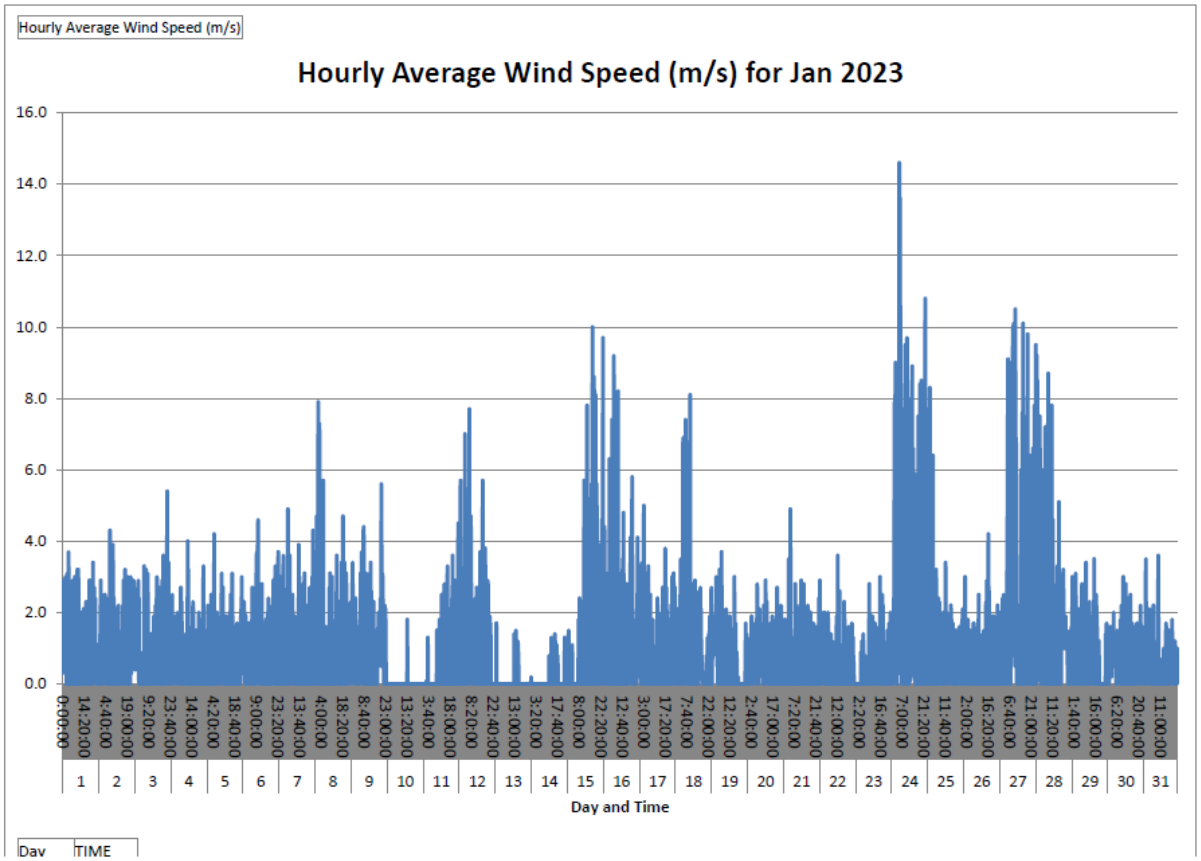
ANNEX D3 METEOROLOGICAL DATA

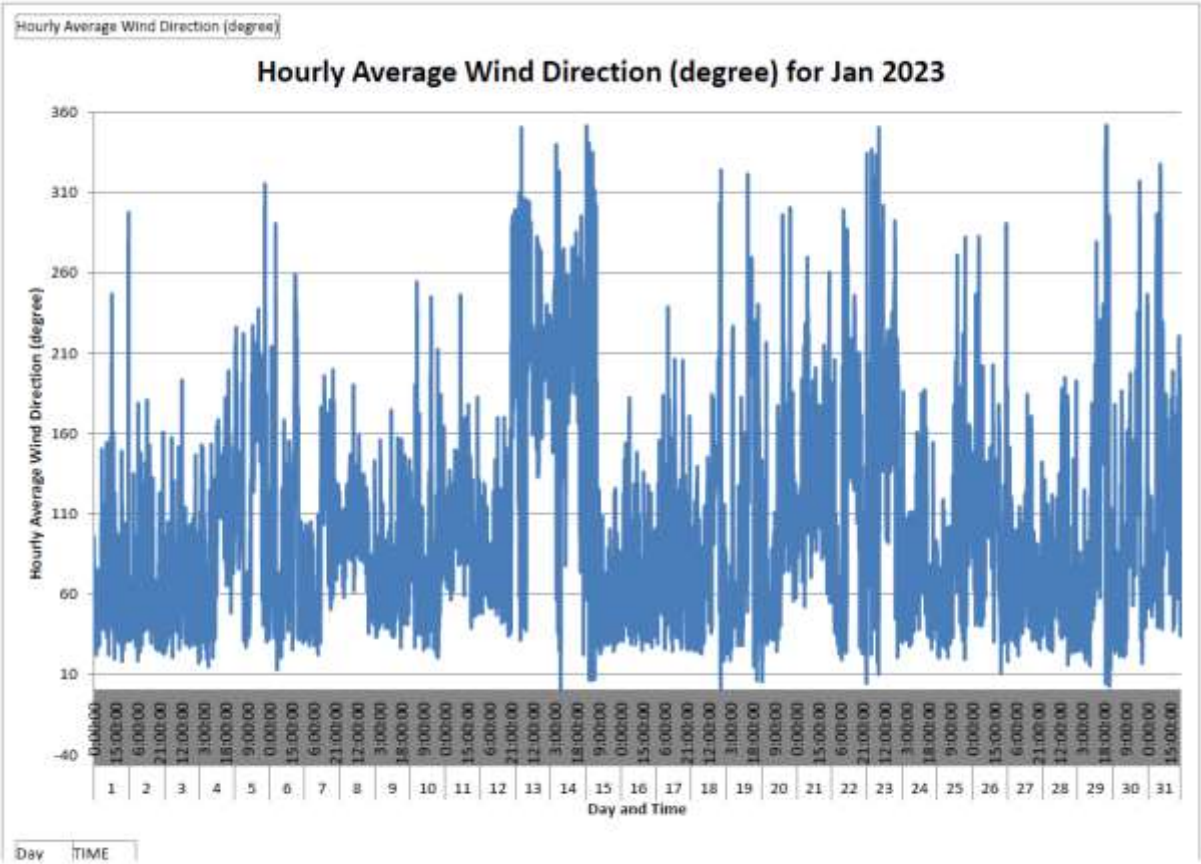
JANUARY 2023

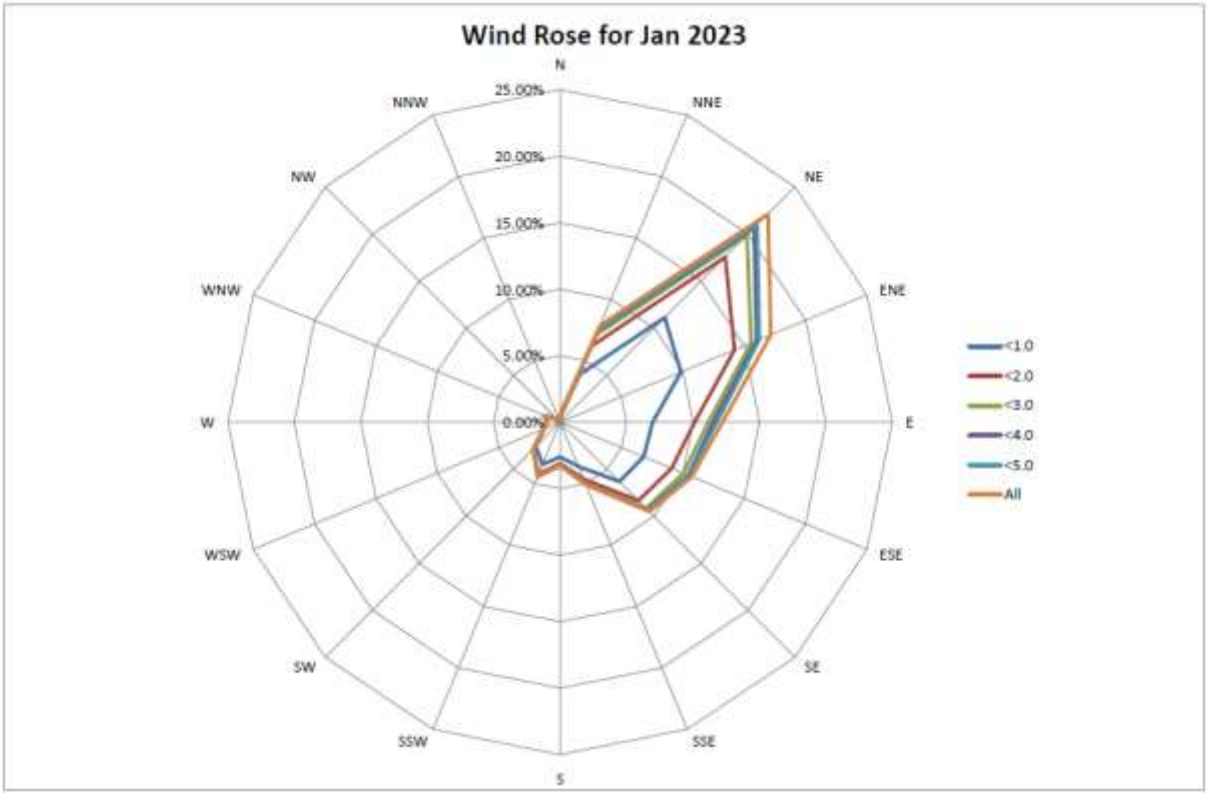


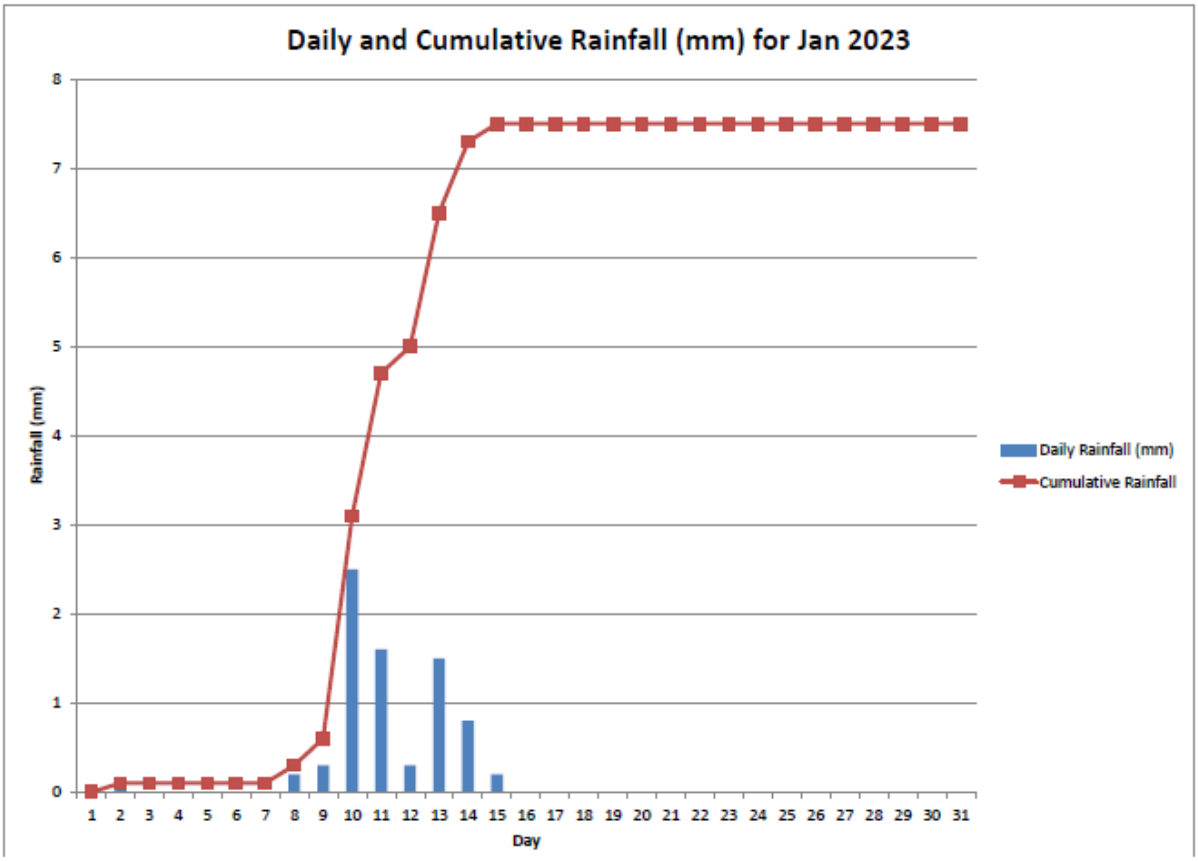



Hourly Average Pressure (hPa)
Hourly Average Pressure (hPa) for Jan 2023
Hourly Average Pressure (hPa)
1030
1025
1020
1015
1010
1005
1000
995
Day and Time
Dav
TIME

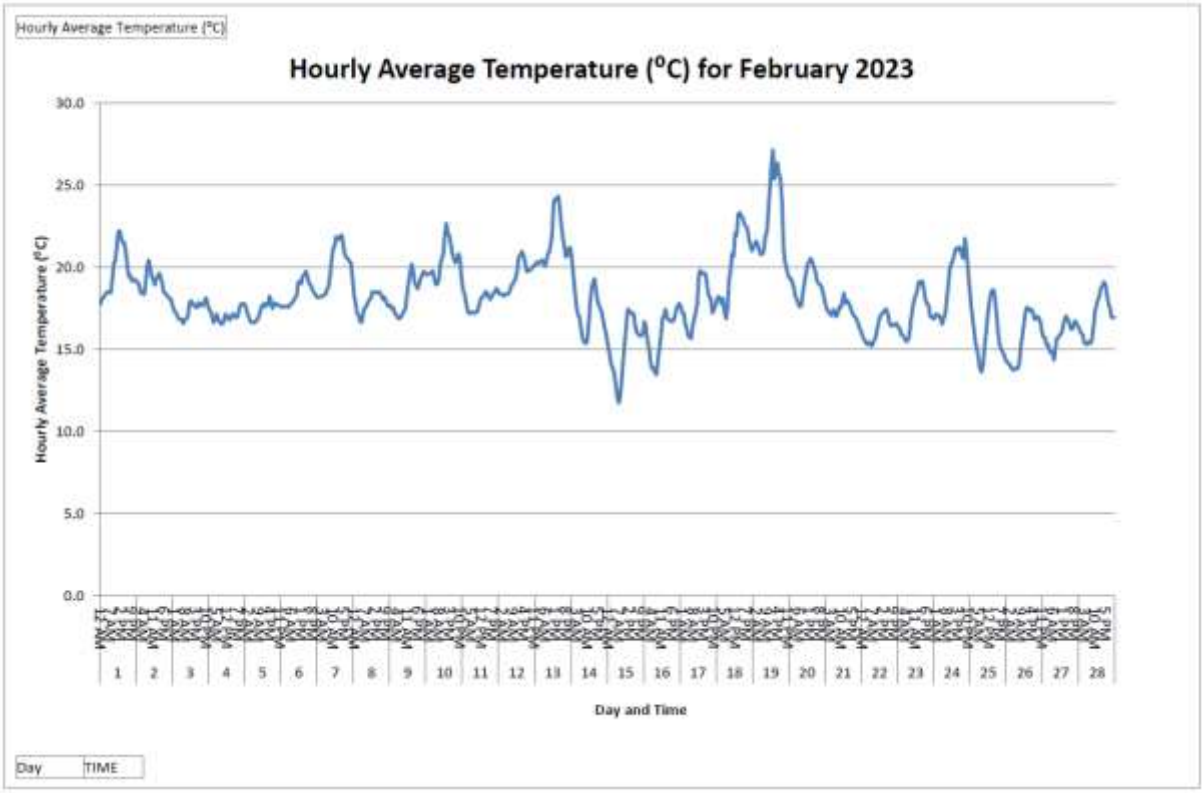

Hourly Average Wind Speed (m/s)
Hourly Average Wind Speed (m/s) for Jan 2023
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
Day and Time
Dav
TIME

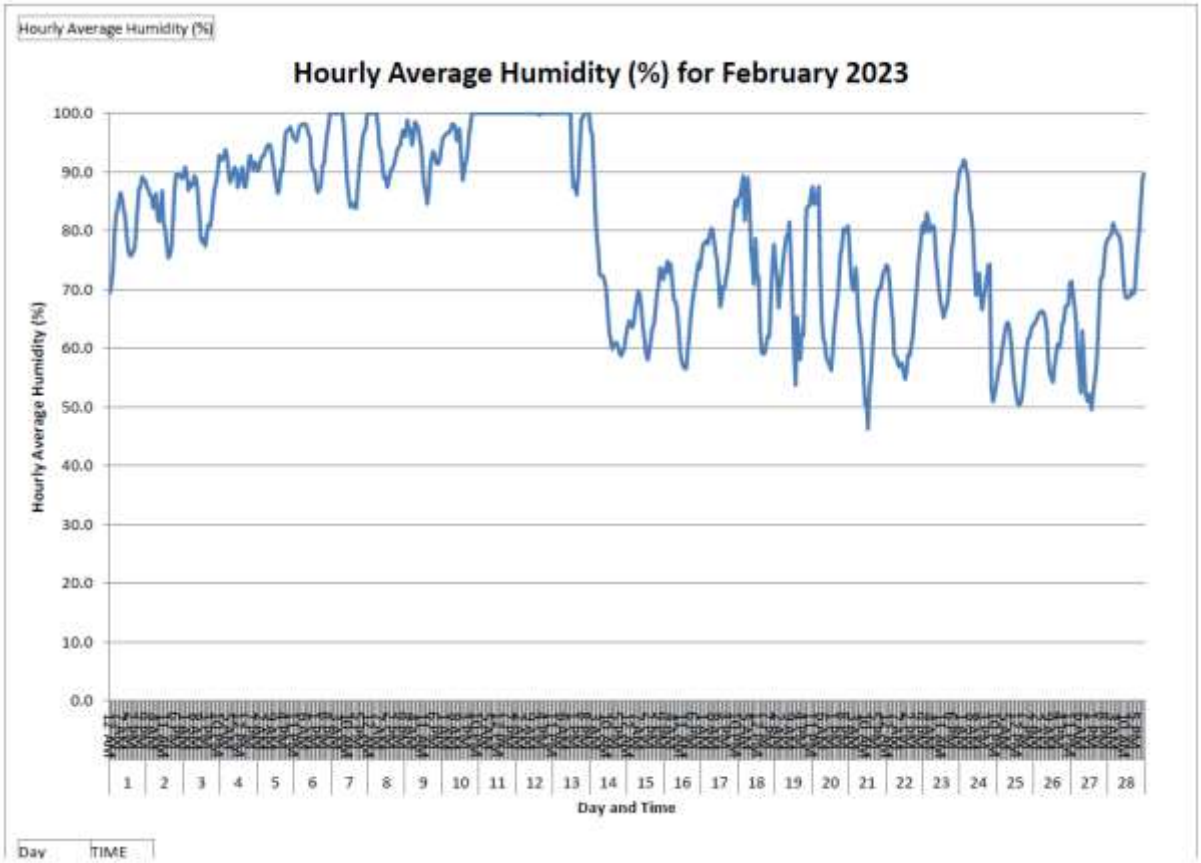

Hourly Average Wind Direction (degree)
Hourly Average Wind Direction (degree) for Jan 2023
Hourly Average Wind Direction (degree)
360
310
260
210
160
110
60
10
-40
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
Day and Time
Day
TIME

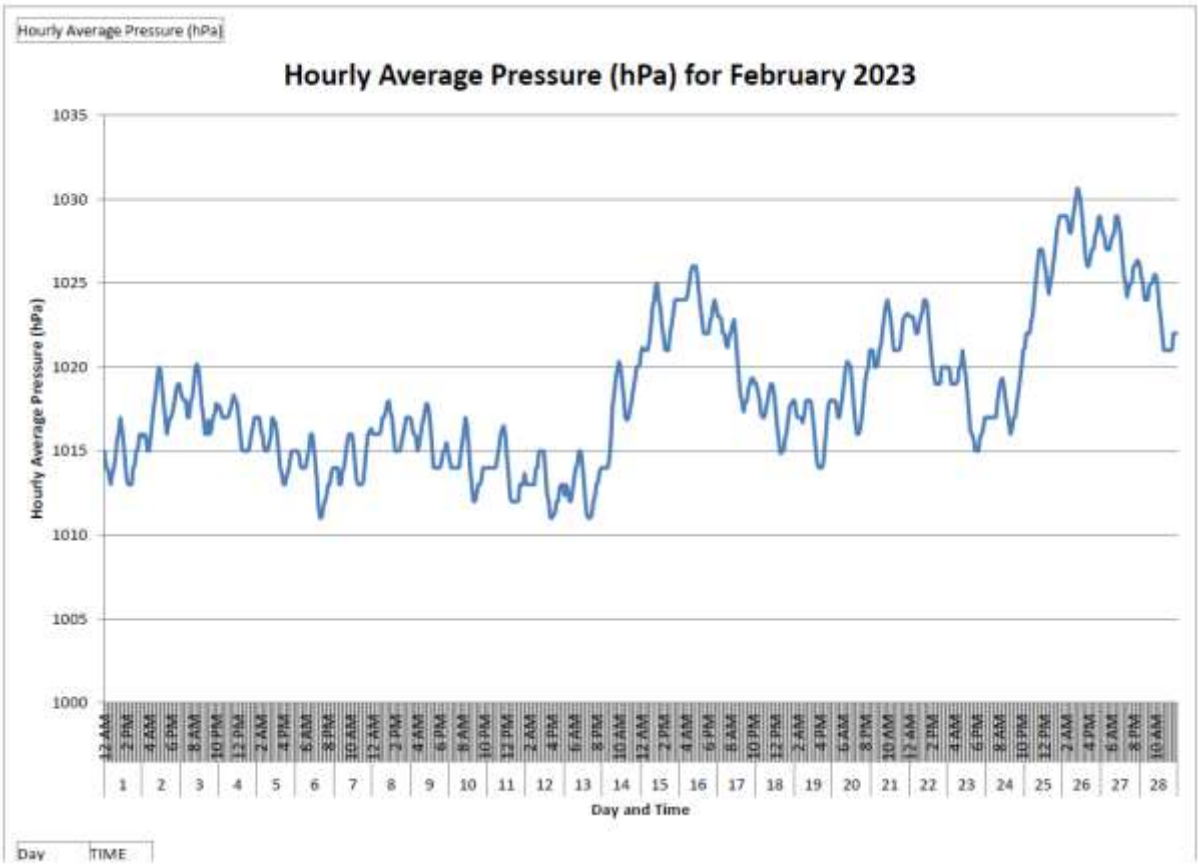

Wind Rose for Jan 2023
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
25.00%
20.00%
15.00%
10.00%
5.00%
0.00%
<1.0
<2.0
<3.0
<4.0
<5.0
All

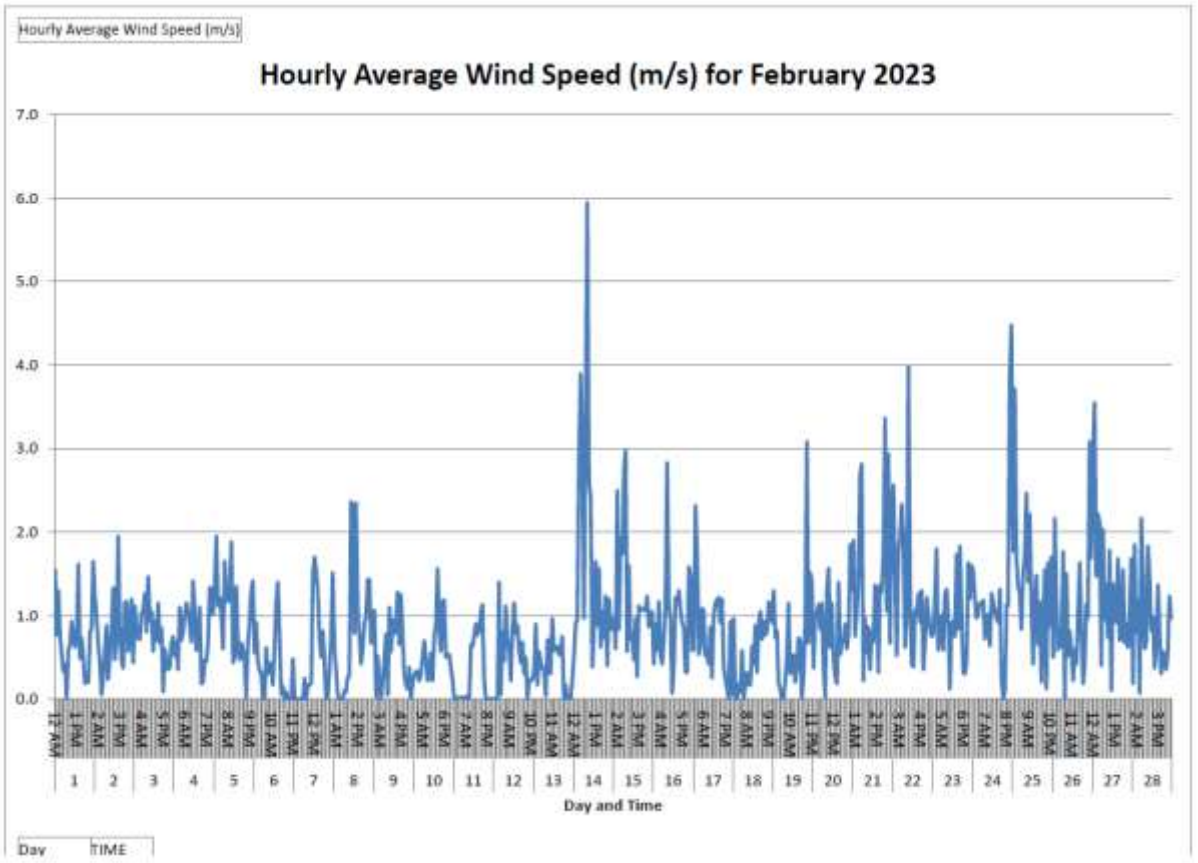

Daily and Cumulative Rainfall (mm) for Jan 2023
Rainfall (mm)
Day
Daily Rainfall (mm)
Cumulative Rainfall

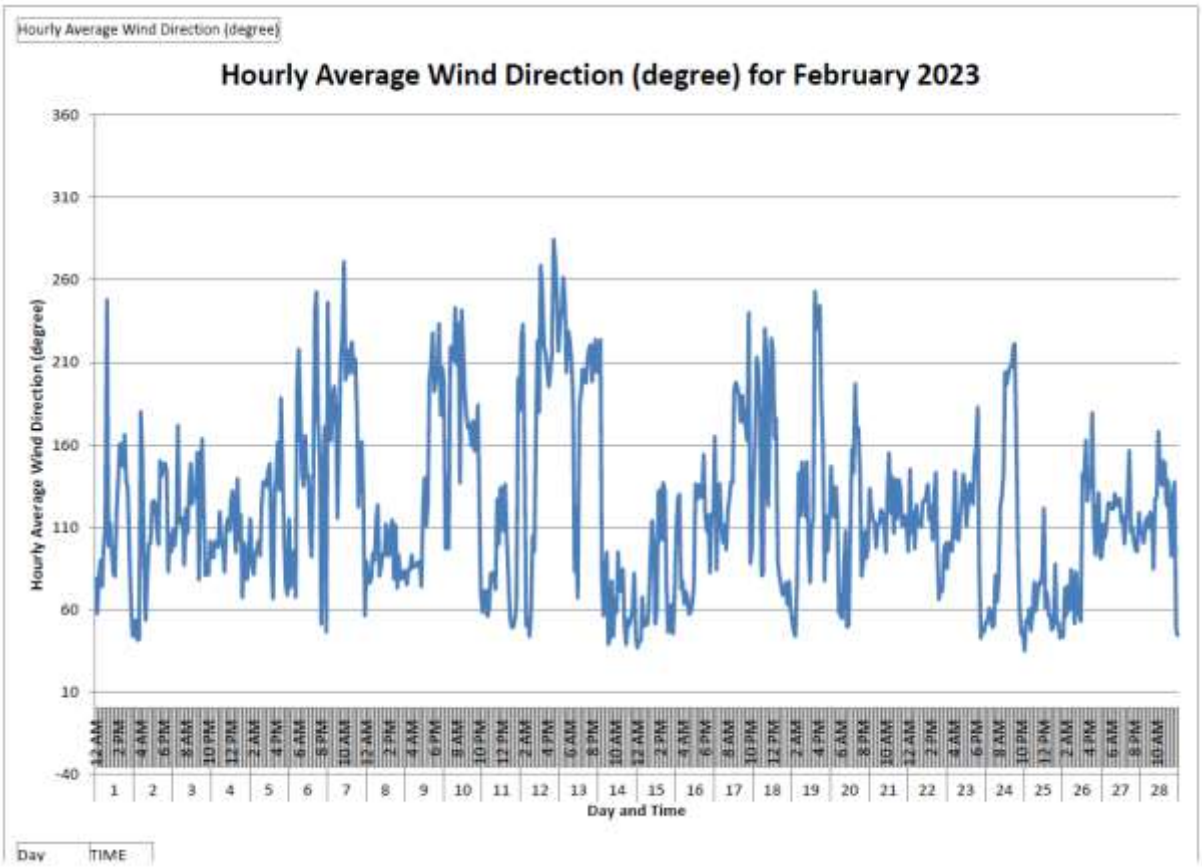
FEBRUARY 2023

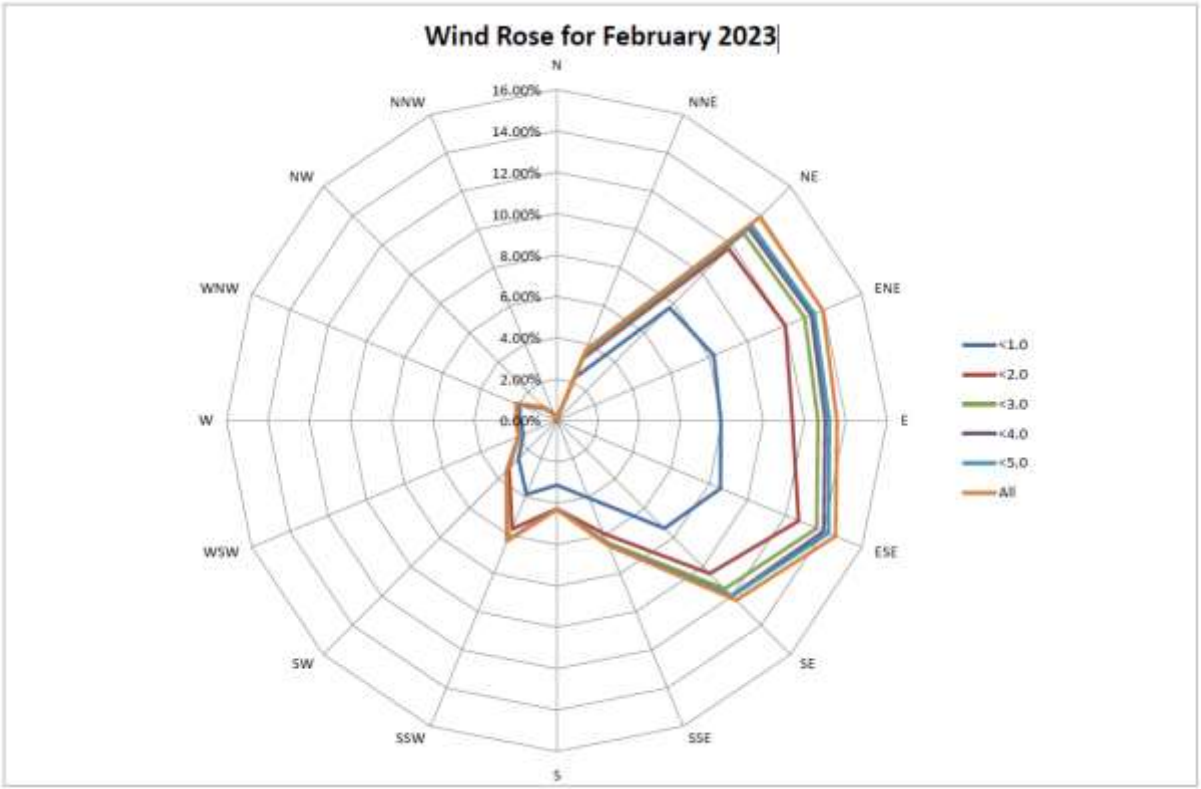


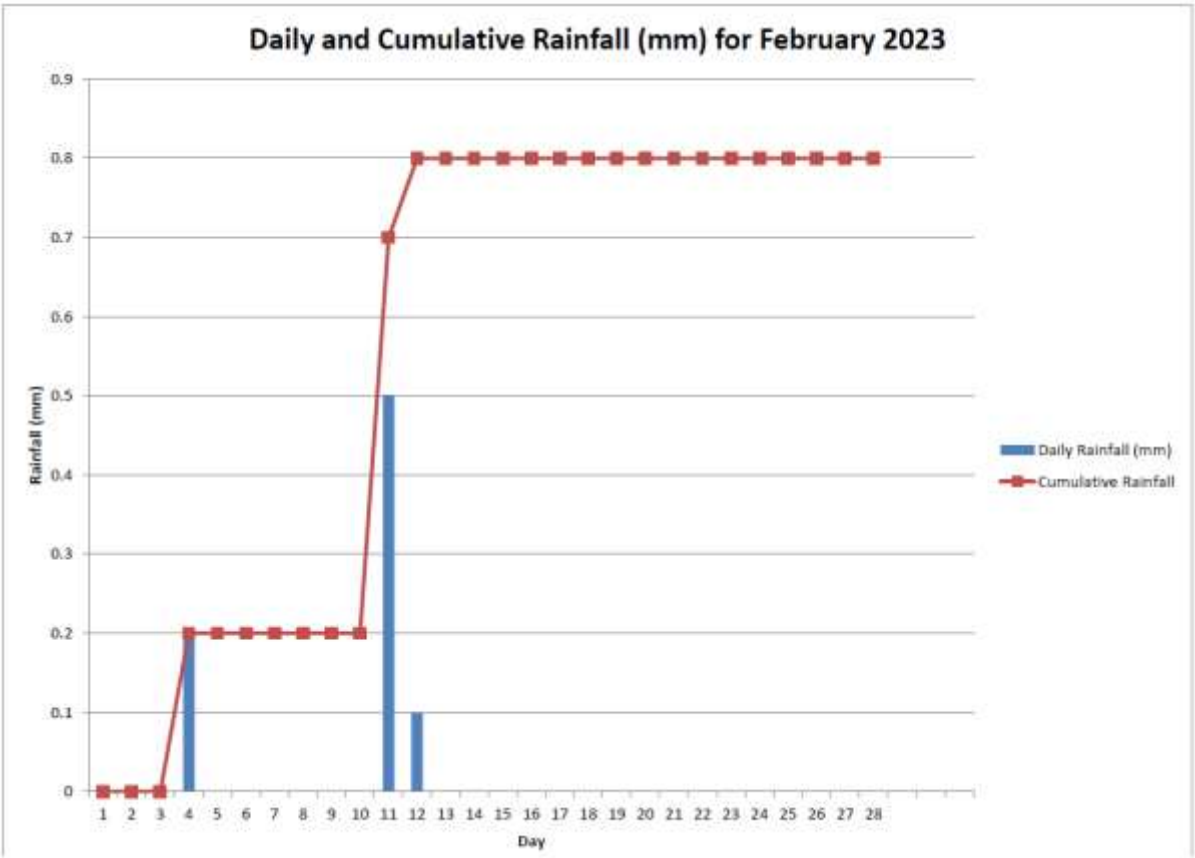



Hourly Average Pressure (hPa)
Hourly Average Pressure (hPa) for February 2023
1035
1030
1025
1020
1015
1010
1005
1000
Hourly Average Pressure (hPa)
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28
Day and Time
Day
TIME

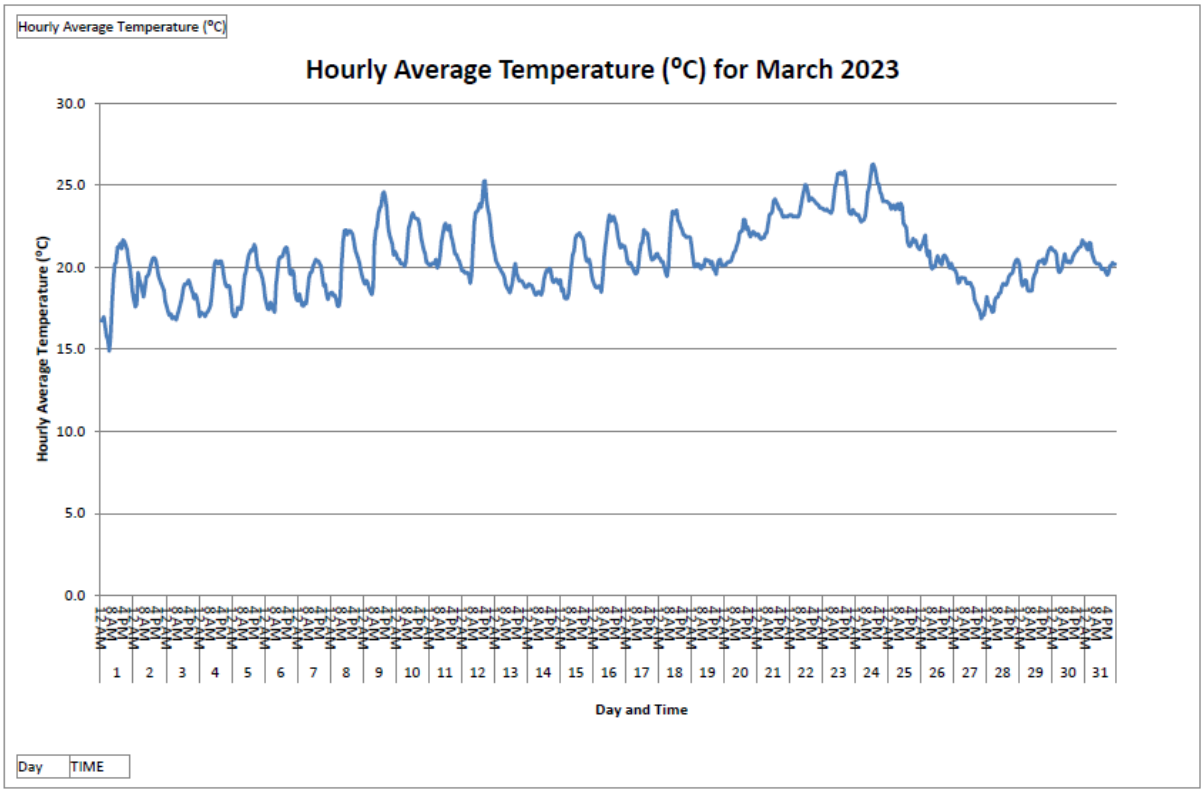

Hourly Average Wind Speed (m/s)
Hourly Average Wind Speed (m/s) for February 2023
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28
Day and Time
Day
TIME

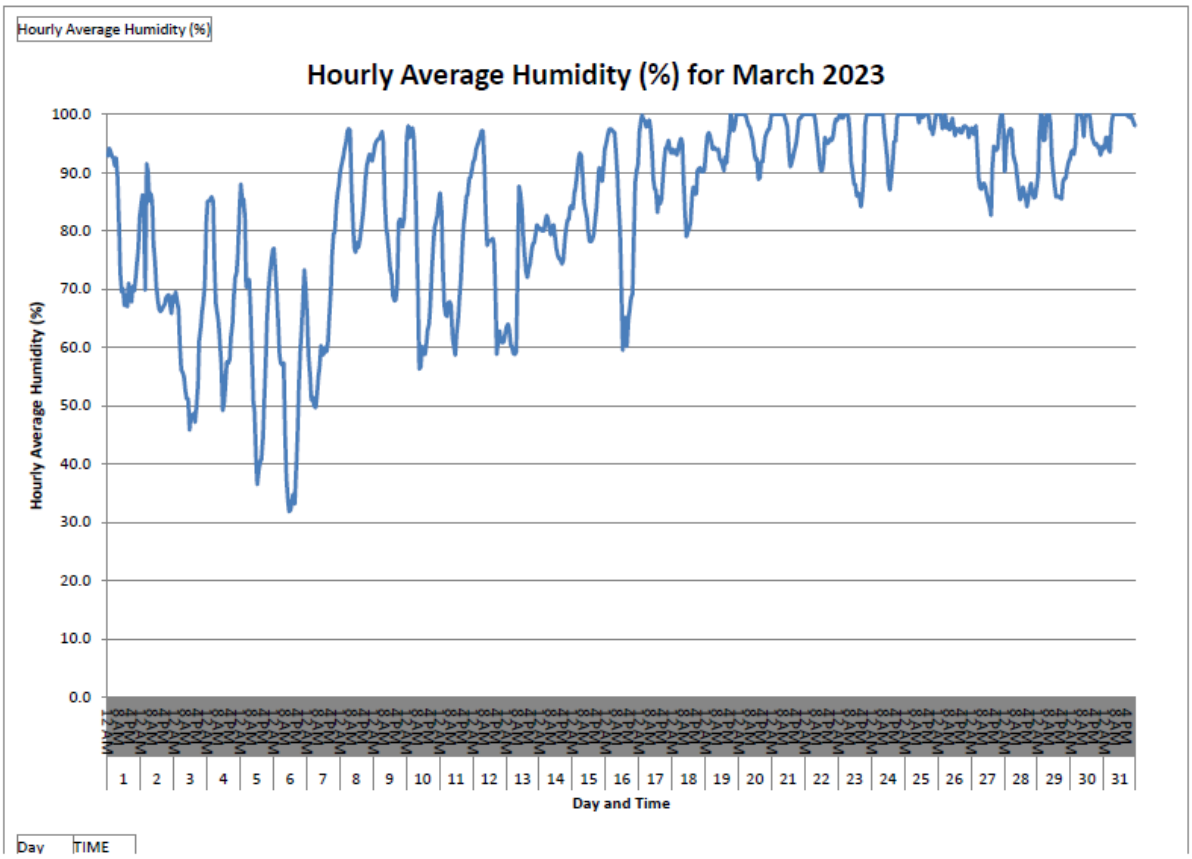

Hourly Average Wind Direction (degree)
Hourly Average Wind Direction (degree) for February 2023
Hourly Average Wind Direction (degree)
Day and Time
Day
TIME

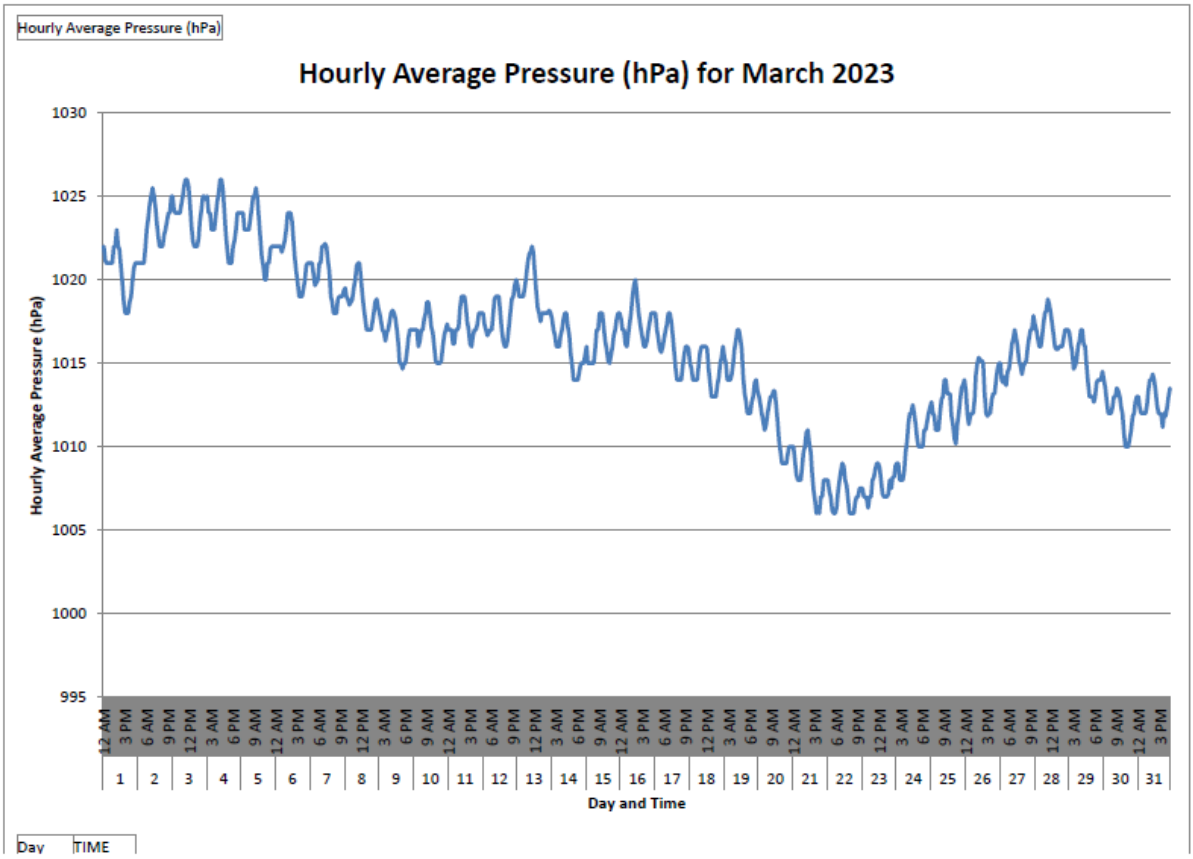

Wind Rose for February 2023
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
16.00%
14.00%
12.00%
10.00%
8.00%
6.00%
4.00%
2.00%
0.00%
<1.0
<2.0
<3.0
<4.0
<5.0
All

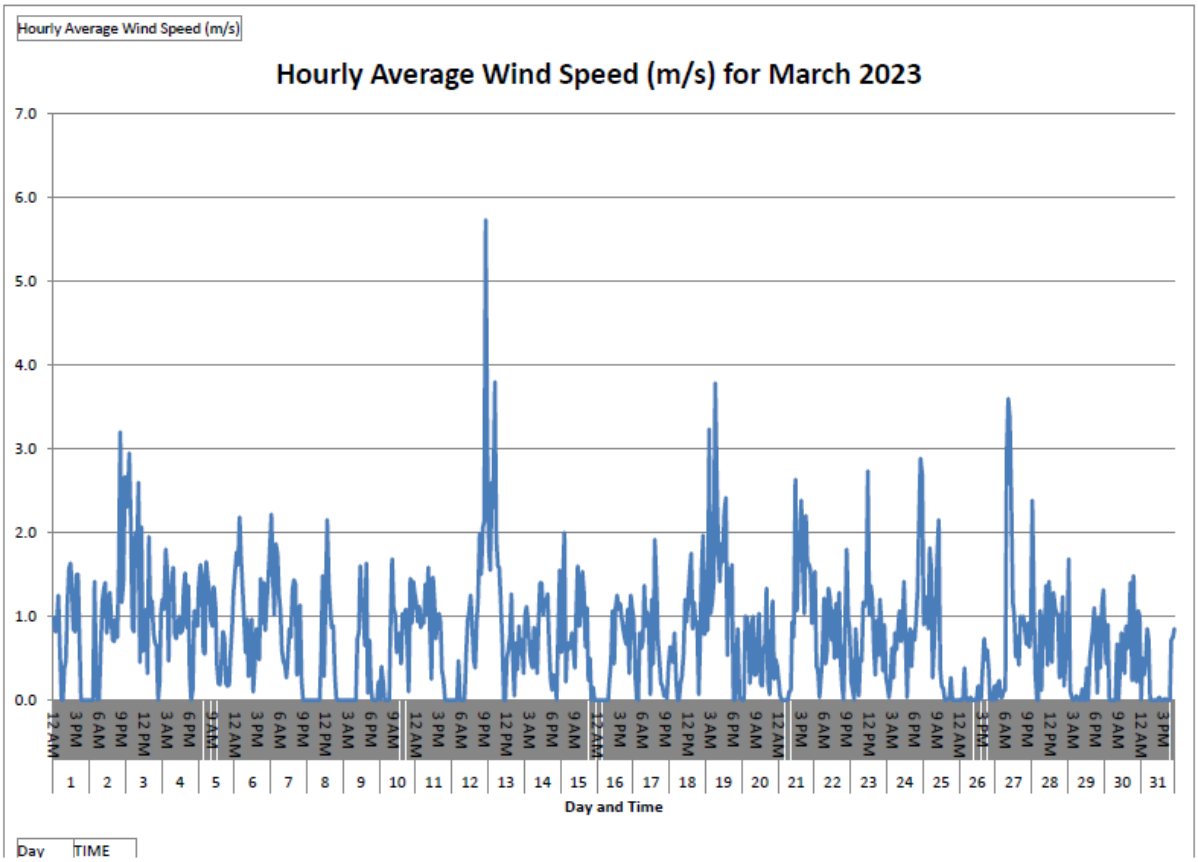

Daily and Cumulative Rainfall (mm) for February 2023
Rainfall (mm)
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28
Day
Daily Rainfall (mm)
Cumulative Rainfall

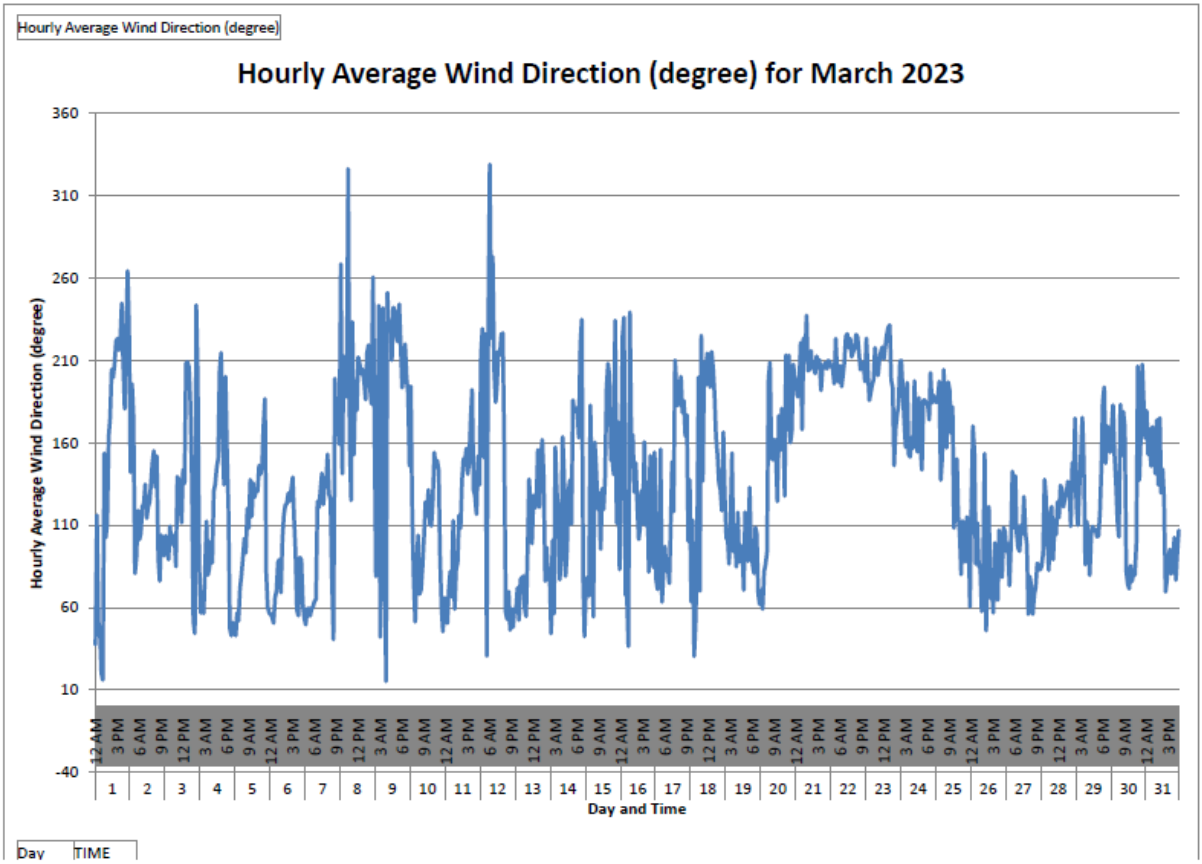
MARCH 2023

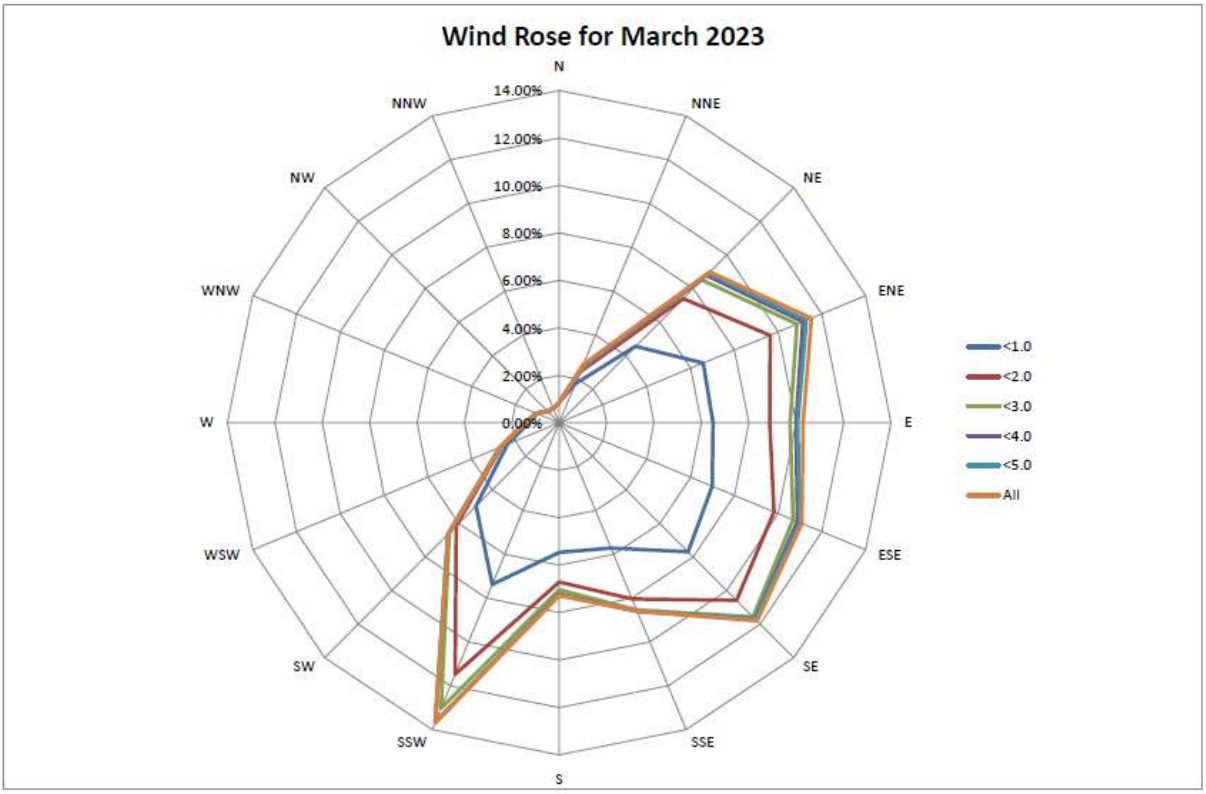

Hourly Average Temperature (°C)
Hourly Average Temperature (°C) for March 2023
30.0
25.0
20.0
15.0
10.0
5.0
0.0
Hourly Average Temperature (°C)
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Day and Time
Day
TIME

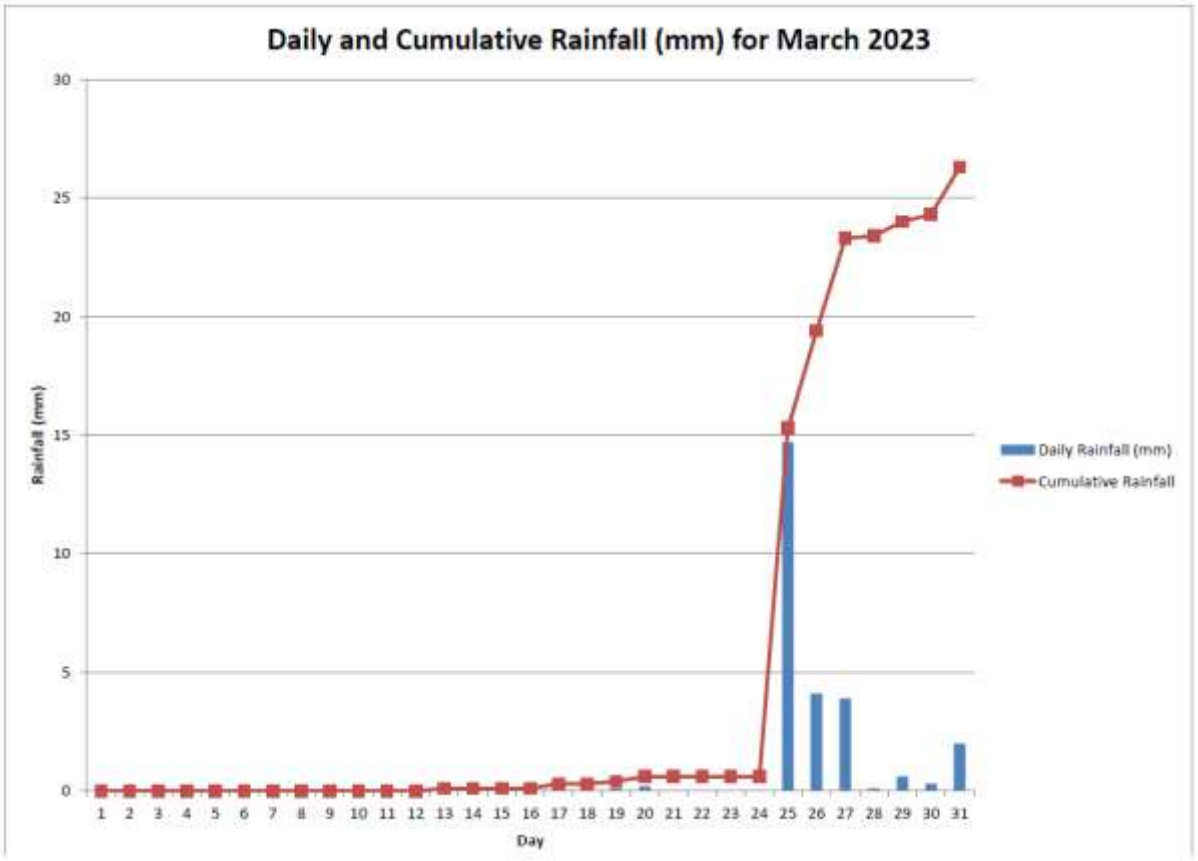

Hourly Average Humidity (%)
Hourly Average Humidity (%) for March 2023
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
Hourly Average Humidity (%)
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Day and Time
Day
TIME


Hourly Average Pressure (hPa)
Hourly Average Pressure (hPa) for March 2023
Hourly Average Pressure (hPa)
1030
1025
1020
1015
1010
1005
1000
995
Day and Time
Day
TIME

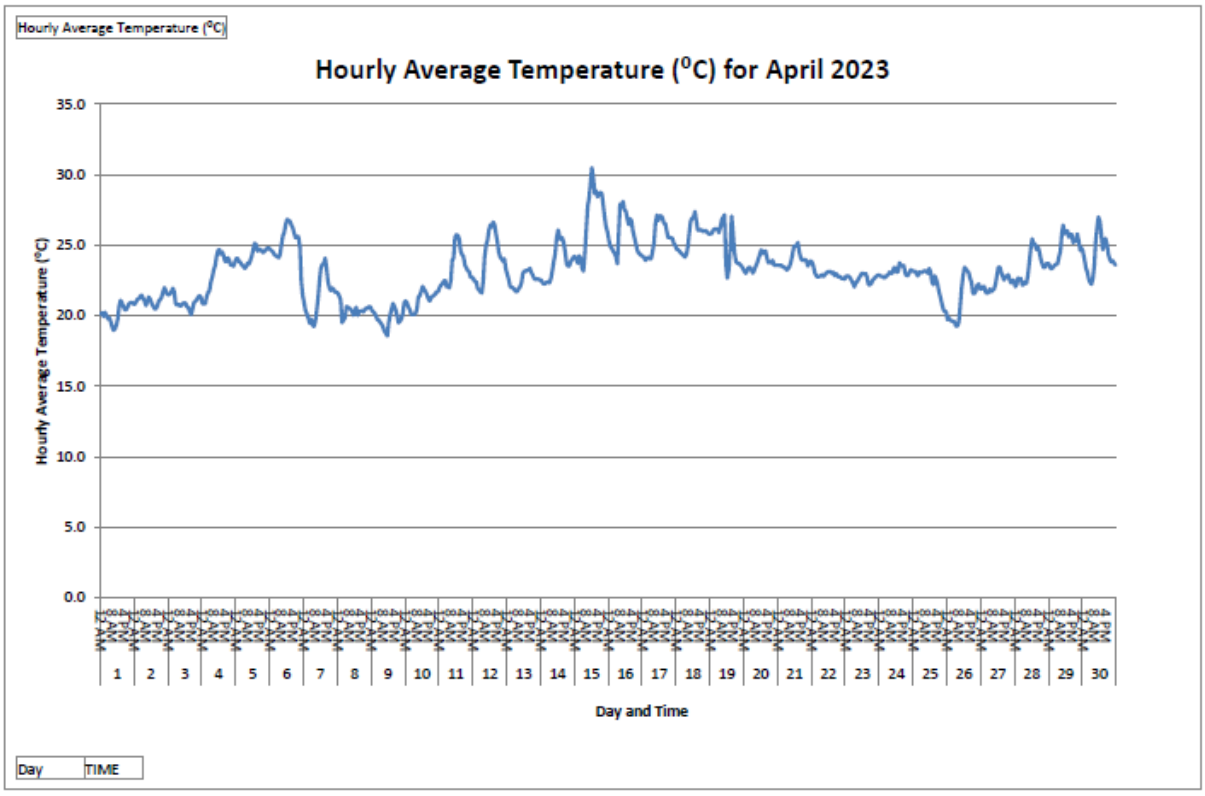

Hourly Average Wind Speed (m/s)
Hourly Average Wind Speed (m/s) for March 2023
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
Day and Time
Day
TIME

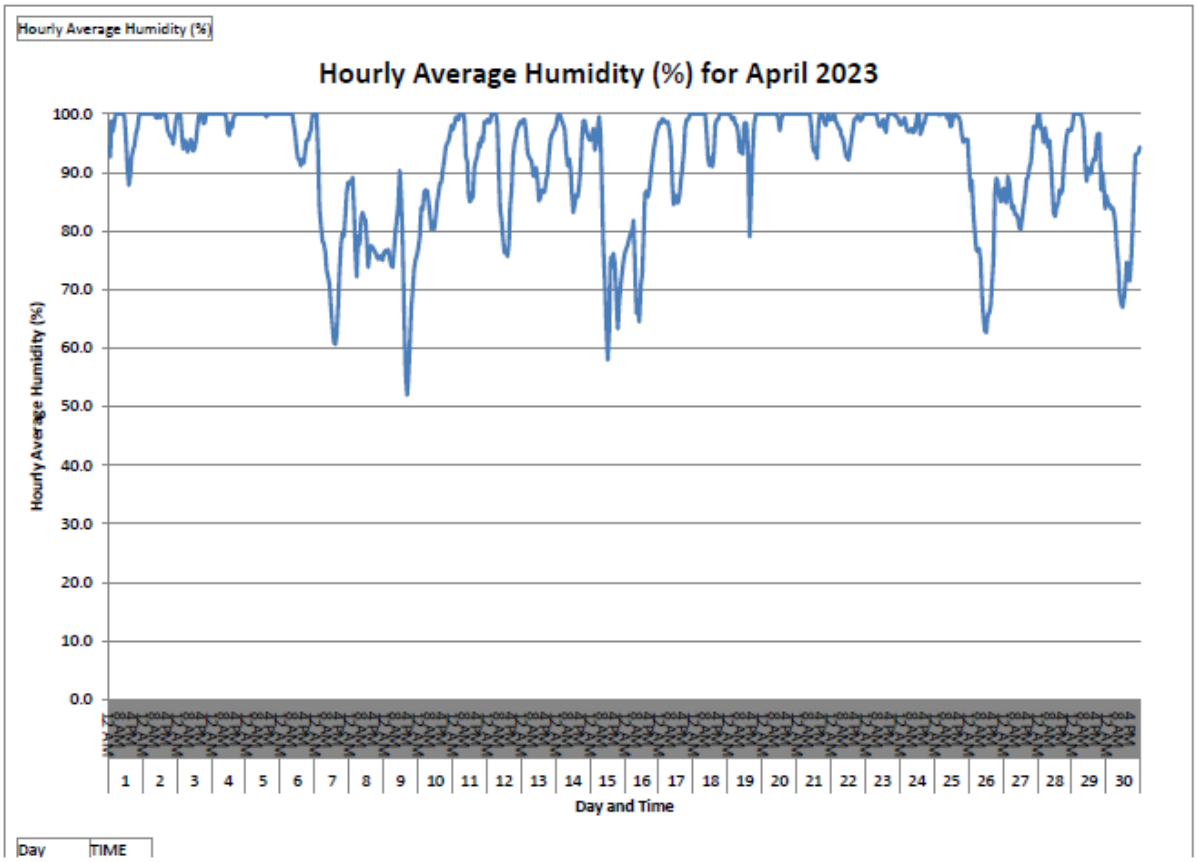

Hourly Average Wind Direction (degree)
Hourly Average Wind Direction (degree) for March 2023
Hourly Average Wind Direction (degree)
360
310
260
210
160
110
60
10
-40
12 AM 3 PM 6 AM 9 PM 12 PM 3 AM 6 PM 9 AM 12 AM 3 PM 6 AM 9 PM 12 PM 3 AM 6 PM 9 AM 12 AM 3 PM 6 AM 9 PM 12 PM 3 AM 6 PM 9 AM 12 AM 3 PM 6 AM 9 PM 12 PM 3 AM 6 PM 9 AM 12 AM 3 PM 6 AM 9 PM 12 PM 3 AM 6 PM 9 AM 12 AM 3 PM 6 AM 9 PM 12 PM 3 AM 6 PM 9 AM 12 AM 3 PM
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Day and Time
Day
TIME

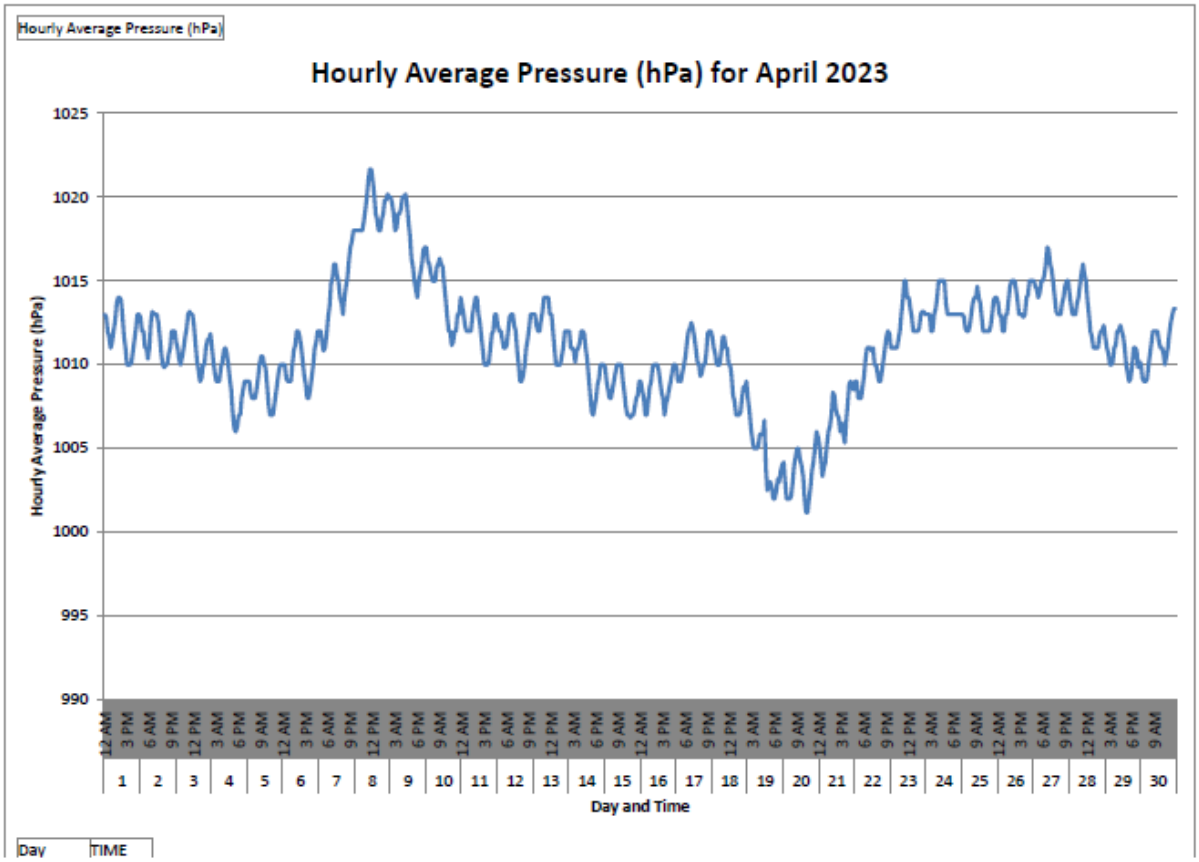

Wind Rose for March 2023
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
14.00%
12.00%
10.00%
8.00%
6.00%
4.00%
2.00%
0.00%
<1.0
<2.0
<3.0
<4.0
<5.0
All

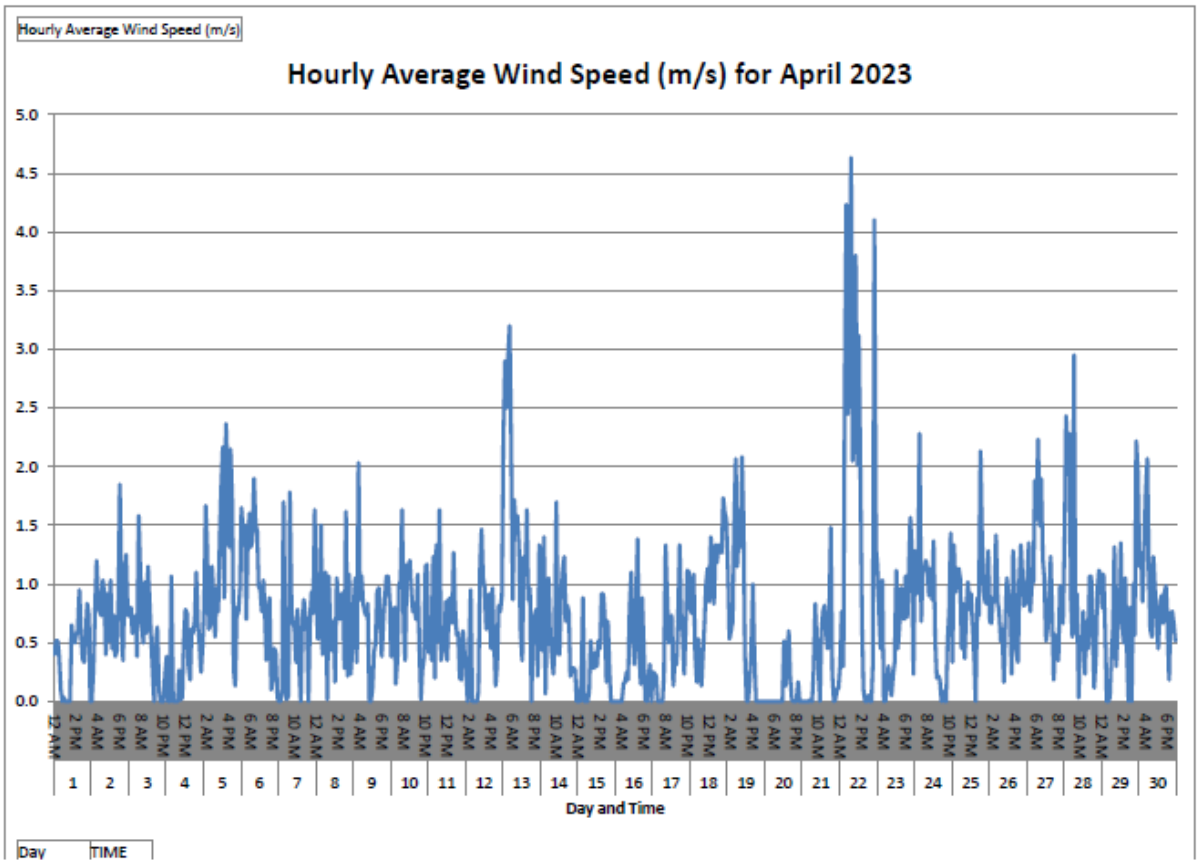

Daily and Cumulative Rainfall (mm) for March 2023
Rainfall (mm)
30
25
20
15
10
5
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Day
Daily Rainfall (mm)
Cumulative Rainfall

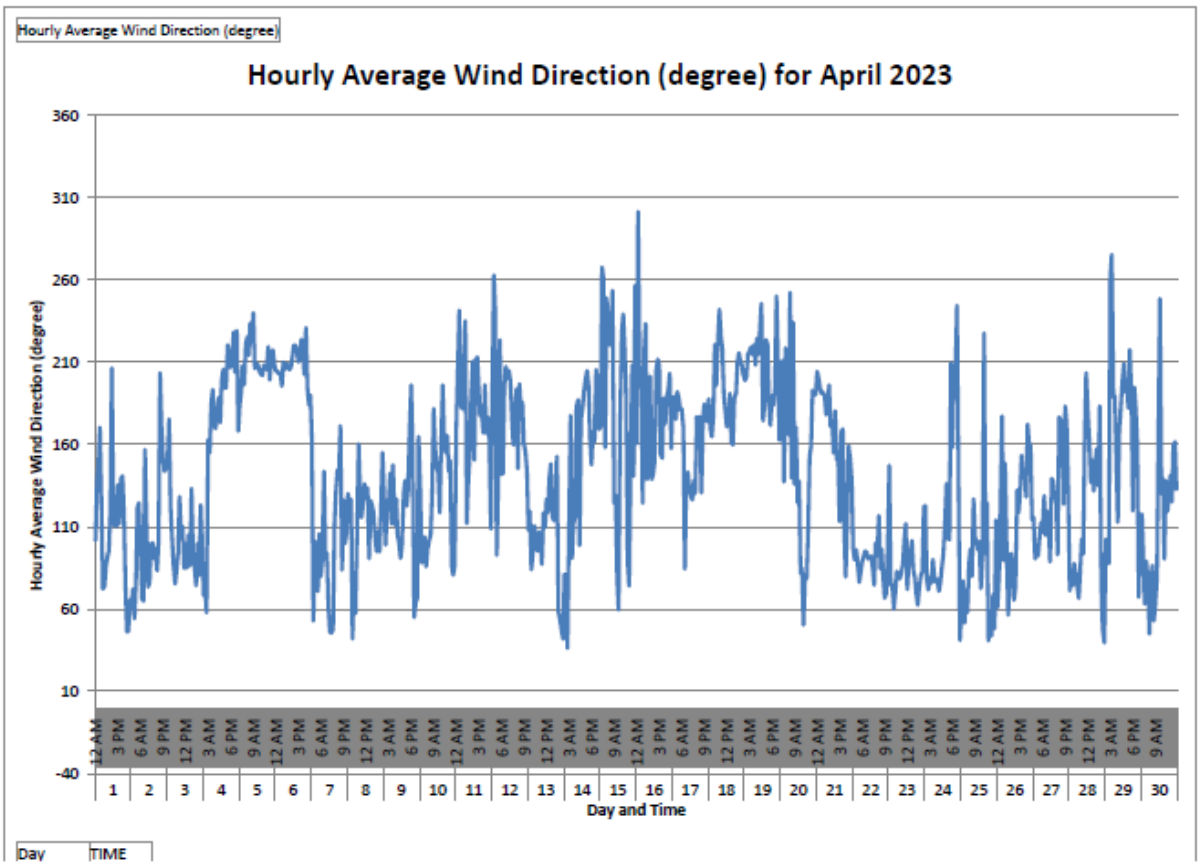
APRIL 2023

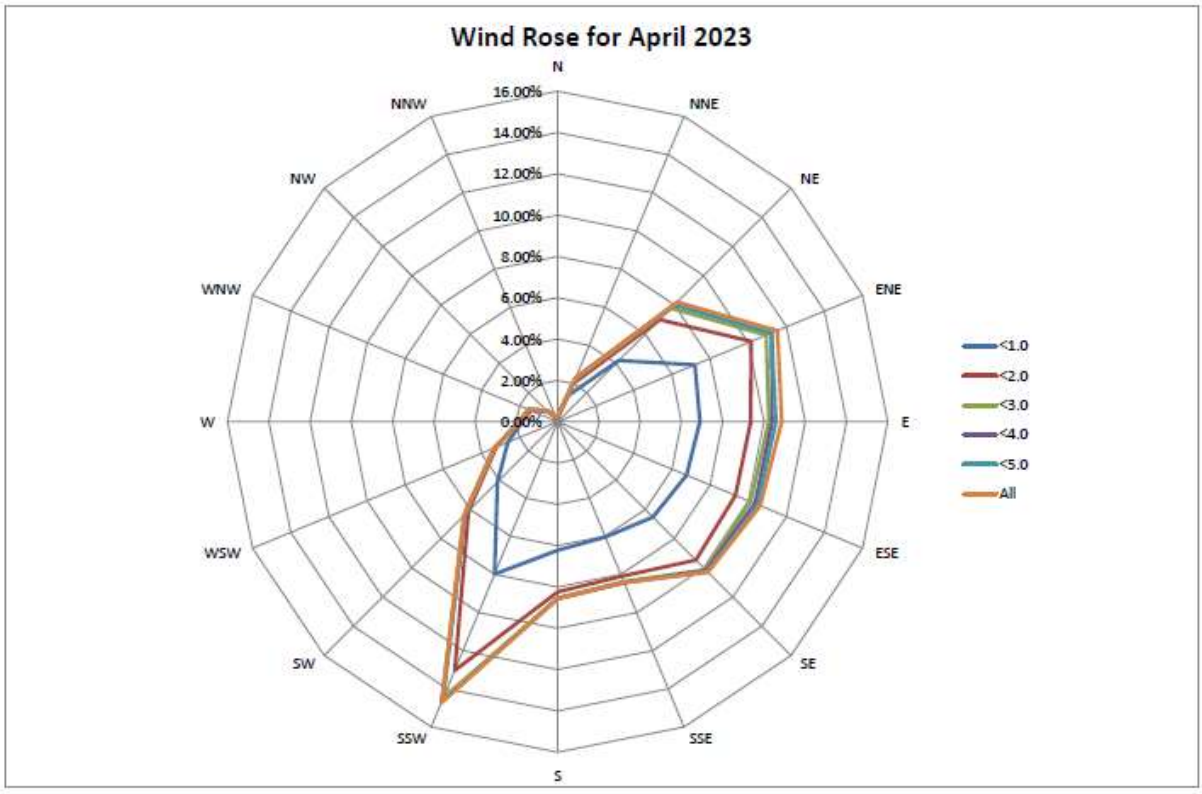

Hourly Average Temperature (°C)
Hourly Average Temperature (°C) for April 2023
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
Hourly Average Temperature (°C)
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
Day and Time
Day
TIME

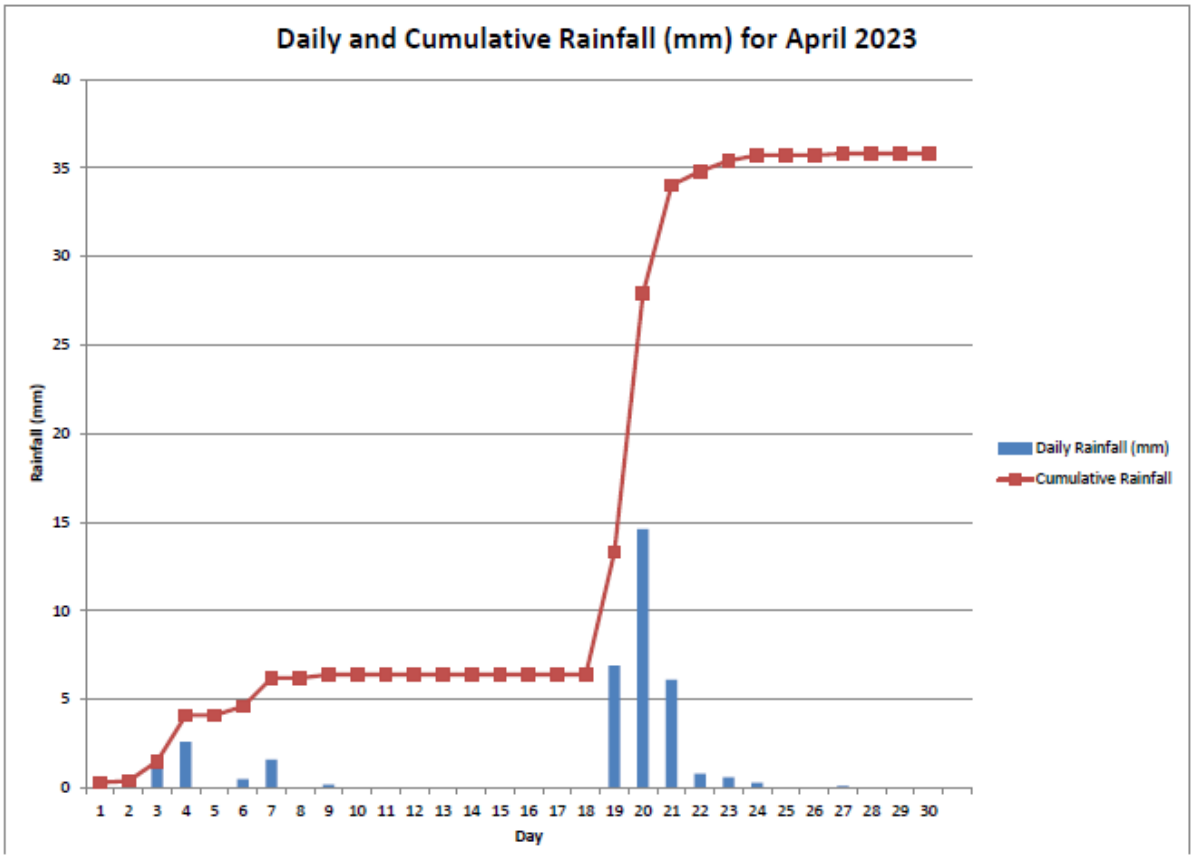

Hourly Average Humidity (%)
Hourly Average Humidity (%) for April 2023
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
Hourly Average Humidity (%)
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
Day and Time
Day
TIME


Hourly Average Pressure (hPa)
Hourly Average Pressure (hPa) for April 2023
Hourly Average Pressure (hPa)
Day and Time
Day
TIME

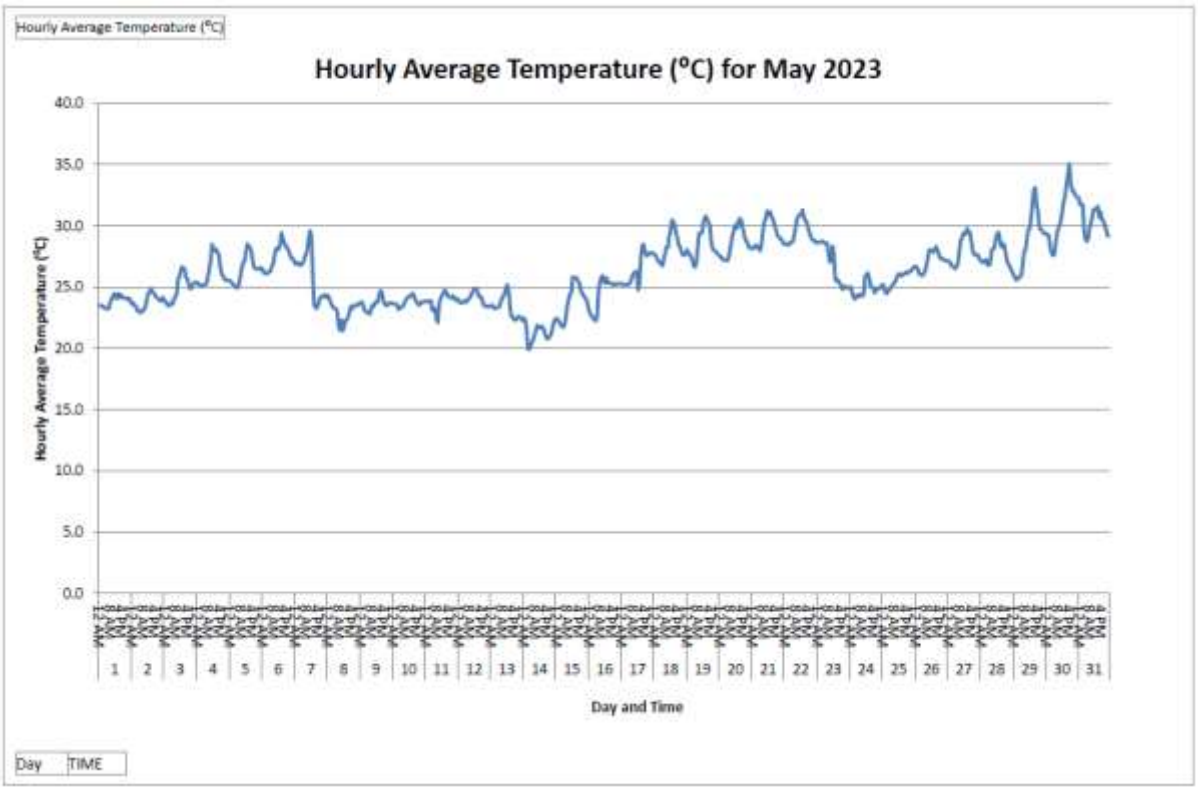

Hourly Average Wind Speed (m/s)
Hourly Average Wind Speed (m/s) for April 2023
Day and Time
Day
TIME

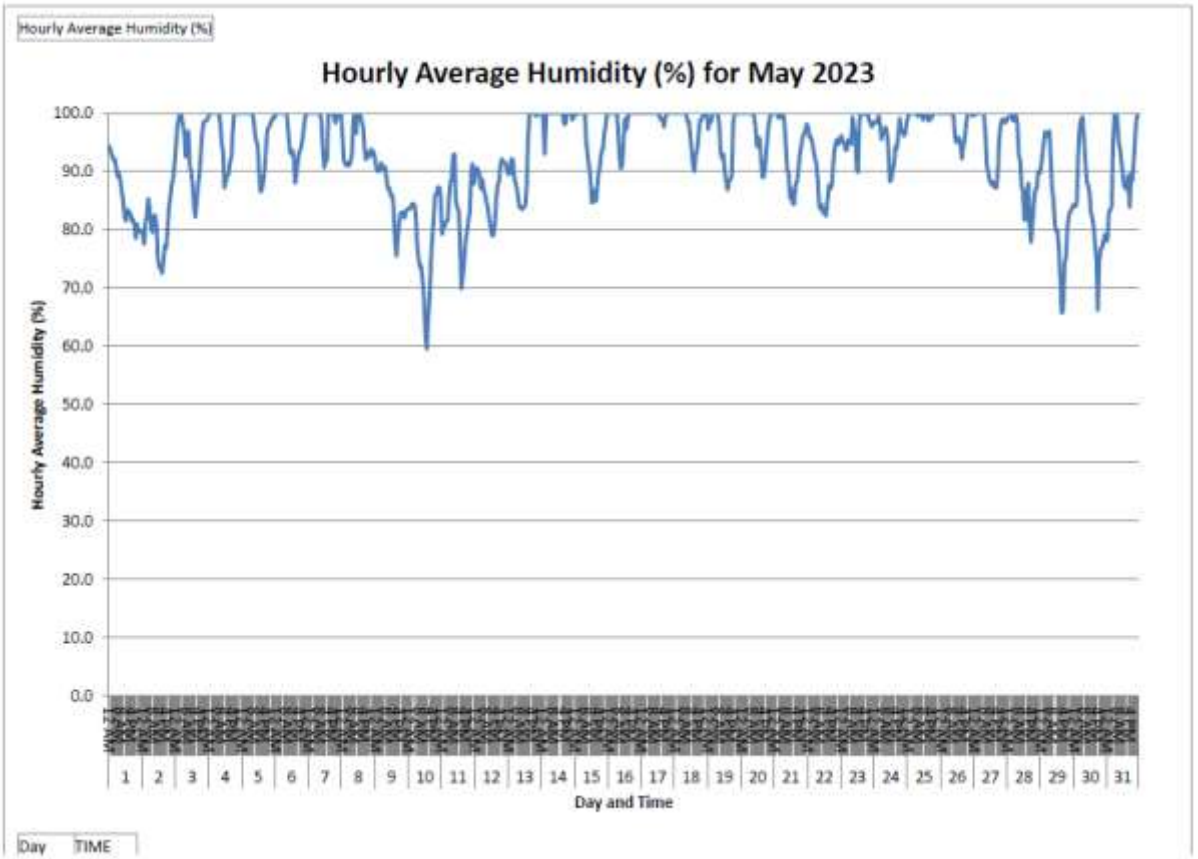

Hourly Average Wind Direction (degree)
Hourly Average Wind Direction (degree) for April 2023
Hourly Average Wind Direction (degree)
360
310
260
210
160
110
60
10
-40
12 AM 3 PM 6 AM 9 PM 12 PM 3 AM 6 PM 9 AM 12 AM 3 PM 6 AM 9 PM 12 PM 3 AM 6 PM 9 AM 12 AM 3 PM 6 AM 9 PM 12 PM 3 AM 6 PM 9 AM 12 AM 3 PM 6 AM 9 PM 12 PM 3 AM 6 PM 9 AM 12 AM 3 PM 6 AM 9 PM 12 PM 3 AM 6 PM 9 AM 12 AM 3 PM 6 AM 9 PM 12 PM 3 AM 6 PM 9 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
Day and Time
Day
TIME

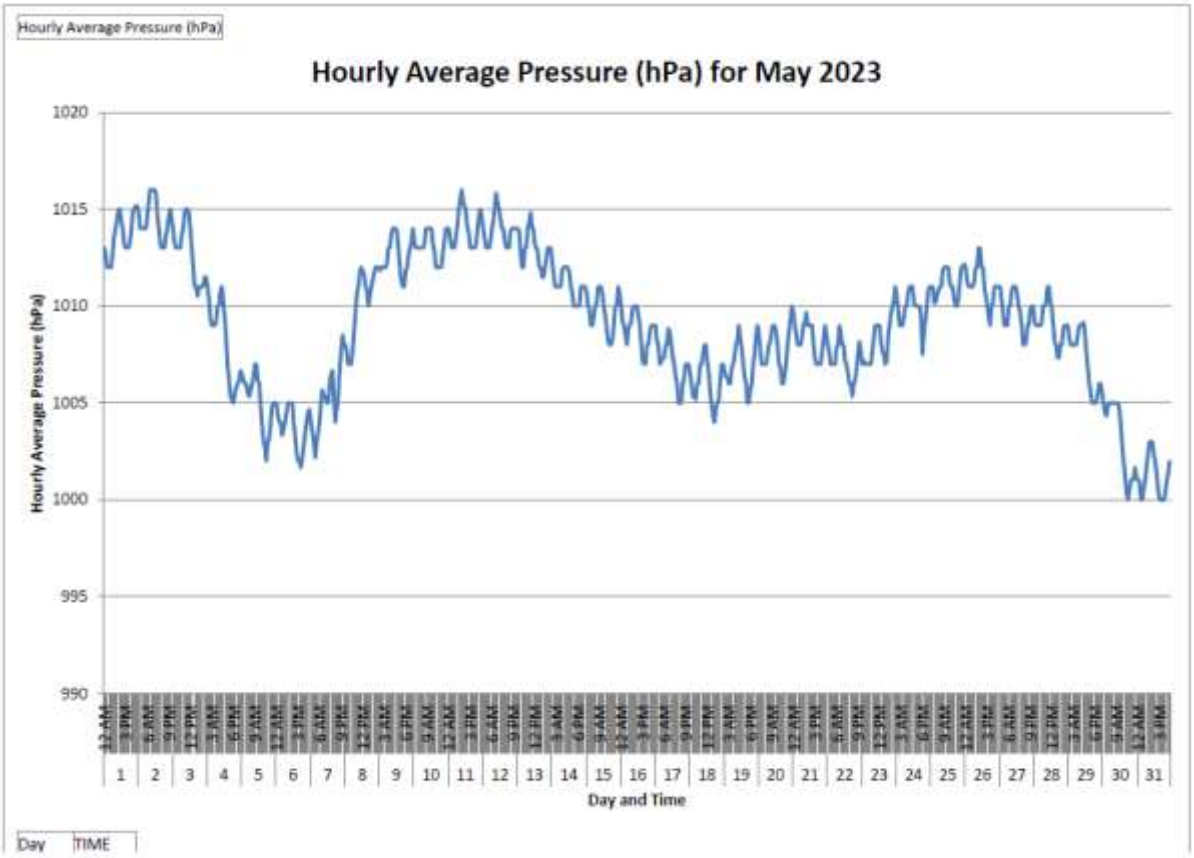

Wind Rose for April 2023
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
16.00%
14.00%
12.00%
10.00%
8.00%
6.00%
4.00%
2.00%
0.00%
<1.0
<2.0
<3.0
<4.0
<5.0
All

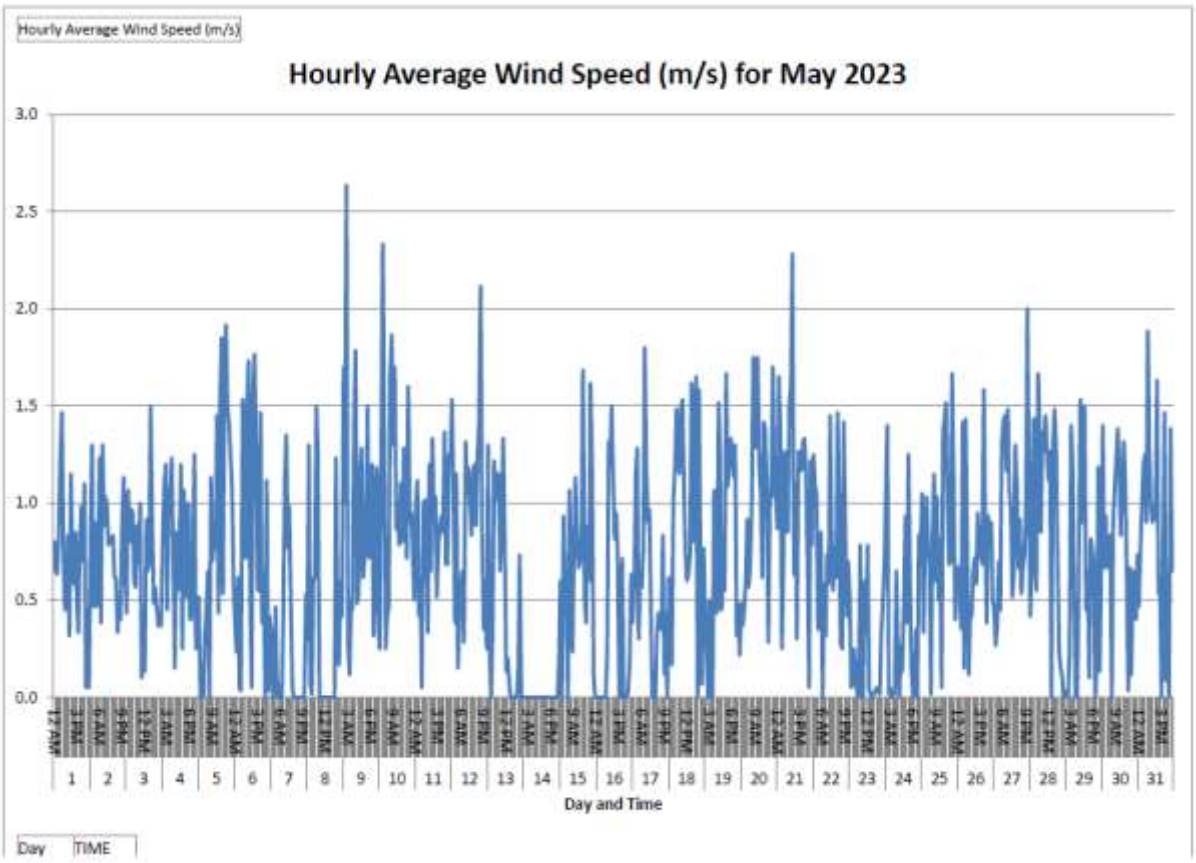

Daily and Cumulative Rainfall (mm) for April 2023
Rainfall (mm)
Day
Daily Rainfall (mm)
Cumulative Rainfall

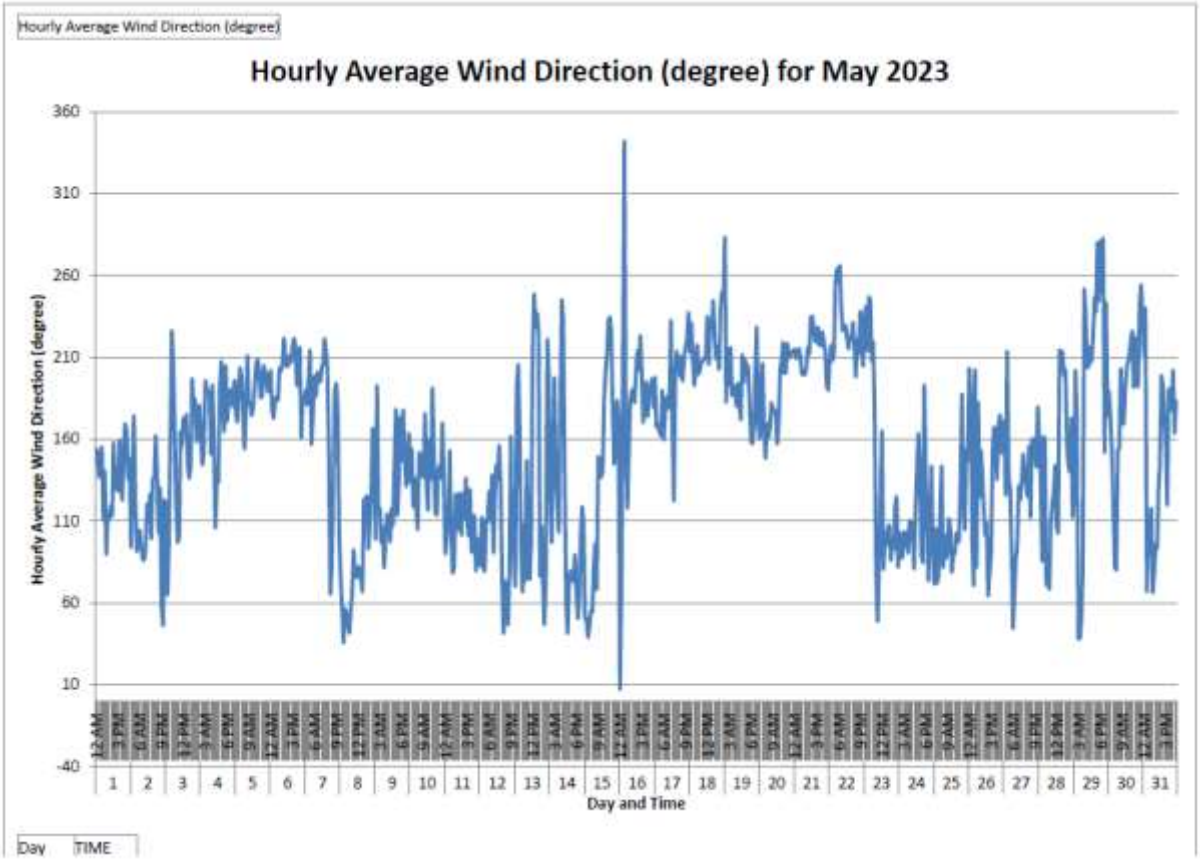
MAY 2023

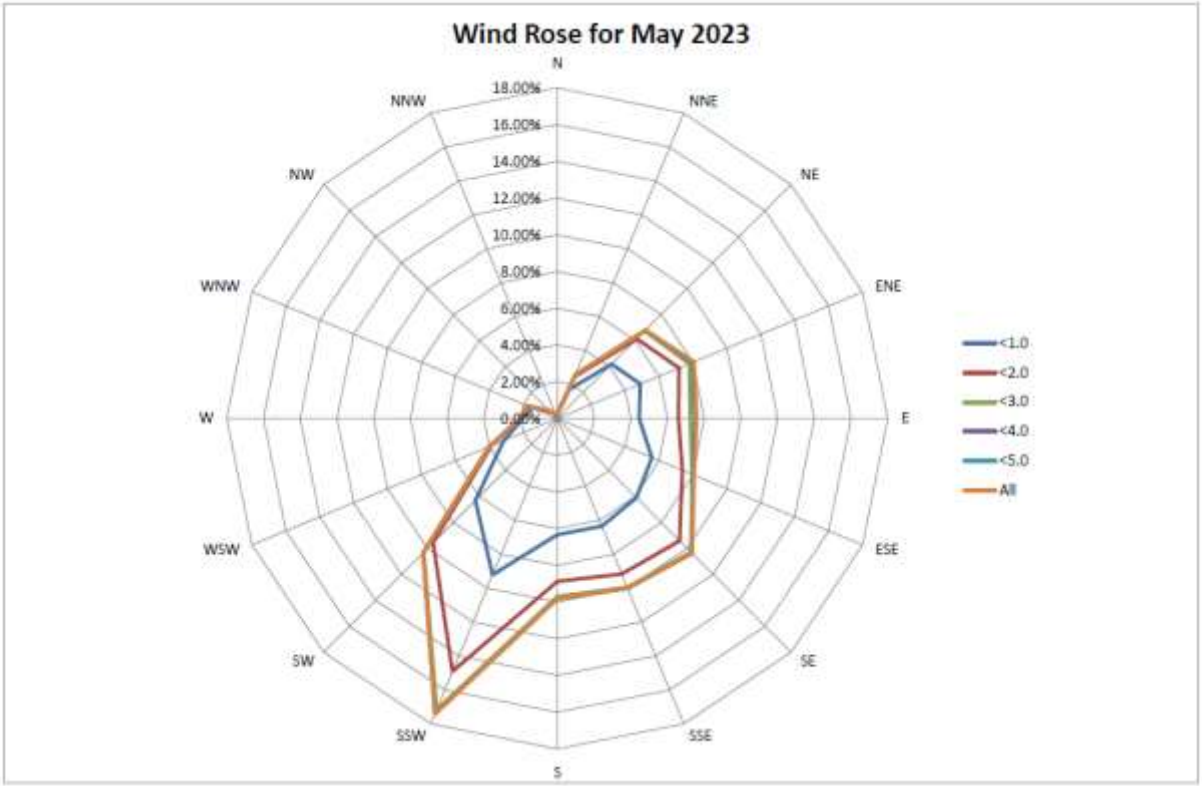

Hourly Average Temperature (°C)
Hourly Average Temperature (°C) for May 2023
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
Hourly Average Temperature (°C)
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Day and Time
Day
TIME

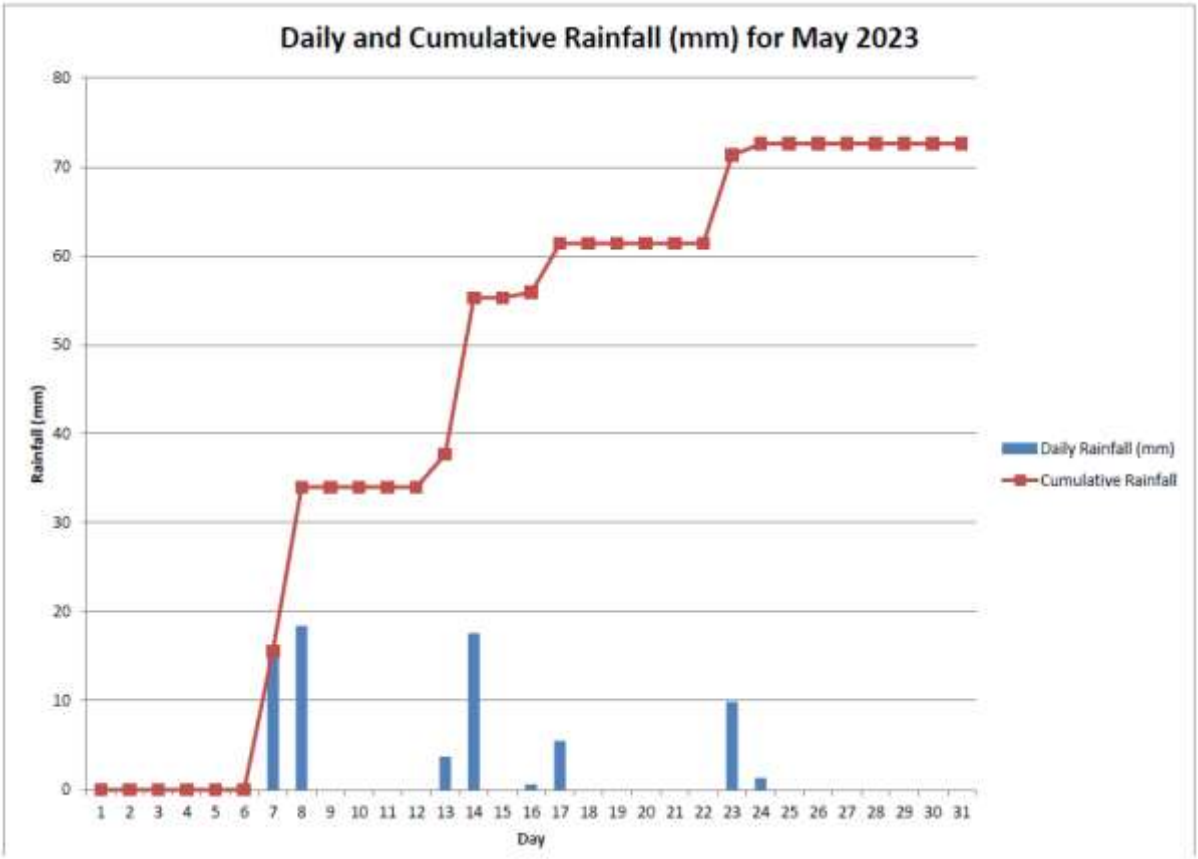

Hourly Average Humidity (%)
Hourly Average Humidity (%) for May 2023
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
Hourly Average Humidity (%)
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Day and Time
Day
TIME


Hourly Average Pressure (hPa)
Hourly Average Pressure (hPa) for May 2023
1020
1015
1010
1005
1000
995
990
Hourly Average Pressure (hPa)
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Day and Time
Day
TIME

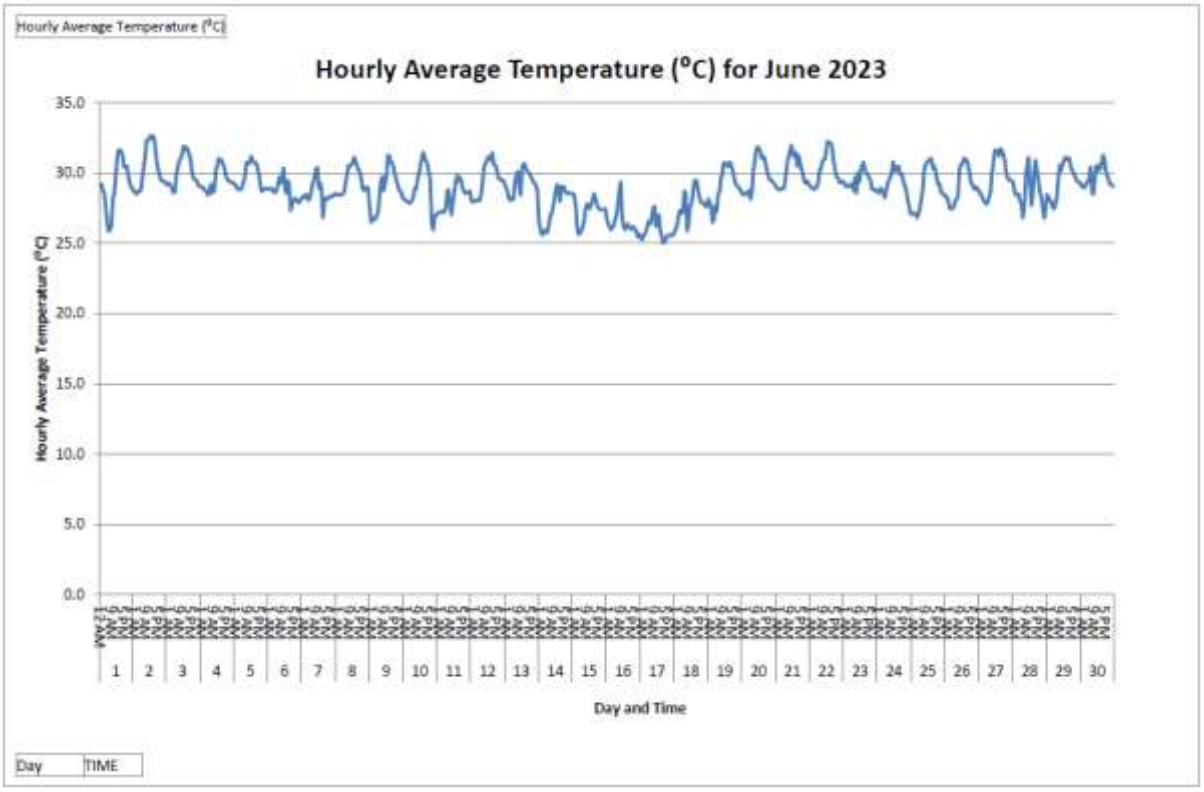

Hourly Average Wind Speed (m/s)
Hourly Average Wind Speed (m/s) for May 2023
3.0
2.5
2.0
1.5
1.0
0.5
0.0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Day and Time
Day
TIME

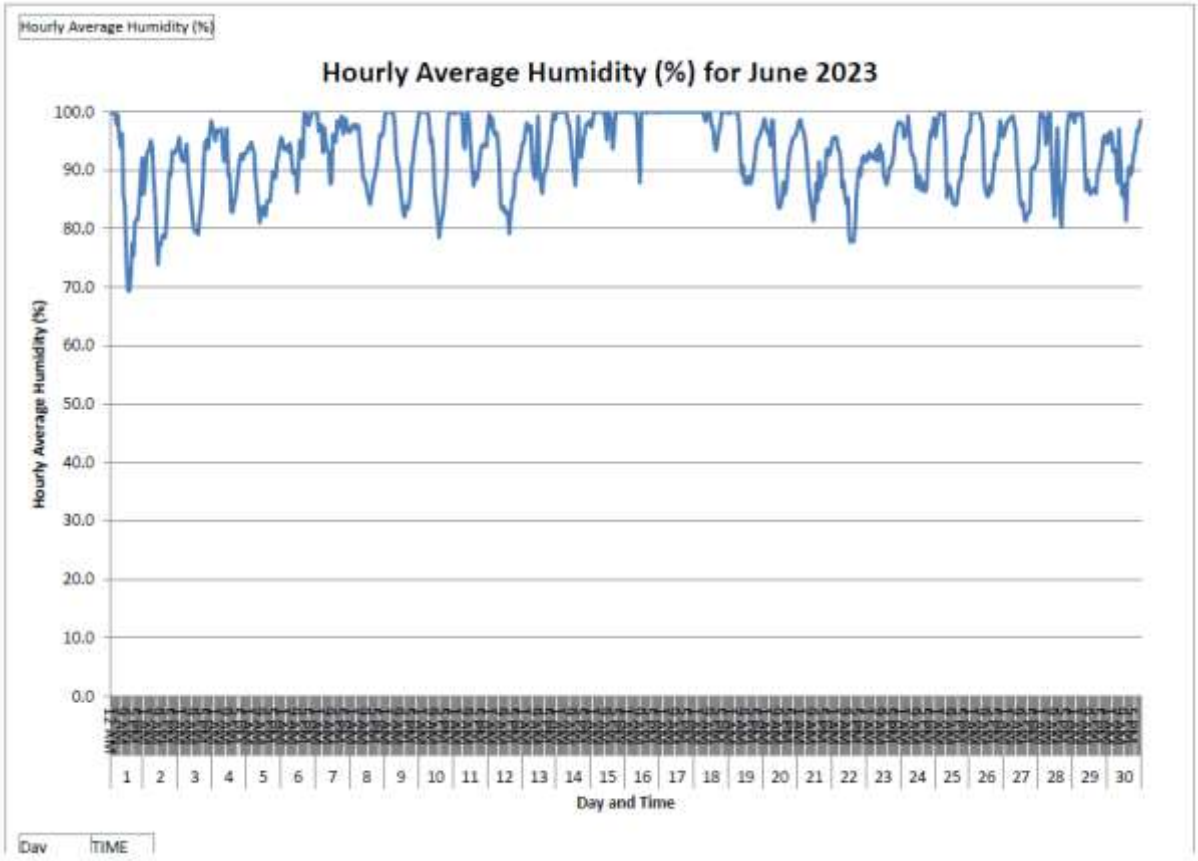

Hourly Average Wind Direction (degree)
Hourly Average Wind Direction (degree) for May 2023
Hourly Average Wind Direction (degree)
360
310
260
210
160
110
60
10
-40
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Day and Time
Day
TIME

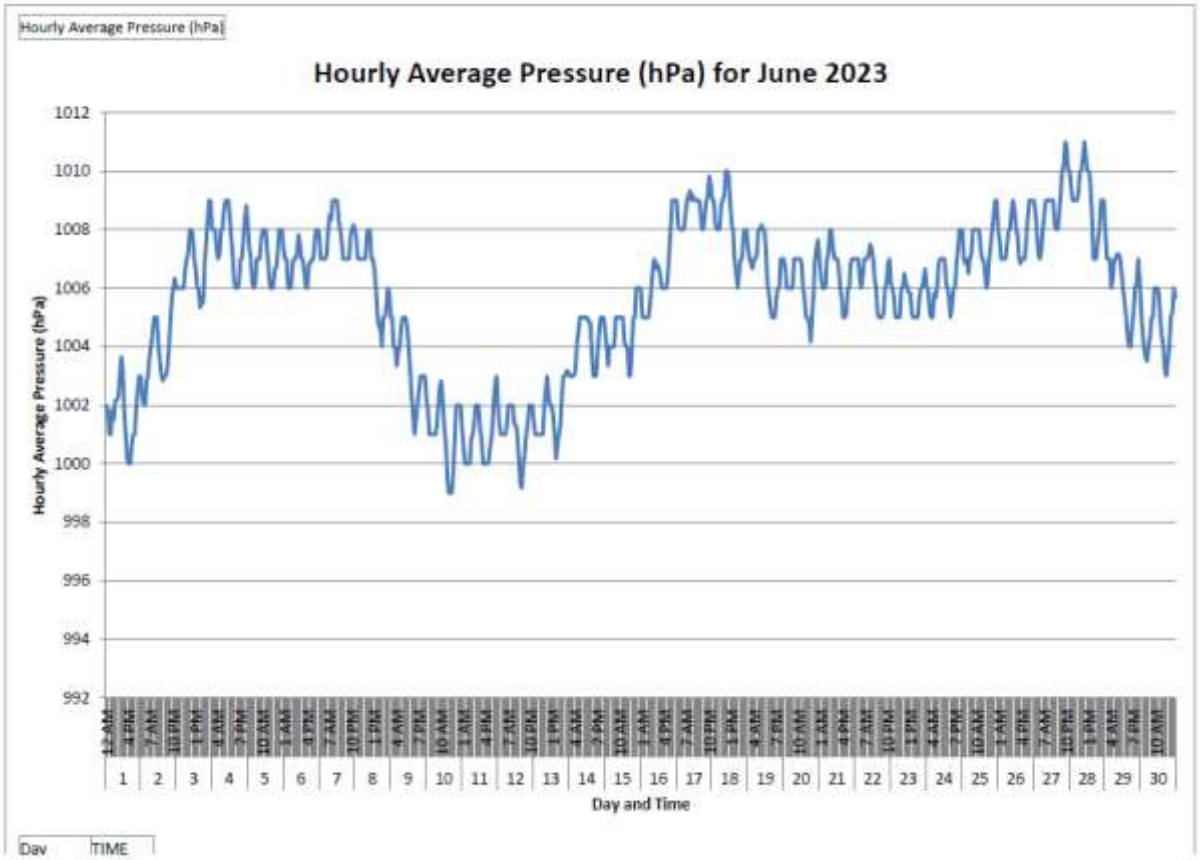

Wind Rose for May 2023
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
18.00%
16.00%
14.00%
12.00%
10.00%
8.00%
6.00%
4.00%
2.00%
<1.0
<2.0
<3.0
<4.0
<5.0
All

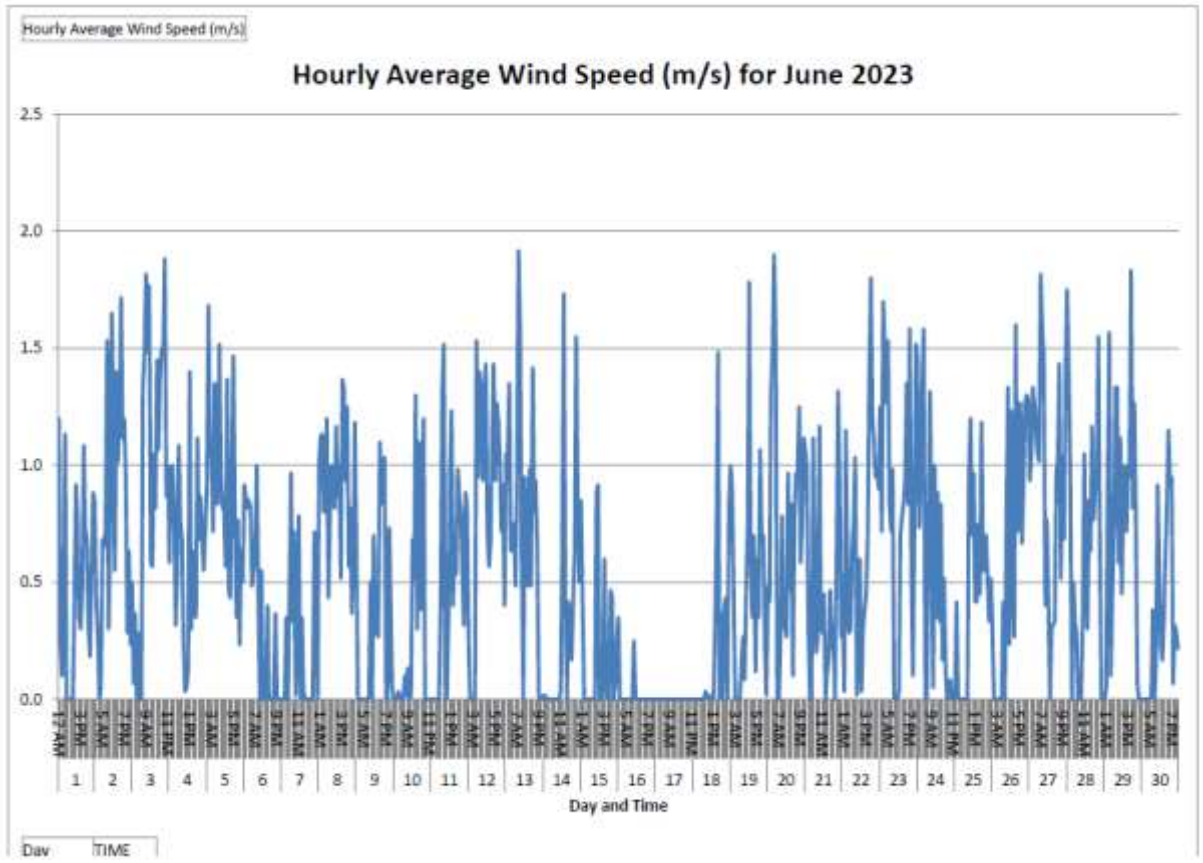

Daily and Cumulative Rainfall (mm) for May 2023
Rainfall (mm)
Day
Daily Rainfall (mm)
Cumulative Rainfall

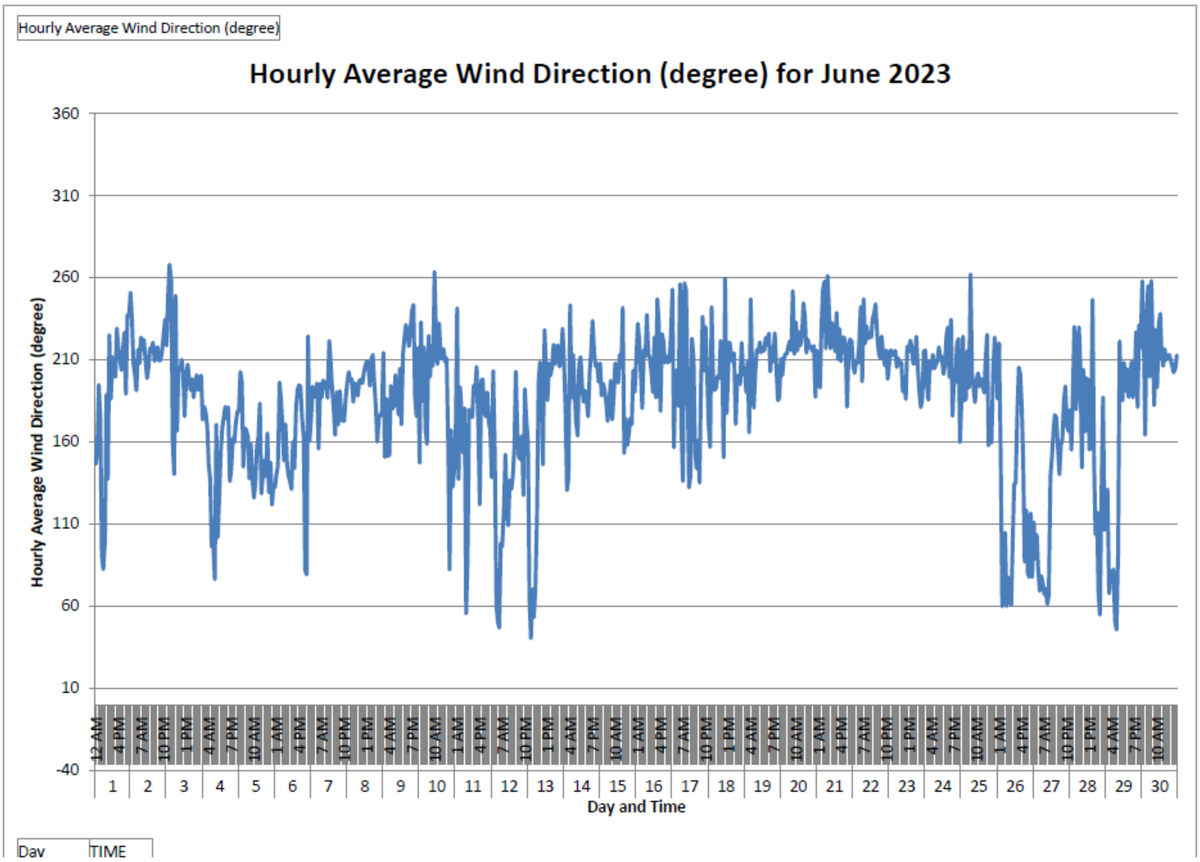
JUNE 2023


Hourly Average Temperature (°C)
Hourly Average Temperature (°C) for June 2023
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
Hourly Average Temperature (°C)
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
Day and Time
Day
TIME

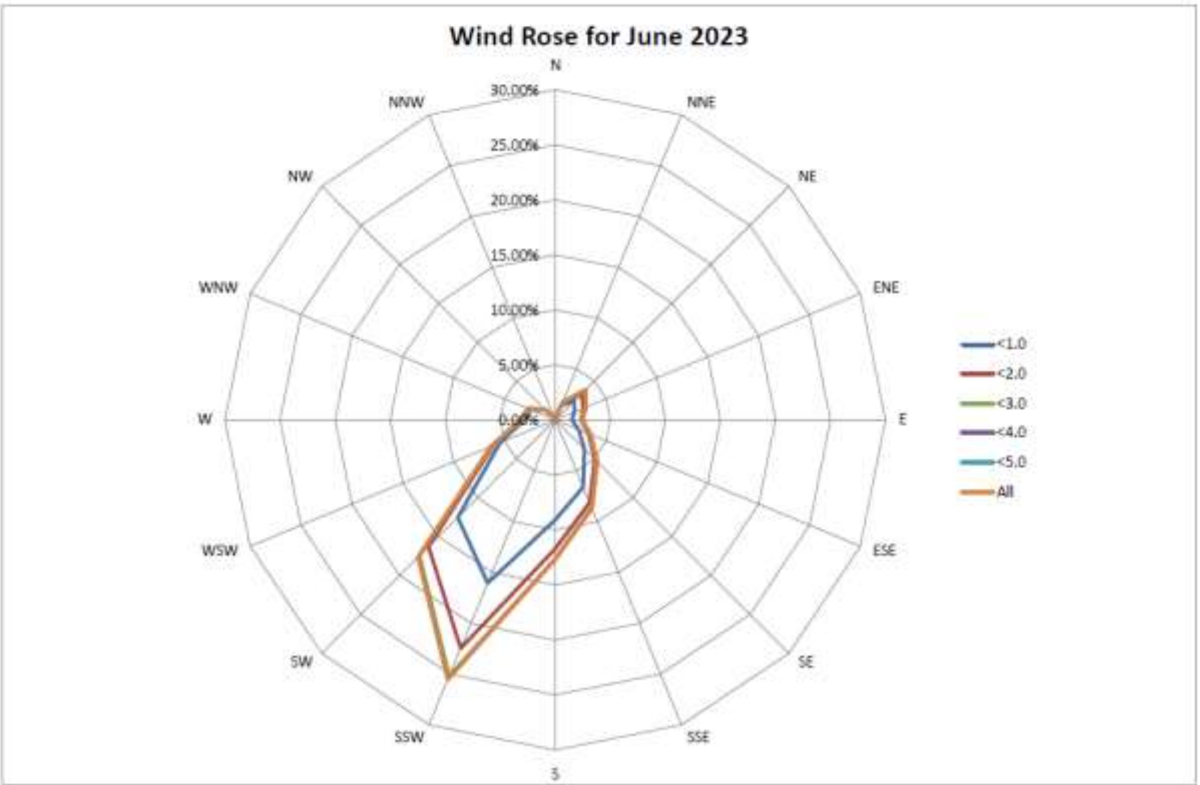

Hourly Average Humidity (%)
Hourly Average Humidity (%) for June 2023
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
Hourly Average Humidity (%)
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
Day and Time
Day
TIME


Hourly Average Pressure (hPa)
Hourly Average Pressure (hPa) for June 2023
1012
1010
1008
1006
1004
1002
1000
998
996
994
992
Hourly Average Pressure (hPa)
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
Day and Time
Day
TIME

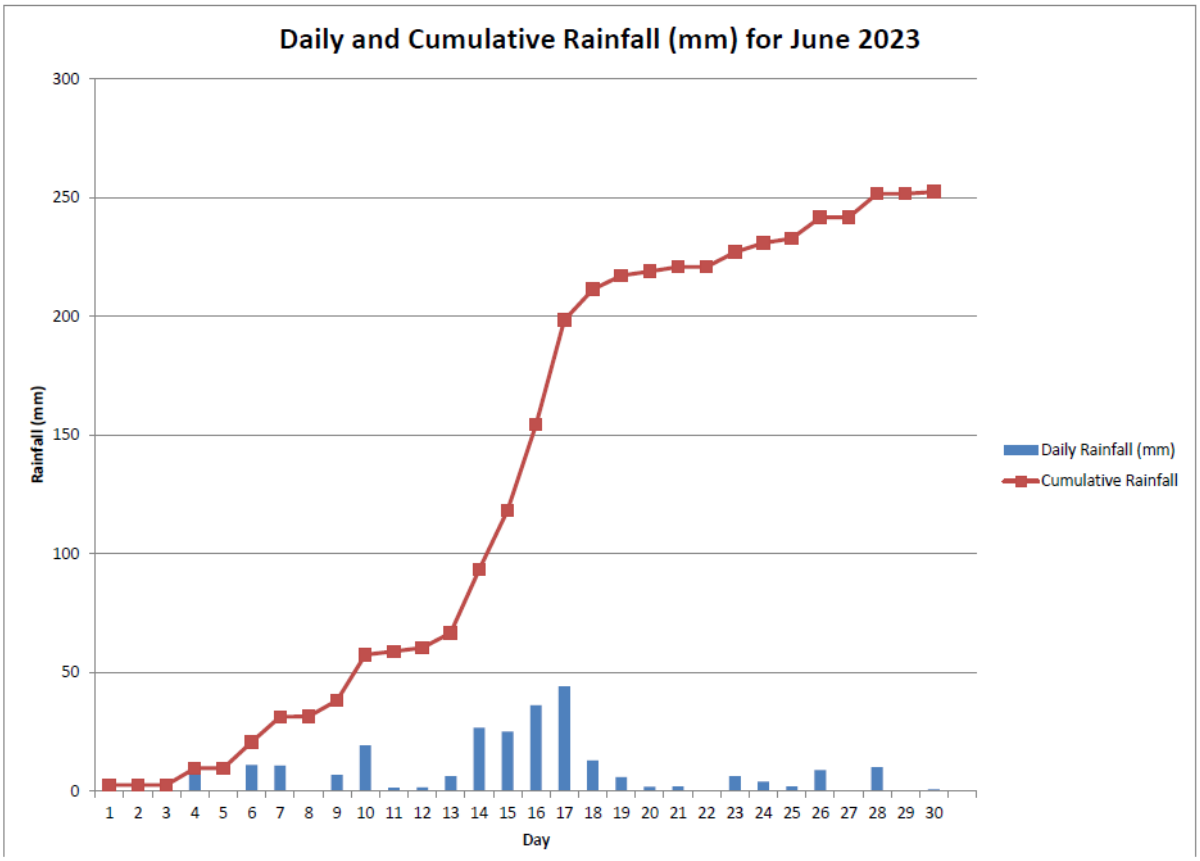

Hourly Average Wind Speed (m/s)
Hourly Average Wind Speed (m/s) for June 2023
2.5
2.0
1.5
1.0
0.5
0.0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
Day and Time
Day
TIME



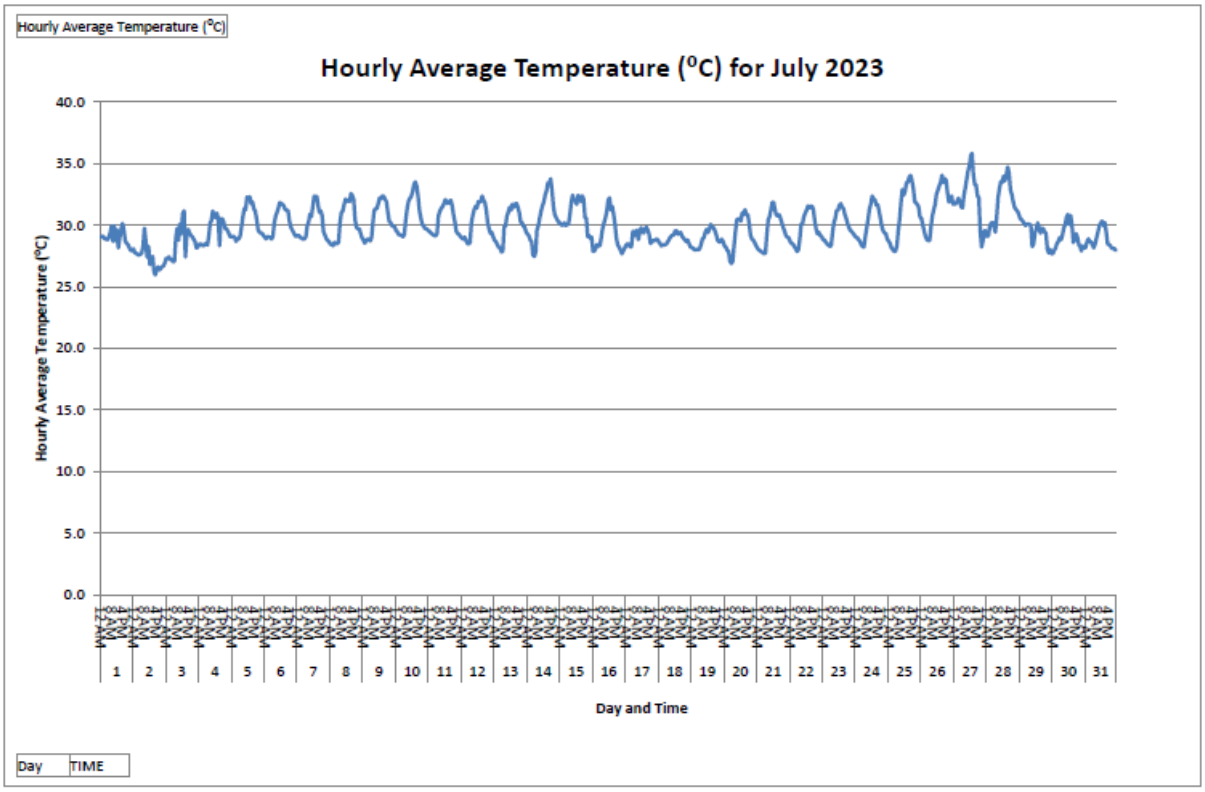
Hourly Average Wind Direction (degree)
Hourly Average Wind Direction (degree) for June 2023
Hourly Average Wind Direction (degree)
360
310
260
210
160
110
60
10
-40
Day and Time
Day
TIME

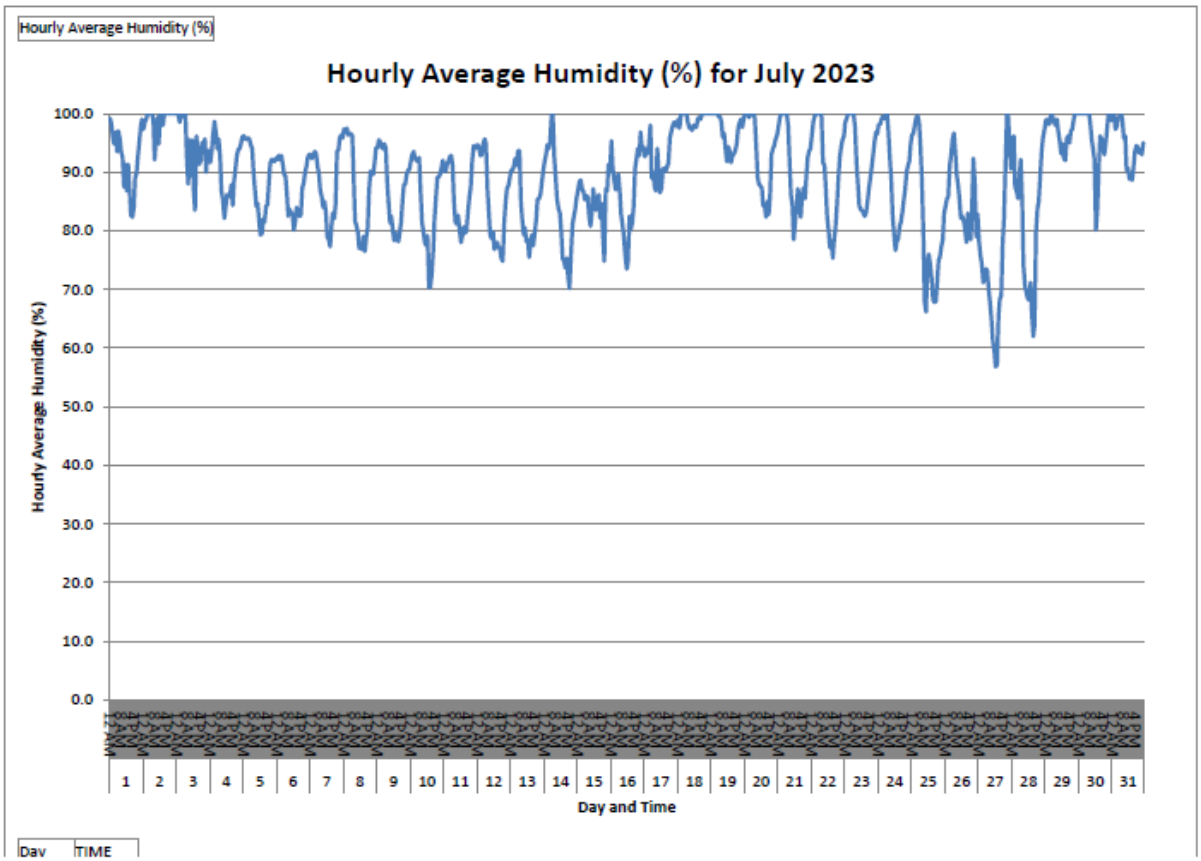


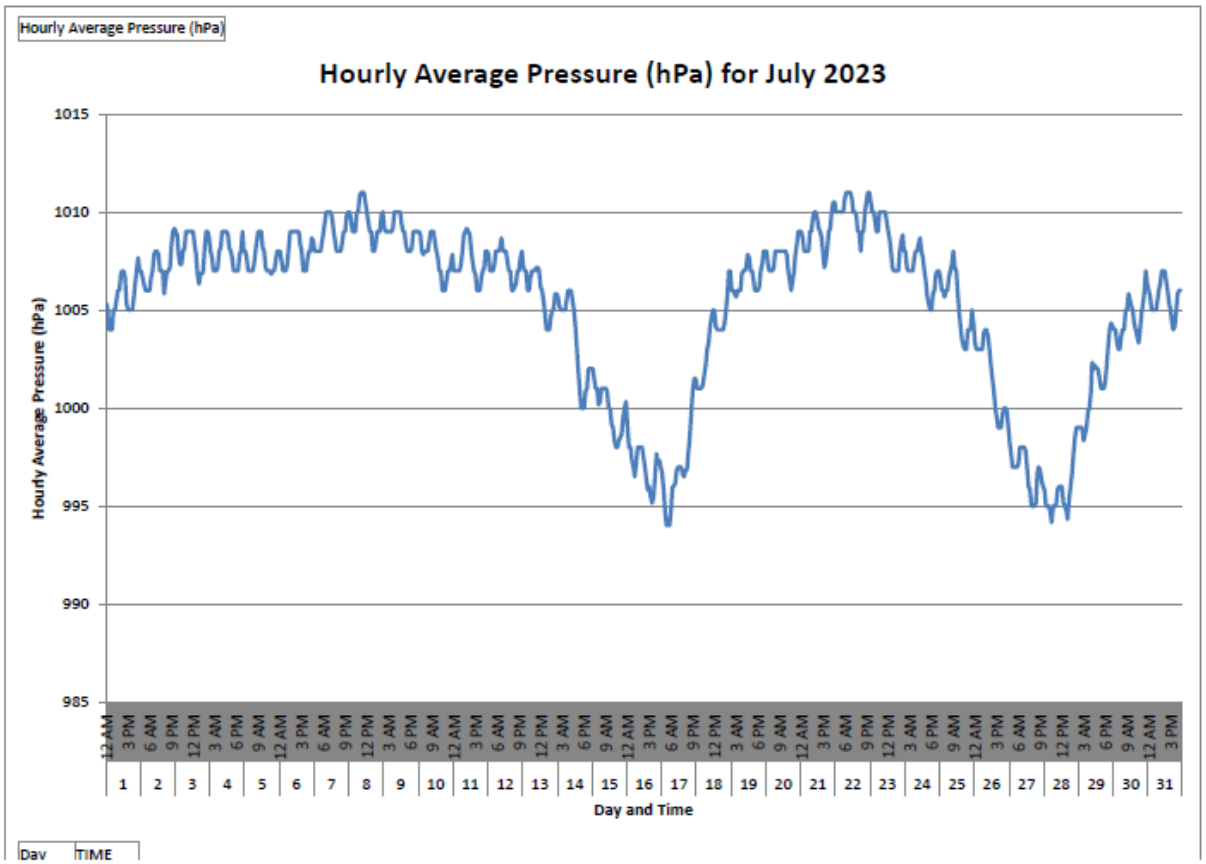
Wind Rose for June 2023
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
30.00%
25.00%
20.00%
15.00%
10.00%
5.00%
0.00%
<1.0
<2.0
<3.0
<4.0
<5.0
All

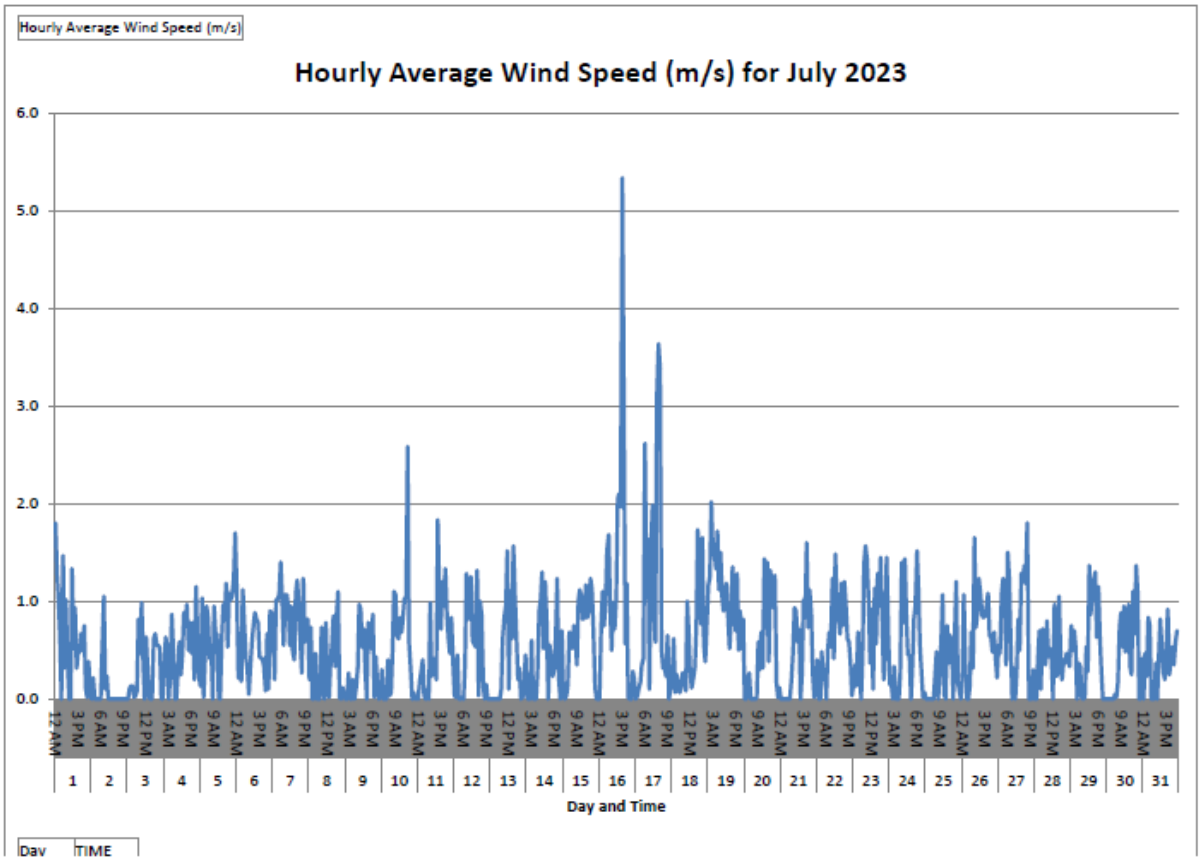

Daily and Cumulative Rainfall (mm) for June 2023
Rainfall (mm)
300
250
200
150
100
50
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
Day
Daily Rainfall (mm)
Cumulative Rainfall

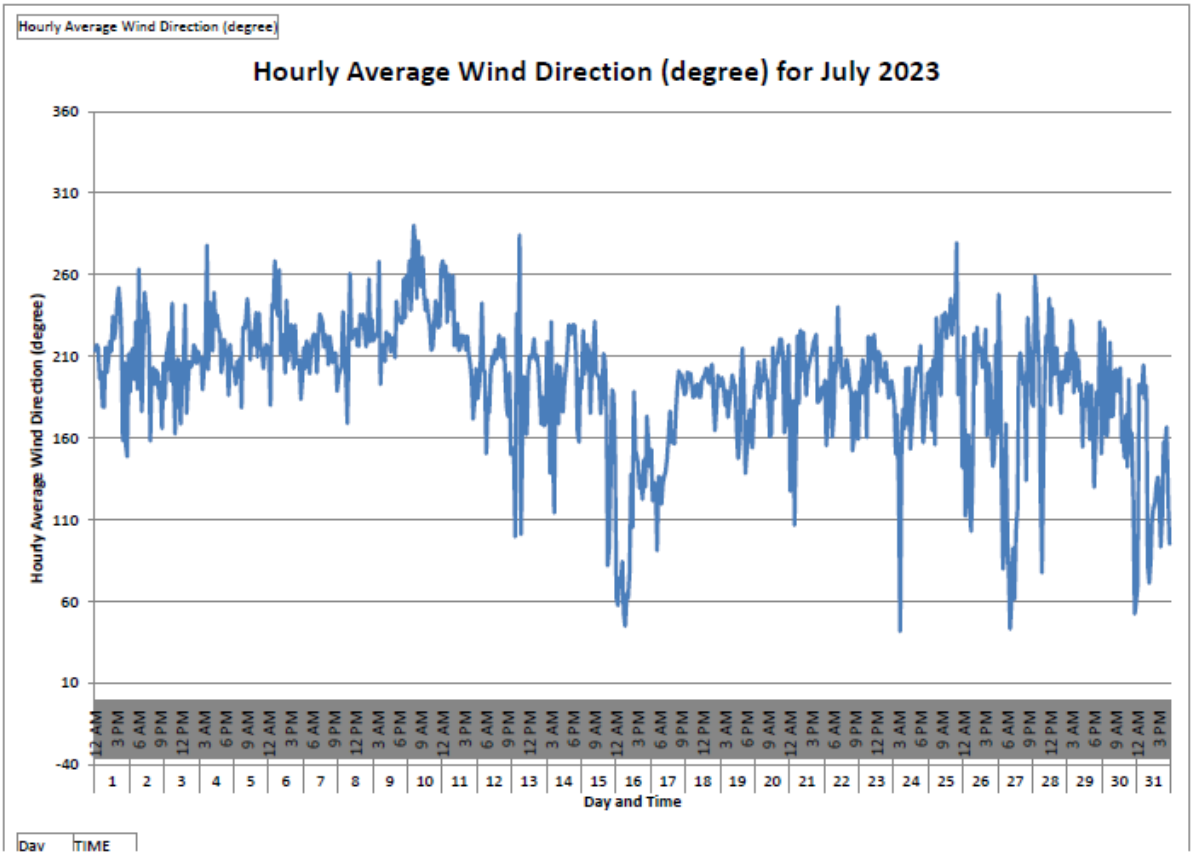
JULY 2023

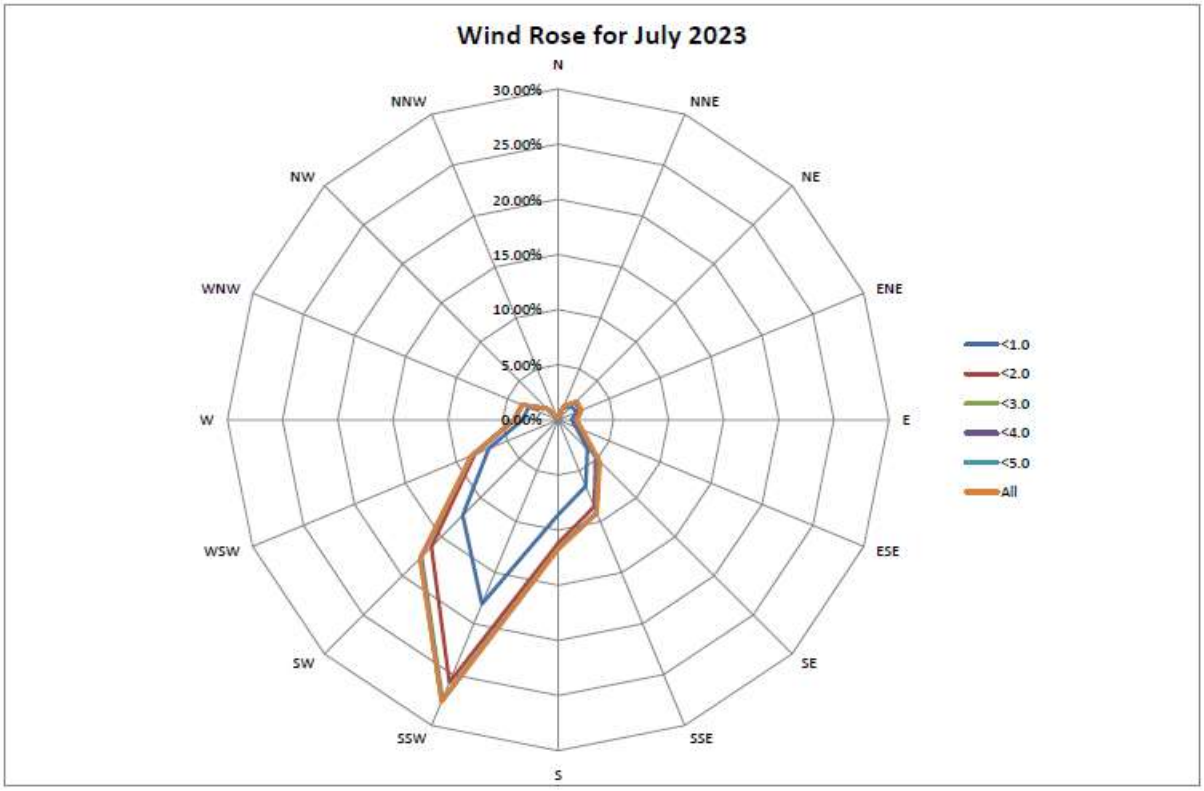

Hourly Average Temperature (°C)
Hourly Average Temperature (°C) for July 2023
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
Hourly Average Temperature (°C)
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Day and Time
Day
TIME

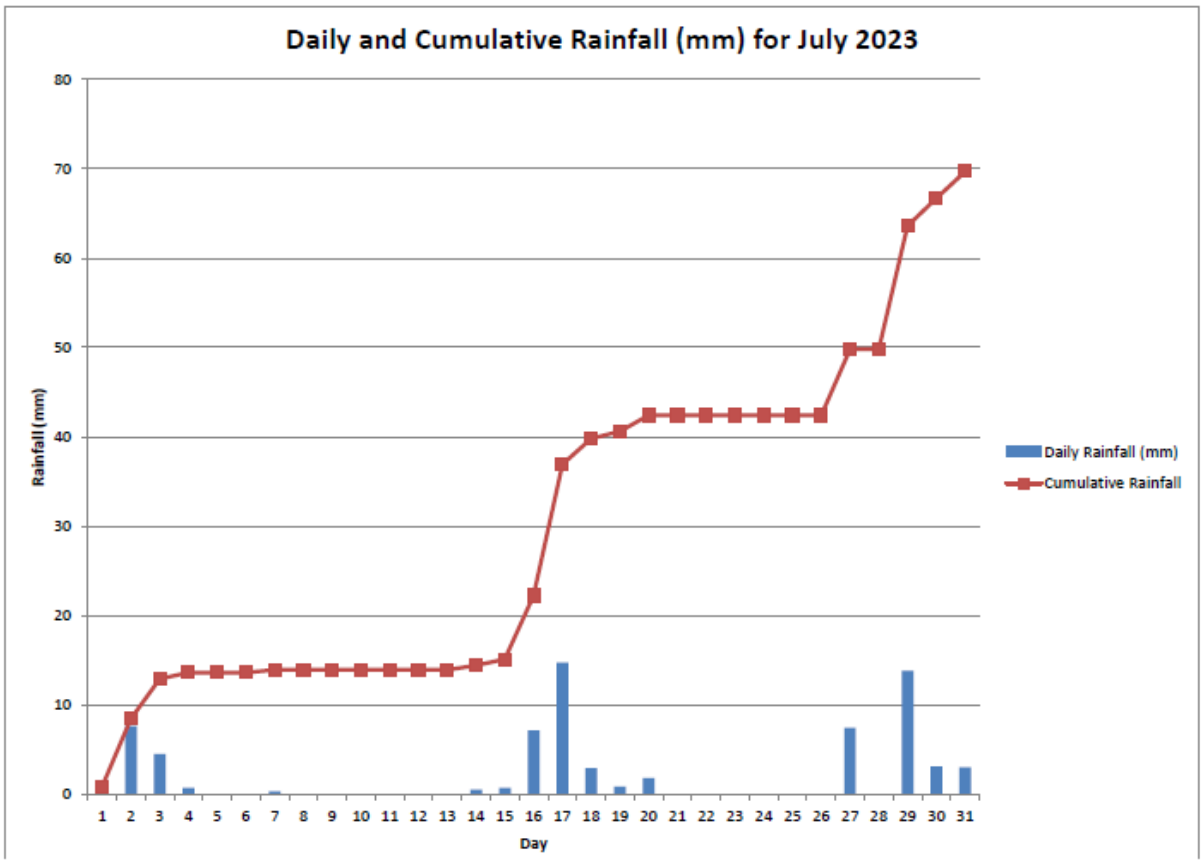

Hourly Average Humidity (%)
Hourly Average Humidity (%) for July 2023
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
Hourly Average Humidity (%)
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Day and Time
Day
TIME


Hourly Average Pressure (hPa)
Hourly Average Pressure (hPa) for July 2023
1015
1010
1005
1000
995
990
985
Hourly Average Pressure (hPa)
Day and Time
Dav
TIME

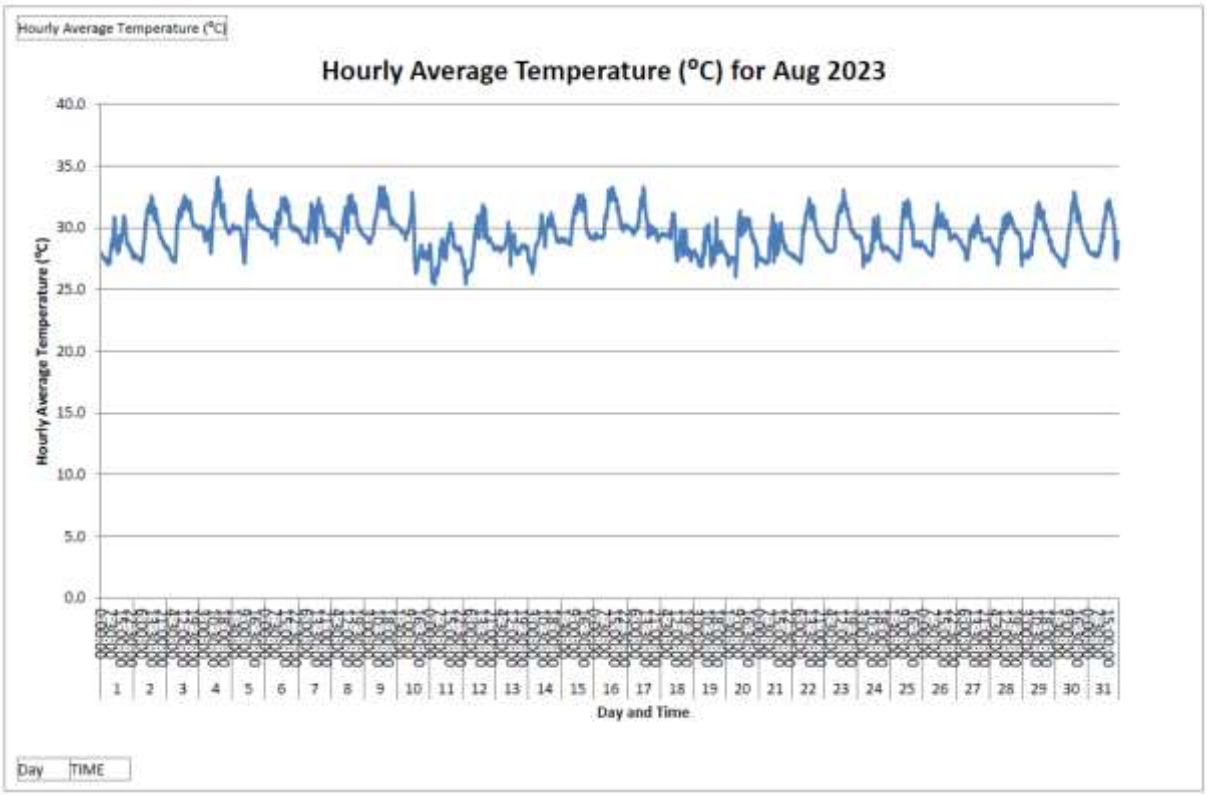

Hourly Average Wind Speed (m/s)
Hourly Average Wind Speed (m/s) for July 2023
6.0
5.0
4.0
3.0
2.0
1.0
0.0
Day and Time
Dav
TIME

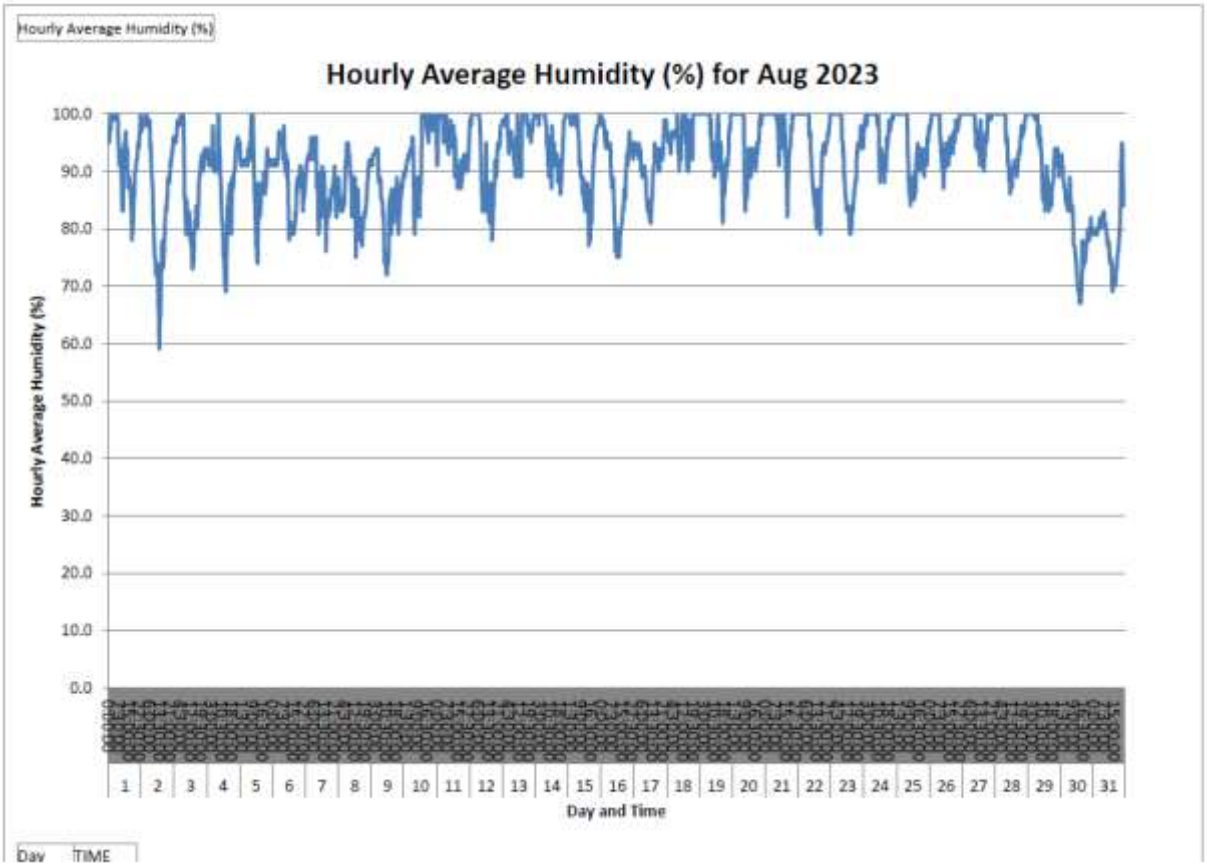

Hourly Average Wind Direction (degree)
Hourly Average Wind Direction (degree) for July 2023
Hourly Average Wind Direction (degree)
360
310
260
210
160
110
60
10
-40
Day and Time
Day
TIME

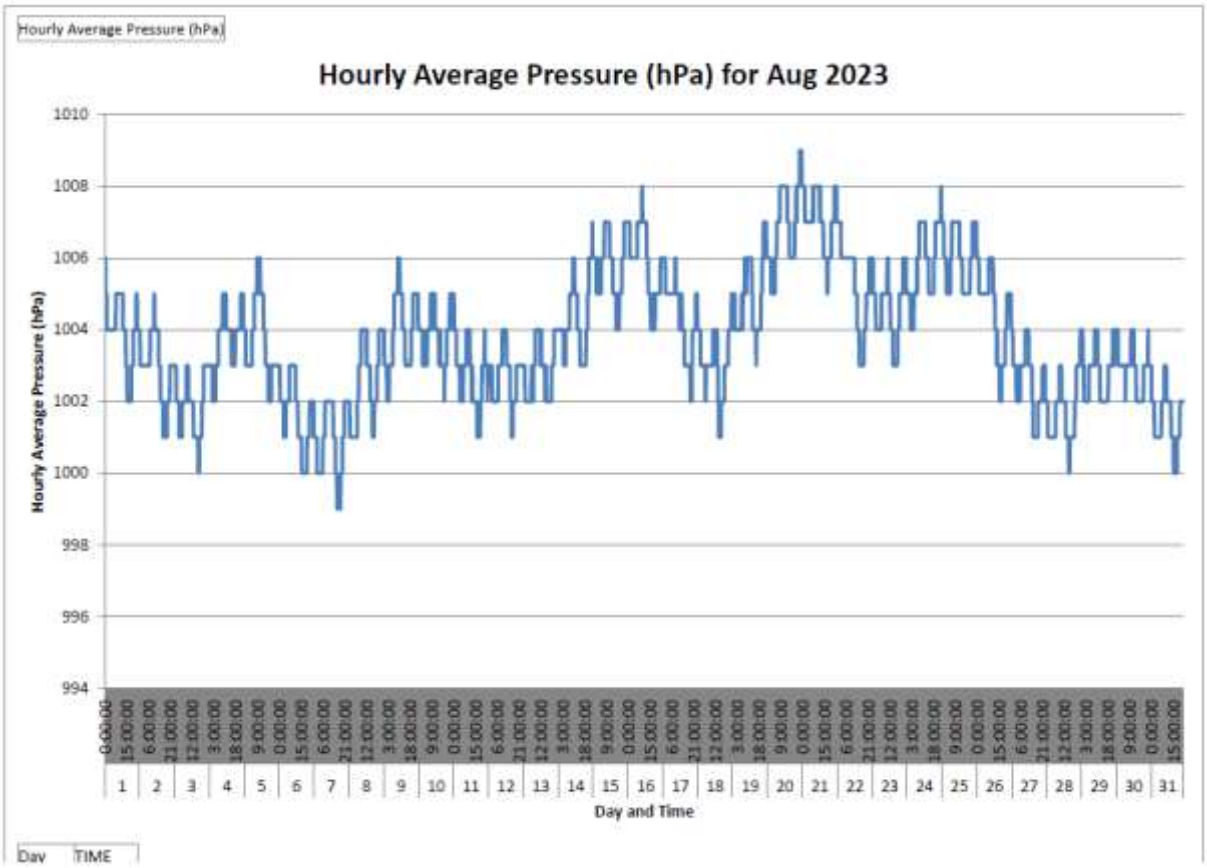

Wind Rose for July 2023
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
30.00%
25.00%
20.00%
15.00%
10.00%
5.00%
0.00%
<1.0
<2.0
<3.0
<4.0
<5.0
All

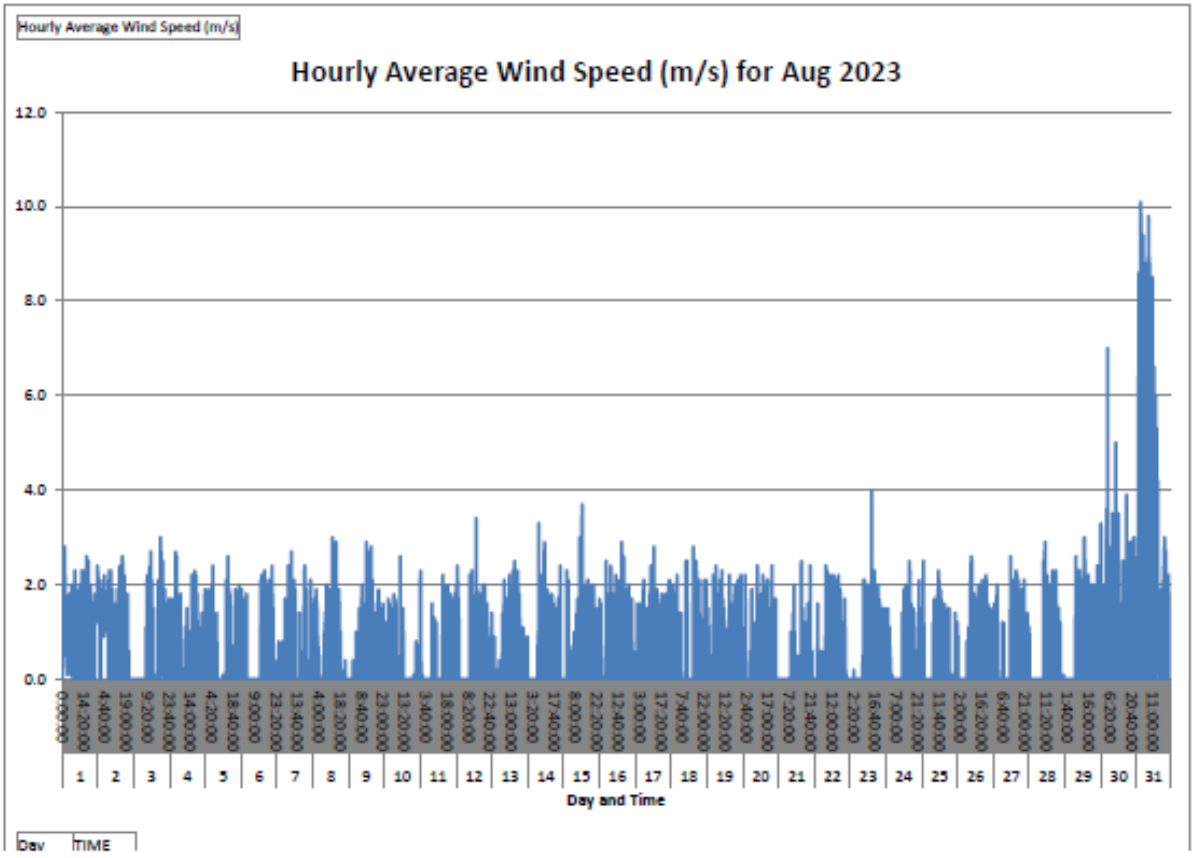

Daily and Cumulative Rainfall (mm) for July 2023
Rainfall (mm)
Day
Daily Rainfall (mm)
Cumulative Rainfall

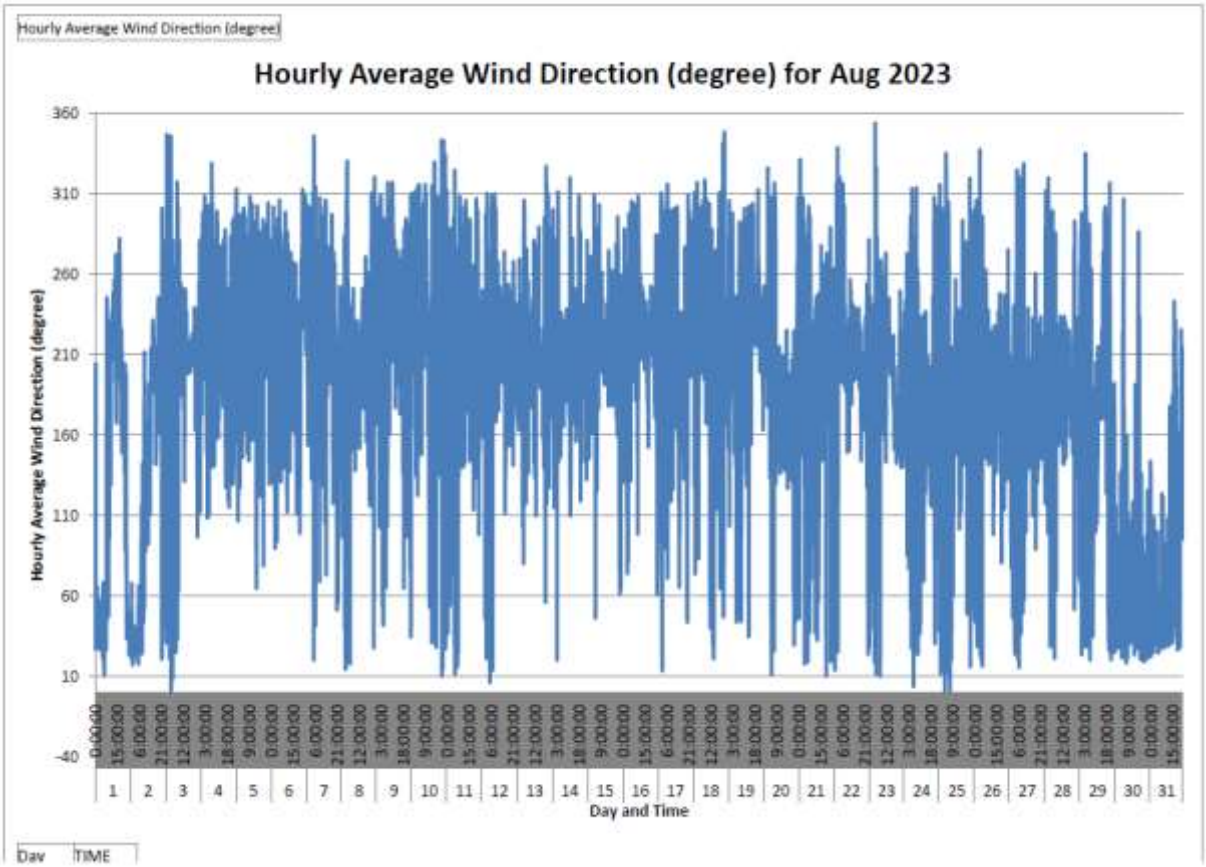
AUGUST 2023

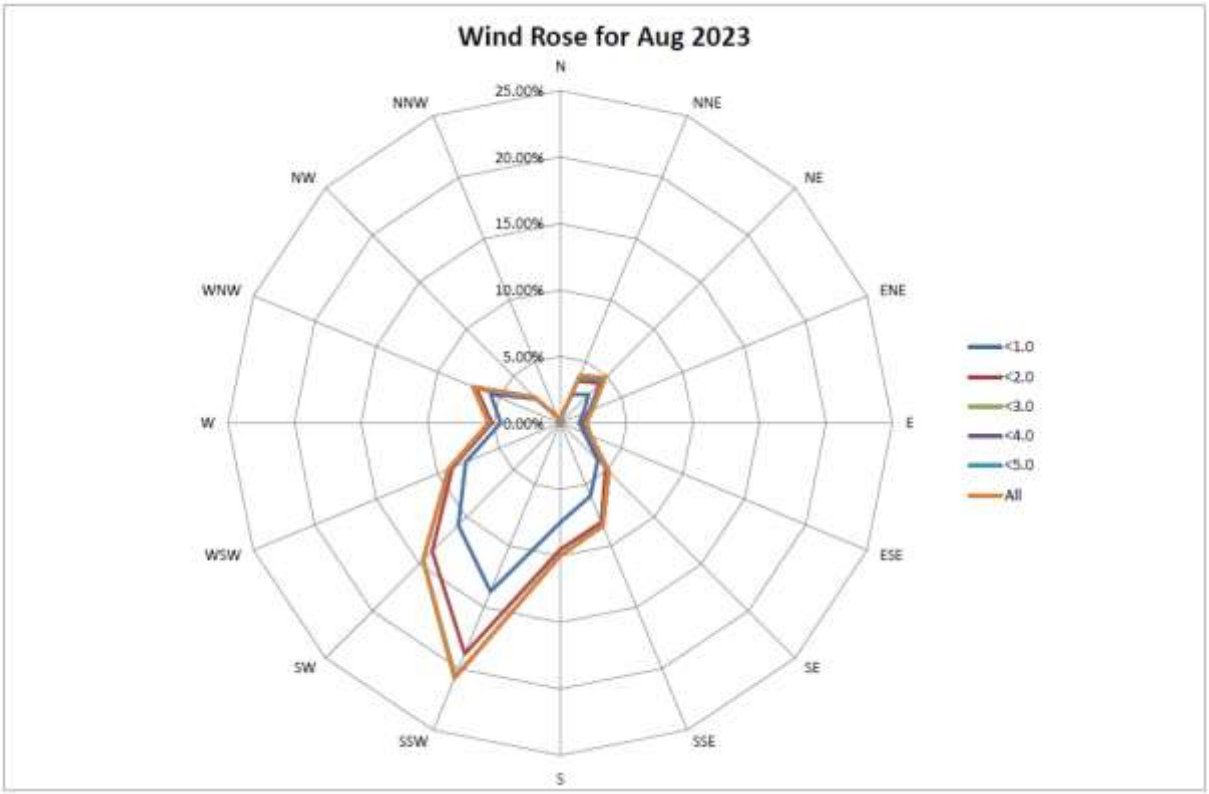

Hourly Average Temperature (°C)
Hourly Average Temperature (°C) for Aug 2023
Hourly Average Temperature (°C)
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Day and Time
Day
TIME

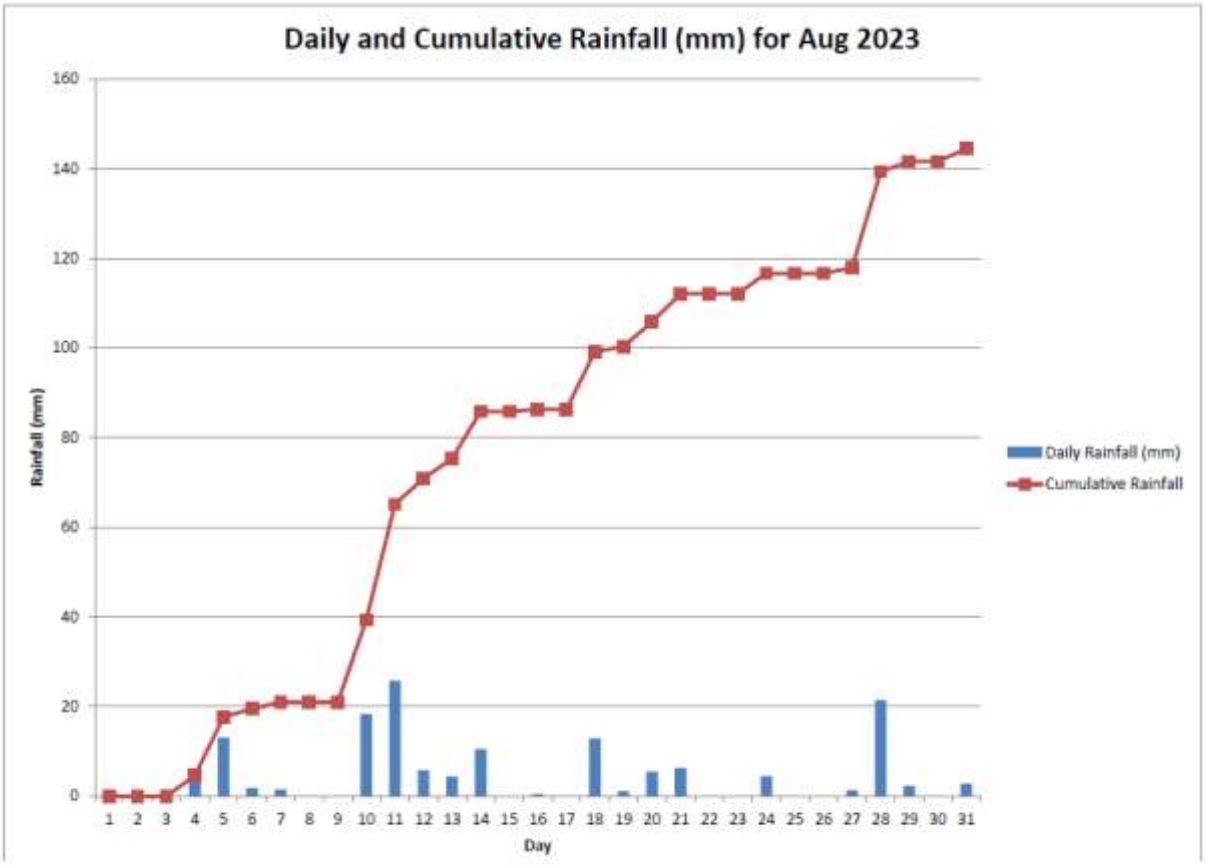

Hourly Average Humidity (%)
Hourly Average Humidity (%) for Aug 2023
Hourly Average Humidity (%)
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Day and Time
Day
TIME


Hourly Average Pressure (hPa)
Hourly Average Pressure (hPa) for Aug 2023
Hourly Average Pressure (hPa)
1010
1008
1006
1004
1002
1000
998
996
994
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Day and Time
Day TIME

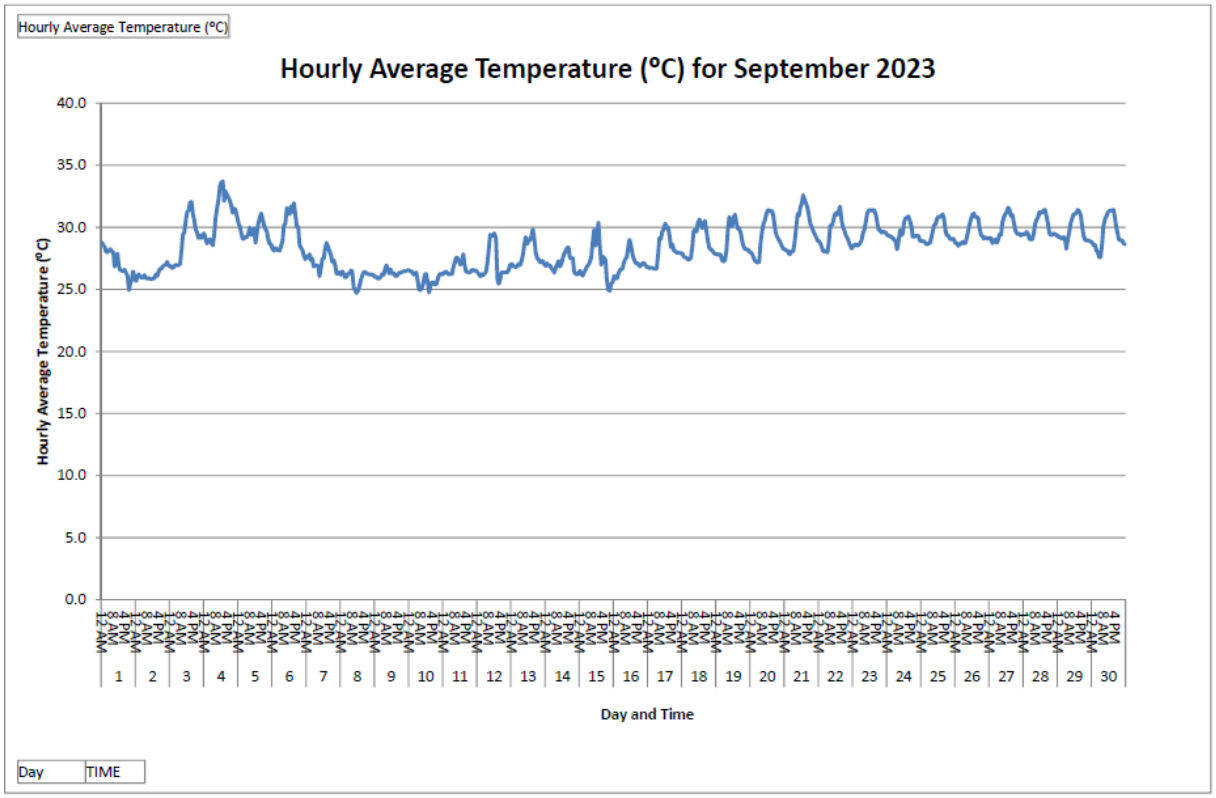

Hourly Average Wind Speed (m/s)
Hourly Average Wind Speed (m/s) for Aug 2023
12.0
10.0
8.0
6.0
4.0
2.0
0.0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Day and Time
Day TIME

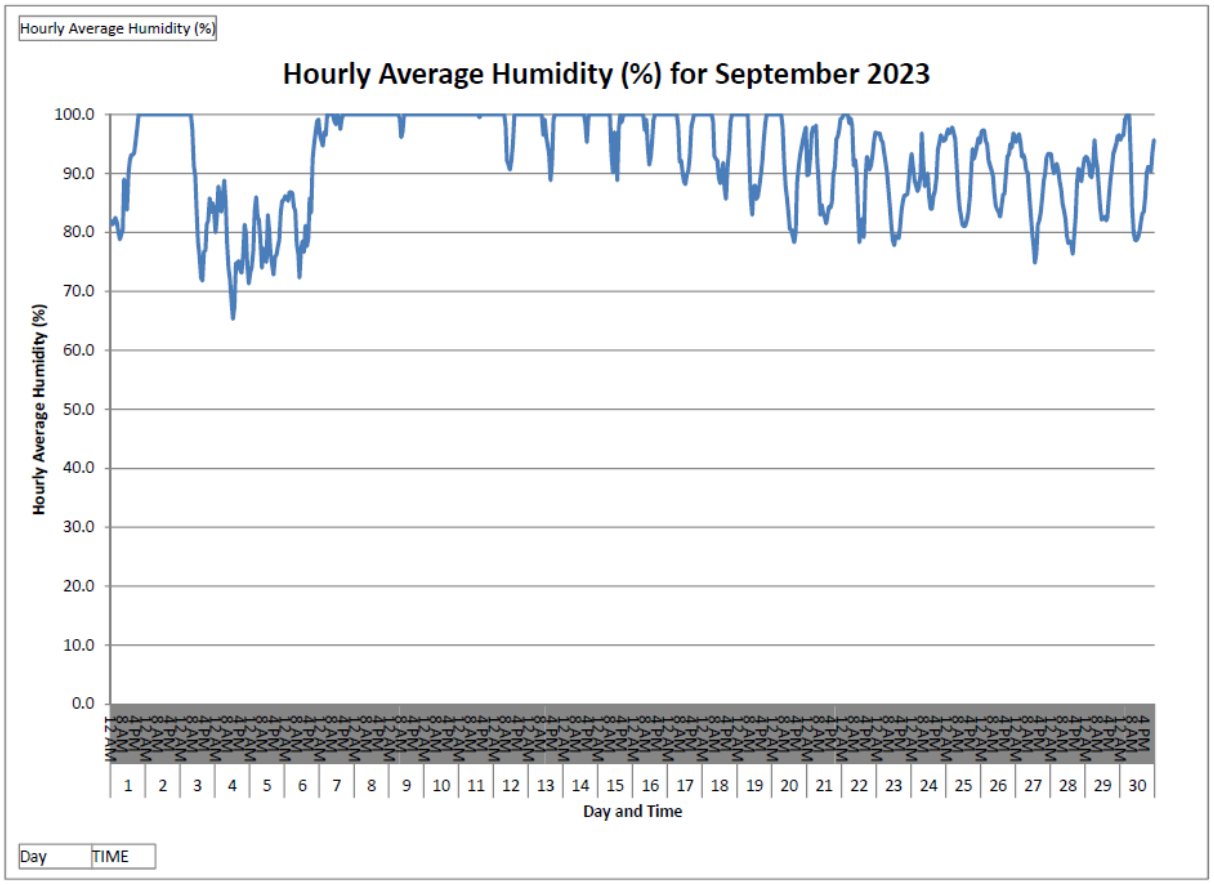

Hourly Average Wind Direction (degree)
Hourly Average Wind Direction (degree) for Aug 2023
Hourly Average Wind Direction (degree)
Day and Time
Day
TIME

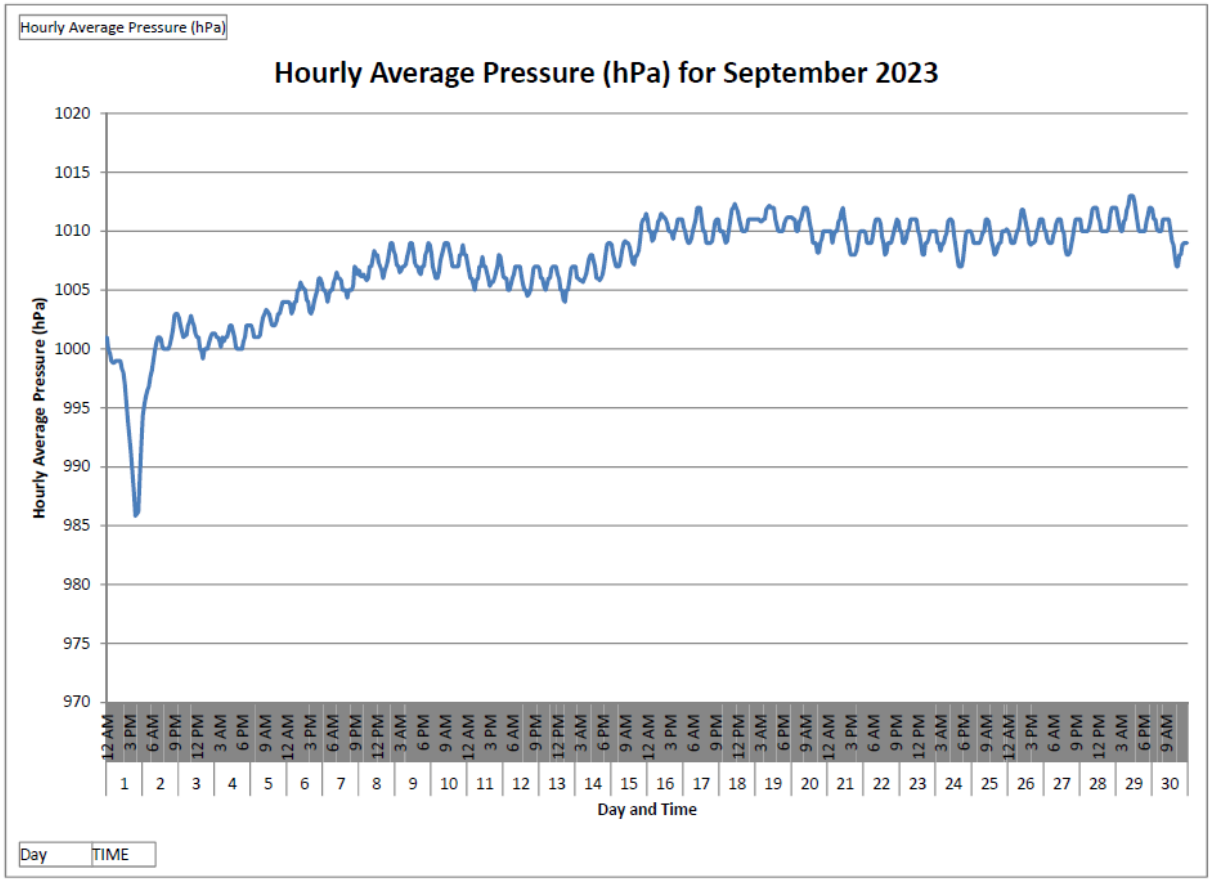

Wind Rose for Aug 2023
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
25.00%
20.00%
15.00%
10.00%
5.00%
0.00%
<1.0
<2.0
<3.0
<4.0
<5.0
All

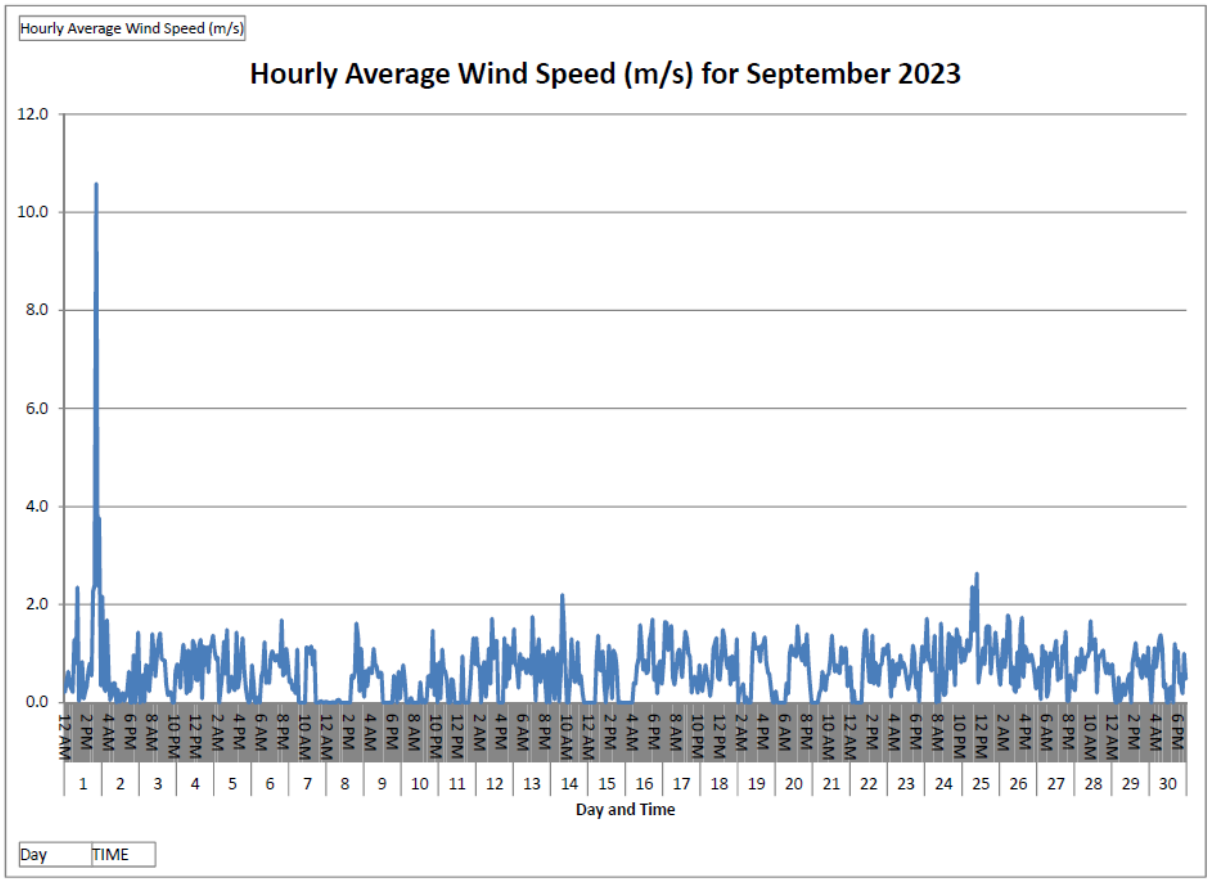

Daily and Cumulative Rainfall (mm) for Aug 2023
Rainfall (mm)
160
140
120
100
80
60
40
20
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Day
Daily Rainfall (mm)
Cumulative Rainfall

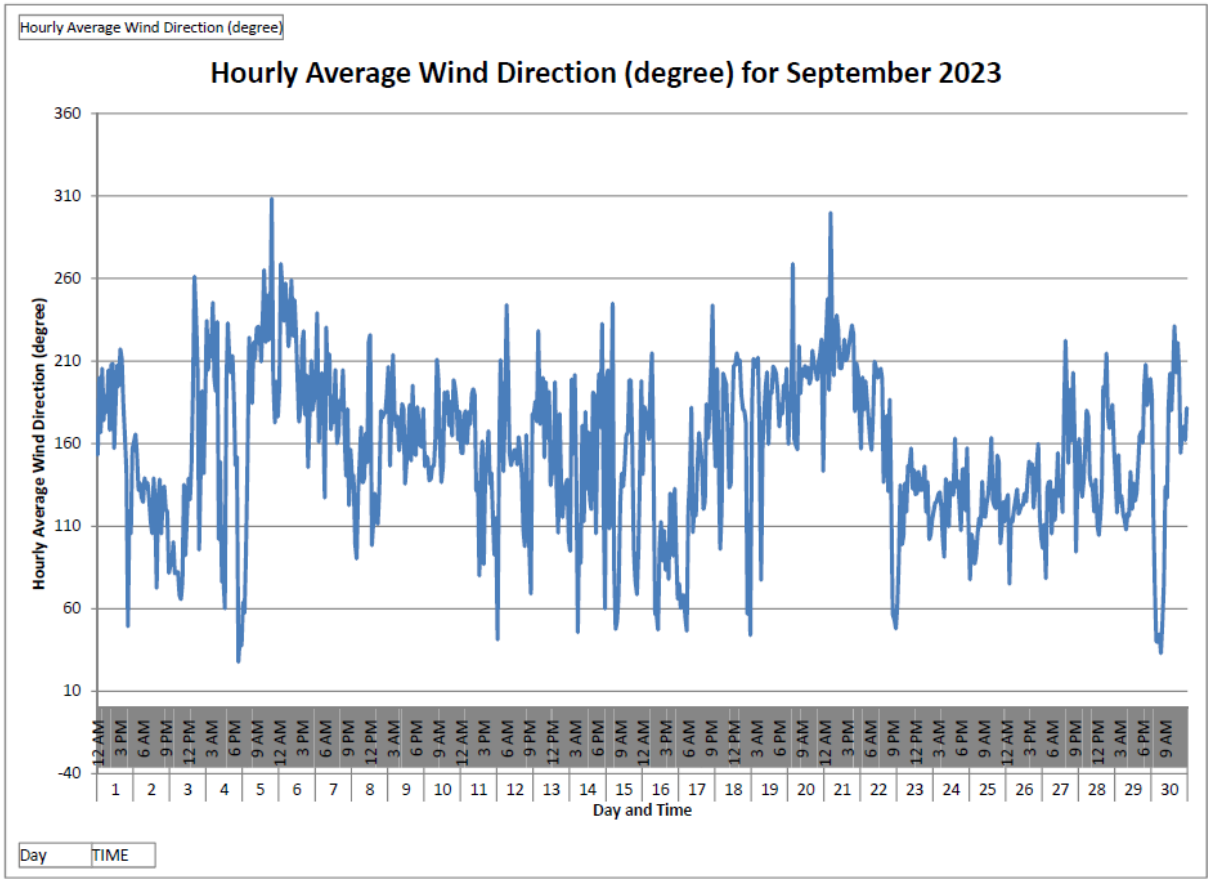
SEPTEMBER 2023

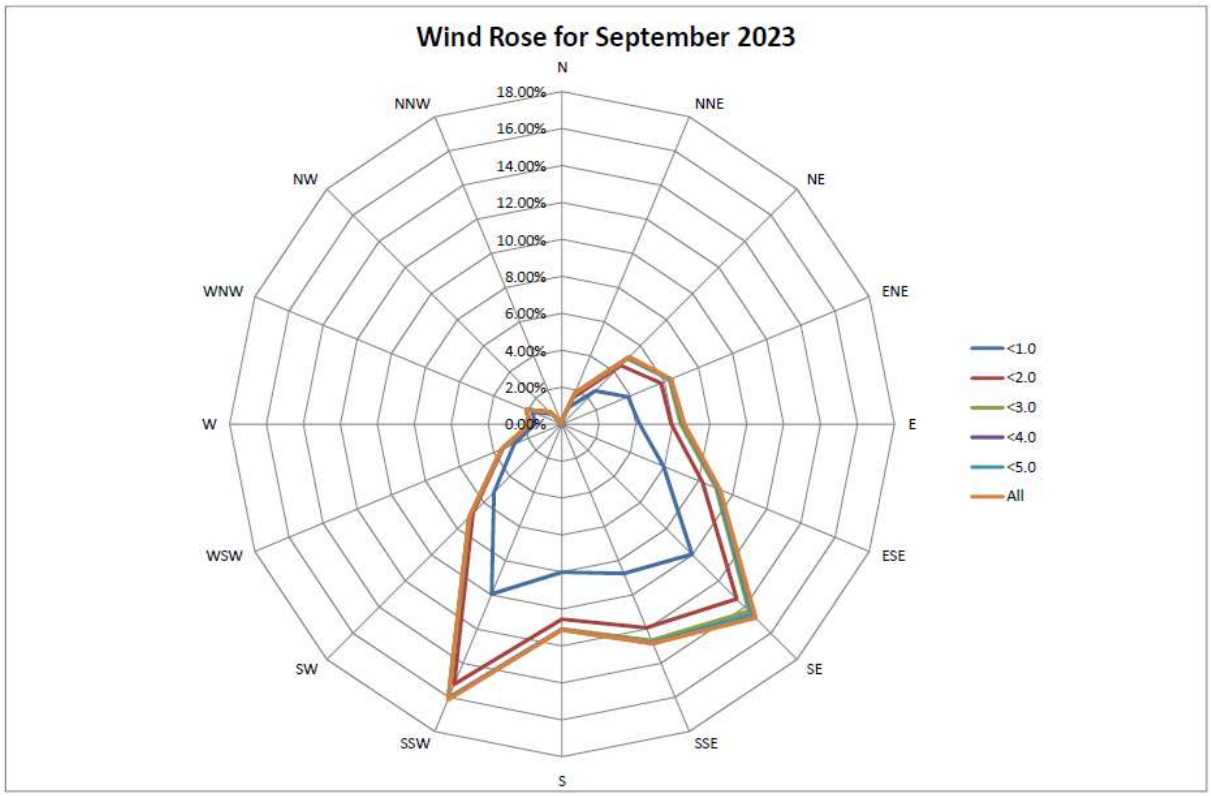


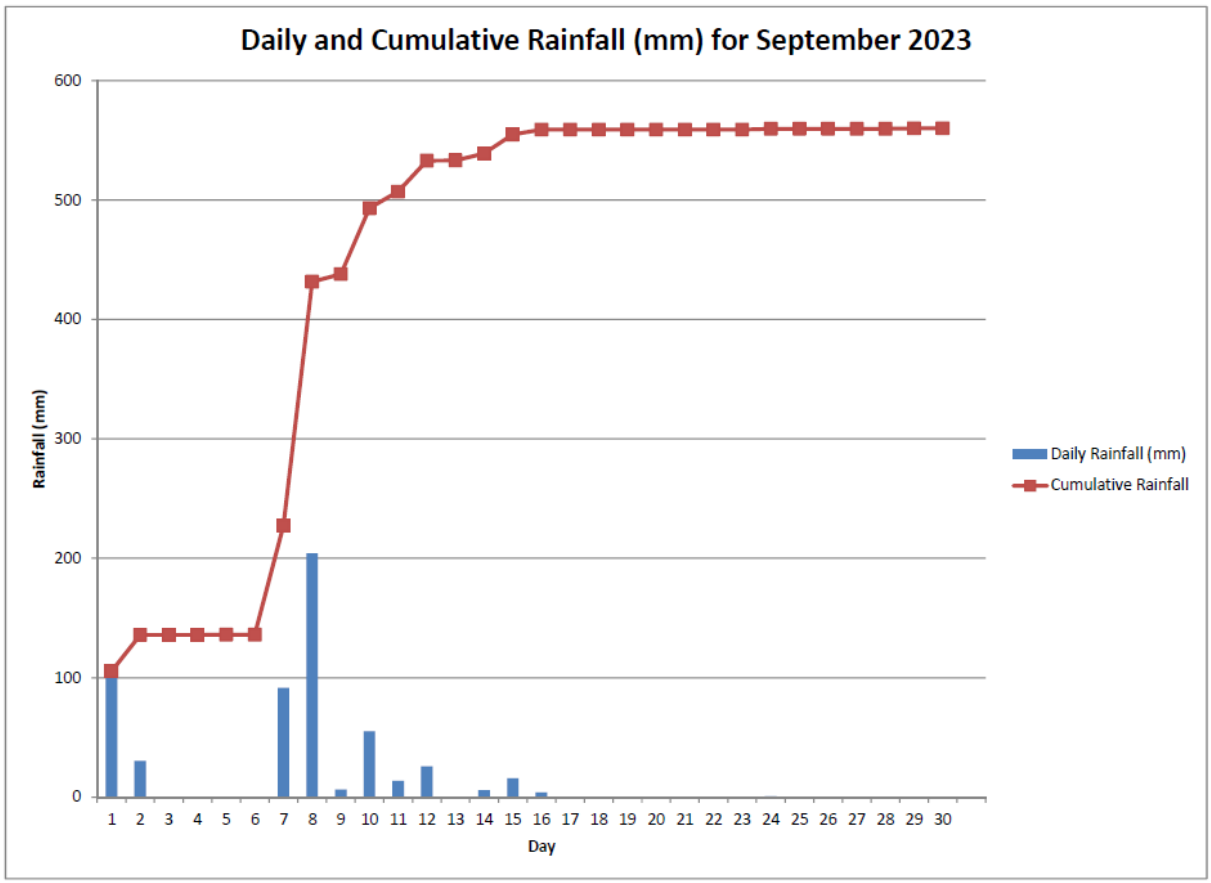



Hourly Average Pressure (hPa)
Hourly Average Pressure (hPa) for September 2023
Hourly Average Pressure (hPa)
Day and Time
Day
TIME

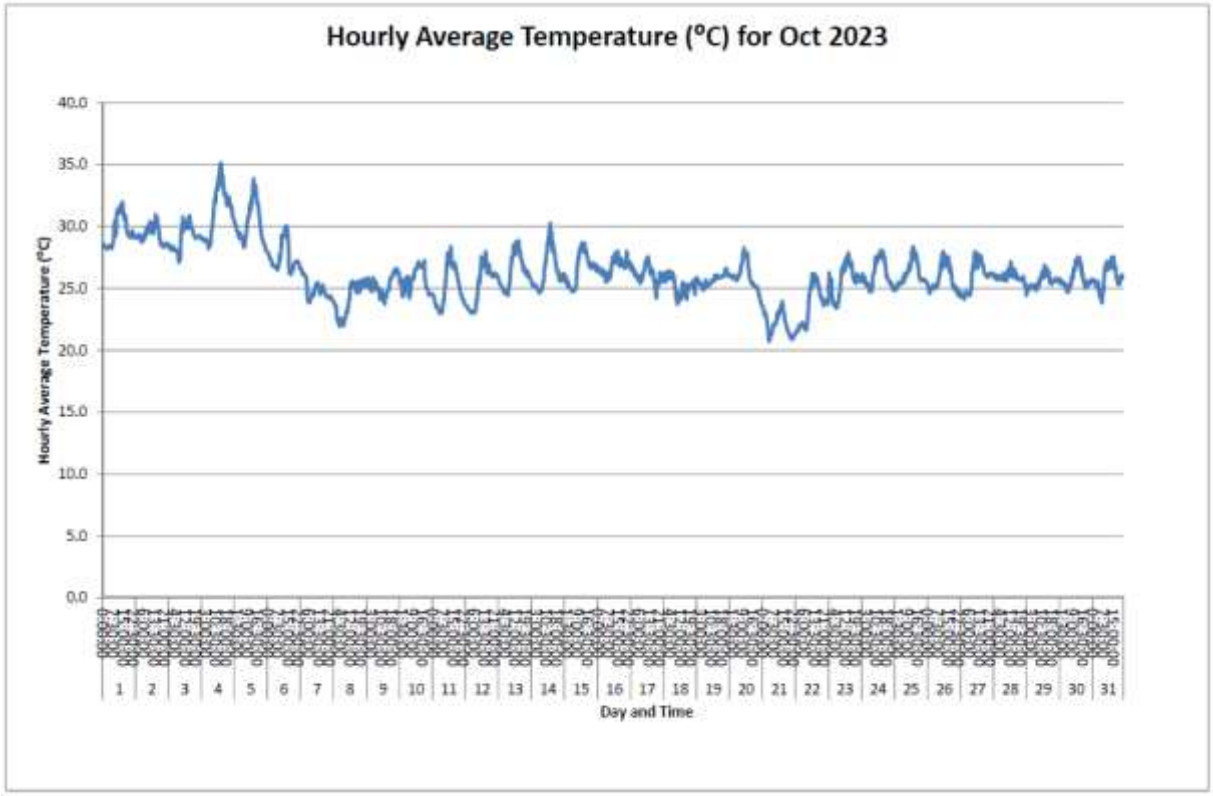

Hourly Average Wind Speed (m/s)
Hourly Average Wind Speed (m/s) for September 2023
Day and Time
Day
TIME

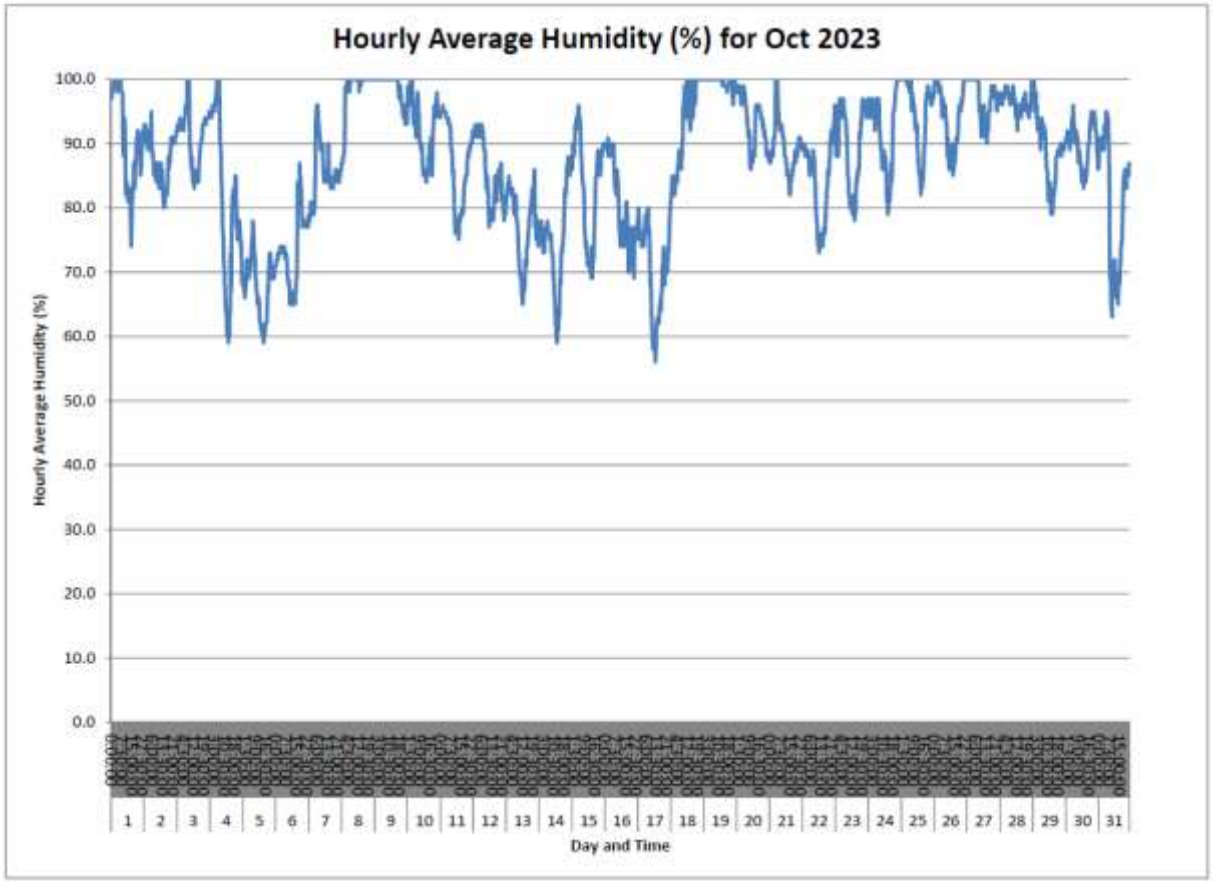

Hourly Average Wind Direction (degree)
Hourly Average Wind Direction (degree) for September 2023
Hourly Average Wind Direction (degree)
Day and Time
Day
TIME

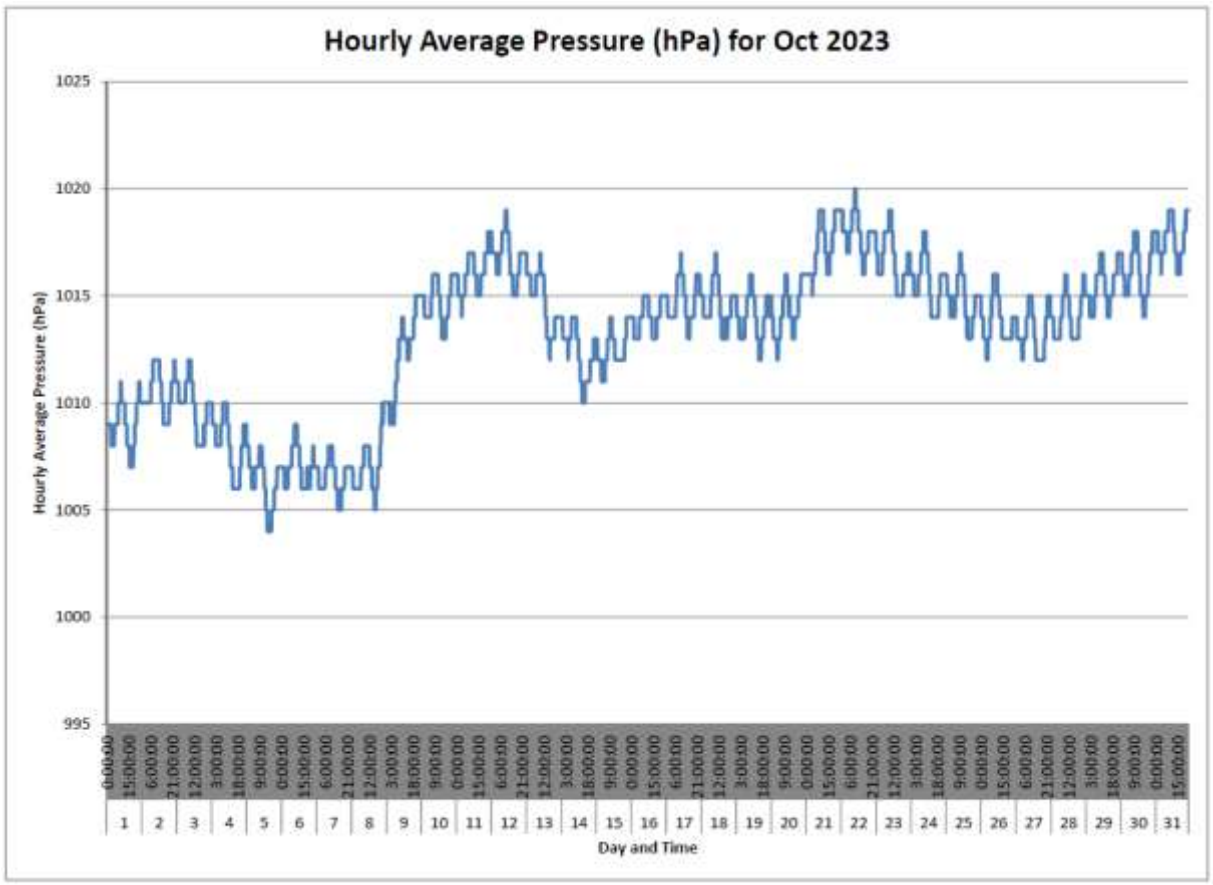

Wind Rose for September 2023
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
18.00%
16.00%
14.00%
12.00%
10.00%
8.00%
6.00%
4.00%
2.00%
0.00%
<1.0
<2.0
<3.0
<4.0
<5.0
All

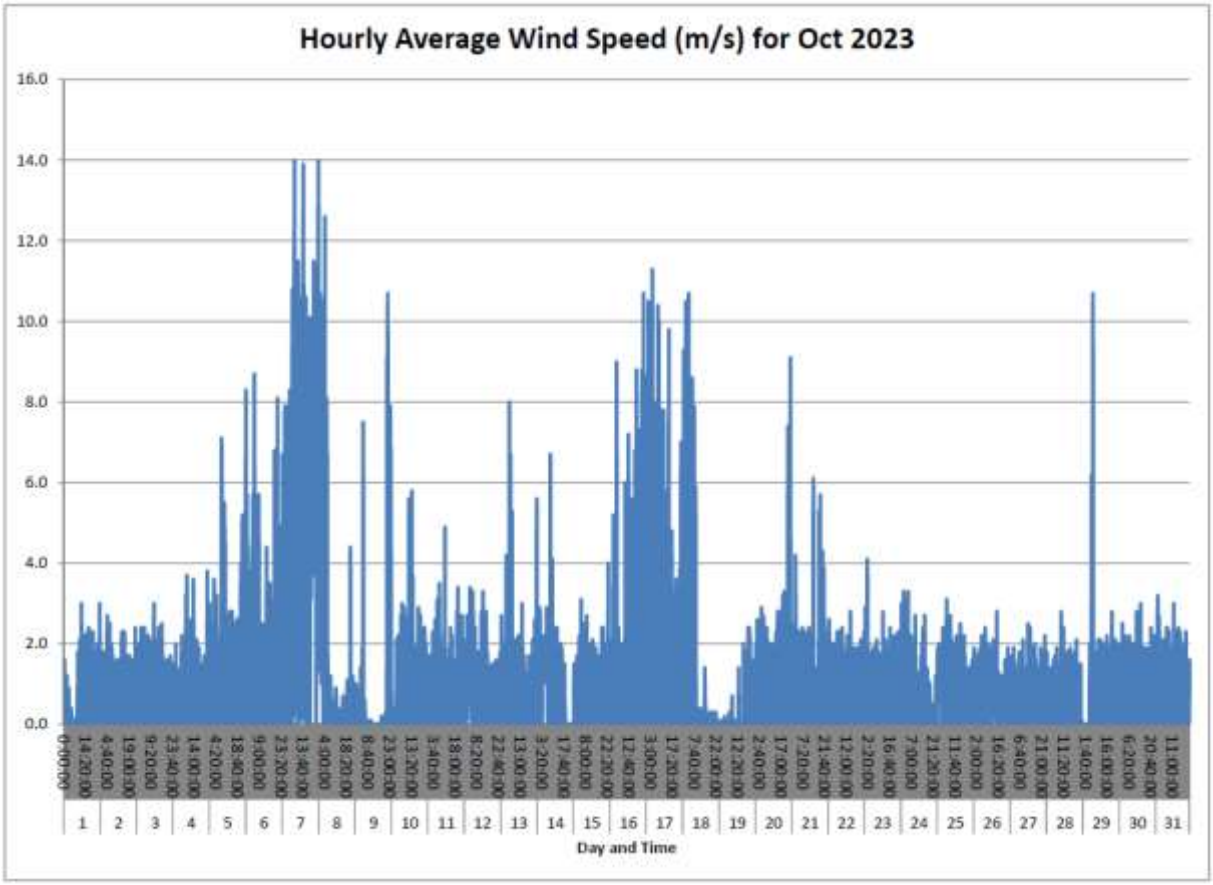

Daily and Cumulative Rainfall (mm) for September 2023
Rainfall (mm)
600
500
400
300
200
100
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
Day
Daily Rainfall (mm)
Cumulative Rainfall

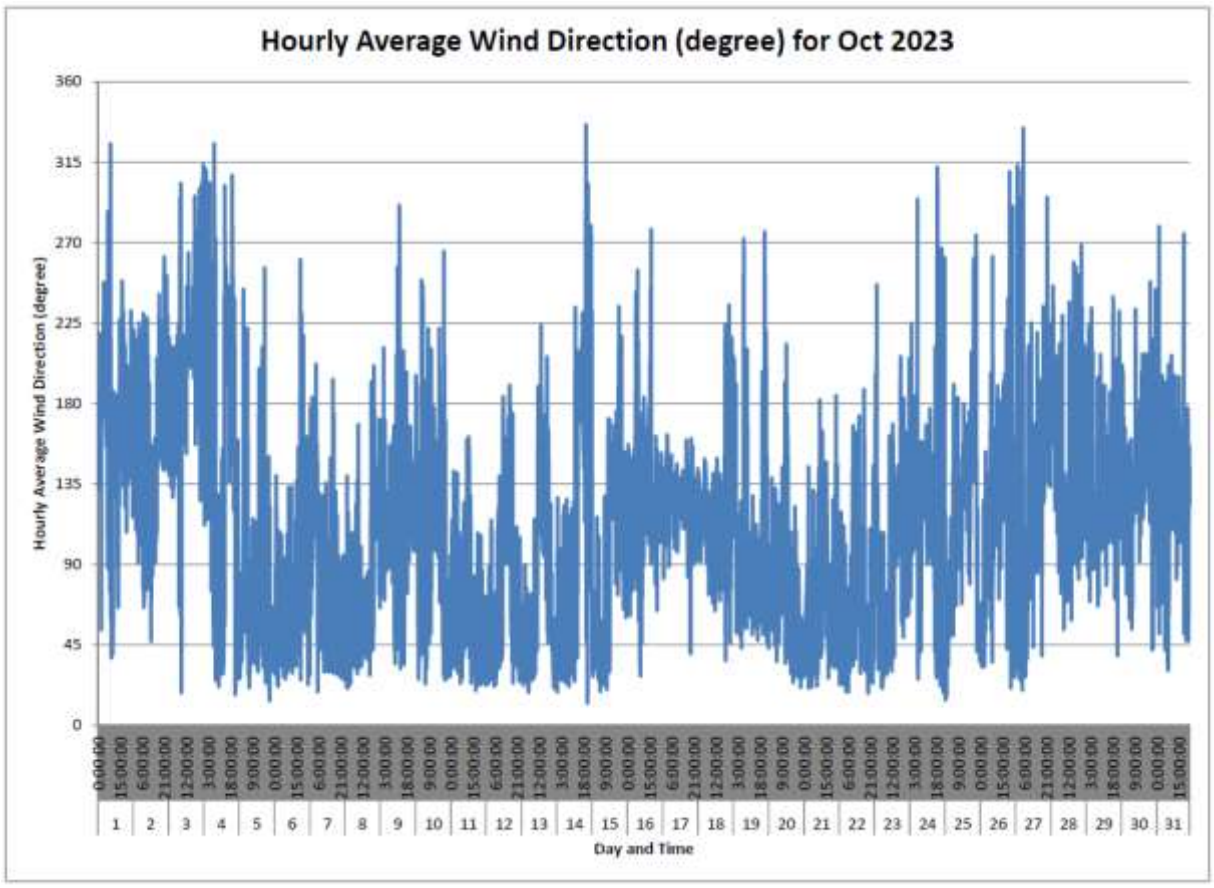
OCTOBER 2023

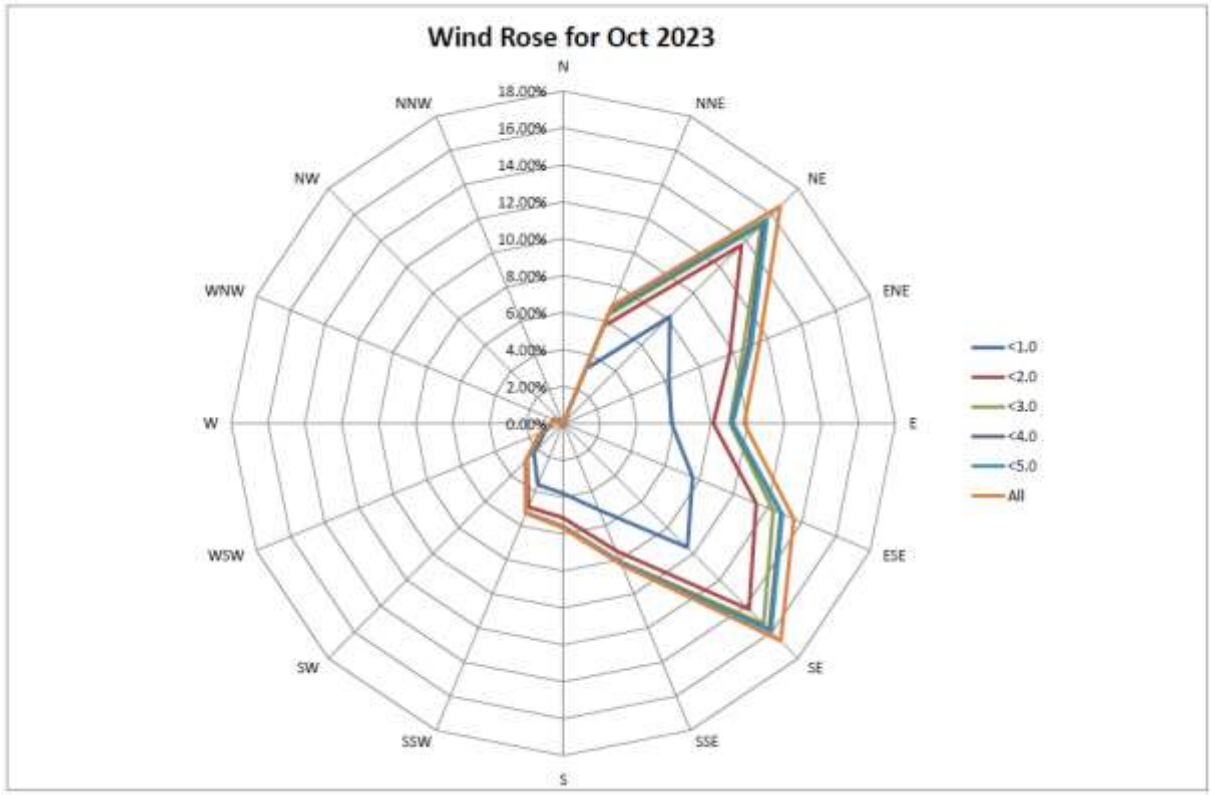


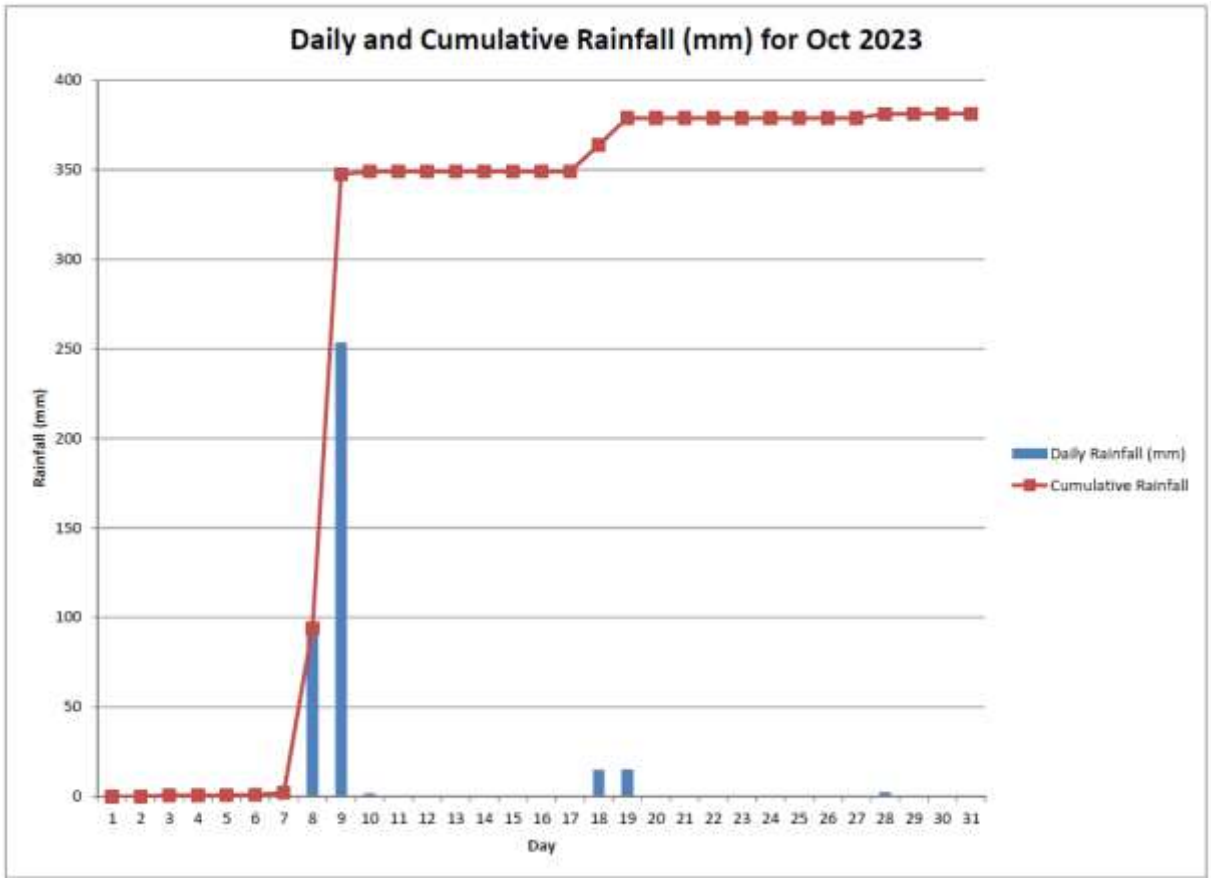



Hourly Average Pressure (hPa) for Oct 2023
Hourly Average Pressure (hPa)
1025
1020
1015
1010
1005
1000
995
Day and Time
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

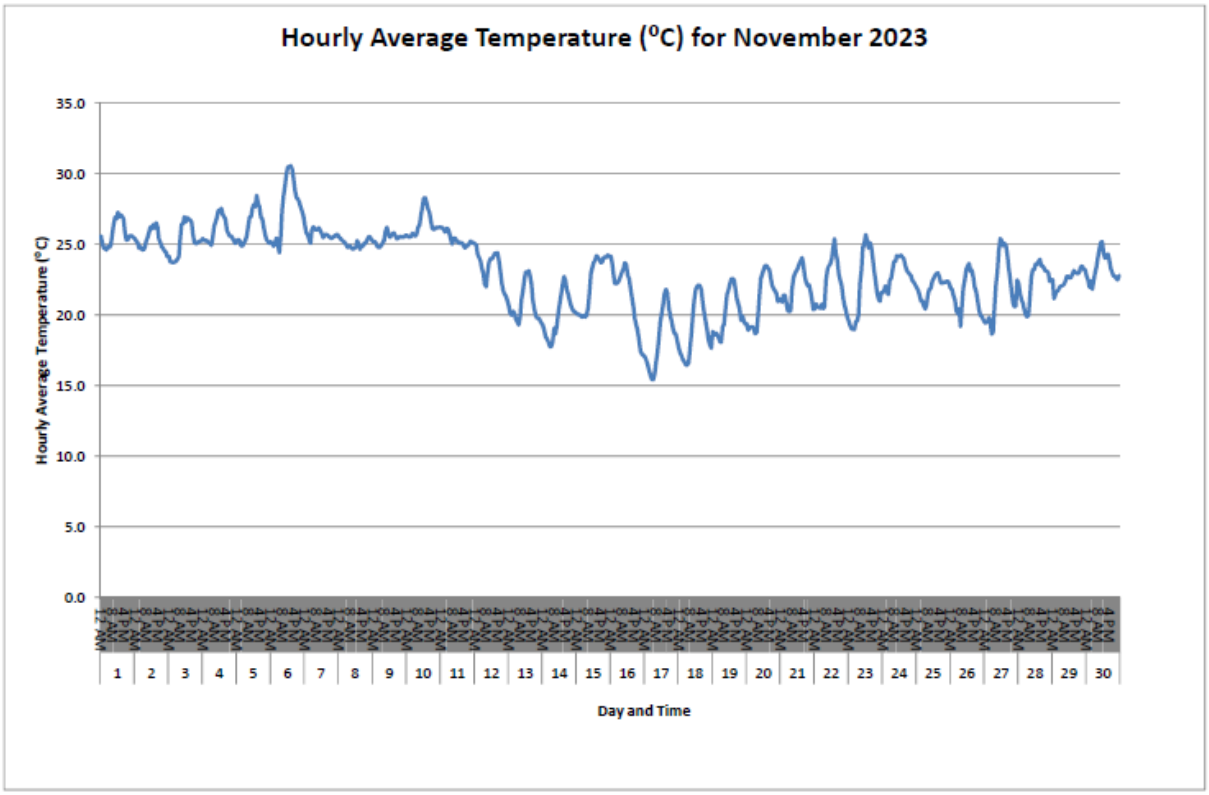

Hourly Average Wind Speed (m/s) for Oct 2023
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
Day and Time
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

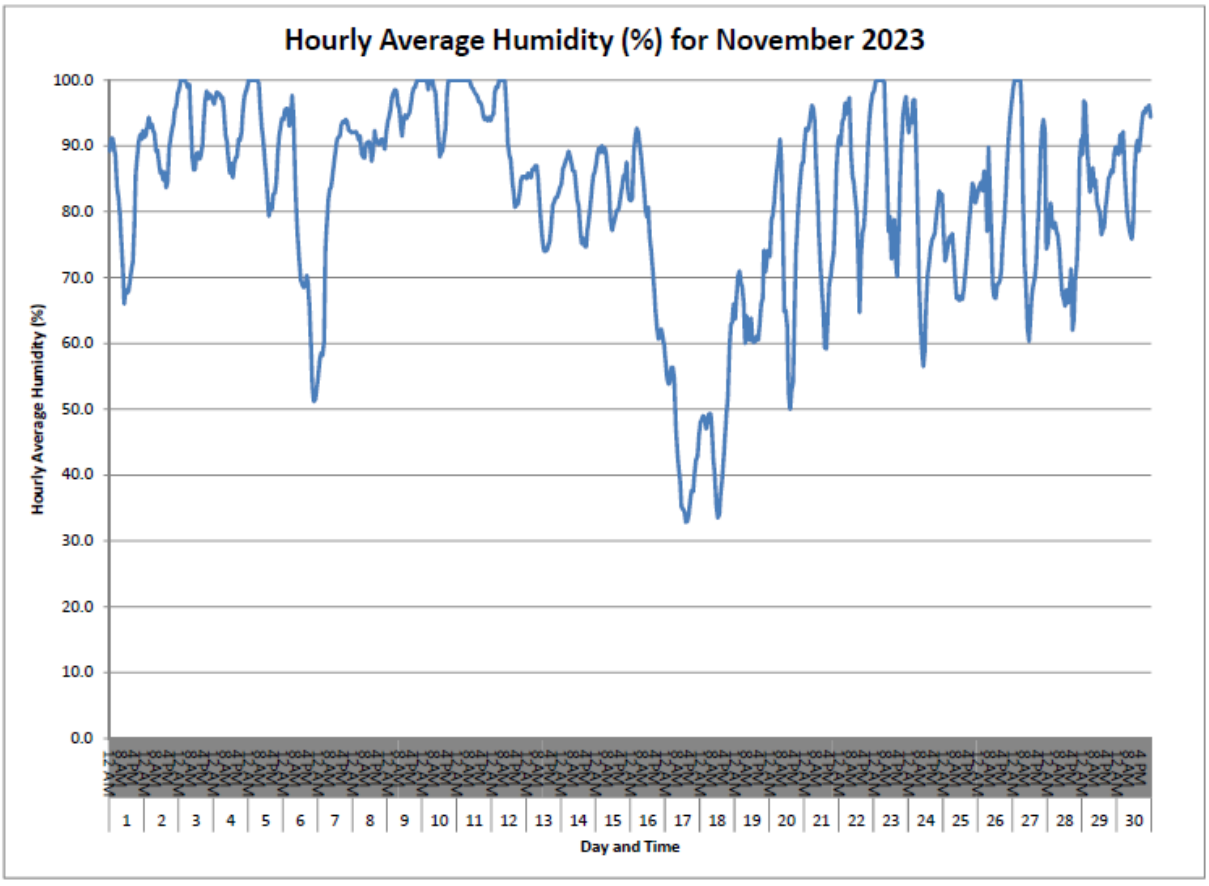

Hourly Average Wind Direction (degree) for Oct 2023
Hourly Average Wind Direction (degree)
360
315
270
225
180
135
90
45
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Day and Time

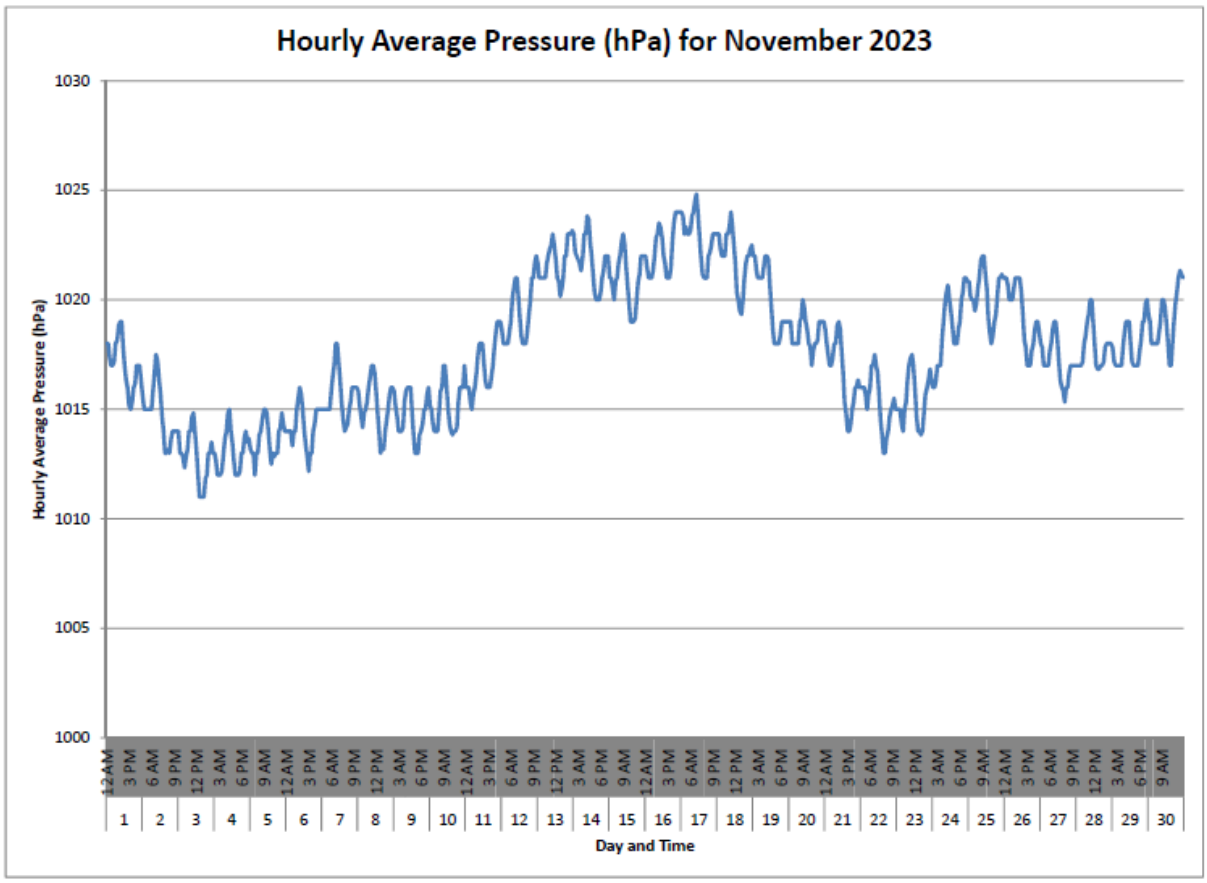

Wind Rose for Oct 2023
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
18.00%
16.00%
14.00%
12.00%
10.00%
8.00%
6.00%
4.00%
2.00%
0.00%
<1.0
<2.0
<3.0
<4.0
<5.0
All

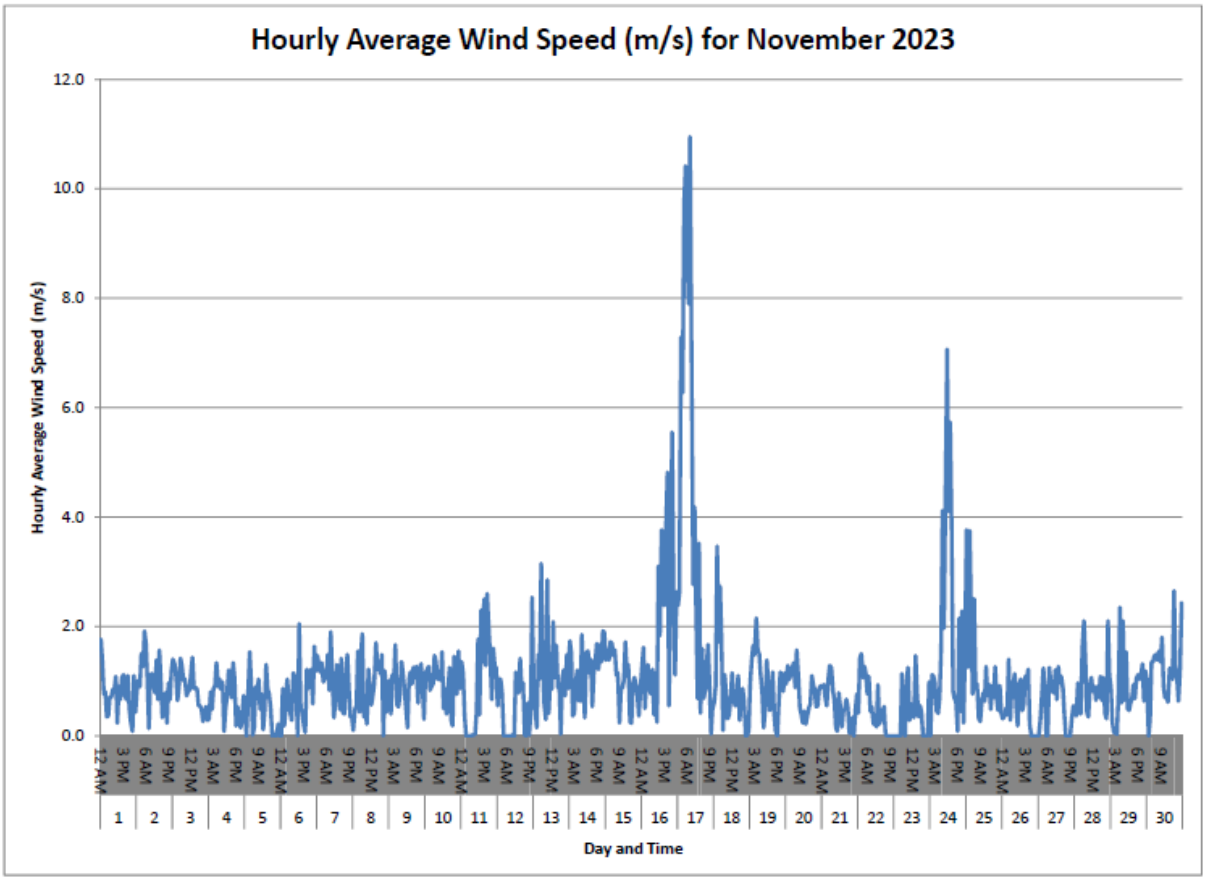

Daily and Cumulative Rainfall (mm) for Oct 2023
Rainfall (mm)
400
350
300
250
200
150
100
50
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Day
Daily Rainfall (mm)
Cumulative Rainfall

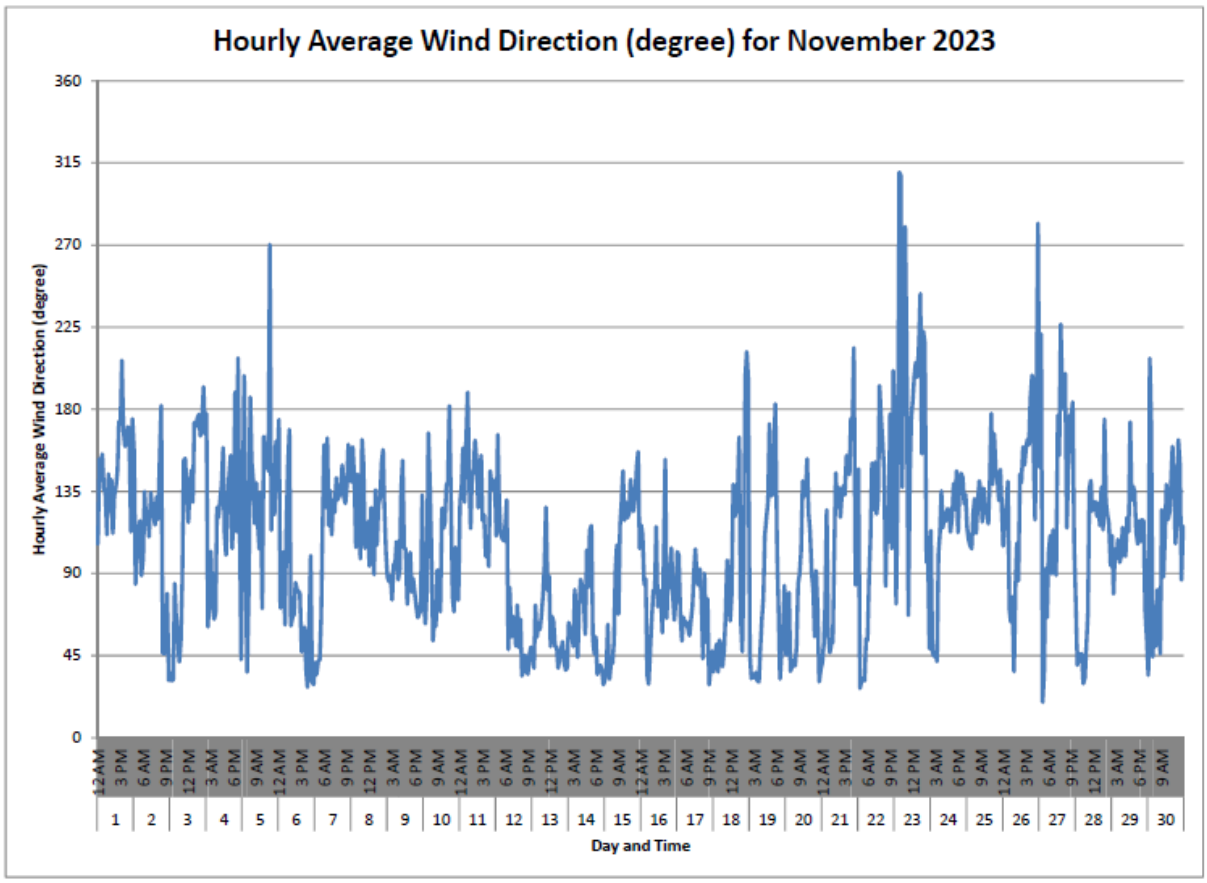
NOVEMBER 2023

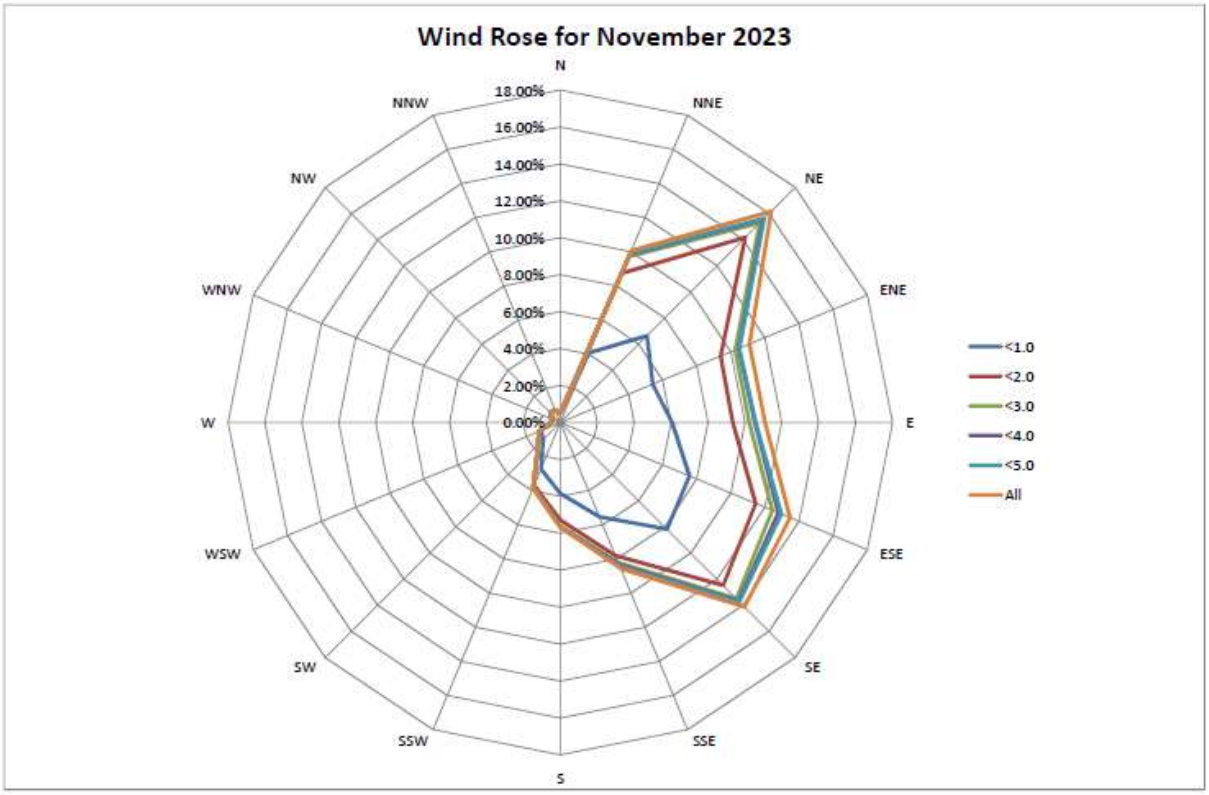


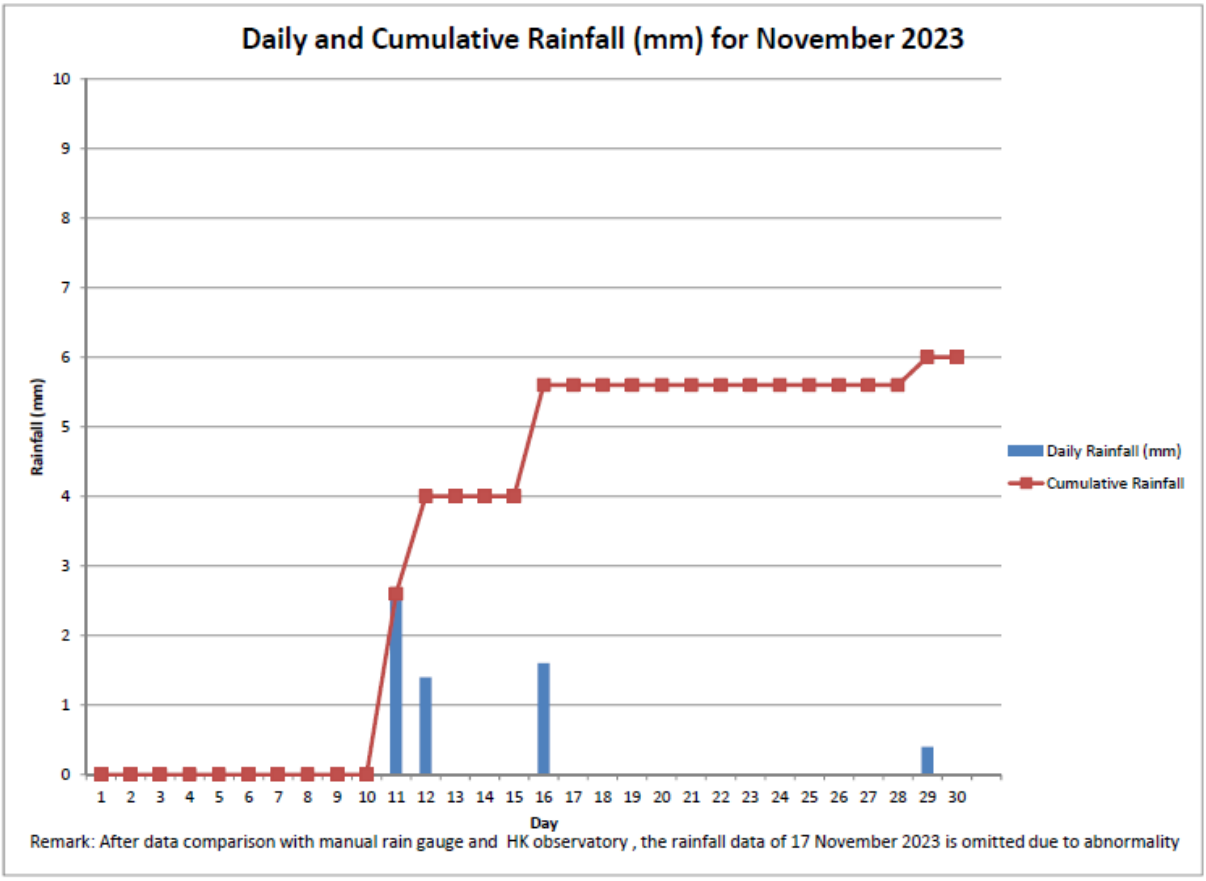



Hourly Average Pressure (hPa) for November 2023
Hourly Average Pressure (hPa)
1030
1025
1020
1015
1010
1005
1000
Day and Time

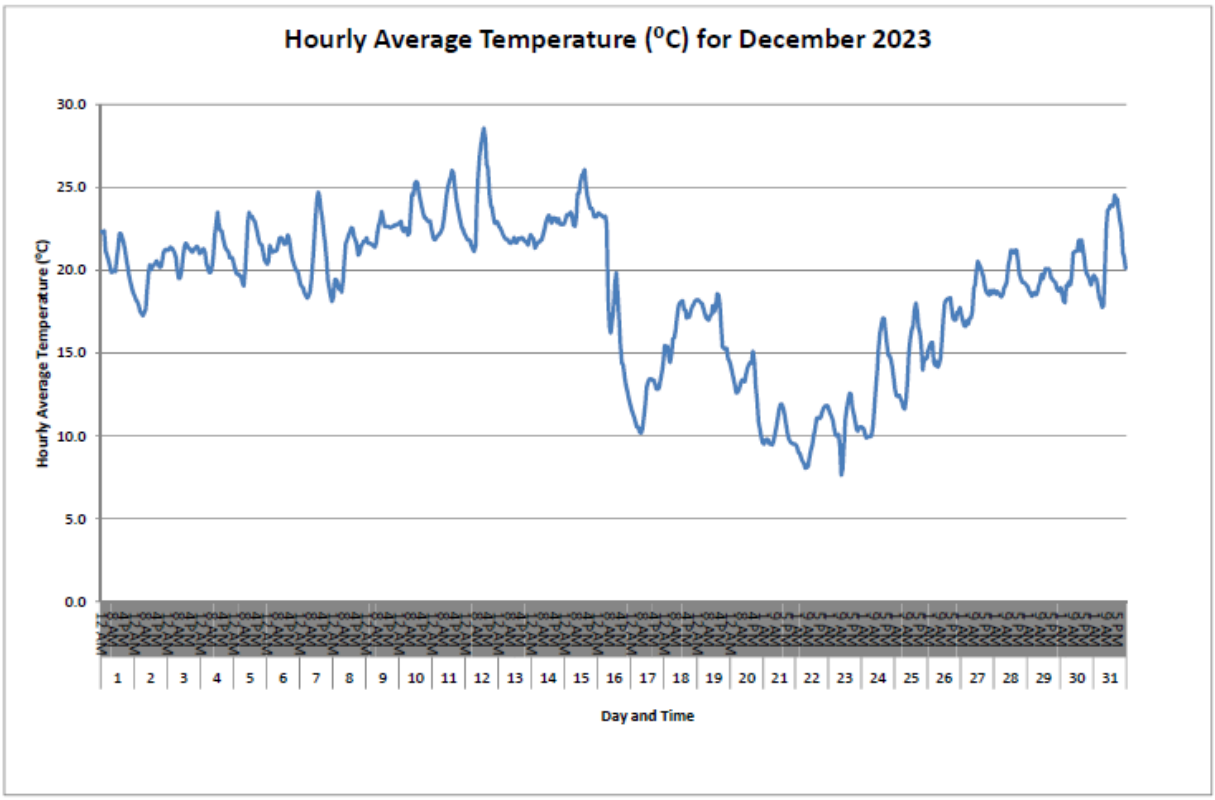

Hourly Average Wind Speed (m/s) for November 2023
Hourly Average Wind Speed (m/s)
12.0
10.0
8.0
6.0
4.0
2.0
0.0
Day and Time

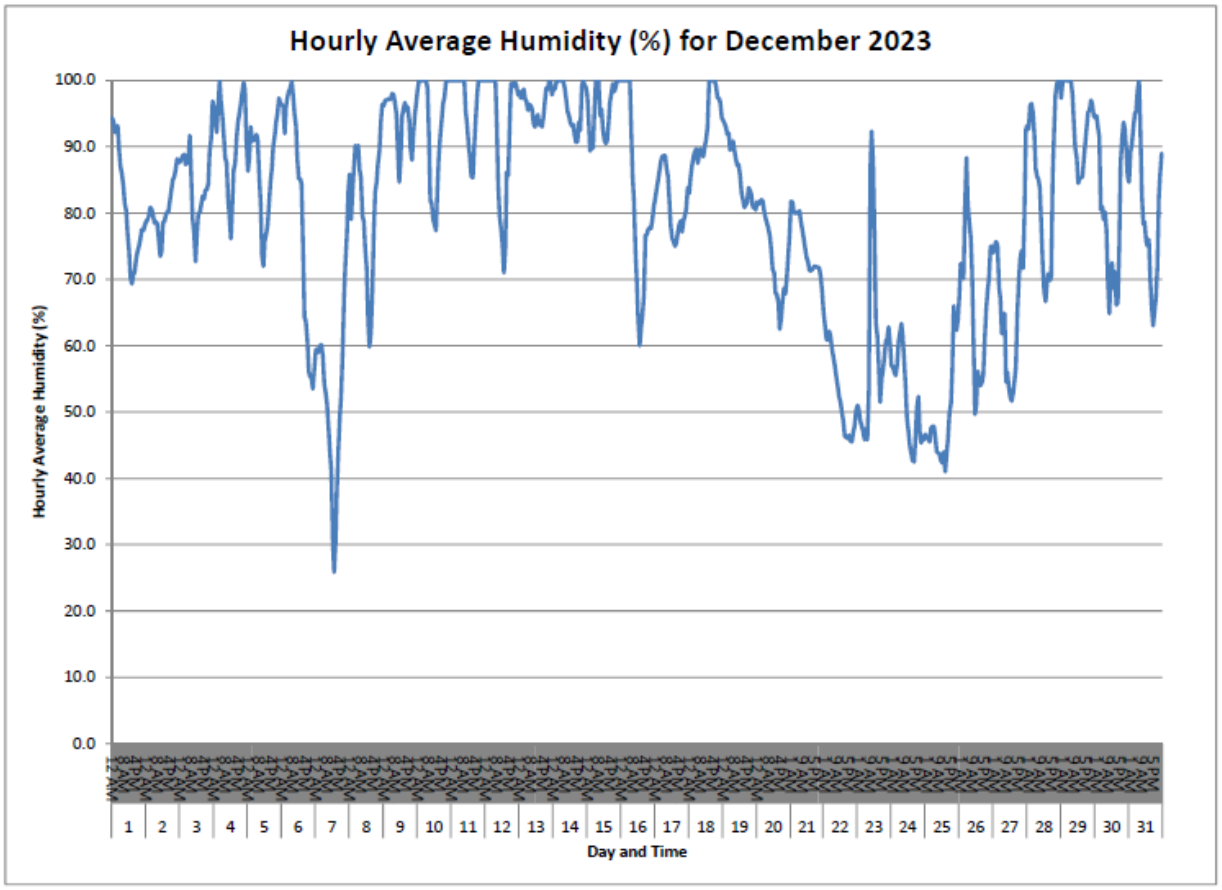

Hourly Average Wind Direction (degree) for November 2023
Hourly Average Wind Direction (degree)
360
315
270
225
180
135
90
45
0
12 AM 3 PM 6 AM 9 PM 12 PM 3 AM 6 PM 9 AM 12 AM 3 PM 6 AM 9 PM 12 PM 3 AM 6 PM 9 AM 12 AM 3 PM 6 AM 9 PM 12 PM 3 AM 6 PM 9 AM 12 AM 3 PM 6 AM 9 PM 12 PM 3 AM 6 PM 9 AM 12 AM 3 PM 6 AM 9 PM 12 PM 3 AM 6 PM 9 AM 12 AM 3 PM 6 AM 9 PM 12 PM 3 AM 6 PM 9 AM 12 AM 3 PM 6 AM 9 PM 12 PM 3 AM 6 PM 9 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
Day and Time

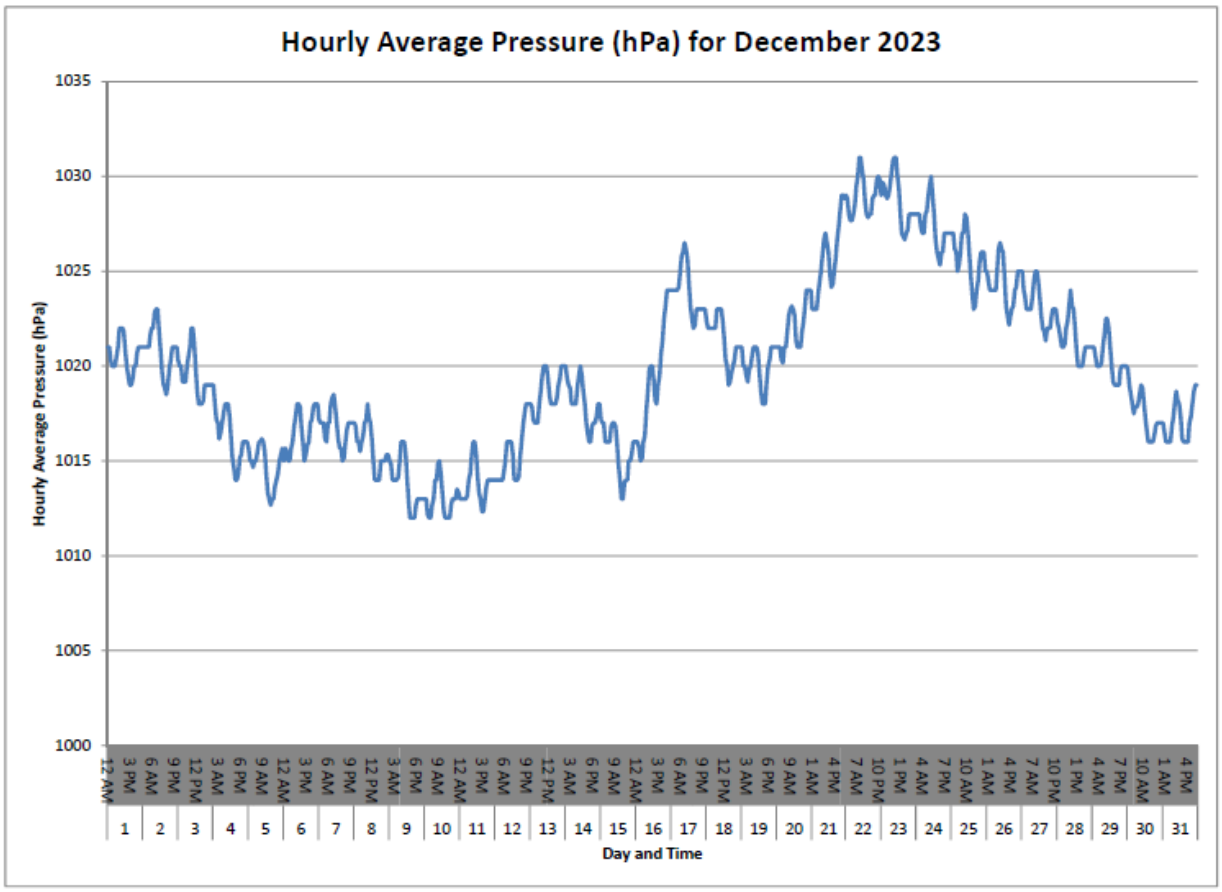

Wind Rose for November 2023
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
18.00%
16.00%
14.00%
12.00%
10.00%
8.00%
6.00%
4.00%
2.00%
0.00%
<1.0
<2.0
<3.0
<4.0
<5.0
All

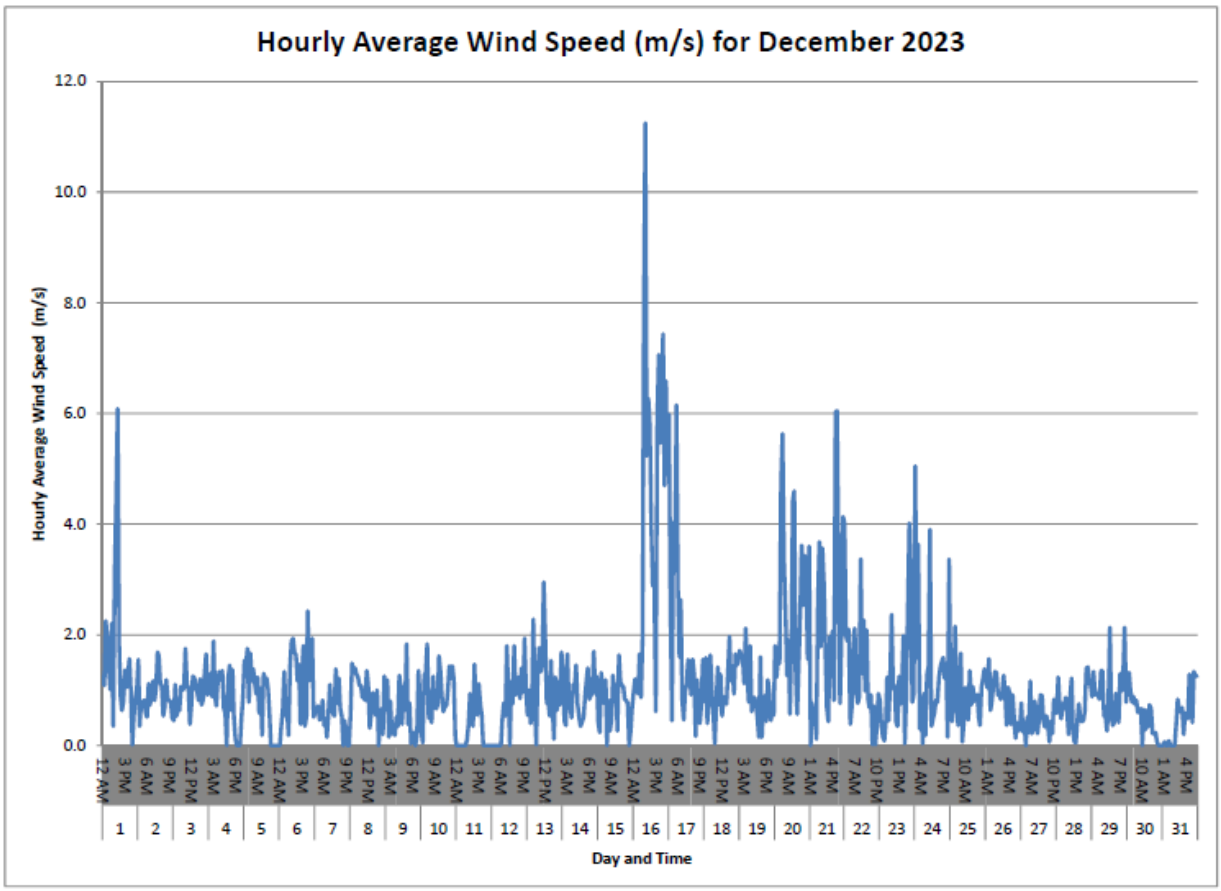

Daily and Cumulative Rainfall (mm) for November 2023
Rainfall (mm)
Day
Daily Rainfall (mm)
Cumulative Rainfall
Remark: After data comparison with manual rain gauge and HK observatory , the rainfall data of 17 November 2023 is omitted due to abnormality

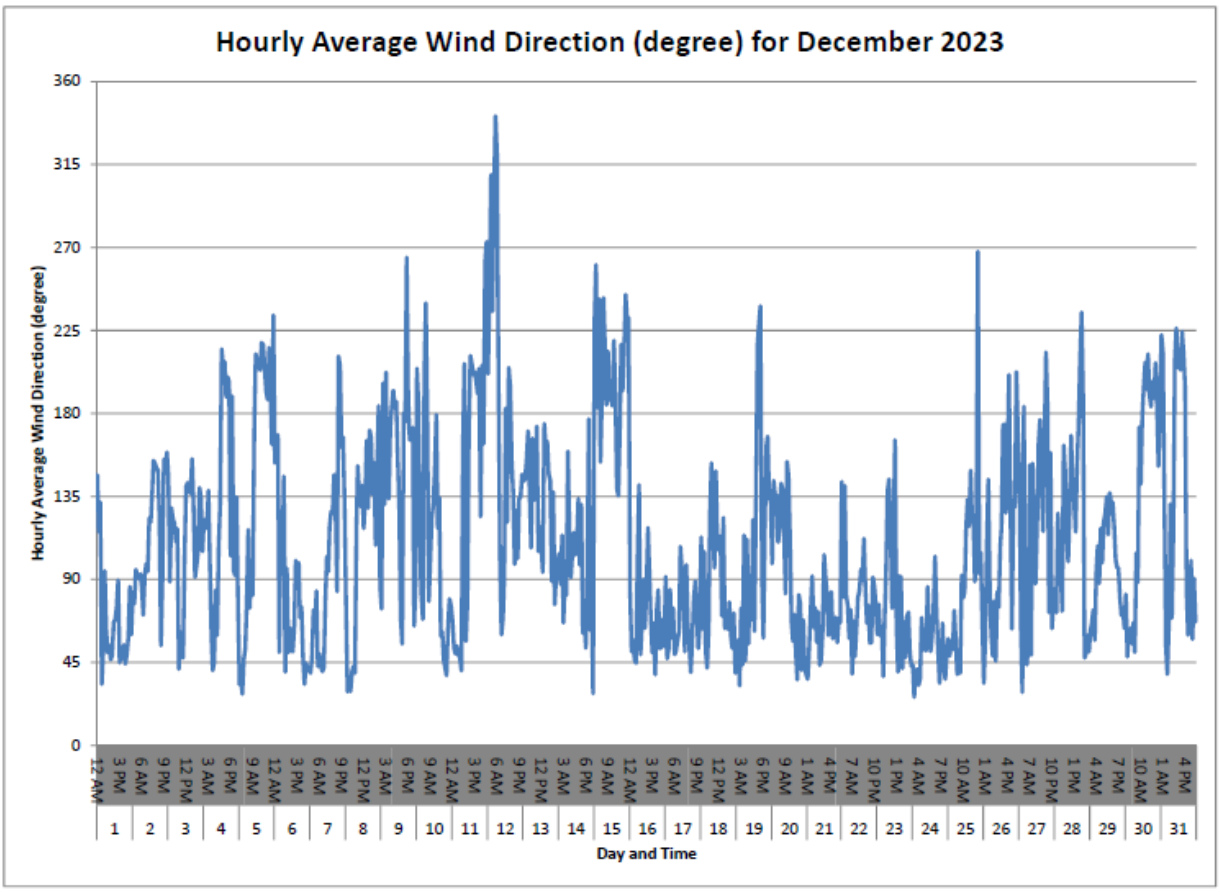
DECEMBER 2023

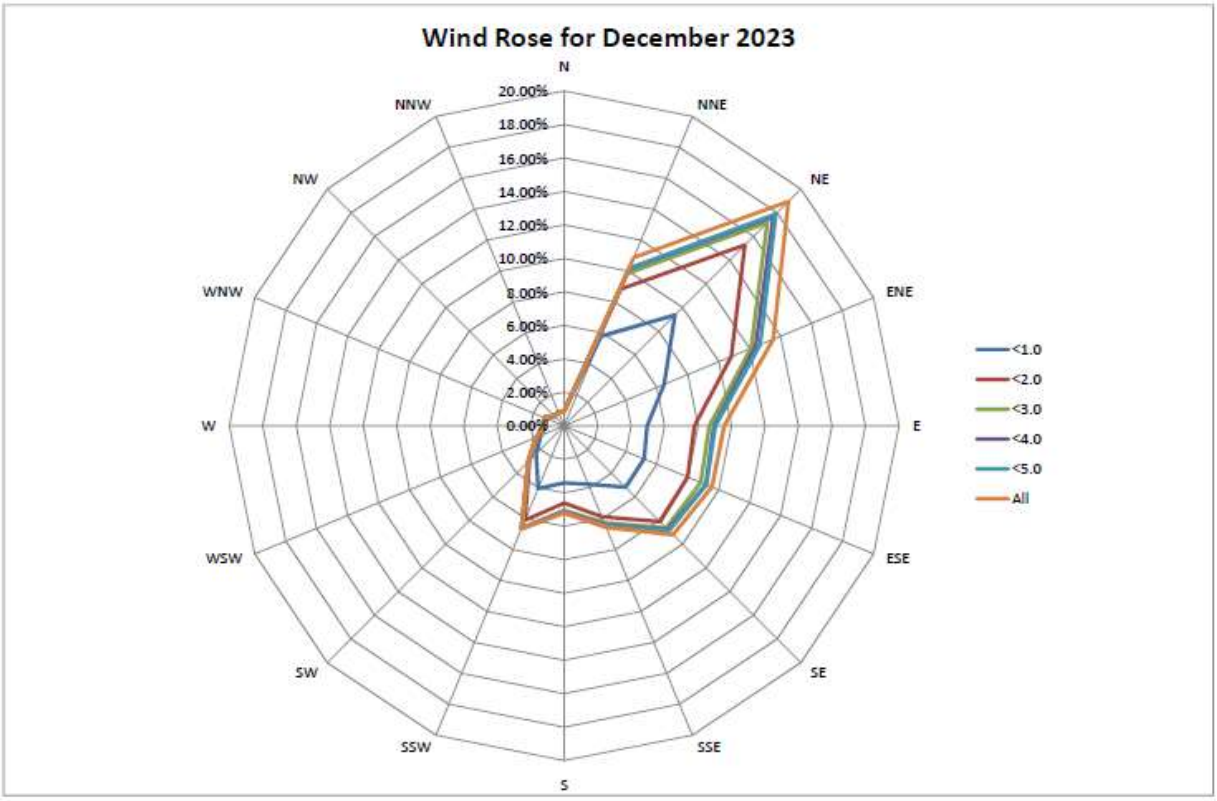


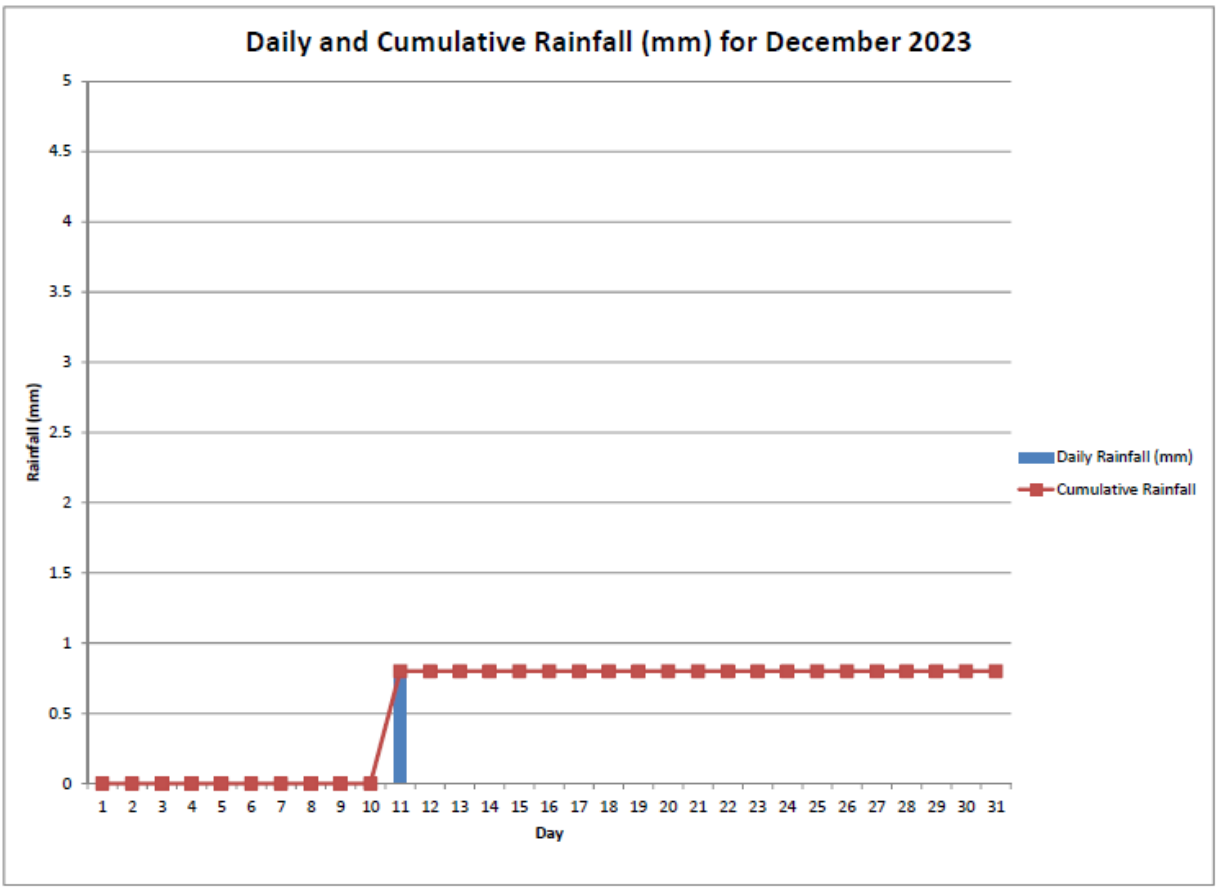



Hourly Average Pressure (hPa) for December 2023
Hourly Average Pressure (hPa)
1035
1030
1025
1020
1015
1010
1005
1000
Day and Time


Hourly Average Wind Speed (m/s) for December 2023
Hourly Average Wind Speed (m/s)
12.0
10.0
8.0
6.0
4.0
2.0
0.0
Day and Time


Hourly Average Wind Direction (degree) for December 2023
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 December 2023
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
20.00%
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 December 2023
Rainfall (mm)
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
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 29 30 31
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
26 Jan 23	Fine	OP1	14:37	20.8	5.5	N	Yes	0	N/A	N/A	N/A
26 Jan 23	Fine	OP2	14:41	17.8	5.2	N	Yes	0	N/A	N/A	N/A
26 Jan 23	Fine	OP3	14:43	20.5	1.9	W	No	0	N/A	N/A	N/A
26 Jan 23	Fine	OP4	14:45	20.3	1.6	E	Yes	1	Leachate	Pump truck	N/A
26 Jan 23	Fine	OP5	14:49	20.3	0.0	N/A	N/A	0	N/A	N/A	N/A
26 Jan 23	Fine	OP6	14:51	18.0	4.9	NE	Yes	0	N/A	N/A	N/A
26 Jan 23	Fine	OP7	14:53	17.9	1.3	N	No	0	N/A	N/A	N/A
26 Jan 23	Fine	OP8	14:56	21.9	0.0	N/A	N/A	0	N/A	N/A	N/A
26 Jan 23	Fine	OP9	15:00	19.8	1.1	SE	Yes	0	N/A	N/A	N/A
26 Jan 23	Fine	OP10	15:02	22.3	0.0	N/A	N/A	0	N/A	N/A	N/A
26 Jan 23	Fine	OP11	15:16	21.2	4.8	E	No	0	N/A	N/A	N/A
26 Jan 23	Fine	OP12	15:13	21.4	3.7	E	No	0	N/A	N/A	N/A
26 Jan 23	Fine	OP13	15:11	21.5	0.0	N/A	N/A	0	N/A	N/A	N/A
26 Jan 23	Fine	OP14	15:07	22.4	2.0	NW	Yes	0	N/A	N/A	N/A
26 Jan 23	Fine	OP15	15:34	17.5	1.8	W	Yes	0	N/A	N/A	N/A
26 Jan 23	Fine	OP16	15:32	17.6	4.0	NE	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
26 Jan 23	Fine	OP17	15:29	17.8	3.7	N	Yes	0	N/A	N/A	N/A
3 Feb 23	Fine	OP1	14:36	18.1	4.5	N	Yes	0	N/A	N/A	N/A
3 Feb 23	Fine	OP2	14:39	19.5	1.4	N	Yes	0	N/A	N/A	N/A
3 Feb 23	Fine	OP3	14:41	19.9	1.3	W	Yes	0	N/A	N/A	N/A
3 Feb 23	Fine	OP4	14:44	20.9	N/A	N/A	N/A	0	N/A	N/A	N/A
3 Feb 23	Fine	OP5	14:46	21.0	N/A	N/A	N/A	0	N/A	N/A	N/A
3 Feb 23	Fine	OP6	14:48	20.8	3.9	N	No	0	N/A	N/A	N/A
3 Feb 23	Fine	OP7	14:51	18.2	N/A	N/A	N/A	1	Exhaust Gas	Excavator	From WSD Project
3 Feb 23	Fine	OP8	14:56	20.9	0.8	SE	Yes	0	N/A	N/A	N/A
3 Feb 23	Fine	OP9	15:00	19.8	1.5	E	Yes	1	Town Gas	Town Gas Plant	N/A
3 Feb 23	Fine	OP10	15:02	19.6	2.5	E	Yes	0	N/A	N/A	N/A
3 Feb 23	Fine	OP11	15:15	17.8	6.7	NE	No	0	N/A	N/A	N/A
3 Feb 23	Fine	OP12	15:13	18.7	2.3	NE	No	0	N/A	N/A	N/A
3 Feb 23	Fine	OP13	15:10	19.5	2.6	NE	No	0	N/A	N/A	N/A
3 Feb 23	Fine	OP14	15:08	19.5	N/A	N/A	N/A	0	N/A	N/A	N/A
3 Feb 23	Fine	OP15	15:31	18.0	5.7	N	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
3 Feb 23	Fine	OP16	15:30	18.0	5.7	NE	No	0	N/A	N/A	N/A
3 Feb 23	Fine	OP17	15:27	18.0	5.5	NE	No	0	N/A	N/A	N/A
22 Mar 23	Fine	OP1	14:05	24.9	1.1	S	No	0	N/A	N/A	N/A
22 Mar 23	Fine	OP2	14:08	24.7	0.8	S	No	0	N/A	N/A	N/A
22 Mar 23	Fine	OP3	14:11	25.1	0.8	SW	No	0	N/A	N/A	N/A
22 Mar 23	Fine	OP4	14:13	25.3	N/A	N/A	No	1	Grass	Grass	N/A
22 Mar 23	Fine	OP5	14:15	26.0	0.5	SE	No	1	Exhaust Gas	Generator	N/A
22 Mar 23	Fine	OP6	14:17	25.4	0.7	N	No	0	N/A	N/A	N/A
22 Mar 23	Fine	OP7	14:19	25.3	1.0	SW	No	0	N/A	N/A	N/A
22 Mar 23	Fine	OP8	14:22	25.6	1.2	SW	No	0	N/A	N/A	N/A
22 Mar 23	Fine	OP9	14:25	24.8	0.7	SW	No	0	N/A	N/A	N/A
22 Mar 23	Fine	OP10	14:27	25.4	1.0	SW	No	1	Exhaust Gas	Traffic	N/A
22 Mar 23	Fine	OP11	14:40	25.3	1.3	SW	Yes	1	Exhaust Gas	Landfill	N/A
22 Mar 23	Fine	OP12	14:39	25.0	0.8	S	Yes	0	N/A	N/A	N/A
22 Mar 23	Fine	OP13	14:36	24.8	0.5	SW	Yes	1	Grass	Grass	N/A
22 Mar 23	Fine	OP14	14:34	25.0	N/A	N/A	No	1	Grass	Grass	N/A
22 Mar 23	Fine	OP15	14:50	24.6	1.3	SE	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
22 Mar 23	Fine	OP16	14:53	25.1	0.8	SE	No	0	N/A	N/A	N/A
22 Mar 23	Fine	OP17	14:55	25.5	1.7	SW	Yes	0	N/A	N/A	N/A
18 Apr 23	Fine	OP1	14:38	27.0	0.0	N/A	No	0	N/A	N/A	N/A
18 Apr 23	Fine	OP2	14:41	26.9	1.5	SW	Yes	0	N/A	N/A	N/A
18 Apr 23	Fine	OP3	14:43	26.8	3.5	SW	No	0	N/A	N/A	N/A
18 Apr 23	Fine	OP4	14:45	26.2	3.6	E	No	0	N/A	N/A	N/A
18 Apr 23	Fine	OP5	14:47	27.6	4.1	E	No	1	Grassy	Vegetation	N/A
18 Apr 23	Fine	OP6	14:49	28.0	1.6	S	No	0	N/A	N/A	N/A
18 Apr 23	Fine	OP7	14:51	27.8	2.0	N/A	No	0	N/A	N/A	N/A
18 Apr 23	Fine	OP8	14:54	28.1	2.0	E	No	0	N/A	N/A	N/A
18 Apr 23	Fine	OP9	14:58	27.2	3.6	SE	Yes	0	N/A	N/A	N/A
18 Apr 23	Fine	OP10	15:02	28.1	1.7	E	No	0	N/A	N/A	N/A
18 Apr 23	Fine	OP11	15:18	27.8	1.5	W	No	1	Grassy	Vegetation	N/A
18 Apr 23	Fine	OP12	15:16	27.1	2.0	S	Yes	1	Grassy	Vegetation	N/A
18 Apr 23	Fine	OP13	15:14	28.1	1.0	SW	Yes	1	Grassy	Vegetation	N/A
18 Apr 23	Fine	OP14	15:11	30.3	0.0	N/A	No	1	Grassy	Vegetation	N/A
18 Apr 23	Fine	OP15	15:38	26.1	3.0	SW	Yes	1	Waste	Cell 4X	N/A

Date	Weather	Location	Time	Temperature (°C)	Wind Speed (m/s)	Wind Direction	From Project Site	Odour Intensity	Odour Characteristic	Possible Source	Remarks
18 Apr 23	Fine	OP16	15:35	27.6	0.0	N/A	No	0	N/A	N/A	N/A
18 Apr 23	Fine	OP17	15:32	26.8	2.0	W	Yes	0	N/A	N/A	N/A
22 May 23	Fine	OP1	14:46	30.4	3.4	N	Yes	0	N/A	N/A	N/A
22 May 23	Fine	OP2	14:49	30.6	4.6	SE	No	0	N/A	N/A	N/A
22 May 23	Fine	OP3	14:51	31.7	1.4	W	No	0	N/A	N/A	N/A
22 May 23	Fine	OP4	14:54	32.2	0.8	E	No	0	N/A	N/A	N/A
22 May 23	Fine	OP5	14:56	32.2	1.4	E	No	0	N/A	N/A	N/A
22 May 23	Fine	OP6	14:58	31.5	3.4	NE	Yes	0	N/A	N/A	N/A
22 May 23	Fine	OP7	14:59	31.7	6.3	S	No	0	N/A	N/A	N/A
22 May 23	Fine	OP8	15:01	32.5	4.4	S	No	0	N/A	N/A	N/A
22 May 23	Fine	OP9	15:05	32.2	2.2	SW	No	0	N/A	N/A	N/A
22 May 23	Fine	OP10	15:07	33.9	2.3	NE	Yes	0	N/A	N/A	N/A
22 May 23	Fine	OP11	15:19	33.1	2.5	NW	No	0	N/A	N/A	N/A
22 May 23	Fine	OP12	15:16	33.6	1.5	SE	Yes	1	Grassy smell	Vegetation	N/A
22 May 23	Fine	OP13	15:14	34.3	0.0	N/A	No	0	N/A	N/A	N/A
22 May 23	Fine	OP14	15:12	32.7	2.5	NW	No	1	Grassy smell	Vegetation	N/A
22 May 23	Fine	OP15	15:33	30.8	7.8	W	Yes	1	Waste	Cell 4X	N/A

Date	Weather	Location	Time	Temperature (°C)	Wind Speed (m/s)	Wind Direction	From Project Site	Odour Intensity	Odour Characteristic	Possible Source	Remarks
22 May 23	Fine	OP16	15:31	35.9	3.0	S	Yes	1	Waste	Cell 4X	N/A
22 May 23	Fine	OP17	15:28	32.8	3.2	N	No	0	N/A	N/A	N/A
15 Jun 23	Overcast	OP1	14:18	26.3	1.6	N	Yes	0	N/A	N/A	N/A
15 Jun 23	Overcast	OP2	14:22	26.8	1.5	N	Yes	0	N/A	N/A	N/A
15 Jun 23	Overcast	OP3	14:25	27.6	0.0	N/A	N/A	0	N/A	N/A	N/A
15 Jun 23	Overcast	OP4	14:27	27.0	1.2	SW	No	0	N/A	N/A	N/A
15 Jun 23	Overcast	OP5	14:29	27.1	1.2	NW	No	0	N/A	N/A	N/A
15 Jun 23	Overcast	OP6	14:31	27.3	3.5	NE	Yes	0	N/A	N/A	N/A
15 Jun 23	Overcast	OP7	14:33	27.6	3.3	N	No	0	N/A	N/A	N/A
15 Jun 23	Overcast	OP8	14:36	29.2	1.3	W	No	0	N/A	N/A	N/A
15 Jun 23	Overcast	OP9	14:43	28.4	0.0	N/A	N/A	0	N/A	N/A	N/A
15 Jun 23	Overcast	OP10	14:44	28.1	2.7	N	No	0	N/A	N/A	N/A
15 Jun 23	Overcast	OP11	14:56	28.4	0.0	N/A	N/A	0	N/A	N/A	N/A
15 Jun 23	Overcast	OP12	14:54	28.5	2.0	NW	No	0	N/A	N/A	N/A
15 Jun 23	Overcast	OP13	14:52	26.5	0.0	N/A	N/A	0	N/A	N/A	N/A
15 Jun 23	Overcast	OP14	14:50	26.5	0.0	N/A	N/A	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
15 Jun 23	Overcast	OP15	15:15	28.0	1.6	SW	Yes	1	Waste	Tipping area	N/A
15 Jun 23	Overcast	OP16	15:12	27.3	2.3	W	Yes	1	Waste	Tipping area	N/A
15 Jun 23	Overcast	OP17	15:09	27.9	1.0	NW	Yes	0	N/A	N/A	N/A
27 Jul 23	Sunny	OP1	14:16	33.1	0.6	N	Y	0	N/A	N/A	N/A
27 Jul 23	Sunny	OP2	14:20	33.9	4.5	S	N	0	N/A	N/A	N/A
27 Jul 23	Sunny	OP3	14:22	34.3	0.9	SW	N	0	N/A	N/A	N/A
27 Jul 23	Sunny	OP4	14:24	34.9	3.0	S	N	0	N/A	N/A	N/A
27 Jul 23	Sunny	OP5	14:26	35.4	2.8	NW	N	0	N/A	N/A	N/A
27 Jul 23	Sunny	OP6	14:28	36.2	3.1	S	N	0	N/A	N/A	N/A
27 Jul 23	Sunny	OP7	14:29	35.1	5.0	S	N	0	N/A	N/A	N/A
27 Jul 23	Sunny	OP8	14:32	34.5	4.7	S	N	0	N/A	N/A	N/A
27 Jul 23	Sunny	OP9	14:36	35.6	1.9	E	Y	0	N/A	N/A	N/A
27 Jul 23	Sunny	OP10	14:37	36.9	0.9	SE	N	0	N/A	N/A	N/A
27 Jul 23	Sunny	OP11	14:49	35.5	1.9	SW	Y	0	N/A	N/A	N/A
27 Jul 23	Sunny	OP12	14:48	34.5	1.8	SW	Y	0	N/A	N/A	N/A
27 Jul 23	Sunny	OP13	14:45	35.6	1.7	SW	Y	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
27 Jul 23	Sunny	OP14	14:43	35.7	0.0	N/A	N/A	0	N/A	N/A	N/A
27 Jul 23	Sunny	OP15	14:58	34.2	0.0	N/A	N/A	0	N/A	N/A	N/A
27 Jul 23	Sunny	OP16	15:02	34.2	2.6	NE	Y	1	Waste	Tipping area	N/A
27 Jul 23	Sunny	OP17	15:04	34.6	0.0	N/A	N/A	0	N/A	N/A	N/A
17 Aug 23	Rainy	OP1	15:03	28.0	N/A	N/A	N	0	N/A	N/A	N/A
17 Aug 23	Rainy	OP2	15:06	29.4	1.7	NE	N	0	N/A	N/A	N/A
17 Aug 23	Rainy	OP3	15:09	29.2	0.9	E	N	0	N/A	N/A	N/A
17 Aug 23	Rainy	OP4	15:10	29.1	1.6	SE	N	1	Leachate	LTP	N/A
17 Aug 23	Rainy	OP5	15:12	29.4	1.3	E	N	0	N/A	N/A	N/A
17 Aug 23	Rainy	OP6	15:15	30.6	1.8	SE	N	0	N/A	N/A	N/A
17 Aug 23	Rainy	OP7	15:17	30.6	2.5	SE	N	0	N/A	N/A	N/A
17 Aug 23	Rainy	OP8	15:20	32.8	3.5	SE	Y	1	Sludge	Sediment trap	N/A
17 Aug 23	Rainy	OP9	15:28	30.7	1.9	SE	Y	1	Landfill gas	Tipping area	N/A
17 Aug 23	Rainy	OP10	15:30	30.0	3.2	E	Y	1	Waste	Tipping area	N/A

Date	Weather	Location	Time	Temperature (°C)	Wind Speed (m/s)	Wind Direction	From Project Site	Odour Intensity	Odour Characteristic	Possible Source	Remarks
17 Aug 23	Rainy	OP11	15:47	31.8	0.0	N/A	N	1	Waste	Tipping area	N/A
17 Aug 23	Rainy	OP12	15:45	29.4	1.5	SE	N	0	N/A	N/A	N/A
17 Aug 23	Rainy	OP13	15:44	29.5	0.0	N/A	N	0	N/A	N/A	N/A
17 Aug 23	Rainy	OP14	15:42	30.0	0.0	N/A	N	0	N/A	N/A	N/A
17 Aug 23	Rainy	OP15	16:00	30.7	0.0	N/A	N	0	N/A	N/A	N/A
17 Aug 23	Rainy	OP16	15:58	30.5	1.5	E	Y	0	N/A	N/A	N/A
17 Aug 23	Rainy	OP17	15:56	31.1	1.1	NW	Y	0	N/A	N/A	N/A
20 Sep 23	Sunny	OP1	10:20	32.3	0.5	E	Yes	1	Grassy	Vegetation	N/A
20 Sep 23	Sunny	OP2	10:24	31.8	1.2	SE	Yes	1	Grassy	Vegetation	N/A
20 Sep 23	Sunny	OP3	10:29	31.9	1.0	NW	Yes	1	Grassy	Vegetation	N/A
20 Sep 23	Sunny	OP4	10:32	30.6	1.9	NE	Yes	1	Ammonia	LTP	N/A
20 Sep 23	Sunny	OP5	10:35	32.3	0.0	N/A	No	0	N/A	N/A	N/A
20 Sep 23	Sunny	OP6	10:37	31.6	1.4	SW	No	0	N/A	N/A	N/A
20 Sep 23	Sunny	OP7	10:39	32.1	2.0	SE	No	0	N/A	N/A	N/A
20 Sep 23	Sunny	OP8	10:42	32.5	0.7	S	Yes	1	Soil	Sediment trap	N/A
20 Sep 23	Sunny	OP9	10:48	31.9	1.4	S	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
20 Sep 23	Sunny	OP10	10:51	31.4	1.0	S	No	0	N/A	N/A	N/A
20 Sep 23	Sunny	OP11	11:01	32.0	0.4	W	Yes	1	Grassy	Vegetation	N/A
20 Sep 23	Sunny	OP12	11:01	32.3	0.5	SE	Yes	1	Grassy	Vegetation	N/A
20 Sep 23	Sunny	OP13	10:59	31.2	0.5	W	Yes	1	Grassy	Vegetation	N/A
20 Sep 23	Sunny	OP14	11:57	31.4	0.5	NE	No	0	N/A	N/A	N/A
20 Sep 23	Sunny	OP15	11:14	32.2	1.2	SE	Yes	1	Rubbish	Tipping area	N/A
20 Sep 23	Sunny	OP16	11:18	32.4	0.7	NE	No	0	N/A	N/A	N/A
20 Sep 23	Sunny	OP17	11:21	32.2	1.3	SW	No	0	N/A	N/A	N/A
19 Oct 23	Rainy	OP1	13:38	26.1	3.9	SW	No	0	N/A	N/A	N/A
19 Oct 23	Rainy	OP2	13:42	26.3	4.4	N	Yes	0	N/A	N/A	N/A
19 Oct 23	Rainy	OP3	13:45	27.5	4.4	N	No	1	Leachate	LTP	N/A
19 Oct 23	Rainy	OP4	13:47	27.8	1.3	NE	Yes	0	N/A	N/A	N/A
19 Oct 23	Rainy	OP5	13:49	27.5	3.8	NE	Yes	0	N/A	N/A	N/A
19 Oct 23	Rainy	OP6	13:51	27.6	4.8	N	No	0	N/A	N/A	N/A
19 Oct 23	Rainy	OP7	13:52	26.8	3.3	N	No	0	N/A	N/A	N/A
19 Oct 23	Rainy	OP8	13:56	27.5	4.4	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
19 Oct 23	Rainy	OP9	13:59	28.3	2.1	N	No	1	Towngas	Towngas plant	N/A
19 Oct 23	Rainy	OP10	14:02	26.8	3.1	E	Yes	1	Towngas	Towngas plant	N/A
19 Oct 23	Rainy	OP11	14:18	26.6	2.8	E	Yes	0	N/A	N/A	N/A
19 Oct 23	Rainy	OP12	14:16	26.9	3.3	NW	No	0	N/A	N/A	N/A
19 Oct 23	Rainy	OP13	14:13	27.8	2.4	NW	No	0	N/A	N/A	N/A
19 Oct 23	Rainy	OP14	14:10	27.7	4.4	SW	No	0	N/A	N/A	N/A
19 Oct 23	Rainy	OP15	14:25	27.4	1.5	E	No	0	N/A	N/A	N/A
19 Oct 23	Rainy	OP16	14:36	27.9	0.0	NA	No	0	N/A	N/A	N/A
19 Oct 23	Rainy	OP17	14:32	26.1	5.4	SW	Yes	0	N/A	N/A	N/A
9 Nov 23	Rainy	OP1	13:43	26.7	1.9	SW	Yes	0	N/A	N/A	N/A
9 Nov 23	Rainy	OP2	13:47	27.5	1.1	SW	Yes	0	N/A	N/A	N/A
9 Nov 23	Rainy	OP3	13:49	27.9	5.6	W	Yes	0	N/A	N/A	N/A
9 Nov 23	Rainy	OP4	13:51	26.9	2.8	N	Yes	1	Leachate smell	LTP	N/A
9 Nov 23	Rainy	OP5	13:53	26.7	4.0	NE	No	0	N/A	N/A	N/A
9 Nov 23	Rainy	OP6	13:57	26.9	2.9	N	No	0	N/A	N/A	N/A
9 Nov 23	Rainy	OP7	13:58	26.3	2.3	S	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
9 Nov 23	Rainy	OP8	14:02	27.7	2.8	NE	Yes	0	N/A	N/A	N/A
9 Nov 23	Rainy	OP9	14:05	29.4	0.0	N/A	No	0	N/A	N/A	N/A
9 Nov 23	Rainy	OP10	14:01	27.6	1.3	SE	No	0	N/A	N/A	N/A
9 Nov 23	Rainy	OP11	14:18	26.8	2.2	E	No	0	N/A	N/A	N/A
9 Nov 23	Rainy	OP12	14:15	27.9	2.2	E	No	0	N/A	N/A	N/A
9 Nov 23	Rainy	OP13	14:14	26.8	1.4	E	No	0	N/A	N/A	N/A
9 Nov 23	Rainy	OP14	14:12	26.4	0.0	N/A	No	0	N/A	N/A	N/A
9 Nov 23	Rainy	OP15	14:28	26.8	2.2	W	No	0	N/A	N/A	N/A
9 Nov 23	Rainy	OP16	14:29	25.9	6.2	N	Yes	0	N/A	N/A	N/A
9 Nov 23	Rainy	OP17	14:30	27.5	4.4	S	No	0	N/A	N/A	N/A
15 Dec 23	Sunny	OP1	14:05	30.9	1.1	SW	No	0	N/A	N/A	N/A
15 Dec 23	Sunny	OP2	14:09	27.6	3.4	S	No	0	N/A	N/A	N/A
15 Dec 23	Sunny	OP3	14:11	28.0	1.3	SW	No	0	N/A	N/A	N/A
15 Dec 23	Sunny	OP4	14:13	28.3	3.8	NE	No	0	N/A	N/A	N/A
15 Dec 23	Sunny	OP5	14:15	28.3	1.1	E	No	0	N/A	N/A	N/A
15 Dec 23	Sunny	OP6	14:17	27.8	1.2	SE	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
15 Dec 23	Sunny	OP7	14:18	28.2	1.6	SW	No	1	Soil	WSD Trench	N/A
15 Dec 23	Sunny	OP8	14:22	28.6	2.5	S	No	0	N/A	N/A	N/A
15 Dec 23	Sunny	OP9	14:26	28.7	0.6	SE	Yes	0	N/A	N/A	N/A
15 Dec 23	Sunny	OP10	14:28	27.4	1.3	SE	Yes	1	Faeces	Planting area	SENTx
15 Dec 23	Sunny	OP11	14:50	25.7	4.6	E	Yes	1	Soil	Cell 4X Tipping area	SENTx
15 Dec 23	Sunny	OP12	14:47	26.3	2.3	E	No	0	N/A	N/A	N/A
15 Dec 23	Sunny	OP13	14:45	26.0	2.6	NE	No	0	N/A	N/A	N/A
15 Dec 23	Sunny	OP14	14:42	26.1	1.8	NE	No	0	N/A	N/A	N/A
15 Dec 23	Sunny	OP15	14:58	26.1	2.2	SE	Yes	1	Musty	Cell 4X Tipping area	SENTx
15 Dec 23	Sunny	OP16	15:04	26.0	3.3	NE	Yes	1	Musty	Cell 4X Tipping area	SENTx
15 Dec 23	Sunny	OP17	15:07	27.4	0.0	N/A	No	0	N/A	N/A	N/A

ANNEX D5 THERMAL OXIDIZER, LANDFILL GAS FLARE AND LANDFILL GAS GENERATOR STACK EMISSION MONITORING RESULTS

TABLE D5.1 THERMAL OXIDISER STACK EMISSION MONITORING RESULTS

Parameters	**Monitoring Results (January 2023)**
NO_2	1.21 gs^{-1}
CO	<0.01 gs^{-1}
SO_2	0.21 gs^{-1}
Benzene	<2.0 x 10^{-4} gs^{-1}
Vinyl chloride	<1.6 x 10^{-4} gs^{-1}
Exhaust gas velocity	11.4 ms^{-1}
Parameters	**Monitoring Results (February 2023)**
NO_2	0.95 gs^{-1}
CO	<0.01 gs^{-1}
SO_2	<0.01 gs^{-1}
Benzene	<2.0 x 10^{-4} gs^{-1}
Vinyl chloride	<1.3 x 10^{-4} gs^{-1}
Non-Methane Organic Carbons	<3.0 x 10^{-3} gs^{-1}
Ammonia	0.0384 gs^{-1}
Exhaust gas velocity	10.1 ms^{-1}
Parameters	**Monitoring Results (March 2023)**
NO_2	1.34 gs^{-1}
CO	<0.01 gs^{-1}
SO_2	<0.01 gs^{-1}
Benzene	<2.0 x 10^{-4} gs^{-1}
Vinyl chloride	<1.4 x 10^{-4} gs^{-1}
Exhaust gas velocity	11.3 ms^{-1}
Parameters	**Monitoring Results (April 2023)**
NO_2	0.98 gs^{-1}
CO	<0.01 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	10.4 ms^{-1}
Parameters	**Monitoring Results (May 2023)**
NO_2	0.35 gs^{-1}
CO	<0.01 gs^{-1}
SO_2	<0.01 gs^{-1}
Benzene	1.0 x 10^{-4} gs^{-1}
Vinyl chloride	<1.0 x 10^{-4} gs^{-1}

Non-Methane Organic Carbons	$<3.0 \times 10^{-3}$ gs^{-1}
Ammonia	0.0227 gs^{-1}
Exhaust gas velocity	9.3 ms^{-1}
Parameters	**Monitoring Results (June 2023)**
NO_2	0.95 gs^{-1}
CO	<0.01 gs^{-1}
SO_2	<0.01 gs^{-1}
Benzene	$<1.0 \times 10^{-4}$ gs^{-1}
Vinyl chloride	$<1.0 \times 10^{-4}$ gs^{-1}
Exhaust gas velocity	8.2 ms^{-1}
Parameters	**Monitoring Results (July 2023)**
NO_2	0.92 gs^{-1}
CO	0.02 gs^{-1}
SO_2	<0.01 gs^{-1}
Benzene	$<1.0 \times 10^{-4}$ gs^{-1}
Vinyl chloride	$<7.0 \times 10^{-5}$ gs^{-1}
Exhaust gas velocity	5.8 ms^{-1}
Parameters	**Monitoring Results (August 2023)**
NO_2	0.14 gs^{-1}
CO	0.03 gs^{-1}
SO_2	<0.01 gs^{-1}
Benzene	$<1.0 \times 10^{-4}$ gs^{-1}
Vinyl chloride	$<9.0 \times 10^{-5}$ gs^{-1}
Non-Methane Organic Carbons	0.009 gs^{-1}
Ammonia	0.0361 gs^{-1}
Exhaust gas velocity	8.7 ms^{-1}
Parameters	**Monitoring Results (September 2023)**
NO_2	0.23 gs^{-1}
CO	0.03 gs^{-1}
SO_2	0.92 gs^{-1}
Benzene	$<1.0 \times 10^{-4}$ gs^{-1}
Vinyl chloride	$<1.0 \times 10^{-4}$ gs^{-1}
Exhaust gas velocity	8.1 ms^{-1}
Parameters	**Monitoring Results (October 2023)**
NO_2	0.17 gs^{-1}
CO	0.03 gs^{-1}
SO_2	0.79 gs^{-1}
Benzene	$<2.0 \times 10^{-4}$ gs^{-1}

Vinyl chloride	$<1.2 \times 10^{-4}$ gs^{-1}
Exhaust gas velocity	10.5 ms^{-1} (b)
Parameters	**Monitoring Results (November 2023)**
NO_2	0.55 gs^{-1}
CO	0.03 gs^{-1}
SO_2	0.45 gs^{-1}
Benzene	$<2.0 \times 10^{-4}$ gs^{-1}
Vinyl chloride	$<1.1 \times 10^{-4}$ gs^{-1}
Non-Methane Organic Carbons	0.003 gs^{-1}
Ammonia	0.0287 gs^{-1}
Exhaust gas velocity	9.0 ms^{-1}
Parameters	**Monitoring Results (December 2023)**
NO_2	0.68 gs^{-1}
CO	0.03 gs^{-1}
SO_2	<0.005 gs^{-1}
Benzene	$<2.0 \times 10^{-4}$ gs^{-1}
Vinyl chloride	$<1.0 \times 10^{-4}$ gs^{-1}
Exhaust gas velocity	7.7 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 23	926	1238	11.4
2 Jan 23	939	1234	
3 Jan 23	934	1239	
4 Jan 23	920	1231	
5 Jan 23	912	1230	
6 Jan 23	927	1238	
7 Jan 23	923	1233	
8 Jan 23	923	1231	
9 Jan 23	925	1227	
10 Jan 23	926	1233	
11 Jan 23	936	1239	
12 Jan 23	938	1243	
13 Jan 23	917	1234	
14 Jan 23	941	1246	
15 Jan 23	965	1245	
16 Jan 23	947	1221	
17 Jan 23	927	1232	
18 Jan 23	911	1228	
19 Jan 23	942	1255	
20 Jan 23	925	1237	
21 Jan 23	918	1229	
22 Jan 23	Under Maintenance		
23 Jan 23	Under Maintenance		
24 Jan 23	Under Maintenance		
25 Jan 23	929	1236	
26 Jan 23	910	1227	
27 Jan 23	939	1242	
28 Jan 23	942	1251	
29 Jan 23	941	1252	
30 Jan 23	927	1226	
31 Jan 23	911	1229	
1 Feb 23	918	1232	
2 Feb 23	937	1244	
3 Feb 23	927	1230	
4 Feb 23	930	1241	
5 Feb 23	913	1226	

Date	Gas Combustion Temperature (°C)	Exhaust Temperature (K)	Exhaust Gas Velocity (ms^{-1}) (a)
6 Feb 23	Under Maintenance		
7 Feb 23	Under Maintenance		
8 Feb 23	Under Maintenance		
9 Feb 23	924	1230	
10 Feb 23	942	1245	
11 Feb 23	906	1256	
12 Feb 23	903	1198	
13 Feb 23	916	1219	
14 Feb 23	922	1229	
15 Feb 23	924	1232	10.1
16 Feb 23	925	1235	
17 Feb 23	922	1228	
18 Feb 23	924	1229	
19 Feb 23	930	1237	
20 Feb 23	902	1198	
21 Feb 23	895	1210	
22 Feb 23	930	1233	
23 Feb 23	924	1230	
24 Feb 23	925	1232	
25 Feb 23	937	1234	
26 Feb 23	935	1232	
27 Feb 23	934	1233	
28 Feb 23	925	1234	
1 Mar 23	930	1233	
2 Mar 23	937	1239	
3 Mar 23	932	1230	
4 Mar 23	932	1239	
5 Mar 23	927	1230	
6 Mar 23	918	1214	
7 Mar 23	929	1237	
8 Mar 23	928	1231	
9 Mar 23	928	1233	
10 Mar 23	926	1233	
11 Mar 23	923	1233	
12 Mar 23	908	1222	
13 Mar 23	Under Maintenance		
14 Mar 23	Under Maintenance		11.3

Date	Gas Combustion Temperature (°C)	Exhaust Temperature (K)	Exhaust Gas Velocity (ms^{-1}) (a)
15 Mar 23	Under Maintenance		
16 Mar 23	930	1232	
17 Mar 23	940	1235	
18 Mar 23	919	1188	
19 Mar 23	956	1240	
20 Mar 23	924	1213	
21 Mar 23	930	1212	
22 Mar 23	925	1209	
23 Mar 23	926	1215	
24 Mar 23	917	1212	
25 Mar 23	919	1213	
26 Mar 23	927	1212	
27 Mar 23	930	1207	
28 Mar 23	939	1212	
29 Mar 23	921	1211	
30 Mar 23	929	1218	
31 Mar 23	927	1216	
1 Apr 23	926	1214	
2 Apr 23	923	1216	
3 Apr 23	922	1212	
4 Apr 23	937	1218	
5 Apr 23	926	1221	
6 Apr 23	Under Maintenance		
7 Apr 23	932	1215	
8 Apr 23	924	1217	
9 Apr 23	924	1217	
10 Apr 23	919	1198	
11 Apr 23	923	1218	
12 Apr 23	928	1217	
13 Apr 23	927	1219	
14 Apr 23	925	1218	10.4
15 Apr 23	927	1230	
16 Apr 23	925	1228	
17 Apr 23	920	1235	
18 Apr 23	922	1236	
19 Apr 23	923	1239	
20 Apr 23	924	1240	

Date	Gas Combustion Temperature (°C)	Exhaust Temperature (K)	Exhaust Gas Velocity (ms^{-1}) (a)
21 Apr 23	921	1246	
22 Apr 23	928	1253	
23 Apr 23	925	1254	
24 Apr 23	923	1254	
25 Apr 23	923	1261	
26 Apr 23	925	1267	
27 Apr 23	922	1272	
28 Apr 23	926	1274	
29 Apr 23	925	1275	
30 Apr 23	924	1281	
1 May 23	922	1281	9.3
2 May 23	914	1269	
3 May 23	909	1272	
4 May 23	895	1264	
5 May 23	880	1254	
6 May 23	880	1260	
7 May 23	880	1262	
8 May 23	906	1246	
9 May 23	882	1267	
10 May 23	893	1282	
11 May 23	883	1271	
12 May 23	893	1263	
13 May 23	871	1266	
14 May 23	871	1269	
15 May 23	869	1270	
16 May 23	869	1271	
17 May 23	867	1275	
18 May 23	858	1250	
19 May 23	859	1255	
20 May 23	860	1257	
21 May 23	863	1263	
22 May 23	860	1268	
23 May 23	858	1260	
24 May 23	855	1260	
25 May 23	855	1262	
26 May 23	861	1271	
27 May 23	856	1265	

Date	Gas Combustion Temperature (°C)	Exhaust Temperature (K)	Exhaust Gas Velocity (ms^{-1}) (a)
28 May 23	858	1254	
29 May 23	865	1270	
30 May 23	860	1268	
31 May 23	857	1262	
1 Jun 23	862	1270	8.2
2 Jun 23	858	1283	
3 Jun 23	859	1273	
4 Jun 23	853	1268	
5 Jun 23	Under Maintenance		
6 Jun 23	861	1278	
7 Jun 23	864	1275	
8 Jun 23	926	1189	
9 Jun 23	891	1210	
10 Jun 23	925	1212	
11 Jun 23	918	1214	
12 Jun 23	862	1208	
13 Jun 23	938	1221	
14 Jun 23	885	1208	
15 Jun 23	907	1206	
16 Jun 23	904	1198	
17 Jun 23	894	1199	
18 Jun 23	930	1215	
19 Jun 23	930	1191	
20 Jun 23	931	1218	
21 Jun 23	922	1212	
22 Jun 23	934	1215	
23 Jun 23	940	1216	
24 Jun 23	920	1202	
25 Jun 23	912	1202	
26 Jun 23	868	1192	
27 Jun 23	933	1214	
28 Jun 23	916	1193	
29 Jun 23	933	1218	
30 Jun 23	932	1223	
1 Jul 23	938	1223	
2 Jul 23	916	1208	
3 Jul 23	944	1228	

Date	Gas Combustion Temperature (°C)	Exhaust Temperature (K)	Exhaust Gas Velocity (ms^{-1}) (a)
4 Jul 23	902	1204	5.8
5 Jul 23	919	1213	
6 Jul 23	929	1222	
7 Jul 23	933	1219	
8 Jul 23	896	1183	
9 Jul 23	910	1216	
10 Jul 23	905	1211	
11 Jul 23	951	1225	
12 Jul 23	950	1228	
13 Jul 23	941	1228	
14 Jul 23	932	1224	
15 Jul 23	935	1230	
16 Jul 23	914	1217	
17 Jul 23	901	1213	
18 Jul 23	906	1208	
19 Jul 23	913	1209	
20 Jul 23	871	1194	
21 Jul 23	Under Maintenance		
22 Jul 23	926	1223	
23 Jul 23	915	1206	
24 Jul 23	886	1198	
25 Jul 23	929	1219	
26 Jul 23	925	1219	
27 Jul 23	948	1222	
28 Jul 23	926	1212	
29 Jul 23	959	1225	
30 Jul 23	934	1215	
31 Jul 23	912	1206	
1 Aug 23	921	1224	
2 Aug 23	944	1228	
3 Aug 23	907	1218	
4 Aug 23	944	1222	
5 Aug 23	885	1180	
6 Aug 23	929	1221	
7 Aug 23	921	1218	
8 Aug 23	903	1212	
9 Aug 23	895	1208	

Date	Gas Combustion Temperature (°C)	Exhaust Temperature (K)	Exhaust Gas Velocity (ms^{-1}) (a)
10 Aug 23	898	1206	8.7
11 Aug 23	931	1220	
12 Aug 23	917	1195	
13 Aug 23	939	1212	
14 Aug 23	923	1212	
15 Aug 23	930	1224	
16 Aug 23	937	1218	
17 Aug 23	924	1206	
18 Aug 23	910	1205	
19 Aug 23	933	1214	
20 Aug 23	955	1227	
21 Aug 23	Under Maintenance		
22 Aug 23	Under Maintenance		
23 Aug 23	Under Maintenance		
24 Aug 23	Under Maintenance		
25 Aug 23	Under Maintenance		
26 Aug 23	Under Maintenance		
27 Aug 23	Under Maintenance		
28 Aug 23	Under Maintenance		
29 Aug 23	Under Maintenance		
30 Aug 23	Under Maintenance		
31 Aug 23	922	1180	
1 Sep 23	917	1194	8.1
2 Sep 23	911	1183	
3 Sep 23	921	1204	
4 Sep 23	917	1206	
5 Sep 23	914	1204	
6 Sep 23	915	1194	
7 Sep 23	933	1216	
8 Sep 23	907	1188	
9 Sep 23	913	1204	
10 Sep 23	927	1209	
11 Sep 23	922	1204	
12 Sep 23	924	1200	
13 Sep 23	926	1207	
14 Sep 23	934	1210	
15 Sep 23	918	1203	

Date	Gas Combustion Temperature (°C)	Exhaust Temperature (K)	Exhaust Gas Velocity (ms^{-1}) (a)
16 Sep 23	926	1201	
17 Sep 23	939	1207	
18 Sep 23	903	1199	
19 Sep 23	912	1202	
20 Sep 23	908	1200	
21 Sep 23	920	1201	
22 Sep 23	924	1209	
23 Sep 23	939	1208	
24 Sep 23	910	1206	
25 Sep 23	921	1209	
26 Sep 23	916	1208	
27 Sep 23	869	1193	
28 Sep 23	925	1191	
29 Sep 23	939	1214	
30 Sep 23	918	1218	
1 Oct 23	909	1204	
2 Oct 23	900	1203	
3 Oct 23	909	1207	
4 Oct 23	943	1209	
5 Oct 23	924	1207	
6 Oct 23	924	1203	
7 Oct 23	924	1199	
8 Oct 23	926	1197	
9 Oct 23	926	1194	
10 Oct 23	926	1196	
11 Oct 23	927	1209	
12 Oct 23	926	1210	
13 Oct 23	926	1206	
14 Oct 23	927	1204	
15 Oct 23	925	1202	10.5
16 Oct 23	923	1197	
17 Oct 23	926	1195	
18 Oct 23	924	1197	
19 Oct 23	923	1200	
20 Oct 23	924	1200	
21 Oct 23	927	1209	
22 Oct 23	925	1200	

Date	Gas Combustion Temperature (°C)	Exhaust Temperature (K)	Exhaust Gas Velocity (ms^{-1}) (a)
23 Oct 23	926	1202	
24 Oct 23	928	1201	
25 Oct 23	927	1203	
26 Oct 23	Under Maintenance		
27 Oct 23	Under Maintenance		
28 Oct 23	Under Maintenance		
29 Oct 23	925	1192	
30 Oct 23	924	1197	
31 Oct 23	925	1200	
1 Nov 23	924	1196	
2 Nov 23	925	1197	
3 Nov 23	927	1201	
4 Nov 23	924	1201	
5 Nov 23	923	1199	
6 Nov 23	926	1197	
7 Nov 23	925	1196	
8 Nov 23	926	1198	
9 Nov 23	925	1196	
10 Nov 23	924	1199	
11 Nov 23	923	1203	
12 Nov 23	925	1204	
13 Nov 23	924	1201	
14 Nov 23	927	1204	
15 Nov 23	925	1203	
16 Nov 23	922	1197	
17 Nov 23	925	1198	
18 Nov 23	925	1199	
19 Nov 23	925	1200	
20 Nov 23	925	1204	
21 Nov 23	924	1201	
22 Nov 23	924	1202	
23 Nov 23	923	1198	
24 Nov 23	930	1212	9.0
25 Nov 23	926	1206	
26 Nov 23	926	1204	
27 Nov 23	926	1204	
28 Nov 23	Under Maintenance		

Date	Gas Combustion Temperature (°C)	Exhaust Temperature (K)	Exhaust Gas Velocity (ms^{-1}) (a)
29 Nov 23	925	1197	
30 Nov 23	926	1206	
1 Dec 23	923	1207	
2 Dec 23	927	1210	
3 Dec 23	927	1211	
4 Dec 23	924	1211	
5 Dec 23	925	1212	
6 Dec 23	926	1212	
7 Dec 23	927	1215	
8 Dec 23	925	1214	
9 Dec 23	926	1218	
10 Dec 23	924	1217	
11 Dec 23	928	1221	
12 Dec 23	926	1206	
13 Dec 23	928	1218	7.7
14 Dec 23	926	1215	
15 Dec 23	926	1214	
16 Dec 23	927	1204	
17 Dec 23	925	1204	
18 Dec 23	928	1208	
19 Dec 23	935	1207	
20 Dec 23	924	1215	
21 Dec 23	927	1209	
22 Dec 23	925	1209	
23 Dec 23	923	1212	
24 Dec 23	927	1214	
25 Dec 23	927	1211	
26 Dec 23	925	1211	
27 Dec 23	925	1213	
28 Dec 23	924	1211	
29 Dec 23	927	1213	
30 Dec 23	925	1212	
31 Dec 23	926	1212	
Average	918	1221	9.2
Min	853	1180	5.8
Max	965	1283	11.4

Date	Gas Combustion Temperature (°C)	Exhaust Temperature (K)	Exhaust Gas Velocity (ms^{-1}) (a)

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 2023)**
	Flare 1 – F601
NO_2	0.024 gs^{-1}
CO	0.111 gs^{-1}
SO_2	<0.012 gs^{-1}
Benzene	<1.8 x 10^{-4} gs^{-1}
Vinyl chloride	<1.44 x 10^{-4} gs^{-1}
Exhaust gas velocity	12.5 ms^{-1}
Parameters	**Monitoring Results (February 2023)**
	Flare 1 – F601
NO_2	0.02 gs^{-1}
CO	0.16 gs^{-1}
SO_2	0.02 gs^{-1}
Benzene	<1.2 x 10^{-4} gs^{-1}
Vinyl chloride	<9.6 x 10^{-5} gs^{-1}
Non-Methane Organic Carbons	0.006 gs^{-1}
Exhaust gas velocity	8.9 ms^{-1}
Parameters	**Monitoring Results (March 2023)**
	Flare 1 – F601
NO_2	0.02 gs^{-1}
CO	<0.01 gs^{-1}
SO_2	<0.01 gs^{-1}
Benzene	<9.5 x 10^{-5} gs^{-1}
Vinyl chloride	<7.6 x 10^{-5} gs^{-1}
Exhaust gas velocity	6.2 ms^{-1}
Parameters	**Monitoring Results (April 2023)**
	Flare 1 – F601
NO_2	0.02 gs^{-1}
CO	2.16 gs^{-1}
SO_2	0.02 gs^{-1}
Benzene	<1.6 x 10^{-4} gs^{-1}
Vinyl chloride	<1.3 x 10^{-4} gs^{-1}
Exhaust gas velocity	11.6 ms^{-1}
Parameters	**Monitoring Results (May 2023)**
	Flare 1 – F601
NO_2	0.03 gs^{-1}
CO	0.33 gs^{-1}

SO_2	<0.01 gs^{-1}
Benzene	<4.47 x 10^{-4} gs^{-1}
Vinyl chloride	<1.07 x 10^{-4} gs^{-1}
Non-Methane Organic Carbons	0.003 gs^{-1}
Exhaust gas velocity	8.7 ms^{-1}
Parameters	**Monitoring Results (June 2023)**
	Flare 1 – F601
NO_2	0.02 gs^{-1}
CO	0.64 gs^{-1}
SO_2	<0.06 gs^{-1}
Benzene	3.30 x 10^{-4} gs^{-1}
Vinyl chloride	<1.01 x 10^{-4} gs^{-1}
Exhaust gas velocity	8.9 ms^{-1}
Parameters	**Monitoring Results (July 2023)**
	Flare 1 – F601
NO_2	0.02 gs^{-1}
CO	0.04 gs^{-1}
SO_2	0.03 gs^{-1}
Benzene	1.34 x 10^{-4} gs^{-1}
Vinyl chloride	<1.07 x 10^{-4} gs^{-1}
Exhaust gas velocity	8.5 ms^{-1}
Parameters	**Monitoring Results (August 2023)**
	Flare 1 – F601
NO_2	<0.02 gs^{-1}
CO	0.08 gs^{-1}
SO_2	0.06 gs^{-1}
Benzene	<1.22 x 10^{-4} gs^{-1}
Vinyl chloride	<0.98 x 10^{-5} gs^{-1}
Non-Methane Organic Carbons	0.003 gs^{-1}
Exhaust gas velocity	8.9 ms^{-1}
Parameters	**Monitoring Results (September 2023)**
	Flare 1 – F601
NO_2	<0.01 gs^{-1}
CO	0.20 gs^{-1}
SO_2	0.02 gs^{-1}
Benzene	<1.22 x 10^{-4} gs^{-1}
Vinyl chloride	<9.7 x 10^{-5} gs^{-1}
Exhaust gas velocity	9.1 ms^{-1}

Parameters	Monitoring Results (October 2023)
	Flare 1 – F601
NO_2	0.02 gs^{-1}
CO	0.38 gs^{-1}
SO_2	<0.01 gs^{-1}
Benzene	<3.03 x 10^{-4} gs^{-1}
Vinyl chloride	<7.9 x 10^{-5} gs^{-1}
Exhaust gas velocity	5.8 ms^{-1}
Parameters	**Monitoring Results (November 2023)**
	Flare 1 – F601
NO_2	0.02 gs^{-1}
CO	0.032 gs^{-1}
SO_2	0.05 gs^{-1}
Benzene	<8.9 x 10^{-5} gs^{-1}
Vinyl chloride	<7.1 x 10^{-5} gs^{-1}
Non-Methane Organic Carbons	0.004 gs^{-1}
Exhaust gas velocity	6.3 ms^{-1}
Parameters	**Monitoring Results (December 2023)**
	Flare 1 – F601
NO_2	0.03 gs^{-1}
CO	0.02 gs^{-1}
SO_2	<0.01 gs^{-1}
Benzene	<1.26 x 10^{-4} gs^{-1}
Vinyl chloride	<1.01 x 10^{-4} gs^{-1}
Exhaust gas velocity	9.0 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 23	-	-		Under Maintenance
2 Jan 23	820	1035		In Operation
3 Jan 23	830	1060		In Operation
4 Jan 23	865	1069		In Operation
5 Jan 23	887	1037		In Operation
6 Jan 23	880	1058		In Operation
7 Jan 23	890	1073		In Operation
8 Jan 23	870	1023		In Operation
9 Jan 23	870	1068		In Operation
10 Jan 23	830	1043		In Operation
11 Jan 23	880	1063		In Operation
12 Jan 23	830	1053		In Operation
13 Jan 23	890	1073		In Operation
14 Jan 23	880	1053		In Operation
15 Jan 23	880	1073	12.5	In Operation
16 Jan 23	900	1073		In Operation
17 Jan 23	890	1073		In Operation
18 Jan 23	830	1053		In Operation
19 Jan 23	860	963		In Operation
20 Jan 23	890	1053		In Operation
21 Jan 23	820	973		In Operation
22 Jan 23	910	1093		In Operation
23 Jan 23	880	1073		In Operation
24 Jan 23	870	1073		In Operation
25 Jan 23	880	1073		In Operation
26 Jan 23	870	1063		In Operation
27 Jan 23	930	1153		In Operation
28 Jan 23	860	1083		In Operation
29 Jan 23	860	1063		In Operation
30 Jan 23	870	1063		In Operation
31 Jan 23	840	1043		In Operation
1 Feb 23	860	1073		In Operation
2 Feb 23	880	1043		In Operation
3 Feb 23	870	1073		In Operation
4 Feb 23	830	1023		In Operation

Date	Gas Combustion Temperature (°C)	Exhaust Temperature (K)	Exhaust Gas Velocity (ms^{-1}) (a)	Operation Status
5 Feb 23	880	1033		In Operation
6 Feb 23	840	1053		In Operation
7 Feb 23	880	1053		In Operation
8 Feb 23	890	1033		In Operation
9 Feb 23	880	1043		In Operation
10 Feb 23	-	-		Under Maintenance
11 Feb 23	-	-		Under Maintenance
12 Feb 23	-	-		Under Maintenance
13 Feb 23	-	-		Under Maintenance
14 Feb 23	-	-		Under Maintenance
15 Feb 23	-	-	8.9	Under Maintenance
16 Feb 23	-	-		Under Maintenance
17 Feb 23	-	-		Under Maintenance
18 Feb 23	-	-		Under Maintenance
19 Feb 23	-	-		Under Maintenance
20 Feb 23	860	1023		In Operation
21 Feb 23	880	1043		In Operation
22 Feb 23	880	1053		In Operation
23 Feb 23	900	1053		In Operation
24 Feb 23	870	1003		In Operation
25 Feb 23	900	1093		In Operation
26 Feb 23	880	1083		In Operation
27 Feb 23	840	1023		In Operation
28 Feb 23	830	1073		In Operation
1 Mar 23	923	1090		In Operation
2 Mar 23	954	1093		In Operation
3 Mar 23	880	1083		In Operation
4 Mar 23	958	1083		In Operation
5 Mar 23	980	1073		In Operation
6 Mar 23	915	1083		In Operation
7 Mar 23	934	1083		In Operation
8 Mar 23	940	1063		In Operation
9 Mar 23	-	-		Under Maintenance
10 Mar 23	910	1063		In Operation
11 Mar 23	920	1083		In Operation
12 Mar 23	940	1083		In Operation
13 Mar 23	960	1093		In Operation

Date	Gas Combustion Temperature (°C)	Exhaust Temperature (K)	Exhaust Gas Velocity (ms^{-1}) (a)	Operation Status
14 Mar 23	980	1153		In Operation
15 Mar 23	920	1093	6.2	In Operation
16 Mar 23	990	1193		In Operation
17 Mar 23	990	1163		In Operation
18 Mar 23	970	1093		In Operation
19 Mar 23	940	1083		In Operation
20 Mar 23	950	1123		In Operation
21 Mar 23	900	1083		In Operation
22 Mar 23	880	1053		In Operation
23 Mar 23	870	1063		In Operation
24 Mar 23	890	1073		In Operation
25 Mar 23	940	1113		In Operation
26 Mar 23	950	1133		In Operation
27 Mar 23	960	1173		In Operation
28 Mar 23	930	1123		In Operation
29 Mar 23	950	1153		In Operation
30 Mar 23	970	1143		In Operation
31 Mar 23	900	1103		In Operation
1 Apr 23	872	1049		In Operation
2 Apr 23	875	1093		In Operation
3 Apr 23	895	1063		In Operation
4 Apr 23	900	1020		In Operation
5 Apr 23	942	1068		In Operation
6 Apr 23	880	1063		In Operation
7 Apr 23	860	1053		In Operation
8 Apr 23	860	1063		In Operation
9 Apr 23	850	1033		In Operation
10 Apr 23	890	1073		In Operation
11 Apr 23	880	1063		In Operation
12 Apr 23	880	1093		In Operation
13 Apr 23	890	1063		In Operation
14 Apr 23	860	1053		In Operation
15 Apr 23	920	1073	11.6	In Operation
16 Apr 23	880	1093		In Operation
17 Apr 23	840	1093		In Operation
18 Apr 23	870	1093		In Operation
19 Apr 23	880	1033		In Operation

Date	Gas Combustion Temperature (°C)	Exhaust Temperature (K)	Exhaust Gas Velocity (ms^{-1}) (a)	Operation Status
20 Apr 23	890	1043		In Operation
21 Apr 23	870	1093		In Operation
22 Apr 23	870	1063		In Operation
23 Apr 23	880	1093		In Operation
24 Apr 23	890	1083		In Operation
25 Apr 23	830	1023		In Operation
26 Apr 23	930	1133		In Operation
27 Apr 23	940	1153		In Operation
28 Apr 23	890	1063		In Operation
29 Apr 23	900	1083		In Operation
30 Apr 23	930	1033		In Operation
1 May 23	954	1053		In Operation
2 May 23	820	1063		In Operation
3 May 23	860	1003		In Operation
4 May 23	930	1093		In Operation
5 May 23	940	1033		In Operation
6 May 23	990	1053		In Operation
7 May 23	870	1053		In Operation
8 May 23	840	1053		In Operation
9 May 23	870	1073		In Operation
10 May 23	900	1043		In Operation
11 May 23	900	1093		In Operation
12 May 23	840	1043		In Operation
13 May 23	920	1143		In Operation
14 May 23	830	1053		In Operation
15 May 23	870	1093	8.7	In Operation
16 May 23	850	1093		In Operation
17 May 23	930	1043		In Operation
18 May 23	860	1003		In Operation
19 May 23	920	1163		In Operation
20 May 23	840	1023		In Operation
21 May 23	940	1033		In Operation
22 May 23	850	1083		In Operation
23 May 23	890	1103		In Operation
24 May 23	880	1083		In Operation
25 May 23	880	1103		In Operation
26 May 23	855	1023		In Operation

Date	Gas Combustion Temperature (°C)	Exhaust Temperature (K)	Exhaust Gas Velocity (ms^{-1}) (a)	Operation Status
27 May 23	860	1003		In Operation
28 May 23	830	1053		In Operation
29 May 23	840	1013		In Operation
30 May 23	850	1023		In Operation
31 May 23	840	1023		In Operation
1 Jun 23	868	1017		In Operation
2 Jun 23	870	1038		In Operation
3 Jun 23	884	1053		In Operation
4 Jun 23	860	1053		In Operation
5 Jun 23	880	1033		In Operation
6 Jun 23	890	1033		In Operation
7 Jun 23	890	1043		In Operation
8 Jun 23	820	1043		In Operation
9 Jun 23	890	1053		In Operation
10 Jun 23	890	1083		In Operation
11 Jun 23	900	1073		In Operation
12 Jun 23	850	1063		In Operation
13 Jun 23	880	1053		In Operation
14 Jun 23	890	1003		In Operation
15 Jun 23	850	1083	8.9	In Operation
16 Jun 23	920	1133		In Operation
17 Jun 23	850	1023		In Operation
18 Jun 23	830	1033		In Operation
19 Jun 23	880	1053		In Operation
20 Jun 23	850	1053		In Operation
21 Jun 23	820	1043		In Operation
22 Jun 23	880	1033		In Operation
23 Jun 23	830	1043		In Operation
24 Jun 23	880	1063		In Operation
25 Jun 23	840	1053		In Operation
26 Jun 23	880	1023		In Operation
27 Jun 23	870	1023		In Operation
28 Jun 23	900	1123		In Operation
29 Jun 23	-	-		In Operation
30 Jun 23	-	-		Under Maintenance
1 Jul 23	870	1117		In Operation
2 Jul 23	870	1093		In Operation

Date	Gas Combustion Temperature (°C)	Exhaust Temperature (K)	Exhaust Gas Velocity (ms^{-1}) (a)	Operation Status
3 Jul 23	860	1113		In Operation
4 Jul 23	880	1113		In Operation
5 Jul 23	840	1083		In Operation
6 Jul 23	880	1143		In Operation
7 Jul 23	870	1123		In Operation
8 Jul 23	880	1113		In Operation
9 Jul 23	860	1063		In Operation
10 Jul 23	880	1043		In Operation
11 Jul 23	860	1043		In Operation
12 Jul 23	880	1053		In Operation
13 Jul 23	840	1023		In Operation
14 Jul 23	830	1043		In Operation
15 Jul 23	820	1053	8.5	In Operation
16 Jul 23	880	1113		In Operation
17 Jul 23	830	1043		In Operation
18 Jul 23	860	1033		In Operation
19 Jul 23	870	1053		In Operation
20 Jul 23	930	1063		In Operation
21 Jul 23	880	1053		In Operation
22 Jul 23	880	1053		In Operation
23 Jul 23	830	1023		In Operation
24 Jul 23	870	1033		In Operation
25 Jul 23	850	1053		In Operation
26 Jul 23	860	1003		In Operation
27 Jul 23	860	1093		In Operation
28 Jul 23	860	1093		In Operation
29 Jul 23	920	1153		In Operation
30 Jul 23	910	1033		In Operation
31 Jul 23	870	1103		In Operation
1 Aug 23	877	1043		In Operation
2 Aug 23	830	1023		In Operation
3 Aug 23	835	993		In Operation
4 Aug 23	850	1003		In Operation
5 Aug 23	850	1043		In Operation
6 Aug 23	-	-		Under Maintenance
7 Aug 23	860	1033		In Operation
8 Aug 23	860	1023		In Operation

Date	Gas Combustion Temperature (°C)	Exhaust Temperature (K)	Exhaust Gas Velocity (ms^{-1}) (a)	Operation Status
9 Aug 23	980	1133		In Operation
10 Aug 23	970	1063		In Operation
11 Aug 23	950	1103		In Operation
12 Aug 23	880	1053		In Operation
13 Aug 23	860	1033		In Operation
14 Aug 23	850	1043		In Operation
15 Aug 23	870	1023	8.9	In Operation
16 Aug 23	910	1093		In Operation
17 Aug 23	980	1083		In Operation
18 Aug 23	950	1123		In Operation
19 Aug 23	870	1053		In Operation
20 Aug 23	830	1023		In Operation
21 Aug 23	860	1053		In Operation
22 Aug 23	880	1063		In Operation
23 Aug 23	860	1053		In Operation
24 Aug 23	850	1063		In Operation
25 Aug 23	840	1043		In Operation
26 Aug 23	860	1073		In Operation
27 Aug 23	860	1053		In Operation
28 Aug 23	860	1063		In Operation
29 Aug 23	860	1053		In Operation
30 Aug 23	865	1085		In Operation
31 Aug 23	890	1073		In Operation
1 Sep 23	843	1029		In Operation
2 Sep 23	852	1041		In Operation
3 Sep 23	859	1023		In Operation
4 Sep 23	954	1034		In Operation
5 Sep 23	874	979		In Operation
6 Sep 23	880	1003		In Operation
7 Sep 23	946	1074		In Operation
8 Sep 23	936	1106		In Operation
9 Sep 23	876	1047		In Operation
10 Sep 23	990	1151		In Operation
11 Sep 23	901	1127		In Operation
12 Sep 23	988	1149		In Operation
13 Sep 23	897	1055		In Operation
14 Sep 23	935	1024		In Operation

Date	Gas Combustion Temperature (°C)	Exhaust Temperature (K)	Exhaust Gas Velocity (ms^{-1}) (a)	Operation Status
15 Sep 23	856	1046	9.1	In Operation
16 Sep 23	971	1085		In Operation
17 Sep 23	881	1012		In Operation
18 Sep 23	900	1082		In Operation
19 Sep 23	845	979		In Operation
20 Sep 23	844	1047		In Operation
21 Sep 23	892	1035		In Operation
22 Sep 23	833	1027		In Operation
23 Sep 23	861	1008		In Operation
24 Sep 23	848	1010		In Operation
25 Sep 23	849	1041		In Operation
26 Sep 23	858	1037		In Operation
27 Sep 23	843	1025		In Operation
28 Sep 23	841	1034		In Operation
29 Sep 23	972	1044		In Operation
30 Sep 23	847	1032		In Operation
1 Oct 23	824	1041		In Operation
2 Oct 23	827	1063		In Operation
3 Oct 23	830	1067		In Operation
4 Oct 23	832	1070		In Operation
5 Oct 23	834	1073		In Operation
6 Oct 23	836	1076		In Operation
7 Oct 23	838	1079		In Operation
8 Oct 23	840	1083		In Operation
9 Oct 23	843	1087		In Operation
10 Oct 23	845	1091		In Operation
11 Oct 23	848	1095	5.8	In Operation
12 Oct 23	852	1100		In Operation
13 Oct 23	856	1107		In Operation
14 Oct 23	860	1113		In Operation
15 Oct 23	868	1102		In Operation
16 Oct 23	860	1125		In Operation
17 Oct 23	861	1113		In Operation
18 Oct 23	859	1124		In Operation
19 Oct 23	857	1116		In Operation
20 Oct 23	868	1100		In Operation
21 Oct 23	854	1115		In Operation

Date	Gas Combustion Temperature (°C)	Exhaust Temperature (K)	Exhaust Gas Velocity (ms^{-1}) (a)	Operation Status
22 Oct 23	864	1013		In Operation
23 Oct 23	868	1112		In Operation
24 Oct 23	850	1109		In Operation
25 Oct 23	854	1086		In Operation
26 Oct 23	850	1106		In Operation
27 Oct 23	833	1075		In Operation
28 Oct 23	959	1199		In Operation
29 Oct 23	837	1093		In Operation
30 Oct 23	857	1120		In Operation
31 Oct 23	848	1116		In Operation
1 Nov 23	992	1258		In Operation
2 Nov 23	900	1141		In Operation
3 Nov 23	952	1206		In Operation
4 Nov 23	838	1100		In Operation
5 Nov 23	889	1155		In Operation
6 Nov 23	836	1103		In Operation
7 Nov 23	860	1118		In Operation
8 Nov 23	862	1121		In Operation
9 Nov 23	858	1121		In Operation
10 Nov 23	993	1246		In Operation
11 Nov 23	869	1129		In Operation
12 Nov 23	855	1115		In Operation
13 Nov 23	870	1128		In Operation
14 Nov 23	981	1229		In Operation
15 Nov 23	863	1123		In Operation
16 Nov 23	973	1239		In Operation
17 Nov 23	970	1209		In Operation
18 Nov 23	901	1137		In Operation
19 Nov 23	867	1105		In Operation
20 Nov 23	885	1129		In Operation
21 Nov 23	985	1229		In Operation
22 Nov 23	956	1212		In Operation
23 Nov 23	913	1148		In Operation
24 Nov 23	911	1161		In Operation
25 Nov 23	890	1144		In Operation
26 Nov 23	849	1107		In Operation
27 Nov 23	916	1164	6.3	In Operation

Date	Gas Combustion Temperature (°C)	Exhaust Temperature (K)	Exhaust Gas Velocity (ms^{-1}) (a)	Operation Status
28 Nov 23	941	1170		In Operation
29 Nov 23	907	1148		In Operation
30 Nov 23	978	1170		In Operation
1 Dec 23	990	1143		In Operation
2 Dec 23	880	1123		In Operation
3 Dec 23	990	1143		In Operation
4 Dec 23	960	1153		In Operation
5 Dec 23	990	1143		In Operation
6 Dec 23	990	1233		In Operation
7 Dec 23	860	1103		In Operation
8 Dec 23	990	1123		In Operation
9 Dec 23	860	1113		In Operation
10 Dec 23	980	1153		In Operation
11 Dec 23	980	1123		In Operation
12 Dec 23	990	1253		In Operation
13 Dec 23	890	1083		In Operation
14 Dec 23	940	1113		In Operation
15 Dec 23	990	1123		In Operation
16 Dec 23	990	1253		In Operation
17 Dec 23	850	1083		In Operation
18 Dec 23	860	1093		In Operation
19 Dec 23	850	1053		In Operation
20 Dec 23	850	1063		In Operation
21 Dec 23	890	1093		In Operation
22 Dec 23	910	1093		In Operation
23 Dec 23	920	1133		In Operation
24 Dec 23	950	1143		In Operation
25 Dec 23	850	1083		In Operation
26 Dec 23	890	1093		In Operation
27 Dec 23	830	1033		In Operation
28 Dec 23	980	1143		In Operation
29 Dec 23	840	1043		In Operation
30 Dec 23	830	1053		In Operation
31 Dec 23	890	1053	9.0	In Operation
Average	886	1079	8.7	
Min	820	963	5.8	
Max	993	1258	12.5	

Date	Gas Combustion Temperature (°C)	Exhaust Temperature (K)	Exhaust Gas Velocity (ms^{-1}) (a)	Operation Status
Flare 2 – F602				
1 Jan 23	-	-		Under Maintenance
2 Jan 23	-	-		Under Maintenance
3 Jan 23	-	-		Under Maintenance
4 Jan 23	-	-		Under Maintenance
5 Jan 23	-	-		Under Maintenance
6 Jan 23	830	1053		In Operation
7 Jan 23	860	1103		In Operation
8 Jan 23	840	1073		In Operation
9 Jan 23	870	1073		In Operation
10 Jan 23	840	1073		In Operation
11 Jan 23	820	1043		In Operation
12 Jan 23	900	1113		In Operation
13 Jan 23	860	1113		In Operation
14 Jan 23	820	1073		In Operation
15 Jan 23	820	1053	12.5	In Operation
16 Jan 23	840	1063		In Operation
17 Jan 23	920	1113		In Operation
18 Jan 23	880	1073		In Operation
19 Jan 23	860	1073		In Operation
20 Jan 23	840	1063		In Operation
21 Jan 23	840	1053		In Operation
22 Jan 23	860	1053		In Operation
23 Jan 23	-	-		Under Maintenance
24 Jan 23	-	-		Under Maintenance
25 Jan 23	-	-		Under Maintenance
26 Jan 23	-	-		Under Maintenance
27 Jan 23	880	1103		In Operation
28 Jan 23	830	1028		In Operation
29 Jan 23	870	1063		In Operation
30 Jan 23	-	-		Under Maintenance
31 Jan 23	840	1043		In Operation
1 Feb 23	860	1088		In Operation
2 Feb 23	-	-		Under Maintenance
3 Feb 23	-	-		Under Maintenance
4 Feb 23	860	1083		In Operation
5 Feb 23	840	1093		In Operation

Date	Gas Combustion Temperature (°C)	Exhaust Temperature (K)	Exhaust Gas Velocity (ms^{-1}) (a)	Operation Status
6 Feb 23	880	1103		In Operation
7 Feb 23	900	1153		In Operation
8 Feb 23	-	-		Under Maintenance
9 Feb 23	850	1083		In Operation
10 Feb 23	840	1063		In Operation
11 Feb 23	-	-		Under Maintenance
12 Feb 23	870	1053		In Operation
13 Feb 23	870	1073		In Operation
14 Feb 23	860	1093		In Operation
15 Feb 23	880	1083	8.9	In Operation
16 Feb 23	880	1093		In Operation
17 Feb 23	840	1073		In Operation
18 Feb 23	830	1053		In Operation
19 Feb 23	830	1053		In Operation
20 Feb 23	-	-		Under Maintenance
21 Feb 23	840	1053		In Operation
22 Feb 23	820	1073		In Operation
23 Feb 23	880	1083		In Operation
24 Feb 23	880	1083		In Operation
25 Feb 23	-	-		Under Maintenance
26 Feb 23	-	-		Under Maintenance
27 Feb 23	-	-		Under Maintenance
28 Feb 23	890	1093		In Operation
1 Mar 23	990	1193		In Operation
2 Mar 23	905	1113		In Operation
3 Mar 23	930	1123		In Operation
4 Mar 23	910	1113		In Operation
5 Mar 23	900	1103		In Operation
6 Mar 23	910	1113		In Operation
7 Mar 23	920	1133		In Operation
8 Mar 23	990	1193		In Operation
9 Mar 23	-	-		Under Maintenance
10 Mar 23	900	1103		In Operation
11 Mar 23	910	1113		In Operation
12 Mar 23	910	1123		In Operation
13 Mar 23	910	1103		In Operation
14 Mar 23	920	1133		In Operation

Date	Gas Combustion Temperature (°C)	Exhaust Temperature (K)	Exhaust Gas Velocity (ms^{-1}) (a)	Operation Status
15 Mar 23	940	1143	6.2	In Operation
16 Mar 23	990	1193		In Operation
17 Mar 23	990	1203		In Operation
18 Mar 23	880	1113		In Operation
19 Mar 23	990	1183		In Operation
20 Mar 23	940	1163		In Operation
21 Mar 23	910	1143		In Operation
22 Mar 23	830	993		In Operation
23 Mar 23	910	1123		In Operation
24 Mar 23	930	1123		In Operation
25 Mar 23	940	1113		In Operation
26 Mar 23	950	1133		In Operation
27 Mar 23	990	1193		In Operation
28 Mar 23	950	1133		In Operation
29 Mar 23	930	1133		In Operation
30 Mar 23	870	1063		In Operation
31 Mar 23	860	1043		In Operation
1 Apr 23	-	-		Under Maintenance
2 Apr 23	-	-		Under Maintenance
3 Apr 23	840	1083		In Operation
4 Apr 23	-	-		Under Maintenance
5 Apr 23	840	983		In Operation
6 Apr 23	880	1103		In Operation
7 Apr 23	890	1123		In Operation
8 Apr 23	-	-		Under Maintenance
9 Apr 23	-	-		Under Maintenance
10 Apr 23	840	1093		In Operation
11 Apr 23	-	-		Under Maintenance
12 Apr 23	-	-		Under Maintenance
13 Apr 23	-	-		Under Maintenance
14 Apr 23	-	-		Under Maintenance
15 Apr 23	-	-	11.6	Under Maintenance
16 Apr 23	860	1103		In Operation
17 Apr 23	860	1073		In Operation
18 Apr 23	830	1083		In Operation
19 Apr 23	840	1078		In Operation
20 Apr 23	880	1103		In Operation

Date	Gas Combustion Temperature (°C)	Exhaust Temperature (K)	Exhaust Gas Velocity (ms^{-1}) (a)	Operation Status
21 Apr 23	840	1088		In Operation
22 Apr 23	-	-		Under Maintenance
23 Apr 23	-	-		Under Maintenance
24 Apr 23	880	1113		In Operation
25 Apr 23	-	-		Under Maintenance
26 Apr 23	-	-		Under Maintenance
27 Apr 23	-	-		Under Maintenance
28 Apr 23	-	-		Under Maintenance
29 Apr 23	-	-		Under Maintenance
30 Apr 23	860	1113		In Operation
1 May 23	890	1113		In Operation
2 May 23	920	1033		In Operation
3 May 23	890	1083		In Operation
4 May 23	850	1003		In Operation
5 May 23	830	1073		In Operation
6 May 23	910	1033		In Operation
7 May 23	860	1043		In Operation
8 May 23	880	1123		In Operation
9 May 23	890	1013		In Operation
10 May 23	830	1073		In Operation
11 May 23	880	1033		In Operation
12 May 23	890	1053		In Operation
13 May 23	890	1093		In Operation
14 May 23	860	1083		In Operation
15 May 23	880	1123	8.7	In Operation
16 May 23	840	1073		In Operation
17 May 23	890	1043		In Operation
18 May 23	870	1083		In Operation
19 May 23	900	1113		In Operation
20 May 23	890	1113		In Operation
21 May 23	900	1123		In Operation
22 May 23	900	1113		In Operation
23 May 23	880	1073		In Operation
24 May 23	890	1093		In Operation
25 May 23	880	1083		In Operation
26 May 23	860	1073		In Operation
27 May 23	890	1103		In Operation

Date	Gas Combustion Temperature (°C)	Exhaust Temperature (K)	Exhaust Gas Velocity (ms^{-1}) (a)	Operation Status
28 May 23	880	1103		In Operation
29 May 23	870	1093		In Operation
30 May 23	830	1033		In Operation
31 May 23	900	1113		In Operation
1 Jun 23	880	1113		In Operation
2 Jun 23	830	1063		In Operation
3 Jun 23	880	1113		In Operation
4 Jun 23	920	1113		In Operation
5 Jun 23	910	1153		In Operation
6 Jun 23	910	1163		In Operation
7 Jun 23	870	1083		In Operation
8 Jun 23	860	1093		In Operation
9 Jun 23	880	1103		In Operation
10 Jun 23	830	1063		In Operation
11 Jun 23	880	1103		In Operation
12 Jun 23	900	1113		In Operation
13 Jun 23	835	1063		In Operation
14 Jun 23	870	1093		In Operation
15 Jun 23	-	-	8.9	Under Maintenance
16 Jun 23	-	-		Under Maintenance
17 Jun 23	840	1063		In Operation
18 Jun 23	850	1073		In Operation
19 Jun 23	-	-		Under Maintenance
20 Jun 23	-	-		Under Maintenance
21 Jun 23	-	-		Under Maintenance
22 Jun 23	-	-		Under Maintenance
23 Jun 23	-	-		Under Maintenance
24 Jun 23	-	-		Under Maintenance
25 Jun 23	-			Under Maintenance
26 Jun 23	-	-		Under Maintenance
27 Jun 23	-	-		Under Maintenance
28 Jun 23	880	1063		In Operation
29 Jun 23	870	1083		In Operation
30 Jun 23	850	1063		In Operation
1 Jul 23	880	1143		In Operation
2 Jul 23	840	1043		In Operation
3 Jul 23	830	1053		In Operation

Date	Gas Combustion Temperature (°C)	Exhaust Temperature (K)	Exhaust Gas Velocity (ms^{-1}) (a)	Operation Status
4 Jul 23	860	1083		In Operation
5 Jul 23	860	1063		In Operation
6 Jul 23	840	1083		In Operation
7 Jul 23	880	1073		In Operation
8 Jul 23	860	1093		In Operation
9 Jul 23	-	-		Under Maintenance
10 Jul 23	880	1113		In Operation
11 Jul 23	860	1093		In Operation
12 Jul 23	880	1103		In Operation
13 Jul 23	850	1083		In Operation
14 Jul 23	830	1053		In Operation
15 Jul 23	850	1083	8.5	In Operation
16 Jul 23	860	1083		In Operation
17 Jul 23	830	1053		In Operation
18 Jul 23	840	1083		In Operation
19 Jul 23	900	1123		In Operation
20 Jul 23	870	1063		In Operation
21 Jul 23	870	1123		In Operation
22 Jul 23	840	1083		In Operation
23 Jul 23	830	1073		In Operation
24 Jul 23	830	1053		In Operation
25 Jul 23	860	1083		In Operation
26 Jul 23	840	1093		In Operation
27 Jul 23	830	1063		In Operation
28 Jul 23	870	1093		In Operation
29 Jul 23	840	1053		In Operation
30 Jul 23	-	-		Under Maintenance
31 Jul 23	850	1093		In Operation
1 Aug 23	830	1063		In Operation
2 Aug 23	840	1053		In Operation
3 Aug 23	890	1003		In Operation
4 Aug 23	830	1053		In Operation
5 Aug 23	860	1083		In Operation
6 Aug 23	860	1083		In Operation
7 Aug 23	900	1093		In Operation
8 Aug 23	830	1033		In Operation
9 Aug 23	870	1083		In Operation

Date	Gas Combustion Temperature (°C)	Exhaust Temperature (K)	Exhaust Gas Velocity (ms^{-1}) [a]	Operation Status
10 Aug 23	870	1073		In Operation
11 Aug 23	880	1023		In Operation
12 Aug 23	930	1123		In Operation
13 Aug 23	850	1063		In Operation
14 Aug 23	820	1023		In Operation
15 Aug 23	860	1043	8.9	In Operation
16 Aug 23	820	1053		In Operation
17 Aug 23	860	1053		In Operation
18 Aug 23	840	1053		In Operation
19 Aug 23	820	1023		In Operation
20 Aug 23	840	1053		In Operation
21 Aug 23	840	1063		In Operation
22 Aug 23	870	1116		In Operation
23 Aug 23	840	1063		In Operation
24 Aug 23	830	1083		In Operation
25 Aug 23	830	1043		In Operation
26 Aug 23	890	1053		In Operation
27 Aug 23	860	1053		In Operation
28 Aug 23	850	1083		In Operation
29 Aug 23	880	1103		In Operation
30 Aug 23	840	1083		In Operation
31 Aug 23	890	1073		In Operation
1 Sep 23	939	1142		In Operation
2 Sep 23	917	1091		In Operation
3 Sep 23	953	1110		In Operation
4 Sep 23	948	1126		In Operation
5 Sep 23	988	1178		In Operation
6 Sep 23	946	1128		In Operation
7 Sep 23	968	1134		In Operation
8 Sep 23	948	1121		In Operation
9 Sep 23	926	1097		In Operation
10 Sep 23	952	1128		In Operation
11 Sep 23	889	1076		In Operation
12 Sep 23	899	1076		In Operation
13 Sep 23	922	1098		In Operation
14 Sep 23	931	1109		In Operation
15 Sep 23	914	1098	9.1	In Operation

Date	Gas Combustion Temperature (°C)	Exhaust Temperature (K)	Exhaust Gas Velocity (ms^{-1}) [a]	Operation Status
16 Sep 23	929	1110		In Operation
17 Sep 23	931	1111		In Operation
18 Sep 23	938	1109		In Operation
19 Sep 23	942	1121		In Operation
20 Sep 23	948	1118		In Operation
21 Sep 23	941	1114		In Operation
22 Sep 23	931	1109		In Operation
23 Sep 23	941	1110		In Operation
24 Sep 23	952	1124		In Operation
25 Sep 23	928	1104		In Operation
26 Sep 23	943	1104		In Operation
27 Sep 23	940	1119		In Operation
28 Sep 23	950	1121		In Operation
29 Sep 23	919	1085		In Operation
30 Sep 23	912	1084		In Operation
1 Oct 23	936	1061		In Operation
2 Oct 23	845	1089		In Operation
3 Oct 23	899	1120		In Operation
4 Oct 23	908	1115		In Operation
5 Oct 23	913	1117		In Operation
6 Oct 23	917	1122		In Operation
7 Oct 23	913	1137		In Operation
8 Oct 23	894	1116		In Operation
9 Oct 23	921	1140		In Operation
10 Oct 23	920	1150		In Operation
11 Oct 23	923	1152		In Operation
12 Oct 23	909	1140		In Operation
13 Oct 23	921	1143		In Operation
14 Oct 23	914	1159		In Operation
15 Oct 23	904	1123		In Operation
16 Oct 23	935	1060		In Operation
17 Oct 23	842	1086		In Operation
18 Oct 23	900	1121		In Operation
19 Oct 23	911	1118		In Operation
20 Oct 23	912	1116		In Operation
21 Oct 23	914	1119		In Operation
22 Oct 23	914	1138	5.8	In Operation

Date	Gas Combustion Temperature (°C)	Exhaust Temperature (K)	Exhaust Gas Velocity (ms^{-1}) (a)	Operation Status
23 Oct 23	897	1119		In Operation
24 Oct 23	920	1139		In Operation
25 Oct 23	917	1147		In Operation
26 Oct 23	924	1153		In Operation
27 Oct 23	912	1143		In Operation
28 Oct 23	920	1142		In Operation
29 Oct 23	911	1156		In Operation
30 Oct 23	905	1124		In Operation
31 Oct 23	903	1112		In Operation
1 Nov 23	882	1101		In Operation
2 Nov 23	855	1045		In Operation
3 Nov 23	869	1023		In Operation
4 Nov 23	853	1063		In Operation
5 Nov 23	890	1107		In Operation
6 Nov 23	973	1106		In Operation
7 Nov 23	840	1058		In Operation
8 Nov 23	863	1087		In Operation
9 Nov 23	876	1093		In Operation
10 Nov 23	828	1090		In Operation
11 Nov 23	841	1037		In Operation
12 Nov 23	855	1075		In Operation
13 Nov 23	860	1073		In Operation
14 Nov 23	900	1120		In Operation
15 Nov 23	889	1099		In Operation
16 Nov 23	843	1106		In Operation
17 Nov 23	885	1123		In Operation
18 Nov 23	862	1084		In Operation
19 Nov 23	864	1093		In Operation
20 Nov 23	851	1081		In Operation
21 Nov 23	859	1090		In Operation
22 Nov 23	860	1073		In Operation
23 Nov 23	862	1095		In Operation
24 Nov 23	868	1087		In Operation
25 Nov 23	-	-		Under maintenance
26 Nov 23	-	-		Under maintenance
27 Nov 23	854	1110		In Operation
28 Nov 23	882	1147	6.3	In Operation

Date	Gas Combustion Temperature (°C)	Exhaust Temperature (K)	Exhaust Gas Velocity (ms^{-1}) (a)	Operation Status
29 Nov 23	865	1098		In Operation
30 Nov 23	865	1119		In Operation
1 Dec 23	860	1053		In Operation
2 Dec 23	830	1043		In Operation
3 Dec 23	860	1043		In Operation
4 Dec 23	840	993		In Operation
5 Dec 23	850	1013		In Operation
6 Dec 23	960	1143		In Operation
7 Dec 23	910	1093		In Operation
8 Dec 23	840	1063		In Operation
9 Dec 23	850	1023		In Operation
10 Dec 23	840	1013		In Operation
11 Dec 23	840	993		In Operation
12 Dec 23	860	1023		In Operation
13 Dec 23	880	1043		In Operation
14 Dec 23	880	1093		In Operation
15 Dec 23	860	1013	9.0	In Operation
16 Dec 23	850	993		In Operation
17 Dec 23	-	-		Under maintenance
18 Dec 23	-	-		Under maintenance
19 Dec 23	-	-		Under maintenance
20 Dec 23	-	-		Under maintenance
21 Dec 23	860	1093		In Operation
22 Dec 23	840	1053		In Operation
23 Dec 23	860	1043		In Operation
24 Dec 23	880	1063		In Operation
25 Dec 23	880	1063		In Operation
26 Dec 23	-	-		Under maintenance
27 Dec 23	880	1083		In Operation
28 Dec 23	870	1053		In Operation
29 Dec 23	830	1053		In Operation
30 Dec 23	840	1063		In Operation
31 Dec 23	750	923		In Operation
Average	880	1089	8.70	
Min	750	923	5.80	
Max	990	1203	12.50	

Date	Gas Combustion Temperature (°C)	Exhaust Temperature (K)	Exhaust Gas Velocity (ms^{-1}) (a)	Operation Status

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 2023)**
NO_2	0.044 gs^{-1}
CO	0.731 gs^{-1}
SO_2	<0.001 gs^{-1}
Benzene	<7.0 x 10^{-5} gs^{-1}
Vinyl chloride	<9.6 x 10^{-6} gs^{-1}
Exhaust gas velocity	10.0 ms^{-1}
Parameters	**Monitoring Results (February 2023)**
NO_2	0.053 gs^{-1}
CO	0.973 gs^{-1}
SO_2	<0.002 gs^{-1}
Benzene	<1.0 x 10^{-4} gs^{-1}
Vinyl chloride	<1.3 x 10^{-5} gs^{-1}
Non-Methane Organic Carbons	<3.3 x 10^{-3} gs^{-1}
Exhaust gas velocity	12.1 ms^{-1}
Parameters	**Monitoring Results (March 2023)**
NO_2	0.079 gs^{-1}
CO	0.942 gs^{-1}
SO_2	<0.001 gs^{-1}
Benzene	9.7 x 10^{-5} gs^{-1}
Vinyl chloride	<1.2 x 10^{-5} gs^{-1}
Non-Methane Organic Carbons	13.9 ms^{-1}
Parameters	**Monitoring Results (April 2023)**
NO_2	0.018 gs^{-1}
CO	0.694 gs^{-1}
SO_2	0.001 gs^{-1}
Benzene	3.0 x 10^{-5} gs^{-1}
Vinyl chloride	<0.8 x 10^{-5} gs^{-1}
Exhaust gas velocity	9.1 ms^{-1}
Parameters	**Monitoring Results (May 2023)**
NO_2	0.030 gs^{-1}
CO	0.853 gs^{-1}
SO_2	<0.001 gs^{-1}
Benzene	5.9 x 10^{-5} gs^{-1}
Vinyl chloride	<1.2 x 10^{-5} gs^{-1}
Non-Methane Organic Carbons	1.9 x 10^{-3} gs^{-1}
Exhaust gas velocity	12.9 ms^{-1}

Parameters	Monitoring Results (June 2023)
NO_2	0.034 gs^{-1}
CO	1.012 gs^{-1}
SO_2	0.002 gs^{-1}
Benzene	6.6×10^{-5} gs^{-1}
Vinyl chloride	$<1.3 \times 10^{-5}$ gs^{-1}
Non-Methane Organic Carbons	13.6 ms^{-1}
Parameters	**Monitoring Results (July 2023)**
NO_2	0.032 gs^{-1}
CO	0.678 gs^{-1}
SO_2	<0.001 gs^{-1}
Benzene	3.4×10^{-5} gs^{-1}
Vinyl chloride	$<8.9 \times 10^{-6}$ gs^{-1}
Exhaust gas velocity	10.6 ms^{-1}
Parameters	**Monitoring Results (August 2023)**
NO_2	0.024 gs^{-1}
CO	0.895 gs^{-1}
SO_2	<0.001 gs^{-1}
Benzene	6.9×10^{-5} gs^{-1}
Vinyl chloride	$<1.1 \times 10^{-5}$ gs^{-1}
Non-Methane Organic Carbons	1.9×10^{-3} gs^{-1}
Exhaust gas velocity	13.1 ms^{-1}
Parameters	**Monitoring Results (September 2023)**
NO_2	0.007 gs^{-1}
CO	0.89 gs^{-1}
SO_2	0.001 gs^{-1}
Benzene	1.5×10^{-4} gs^{-1}
Vinyl chloride	$<1.07 \times 10^{-5}$ gs^{-1}
Non-Methane Organic Carbons	13.0 ms^{-1}
Parameters	**Monitoring Results (October 2023)**
NO_2	0.06 gs^{-1}
CO	1.08 gs^{-1}
SO_2	<0.001 gs^{-1}
Benzene	4.0×10^{-5} gs^{-1}
Vinyl chloride	$<1.06 \times 10^{-5}$ gs^{-1}
Exhaust gas velocity	11.6 ms^{-1}
Parameters	**Monitoring Results (November 2023)**
NO_2	0.095 gs^{-1}

CO	1.082 gs^{-1}
SO_2	<0.001 gs^{-1}
Benzene	1.01 x 10^{-4} gs^{-1}
Vinyl chloride	<1.02 x 10^{-5} gs^{-1}
Non-Methane Organic Carbons	0.0064 gs^{-1}
Exhaust gas velocity	11.8 ms^{-1}
Parameters	**Monitoring Results (December 2023)**
NO_2	0.075 gs^{-1}
CO	0.994 gs^{-1}
SO_2	<4.00 x 10^{-4} gs^{-1}
Benzene	1.86 x 10^{-4} gs^{-1}
Vinyl chloride	<9.5 x 10^{-6} gs^{-1}
Exhaust gas velocity	10.5 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 23	-		Standby
2 Jan 23	-		Standby
3 Jan 23	-		Standby
4 Jan 23	-		Standby
5 Jan 23	860		In Operation
6 Jan 23	860		In Operation
7 Jan 23	-		Standby
8 Jan 23	-		Standby
9 Jan 23	-		Standby
10 Jan 23	-		Standby
11 Jan 23	-		Standby
12 Jan 23	-		Standby
13 Jan 23	-		Standby
14 Jan 23	-		Standby
15 Jan 23	-	10.0	Standby
16 Jan 23	-		Standby
17 Jan 23	856		In Operation
18 Jan 23	849		In Operation
19 Jan 23	856		In Operation
20 Jan 23	860		In Operation
21 Jan 23	869		In Operation
22 Jan 23	-		Standby
23 Jan 23	-		Standby
24 Jan 23	-		Standby
25 Jan 23	-		Standby
26 Jan 23	860		In Operation
27 Jan 23	860		In Operation
28 Jan 23	860		In Operation
29 Jan 23	861		In Operation
30 Jan 23	865		In Operation
31 Jan 23	865		In Operation
1 Feb 23	868		In Operation
2 Feb 23	868		In Operation

Date	Exhaust temperature (K)	Exhaust gas velocity (ms^{-1}) [a]	Operation Status (Landfill Gas Generator in Operation)
3 Feb 23	868		In Operation
4 Feb 23	869		In Operation
5 Feb 23	870		In Operation
6 Feb 23	865		In Operation
7 Feb 23	867		In Operation
8 Feb 23	866		In Operation
9 Feb 23	872		In Operation
10 Feb 23	867		In Operation
11 Feb 23	867		In Operation
12 Feb 23	870		In Operation
13 Feb 23	871		In Operation
14 Feb 23	860		In Operation
15 Feb 23	868	12.1	In Operation
16 Feb 23	868		In Operation
17 Feb 23	869		In Operation
18 Feb 23	869		In Operation
19 Feb 23	870		In Operation
20 Feb 23	-		Under Maintenance
21 Feb 23	-		Under Maintenance
22 Feb 23	-		Under Maintenance
23 Feb 23	-		Under Maintenance
24 Feb 23	870		In Operation
25 Feb 23	870		In Operation
26 Feb 23	872		In Operation
27 Feb 23	868		In Operation
28 Feb 23	870		In Operation
1 Mar 23	871		In Operation
2 Mar 23	876		In Operation
3 Mar 23	873		In Operation
4 Mar 23	874		In Operation
5 Mar 23	875		In Operation
6 Mar 23	868		In Operation
7 Mar 23	877		In Operation
8 Mar 23	878		In Operation
9 Mar 23	879		In Operation

Date	Exhaust temperature (K)	Exhaust gas velocity (ms^{-1}) [a]	Operation Status (Landfill Gas Generator in Operation)
10 Mar 23	879		In Operation
11 Mar 23	881		In Operation
12 Mar 23	879		In Operation
13 Mar 23	875		In Operation
14 Mar 23	876		In Operation
15 Mar 23	877	13.9	In Operation
16 Mar 23	879		In Operation
17 Mar 23	-		Under Maintenance
18 Mar 23	-		Under Maintenance
19 Mar 23	-		Under Maintenance
20 Mar 23	874		In Operation
21 Mar 23	869		In Operation
22 Mar 23	869		In Operation
23 Mar 23	874		In Operation
24 Mar 23	875		In Operation
25 Mar 23	-		Under Maintenance
26 Mar 23	-		Under Maintenance
27 Mar 23	-		Under Maintenance
28 Mar 23	-		Under Maintenance
29 Mar 23	-		Under Maintenance
30 Mar 23	-		Under Maintenance
31 Mar 23	-		Under Maintenance
1 Apr 23	865		In Operation
2 Apr 23	864		In Operation
3 Apr 23	862		In Operation
4 Apr 23	-		Under Maintenance
5 Apr 23	-		Under Maintenance
6 Apr 23	-		Under Maintenance
7 Apr 23	-		Under Maintenance
8 Apr 23	-		Under Maintenance
9 Apr 23	-		Under Maintenance
10 Apr 23	-		Under Maintenance
11 Apr 23	-		Under Maintenance
12 Apr 23	-		Under Maintenance
13 Apr 23	-		Under Maintenance

Date	Exhaust temperature (K)	Exhaust gas velocity (ms^{-1}) [a]	Operation Status (Landfill Gas Generator in Operation)
14 Apr 23	-		Under Maintenance
15 Apr 23	-	9.1	Under Maintenance
16 Apr 23	-		Under Maintenance
17 Apr 23	-		Under Maintenance
18 Apr 23	-		Under Maintenance
19 Apr 23	-		Under Maintenance
20 Apr 23	-		Under Maintenance
21 Apr 23	-		Under Maintenance
22 Apr 23	-		Under Maintenance
23 Apr 23	-		Under Maintenance
24 Apr 23	-		Under Maintenance
25 Apr 23	861		In Operation
26 Apr 23	858		In Operation
27 Apr 23	-		Under Maintenance
28 Apr 23	-		Under Maintenance
29 Apr 23	-		Under Maintenance
30 Apr 23	-		Under Maintenance
1 May 23	-		Under Maintenance
2 May 23	-		Under Maintenance
3 May 23	-		Under Maintenance
4 May 23	-		Under Maintenance
5 May 23	-		Under Maintenance
6 May 23	876		In Operation
7 May 23	872		In Operation
8 May 23	871		In Operation
9 May 23	-		Under Maintenance
10 May 23	869		In Operation
11 May 23	872		In Operation
12 May 23	-		Under Maintenance
13 May 23	-		Under Maintenance
14 May 23	-		Under Maintenance
15 May 23	872	12.9	In Operation
16 May 23	870		In Operation
17 May 23	876		In Operation
18 May 23	877		In Operation

Date	Exhaust temperature (K)	Exhaust gas velocity (ms^{-1}) [a]	Operation Status (Landfill Gas Generator in Operation)
19 May 23	878		In Operation
20 May 23	879		In Operation
21 May 23	877		In Operation
22 May 23	877		In Operation
23 May 23	873		In Operation
24 May 23	873		In Operation
25 May 23	875		In Operation
26 May 23	875		In Operation
27 May 23	864		In Operation
28 May 23	862		In Operation
29 May 23	875		In Operation
30 May 23	877		In Operation
31 May 23	873		In Operation
1 Jun 23	876		In Operation
2 Jun 23	878		In Operation
3 Jun 23	877		In Operation
4 Jun 23	876		In Operation
5 Jun 23	876		In Operation
6 Jun 23	875		In Operation
7 Jun 23	877		In Operation
8 Jun 23	879		In Operation
9 Jun 23	878		In Operation
10 Jun 23	878		In Operation
11 Jun 23	879		In Operation
12 Jun 23	880		In Operation
13 Jun 23	-		Under Maintenance
14 Jun 23	-		Under Maintenance
15 Jun 23	879	13.6	In Operation
16 Jun 23	876		In Operation
17 Jun 23	877		In Operation
18 Jun 23	876		In Operation
19 Jun 23	855		In Operation
20 Jun 23	850		In Operation
21 Jun 23	847		In Operation
22 Jun 23	845		In Operation

Date	Exhaust temperature (K)	Exhaust gas velocity (ms^{-1}) [a]	Operation Status (Landfill Gas Generator in Operation)
23 Jun 23	847		In Operation
24 Jun 23	846		In Operation
25 Jun 23	847		In Operation
26 Jun 23	847		In Operation
27 Jun 23	847		In Operation
28 Jun 23	848		In Operation
29 Jun 23	847		In Operation
30 Jun 23	848		In Operation
1 Jul 23	847		In Operation
2 Jul 23	848		In Operation
3 Jul 23	847		In Operation
4 Jul 23	847		In Operation
5 Jul 23	847		In Operation
6 Jul 23	846		In Operation
7 Jul 23	875		In Operation
8 Jul 23	846		In Operation
9 Jul 23	847		In Operation
10 Jul 23	846		In Operation
11 Jul 23	847		In Operation
12 Jul 23	846		In Operation
13 Jul 23	847		In Operation
14 Jul 23	846		In Operation
15 Jul 23	847		In Operation
16 Jul 23	846		In Operation
17 Jul 23	849		In Operation
18 Jul 23	845		In Operation
19 Jul 23	850		In Operation
20 Jul 23	-	10.6	Under Maintenance
21 Jul 23	-		Under Maintenance
22 Jul 23	844		In Operation
23 Jul 23	845		In Operation
24 Jul 23	843		In Operation
25 Jul 23	843		In Operation
26 Jul 23	843		In Operation
27 Jul 23	845		In Operation

Date	Exhaust temperature (K)	Exhaust gas velocity (ms^{-1}) [a]	Operation Status (Landfill Gas Generator in Operation)
28 Jul 23	848		In Operation
29 Jul 23	844		In Operation
30 Jul 23	843		In Operation
31 Jul 23	843		In Operation
1 Aug 23	866		In Operation
2 Aug 23	848		In Operation
3 Aug 23	870		In Operation
4 Aug 23	876		In Operation
5 Aug 23	867		In Operation
6 Aug 23	847		In Operation
7 Aug 23	846		In Operation
8 Aug 23	849		In Operation
9 Aug 23	851		In Operation
10 Aug 23	861		In Operation
11 Aug 23	873		In Operation
12 Aug 23	876		In Operation
13 Aug 23	846	13.1	In Operation
14 Aug 23	874		In Operation
15 Aug 23	847		In Operation
16 Aug 23	873		In Operation
17 Aug 23	847		In Operation
18 Aug 23	876		In Operation
19 Aug 23	874		In Operation
20 Aug 23	847		In Operation
21 Aug 23	876		In Operation
22 Aug 23	875		In Operation
23 Aug 23	875		In Operation
24 Aug 23	874		In Operation
25 Aug 23	875		In Operation
26 Aug 23	875		In Operation
27 Aug 23	875		In Operation
28 Aug 23	875		In Operation
29 Aug 23	874		In Operation
30 Aug 23	-		Under Maintenance
31 Aug 23	872		In Operation

Date	Exhaust temperature (K)	Exhaust gas velocity (ms^{-1}) [a]	Operation Status (Landfill Gas Generator in Operation)
1 Sep 23	872		In Operation
2 Sep 23	845		In Operation
3 Sep 23	853		In Operation
4 Sep 23	875		In Operation
5 Sep 23	876		In Operation
6 Sep 23	878		In Operation
7 Sep 23	895		In Operation
8 Sep 23	877		In Operation
9 Sep 23	879		In Operation
10 Sep 23	886		In Operation
11 Sep 23	884		In Operation
12 Sep 23	876		In Operation
13 Sep 23	877		In Operation
14 Sep 23	878		In Operation
15 Sep 23	876	13.0	In Operation
16 Sep 23	877		In Operation
17 Sep 23	876		In Operation
18 Sep 23	877		In Operation
19 Sep 23	881		In Operation
20 Sep 23	877		In Operation
21 Sep 23	877		In Operation
22 Sep 23	847		In Operation
23 Sep 23	846		In Operation
24 Sep 23	847		In Operation
25 Sep 23	845		In Operation
26 Sep 23	844		In Operation
27 Sep 23	844		In Operation
28 Sep 23	844		In Operation
29 Sep 23	844		In Operation
30 Sep 23	844		In Operation
1 Oct 23	843		In Operation
2 Oct 23	843		In Operation
3 Oct 23	844		In Operation
4 Oct 23	841		In Operation
5 Oct 23	841		In Operation

Date	Exhaust temperature (K)	Exhaust gas velocity (ms^{-1}) [a]	Operation Status (Landfill Gas Generator in Operation)
6 Oct 23	840		In Operation
7 Oct 23	837		In Operation
8 Oct 23	841		In Operation
9 Oct 23	-		Under Maintenance
10 Oct 23	-		Under Maintenance
11 Oct 23	-		Under Maintenance
12 Oct 23	-		Under Maintenance
13 Oct 23	-		Under Maintenance
14 Oct 23	-		Under Maintenance
15 Oct 23	-	11.6	Under Maintenance
16 Oct 23	-		Under Maintenance
17 Oct 23	-		Under Maintenance
18 Oct 23	-		Under Maintenance
19 Oct 23	843		In Operation
20 Oct 23	841		In Operation
21 Oct 23	842		In Operation
22 Oct 23	838		In Operation
23 Oct 23	875		In Operation
24 Oct 23	877		In Operation
25 Oct 23	879		In Operation
26 Oct 23	879		In Operation
27 Oct 23	879		In Operation
28 Oct 23	879		In Operation
29 Oct 23	879		In Operation
30 Oct 23	880		In Operation
31 Oct 23	882		In Operation
1 Nov 23	883		In Operation
2 Nov 23	884		In Operation
3 Nov 23	885		In Operation
4 Nov 23	-		Under Maintenance
5 Nov 23	873		In Operation
6 Nov 23	868		In Operation
7 Nov 23	874		In Operation
8 Nov 23	875		In Operation
9 Nov 23	876		In Operation

Date	Exhaust temperature (K)	Exhaust gas velocity (ms^{-1}) [a]	Operation Status (Landfill Gas Generator in Operation)
10 Nov 23	878	11.8	In Operation
11 Nov 23	877		In Operation
12 Nov 23	871		In Operation
13 Nov 23	872		In Operation
14 Nov 23	873		In Operation
15 Nov 23	876		In Operation
16 Nov 23	872		In Operation
17 Nov 23	872		In Operation
18 Nov 23	875		In Operation
19 Nov 23	877		In Operation
20 Nov 23	876		In Operation
21 Nov 23	878		In Operation
22 Nov 23	879		In Operation
23 Nov 23	875		In Operation
24 Nov 23	874		In Operation
25 Nov 23	875		In Operation
26 Nov 23	876		In Operation
27 Nov 23	858		In Operation
28 Nov 23	-		Under Maintenance
29 Nov 23	-		Under Maintenance
30 Nov 23	-		Under Maintenance
1 Dec 23	-		Under Maintenance
2 Dec 23	-		Under Maintenance
3 Dec 23	-		Under Maintenance
4 Dec 23	873		In Operation
5 Dec 23	873		In Operation
6 Dec 23	873		In Operation
7 Dec 23	869		In Operation
8 Dec 23	873		In Operation
9 Dec 23	876		In Operation
10 Dec 23	879		In Operation
11 Dec 23	880		In Operation
12 Dec 23	882		In Operation
13 Dec 23	880		In Operation
14 Dec 23	882		In Operation

Date	Exhaust temperature (K)	Exhaust gas velocity (ms^{-1}) [a]	Operation Status (Landfill Gas Generator in Operation)
15 Dec 23	884	10.5	In Operation
16 Dec 23	883		In Operation
17 Dec 23	875		In Operation
18 Dec 23	880		In Operation
19 Dec 23	877		In Operation
20 Dec 23	873		In Operation
21 Dec 23	872		In Operation
22 Dec 23	869		In Operation
23 Dec 23	871		In Operation
24 Dec 23	871		In Operation
25 Dec 23	871		In Operation
26 Dec 23	872		In Operation
27 Dec 23	875		In Operation
28 Dec 23	876		In Operation
29 Dec 23	884		In Operation
30 Dec 23	882		In Operation
31 Dec 23	884		In Operation
Average	866	11.9	
Min	837	9.1	
Max	895	13.9	
ENGB			
1 Jan 23	836		In Operation
2 Jan 23	834		In Operation
3 Jan 23	853		In Operation
4 Jan 23	843		In Operation
5 Jan 23	870		In Operation
6 Jan 23	852		In Operation
7 Jan 23	853		In Operation
8 Jan 23	855		In Operation
9 Jan 23	862		In Operation
10 Jan 23	862		In Operation
11 Jan 23	863		In Operation
12 Jan 23	865		In Operation
13 Jan 23	868		In Operation
14 Jan 23	868		In Operation

Date	Exhaust temperature (K)	Exhaust gas velocity (ms^{-1}) [a]	Operation Status (Landfill Gas Generator in Operation)
15 Jan 23	861	10.0	In Operation
16 Jan 23	861		In Operation
17 Jan 23	871		In Operation
18 Jan 23	-		Under Maintenance
19 Jan 23	-		Under Maintenance
20 Jan 23	-		Under Maintenance
21 Jan 23	859		In Operation
22 Jan 23	861		In Operation
23 Jan 23	862		In Operation
24 Jan 23	857		In Operation
25 Jan 23	859		In Operation
26 Jan 23	873		In Operation
27 Jan 23	-		Under Maintenance
28 Jan 23	-		Under Maintenance
29 Jan 23	-		Under Maintenance
30 Jan 23	-		Under Maintenance
31 Jan 23	-		Under Maintenance
1 Feb 23	-		Under Maintenance
2 Feb 23	-		Under Maintenance
3 Feb 23	-		Under Maintenance
4 Feb 23	-		Under Maintenance
5 Feb 23	-		Under Maintenance
6 Feb 23	-		Under Maintenance
7 Feb 23	-		Under Maintenance
8 Feb 23	-		Under Maintenance
9 Feb 23	-		Under Maintenance
10 Feb 23	-		Under Maintenance
11 Feb 23	-		Under Maintenance
12 Feb 23	-		Under Maintenance
13 Feb 23	-		Under Maintenance
14 Feb 23	-		Under Maintenance
15 Feb 23	-	12.1	Under Maintenance
16 Feb 23	-		Under Maintenance
17 Feb 23	-		Under Maintenance
18 Feb 23	-		Under Maintenance

Date	Exhaust temperature (K)	Exhaust gas velocity (ms^{-1}) [a]	Operation Status (Landfill Gas Generator in Operation)
19 Feb 23	-		Under Maintenance
20 Feb 23	860		In Operation
21 Feb 23	860		In Operation
22 Feb 23	861		In Operation
23 Feb 23	862		In Operation
24 Feb 23	-		Under Maintenance
25 Feb 23	-		Under Maintenance
26 Feb 23	-		Under Maintenance
27 Feb 23	-		Under Maintenance
28 Feb 23	-		Under Maintenance
1 Mar 23	-		Under Maintenance
2 Mar 23	-		Under Maintenance
3 Mar 23	-		Under Maintenance
4 Mar 23	-		Under Maintenance
5 Mar 23	-		Under Maintenance
6 Mar 23	-		Under Maintenance
7 Mar 23	-		Under Maintenance
8 Mar 23	-		Under Maintenance
9 Mar 23	-		Under Maintenance
10 Mar 23	-		Under Maintenance
11 Mar 23	-		Under Maintenance
12 Mar 23	-		Under Maintenance
13 Mar 23	-		Under Maintenance
14 Mar 23	-		Under Maintenance
15 Mar 23	-	13.9	Under Maintenance
16 Mar 23	-		Under Maintenance
17 Mar 23	867		In Operation
18 Mar 23	862		In Operation
19 Mar 23	863		In Operation
20 Mar 23	875		In Operation
21 Mar 23	-		Under Maintenance
22 Mar 23	-		Under Maintenance
23 Mar 23	-		Under Maintenance
24 Mar 23	870		In Operation
25 Mar 23	866		In Operation

Date	Exhaust temperature (K)	Exhaust gas velocity (ms^{-1}) [a]	Operation Status (Landfill Gas Generator in Operation)
26 Mar 23	864		In Operation
27 Mar 23	863		In Operation
28 Mar 23	859		In Operation
29 Mar 23	860		In Operation
30 Mar 23	859		In Operation
31 Mar 23	859		In Operation
1 Apr 23	863		In Operation
2 Apr 23	-		Under Maintenance
3 Apr 23	858		In Operation
4 Apr 23	867		In Operation
5 Apr 23	867		In Operation
6 Apr 23	847		In Operation
7 Apr 23	858		In Operation
8 Apr 23	858		In Operation
9 Apr 23	858		In Operation
10 Apr 23	859		In Operation
11 Apr 23	868		In Operation
12 Apr 23	873		In Operation
13 Apr 23	871		In Operation
14 Apr 23	870		In Operation
15 Apr 23	871	9.1	In Operation
16 Apr 23	856		In Operation
17 Apr 23	873		In Operation
18 Apr 23	873		In Operation
19 Apr 23	872		In Operation
20 Apr 23	874		In Operation
21 Apr 23	872		In Operation
22 Apr 23	871		In Operation
23 Apr 23	870		In Operation
24 Apr 23	868		In Operation
25 Apr 23	864		In Operation
26 Apr 23	868		In Operation
27 Apr 23	866		In Operation
28 Apr 23	869		In Operation
29 Apr 23	869		In Operation

Date	Exhaust temperature (K)	Exhaust gas velocity (ms^{-1}) [a]	Operation Status (Landfill Gas Generator in Operation)
30 Apr 23	863		In Operation
1 May 23	860		In Operation
2 May 23	862		In Operation
3 May 23	864		In Operation
4 May 23	865		In Operation
5 May 23	870		In Operation
6 May 23	-		Under Maintenance
7 May 23	-		Under Maintenance
8 May 23	-		Under Maintenance
9 May 23	861		In Operation
10 May 23	-		Under Maintenance
11 May 23	868		In Operation
12 May 23	868		In Operation
13 May 23	868		In Operation
14 May 23	867		In Operation
15 May 23	-	12.9	Under Maintenance
16 May 23	-		Under Maintenance
17 May 23	-		Under Maintenance
18 May 23	-		Under Maintenance
19 May 23	-		Under Maintenance
20 May 23	-		Under Maintenance
21 May 23	-		Under Maintenance
22 May 23	-		Under Maintenance
23 May 23	-		Under Maintenance
24 May 23	-		Under Maintenance
25 May 23	-		Under Maintenance
26 May 23	-		Under Maintenance
27 May 23	-		Under Maintenance
28 May 23	-		Under Maintenance
29 May 23	-		Under Maintenance
30 May 23	-		Under Maintenance
31 May 23	-		Under Maintenance
1 Jun 23	-		Under Maintenance
2 Jun 23	-		Under Maintenance
3 Jun 23	-		Under Maintenance

Date	Exhaust temperature (K)	Exhaust gas velocity (ms^{-1}) [a]	Operation Status (Landfill Gas Generator in Operation)
4 Jun 23	-		Under Maintenance
5 Jun 23	-		Under Maintenance
6 Jun 23	-		Under Maintenance
7 Jun 23	-		Under Maintenance
8 Jun 23	-		Under Maintenance
9 Jun 23	-		Under Maintenance
10 Jun 23	-		Under Maintenance
11 Jun 23	-		Under Maintenance
12 Jun 23	-		Under Maintenance
13 Jun 23	876		In Operation
14 Jun 23	877		In Operation
15 Jun 23	-	13.6	Under Maintenance
16 Jun 23	-		Under Maintenance
17 Jun 23	-		Under Maintenance
18 Jun 23	-		Under Maintenance
19 Jun 23	851		In Operation
20 Jun 23	846		In Operation
21 Jun 23	843		In Operation
22 Jun 23	841		In Operation
23 Jun 23	843		In Operation
24 Jun 23	842		In Operation
25 Jun 23	843		In Operation
26 Jun 23	842		In Operation
27 Jun 23	843		In Operation
28 Jun 23	844		In Operation
29 Jun 23	843		In Operation
30 Jun 23	843		In Operation
1 Jul 23	844		In Operation
2 Jul 23	844		In Operation
3 Jul 23	843		In Operation
4 Jul 23	843		In Operation
5 Jul 23	845		In Operation
6 Jul 23	843		In Operation
7 Jul 23	-		Under Maintenance
8 Jul 23	842		In Operation

Date	Exhaust temperature (K)	Exhaust gas velocity (ms^{-1}) [a]	Operation Status (Landfill Gas Generator in Operation)
9 Jul 23	843		In Operation
10 Jul 23	843		In Operation
11 Jul 23	843		In Operation
12 Jul 23	842		In Operation
13 Jul 23	843		In Operation
14 Jul 23	842		In Operation
15 Jul 23	844	10.6	In Operation
16 Jul 23	842		In Operation
17 Jul 23	844		In Operation
18 Jul 23	841		In Operation
19 Jul 23	845		In Operation
20 Jul 23	870		In Operation
21 Jul 23	872		In Operation
22 Jul 23	842		In Operation
23 Jul 23	843		In Operation
24 Jul 23	842		In Operation
25 Jul 23	842		In Operation
26 Jul 23	842		In Operation
27 Jul 23	843		In Operation
28 Jul 23	846		In Operation
29 Jul 23	843		In Operation
30 Jul 23	842		In Operation
31 Jul 23	841		In Operation
1 Aug 23	852		In Operation
2 Aug 23	865		In Operation
3 Aug 23	845		In Operation
4 Aug 23	843		In Operation
5 Aug 23	847		In Operation
6 Aug 23	845		In Operation
7 Aug 23	872		In Operation
8 Aug 23	874		In Operation
9 Aug 23	850		In Operation
10 Aug 23	875		In Operation
11 Aug 23	843		In Operation
12 Aug 23	844		In Operation

Date	Exhaust temperature (K)	Exhaust gas velocity (ms^{-1}) [a]	Operation Status (Landfill Gas Generator in Operation)
13 Aug 23	845		In Operation
14 Aug 23	846		In Operation
15 Aug 23	846	13.1	In Operation
16 Aug 23	850		In Operation
17 Aug 23	870		In Operation
18 Aug 23	846		In Operation
19 Aug 23	847		In Operation
20 Aug 23	846		In Operation
21 Aug 23	846		In Operation
22 Aug 23	-		Under Maintenance
23 Aug 23	-		Under Maintenance
24 Aug 23	-		Under Maintenance
25 Aug 23	-		Under Maintenance
26 Aug 23	-		Under Maintenance
27 Aug 23	-		Under Maintenance
28 Aug 23	-		Under Maintenance
29 Aug 23	875		In Operation
30 Aug 23	874		In Operation
31 Aug 23	871		In Operation
1 Sep 23	871		In Operation
2 Sep 23	843		In Operation
3 Sep 23	-		Under Maintenance
4 Sep 23	-		Under Maintenance
5 Sep 23	-		Under Maintenance
6 Sep 23	-		Under Maintenance
7 Sep 23	-		Under Maintenance
8 Sep 23	-		Under Maintenance
9 Sep 23	-		Under Maintenance
10 Sep 23	-		Under Maintenance
11 Sep 23	-		Under Maintenance
12 Sep 23	-		Under Maintenance
13 Sep 23	-		Under Maintenance
14 Sep 23	-		Under Maintenance
15 Sep 23	-	13.0	Under Maintenance
16 Sep 23	-		Under Maintenance

Date	Exhaust temperature (K)	Exhaust gas velocity (ms^{-1}) [a]	Operation Status (Landfill Gas Generator in Operation)
17 Sep 23	-		Under Maintenance
18 Sep 23	-		Under Maintenance
19 Sep 23	-		Under Maintenance
20 Sep 23	-		Under Maintenance
21 Sep 23	845		In Operation
22 Sep 23	844		In Operation
23 Sep 23	843		In Operation
24 Sep 23	843		In Operation
25 Sep 23	841		In Operation
26 Sep 23	841		In Operation
27 Sep 23	841		In Operation
28 Sep 23	869		In Operation
29 Sep 23	869		In Operation
30 Sep 23	841		In Operation
1 Oct 23	840		In Operation
2 Oct 23	840		In Operation
3 Oct 23	842		In Operation
4 Oct 23	839		In Operation
5 Oct 23	838		In Operation
6 Oct 23	838		In Operation
7 Oct 23	836		In Operation
8 Oct 23	840		In Operation
9 Oct 23	866		In Operation
10 Oct 23	854		In Operation
11 Oct 23	864		In Operation
12 Oct 23	864		In Operation
13 Oct 23	863	11.6	In Operation
14 Oct 23	866		In Operation
15 Oct 23	867		In Operation
16 Oct 23	867		In Operation
17 Oct 23	868		In Operation
18 Oct 23	872		In Operation
19 Oct 23	844		In Operation
20 Oct 23	843		In Operation
21 Oct 23	870		In Operation

Date	Exhaust temperature (K)	Exhaust gas velocity (ms^{-1}) [a]	Operation Status (Landfill Gas Generator in Operation)
22 Oct 23	840		In Operation
23 Oct 23	-		Under Maintenance
24 Oct 23	-		Under Maintenance
25 Oct 23	-		Under Maintenance
26 Oct 23	-		Under Maintenance
27 Oct 23	-		Under Maintenance
28 Oct 23	-		Under Maintenance
29 Oct 23	-		Under Maintenance
30 Oct 23	-		Under Maintenance
31 Oct 23	-		Under Maintenance
1 Nov 23	-	11.8	Under Maintenance
2 Nov 23	-		Under Maintenance
3 Nov 23	-		Under Maintenance
4 Nov 23	-		Under Maintenance
5 Nov 23	-		Under Maintenance
6 Nov 23	-		Under Maintenance
7 Nov 23	-		Under Maintenance
8 Nov 23	-		Under Maintenance
9 Nov 23	-		Under Maintenance
10 Nov 23	-		Under Maintenance
11 Nov 23	-		Under Maintenance
12 Nov 23	-		Under Maintenance
13 Nov 23	-		Under Maintenance
14 Nov 23	-		Under Maintenance
15 Nov 23	-		Under Maintenance
16 Nov 23	-		Under Maintenance
17 Nov 23	-		Under Maintenance
18 Nov 23	-		Under Maintenance
19 Nov 23	-		Under Maintenance
20 Nov 23	-		Under Maintenance
21 Nov 23	-		Under Maintenance
22 Nov 23	-		Under Maintenance
23 Nov 23	-		Under Maintenance
24 Nov 23	-		Under Maintenance
25 Nov 23	-		Under Maintenance

Date	Exhaust temperature (K)	Exhaust gas velocity (ms^{-1}) [a]	Operation Status (Landfill Gas Generator in Operation)
26 Nov 23	-		Under Maintenance
27 Nov 23	-		Under Maintenance
28 Nov 23	-		Under Maintenance
29 Nov 23	868		In Operation
30 Nov 23	868		In Operation
1 Dec 23	869		In Operation
2 Dec 23	868		In Operation
3 Dec 23	869		In Operation
4 Dec 23	869		In Operation
5 Dec 23	-		Under Maintenance
6 Dec 23	-		Under Maintenance
7 Dec 23	-		Under Maintenance
8 Dec 23	-		Under Maintenance
9 Dec 23	-		Under Maintenance
10 Dec 23	-		Under Maintenance
11 Dec 23	-		Under Maintenance
12 Dec 23	-		Under Maintenance
13 Dec 23	-		Under Maintenance
14 Dec 23	-		Under Maintenance
15 Dec 23	-	10.5	Under Maintenance
16 Dec 23	-		Under Maintenance
17 Dec 23	-		Under Maintenance
18 Dec 23	-		Under Maintenance
19 Dec 23	-		Under Maintenance
20 Dec 23	-		Under Maintenance
21 Dec 23	-		Under Maintenance
22 Dec 23	-		Under Maintenance
23 Dec 23	-		Under Maintenance
24 Dec 23	-		Under Maintenance
25 Dec 23	-		Under Maintenance
26 Dec 23	-		Under Maintenance
27 Dec 23	-		Under Maintenance
28 Dec 23	-		Under Maintenance
29 Dec 23	-		Under Maintenance
30 Dec 23	-		Under Maintenance

Date	Exhaust temperature (K)	Exhaust gas velocity (ms^{-1}) [(a)]	Operation Status (Landfill Gas Generator in Operation)
31 Dec 23	-		Under Maintenance
Average	856	11.7	
Min	834	9.1	
Max	877	13.9	

Notes:

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

ANNEX D6 AMBIENT VOCs, AMMONIA AND H2S MONITORING RESULTS

TABLE D6.1 AMBIENT VOCS, AMMONIA AND H_2S MONITORING RESULTS (FEBRUARY 2023)

Parameters	Limit Level	Monitoring Results (µg m^{-3})			
		AM1	AM2	AM3	AM4
Ammonia	180	157	111	74	72
H_2S	42	<15	<15	<15	<15
Methane	NA [a]	0.00033 %(v/v)	0.00023 %(v/v)	0.00018 %(v/v)	0.00017 %(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	<0.3	<0.3	<0.3	<0.3
Benzene	33	0.6	0.7	0.6	0.6
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	<0.6	<0.6	<0.6	<0.6
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	1.2	1	0.9
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	<0.4	<0.4	<0.4
Ethanethiol	13	<0.6	<0.6	<0.6	<0.6
Ethanol	19,200	<3.8	3.9	<3.8	<3.8
Ethyl butanoate	71	<1.0	<1.0	<1.0	<1.0
Ethyl propionate	29	<0.8	<0.8	<0.8	<0.8
Ethyl benzene	738	<0.5	<0.5	<0.5	0.6
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	22.4	39.1	35.2	28.4
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	0.9	1.2	1.8	0.7
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	1.2	0.9	1	1
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	0.8	0.7	0.9	1.8

Notes:

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

TABLE D6.2 AMBIENT VOCS, AMMONIA AND H_2S MONITORING RESULTS (MAY 2023)

Parameters	Limit Level	Monitoring Results (µg m^{-3})			
		AM1	AM2	AM3	AM4
Ammonia	180	64	55	82	66
H_2S	42	<15	<15	<15	<15
Methane	NA [a]	0.00021 %(v/v)	0.00016 %(v/v)	0.00021 %(v/v)	0.00017 %(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	0.4	0.4	0.5	0.4
Benzene	33	0.6	1	0.6	0.7
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	0.8	0.7	1.2
Carbon Tetrachloride	64	0.7	0.8	0.8	0.8
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]	1.9	2.2	2.1	2.3
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	<0.4	0.5	<0.4
Ethanethiol	13	<0.6	<0.6	<0.6	<0.6
Ethanol	19,200	<3.8	5.7	7	15
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	1.9	<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	31.1	37.7	41.5
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	1.4	1.5	3.8	7.9
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	1.1	<0.8
Tetrachloroethylene	1,380	<0.7	<0.7	<0.7	<0.7
Toluene	1,244	1.5	1.4	1.9	7
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	0.8	1	3	0.9

Notes:

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

TABLE D6.3 AMBIENT VOCS, AMMONIA AND H_2S MONITORING RESULTS (AUGUST 2023)

Parameters	Limit Level	Monitoring Results (µg m^{-3})			
		AM1	AM2	AM3	AM4
Ammonia	180	16	54	18	37
H_2S	42	<15	<15	<15	<15
Methane	NA [a]	0.00016 %(v/v)	0.00013 %(v/v)	0.00014 %(v/v)	0.00014 %(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	<0.3	<0.3	<0.3	<0.3
Benzene	33	<0.5	1.3	<0.5	<0.5
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	3.2	2.6	20.9	2
Carbon Tetrachloride	64	1	0.9	1	0.9
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]	3.5	3.6	3.5	3.7
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	<0.4	0.5	<0.4
Ethanethiol	13	<0.6	<0.6	<0.6	<0.6
Ethanol	19,200	<3.8	<3.8	<3.8	<3.8
Ethyl butanoate	71	<1.0	<1.0	<1.0	<1.0
Ethyl propionate	29	<0.8	<0.8	<0.8	<0.8
Ethyl benzene	738	<0.5	0.9	0.7	0.6
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	<2.6	<2.6
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	1.4	0.9	2.3	1
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	0.9	0.8	1.4	0.7
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	0.5	0.8	2.6	1.1

Notes:

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

TABLE D6.4 AMBIENT VOCS, AMMONIA AND H_2S MONITORING RESULTS (NOVEMBER 2023)

Parameters	Limit Level	Monitoring Results (µg m^{-3})			
		AM1	AM2	AM3	AM4
Ammonia	180	34	25	23	30
H_2S	42	<15	<15	<15	<15
Methane	NA [(a)]	0.00016 %(v/v)	0.00017 %(v/v)	0.00035 %(v/v)	0.00032 %(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	0.9	1.2	1.5	1
Benzene	33	0.8	1	1.5	1.4
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	8.6	0.8	<0.5
Carbon Tetrachloride	64	0.6	0.7	0.9	0.6
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)]	0.8	1.4	1.4	0.9
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	0.6	0.5
Ethanethiol	13	<0.6	<0.6	<0.6	<0.6
Ethanol	19,200	4.5	<3.8	5.5	<3.8
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	0.7
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	22.1	9.5	79.6	29.7
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	3	4.3	6.3	3.6
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	1.4	<0.8
Tetrachloroethylene	1,380	<0.7	<0.7	<0.7	<0.7
Toluene	1,244	1.4	2.4	3.2	1.8
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	<0.5	1.1	2.4	1.6

Notes:

(d) 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	7 January 2023
Time	8:00 (7 January 2023) – 8:00 (8 January 2023)
Monitoring Location	AM2
Parameter	24-hour Total Suspended Particulates (TSP)
Action / Limit Levels	Action level: >260 µg/ m^3 Limit level: >260 µg/m^3
Measured Level	337 µg/m^3
Possible reason	From the meteorological data obtained from the SENTX on-site meteorological monitoring station, a predominantly east-southeasterly to easterly wind with highest wind speed 8.0 m/s was recorded on 7 and 8 January 2023 during the sampling event. On 6 and 9 January 2023 (monitoring event was conducted on Saturday and Sunday), the ET site representative observed construction works of Cell 4X and SENT Landfill tie-in area and unpaved areas 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 at AM2 on 13 January 2023 to confirm findings. 24-hour TSP level of 47 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 working days and the preliminary results for the monitoring event conducted on 7 to 8 January 2023 were available on 16 January 2023. Repeat measurement was conducted on 13 January 2023 and the TSP monitoring result 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 and Limit Levels.
Remarks	-

Prepared by: Abbey Lau
Designation: Environmental Team
Date: 20 February 2023

Investigation Report of Environmental Quality Limit Exceedance

Project	South East New Territories (SENT) Landfill Extension
Date	18 January 2023
Time	10:55 – 11:25
Monitoring Location	Thermal Oxidiser
Parameter	Sulphur Dioxide (SO_2)
Trigger Levels	>0.07 g/s
Measured Level	0.21 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 (NO_2, CO, Benzene, Vinyl chloride, gas combustion temperature, exhaust temperature and exhaust gas velocity) on 18 January 2023 were well within the respective limit levels. It is possible that the slight exceedance of SO_2 limit level measured on 18 January 2023 could be due to some short-term system instability (e.g. insufficient air, short gas residence time or ineffective mixing of gas and air during the combustion) during the sampling event. Hence, the SO_2 exceedance at the thermal oxidiser on 18 January 2023 is considered to be Project related. In accordance with Table 3.8b of the updated EM&A Manual, repeat measurement was conducted on 21 February 2023 (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 6 March 2023) to confirm findings. The SO_2 concentration (<0.01 g/s) measured on 21 February 2023 is well below Limit Level. There is no consecutive exceedance of SO_2 concentrations in the flue gas emission of thermal oxidiser.
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 closely monitoring the operating conditions of the thermal oxidiser to avoid any exceedance of the Limit Levels.
Remarks	-

Prepared by: Abbey Lau
Designation: Environmental Team
Date: 7 March 2023

Investigation Report of Environmental Quality Limit Exceedance

Project	South East New Territories (SENT) Landfill Extension
Date	31 January 20233
Time	8:00 (31 January 2023) – 8:00 (1 February 2023)
Monitoring Location	AM1, AM2, AM3
Parameter	24-hour Total Suspended Particulates (TSP)
Action / Limit Levels	Action level: >260 µg/ m^3 Limit level: >260 µg/m^3
Measured Level	AM1: 509 µg /m^3 AM2: 266 µg /m^3 AM3: 267 µg /m^3
Possible reason	From the meteorological data obtained from the SENTX on-site meteorological monitoring station, a predominantly east-northeasterly to easterly wind with highest wind speed 3.6 m/s was recorded on 31 January and 1 February 2023 during the sampling event. <u>AM1</u> On 31 January 2023, dust and traffic emission from the SENT landfill in vicinity and located at the east of dust monitoring location 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 on-site observations and construction and operation activities as described by the Contractor. Environmental deficiency was not observed during the weekly site inspection on 26 January 2023 and 2 February 2023 (before and after the sampling event). 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 6 February 2023 to confirm findings. 24-hour TSP level of 109 µg/m^3 (below Action and Limit Levels) was measured during the sampling event, which demonstrate no consecutive dust impact at AM1. Due to presence of the influencing factor from the SENT landfill and no potential source from the Project-related activities in the vicinity of AM1 which may lead to the high TSP level was identified, there is no adequate evidence showing that the TSP exceedance at AM1 was deemed to Project-related activities.

	AM2 On 31 January 2023, the ET site representative observed construction works of Cell 4X and SENT Landfill tie-in area and unpaved areas 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 6 February 2023 to confirm findings. 24-hour TSP level of 61 μg/m^3 (below Action and Limit Levels) was measured during the sampling event, which demonstrate no consecutive dust impact at AM2. AM3 On 31 January 2023, no works from SENTX which may generate dust emission were conducted in the vicinity of AM3 on the sampling day based on the ET site representative on-site observations and the Contractor's record of the construction and operation activities carried out on that day. The dust and traffic emission from SENTX haul road at the east of dust monitoring location AM3 could be the potential dust source contributing to the exceedance. The TSP exceedance at AM3 was therefore deemed to Project-related activities. It should be noted that dust emitted from the public fill stockpiling areas and active earthworks from another project site in close vicinity of dust monitoring station AM3 could also contribute to the project. In accordance with Table 3.8b of the updated EM&A Manual, repeat measurement was conducted on 6 February 2023 to confirm findings. 24-hour TSP level of 115 μg/m^3 (below Action and Limit Levels) was measured during the sampling event, which demonstrate no consecutive dust impact at AM3.
Action Taken / Action to be Taken	In accordance with Table 3.8b of the updated EM&A Manual, the monitoring frequency at AM1, AM2 and AM3 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 working days and the preliminary results for the monitoring event conducted on 31 January to 1 February 2023 were available on 8 February 2023. Repeat measurement was conducted on 6 February 2023 and the TSP monitoring results at AM1, AM2 and AM3 are well below the Action/Limit Level. Hence, the daily TSP monitoring at AM1, AM2 and AM3 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 Level. In addition, the Contractor was reminded to discuss the dust control measures with CEDD to minimize the dust impact from the other project site to proximity to the SENTX boundary.
Remarks	-

Prepared by: Abbey Lau
Designation: Environmental Team
Date: 20 February 2023

Investigation Report of Environmental Quality Limit Exceedance

Project	South East New Territories (SENT) Landfill Extension
Date	2 March 2023
Time	8:00 (2 March 2023) – 8:00 (3 March 2023)
Monitoring Location	AM1
Parameter	24-hour Total Suspended Particulates (TSP)
Action / Limit Levels	Action level: >260 µg/ m^3 Limit level: >260 µg/m^3
Measured Level	401 µg/m^3
Possible reason	From the meteorological data obtained from the SENTX on-site meteorological monitoring station, a predominantly east-southeasterly to easterly wind with highest wind speed 9.5 m/s was recorded on 2 and 3 March 2023 during the sampling event. On 2 March 2023, dust and traffic emission from the SENT landfill in vicinity and located at the east of dust monitoring location 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 on-site observations and construction and operation activities as described by the Contractor. Environmental deficiency was not observed during the weekly site inspection on 2 March 2023. 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 9 March 2023 to confirm findings. 24-hour TSP level of 165 µg/m^3 (below Action and Limit Levels) was measured during the sampling event, which demonstrate no consecutive dust impact at AM1. Due to presence of the influencing factor from the SENT landfill and no potential source from the Project-related activities in the vicinity of AM1 which may lead to the high TSP level was identified, there is no adequate evidence showing that the TSP exceedance at AM1 was deemed to Project-related activities.
Action Taken / Action to be Taken	Examination of environmental performance of the Project will be continued during the weekly inspections. The Contractor is reminded to implement relevant and appropriate mitigation measures according to the updated EM&A Manual to avoid any exceedance of the Action and Limit Levels. In addition, the Contractor was reminded to implement additional

	dust control measures to minimize the dust impact from SENT landfill to the SENTX boundary.
Remarks	-

Prepared by: Abbey Lau
Designation: Environmental Team
Date: 22 March 2023

Investigation Report of Environmental Quality Limit Exceedance

Project	South East New Territories (SENT) Landfill Extension
Date	8 March 2023
Time	8:00 (8 March 2023) – 8:00 (9 March 2023)
Monitoring Location	AM2
Parameter	24-hour Total Suspended Particulates (TSP)
Action / Limit Levels	Action level: >260 µg/ m^3 Limit level: >260 µg/m^3
Measured Level	313 µg/m^3
Possible reason	From the meteorological data obtained from the SENTX on-site meteorological monitoring station, a predominantly southwesterly to south-southwesterly wind with highest wind speed 3.8 m/s was recorded on 8 and 9 March 2023 during the sampling event. On 8 and 9 March 2023 (during the sampling event), the ET site representative observed construction works at Cell 4X and SENT Landfill tie-in area and unpaved areas 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 at AM2 on 14 March 2023 to confirm findings. Exceedance of 24-hour TSP Action/Limit Levels was recorded at AM2 (452 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 working days and the preliminary results for the monitoring event conducted on 8 to 9 March 2023 were available on 17 March 2023. Repeat measurement and the regular TSP monitoring were conducted on 14 March and 20 March 2023, respectively. The TSP monitoring result at AM2 on 14 March 2023 exceeded the Action/Limit Level. However, 24-hour TSP level of 151 µg/m^3 (below Action/Limit Levels) was measured during the regular TSP monitoring event on 20 March 2023. 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. ET will continue to closely monitor the dust monitoring results and collect additional data for investigation and further review, if necessary.
Remarks	-

Prepared by: Abbey Lau
Designation: Environmental Team
Date: 23 March 2023

Investigation Report of Environmental Quality Limit Exceedance

Project	South East New Territories (SENT) Landfill Extension
Date	14 March 2023
Time	8:00 (14 March 2023) – 8:00 (15 March 2023)
Monitoring Location	AM1 and AM2
Parameter	24-hour Total Suspended Particulates (TSP)
Action / Limit Levels	Action level: >260 µg/ m^3 Limit level: >260 µg/m^3
Measured Level	AM1: 306 µg /m^3 AM2: 452 µg /m^3
Possible reason	From the meteorological data obtained from the SENTX on-site meteorological monitoring station, a predominantly east-northeasterly to south-easterly wind with highest wind speed 2.0 m/s was recorded on 14 and 15 March 2023 during the sampling event. <u>AM1</u> On 14 March 2023, dust and traffic emission from the SENT landfill in vicinity and located at the east of dust monitoring location 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 on-site observations and construction and operation activities as described by the Contractor. Environmental deficiency was not observed during the weekly site inspection on 9 and 16 March 2023. 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 20 March 2023 to confirm findings. 24-hour TSP level of 171 µg/m^3 (below Action and Limit Levels) was measured during the sampling event, which demonstrate no consecutive dust impact at AM1. Due to presence of the influencing factor from the SENT landfill and no potential source from the Project-related activities in the vicinity of AM1 which may lead to the high TSP level was identified, there is no adequate evidence showing that the TSP exceedance at AM1 was deemed to Project-related activities. <u>AM2</u> On 14 March 2023, the ET site representative observed construction works at Cell 4X and SENT Landfill tie-in area and unpaved areas

	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 20 March 2023 to confirm findings. 24-hour TSP level of 151 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 working days and the preliminary results for the monitoring event conducted on 14 to 15 March 2023 were available on 22 March 2023. Repeat measurement was conducted on 20 March 2023 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 Level. The Contractor is also reminded to implement additional dust control measures to minimize the dust impact from SENT Landfill to the SENTX boundary. ET will continue to closely monitor the dust monitoring results and collect additional data for investigation and further review, if necessary.
Remarks	-

Prepared by: Abbey Lau
Designation: Environmental Team
Date: 31 March 2023

Investigation Report of Environmental Quality Limit Exceedance

Project	South East New Territories (SENT) Landfill Extension
Date	13 April 2023
Time	8:00 (13 April 2023) – 8:00 (14 April 2023)
Monitoring Location	AM1
Parameter	24-hour Total Suspended Particulates (TSP)
Action / Limit Levels	Action level: >260 µg/ m^3 Limit level: >260 µg/m^3
Measured Level	365 µg /m^3
Possible reason	From the meteorological data obtained from the SENTX on-site meteorological monitoring station, a predominantly east-southeasterly to easterly wind with highest wind speed 3.2 m/s was recorded on 13 and 14 April 2023 during the sampling event. On 13 April 2023, dust and traffic emission from the SENT landfill in vicinity and located at the east of dust monitoring location 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 on-site observations and construction and operation activities as described by the Contractor. Environmental deficiency was not observed during the weekly site inspection on 13 April 2023. 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 19 April 2023 to confirm findings. 24-hour TSP level of 142 µg/m^3 (below Action and Limit Levels) was measured during the sampling event, which demonstrate no consecutive dust impact at AM1. Due to presence of the influencing factor from the SENT landfill and no potential source from the Project-related activities in the vicinity of AM1 which may lead to the high TSP level was identified, there is no adequate evidence showing that the TSP exceedance at AM1 was deemed to Project-related activities.
Action Taken / Action to be Taken	Examination of environmental performance of the Project will be continued during the weekly inspections. The Contractor is reminded to implement relevant and appropriate mitigation measures according to the updated EM&A Manual to avoid any exceedance of the Action/Limit Level. 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: Abbey Lau
Designation: Environmental Team
Date: 28 April 2023

Investigation Report of Environmental Quality Limit Exceedance

Project	South East New Territories (SENT) Landfill Extension
Date	1 May 2023
Time	8:00 (1 May 2023) – 8:00 (2 May 2023)
Monitoring Location	AM2
Parameter	24-hour Total Suspended Particulates (TSP)
Action / Limit Levels	Action level: >260 µg/ m^3 Limit level: >260 µg/m^3
Measured Level	356 µg /m^3
Possible reason	From the meteorological data obtained from the SENTX on-site meteorological monitoring station, a predominantly south-easterly to east-southeasterly wind with highest wind speed 4.8 m/s was recorded on 1 and 2 May 2023 during the sampling event. On 1 May 2023, the ET site representative observed tipping activities at Cell 4X and SENT Landfill tie-in area and unpaved areas 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 7 May 2023 to confirm findings. 24-hour TSP level of 103 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 working days and the preliminary results for the monitoring event conducted on 1 to 2 May 2023 were available on 9 May 2023. Repeat measurement was conducted on 7 May 2023 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 Level. ET will continue to closely monitor the dust monitoring results and collect additional data for investigation and further review, if necessary.

Remarks	-

Prepared by: Abbey Lau
Designation: Environmental Team
Date: 18 May 2023

Investigation Report of Environmental Quality Limit Exceedance

Project	South East New Territories (SENT) Landfill Extension
Date	12 May 2023
Time	12:01 – 12:31
Monitoring Location	Landfill Gas Flare 1 (F601)
Parameter	Benzene
Limit Levels	>0.000414 g/s
Measured Level	0.000447 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 (SO_2, NO_2, CO, Vinyl chloride, gas combustion temperature, exhaust temperature and exhaust gas velocity) at Landfill Gas Flare 1 (F601) on 12 May 2023 were well within the respective limit levels. It is possible that the slight exceedance of benzene limit level measured on 12 May 2023 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) during the sampling event. Hence, the benzene exceedance at Landfill Gas Flare 1 (F601) on 12 May 2023 is considered Project related. In accordance with Table 3.8b of the updated EM&A Manual, repeat measurement was conducted on 16 June 2023 (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 3 July 2023) to confirm findings. The benzene concentration (<0.000330 g/s) measured on 16 June 2023 is well below Limit Level. There is no consecutive exceedance of benzene concentrations in the flue gas emission of Landfill Gas Flare 1 (F601).
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 closely monitoring the operating conditions of the flare to avoid any exceedance of the Limit Levels.
Remarks	-

Prepared by: Abbey Lau
Designation: Environmental Team
Date: 4 July 2023

Investigation Report of Environmental Quality Limit Exceedance

Project	South East New Territories (SENT) Landfill Extension
Date	6 June 2023
Time	8:00 (6 June 2023) – 8:00 (7 June 2023)
Monitoring Location	AM2
Parameter	24-hour Total Suspended Particulates (TSP)
Action / Limit Levels	Action level: >260 µg/ m^3 Limit level: >260 µg/m^3
Measured Level	340 µg /m^3
Possible reason	From the meteorological data obtained from the SENTX on-site meteorological monitoring station, a predominantly south-southwesterly to southerly wind with highest wind speed 2.6 m/s was recorded on 6 and 7 June 2023 during the sampling event. On 6 June 2023, the ET site representative observed tipping activities at Cell 4X and SENT Landfill tie-in area and traffic emission 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 12 June and 18 June 2023 to confirm findings. However, the TSP monitoring results at AM2 on 12 June and 18 June 2023 were discarded due to the abnormally wet condition of the filter paper (suspected to be under the influence of sprinkler operation and adverse weather condition). Repeat measurement at AM2 was arranged on 20 June 2023. 24-hour TSP level of 94 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 working days and the preliminary results for the monitoring event conducted on 6 to 7 June 2023 were available on 14 June 2023. Repeat measurement was conducted on 12 June (results discarded due to the abnormally wet condition of the filter paper), 18 June (results discarded due to the abnormally wet condition of the filter paper) and 20 June 2023, 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 Level. ET will continue to closely monitor the dust monitoring results and collect additional data for investigation and further review, if necessary.
Remarks	-

Prepared by: Abbey Lau
Designation: Environmental Team
Date: 4 July 2023

Investigation Report of Environmental Quality Limit Exceedance

Project	South East New Territories (SENT) Landfill Extension
Date	13 September 2023
Time	11:49 – 12:19
Monitoring Location	Thermal Oxidiser
Parameter	Sulphur Dioxide (SO_2)
Limit Levels	>0.07 g/s
Measured Level	0.92 g/s
Possible reason	As confirmed by the Contractor, the thermal oxidiser was under normal operating conditions during the sampling event. The thermal oxidizer stack emission monitoring results (NO_2, CO, Benzene, Vinyl chloride, gas combustion temperature, exhaust temperature and exhaust gas velocity) on 13 September 2023 were well within the respective limit levels. It is possible that the slight exceedance of SO_2 limit level measured on 13 September 2023 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) during the sampling event. Hence, the SO_2 exceedance at the thermal oxidizer on 13 September 2023 is considered to be Project related. In accordance with Table 3.8b of the updated EM&A Manual, repeat measurement was conducted on 16 October 2023 (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 2 November 2023) to confirm findings. Exceedance of SO_2 Limit Level was recorded at the thermal oxidiser (0.79 g/s) during the sampling event. The thermal oxidiser showed consecutive exceedance of the stack emission limit (SO_2). It should be noted that although the measured SO_2 level exceeded the limit level of the EM&A programme (which was set based on the stack design parameters), the slight exceedance of SO_2 on 13 September 2023 will not cause adverse air quality impact to the identified ASRs as the anticipated SO_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 closely monitoring the operating conditions of the thermal oxidiser to avoid any exceedance of the Limit Levels. The Contractor is also reminded to adjust the inlet gas and flow during the routine gas well monitoring.

Remarks	-

Prepared by: Abbey Lau
Designation: Environmental Team
Date: 7 November 2023

Investigation Report of Environmental Quality Limit Exceedance

Project	South East New Territories (SENT) Landfill Extension
Date	22 September 2023
Time	8:00 (22 September 2023) – 8:00 (23 September 2023)
Monitoring Location	AM1
Parameter	24-hour Total Suspended Particulates (TSP)
Action / Limit Levels	Action level: >260 µg/ m^3 Limit level: >260 µg/m^3
Measured Level	357 µg /m^3
Possible reason	From the meteorological data obtained from the SENTX on-site meteorological monitoring station, a predominantly south-southwesterly to southeasterly wind with highest wind speed 4.1m/s was recorded on 22 and 23 September 2023 during the sampling event. On 22 September 2023, dust and traffic emission from the SENT landfill in vicinity and located at the east of dust monitoring location 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 on-site observations and construction and operation activities as described by the Contractor. Environmental deficiency was not observed during the weekly site inspection on 21 September 2023. 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 28 September 2023 to confirm findings. Exceedance of TSP Action and Limit Levels was recorded at AM1 (343 µg/m^3) during the sampling event. AM1 showed consecutive exceedance of the TSP level. Due to presence of the influencing factor from the SENT landfill and no potential source from the Project-related activities in the vicinity of AM1 which may lead to the high TSP level was identified, there is no adequate evidence showing that the TSP exceedance at AM1 was deemed to Project-related activities.
Action Taken / Action to be Taken	Examination of environmental performance of the Project will be continued during the weekly inspections. The Contractor is reminded to implement relevant and appropriate mitigation measures according to the updated EM&A Manual to avoid any exceedance of the Action/Limit Level.

	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: Abbey Lau
Designation: Environmental Team
Date: 9 October 2023

Investigation Report of Environmental Quality Limit Exceedance

Project	South East New Territories (SENT) Landfill Extension
Date	28 September 2023
Time	8:00 (28 September 2023) – 8:00 (29 September 2023)
Monitoring Location	AM1
Parameter	24-hour Total Suspended Particulates (TSP)
Action / Limit Levels	Action level: >260 µg/ m^3 Limit level: >260 µg/m^3
Measured Level	343 µg /m^3
Possible reason	From the meteorological data obtained from the SENTX on-site meteorological monitoring station, a predominantly southeasterly to south-southeasterly wind with highest wind speed 5.2 m/s was recorded on 28 and 29 September 2023 during the sampling event. On 28 September 2023, dust and traffic emission from the SENT landfill in vicinity and located at the east of dust monitoring location 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 on-site observations and construction and operation activities as described by the Contractor. Environmental deficiency was not observed during the weekly site inspection on 28 September 2023. 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 4 October 2023 to confirm findings. 24-hour TSP level of 76 µg/m^3 (below Action and Limit Levels) was measured during the sampling event, which demonstrate no consecutive dust impact at AM1. Due to presence of the influencing factor from the SENT landfill and no potential source from the Project-related activities in the vicinity of AM1 which may lead to the high TSP level was identified, there is no adequate evidence showing that the TSP exceedance at AM1 was deemed to Project-related activities.
Action Taken / Action to be Taken	Examination of environmental performance of the Project will be continued during the weekly inspections. The Contractor is reminded to implement relevant and appropriate mitigation measures according to the updated EM&A Manual to avoid any exceedance of the Action/Limit Level. 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: Abbey Lau
Designation: Environmental Team
Date: 11 October 2023

Investigation Report of Environmental Quality Limit Exceedance

Project	South East New Territories (SENT) Landfill Extension
Date	16 October 2023
Time	11:41 – 12:11
Monitoring Location	Thermal Oxidiser
Parameter	Sulphur Dioxide (SO_2)
Limit Levels	>0.07 g/s
Measured Level	0.79 g/s
Possible reason	As confirmed by the Contractor, the thermal oxidiser was under normal operating conditions during the sampling event. The thermal oxidizer stack emission monitoring results (NO_2, CO, Benzene, Vinyl chloride, gas combustion temperature, exhaust temperature and exhaust gas velocity) on 16 October 2023 were well within the respective limit levels. It is possible that the slight exceedance of SO_2 limit level measured on 16 October 2023 could be due to the low desulfurization efficiency of the desulfurization tanks. Hence, the SO_2 exceedance at the thermal oxidizer on 16 October 2023 is considered to be Project related. In accordance with Table 3.8b of the updated EM&A Manual, repeat measurement was conducted on 16 November 2023 (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 29 November 2023) to confirm findings. Exceedance of SO_2 Limit Level was recorded at the thermal oxidiser (0.45 g/s) during the sampling event. The thermal oxidiser showed consecutive exceedance of the stack emission limit (SO_2). It should be noted that although the measured SO_2 level exceeded the limit level of the EM&A programme (which was set based on the stack design parameters), the slight exceedance of SO_2 on 16 October 2023 will not cause adverse air quality impact to the identified ASRs as the anticipated SO_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 closely monitoring the operating conditions of the thermal oxidiser to avoid any exceedance of the Limit Levels. The Contractor has arranged inspection and maintenance at the desulfurization tanks in December 2023 to enhance the desulfurization efficiency.

Remarks	-

Prepared by: Abbey Lau
Designation: Environmental Team
Date: 12 December 2023

Investigation Report of Environmental Quality Limit Exceedance

Project	South East New Territories (SENT) Landfill Extension
Date	16 November 2023
Time	12:19 – 12:49
Monitoring Location	Thermal Oxidiser
Parameter	Sulphur Dioxide (SO_2)
Limit Levels	>0.07 g/s
Measured Level	0.45 g/s
Possible reason	As confirmed by the Contractor, the thermal oxidiser was under normal operating conditions during the sampling event. The thermal oxidizer stack emission monitoring results (NO_2, CO, Benzene, Vinyl chloride, gas combustion temperature, exhaust temperature and exhaust gas velocity) on 16 November 2023 were well within the respective limit levels. It is possible that the slight exceedance of SO_2 limit level measured on 16 November 2023 was due to low desulfurization efficiency of the desulfurization tanks. Hence, the SO_2 exceedance at the thermal oxidizer on 16 November 2023 is considered Project-related. In accordance with Table 3.8b of the updated EM&A Manual, repeat measurement was conducted on 15 December 2023 (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 3 January 2024) to confirm findings. The SO_2 concentration (<0.005 g/s) measured on 15 December 2023 is well below Limit Level. There is no consecutive exceedance of SO_2 concentrations in the flue gas emission of the thermal oxidiser. It should be noted that although the measured SO_2 level exceeded the limit level of the EM&A programme (which was set based on the stack design parameters), the slight exceedance of SO_2 on 16 November 2023 will not cause adverse air quality impact to the identified ASRs as the anticipated SO_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 closely monitoring the operating conditions of the thermal oxidiser to avoid any exceedance of the Limit Levels. The Contractor has arranged inspection and maintenance at the desulfurization tanks in December 2023 to enhance the desulfurization efficiency.

Remarks	-

Prepared by: Abbey Lau
Designation: Environmental Team
Date: 4 January 2024

Investigation Report of Environmental Quality Limit Exceedance

Project	South East New Territories (SENT) Landfill Extension
Date	21 November 2023
Time	8:00 (21 November 2023) – 8:00 (22 November 2023)
Monitoring Location	AM3
Parameter	24-hour Total Suspended Particulates (TSP)
Action / Limit Levels	Action level: >260 µg/ m^3 Limit level: >260 µg/m^3
Measured Level	272 µg /m^3
Possible reason	From the meteorological data obtained from the SENTX on-site meteorological monitoring station, a predominantly northeasterly to southeasterly wind with highest wind speed 1.5 m/s was recorded on 21 and 22 November 2023 during the sampling event. On 21 November 2023, dust emission from the public fill stockpiling areas and active earthworks in vicinity of dust monitoring station AM3 were observed. The sample taken at AM3 on the day might not represent the operation dust emission from SENTX. In addition, no works from SENTX which may lead to potential dust emission was conducted in the vicinity of AM3 on the sampling day based on ET site representative's on-site observations and construction and operation activities as described by the Contractor. Environmental deficiency was not observed during the weekly site inspection on 23 November 2023. 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 27 November 2023 to confirm findings. 24-hour TSP level of 223 µg/m^3 (below Action and Limit Levels) was measured during the sampling event, which demonstrate no consecutive dust impact at AM3. Due to presence of the influencing factor from other project site and no potential source from the Project-related activities in the vicinity of AM3 which may lead to the high TSP level was identified, there is no adequate evidence showing that the TSP exceedance at AM3 was deemed to Project-related activities.
Action Taken / Action to be Taken	Examination of environmental performance of the Project will be continued during the weekly inspections. The Contractor is reminded to implement relevant and appropriate mitigation measures according to the updated EM&A Manual to avoid any exceedance of the Action/Limit Level.

	In addition, the Contractor was reminded to discuss the dust control measures with CEDD, to minimize the dust impact from the other project sites to proximity to the SENTX boundary.
Remarks	-

Prepared by: Abbey Lau
Designation: Environmental Team
Date: 12 December 2023

ANNEX E NOISE

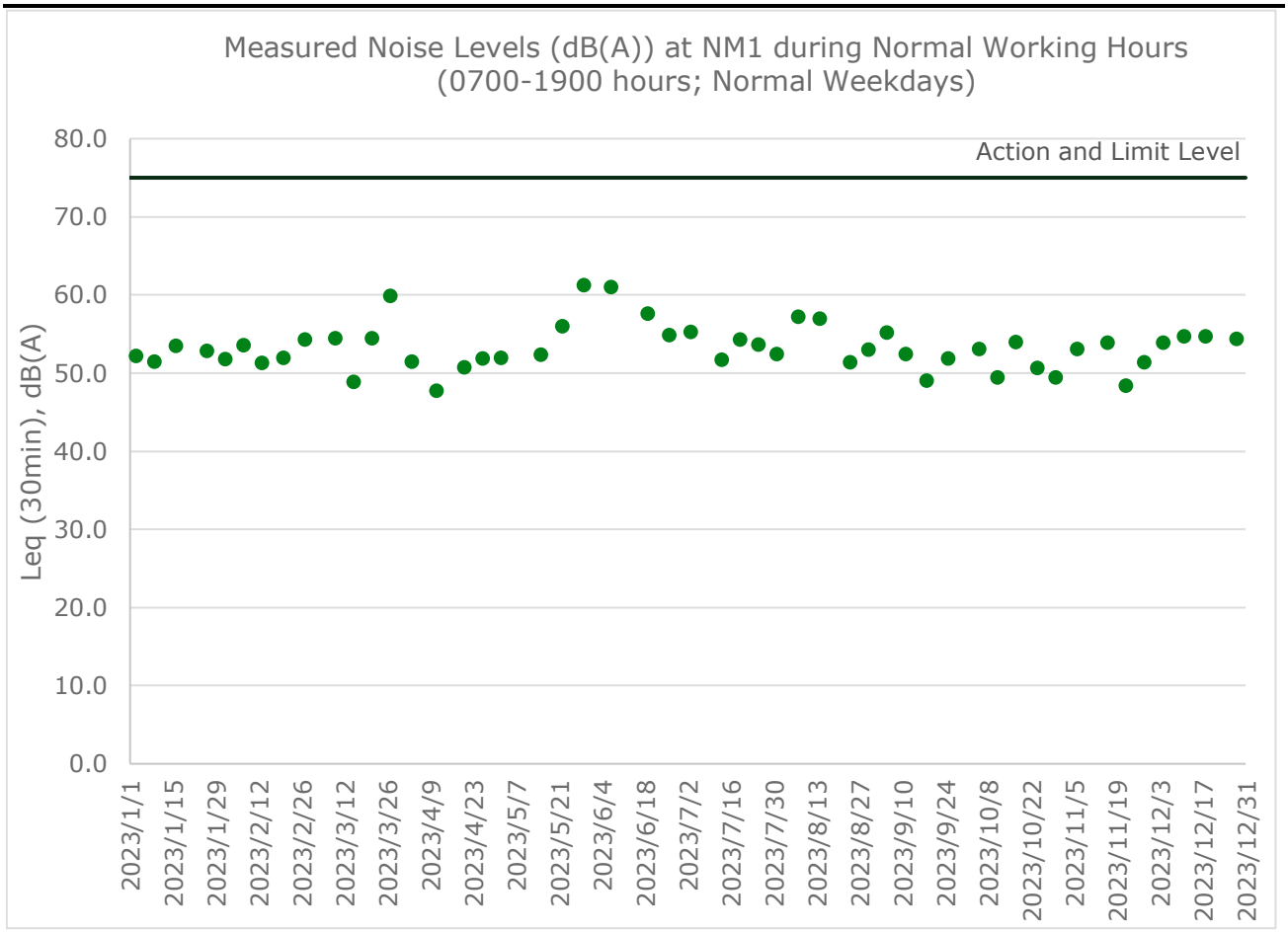
ANNEX E1 NOISE MONITORING RESULTS

TABLE E1.1 MEASURED NOISE LEVELS (DB(A)) AT NM1 DURING NORMAL WORKING HOURS (0700-1900 HOURS; NORMAL WEEKDAYS)

Date	Start Time	Finish Time	Weather	$L_{10\ (30min)}$	$L_{90\ (30min)}$	$L_{eq\ (30min)}$
3 Jan 23	10:32	11:02	Cloudy	54.1	49.5	52.2
9 Jan 23	09:02	09:32	Cloudy	54.0	48.1	51.5
16 Jan 23	09:40	10:10	Cloudy	55.0	51.5	53.5
26 Jan 23	10:20	10:50	Cloudy	55.2	46.4	52.9
1 Feb 23	09:22	09:52	Cloudy	53.9	48.4	51.8
7 Feb 23	09:43	10:13	Cloudy	55.4	50.3	53.6
13 Feb 23	10:50	11:20	Cloudy	53.7	48.0	51.3
20 Feb 23	09:36	10:06	Sunny	53.7	49.8	52.0
27 Feb 23	10:16	10:46	Sunny	56.3	50.5	54.3
9 Mar 23	14:33	15:03	Sunny	56.5	51.7	54.5
15 Mar 23	09:28	09:58	Sunny	50.6	46.5	48.9
21 Mar 23	09:31	10:01	Cloudy	56.0	52.5	54.5
27 Mar 23	09:52	10:22	Cloudy	52.9	48.3	59.9
3 Apr 23	09:53	10:23	Cloudy	53.2	48.5	51.5
11 Apr 23	10:46	11:16	Sunny	49.8	45.0	47.8
20 Apr 23	10:26	10:56	Cloudy	52.6	48.3	50.8
26 Apr 23	10:39	11:09	Sunny	53.8	48.9	51.9
2 May 23	10:21	10:51	Cloudy	53.7	48.7	52.0
8 May 23	09:01	09:31	Rainy	Monitoring was cancelled due to adverse weather.		
15 May 23	11:15	11:45	Cloudy	54.5	49.4	52.4
22 May 23	09:50	10:20	Sunny	58.1	53.4	56.0
29 May 23	14:30	15:00	Sunny	60.0	54.5	61.3
7 Jun 23	10:15	10:45	Sunny	61.9	59.9	61.0
13 Jun 23	10:45	11:15	Rainy	Monitoring was cancelled due to adverse weather.		
19 Jun 23	11:00	11:30	Sunny	59.5	53.1	57.6
26 Jun 23	10:35	11:05	Sunny	57.3	51.3	54.9
3 Jul 23	10:48	11:18	Sunny	58.2	51.7	55.3
13 Jul 23	10:45	11:15	Sunny	53.6	49.3	51.7
19 Jul 23	10:54	11:24	Cloudy	56.1	51.3	54.3
25 Jul 23	10:55	11:25	Sunny	55.0	49.6	53.7
31 Jul 23	11:01	11:31	Sunny	53.9	50.5	52.5
7 Aug 23	10:32	11:02	Sunny	59.7	53.3	57.2
14 Aug 23	10:42	11:12	Cloudy	58.3	54.2	57.0
24 Aug 23	10:51	11:21	Cloudy	52.5	49.2	51.4

Date	Start Time	Finish Time	Weather	L_{10} (30min)	L_{90} (30min)	L_{eq} (30min)
30 Aug 23	10:53	11:23	Sunny	55.1	50.0	53.0
5 Sep 23	14:27	14:57	Cloudy	56.5	53.4	55.2
11 Sep 23	10:40	11:10	Cloudy	54.0	49.3	52.5
18 Sep 23	10:11	10:41	Sunny	50.9	46.4	49.1
25 Sep 23	10:41	11:11	Sunny	53.6	48.0	51.9
5 Oct 23	10:26	10:56	Sunny	54.2	50.6	53.1
11 Oct 23	10:35	11:05	Sunny	51.2	47.2	49.5
17 Oct 23	09:35	10:05	Fine	56.4	50.8	54.0
24 Oct 23	10:00	10:30	Sunny	52.9	48.1	50.7
30 Oct 23	10:47	11:17	Sunny	51.7	46.6	49.5
6 Nov 23	10:44	11:14	Sunny	54.8	50.6	53.1
16 Nov 23	13:55	14:25	Sunny	55.6	52.0	53.9
22 Nov 23	10:48	11:18	Sunny	50.8	44.9	48.4
28 Nov 23	10:35	11:05	Sunny	53.4	48.2	51.4
4 Dec 23	09:49	10:19	Sunny	56.2	50.9	53.9
11 Dec 23	10:50	11:20	Fine	57.2	50.5	54.7
18 Dec 23	10:51	11:21	Cloudy	56.5	52.0	54.7
28 Dec 23	14:21	14:51	Sunny	56.2	51.8	54.4
					Average	53.3
					Min	47.8
					Max	61.3

FIGURE E1.1 GRAPHICAL PRESENTATION FOR NOISE MONITORING AT NM1



ANNEX E2 EVENT AND ACTION PLAN FOR NOISE MONITORING

ANNEX E2 EVENT AND ACTION PLAN FOR OPERATIONAL NOISE MONITORING

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	Suspended Solids (SS) (mg/L)	Remarks
11 Apr 23	16:00	Sunny	Unable to collect water sample due to insufficient flow						
5 May 23	10:40	Sunny	Unable to collect water sample due to insufficient flow						
9 Jun 23	10:55	Sunny	Unable to collect water sample due to insufficient flow						
11 Jul 23	10:43	Sunny	Unable to collect water sample due to insufficient flow						
4 Aug 23	14:10	Sunny	Unable to collect water sample due to insufficient flow						
22 Sep 23	10:08	Sunny	Unable to collect water sample due to insufficient flow						
3 Nov 23	10:14	Sunny	Unable to collect water sample due to insufficient flow						
15 Dec 23	09:44	Sunny	Unable to collect water sample due to insufficient flow						
					Average	-	-	-	-
					Min	-	-	-	-
					Max	-	-	-	-

TABLE F1.2 SURFACE WATER QUALITY MONITORING RESULTS AT DP3

Date			**20 Oct 23**
		Limit Level (DP3)	**DP3**
On-site Measurement			
pH Value	pH Unit	6 - 9	8.1
Electrical Conductivity	µS/cm	-	531
Dissolved Oxygen	mg/L	-	8.3
Volume Discharge	m^3	-	- [(a)]
Laboratory Analysis			
Bicarbonate	mg/L	-	103
Carbonate	mg/L	-	<1
Suspended Solids (SS)	mg/L	30	10.5
Ammonia-nitrogen	mg/L	0.5	0.09
Chloride	mg/L	-	62
Nitrite-nitrogen	mg/L	-	0.06
Phosphate	mg/L	5	<0.01
Sulphate	mg/L	-	95
Sulphide	mg/L	2.5	<0.1
Total Kjeldahl Nitrogen(TKN)	mg/L	-	1.5
Nitrate-nitrogen	mg/L	-	1.92
Total Nitrogen(TN)	mg/L	50	3.5
Biochemical Oxygen Demand	mg/L	20	<2

Chemical Oxygen Demand	mg/L	80	6
Oil & Grease	mg/L	20	<5
Total Organic Carbon	mg/L	-	4
Boron	µg/L	1100	100
Calcium	mg/L	-	59.7
Mercury	µg/L	1	<0.20
Magnesium	mg/L	-	4.55
Sodium	mg/L	-	34.4
Iron	mg/L	3	<0.04
Potassium	mg/L	-	8.8
Cadmium	µg/L	1	<0.2
Chromium	µg/L	300	2
Copper	µg/L	300	2
Lead	µg/L	300	<1
Manganese	µg/L	-	7
Nickel	µg/L	300	<1
Zinc	µg/L	-	<10
(a) The flow meter of DP3 is under maintenance.			

TABLE F1.3 SURFACE WATER QUALITY MONITORING RESULTS AT DP4

Date	Time	Weather Condition	Water Appearance	Water Condition	Water Temperature (°C)	Ammoniacal-nitrogen (mg/L)	COD	Suspended Solids (SS) (mg/L)	Remarks
4 Jan 23	14:37	Sunny	Unable to collect water sample due to insufficient flow						
8 Feb 23	14:18	Cloudy	Unable to collect water sample due to insufficient flow						
7 Mar 23	15:15	Sunny	Unable to collect water sample due to insufficient flow						
5 May 23	10:30	Sunny	Unable to collect water sample due to insufficient flow						
11 Jul 23	10:47	Sunny	Unable to collect water sample due to insufficient flow						
3 Nov 23	10:08	Sunny	Unable to collect water sample due to insufficient flow						
15 Dec 23	09:49	Sunny	Unable to collect water sample due to insufficient flow						
					Average	-	-	-	-
					Min	-	-	-	-
					Max	-	-	-	-

TABLE F1.4 SURFACE WATER QUALITY MONITORING RESULTS AT DP4

Date			11 Apr 23	11 Apr 23	9 Jun 23	9 Jun 23	4 Aug 23	4 Aug 23	15 Aug 23	15 Aug 23	22 Sep 23	22 Sep 23	20 Oct 23	20 Oct 23
		Limit Level (DP4 & 6)	DP4	DP4 (Duplicate)	DP4	DP4 (Duplicate)	DP4	DP4 (Duplicate)	DP4	DP4 (Duplicate)	DP4	DP4 (Duplicate)	DP4	DP4 (Duplicate)
On-site Measurement														
pH Value	pH Unit	6 - 9	7.57	7.6	7.8	7.4	8.2	8.6	7.36	7.92	8.1	8.1	7.7	7.8
Electrical Conductivity	µS/cm	-	2140	2160	643	649	763	764	360	345	360	360	198	199
Dissolved Oxygen	mg/L	-	6.96	6.43	4.8	4.4	57.4	46.3	6.75	6.39	7.1	7.3	7.7	8
Volume Discharge	m^3	-	18	18	3,180	3,180	1,360	1,360	6.75	6.39	7.1	7.3	290	290
Laboratory Analysis														
Bicarbonate	mg/L	-	34	34	36	36	39	36	-	-	62	62	35	35
Carbonate	mg/L	-	<1	<1	<1	<1	<1	2	-	-	<1	<1	<1	<1
Suspended Solids (SS)	mg/L	20	4.7	7.6	11.4	11.4	57.4	46.3	12.2	12.6	8.1	8.4	6.1	6
Ammonia-nitrogen	mg/L	7.1	0.03	0.05	0.02	0.03	0.04	0.03	-	-	0.02	0.03	0.02	0.02
Chloride	mg/L	-	410	400	124	123	164	170	-	-	50	50	29	28
Nitrite-nitrogen	mg/L	-	0.03	0.03	0.02	0.02	0.02	0.02	-	-	0.02	0.02	0.02	0.02
Phosphate	mg/L	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	-	<0.01	<0.01	<0.01	<0.01
Sulphate	mg/L	-	125	112	42	46	76	76	-	-	36	36	21	22
Sulphide	mg/L	2.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1
Total Kjeldahl Nitrogen(TKN)	mg/L	-	0.5	0.5	0.2	0.2	0.6	0.6	-	-	0.4	0.5	0.2	0.2
Nitrate-nitrogen	mg/L	-	0.79	0.77	0.2	0.2	0.14	0.13	-	-	0.06	0.06	0.29	0.28
Total Nitrogen(TN)	mg/L	50	1.3	1.3	0.4	0.4	0.8	0.8	-	-	0.5	0.5	0.5	0.5
Biochemical Oxygen Demand	mg/L	20	<2	<2	<2	<2	3	3	-	-	<2	<2	<2	<2

Chemical Oxygen Demand	mg/L	30	22	18	8	8	18	20	-	-	10	9	3	2
Oil & Grease	mg/L	20	<5	<5	<5	<5	<5	<5	-	-	<5	<5	<5	<5
Total Organic Carbon	mg/L	-	5	4	3	3	3	3	-	-	4	4	2	1
Boron	µg/L	1100	150	150	50	50	70	70	-	-	60	60	20	20
Calcium	mg/L	-	106	104	33.2	33.2	52.1	51.9	-	-	29.8	30.8	24	23.7
Mercury	µg/L	1	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	-	-	<0.20	<0.20	<0.20	<0.20
Magnesium	mg/L	-	23.5	23	3.7	3.71	3.4	3.4	-	-	1.7	1.74	0.98	0.98
Sodium	mg/L	-	253	246	58.6	53.7	74.1	76	-	-	31.5	31	11.5	10.6
Iron	mg/L	3	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	-	-	<0.04	<0.04	<0.04	<0.04
Potassium	mg/L	-	19.5	18.8	9.64	9.65	10.6	10.4	-	-	7.61	7.87	2.75	2.71
Cadmium	µg/L	1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	-	<0.2	<0.2	<0.2	<0.2
Chromium	µg/L	300	<1	<1	1	1	<1	<1	-	-	<1	<1	<1	<1
Copper	µg/L	300	3	2	2	1	1	2	-	-	1	1	<1	<1
Lead	µg/L	300	<1	<1	<1	<1	<1	<1	-	-	<1	<1	<1	<1
Manganese	µg/L	-	17	16	6	7	3	9	-	-	5	7	4	4
Nickel	µg/L	300	<1	<1	<1	<1	<1	<1	-	-	<1	<1	<1	<1
Zinc	µg/L	-	<10	<10	<10	<10	<10	13	-	-	86	1780	<10	<10

TABLE F1.5 SURFACE WATER QUALITY MONITORING RESULTS AT DP6

Date	Time	Weather Condition	Water Appearance	Water Condition	Water Temperature (°C)	Ammoniacal-nitrogen (mg/L)	COD	Suspended Solids (SS) (mg/L)	Remarks
4 Jan 23	14:31	Sunny	Unable to collect water sample due to insufficient flow						
8 Feb 23	14:12	Cloudy	Unable to collect water sample due to insufficient flow						
7 Mar 23	16:00	Sunny	Unable to collect water sample due to insufficient flow						
11 Apr 23	15:46	Sunny	Unable to collect water sample due to insufficient flow						
5 May 23	10:15	Sunny	Unable to collect water sample due to insufficient flow						
9 Jun 23	10:50	Sunny	Unable to collect water sample due to insufficient flow						
11 Jul 23	10:32	Sunny	Unable to collect water sample due to insufficient flow						
4 Aug 23	14:02	Sunny	Unable to collect water sample due to insufficient flow						
3 Nov 23	09:55	Sunny	Unable to collect water sample due to insufficient flow						
15 Dec 23	09:53	Sunny	Unable to collect water sample due to insufficient flow						
					Average	-	-	-	-
					Min	-	-	-	-
					Max	-	-	-	-

TABLE F1.6 SURFACE WATER QUALITY MONITORING RESULTS AT DP6

Date			**22 Sep 23**	**20 Oct 23**
		Limit Level (DP4 & 6)	**DP6**	**DP6**
On-site Measurement				
pH Value	pH Unit	6 - 9	8.2	7.9
Electrical Conductivity	µS/cm	-	273	282
Dissolved Oxygen	mg/L	-	8.3	7.8
Volume Discharge	m^3	-	8.3	64
Laboratory Analysis				
Bicarbonate	mg/L	-	83	84
Carbonate	mg/L	-	<1	<1
Suspended Solids (SS)	mg/L	20	2.4	1.8
Ammonia-nitrogen	mg/L	7.1	0.04	0.03
Chloride	mg/L	-	22	23
Nitrite-nitrogen	mg/L	-	0.01	<0.01
Phosphate	mg/L	5	<0.01	0.01
Sulphate	mg/L	-	19	29
Sulphide	mg/L	2.5	<0.1	<0.1
Total Kjeldahl Nitrogen(TKN)	mg/L	-	0.3	0.2
Nitrate-nitrogen	mg/L	-	0.2	0.4
Total Nitrogen(TN)	mg/L	50	0.5	0.6
Biochemical Oxygen Demand	mg/L	20	<2	<2

Chemical Oxygen Demand	mg/L	30	6	4
Oil & Grease	mg/L	20	<5	<5
Total Organic Carbon	mg/L	-	3	2
Boron	µg/L	1100	50	40
Calcium	mg/L	-	28.6	33.1
Mercury	µg/L	1	<0.20	<0.20
Magnesium	mg/L	-	1.9	1.87
Sodium	mg/L	-	20.1	10.6
Iron	mg/L	3	<0.04	<0.04
Potassium	mg/L	-	5.92	6.51
Cadmium	µg/L	1	<0.2	<0.2
Chromium	µg/L	300	<1	<1
Copper	µg/L	300	<1	<1
Lead	µg/L	300	<1	<1
Manganese	µg/L	-	3	4
Nickel	µg/L	300	<1	<1
Zinc	µg/L	-	<10	<10

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 23	70	82	76
2 Jan 23	70	82	76
3 Jan 23	70	82	76
4 Jan 23	66	79	73
5 Jan 23	77	88	83
6 Jan 23	73	84	79
7 Jan 23	70	82	76
8 Jan 23	75	88	82
9 Jan 23	75	88	82
10 Jan 23	70	82	76
11 Jan 23	70	82	76
12 Jan 23	64	75	70
13 Jan 23	66	79	73
14 Jan 23	68	82	75
15 Jan 23	73	84	79
16 Jan 23	73	84	79
17 Jan 23	75	70	73
18 Jan 23	66	77	72
19 Jan 23	66	77	72
20 Jan 23	75	70	73
21 Jan 23	75	88	82
22 Jan 23	73	86	80
23 Jan 23	73	86	80
24 Jan 23	73	86	80
25 Jan 23	73	86	80
26 Jan 23	73	86	80
27 Jan 23	68	82	75
28 Jan 23	66	77	72
29 Jan 23	70	82	76
30 Jan 23	70	82	76
31 Jan 23	66	77	72
1 Feb 23	73	86	80
2 Feb 23	68	82	75
3 Feb 23	75	88	82
4 Feb 23	70	84	77

Date	Meter No.X1 (cm)	Meter No.X2 (cm)	Average (cm)
5 Feb 23	73	86	80
6 Feb 23	73	86	80
7 Feb 23	68	79	74
8 Feb 23	75	88	82
9 Feb 23	70	82	76
10 Feb 23	64	75	70
11 Feb 23	73	84	79
12 Feb 23	68	79	74
13 Feb 23	68	79	74
14 Feb 23	70	82	76
15 Feb 23	68	82	75
16 Feb 23	66	77	72
17 Feb 23	75	88	82
18 Feb 23	70	84	77
19 Feb 23	75	86	81
20 Feb 23	75	86	81
21 Feb 23	70	82	76
22 Feb 23	64	75	70
23 Feb 23	73	84	79
24 Feb 23	66	77	72
25 Feb 23	75	86	81
26 Feb 23	75	88	82
27 Feb 23	75	88	82
28 Feb 23	70	82	76
1 Mar 23	77	88	83
2 Mar 23	70	82	76
3 Mar 23	77	88	83
4 Mar 23	70	82	76
5 Mar 23	70	84	77
6 Mar 23	70	84	77
7 Mar 23	77	64	71
8 Mar 23	73	84	79
9 Mar 23	64	77	71
10 Mar 23	73	84	79
11 Mar 23	64	77	71
12 Mar 23	64	77	71
13 Mar 23	64	77	71

Date	Meter No.X1 (cm)	Meter No.X2 (cm)	Average (cm)
14 Mar 23	73	84	79
15 Mar 23	64	77	71
16 Mar 23	73	84	79
17 Mar 23	64	77	71
18 Mar 23	70	84	77
19 Mar 23	70	84	77
20 Mar 23	70	84	77
21 Mar 23	64	75	70
22 Mar 23	73	84	79
23 Mar 23	66	77	72
24 Mar 23	73	86	80
25 Mar 23	68	79	74
26 Mar 23	70	82	76
27 Mar 23	70	82	76
28 Mar 23	73	84	79
29 Mar 23	77	88	83
30 Mar 23	70	84	77
31 Mar 23	70	82	76
1 Apr 23	73	84	79
2 Apr 23	70	82	76
3 Apr 23	73	84	79
4 Apr 23	70	82	76
5 Apr 23	75	86	81
6 Apr 23	75	86	81
7 Apr 23	73	84	79
8 Apr 23	73	86	80
9 Apr 23	70	82	76
10 Apr 23	70	82	76
11 Apr 23	75	86	81
12 Apr 23	77	88	83
13 Apr 23	75	88	82
14 Apr 23	73	86	80
15 Apr 23	70	82	76
16 Apr 23	77	88	83
17 Apr 23	77	88	83
18 Apr 23	73	84	79
19 Apr 23	68	79	74

Date	Meter No.X1 (cm)	Meter No.X2 (cm)	Average (cm)
20 Apr 23	77	73	75
21 Apr 23	66	79	73
22 Apr 23	75	86	81
23 Apr 23	70	82	76
24 Apr 23	70	82	76
25 Apr 23	73	84	79
26 Apr 23	70	82	76
27 Apr 23	64	75	70
28 Apr 23	70	82	76
29 Apr 23	75	86	81
30 Apr 23	66	77	72
1 May 23	66	77	72
2 May 23	66	77	72
3 May 23	66	77	72
4 May 23	66	77	72
5 May 23	77	88	83
6 May 23	75	86	81
7 May 23	73	84	79
8 May 23	75	88	82
9 May 23	75	88	82
10 May 23	73	84	79
11 May 23	70	82	76
12 May 23	66	77	72
13 May 23	75	88	82
14 May 23	70	84	77
15 May 23	73	84	79
16 May 23	73	84	79
17 May 23	86	73	80
18 May 23	70	82	76
19 May 23	77	88	83
20 May 23	73	84	79
21 May 23	73	84	79
22 May 23	70	82	76
23 May 23	70	82	76
24 May 23	70	82	76
25 May 23	73	86	80
26 May 23	82	70	76

Date	Meter No.X1 (cm)	Meter No.X2 (cm)	Average (cm)
27 May 23	73	84	79
28 May 23	73	84	79
29 May 23	75	88	82
30 May 23	73	84	79
31 May 23	66	79	73
1 Jun 23	73	84	79
2 Jun 23	68	79	74
3 Jun 23	73	84	79
4 Jun 23	70	82	76
5 Jun 23	77	88	83
6 Jun 23	77	88	83
7 Jun 23	77	88	83
8 Jun 23	70	82	76
9 Jun 23	70	82	76
10 Jun 23	70	82	76
11 Jun 23	75	88	82
12 Jun 23	70	54	62
13 Jun 23	75	88	82
14 Jun 23	73	84	79
15 Jun 23	73	66	70
16 Jun 23	70	82	76
17 Jun 23	75	88	82
18 Jun 23	70	64	67
19 Jun 23	70	64	67
20 Jun 23	68	62	65
21 Jun 23	70	82	76
22 Jun 23	73	86	80
23 Jun 23	73	84	79
24 Jun 23	73	84	79
25 Jun 23	73	86	80
26 Jun 23	70	84	77
27 Jun 23	70	84	77
28 Jun 23	75	88	82
29 Jun 23	73	84	79
30 Jun 23	75	88	82
1 Jul 23	75	88	82
2 Jul 23	75	86	81

Date	Meter No.X1 (cm)	Meter No.X2 (cm)	Average (cm)
3 Jul 23	75	86	81
4 Jul 23	77	88	83
5 Jul 23	77	88	83
6 Jul 23	75	88	82
7 Jul 23	77	88	83
8 Jul 23	75	88	82
9 Jul 23	77	88	83
10 Jul 23	77	88	83
11 Jul 23	77	88	83
12 Jul 23	77	88	83
13 Jul 23	77	88	83
14 Jul 23	77	88	83
15 Jul 23	77	88	83
16 Jul 23	77	88	83
17 Jul 23	77	88	83
18 Jul 23	77	88	83
19 Jul 23	77	88	83
20 Jul 23	77	88	83
21 Jul 23	77	64	71
22 Jul 23	77	88	83
23 Jul 23	77	88	83
24 Jul 23	77	88	83
25 Jul 23	77	88	83
26 Jul 23	77	88	83
27 Jul 23	77	88	83
28 Jul 23	77	88	83
29 Jul 23	77	88	83
30 Jul 23	77	88	83
31 Jul 23	77	88	83
1 Aug 23	77	88	83
2 Aug 23	77	88	83
3 Aug 23	77	88	83
4 Aug 23	77	88	83
5 Aug 23	77	88	83
6 Aug 23	77	85	81
7 Aug 23	77	88	83
8 Aug 23	77	88	83

Date	Meter No.X1 (cm)	Meter No.X2 (cm)	Average (cm)
9 Aug 23	77	88	83
10 Aug 23	77	88	83
11 Aug 23	77	86	82
12 Aug 23	77	88	83
13 Aug 23	77	86	82
14 Aug 23	79	88	84
15 Aug 23	77	88	83
16 Aug 23	77	88	83
17 Aug 23	77	88	83
18 Aug 23	77	88	83
19 Aug 23	77	88	83
20 Aug 23	73	86	80
21 Aug 23	68	82	75
22 Aug 23	75	86	81
23 Aug 23	73	86	80
24 Aug 23	75	86	81
25 Aug 23	68	79	74
26 Aug 23	77	88	83
27 Aug 23	70	82	76
28 Aug 23	70	82	76
29 Aug 23	77	88	83
30 Aug 23	68	79	74
31 Aug 23	66	79	73
1 Sep 23	66	79	73
2 Sep 23	70	82	76
3 Sep 23	70	82	76
4 Sep 23	73	84	79
5 Sep 23	88	82	85
6 Sep 23	75	86	81
7 Sep 23	77	88	83
8 Sep 23	249	237	243
9 Sep 23	240	222	231
10 Sep 23	240	222	231
11 Sep 23	233	222	228
12 Sep 23	231	213	222
13 Sep 23	226	209	218
14 Sep 23	213	195	204

Date	Meter No.X1 (cm)	Meter No.X2 (cm)	Average (cm)
15 Sep 23	195	177	186
16 Sep 23	184	166	175
17 Sep 23	164	148	156
18 Sep 23	131	113	122
19 Sep 23	77	88	83
20 Sep 23	75	86	81
21 Sep 23	75	88	82
22 Sep 23	77	88	83
23 Sep 23	77	88	83
24 Sep 23	77	88	83
25 Sep 23	77	88	83
26 Sep 23	77	88	83
27 Sep 23	77	88	83
28 Sep 23	77	88	83
29 Sep 23	77	66	72
30 Sep 23	77	66	72
1 Oct 23	78	77	78
2 Oct 23	79	88	84
3 Oct 23	79	88	84
4 Oct 23	79	88	84
5 Oct 23	77	88	83
6 Oct 23	79	88	84
7 Oct 23	79	88	84
8 Oct 23	88	Standby	88
9 Oct 23	233	Standby	233
10 Oct 23	233	Standby	233
11 Oct 23	224	Standby	224
12 Oct 23	244	Standby	244
13 Oct 23	251	Standby	251
14 Oct 23	240	Standby	240
15 Oct 23	224	Standby	224
16 Oct 23	208	Standby	208
17 Oct 23	188	Standby	188
18 Oct 23	162	Standby	162
19 Oct 23	162	Standby	162
20 Oct 23	163	Standby	163
21 Oct 23	164	Standby	164

Date	Meter No.X1 (cm)	Meter No.X2 (cm)	Average (cm)
22 Oct 23	162	Standby	162
23 Oct 23	162	Standby	162
24 Oct 23	161	Standby	161
25 Oct 23	166	Standby	166
26 Oct 23	168	Standby	168
27 Oct 23	171	Standby	171
28 Oct 23	159	Standby	159
29 Oct 23	160	Standby	160
30 Oct 23	162	Standby	162
31 Oct 23	164	Standby	164
1 Nov 23	164	Standby	164
2 Nov 23	166	Standby	166
3 Nov 23	168	Standby	168
4 Nov 23	168	Standby	168
5 Nov 23	168	Standby	168
6 Nov 23	171	Standby	171
7 Nov 23	162	Standby	162
8 Nov 23	131	Standby	131
9 Nov 23	133	Standby	133
10 Nov 23	135	Standby	135
11 Nov 23	137	Standby	137
12 Nov 23	139	Standby	139
13 Nov 23	142	Standby	142
14 Nov 23	142	Standby	142
15 Nov 23	144	Standby	144
16 Nov 23	146	Standby	146
17 Nov 23	146	Standby	146
18 Nov 23	148	Standby	148
19 Nov 23	148	Standby	148
20 Nov 23	148	Standby	148
21 Nov 23	151	Standby	151
22 Nov 23	151	Standby	151
23 Nov 23	151	Standby	151
24 Nov 23	151	Standby	151
25 Nov 23	153	Standby	153
26 Nov 23	153	Standby	153
27 Nov 23	155	Standby	155

Date	Meter No.X1 (cm)	Meter No.X2 (cm)	Average (cm)
28 Nov 23	155	Standby	155
29 Nov 23	155	Standby	155
30 Nov 23	155	Standby	155
1 Dec 23	157	Standby	157
2 Dec 23	157	Standby	157
3 Dec 23	157	Standby	157
4 Dec 23	157	Standby	157
5 Dec 23	159	Standby	159
6 Dec 23	155	Standby	155
7 Dec 23	159	Standby	159
8 Dec 23	155	Standby	155
9 Dec 23	99	Standby	99
10 Dec 23	106	Standby	106
11 Dec 23	108	Standby	108
12 Dec 23	108	Standby	108
13 Dec 23	113	Standby	113
14 Dec 23	115	Standby	115
15 Dec 23	115	Standby	115
16 Dec 23	117	Standby	117
17 Dec 23	118	Standby	118
18 Dec 23	119	Standby	119
19 Dec 23	102	Standby	102
20 Dec 23	106	Standby	106
21 Dec 23	108	Standby	108
22 Dec 23	111	Standby	111
23 Dec 23	111	Standby	111
24 Dec 23	113	Standby	113
25 Dec 23	115	Standby	115
26 Dec 23	115	Standby	115
27 Dec 23	117	Standby	117
28 Dec 23	117	Standby	117
29 Dec 23	119	Standby	119
30 Dec 23	119	Standby	119
31 Dec 23	111	Standby	111
Average	95	88	99
Min	64	54	62
Max	251	237	251

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 23	82	77	80
2 Jan 23	82	77	80
3 Jan 23	82	77	80
4 Jan 23	86	82	84
5 Jan 23	88	86	87
6 Jan 23	70	66	68
7 Jan 23	77	73	75
8 Jan 23	86	82	84
9 Jan 23	86	82	84
10 Jan 23	64	59	62
11 Jan 23	70	66	68
12 Jan 23	77	73	75
13 Jan 23	82	77	80
14 Jan 23	86	82	84
15 Jan 23	73	68	71
16 Jan 23	73	68	71
17 Jan 23	77	73	75
18 Jan 23	82	79	81
19 Jan 23	86	82	84
20 Jan 23	66	62	64
21 Jan 23	73	68	71
22 Jan 23	73	68	71
23 Jan 23	73	68	71
24 Jan 23	73	68	71
25 Jan 23	73	68	71
26 Jan 23	73	68	71
27 Jan 23	77	73	75
28 Jan 23	82	79	81
29 Jan 23	66	62	64
30 Jan 23	66	62	64
31 Jan 23	73	68	71
1 Feb 23	77	73	75
2 Feb 23	82	79	81
3 Feb 23	86	82	84
4 Feb 23	64	59	62
5 Feb 23	77	73	75

6 Feb 23	77	73	75
7 Feb 23	82	77	80
8 Feb 23	86	82	84
9 Feb 23	64	59	62
10 Feb 23	70	66	68
11 Feb 23	77	73	75
12 Feb 23	86	82	84
13 Feb 23	86	82	84
14 Feb 23	64	59	62
15 Feb 23	70	66	68
16 Feb 23	77	73	75
17 Feb 23	82	77	80
18 Feb 23	86	82	84
19 Feb 23	68	64	66
20 Feb 23	68	64	66
21 Feb 23	75	70	73
22 Feb 23	79	75	77
23 Feb 23	84	79	82
24 Feb 23	88	84	86
25 Feb 23	68	64	66
26 Feb 23	79	75	77
27 Feb 23	79	75	77
28 Feb 23	84	79	82
1 Mar 23	88	84	86
2 Mar 23	66	64	65
3 Mar 23	73	68	71
4 Mar 23	77	73	75
5 Mar 23	88	82	85
6 Mar 23	88	82	85
7 Mar 23	66	62	64
8 Mar 23	73	68	71
9 Mar 23	79	75	77
10 Mar 23	84	79	82
11 Mar 23	88	84	86
12 Mar 23	73	70	72
13 Mar 23	73	70	72
14 Mar 23	79	75	77
15 Mar 23	84	79	82
16 Mar 23	88	84	86

17 Mar 23	68	66	67
18 Mar 23	75	70	73
19 Mar 23	84	80	82
20 Mar 23	86	82	84
21 Mar 23	66	62	64
22 Mar 23	73	68	71
23 Mar 23	77	73	75
24 Mar 23	82	79	81
25 Mar 23	88	84	86
26 Mar 23	84	79	82
27 Mar 23	84	79	82
28 Mar 23	70	66	68
29 Mar 23	79	77	78
30 Mar 23	86	82	84
31 Mar 23	66	64	65
1 Apr 23	75	70	73
2 Apr 23	88	84	86
3 Apr 23	70	68	69
4 Apr 23	88	84	86
5 Apr 23	88	84	86
6 Apr 23	88	84	86
7 Apr 23	82	79	81
8 Apr 23	68	64	66
9 Apr 23	86	82	84
10 Apr 23	86	82	84
11 Apr 23	68	66	67
12 Apr 23	77	73	75
13 Apr 23	84	79	82
14 Apr 23	88	86	87
15 Apr 23	73	68	71
16 Apr 23	73	68	71
17 Apr 23	84	82	83
18 Apr 23	64	59	62
19 Apr 23	70	68	69
20 Apr 23	64	62	63
21 Apr 23	84	82	83
22 Apr 23	84	79	82
23 Apr 23	66	64	65
24 Apr 23	66	64	65

25 Apr 23	82	77	80
26 Apr 23	64	62	63
27 Apr 23	75	73	74
28 Apr 23	84	79	82
29 Apr 23	64	62	63
30 Apr 23	88	84	86
1 May 23	88	84	86
2 May 23	88	84	86
3 May 23	68	64	66
4 May 23	75	70	73
5 May 23	79	77	78
6 May 23	86	82	84
7 May 23	82	79	81
8 May 23	82	79	81
9 May 23	79	75	77
10 May 23	77	73	75
11 May 23	78	78	78
12 May 23	79	75	77
13 May 23	88	84	86
14 May 23	82	77	80
15 May 23	82	77	80
16 May 23	75	70	73
17 May 23	75	70	73
18 May 23	70	66	68
19 May 23	86	82	84
20 May 23	86	82	84
21 May 23	88	86	87
22 May 23	88	86	87
23 May 23	77	75	76
24 May 23	66	62	64
25 May 23	84	88	86
26 May 23	73	70	72
27 May 23	84	79	82
28 May 23	70	66	68
29 May 23	79	77	78
30 May 23	88	84	86
31 May 23	75	70	73
1 Jun 23	82	79	81
2 Jun 23	68	66	67

3 Jun 23	75	79	77
4 Jun 23	73	70	72
5 Jun 23	73	70	72
6 Jun 23	82	79	81
7 Jun 23	75	70	73
8 Jun 23	82	77	80
9 Jun 23	77	75	76
10 Jun 23	73	68	71
11 Jun 23	88	81	85
12 Jun 23	66	64	65
13 Jun 23	88	84	86
14 Jun 23	82	84	83
15 Jun 23	86	82	84
16 Jun 23	70	68	69
17 Jun 23	82	84	83
18 Jun 23	79	88	84
19 Jun 23	86	82	84
20 Jun 23	84	84	84
21 Jun 23	88	84	86
22 Jun 23	86	86	86
23 Jun 23	86	86	86
24 Jun 23	88	86	87
25 Jun 23	88	88	88
26 Jun 23	88	88	88
27 Jun 23	88	86	87
28 Jun 23	88	86	87
29 Jun 23	88	86	87
30 Jun 23	88	86	87
1 Jul 23	88	86	87
2 Jul 23	75	66	71
3 Jul 23	75	66	71
4 Jul 23	86	77	82
5 Jul 23	88	86	87
6 Jul 23	88	86	87
7 Jul 23	90	93	92
8 Jul 23	88	86	87
9 Jul 23	84	82	83
10 Jul 23	84	82	83
11 Jul 23	86	84	85

12 Jul 23	75	73	74
13 Jul 23	77	75	76
14 Jul 23	84	82	83
15 Jul 23	79	77	78
16 Jul 23	81	79	80
17 Jul 23	83	81	82
18 Jul 23	84	82	83
19 Jul 23	77	75	76
20 Jul 23	74	66	70
21 Jul 23	74	77	76
22 Jul 23	89	90	90
23 Jul 23	65	66	66
24 Jul 23	65	66	66
25 Jul 23	80	82	81
26 Jul 23	65	66	66
27 Jul 23	78	79	79
28 Jul 23	80	82	81
29 Jul 23	67	68	68
30 Jul 23	80	82	81
31 Jul 23	80	82	81
1 Aug 23	80	84	82
2 Aug 23	72	73	73
3 Aug 23	85	86	86
4 Aug 23	76	77	77
5 Aug 23	87	88	88
6 Aug 23	80	82	81
7 Aug 23	76	79	78
8 Aug 23	89	90	90
9 Aug 23	80	82	81
10 Aug 23	74	75	75
11 Aug 23	87	90	89
12 Aug 23	82	86	84
13 Aug 23	82	84	83
14 Aug 23	78	82	80
15 Aug 23	82	84	83
16 Aug 23	80	82	81
17 Aug 23	76	77	77
18 Aug 23	70	77	74
19 Aug 23	87	86	87

20 Aug 23	78	77	78
21 Aug 23	78	77	78
22 Aug 23	63	75	69
23 Aug 23	87	86	87
24 Aug 23	78	75	77
25 Aug 23	87	86	87
26 Aug 23	78	77	78
27 Aug 23	78	77	78
28 Aug 23	78	77	78
29 Aug 23	80	79	80
30 Aug 23	85	84	85
31 Aug 23	87	86	87
1 Sep 23	87	86	87
2 Sep 23	63	82	73
3 Sep 23	63	82	73
4 Sep 23	87	84	86
5 Sep 23	87	84	86
6 Sep 23	87	86	87
7 Sep 23	87	88	88
8 Sep 23	87	88	88
9 Sep 23	67	88	78
10 Sep 23	67	88	78
11 Sep 23	85	86	86
12 Sep 23	61	86	74
13 Sep 23	63	84	74
14 Sep 23	87	83	85
15 Sep 23	87	84	86
16 Sep 23	69	84	77
17 Sep 23	89	84	87
18 Sep 23	84	89	87
19 Sep 23	84	84	84
20 Sep 23	87	81	84
21 Sep 23	69	84	77
22 Sep 23	89	86	88
23 Sep 23	82	81	82
24 Sep 23	67	86	77
25 Sep 23	80	84	82
26 Sep 23	89	84	87
27 Sep 23	85	81	83

28 Sep 23	89	86	88
29 Sep 23	80	86	83
30 Sep 23	80	86	83
1 Oct 23	84	85	85
2 Oct 23	87	84	86
3 Oct 23	87	84	86
4 Oct 23	89	86	88
5 Oct 23	78	84	81
6 Oct 23	76	84	80
7 Oct 23	87	84	86
8 Oct 23	84	89	87
9 Oct 23	78	75	77
10 Oct 23	78	75	77
11 Oct 23	329	239	284
12 Oct 23	329	239	284
13 Oct 23	366	297	332
14 Oct 23	361	284	323
15 Oct 23	357	271	314
16 Oct 23	348	257	303
17 Oct 23	346	249	298
18 Oct 23	322	257	290
19 Oct 23	298	257	278
20 Oct 23	318	258	288
21 Oct 23	318	260	289
22 Oct 23	296	261	279
23 Oct 23	296	260	278
24 Oct 23	302	262	282
25 Oct 23	307	286	297
26 Oct 23	311	320	316
27 Oct 23	315	324	320
28 Oct 23	313	318	316
29 Oct 23	312	320	316
30 Oct 23	313	324	319
31 Oct 23	313	324	319
1 Nov 23	315	324	320
2 Nov 23	315	324	320
3 Nov 23	318	320	319
4 Nov 23	315	318	317
5 Nov 23	313	318	316

6 Nov 23	307	315	311
7 Nov 23	311	318	315
8 Nov 23	311	318	315
9 Nov 23	311	318	315
10 Nov 23	311	318	315
11 Nov 23	311	318	315
12 Nov 23	311	318	315
13 Nov 23	311	318	315
14 Nov 23	311	318	315
15 Nov 23	311	318	315
16 Nov 23	302	304	303
17 Nov 23	287	291	289
18 Nov 23	274	277	276
19 Nov 23	261	264	263
20 Nov 23	246	249	248
21 Nov 23	259	246	253
22 Nov 23	246	142	194
23 Nov 23	209	99	154
24 Nov 23	141	62	102
25 Nov 23	146	137	142
26 Nov 23	148	142	145
27 Nov 23	150	144	147
28 Nov 23	152	146	149
29 Nov 23	154	148	151
30 Nov 23	154	148	151
1 Dec 23	157	151	154
2 Dec 23	157	151	154
3 Dec 23	157	153	155
4 Dec 23	159	153	156
5 Dec 23	161	155	158
6 Dec 23	161	155	158
7 Dec 23	161	155	158
8 Dec 23	163	157	160
9 Dec 23	126	119	123
10 Dec 23	126	119	123
11 Dec 23	126	119	123
12 Dec 23	126	119	123
13 Dec 23	126	119	123
14 Dec 23	126	119	123

15 Dec 23	126	119	123
16 Dec 23	126	119	123
17 Dec 23	125	119	122
18 Dec 23	124	119	122
19 Dec 23	126	119	123
20 Dec 23	126	119	123
21 Dec 23	124	115	120
22 Dec 23	126	119	123
23 Dec 23	126	119	123
24 Dec 23	126	119	123
25 Dec 23	124	119	122
26 Dec 23	126	119	123
27 Dec 23	124	119	122
28 Dec 23	124	119	122
29 Dec 23	124	119	122
30 Dec 23	126	119	123
31 Dec 23	125	119	122
Average	113	108	110
Min	61	59	60
Max	366	324	332

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 23	70	70	70
2 Jan 23	70	70	70
3 Jan 23	70	70	70
4 Jan 23	70	70	70
5 Jan 23	62	62	62
6 Jan 23	64	64	64
7 Jan 23	66	66	66
8 Jan 23	68	68	68
9 Jan 23	68	68	68
10 Jan 23	70	70	70
11 Jan 23	62	62	62
12 Jan 23	64	64	64
13 Jan 23	66	66	66
14 Jan 23	66	66	66
15 Jan 23	70	70	70
16 Jan 23	70	70	70
17 Jan 23	62	62	62
18 Jan 23	64	64	64
19 Jan 23	66	64	65
20 Jan 23	66	66	66
21 Jan 23	66	66	66
22 Jan 23	70	70	70
23 Jan 23	70	70	70
24 Jan 23	70	70	70
25 Jan 23	70	70	70
26 Jan 23	70	70	70
27 Jan 23	62	62	62
28 Jan 23	64	64	64
29 Jan 23	64	64	64
30 Jan 23	64	64	64
31 Jan 23	66	66	66
1 Feb 23	66	66	66
2 Feb 23	66	66	66
3 Feb 23	66	66	66
4 Feb 23	66	66	66
5 Feb 23	66	66	66

6 Feb 23	66	66	66
7 Feb 23	66	66	66
8 Feb 23	68	68	68
9 Feb 23	68	68	68
10 Feb 23	68	68	68
11 Feb 23	68	75	72
12 Feb 23	70	70	70
13 Feb 23	70	70	70
14 Feb 23	70	70	70
15 Feb 23	62	62	62
16 Feb 23	62	62	62
17 Feb 23	64	64	64
18 Feb 23	62	64	63
19 Feb 23	62	62	62
20 Feb 23	62	62	62
21 Feb 23	64	64	64
22 Feb 23	64	64	64
23 Feb 23	64	64	64
24 Feb 23	64	64	64
25 Feb 23	64	64	64
26 Feb 23	62	62	62
27 Feb 23	62	62	62
28 Feb 23	62	62	62
1 Mar 23	70	70	70
2 Mar 23	70	70	70
3 Mar 23	68	68	68
4 Mar 23	66	68	67
5 Mar 23	66	66	66
6 Mar 23	66	66	66
7 Mar 23	64	64	64
8 Mar 23	64	64	64
9 Mar 23	64	64	64
10 Mar 23	62	64	63
11 Mar 23	62	62	62
12 Mar 23	70	70	70
13 Mar 23	70	70	70
14 Mar 23	68	68	68
15 Mar 23	68	68	68
16 Mar 23	66	66	66

17 Mar 23	66	66	66
18 Mar 23	64	64	64
19 Mar 23	64	64	64
20 Mar 23	64	64	64
21 Mar 23	62	62	62
22 Mar 23	70	70	70
23 Mar 23	70	70	70
24 Mar 23	68	68	68
25 Mar 23	68	68	68
26 Mar 23	64	68	66
27 Mar 23	64	64	64
28 Mar 23	70	70	70
29 Mar 23	64	64	64
30 Mar 23	66	66	66
31 Mar 23	66	66	66
1 Apr 23	66	66	66
2 Apr 23	64	64	64
3 Apr 23	64	64	64
4 Apr 23	68	68	68
5 Apr 23	70	70	70
6 Apr 23	70	70	70
7 Apr 23	68	68	68
8 Apr 23	64	64	64
9 Apr 23	66	66	66
10 Apr 23	66	66	66
11 Apr 23	68	68	68
12 Apr 23	68	68	68
13 Apr 23	68	68	68
14 Apr 23	68	68	68
15 Apr 23	68	68	68
16 Apr 23	66	68	67
17 Apr 23	66	68	67
18 Apr 23	66	66	66
19 Apr 23	66	66	66
20 Apr 23	64	64	64
21 Apr 23	70	73	72
22 Apr 23	48	66	57
23 Apr 23	70	70	70
24 Apr 23	70	70	70

25 Apr 23	70	70	70
26 Apr 23	66	66	66
27 Apr 23	66	66	66
28 Apr 23	70	70	70
29 Apr 23	64	64	64
30 Apr 23	68	70	69
1 May 23	68	70	69
2 May 23	68	70	69
3 May 23	70	70	70
4 May 23	64	64	64
5 May 23	64	64	64
6 May 23	64	64	64
7 May 23	70	73	72
8 May 23	70	73	72
9 May 23	68	68	68
10 May 23	70	70	70
11 May 23	71	72	72
12 May 23	62	62	62
13 May 23	62	62	62
14 May 23	62	62	62
15 May 23	62	62	62
16 May 23	68	68	68
17 May 23	68	70	69
18 May 23	64	64	64
19 May 23	68	68	68
20 May 23	68	68	68
21 May 23	68	68	68
22 May 23	68	68	68
23 May 23	68	68	68
24 May 23	66	64	65
25 May 23	66	66	66
26 May 23	70	70	70
27 May 23	68	68	68
28 May 23	68	68	68
29 May 23	64	64	64
30 May 23	70	68	69
31 May 23	62	64	63
1 Jun 23	55	55	55
2 Jun 23	66	66	66

3 Jun 23	66	66	66
4 Jun 23	66	68	67
5 Jun 23	66	68	67
6 Jun 23	64	64	64
7 Jun 23	70	70	70
8 Jun 23	62	62	62
9 Jun 23	66	66	66
10 Jun 23	68	68	68
11 Jun 23	68	68	68
12 Jun 23	68	68	68
13 Jun 23	66	66	66
14 Jun 23	46	59	53
15 Jun 23	53	66	60
16 Jun 23	55	68	62
17 Jun 23	57	59	58
18 Jun 23	151	166	159
19 Jun 23	122	128	125
20 Jun 23	66	57	62
21 Jun 23	55	68	62
22 Jun 23	48	64	56
23 Jun 23	48	64	56
24 Jun 23	66	68	67
25 Jun 23	57	59	58
26 Jun 23	57	59	58
27 Jun 23	68	73	71
28 Jun 23	55	68	62
29 Jun 23	64	66	65
30 Jun 23	64	68	66
1 Jul 23	64	68	66
2 Jul 23	70	73	72
3 Jul 23	70	73	72
4 Jul 23	64	68	66
5 Jul 23	70	73	72
6 Jul 23	57	62	60
7 Jul 23	64	68	66
8 Jul 23	64	68	66
9 Jul 23	62	66	64
10 Jul 23	64	68	66
11 Jul 23	66	70	68

12 Jul 23	66	70	68
13 Jul 23	66	70	68
14 Jul 23	64	68	66
15 Jul 23	59	64	62
16 Jul 23	60	65	62
17 Jul 23	61	66	63
18 Jul 23	62	66	64
19 Jul 23	64	68	66
20 Jul 23	59	66	63
21 Jul 23	55	59	57
22 Jul 23	68	78	73
23 Jul 23	66	70	68
24 Jul 23	66	70	68
25 Jul 23	70	75	73
26 Jul 23	57	62	60
27 Jul 23	62	68	65
28 Jul 23	70	75	73
29 Jul 23	57	64	61
30 Jul 23	48	59	54
31 Jul 23	64	68	66
1 Aug 23	57	62	60
2 Aug 23	66	70	68
3 Aug 23	55	62	59
4 Aug 23	64	68	66
5 Aug 23	57	64	61
6 Aug 23	53	57	55
7 Aug 23	64	68	66
8 Aug 23	70	77	74
9 Aug 23	59	64	62
10 Aug 23	64	70	67
11 Aug 23	53	59	56
12 Aug 23	53	59	56
13 Aug 23	62	66	64
14 Aug 23	55	62	59
15 Aug 23	68	68	68
16 Aug 23	66	64	65
17 Aug 23	59	59	59
18 Aug 23	68	66	67
19 Aug 23	64	66	65

20 Aug 23	62	62	62
21 Aug 23	70	70	70
22 Aug 23	70	70	70
23 Aug 23	59	59	59
24 Aug 23	57	64	61
25 Aug 23	70	70	70
26 Aug 23	70	70	70
27 Aug 23	55	55	55
28 Aug 23	55	55	55
29 Aug 23	70	70	70
30 Aug 23	55	55	55
31 Aug 23	57	57	57
1 Sep 23	57	57	57
2 Sep 23	55	64	60
3 Sep 23	55	64	60
4 Sep 23	57	59	58
5 Sep 23	57	68	63
6 Sep 23	57	62	60
7 Sep 23	52	57	55
8 Sep 23	204	213	209
9 Sep 23	204	213	209
10 Sep 23	204	213	209
11 Sep 23	204	215	210
12 Sep 23	208	217	213
13 Sep 23	213	222	218
14 Sep 23	213	222	218
15 Sep 23	211	220	216
16 Sep 23	213	222	218
17 Sep 23	208	220	214
18 Sep 23	204	214	209
19 Sep 23	197	208	203
20 Sep 23	186	197	192
21 Sep 23	151	157	154
22 Sep 23	151	77	114
23 Sep 23	71	73	72
24 Sep 23	48	50	49
25 Sep 23	71	73	72
26 Sep 23	73	75	74
27 Sep 23	53	55	54

28 Sep 23	55	57	56
29 Sep 23	77	79	78
30 Sep 23	77	79	78
1 Oct 23	76	77	77
2 Oct 23	75	75	75
3 Oct 23	75	75	75
4 Oct 23	Standby	70	70
5 Oct 23	Standby	62	62
6 Oct 23	Standby	55	55
7 Oct 23	Standby	70	70
8 Oct 23	Standby	59	59
9 Oct 23	Standby	358	358
10 Oct 23	Standby	358	358
11 Oct 23	Standby	366	366
12 Oct 23	Standby	366	366
13 Oct 23	Standby	358	358
14 Oct 23	Standby	353	353
15 Oct 23	Standby	346	346
16 Oct 23	Standby	338	338
17 Oct 23	Standby	331	331
18 Oct 23	Standby	324	324
19 Oct 23	Standby	324	324
20 Oct 23	Standby	335	335
21 Oct 23	Standby	335	335
22 Oct 23	Standby	338	338
23 Oct 23	Standby	342	342
24 Oct 23	Standby	344	344
25 Oct 23	Standby	344	344
26 Oct 23	Standby	346	346
27 Oct 23	Standby	349	349
28 Oct 23	Standby	346	346
29 Oct 23	Standby	345	345
30 Oct 23	Standby	349	349
31 Oct 23	Standby	349	349
1 Nov 23	Standby	349	349
2 Nov 23	Standby	351	351
3 Nov 23	Standby	346	346
4 Nov 23	Standby	340	340
5 Nov 23	Standby	340	340

6 Nov 23	Standby	338	338
7 Nov 23	Standby	338	338
8 Nov 23	Standby	338	338
9 Nov 23	Standby	338	338
10 Nov 23	Standby	338	338
11 Nov 23	Standby	338	338
12 Nov 23	Standby	340	340
13 Nov 23	Standby	340	340
14 Nov 23	Standby	340	340
15 Nov 23	331	340	336
16 Nov 23	304	309	307
17 Nov 23	297	297	297
18 Nov 23	284	282	283
19 Nov 23	269	266	268
20 Nov 23	255	253	254
21 Nov 23	240	237	239
22 Nov 23	224	222	223
23 Nov 23	208	206	207
24 Nov 23	191	186	189
25 Nov 23	93	95	94
26 Nov 23	66	64	65
27 Nov 23	70	68	69
28 Nov 23	97	97	97
29 Nov 23	106	106	106
30 Nov 23	111	111	111
1 Dec 23	115	115	115
2 Dec 23	119	117	118
3 Dec 23	102	99	101
4 Dec 23	106	106	106
5 Dec 23	111	111	111
6 Dec 23	111	115	113
7 Dec 23	117	117	117
8 Dec 23	119	119	119
9 Dec 23	99	99	99
10 Dec 23	106	106	106
11 Dec 23	111	111	111
12 Dec 23	113	113	113
13 Dec 23	117	115	116
14 Dec 23	119	117	118

15 Dec 23	119	119	119
16 Dec 23	102	102	102
17 Dec 23	107	107	107
18 Dec 23	111	111	111
19 Dec 23	113	113	113
20 Dec 23	115	115	115
21 Dec 23	119	117	118
22 Dec 23	122	119	121
23 Dec 23	102	102	102
24 Dec 23	106	106	106
25 Dec 23	111	111	111
26 Dec 23	113	111	112
27 Dec 23	115	115	115
28 Dec 23	117	117	117
29 Dec 23	119	119	119
30 Dec 23	122	119	121
31 Dec 23	114	112	113
Average	82	110	109
Min	46	50	49
Max	331	366	366

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 23	54	59	57
2 Jan 23	54	59	57
3 Jan 23	54	59	57
4 Jan 23	56	61	59
5 Jan 23	59	63	61
6 Jan 23	61	65	63
7 Jan 23	61	65	63
8 Jan 23	65	70	68
9 Jan 23	65	70	68
10 Jan 23	65	70	68
11 Jan 23	59	63	61
12 Jan 23	63	67	65
13 Jan 23	56	61	59
14 Jan 23	61	65	63
15 Jan 23	48	52	50
16 Jan 23	48	52	50
17 Jan 23	56	61	59
18 Jan 23	61	65	63
19 Jan 23	65	70	68
20 Jan 23	48	52	50
21 Jan 23	50	54	52
22 Jan 23	56	61	59
23 Jan 23	56	61	59
24 Jan 23	56	61	59
25 Jan 23	56	61	59
26 Jan 23	56	61	59
27 Jan 23	56	61	59
28 Jan 23	56	61	59
29 Jan 23	54	59	57
30 Jan 23	54	59	57
31 Jan 23	54	59	57
1 Feb 23	52	56	54
2 Feb 23	52	56	54
3 Feb 23	48	54	51
4 Feb 23	48	52	50
5 Feb 23	65	67	66

6 Feb 23	65	67	66
7 Feb 23	63	67	65
8 Feb 23	61	65	63
9 Feb 23	59	63	61
10 Feb 23	56	61	59
11 Feb 23	54	59	57
12 Feb 23	65	70	68
13 Feb 23	65	70	68
14 Feb 23	65	70	68
15 Feb 23	65	70	68
16 Feb 23	63	67	65
17 Feb 23	61	65	63
18 Feb 23	59	65	62
19 Feb 23	54	59	57
20 Feb 23	54	59	57
21 Feb 23	52	56	54
22 Feb 23	48	52	50
23 Feb 23	65	70	68
24 Feb 23	63	67	65
25 Feb 23	59	65	62
26 Feb 23	54	59	57
27 Feb 23	54	59	57
28 Feb 23	50	54	52
1 Mar 23	50	56	53
2 Mar 23	63	67	65
3 Mar 23	59	63	61
4 Mar 23	54	59	57
5 Mar 23	48	52	50
6 Mar 23	48	52	50
7 Mar 23	63	67	65
8 Mar 23	61	65	63
9 Mar 23	56	61	59
10 Mar 23	52	56	54
11 Mar 23	48	52	50
12 Mar 23	59	63	61
13 Mar 23	59	63	61
14 Mar 23	54	59	57
15 Mar 23	52	56	54
16 Mar 23	48	52	50

17 Mar 23	63	67	65
18 Mar 23	59	63	61
19 Mar 23	52	56	54
20 Mar 23	50	54	52
21 Mar 23	63	67	65
22 Mar 23	59	63	61
23 Mar 23	54	59	57
24 Mar 23	50	54	52
25 Mar 23	65	70	68
26 Mar 23	52	56	54
27 Mar 23	52	56	54
28 Mar 23	52	56	54
29 Mar 23	59	63	61
30 Mar 23	65	67	66
31 Mar 23	48	52	50
1 Apr 23	63	67	65
2 Apr 23	61	65	63
3 Apr 23	63	67	65
4 Apr 23	65	70	68
5 Apr 23	65	70	68
6 Apr 23	65	70	68
7 Apr 23	50	54	52
8 Apr 23	50	54	52
9 Apr 23	61	65	63
10 Apr 23	61	65	63
11 Apr 23	61	65	63
12 Apr 23	65	70	68
13 Apr 23	56	61	59
14 Apr 23	54	59	57
15 Apr 23	50	54	52
16 Apr 23	50	54	52
17 Apr 23	63	67	65
18 Apr 23	59	63	61
19 Apr 23	54	59	57
20 Apr 23	63	67	65
21 Apr 23	54	61	58
22 Apr 23	50	56	53
23 Apr 23	63	67	65
24 Apr 23	63	67	65

25 Apr 23	48	52	50
26 Apr 23	65	70	68
27 Apr 23	59	63	61
28 Apr 23	65	70	68
29 Apr 23	52	56	54
30 Apr 23	61	65	63
1 May 23	61	65	63
2 May 23	61	65	63
3 May 23	61	65	63
4 May 23	61	65	63
5 May 23	59	63	61
6 May 23	56	61	59
7 May 23	59	63	61
8 May 23	59	63	61
9 May 23	61	67	64
10 May 23	59	63	61
11 May 23	59	63	61
12 May 23	59	63	61
13 May 23	59	63	61
14 May 23	50	56	53
15 May 23	50	56	53
16 May 23	63	67	65
17 May 23	56	59	58
18 May 23	61	65	63
19 May 23	56	59	58
20 May 23	56	59	58
21 May 23	67	70	69
22 May 23	67	70	69
23 May 23	65	67	66
24 May 23	52	56	54
25 May 23	52	56	54
26 May 23	52	48	50
27 May 23	65	67	66
28 May 23	65	70	68
29 May 23	56	61	59
30 May 23	50	54	52
31 May 23	59	63	61
1 Jun 23	55	54	55
2 Jun 23	59	63	61

3 Jun 23	65	70	68
4 Jun 23	59	63	61
5 Jun 23	59	63	61
6 Jun 23	63	65	64
7 Jun 23	61	63	62
8 Jun 23	50	52	51
9 Jun 23	59	61	60
10 Jun 23	54	52	53
11 Jun 23	56	63	60
12 Jun 23	54	54	54
13 Jun 23	67	67	67
14 Jun 23	114	120	117
15 Jun 23	129	136	133
16 Jun 23	59	59	59
17 Jun 23	241	226	234
18 Jun 23	285	272	279
19 Jun 23	292	305	299
20 Jun 23	281	292	287
21 Jun 23	252	267	260
22 Jun 23	208	224	216
23 Jun 23	92	107	100
24 Jun 23	56	41	49
25 Jun 23	63	52	58
26 Jun 23	63	52	58
27 Jun 23	65	63	64
28 Jun 23	61	52	57
29 Jun 23	65	70	68
30 Jun 23	52	48	50
1 Jul 23	52	48	50
2 Jul 23	52	65	59
3 Jul 23	52	65	59
4 Jul 23	56	41	49
5 Jul 23	63	61	62
6 Jul 23	61	56	59
7 Jul 23	70	67	69
8 Jul 23	61	61	61
9 Jul 23	63	61	62
10 Jul 23	52	52	52
11 Jul 23	65	65	65

12 Jul 23	50	50	50
13 Jul 23	54	52	53
14 Jul 23	52	52	52
15 Jul 23	70	70	70
16 Jul 23	68	68	68
17 Jul 23	66	66	66
18 Jul 23	65	65	65
19 Jul 23	63	61	62
20 Jul 23	54	45	50
21 Jul 23	52	50	51
22 Jul 23	59	56	58
23 Jul 23	56	56	56
24 Jul 23	56	56	56
25 Jul 23	61	61	61
26 Jul 23	65	65	65
27 Jul 23	52	61	57
28 Jul 23	52	89	71
29 Jul 23	52	61	57
30 Jul 23	61	59	60
31 Jul 23	56	65	61
1 Aug 23	61	70	66
2 Aug 23	52	61	57
3 Aug 23	59	56	58
4 Aug 23	63	63	63
5 Aug 23	63	70	67
6 Aug 23	56	63	60
7 Aug 23	59	67	63
8 Aug 23	61	70	66
9 Aug 23	63	70	67
10 Aug 23	56	54	55
11 Aug 23	54	61	58
12 Aug 23	54	54	54
13 Aug 23	59	67	63
14 Aug 23	61	70	66
15 Aug 23	61	67	64
16 Aug 23	59	67	63
17 Aug 23	59	67	63
18 Aug 23	59	67	63
19 Aug 23	52	61	57

20 Aug 23	56	65	61
21 Aug 23	56	65	61
22 Aug 23	59	67	63
23 Aug 23	56	65	61
24 Aug 23	59	57	58
25 Aug 23	56	52	54
26 Aug 23	61	67	64
27 Aug 23	61	54	58
28 Aug 23	61	54	58
29 Aug 23	63	54	59
30 Aug 23	61	70	66
31 Aug 23	61	70	66
1 Sep 23	61	70	66
2 Sep 23	67	54	61
3 Sep 23	67	54	61
4 Sep 23	61	56	59
5 Sep 23	56	56	56
6 Sep 23	59	67	63
7 Sep 23	61	70	66
8 Sep 23	276	274	275
9 Sep 23	276	274	275
10 Sep 23	276	274	275
11 Sep 23	287	278	283
12 Sep 23	283	274	279
13 Sep 23	278	270	274
14 Sep 23	267	278	273
15 Sep 23	259	278	269
16 Sep 23	259	267	263
17 Sep 23	261	278	270
18 Sep 23	252	272	262
19 Sep 23	232	252	242
20 Sep 23	197	215	206
21 Sep 23	114	131	123
22 Sep 23	52	74	63
23 Sep 23	54	70	62
24 Sep 23	70	63	67
25 Sep 23	54	74	64
26 Sep 23	56	65	61
27 Sep 23	65	74	70

28 Sep 23	67	74	71
29 Sep 23	61	64	63
30 Sep 23	61	64	63
1 Oct 23	62	67	65
2 Oct 23	63	70	67
3 Oct 23	63	70	67
4 Oct 23	70	75	73
5 Oct 23	54	65	60
6 Oct 23	54	63	59
7 Oct 23	59	67	63
8 Oct 23	61	67	64
9 Oct 23	417	404	411
10 Oct 23	417	404	411
11 Oct 23	399	369	384
12 Oct 23	399	369	384
13 Oct 23	373	342	358
14 Oct 23	366	340	353
15 Oct 23	360	331	346
16 Oct 23	351	325	338
17 Oct 23	347	307	327
18 Oct 23	347	362	355
19 Oct 23	351	364	358
20 Oct 23	352	365	359
21 Oct 23	353	366	360
22 Oct 23	355	366	361
23 Oct 23	355	369	362
24 Oct 23	358	371	365
25 Oct 23	358	369	364
26 Oct 23	358	373	366
27 Oct 23	360	375	368
28 Oct 23	358	371	365
29 Oct 23	359	370	365
30 Oct 23	360	373	367
31 Oct 23	360	373	367
1 Nov 23	362	375	369
2 Nov 23	362	375	369
3 Nov 23	351	364	358
4 Nov 23	344	358	351
5 Nov 23	338	349	344

6 Nov 23	325	338	332
7 Nov 23	329	340	335
8 Nov 23	316	325	321
9 Nov 23	300	311	306
10 Nov 23	285	296	291
11 Nov 23	267	281	274
12 Nov 23	248	259	254
13 Nov 23	224	234	229
14 Nov 23	186	199	193
15 Nov 23	63	72	68
16 Nov 23	116	125	121
17 Nov 23	127	136	132
18 Nov 23	133	142	138
19 Nov 23	140	147	144
20 Nov 23	144	151	148
21 Nov 23	147	155	151
22 Nov 23	151	158	155
23 Nov 23	153	162	158
24 Nov 23	155	164	160
25 Nov 23	61	70	66
26 Nov 23	63	72	68
27 Nov 23	65	72	69
28 Nov 23	103	111	107
29 Nov 23	114	122	118
30 Nov 23	94	103	99
1 Dec 23	109	118	114
2 Dec 23	118	127	123
3 Dec 23	105	114	110
4 Dec 23	114	122	118
5 Dec 23	114	122	118
6 Dec 23	109	83	96
7 Dec 23	118	125	122
8 Dec 23	100	109	105
9 Dec 23	111	120	116
10 Dec 23	118	127	123
11 Dec 23	125	131	128
12 Dec 23	129	105	117
13 Dec 23	114	120	117
14 Dec 23	114	120	117

15 Dec 23	114	120	117
16 Dec 23	109	118	114
17 Dec 23	110	119	115
18 Dec 23	111	120	116
19 Dec 23	114	120	117
20 Dec 23	114	120	117
21 Dec 23	111	120	116
22 Dec 23	111	120	116
23 Dec 23	111	120	116
24 Dec 23	111	120	116
25 Dec 23	111	120	116
26 Dec 23	105	120	113
27 Dec 23	89	116	103
28 Dec 23	74	120	97
29 Dec 23	74	120	97
30 Dec 23	72	120	96
31 Dec 23	72	120	96
Average	105	109	107
Min	48	41	49
Max	417	404	411

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

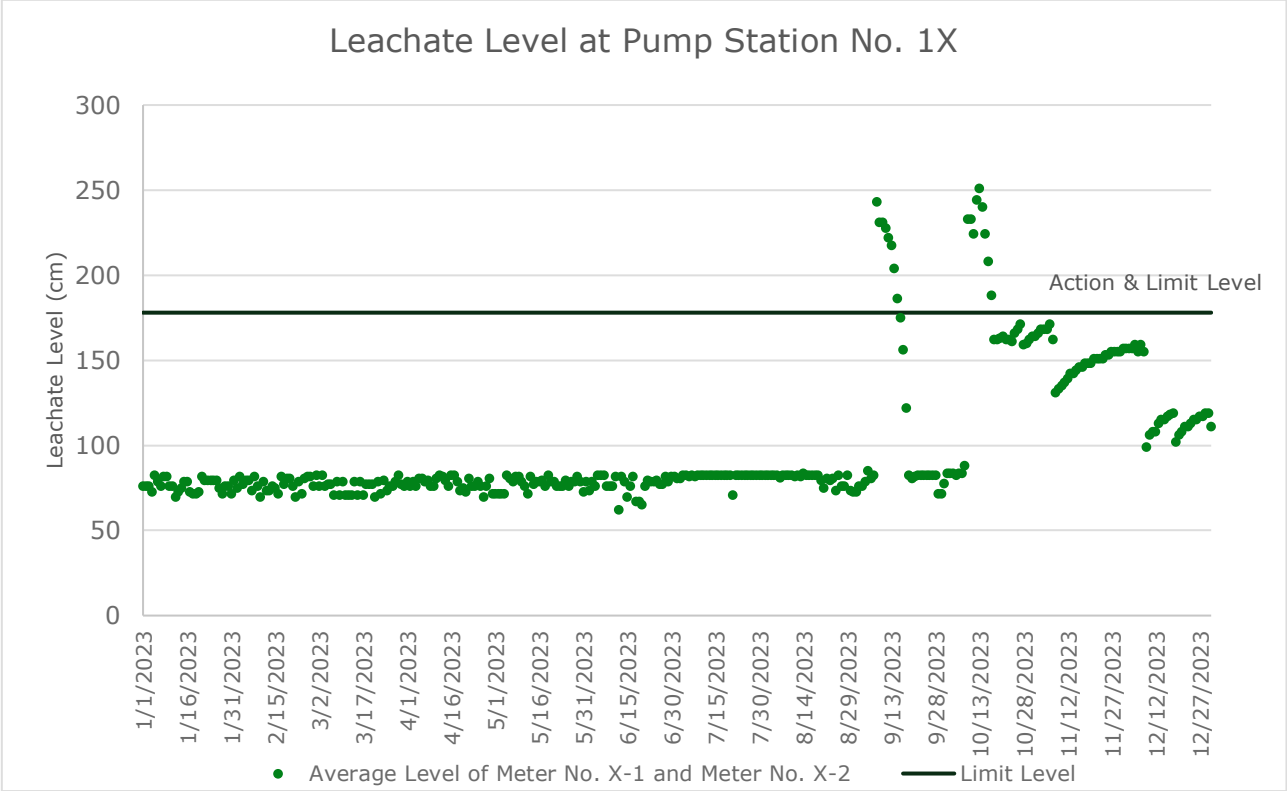


FIGURE F3.2 GRAPHICAL PRESENTATION FOR LEACHATE LEVEL MONITORING RESULTS (PUMP STATION NO.2X (CELL 2X))

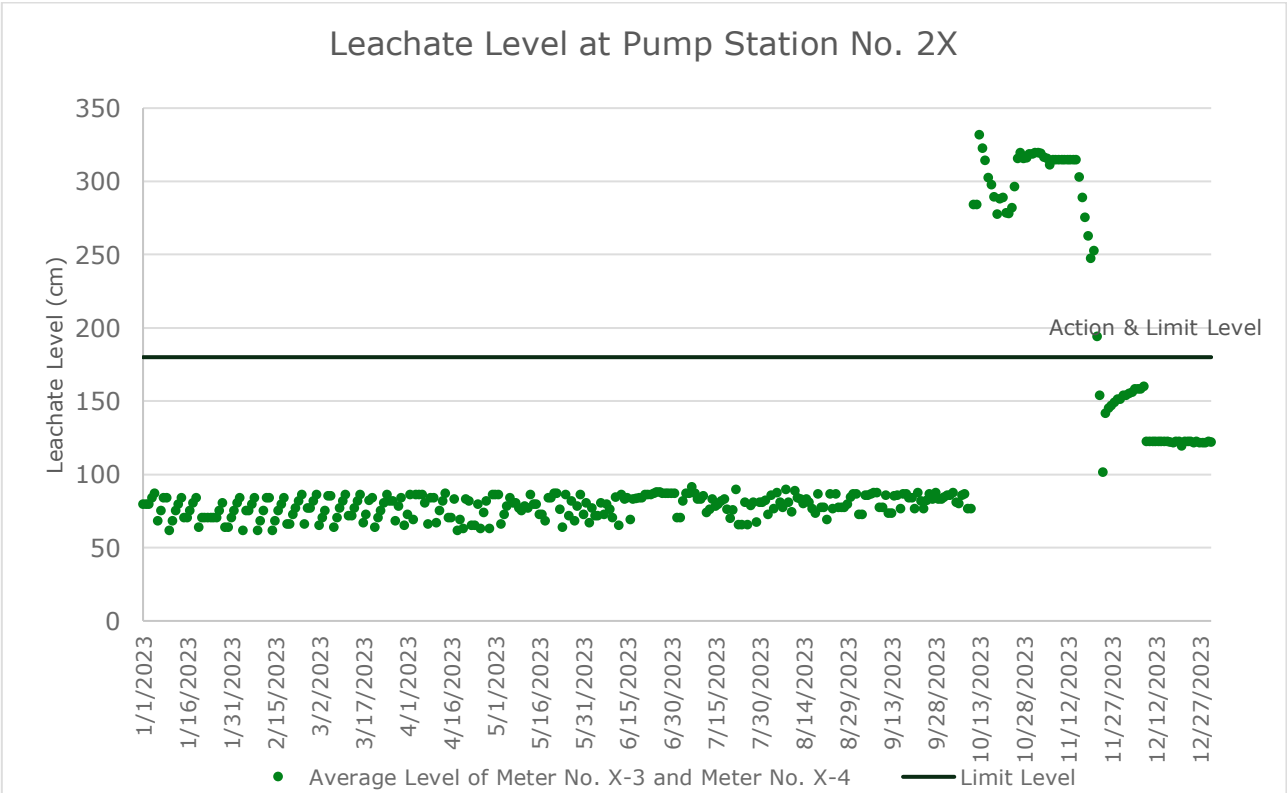


FIGURE F3.3 GRAPHICAL PRESENTATION FOR LEACHATE LEVEL MONITORING RESULTS (PUMP STATION NO.3X (CELL 3X))

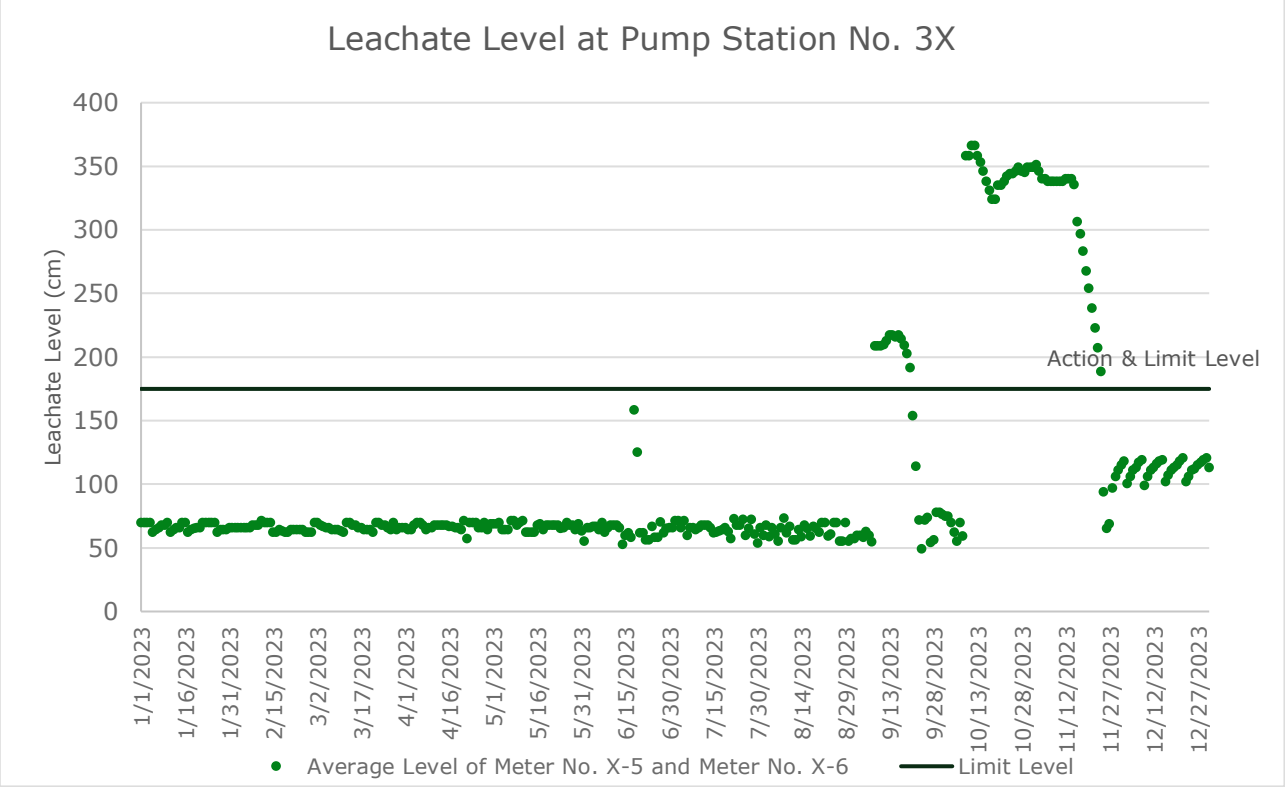
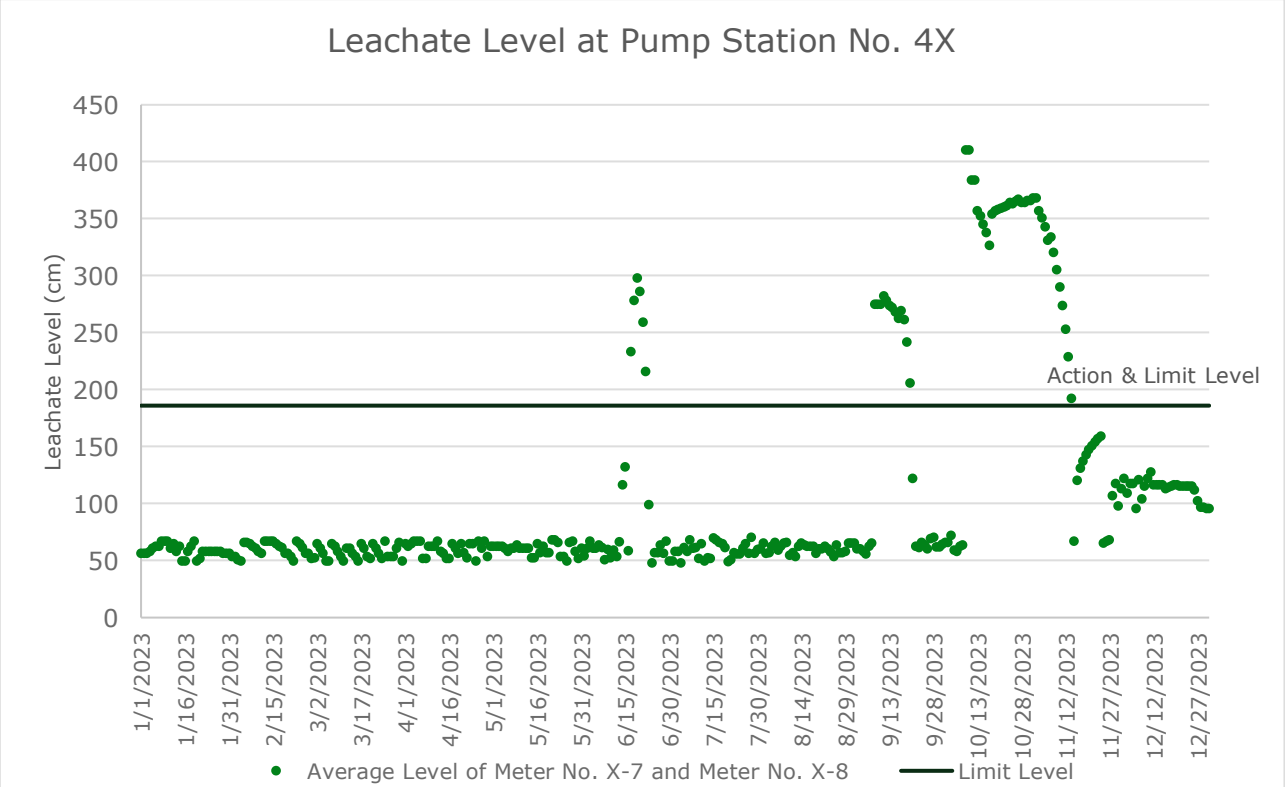


FIGURE F3.4 GRAPHICAL PRESENTATION FOR LEACHATE LEVEL MONITORING RESULTS (PUMP STATION NO.4X (CELL 4X))



ANNEX F4 EFFLUENT QUALITY MONITORING RESULTS

TABLE F4.1 EFFLUENT MONITORING RESULTS

Date		Limit Level	4 Jan 23	2 Feb 23	2 Mar 23	4 Apr 23	4 May 23	1 Jun 23	6 Jul 23	2 Aug 23	7 Sep 23	5 Oct 23	2 Nov 23	6 Dec 23
On-site Measurements														
Temperature	°C	43	25	22	25.7	30.8	35.6	36.6	33.2	35.8	33	35.4	33.1	23
pH Value	pH Unit	6 - 10	8	8.3	8.4	8.7	8.4	8.5	8.4	8.4	8.3	8.3	8.4	8.2
Volume Discharged	m³	2,000	1,339	1,000	1,021	1,268	1,182	799	1,013	724	775	1080	1164	698
Laboratory Analysis														
Suspended Solids (SS)	mg/L	800	14.3	27.2	68	40	38.7	158	40.6	39.8	28.3	31.1	19.4	55.1
Alkalinity	mg/L	N/A	2170	2080	2390	2270	2170	2280	1790	2300	1260	1580	1420	1460
Ammoniacal-nitrogen	mg/L	100	0.08	0.08	0.02	0.24	0.11	0.38	0.26	0.02	0.44	0.22	0.2	0.94
Chloride	mg/L	N/A	1950	2200	1780	1660	1680	1980	1820	2380	1510	1910	1770	1520
Nitrite-nitrogen	mg/L	100	0.25	0.37	0.1	0.11	0.11	0.14	0.15	0.22	<0.10	<0.10	0.02	0.55
Phosphate	mg/L	25	2.96	8.68	7.65	9.5	8.94	5.76	3.54	8.28	2.28	2.82	0.11	1.94
Sulphate	mg/L	800	201	147	164	104	122	142	324	244	451	252	165	279
Total Nitrogen	mg/L	N/A	111	144	87.6	73	79.7	85.9	114	119	104	132	95	100
Nitrate-nitrogen	mg/L	100	42.9	54.3	34.4	20.7	26.7	35.7	52.1	59.5	53.7	79	54.4	23.4
Total Inorganic Nitrogen	mg/L	100	43.23	54.75	34.52	21.05	26.92	36.22	52.51	59.74	54.14	79.22	54.62	24.89
Biochemical Oxygen Demand (BOD)	mg/L	800	24	17	19	12	9	21	9	9	11	20	18	22
Chemical Oxygen Demand (COD)	mg/L	2,000	806	938	1010	1120	941	809	796	1130	675	885	701	1070
Oil & Grease	mg/L	20	<5	<5	<5	<5	<5	<5	<5	<6	<5	<5	<5	<5
Total Organic Carbon (TOC)	mg/L	N/A	257	667	447	406	389	314	288	354	254	270	260	403

Date		Limit Level	4 Jan 23	2 Feb 23	2 Mar 23	4 Apr 23	4 May 23	1 Jun 23	6 Jul 23	2 Aug 23	7 Sep 23	5 Oct 23	2 Nov 23	6 Dec 23
Boron	µg/L	7,000	5130	5390	5640	5930	5570	5710	5220	6000	3850	4610	3880	5080
Calcium	mg/L	N/A	17.7	20.9	19.5	18	19.9	18.7	40.3	21.7	37.2	34.6	50.8	45.7
Iron	mg/L	5	1.76	2.35	1.9	2	2.23	1.63	1.66	1.84	1.13	1.6	1.38	1.78
Magnesium	mg/L	N/A	24.9	25.2	27.7	29	29.9	27.8	28.8	31.2	36	34.2	53.4	54.8
Potassium	mg/L	N/A	787	910	1030	908	908	820	738	869	555	712	550	593
Cadmium	µg/L	1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.1	<1.0	<1.0	<1.0	<1.0
Chromium	µg/L	300	133	218	146	167	178	123	111	129	85	105	93	197
Copper	µg/L	1,000	<10	12	<10	<10	10	<10	<10	<11	11	12	<10	<10
Nickel	µg/L	700	122	146	119	134	139	125	101	126	82	97	78	65
Zinc	µg/L	700	43	126	54	102	109	72	99	82	114	98	73	69

ANNEX F5 GROUNDWATER MONITORING RESULTS

TABLE F5.1 GROUNDWATER MONITORING RESULTS (JANUARY 2023)

Parameters	Units	MWX-1	MWX-2	MWX-3	MWX-4	MWX-5	MWX-6	MWX-7	MWX-8	MWX-9	MWX-10	MWX-11	MWX-12	MWX-13	MWX-14
Water Level	mPD	2.85	2.94	2.91	2.91	2.92	2.89	2.55	2.91	2.54	2.43	2.95	6.79	35.59	41.91
Bicarbonate Alkalinity as CaCO3	mg/L	100	256	139	<1	<1	<1	33	<1	123	221	251	54	18	13
Carbonate Alkalinity as CaCO3	mg/L	<1	<1	<1	63	77	113	29	90	<1	<1	<1	<1	<1	<1
Total Alkalinity as CaCO3	mg/L	100	256	139	101	132	189	62	131	123	221	251	54	18	13
pH Value	pH Unit	8	7.9	7.9	10.9	11.1	11.3	9.3	10.9	8.2	7.9	7.6	7	5.9	5.9
Electrical Conductivity	µS/cm	1270	922	1130	945	1260	1320	2440	1770	1000	948	856	306	92	98
Ammonia	mg/L	0.8	0.02	1.58	4.27	2.34	3.74	6.35	8.64	1.22	0.02	0.13	0.02	<0.01	<0.01
Chloride	mg/L	305	38	204	175	206	190	665	364	184	114	74	21	15	18
Nitrite	mg/L	<0.01	0.02	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01
Phosphorus	mg/L	0.01	0.01	0.01	<0.01	<0.01	<0.01	0.02	<0.01	0.02	0.01	0.01	0.04	0.01	<0.01
Sulphate	mg/L	70	197	90	74	124	100	36	196	88	93	83	61	3	4
Sulphide	mg/L	0.2	<0.1	<0.1	7.2	7.7	17.4	2.5	5.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Kjeldahl Nitrogen	mg/L	0.8	0.1	1.8	5	2.4	4.2	7.1	9.6	1.4	0.1	0.2	0.1	<0.1	<0.1
Nitrate	mg/L	<0.01	0.59	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.03	0.01	<0.01	0.01	0.1	0.08
Total Nitrogen	mg/L	0.8	0.7	1.8	5	2.5	4.2	7.1	9.7	1.4	0.1	0.2	0.1	0.1	<0.1
Boron	µg/L	110	180	200	200	200	180	690	190	270	180	90	20	20	10
Calcium	mg/L	63.6	59.6	72.6	35.3	35	33.6	22.5	40.4	53.8	84.2	96.7	24.8	0.85	1.01
Mercury	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20

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	8.39	57.5	4.79	0.13	<0.05	<0.05	3.2	<0.05	6.27	7.01	6.84	4.26	0.98	0.88
Sodium	mg/L	151	47.4	120	113	151	161	370	247	113	88.9	51.5	22.6	12.3	13.2
Iron	mg/L	0.06	<0.04	0.09	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Potassium	mg/L	20.8	11.8	27.2	29.8	54.9	56.2	49.5	64.8	21.6	13.1	9.26	2.95	3.63	3.41
Cadmium	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chromium	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Copper	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Lead	µg/L	<1	<1	<1	<1	<1	1	<1	<1	<1	<1	<1	<1	<1	<1
Manganese	µg/L	664	156	848	<1	<1	<1	<1	<1	58	657	754	590	18	8
Nickel	µg/L	<1	<1	<1	1	1	2	<1	4	<1	<1	<1	<1	<1	<1
Zinc	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	24	11	<10
Biochemical Oxygen Demand	mg/L	<2	<2	2	<2	<2	7	<2	<2	2	3	<2	<2	<2	<2
Chemical Oxygen Demand	mg/L	7	3	15	24	30	44	11	38	8	8	4	<2	2	2
Total Organic Carbon	mg/L	4	1	8	10	12	12	6	16	4	4	2	<1	<1	<1

TABLE F5.2 GROUNDWATER MONITORING RESULTS (FEBRUARY 2023)

Parameters	Units	MWX-1	MWX-2	MWX-3	MWX-4	MWX-5	MWX-6	MWX-7	MWX-8	MWX-9	MWX-10	MWX-11	MWX-12	MWX-13	MWX-14
Water Level	mPD	2.41	2.71	2.94	2.37	2.72	1.71	2.64	2.96	2.84	2.03	3.17	6.29	Dry	41.41
Bicarbonate Alkalinity as CaCO3	mg/L	132	260	126	<1	<1	<1	42	<1	123	242	223	56	NA	12
Carbonate Alkalinity as CaCO3	mg/L	<1	<1	<1	72	88	134	24	79	<1	<1	<1	<1	NA	<1
Total Alkalinity as CaCO3	mg/L	132	260	126	108	141	204	66	117	123	242	223	56	NA	12
pH Value	pH Unit	7.9	8	8	10.9	11.2	11.4	9.2	10.9	8.3	8	8	7	NA	5.6
Electrical Conductivity	µS/cm	998	874	1110	960	1280	1300	2430	2050	862	776	667	302	NA	99
Ammonia	mg/L	<0.01	<0.01	0.18	0.48	0.27	0.44	0.66	0.96	1.74	0.04	0.17	<0.01	NA	<0.01
Chloride	mg/L	179	41	203	188	215	193	652	458	151	72	51	21	NA	18
Nitrite	mg/L	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	0.15	<0.01	<0.01	<0.01	<0.01	<0.01	NA	<0.01
Phosphorus	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	0.03	0.02	0.01	0.03	NA	<0.01
Sulphate	mg/L	60	141	79	63	123	79	41	167	58	36	47	55	NA	4
Sulphide	mg/L	<0.1	<0.1	<0.1	8.9	13.8	22.4	1.9	4.8	0.1	<0.1	<0.1	<0.1	NA	<0.1
Total Kjeldahl Nitrogen	mg/L	0.1	<0.1	1.9	6	3.2	5.3	6.5	10.9	1.8	<0.1	0.3	<0.1	NA	<0.1
Nitrate	mg/L	<0.01	0.45	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	NA	0.07
Total Nitrogen	mg/L	0.1	0.5	1.9	6	3.2	5.3	6.6	10.9	1.8	<0.1	0.3	<0.1	NA	0.1
Boron	µg/L	130	180	200	190	200	190	710	240	320	90	80	20	NA	10
Calcium	mg/L	58.8	57.5	63.9	38.1	38.5	31.3	25.1	51.5	40.9	79.8	74.8	25.2	NA	0.92
Mercury	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	NA	<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	7.33	51.3	4.17	<0.05	<0.05	<0.05	4.64	<0.05	6.4	7.53	6	4.14	NA	0.89
Sodium	mg/L	114	46.9	125	115	158	161	437	320	102	57.9	48.6	25.9	NA	14.2
Iron	mg/L	0.05	<0.04	0.1	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.38	NA	<0.04
Potassium	mg/L	19.8	10.6	27	31.3	56.8	54.9	50.4	72	18.6	8.34	8.51	3.01	NA	3.82
Cadmium	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	<0.2
Chromium	µg/L	<1	<1	<1	<1	1	<1	<1	<1	<1	<1	<1	<1	NA	<1
Copper	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	<1
Lead	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	<1
Manganese	µg/L	573	172	751	<1	2	<1	1	<1	82	1120	750	726	NA	7
Nickel	µg/L	<1	<1	<1	1	1	2	<1	4	<1	<1	<1	<1	NA	<1
Zinc	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	13	NA	10
Biochemical Oxygen Demand	mg/L	<2	<2	<2	6	4	10	<2	3	<2	<2	<2	<2	NA	<2
Chemical Oxygen Demand	mg/L	6	6	16	28	30	38	12	34	10	4	4	5	NA	<2
Total Organic Carbon	mg/L	4	4	10	8	10	11	6	15	7	2	<1	3	NA	<1

TABLE F5.3 GROUNDWATER MONITORING RESULTS (MARCH 2023)

Parameters	Units	MWX-1	MWX-2	MWX-3	MWX-4	MWX-5	MWX-6	MWX-7	MWX-8	MWX-9	MWX-10	MWX-11	MWX-12	MWX-13	MWX-14
Water Level	mPD	2.71	2.81	2.91	2.67	2.85	2.66	2.36	2.61	2.28	2.16	2.75	6.33	35.38	39.36
Bicarbonate Alkalinity as CaCO3	mg/L	155	256	113	<1	<1	<1	34	<1	131	214	235	55	17	16
Carbonate Alkalinity as CaCO3	mg/L	<1	<1	<1	62	52	120	26	79	<1	<1	<1	<1	<1	<1
Total Alkalinity as CaCO3	mg/L	155	256	113	96	76	202	61	129	131	214	235	55	17	16
pH Value	pH Unit	7.8	8	8	10.7	10.7	11.3	9.3	10.9	8.3	7.9	8	7	5.6	5.8
Electrical Conductivity	µS/cm	982	874	1090	1130	1430	1340	2240	2920	786	727	694	298	93	107
Ammonia	mg/L	0.26	<0.01	1.74	6.17	2.61	4.23	3.25	13.8	1.27	0.02	0.17	0.01	0.02	0.03
Chloride	mg/L	166	40	217	238	320	206	535	821	133	81	53	21	14	18
Nitrite	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	2.8	<0.01	<0.01	<0.01	<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	0.04	0.02	0.02	0.04	0.01	<0.01
Sulphate	mg/L	61	132	78	63	120	96	62	90	46	43	48	48	3	5
Sulphide	mg/L	<0.1	<0.1	0.2	10	8	27.8	1.2	25.2	1.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Kjeldahl Nitrogen	mg/L	0.4	<0.1	2.2	6.7	3.5	4.8	3.3	13.8	1.5	0.1	0.4	0.1	<0.1	0.1
Nitrate	mg/L	0.07	0.41	0.01	<0.01	<0.01	0.02	0.65	<0.01	<0.01	0.01	<0.01	0.01	0.1	0.07
Total Nitrogen	mg/L	0.4	0.5	2.2	6.7	3.5	4.9	6.7	13.8	1.5	0.1	0.4	0.1	0.2	0.2
Boron	µg/L	140	180	220	190	190	180	400	430	320	80	80	20	10	10
Calcium	mg/L	57.6	59.4	60.9	40.5	35.2	36.1	17.3	80.4	42.3	80.3	81.1	24.7	0.82	1.01
Mercury	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20

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	8.5	49.4	3.44	<0.05	<0.05	<0.05	1.6	<0.05	6.22	7.26	6.29	3.78	0.94	0.8
Sodium	mg/L	108	45.1	123	138	185	157	286	415	90.9	43.7	49.7	23.9	13.3	13.5
Iron	mg/L	<0.04	<0.04	0.09	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.04	0.29	<0.04	<0.04
Potassium	mg/L	18.8	10.5	26	31.4	53.1	54	54.6	69	15.2	7.05	8.72	2.9	3.89	3.56
Cadmium	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chromium	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Copper	µg/L	<1	<1	<1	<1	<1	<1	1	<1	<1	1	<1	<1	1	<1
Lead	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Manganese	µg/L	1220	197	633	<1	<1	<1	<1	<1	126	1130	759	590	12	8
Nickel	µg/L	<1	<1	<1	1	<1	2	1	2	<1	<1	<1	<1	<1	<1
Zinc	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	15	<10	<10	11	13
Biochemical Oxygen Demand	mg/L	<2	<2	<2	<2	2	3	<2	<2	<2	<2	<2	<2	<2	<2
Chemical Oxygen Demand	mg/L	11	6	19	34	30	48	30	42	10	8	8	12	5	5
Total Organic Carbon	mg/L	6	6	6	9	6	10	6	13	5	5	5	4	3	2

TABLE F5.4 GROUNDWATER MONITORING RESULTS (APRIL 2023)

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	3.51	2.91	2.84	2.97	2.52	2.41	2.44	2.46	2.34	3.23	2.77	6.39	35.42	42.11
Bicarbonate Alkalinity as CaCO3	mg/L	180	265	175	41	47	126	38	17	126	199	232	54	17	13
Carbonate Alkalinity as CaCO3	mg/L	<1	<1	<1	<1	<1	<1	<1	30	<1	<1	<1	<1	<1	<1
Total Alkalinity as CaCO3	mg/L	180	265	175	46	66	196	38	48	126	199	232	54	17	13
pH Value	pH Unit	7.7	8	8	10	10.6	11.4	8.2	9.4	8.3	7.9	7.9	7.2	5.9	5.6
Electrical Conductivity	µS/cm	978	843	1080	1140	1670	1290	1810	1780	890	818	676	297	91	98
Ammonia	mg/L	0.18	0.01	1.04	3.91	2.24	3.74	0.48	7.07	1.6	<0.01	0.14	0.02	<0.01	<0.01
Chloride	mg/L	177	42	145	251	407	218	359	410	175	114	50	23	15	18
Nitrite	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.95	<0.01	<0.01	<0.01	<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	0.1	0.02	0.01	0.04	0.01	0.01
Sulphate	mg/L	56	122	91	140	118	78	290	160	57	51	54	50	3	4
Sulphide	mg/L	<0.1	<0.1	<0.1	4.1	5.3	19.4	<0.1	<0.1	0.4	<0.1	<0.1	<0.1	<0.1	<0.1
Total Kjeldahl Nitrogen	mg/L	0.3	<0.1	1.2	4.5	2.7	4.6	<1.0	7.8	1.7	<0.1	0.2	0.4	<0.1	<0.1
Nitrate	mg/L	0.06	0.21	<0.01	<0.01	<0.01	<0.01	2.98	<0.01	<0.01	<0.01	<0.01	0.02	0.09	0.06
Total Nitrogen	mg/L	0.3	0.2	1.2	4.5	2.7	4.6	4.4	7.8	1.7	<0.1	0.2	0.4	0.2	0.1
Boron	µg/L	150	190	220	210	180	180	280	250	340	100	80	30	20	20
Calcium	mg/L	59.1	55	81.3	44.6	46.9	37.4	61.7	23.4	42.4	73.9	65.5	26.3	0.82	1.03
Mercury	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20

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	9.65	47.8	4.7	1.44	0.17	<0.05	2.6	0.32	5.48	7.4	6.23	4.09	1.03	0.91
Sodium	mg/L	101	40.7	102	140	229	150	240	263	104	71.6	52.3	25.1	14.1	15
Iron	mg/L	<0.04	<0.04	0.11	<0.04	<0.04	<0.04	<0.04	<0.04	0.07	<0.04	0.11	0.19	<0.04	<0.04
Potassium	mg/L	18.2	9.69	26.1	33.4	58.6	54.4	63.1	59.3	16.9	7.15	8.62	2.93	4.06	3.86
Cadmium	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chromium	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Copper	µg/L	<1	1	<1	<1	<1	<1	2	<1	<1	<1	<1	<1	<1	<1
Lead	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Manganese	µg/L	1560	47	659	<1	<1	<1	2	1	116	1360	544	414	5	5
Nickel	µg/L	<1	<1	<1	<1	<1	1	1	3	<1	<1	<1	<1	<1	<1
Zinc	µg/L	<10	<10	<10	<10	<10	<10	<10	17	<10	<10	<10	<10	<10	<10
Biochemical Oxygen Demand	mg/L	<2	<2	<2	<2	<2	8	<2	3	<2	<2	<2	<2	<2	<2
Chemical Oxygen Demand	mg/L	5	4	17	22	27	54	27	25	13	7	7	7	<2	4
Total Organic Carbon	mg/L	4	2	7	8	7	10	9	11	5	4	5	4	<1	2

TABLE F5.5 GROUNDWATER MONITORING RESULTS (MAY 2023)

Parameters	Units	MWX-1	MWX-2	MWX-3	MWX-4	MWX-5	MWX-6	MWX-7	MWX-8	MWX-9	MWX-10	MWX-11	MWX-12	MWX-13	MWX-14
Water Level	mPD	2.81	3.21	2.74	2.87	3.12	3.01	2.54	2.46	3.04	2.43	2.77	5.89	34.82	41.51
Bicarbonate Alkalinity as CaCO3	mg/L	187	258	183	<1	<1	<1	25	<1	124	226	190	56	17	14
Carbonate Alkalinity as CaCO3	mg/L	<1	<1	<1	62	62	126	9	84	<1	<1	<1	<1	<1	<1
Total Alkalinity as CaCO3	mg/L	187	258	183	111	76	172	35	96	124	226	190	56	17	14
pH Value	pH Unit	7.7	8	8	10.9	10.7	11.3	9.2	10.5	8.2	7.9	8	7	5.8	5.7
Electrical Conductivity	µS/cm	1020	955	1090	1060	1570	1230	1630	1740	1090	1120	597	293	92	100
Ammonia	mg/L	0.32	<0.01	0.91	4.9	2.44	3.51	0.29	8.63	1.05	<0.01	0.14	<0.01	<0.01	<0.01
Chloride	mg/L	123	50	158	191	350	192	266	343	151	124	44	21	14	17
Nitrite	mg/L	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	0.29	<0.01	<0.01	<0.01	<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	0.01	<0.01	<0.01	0.02	<0.01	<0.01
Sulphate	mg/L	43	148	100	58	109	85	164	151	81	111	47	44	3	5
Sulphide	mg/L	<0.1	<0.1	<0.1	7.9	5.5	13.7	<0.1	4.4	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Kjeldahl Nitrogen	mg/L	0.4	<0.1	1.2	5.4	2.8	4.4	1.6	9.7	1.3	0.1	0.2	<0.1	<0.1	<0.1
Nitrate	mg/L	<0.01	0.41	<0.01	<0.01	<0.01	<0.01	3.96	0.01	<0.01	<0.01	<0.01	<0.01	0.08	0.07
Total Nitrogen	mg/L	0.4	0.4	1.2	5.4	2.8	4.4	5.8	9.7	1.3	0.1	0.2	<0.1	<0.1	<0.1
Boron	µg/L	140	180	190	170	170	160	240	170	300	250	70	20	20	10
Calcium	mg/L	64.2	61.7	84.6	45.3	44.6	41	28.5	33	59.7	96	65.9	24.7	1.07	1.1
Mercury	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20

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	11.9	54.7	5.55	0.14	0.08	<0.05	0.59	<0.05	5.14	7.11	5.22	4	1	0.87
Sodium	mg/L	103	52.7	98.8	117	212	147	241	236	121	118	42.4	23.9	13.2	14.1
Iron	mg/L	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Potassium	mg/L	18.7	11	24.8	31.8	57.7	55.8	63.5	61.9	20.4	11.9	8.17	2.86	3.84	3.68
Cadmium	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chromium	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Copper	µg/L	<1	<1	<1	<1	<1	<1	2	<1	<1	2	<1	<1	1	<1
Lead	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Manganese	µg/L	2070	102	773	<1	<1	<1	<1	<1	127	495	577	133	14	9
Nickel	µg/L	<1	<1	<1	1	<1	2	1	5	<1	<1	<1	<1	<1	<1
Zinc	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	11	11	<10	17	12
Biochemical Oxygen Demand	mg/L	<2	<2	<2	<2	<2	4	<2	<2	<2	<2	<2	<2	<2	<2
Chemical Oxygen Demand	mg/L	4	3	16	29	38	36	29	70	6	9	5	<2	5	<2
Total Organic Carbon	mg/L	3	<1	5	9	8	10	11	14	5	2	3	<1	3	<1

TABLE F5.6 GROUNDWATER MONITORING RESULTS (JUNE 2023)

Parameters	Units	MWX-1	MWX-2	MWX-3	MWX-4	MWX-5	MWX-6	MWX-7	MWX-8	MWX-9	MWX-10	MWX-11	MWX-12	MWX-13	MWX-14
Water Level	mPD	2.91	3.31	3.04	4.07	3.12	2.01	2.74	3.06	2.84	2.43	3.67	6.19	35.02	40.61
Bicarbonate Alkalinity as CaCO3	mg/L	165	259	162	35	<1	<1	29	<1	126	250	215	55	17	14
Carbonate Alkalinity as CaCO3	mg/L	<1	<1	<1	29	52	129	18	101	<1	<1	<1	<1	<1	<1
Total Alkalinity as CaCO3	mg/L	165	259	162	64	98	161	48	112	126	250	215	55	17	14
pH Value	pH Unit	7.7	8.1	8	9.5	10.8	11.3	9.6	10.9	7.9	7.9	8.1	7.1	5.8	5.7
Electrical Conductivity	µS/cm	1210	1060	1100	863	1450	1170	1590	1860	1640	1010	774	294	93	100
Ammonia	mg/L	0.17	<0.01	1.05	3.02	2.58	3.44	0.48	7.28	0.24	0.03	0.17	0.02	0.04	<0.01
Chloride	mg/L	237	44	148	172	285	133	258	403	275	122	51	23	15	18
Nitrite	mg/L	<0.01	0.01	<0.01	<0.01	<0.01	0.01	0.57	0.01	0.05	<0.01	<0.01	0.01	<0.01	0.01
Phosphorus	mg/L	<0.01	0.02	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	0.01	0.04	<0.01	<0.01
Sulphate	mg/L	64	150	74	96	127	72	165	173	316	90	71	44	3	4
Sulphide	mg/L	<0.1	<0.1	<0.1	4.7	7.9	15.1	<0.1	5.8	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Kjeldahl Nitrogen	mg/L	0.2	<0.1	1.4	3.8	3.2	4.4	2.1	8.6	0.9	0.2	0.3	0.2	0.2	<0.1
Nitrate	mg/L	<0.01	0.64	<0.01	<0.01	<0.01	<0.01	3.23	<0.01	0.83	0.01	<0.01	<0.01	0.09	0.06
Total Nitrogen	mg/L	0.2	0.7	1.4	3.8	3.2	4.4	5.9	8.6	1.7	0.2	0.3	0.2	0.2	0.2
Boron	µg/L	170	210	230	240	220	190	280	200	410	220	110	30	20	20
Calcium	mg/L	76	61.3	65.8	18.4	33.6	39.6	17.8	50.1	98.4	88.6	86.2	24	0.83	1.07
Mercury	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20

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	13	55.7	5.73	2.03	<0.05	<0.05	0.93	<0.05	4.64	8.11	6.91	3.79	0.96	0.84
Sodium	mg/L	122	51.9	94.4	104	154	135	215	248	161	91.6	50	24	13.1	14
Iron	mg/L	<0.04	<0.04	0.06	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.05	0.48	<0.04	<0.04
Potassium	mg/L	19.9	12.1	31.2	26.2	44.5	48.3	52.8	62.9	28.6	11.4	8	2.9	3.89	3.73
Cadmium	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chromium	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	1	<1	<1	<1	<1	<1
Copper	µg/L	<1	<1	<1	<1	<1	<1	4	<1	5	1	<1	<1	1	<1
Lead	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Manganese	µg/L	1400	4	961	<1	<1	<1	<1	<1	48	278	768	710	18	8
Nickel	µg/L	<1	<1	<1	<1	<1	2	2	5	<1	<1	<1	<1	<1	<1
Zinc	µg/L	<10	<10	<10	34	<10	<10	<10	<10	<10	<10	<10	11	19	12
Biochemical Oxygen Demand	mg/L	<2	<2	<2	<2	3	3	<2	3	<2	<2	<2	<2	<2	<2
Chemical Oxygen Demand	mg/L	7	<2	14	18	26	44	28	36	22	3	5	2	<2	5
Total Organic Carbon	mg/L	2	<1	6	7	8	9	11	12	9	2	<1	<1	<1	1

TABLE F5.7 GROUNDWATER MONITORING RESULTS (JULY 2023)

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	4.71	3.81	3.44	3.97	3.72	3.41	3.54	3.36	4.14	4.13	3.77	6.99	37.02	43.41
Bicarbonate Alkalinity as CaCO3	mg/L	140	235	172	<1	37	<1	<1	<1	145	237	200	54	17	14
Carbonate Alkalinity as CaCO3	mg/L	<1	<1	<1	68	9	132	88	78	<1	<1	<1	<1	<1	<1
Total Alkalinity as CaCO3	mg/L	140	235	172	72	46	179	112	104	145	237	200	54	17	14
pH Value	pH Unit	7.7	8.1	8	10.4	8.9	11.3	10.9	11	8	7.8	7.9	7	5.8	5.7
Electrical Conductivity	µS/cm	944	3340	1080	692	1340	1250	1400	2070	7110	1200	641	300	91	101
Ammonia	mg/L	0.07	0.6	1.43	2.37	1.47	3.44	5.16	4.53	0.4	<0.01	<0.01	<0.01	<0.01	<0.01
Chloride	mg/L	173	752	177	125	270	194	243	466	2110	159	46	21	14	17
Nitrite	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.03	0.02	<0.01	<0.01	<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	0.1	0.02	0.01	0.04	0.01	<0.01
Sulphate	mg/L	68	390	115	72	184	114	164	252	500	155	71	57	3	4
Sulphide	mg/L	<0.1	<0.1	<0.1	4.1	0.5	6.4	1.9	2.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Kjeldahl Nitrogen	mg/L	0.2	0.6	1.7	2.8	2	4.4	5.9	6.1	0.6	0.2	0.1	<0.1	<0.1	<0.1
Nitrate	mg/L	0.35	0.79	<0.01	<0.01	<0.01	0.01	<0.01	0.04	0.43	0.02	0.04	<0.01	0.12	0.08
Total Nitrogen	mg/L	0.6	1.4	1.7	2.8	2	4.5	5.9	6.1	1.1	0.2	0.2	<0.1	0.2	0.1
Boron	µg/L	120	460	200	210	210	190	220	170	1520	350	110	30	20	20
Calcium	mg/L	58.4	81.5	77.6	20	29.8	33.8	22.1	76.6	135	92.6	81.7	24.2	0.73	1.15
Mercury	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20

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	7.88	78.2	4.78	0.66	0.48	<0.05	<0.05	<0.05	96.1	8.42	4.69	3.75	0.92	0.8
Sodium	mg/L	97	419	110	89.4	177	153	198	266	1180	127	36	22.9	12.4	13.3
Iron	mg/L	<0.04	<0.04	0.07	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.43	<0.04	<0.04
Potassium	mg/L	16.9	30.4	26	24.9	58.6	55.3	52.1	75.3	67.5	13.7	8.88	2.74	3.59	3.54
Cadmium	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chromium	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Copper	µg/L	<1	<1	<1	<1	<1	<1	2	<1	2	1	3	<1	<1	<1
Lead	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Manganese	µg/L	176	157	962	2	6	<1	<1	2	162	795	47	755	18	9
Nickel	µg/L	<1	<1	<1	<1	<1	2	2	3	<1	<1	<1	<1	<1	<1
Zinc	µg/L	12	10	495	<10	<10	<10	<10	<10	<10	<10	17	20	<10	16
Biochemical Oxygen Demand	mg/L	<2	<2	<2	<2	<2	6	<2	<2	<2	<2	<2	<2	<2	<2
Chemical Oxygen Demand	mg/L	7	28	18	19	30	43	41	32	23	10	7	<2	<2	<2
Total Organic Carbon	mg/L	3	<1	4	5	9	10	12	10	4	3	2	<1	<1	<1

TABLE F5.8 GROUNDWATER MONITORING RESULTS (AUGUST 2023)

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	3.11	3.71	2.94	3.57	3.02	2.81	3.04	3.36	4.24	3.33	3.37	6.89	36.52	44.01
Bicarbonate Alkalinity as CaCO3	mg/L	141	264	198	22	50	12	18	8	166	230	198	54	17	13
Carbonate Alkalinity as CaCO3	mg/L	<1	<1	<1	50	5	133	74	68	<1	<1	<1	<1	<1	<1
Total Alkalinity as CaCO3	mg/L	141	264	198	73	54	145	92	76	166	230	198	54	17	13
pH Value	pH Unit	7.6	8.4	8.3	10.4	8.6	11.3	10.7	11	8.2	8.2	8.3	7.4	5.8	5.7
Electrical Conductivity	µS/cm	1000	1420	987	794	1300	1100	1350	2240	10400	994	663	300	94	96
Ammonia	mg/L	0.14	0.05	1.33	3.47	1.6	4.32	4.94	7.52	0.72	<0.01	0.05	<0.01	<0.01	<0.01
Chloride	mg/L	201	146	140	159	257	205	263	548	3360	118	48	21	15	18
Nitrite	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.12	0.08	<0.01	<0.01	<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	0.06	0.02	0.01	0.05	<0.01	<0.01
Sulphate	mg/L	64	315	94	79	167	96	170	240	637	117	73	57	3	4
Sulphide	mg/L	<0.1	<0.1	<0.1	3.9	<0.1	12.1	<0.1	2.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Kjeldahl Nitrogen	mg/L	0.2	<0.1	1.4	3.5	1.8	4.5	5.1	7.7	0.8	0.1	0.1	<0.1	<0.1	<0.1
Nitrate	mg/L	0.04	1.14	0.01	<0.01	<0.01	0.01	0.03	0.02	0.02	<0.01	<0.01	0.01	0.1	0.13
Total Nitrogen	mg/L	0.3	1.2	1.4	3.5	1.8	4.5	5.2	7.8	0.8	0.1	0.1	<0.1	0.1	0.1
Boron	µg/L	130	230	200	200	210	180	220	170	2120	270	110	30	20	20
Calcium	mg/L	59.3	76.9	76.1	23	23.6	31.3	19.5	79.4	115	88.2	80.6	23.9	0.79	0.88
Mercury	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20

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	8.99	65.4	5.13	0.41	0.41	<0.05	<0.05	0.45	152	8.13	4.95	1.32	0.9	0.77
Sodium	mg/L	109	105	86.2	105	181	161	189	313	1800	95.8	37.8	23.2	12.6	12.8
Iron	mg/L	<0.04	<0.04	0.12	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.46	<0.04	<0.04
Potassium	mg/L	20	18.5	27.5	26	60.4	55.1	51.2	81.1	78.3	14.6	8.26	2.52	3.58	3.39
Cadmium	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chromium	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Copper	µg/L	<1	<1	<1	<1	1	<1	4	<1	<1	<1	<1	<1	<1	<1
Lead	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Manganese	µg/L	426	142	901	<1	4	<1	<1	<1	239	812	436	735	16	6
Nickel	µg/L	<1	<1	<1	<1	<1	2	2	4	<1	<1	<1	<1	<1	<1
Zinc	µg/L	<10	<10	<10	<10	<10	29	12	<10	<10	<10	16	27	14	16
Biochemical Oxygen Demand	mg/L	<2	<2	<2	2	<2	9	<2	4	2	<2	<2	<2	<2	<2
Chemical Oxygen Demand	mg/L	4	3	13	24	24	49	28	30	54	4	6	<2	<2	<2
Total Organic Carbon	mg/L	2	<1	8	6	9	10	12	12	7	2	2	<1	<1	1

TABLE F5.9 GROUNDWATER MONITORING RESULTS (SEPTEMBER 2023)

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	3.81	4.01	4.54	4.47	3.92	4.01	3.74	4.96	5.04	4.93	6.47	7.49	38.72	46.41
Bicarbonate Alkalinity as CaCO3	mg/L	141	264	198	22	50	12	18	8	166	230	198	54	17	13
Carbonate Alkalinity as CaCO3	mg/L	<1	<1	<1	<1	10	116	70	73	<1	<1	<1	<1	<1	<1
Total Alkalinity as CaCO3	mg/L	115	215	192	48	54	152	92	108	162	260	135	57	18	16
pH Value	pH Unit	8	8	7.9	8.3	9	11	10.6	11	8	7.3	7.8	6.9	5.7	5.7
Electrical Conductivity	µS/cm	1120	5770	1340	1800	900	1090	1460	2850	14400	1190	441	318	95	145
Ammonia	mg/L	0.12	0.95	1.6	0.6	0.48	2.86	4.8	5.32	0.55	<0.01	<0.01	<0.01	<0.01	<0.01
Chloride	mg/L	196	1550	210	338	148	156	310	693	4400	124	33	20	15	24
Nitrite	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.12	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Phosphorus	mg/L	0.01	0.02	0.01	0.02	<0.01	<0.01	<0.01	<0.01	0.06	0.02	<0.01	0.03	0.01	<0.01
Sulphate	mg/L	130	447	162	321	139	117	141	216	790	147	39	65	3	10
Sulphide	mg/L	<0.1	<0.1	<0.1	0.4	0.6	5.5	3.8	2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Kjeldahl Nitrogen	mg/L	0.4	1.9	1.8	1.1	1	4	6.4	6.3	0.6	0.2	0.1	0.1	<0.1	<0.1
Nitrate	mg/L	<0.01	1.74	0.02	<0.01	<0.01	<0.01	0.01	0.07	<0.01	<0.01	0.15	<0.01	0.13	0.21
Total Nitrogen	mg/L	0.4	3.7	1.8	1.1	1	4	6.4	6.5	0.6	0.2	0.3	0.1	0.1	0.2
Boron	µg/L	170	710	220	400	240	250	280	200	2560	430	100	30	20	20
Calcium	mg/L	58.4	101	117	76.9	24.8	17.4	23.3	116	127	103	52.1	28.8	0.82	2.6
Mercury	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20

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	6.83	106	8.51	2.05	0.61	<0.05	0.2	223	223	8.91	3.03	4.24	0.96	1.67
Sodium	mg/L	140	903	127	259	118	158	223	386	2410	134	29.3	25.1	14.1	18.5
Iron	mg/L	<0.04	<0.04	0.14	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.24	<0.04	<0.04
Potassium	mg/L	24.3	53.7	32.5	42.6	52	61.8	62.4	100	135	16.2	8.29	3.53	4.34	5.31
Cadmium	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chromium	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Copper	µg/L	<1	<1	<1	<1	1	1	<1	<1	<1	1	1	4	2	2
Lead	µg/L	<1	<1	<1	<1	<1	2	<1	<1	<1	<1	<1	<1	<1	<1
Manganese	µg/L	487	221	1180	28	6	<1	<1	<1	249	1100	18	746	10	9
Nickel	µg/L	<1	<1	<1	<1	<1	2	2	3	<1	<1	<1	<1	<1	<1
Zinc	µg/L	324	<10	68	<10	<10	<10	20	<10	12	11	<10	22	23	24
Biochemical Oxygen Demand	mg/L	<2	<2	<2	2	<2	4	3	2	<2	<2	<2	<2	<2	<2
Chemical Oxygen Demand	mg/L	15	14	18	19	20	36	40	32	<20	9	7	7	8	8
Total Organic Carbon	mg/L	7	2	6	9	6	10	11	9	<5	4	4	2	4	4

TABLE F5.10 GROUNDWATER MONITORING RESULTS (OCTOBER 2023)

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	3.81	3.91	4.04	4.77	4.72	4.71	4.14	4.76	5.64	5.33	5.47	7.49	39.42	46.01
Bicarbonate Alkalinity as CaCO3	mg/L	106	191	184	135	47	2	<1	<1	171	200	118	52	17	13
Carbonate Alkalinity as CaCO3	mg/L	<1	<1	<1	<1	24	138	68	74	<1	<1	<1	<1	<1	<1
Total Alkalinity as CaCO3	mg/L	106	191	184	135	71	141	82	108	171	200	118	52	17	13
pH Value	pH Unit	8	7.9	7.6	8	9.3	10.4	10.4	10.9	8	7.7	7.6	6.8	5.7	5.5
Electrical Conductivity	µS/cm	837	5580	1060	964	732	934	1610	2650	14000	834	353	331	94	125
Ammonia	mg/L	0.26	1.2	1.43	0.18	0.64	2.23	6.03	4.76	0.5	<0.01	<0.01	<0.01	<0.01	0.06
Chloride	mg/L	158	1710	165	144	106	139	400	636	4400	92	23	20	15	24
Nitrite	mg/L	<0.01	<0.01	<0.01	<0.01	0.11	<0.01	<0.01	0.09	<0.01	<0.01	<0.01	0.04	<0.01	<0.01
Phosphorus	mg/L	0.01	0.01	0.01	0.03	<0.01	<0.01	0.01	<0.01	0.06	0.02	<0.01	0.01	<0.01	<0.01
Sulphate	mg/L	100	334	151	176	138	95	138	248	768	131	34	79	4	6
Sulphide	mg/L	<0.1	<0.1	0.2	<0.1	<0.1	4.3	4.1	2.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Kjeldahl Nitrogen	mg/L	0.4	1.2	1.5	0.4	1	2.5	6.4	4.9	0.5	<0.1	<0.1	0.2	<0.1	<0.1
Nitrate	mg/L	0.04	0.23	<0.01	<0.01	0.02	0.01	<0.01	0.07	<0.01	0.04	0.52	0.7	0.13	0.18
Total Nitrogen	mg/L	0.5	1.5	1.5	0.4	1.1	2.6	6.4	5.1	0.5	0.1	0.6	0.9	0.2	0.2
Boron	µg/L	130	720	220	230	260	260	380	210	2790	260	80	30	20	20
Calcium	mg/L	40.7	101	90.8	77	8.12	8.12	22.9	104	99.8	81.6	44.7	29.1	0.89	1.56
Mercury	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20

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	4.66	99.6	6.28	4.43	0.26	<0.05	0.06	0.07	222	6.69	2.61	4.83	1.03	1.34
Sodium	mg/L	104	850	102	100	103	140	252	362	2380	79.2	23.3	26.4	14	17.2
Iron	mg/L	<0.04	<0.04	0.08	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Potassium	mg/L	19.1	46	26.1	20.3	42.9	55.6	53.7	89.4	107	12.4	6.09	5.67	4.04	4.58
Cadmium	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.6	<0.2	<0.2
Chromium	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Copper	µg/L	<1	<1	<1	<1	2	10	<1	<1	<1	2	<1	<1	2	<1
Lead	µg/L	<1	<1	<1	<1	<1	2	<1	<1	<1	<1	<1	1	<1	<1
Manganese	µg/L	304	193	903	42	2	<1	<1	<1	224	548	6	531	10	9
Nickel	µg/L	<1	<1	<1	<1	<1	2	1	2	<1	<1	<1	<1	<1	<1
Zinc	µg/L	<10	419	<10	<10	<10	33	<10	<10	11	773	<10	49	33	13
Biochemical Oxygen Demand	mg/L	<2	<2	<2	<2	<2	3	<2	<2	<2	<2	<2	<2	<2	<2
Chemical Oxygen Demand	mg/L	9	5	12	13	14	35	31	26	32	7	7	4	3	2
Total Organic Carbon	mg/L	6	2	7	5	3	7	7	6	5	4	5	1	1	2

TABLE F5.11 GROUNDWATER MONITORING RESULTS (NOVEMBER 2023)

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	3.11	3.51	3.24	3.27	3.32	3.51	3.64	4.46	4.34	4.33	3.87	7.29	37.52	45.81
Bicarbonate Alkalinity as CaCO3	mg/L	119	253	154	26	10	<1	<1	<1	168	231	133	54	16	13
Carbonate Alkalinity as CaCO3	mg/L	<1	<1	<1	23	55	139	110	82	<1	<1	<1	<1	<1	<1
Total Alkalinity as CaCO3	mg/L	119	253	154	49	65	181	149	102	168	231	133	54	16	13
pH Value	pH Unit	8	7.9	7.9	9.3	9.9	11.1	11	11	8	7.8	7.8	7	5.8	5.6
Electrical Conductivity	µS/cm	1070	1100	1190	736	1020	1160	1240	2350	15100	1150	343	311	91	117
Ammonia	mg/L	0.3	0.03	1.68	1.81	2.06	3.79	6.53	4.76	0.54	0.02	0.02	0.05	<0.01	<0.01
Chloride	mg/L	204	40	216	142	197	188	222	570	4780	160	19	20	14	24
Nitrite	mg/L	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	0.01	0.04	<0.01	<0.01	<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	0.07	0.03	0.01	0.03	<0.01	<0.01
Sulphate	mg/L	130	330	148	109	154	35	172	256	862	153	16	69	3	4
Sulphide	mg/L	<0.1	<0.1	0.2	3.1	2.9	11.2	7.3	0.7	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Kjeldahl Nitrogen	mg/L	0.6	<0.1	1.8	1.9	2.5	4.4	7.2	4.9	0.6	<0.1	<0.1	<0.1	<0.1	<0.1
Nitrate	mg/L	<0.01	4.57	0.01	<0.01	<0.01	0.01	<0.01	0.08	0.01	<0.01	0.06	0.01	0.13	0.17
Total Nitrogen	mg/L	0.6	4.6	1.8	1.9	2.5	4.4	7.2	5	0.6	<0.1	<0.1	<0.1	0.2	0.2
Boron	µg/L	160	230	220	210	210	220	260	190	2550	280	40	20	10	10
Calcium	mg/L	49.8	79.3	80	22	15.4	26.3	26	86.6	111	92.6	45.1	27.1	0.85	1.46
Mercury	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20

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	6.04	55.1	6.09	0.82	0.12	<0.05	<0.05	<0.05	246	9.87	2.72	4.51	1.07	1.3
Sodium	mg/L	124	55.6	112	95.2	139	144	167	321	2420	118	19.3	24	13.2	16.5
Iron	mg/L	<0.04	<0.04	0.06	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.29	<0.04	<0.04
Potassium	mg/L	21.8	15.9	26	20.8	47.4	53	49.8	83.8	109	11.6	6.07	3.19	3.96	4.36
Cadmium	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chromium	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Copper	µg/L	<1	<1	<1	<1	<1	1	<1	<1	<1	<1	<1	<1	2	3
Lead	µg/L	<1	<1	<1	<1	<1	1	<1	<1	<1	<1	<1	<1	<1	<1
Manganese	µg/L	366	133	1040	6	<1	<1	<1	<1	263	1970	15	776	11	9
Nickel	µg/L	<1	<1	<1	<1	1	2	2	3	<1	<1	<1	<1	<1	<1
Zinc	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	20	61	611
Biochemical Oxygen Demand	mg/L	<2	<2	3	2	<2	7	5	2	<2	<2	<2	<2	<2	<2
Chemical Oxygen Demand	mg/L	10	2	15	14	22	35	38	24	28	5	<2	2	<2	3
Total Organic Carbon	mg/L	6	1	9	6	7	11	12	9	<5	2	<1	1	<1	1

TABLE F5.12 GROUNDWATER MONITORING RESULTS (DECEMBER 2023)

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	3.01	2.95	2.89	2.62	3.36	3.18	2.46	2.78	3.12	3.34	3.15	8.63	36.16	44.99
Bicarbonate Alkalinity as CaCO3	mg/L	171	260	154	9	<1	<1	4	<1	101	198	170	54	17	13
Carbonate Alkalinity as CaCO3	mg/L	<1	<1	<1	42	96	137	66	78	<1	<1	<1	<1	<1	<1
Total Alkalinity as CaCO3	mg/L	171	260	154	50	133	189	71	114	101	198	170	54	17	13
pH Value	pH Unit	8	8	8.1	9.8	11.1	11.3	10.2	10.9	8	8	8.2	7.1	5.9	5.8
Electrical Conductivity	µS/cm	1070	1000	1140	786	1110	1190	2040	3330	2010	722	430	303	91	99
Ammonia	mg/L	0.04	0.02	1.54	2.9	2.17	4.36	5.8	13	1.39	0.02	0.03	<0.01	0.02	<0.01
Chloride	mg/L	185	40	218	156	187	189	552	819	448	73	26	20	15	20
Nitrite	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Phosphorus	mg/L	0.01	0.02	0.01	0.01	<0.01	0.01	0.02	<0.01	0.02	0.02	0.01	0.04	0.01	<0.01
Sulphate	mg/L	69	227	98	87	108	88	74	105	222	48	18	61	3	2
Sulphide	mg/L	<0.1	<0.1	0.1	2.7	7.1	10.1	4.1	12.4	0.2	<0.1	<0.1	<0.1	<0.1	<0.1
Total Kjeldahl Nitrogen	mg/L	0.1	<1.0	1.8	3	2.2	5.1	6	13.2	1.8	0.1	0.1	<0.1	<0.1	<0.1
Nitrate	mg/L	<0.01	5.38	<0.01	<0.01	<0.01	<0.01	0.01	0.01	<0.01	<0.01	<0.01	<0.01	0.1	0.12
Total Nitrogen	mg/L	0.1	5.4	1.8	3	2.2	5.1	6	13.2	1.8	0.1	0.1	<0.1	0.2	0.2
Boron	µg/L	180	230	230	230	210	210	520	430	340	130	70	20	10	10
Calcium	mg/L	60.3	73.5	78.8	19.9	29.7	27.6	26.4	107	119	69.8	57.6	24	0.89	0.92
Mercury	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20

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	8.85	51.9	5.48	0.29	<0.05	<0.05	0.36	<0.05	5.11	5.83	3.1	4.09	0.99	0.97
Sodium	mg/L	116	51.9	119	107	147	154	323	486	252	58.9	24.1	22.6	12.4	13.6
Iron	mg/L	<0.04	<0.04	0.05	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.41	<0.04	<0.04
Potassium	mg/L	21.2	14.4	27.6	23	53.4	54	58.4	83.6	35.9	9.74	6.31	2.6	3.46	3.41
Cadmium	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chromium	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Copper	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1	<1	<1	1
Lead	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Manganese	µg/L	444	139	919	2	<1	<1	<1	<1	278	580	460	691	14	7
Nickel	µg/L	<1	<1	<1	<1	1	2	<1	1	<1	<1	<1	<1	<1	<1
Zinc	µg/L	<10	267	<10	<10	61	<10	<10	<10	<10	12	<10	20	26	15
Biochemical Oxygen Demand	mg/L	<2	<2	<2	<2	4	10	<2	9	2	<2	<2	<2	<2	<2
Chemical Oxygen Demand	mg/L	3	<2	19	19	28	54	18	40	24	6	<2	<2	<2	<2
Total Organic Carbon	mg/L	1	<1	8	6	6	10	4	11	11	<1	<1	<1	<1	<1

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

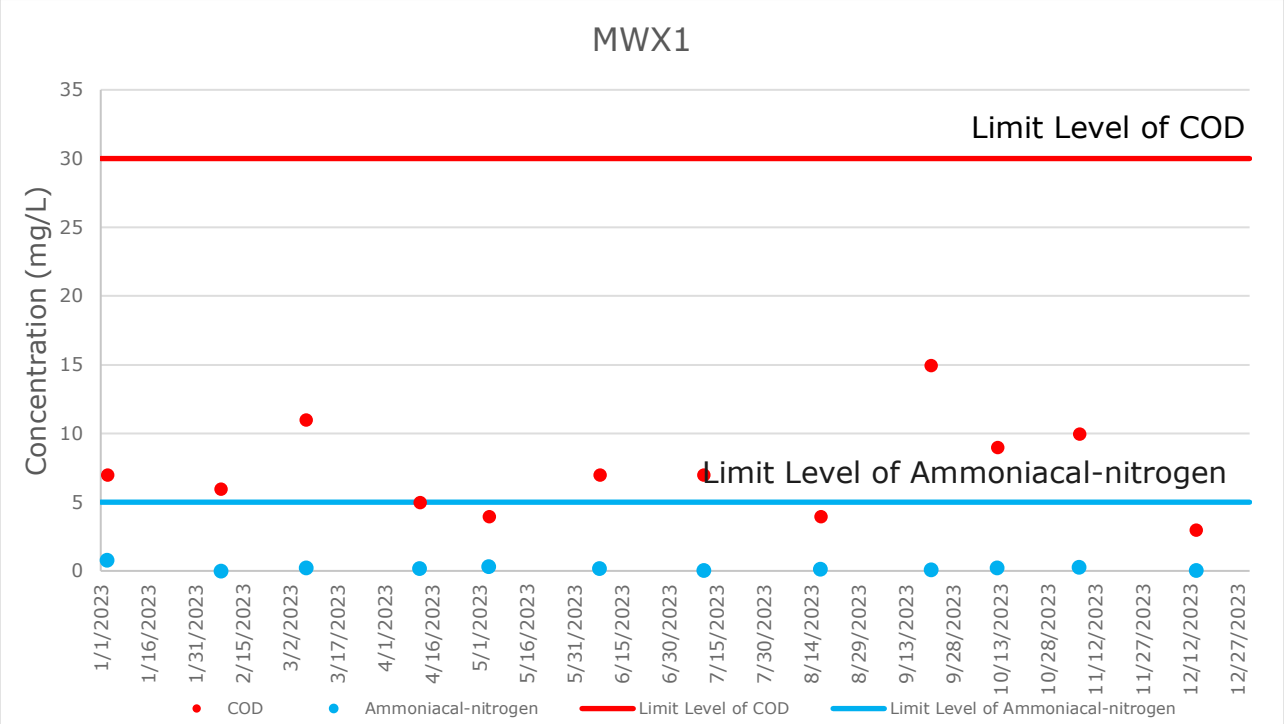


FIGURE F5.2 GRAPHICAL PRESENTATION FOR GROUNDWATER MONITORING (MWX-2)

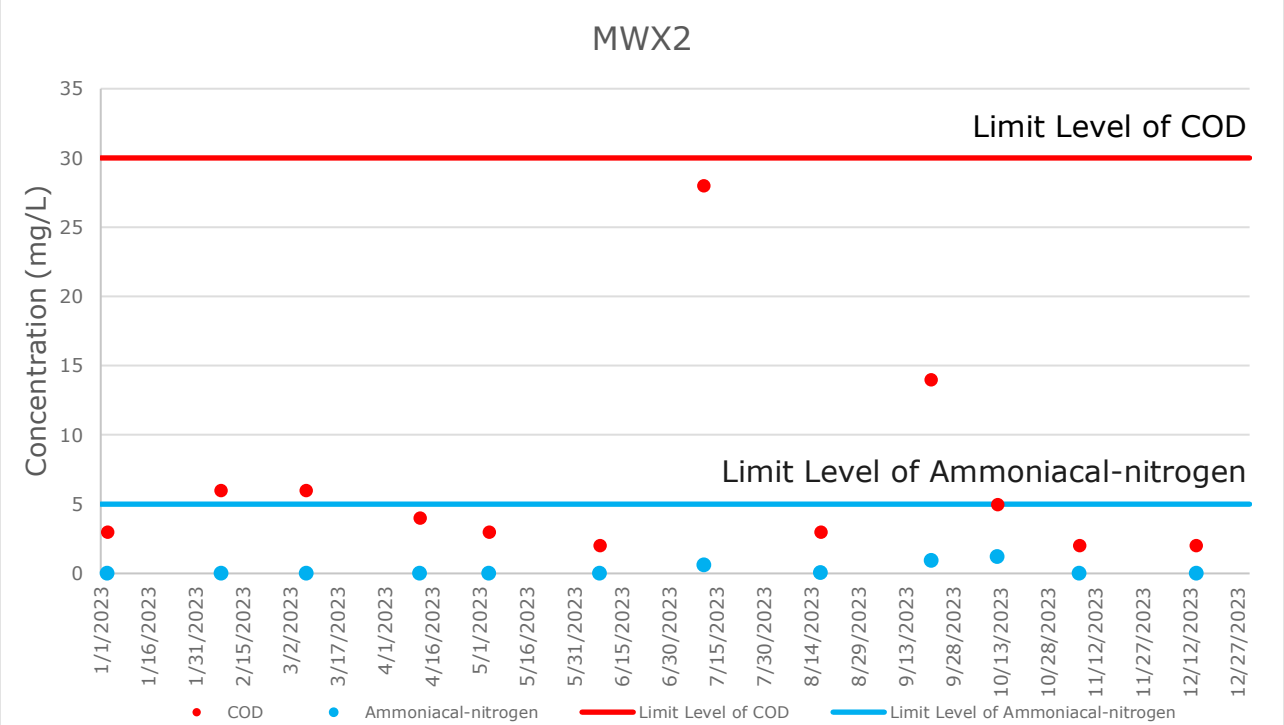


FIGURE F5.3 GRAPHICAL PRESENTATION FOR GROUNDWATER MONITORING (MWX-3)

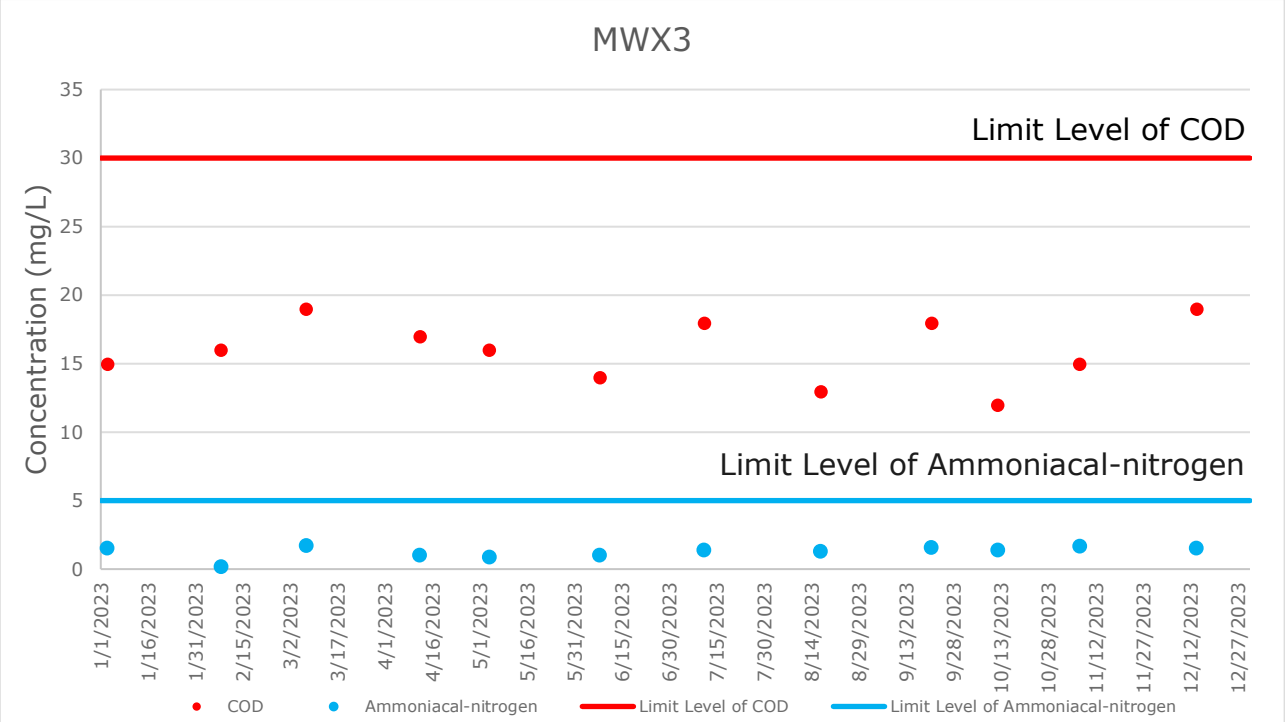


FIGURE F5.4 GRAPHICAL PRESENTATION FOR GROUNDWATER MONITORING (MWX-4)

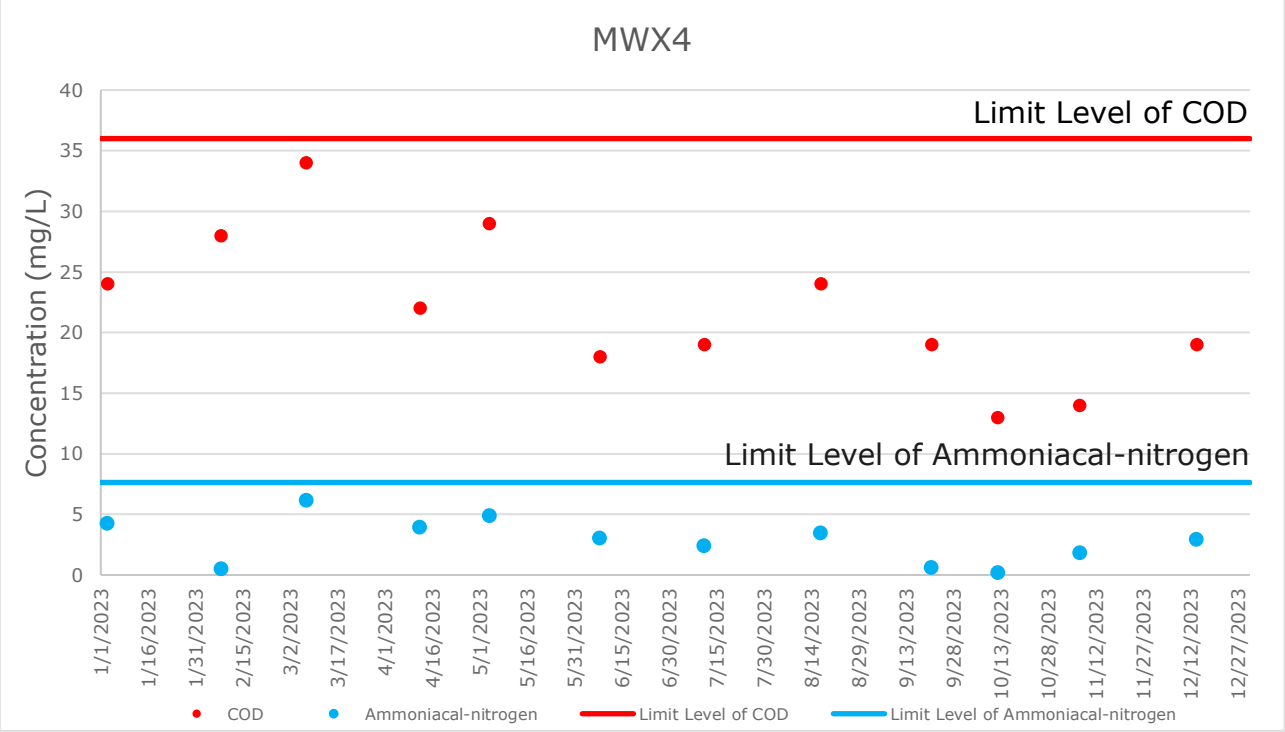


FIGURE F5.5 GRAPHICAL PRESENTATION FOR GROUNDWATER MONITORING (MWX-5)

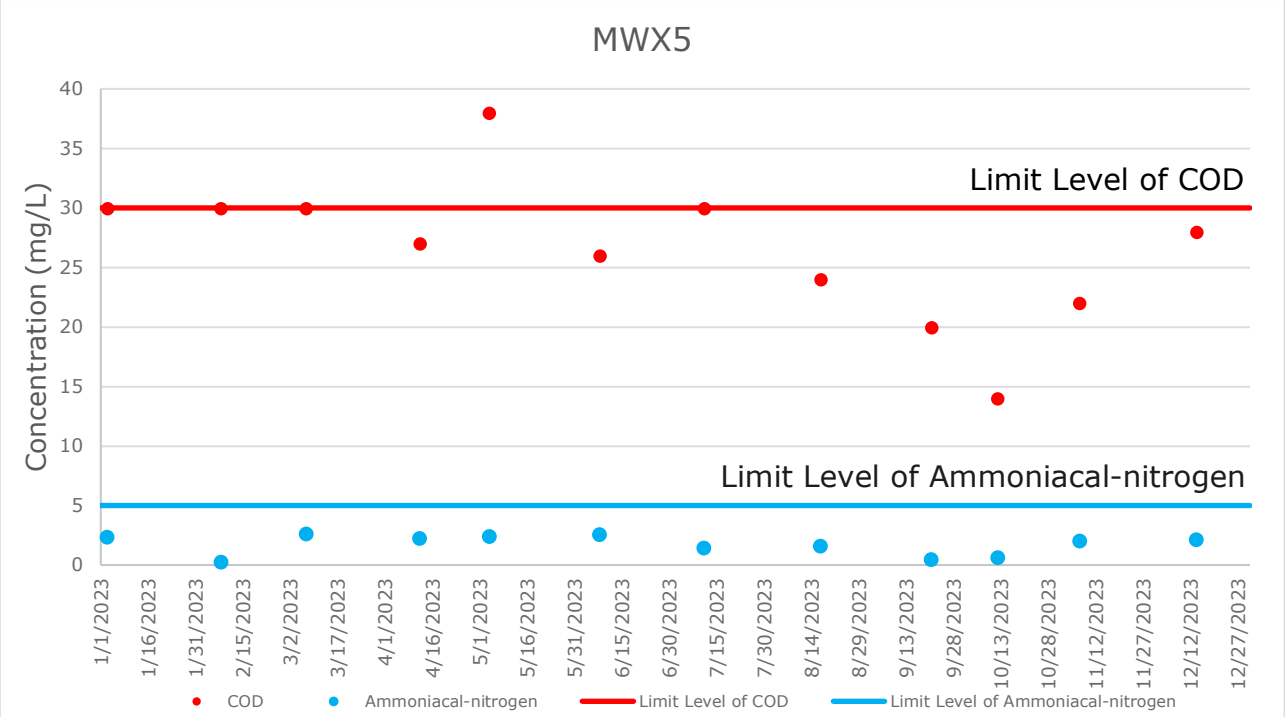


FIGURE F5.6 GRAPHICAL PRESENTATION FOR GROUNDWATER MONITORING (MWX-6)

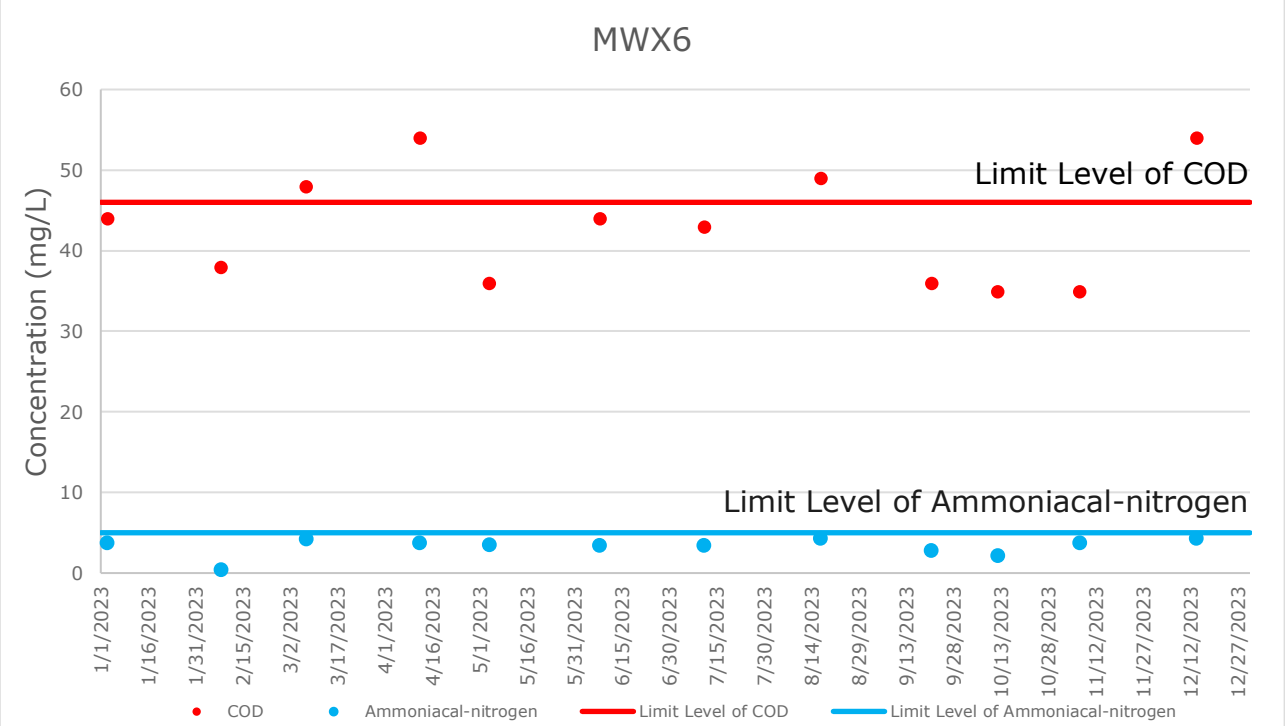


FIGURE F5.7 GRAPHICAL PRESENTATION FOR GROUNDWATER MONITORING (MWX-7)

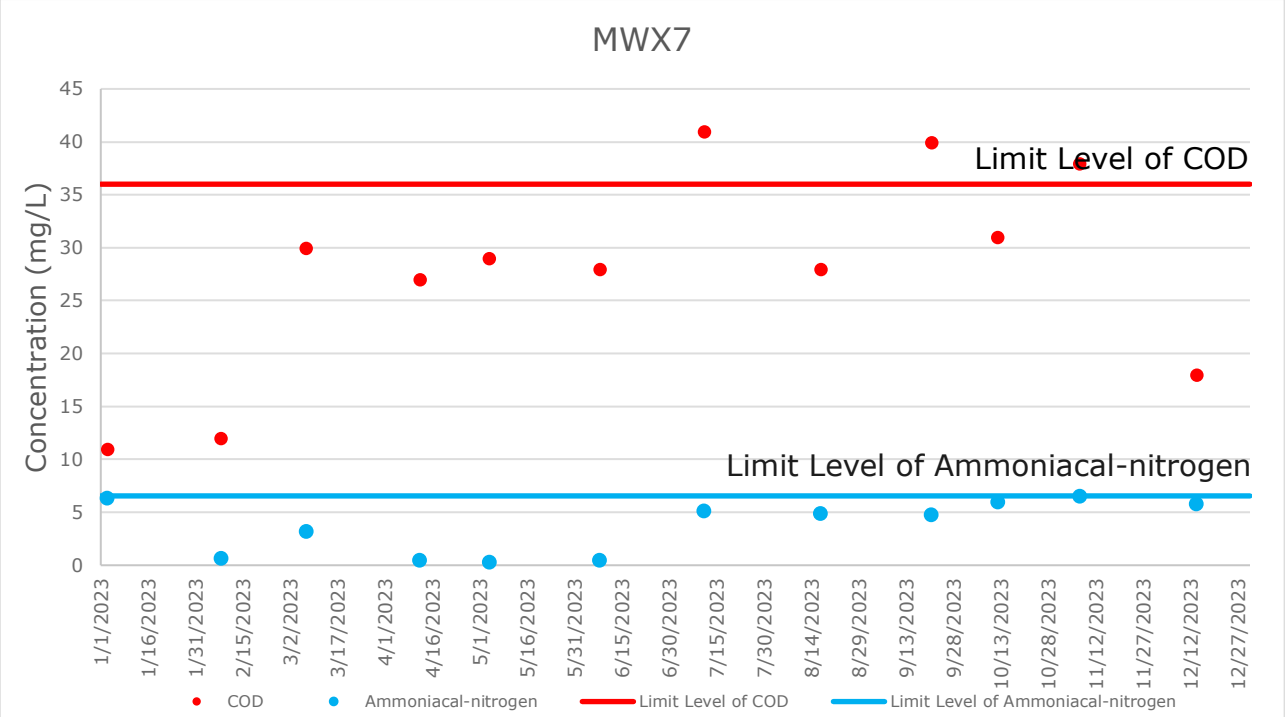


FIGURE F5.8 GRAPHICAL PRESENTATION FOR GROUNDWATER MONITORING (MWX-8)

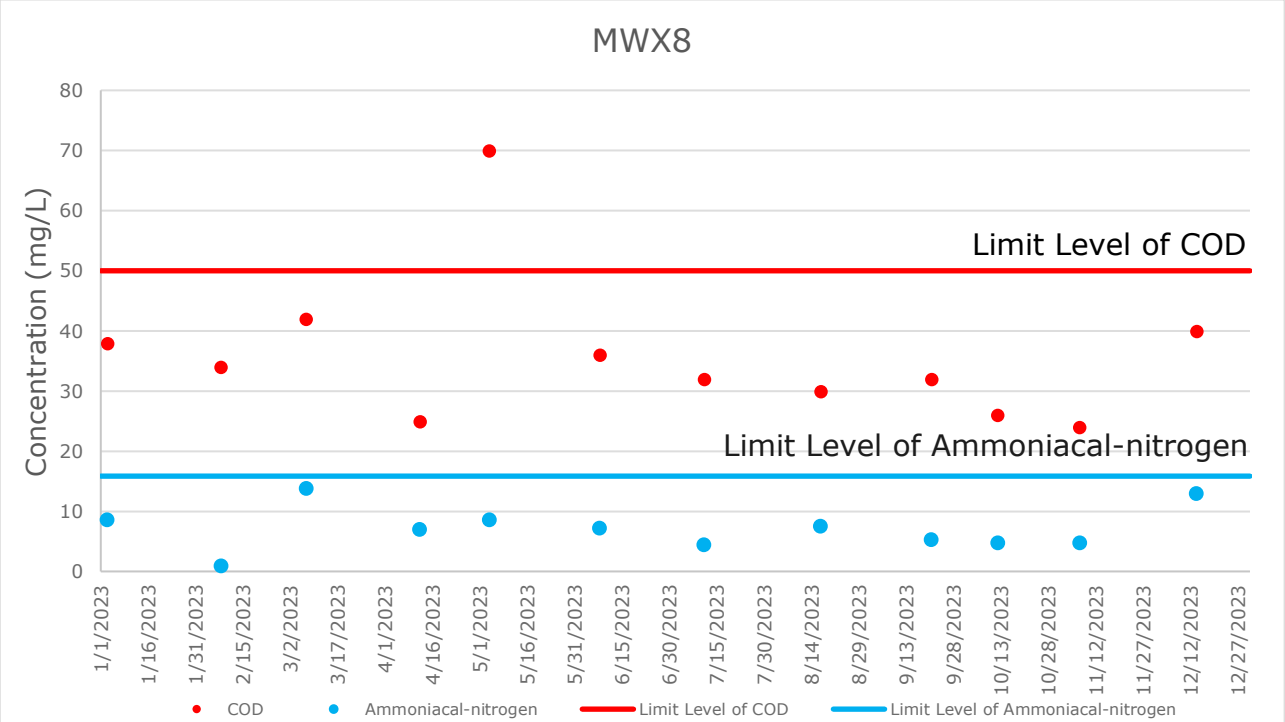


FIGURE F5.9 GRAPHICAL PRESENTATION FOR GROUNDWATER MONITORING (MWX-9)

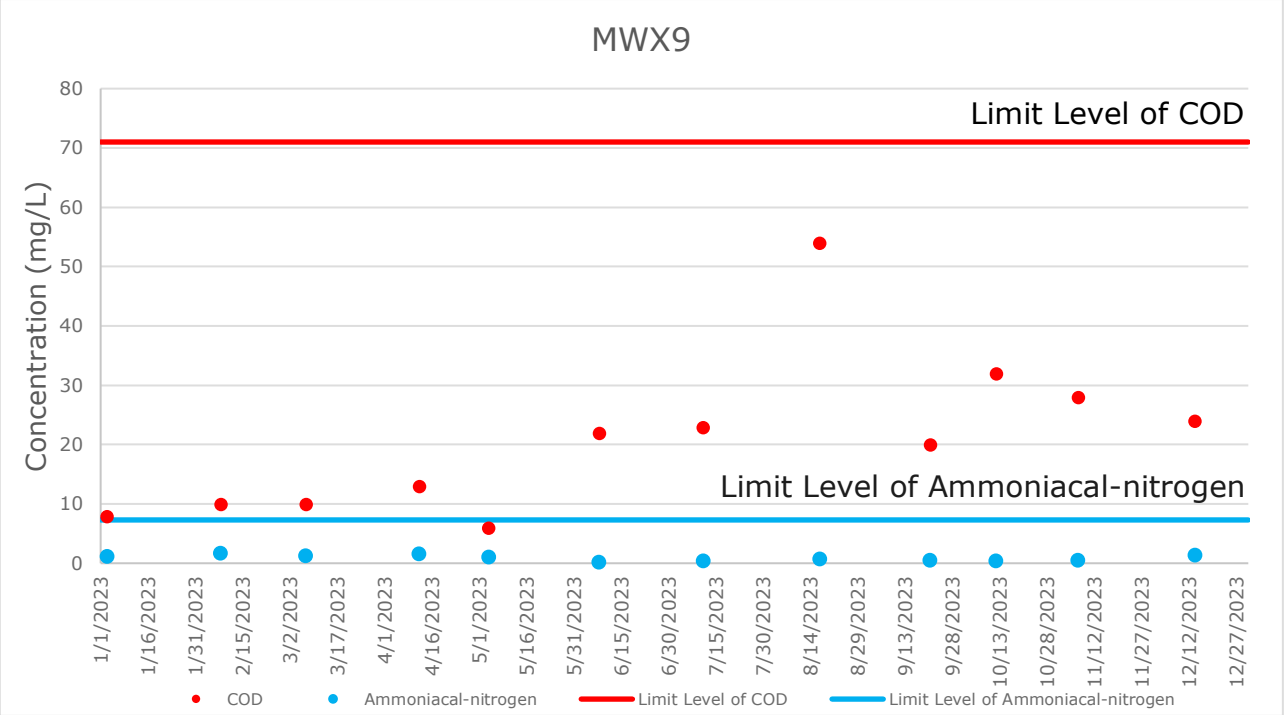


FIGURE F5.10 GRAPHICAL PRESENTATION FOR GROUNDWATER MONITORING (MWX-10)

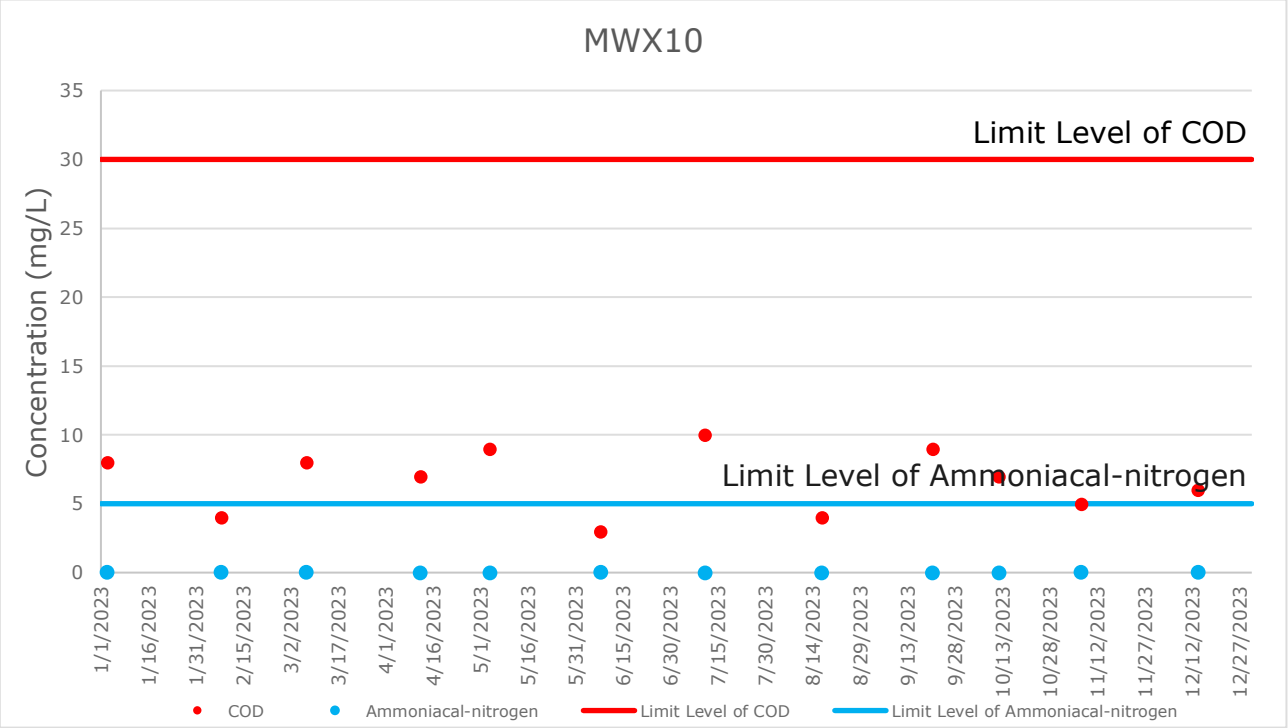


FIGURE F5.11 GRAPHICAL PRESENTATION FOR GROUNDWATER MONITORING (MWX-11)

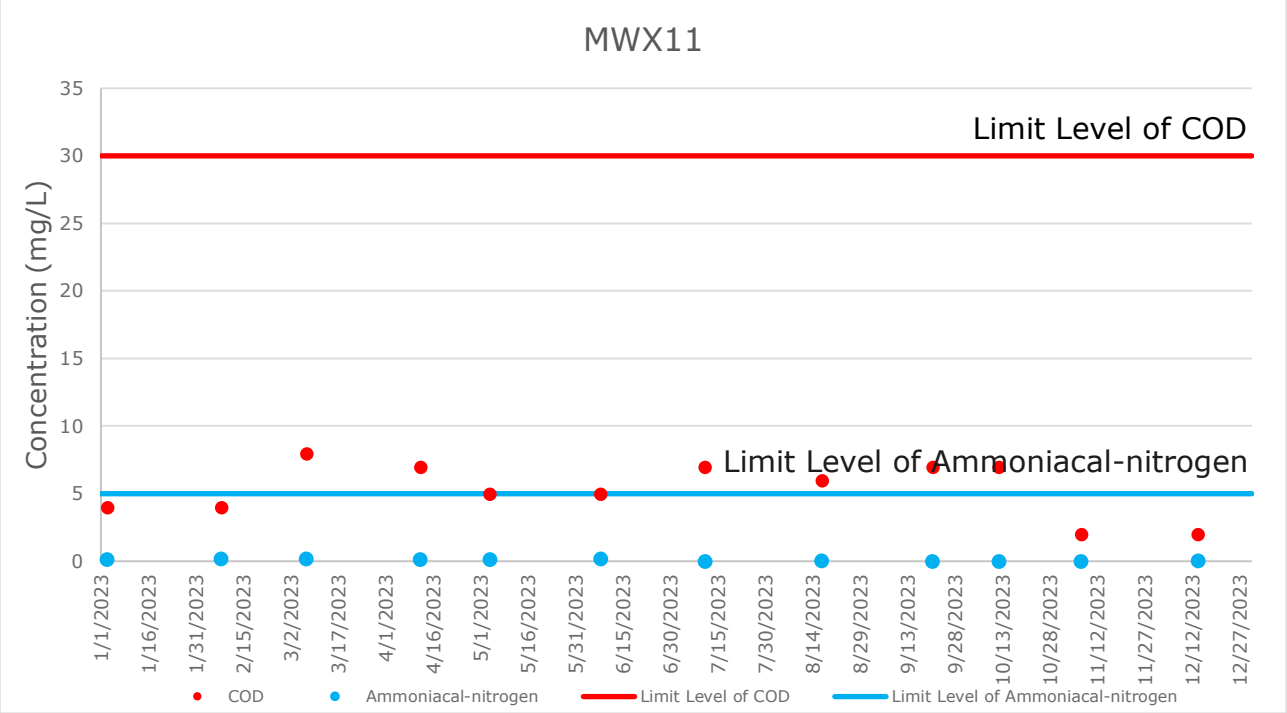


FIGURE F5.12 GRAPHICAL PRESENTATION FOR GROUNDWATER MONITORING (MWX-12)

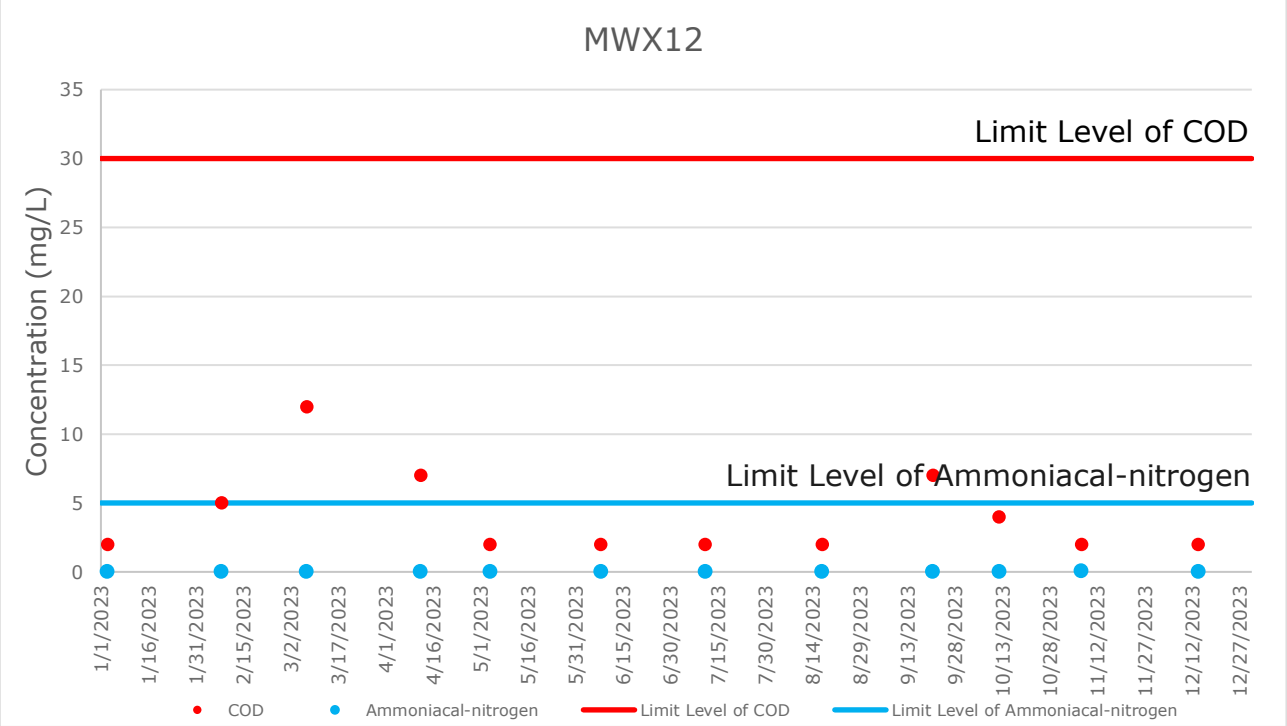


FIGURE F5.13 GRAPHICAL PRESENTATION FOR GROUNDWATER MONITORING (MWX-13)

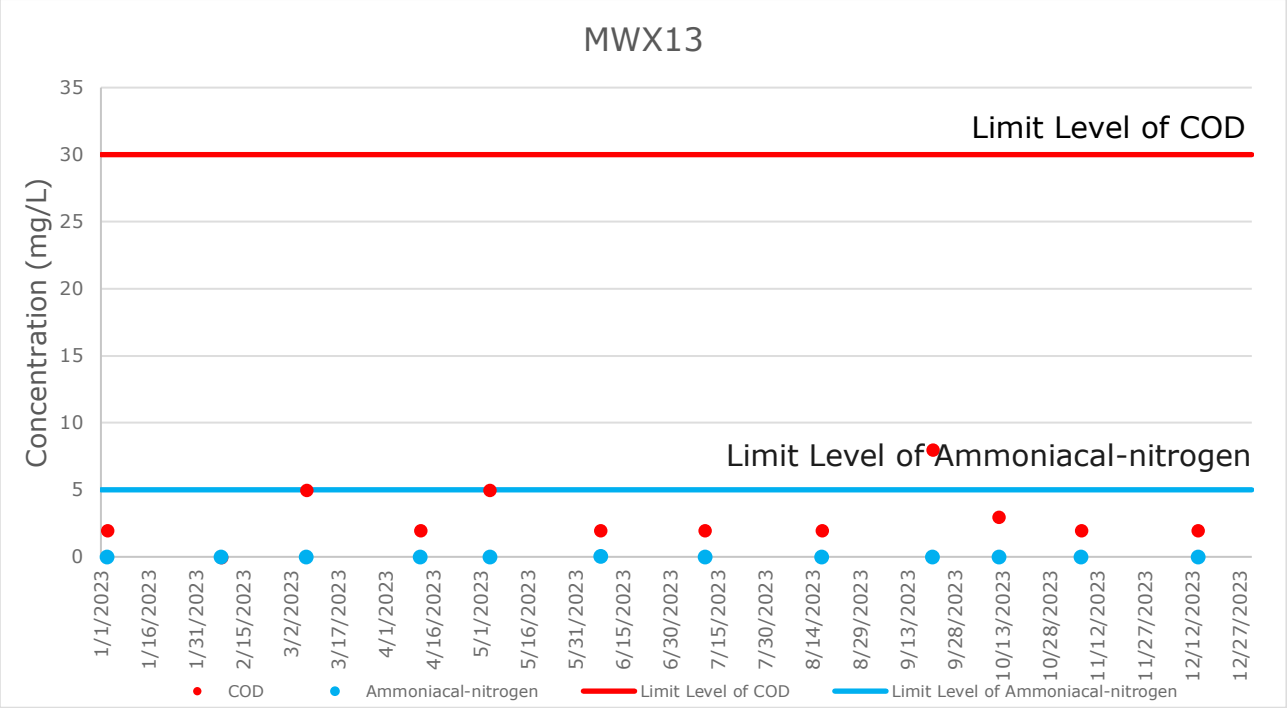
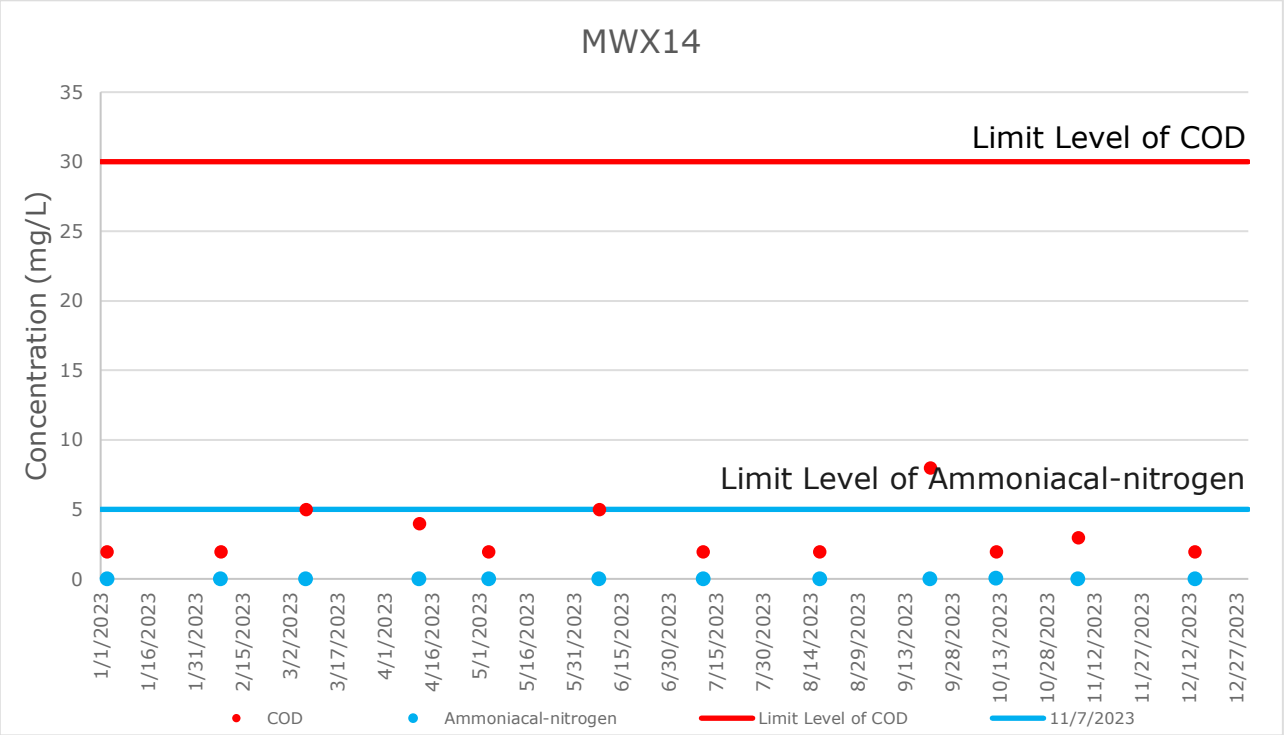


FIGURE F5.14 GRAPHICAL PRESENTATION FOR GROUNDWATER MONITORING (MWX-14)



ANNEX F6 INVESTIGATION REPORTS OF ENVIRONMENTAL QUALITY LIMIT EXCEEDANCE

Investigation Report of Environmental Quality Limit Exceedance

Project	South East New Territories (SENT) Landfill Extension
Date	7 March 2023
Time	14:51
Monitoring Location	MWX-6
Parameter	Chemical Oxygen Demand (COD)
Limit Levels	>46 mg /L
Measured Level	48 mg /L
Possible reason	Groundwater contaminated with leachate is commonly characterized by high COD and ammoniacal-nitrogen levels as a result of degradation of organic matters in the waste. The ammoniacal-nitrogen monitoring result at groundwater monitoring well MWX-6 (4.23 mg/L) and the COD monitoring results of the groundwater monitoring wells adjacent to MWX-6 (MWX-5: 30 mg/L and MWX-7: 30 mg/L) are well within the respective limit levels. Hence, there is a low possibility of the elevation of COD level at MWX-6 is due to leachate contamination from SENTX operation or at least it is not conclusive to base on these results to demonstrate exceedance was due to leachate contamination. In accordance with Table 4.5b of the updated EM&A Manual, repeat measurement was conducted on 13 April 2023 to confirm findings. Exceedance of COD Limit Level was recorded at MWX-6 (54 mg/L) during the sampling event. MWX-6 showed consecutive exceedance of the groundwater quality limit. According to the findings of the desktop review commissioned by GVL and EPD (the Employer) in May 2021 to investigate the potential sources of the elevated methane levels at the perimeter landfill gas monitoring wells at SENTX, pockets of organic matters are identified in the fill materials of the SENTX site upon review of the historical site investigation borehole logs at the Project Site area. It is possible that the elevated COD concentration measured at MWX-6 (with detection of elevated levels of methane (up to 12.2% v/v) and in close proximity to LFG13, which shows elevated methane levels continuously) on 7 March 2023 could be due to localised organic matters within or around the monitoring wells and background fluctuation. Due to the presence of influencing factor from non-project source and the COD levels at all other groundwater monitoring wells are within the respective limit level, there is no adequate evidence showing that the COD level exceedance measured at MWX-6 on 7 March 2023 was deemed to Project-related activities. It should also be noted that although the COD level exceeded the

	limit level of the EM&A programme, it is still well within the WPCO effluent discharge limit of COD (80 mg/L) and the standard for effluents discharged into the inshore waters of the Junk Bay Water Control Zone as stipulated under Technical Memorandum Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters (80 mg/L). The slight exceedance of COD at MWX-6 on 7 March 2023 will not cause adverse water quality impact to the Junk Bay Water Control Zone.
Action Taken / Action to be Taken	Examination of environmental performance of the Project will be continued during the weekly inspections. The Contractor is reminded to implement relevant and appropriate mitigation measures according to the updated EM&A Manual to avoid any exceedance of the Action and Limit Levels. ET will continue to closely monitor the groundwater quality monitoring results and collect additional data for investigation and further review, if necessary.
Remarks	-

Prepared by: Abbey Lau
Designation: Environmental Team
Date: 28 April 2023

Investigation Report of Environmental Quality Limit Exceedance

Project	South East New Territories (SENT) Landfill Extension
Date	13 April 2023
Time	11:49
Monitoring Location	MWX-6
Parameter	Chemical Oxygen Demand (COD)
Limit Levels	>46 mg /L
Measured Level	54 mg /L
Possible reason	Groundwater contaminated with leachate is commonly characterized by high COD and ammoniacal-nitrogen levels as a result of degradation of organic matters in the waste. The ammoniacal-nitrogen monitoring result at groundwater monitoring well MWX-6 (3.74 mg/L) and the COD monitoring results of the groundwater monitoring wells adjacent to MWX-6 (MWX-5: 27 mg/L and MWX-7: 27 mg/L) are well within the respective limit levels. Hence, there is a low possibility of the elevation of COD level at MWX-6 is due to leachate contamination from SENTX operation or at least it is not conclusive to base on these results to demonstrate exceedance was due to leachate contamination. In accordance with Table 4.5b of the updated EM&A Manual, repeat measurement was conducted on 4 May 2023 to confirm findings. COD concentration of 36 mg/L (below the Limit Level) was measured at MWX-6 during the sampling event, which demonstrate no consecutive groundwater quality impact at the monitoring location. 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-6 (with detection of elevated levels of methane (up to 12.2% v/v) and in close proximity to LFG13, which shows elevated methane levels continuously) on 13 April 2023 could be due to localised organic matters within or around the monitoring wells and background fluctuation. Due to the presence of influencing factor from non-project source and the subsequent month monitoring results at MWX-6 did not show any exceedance, there is no adequate evidence showing that the COD level exceedance measured at MWX-6 on 13 April 2023 was deemed to Project-related activities.

	It should also be noted that although the COD level exceeded the limit level of the EM&A programme, it is still well within the WPCO effluent discharge limit of COD (80 mg/L) and the standard for effluents discharged into the inshore waters of the Junk Bay Water Control Zone as stipulated under Technical Memorandum Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters (80 mg/L). The slight exceedance of COD at MWX-6 on 13 April 2023 will not cause adverse water quality impact to the Junk Bay Water Control Zone.
Action Taken / Action to be Taken	Examination of environmental performance of the Project will be continued during the weekly inspections. The Contractor is reminded to implement relevant and appropriate mitigation measures according to the updated EM&A Manual to avoid any exceedance of the Action and Limit Levels. ET will continue to closely monitor the groundwater quality monitoring results and collect additional data for investigation and further review, if necessary.
Remarks	-

Prepared by: Abbey Lau
Designation: Environmental Team
Date: 22 May 2023

Investigation Report of Environmental Quality Limit Exceedance

Project	South East New Territories (SENT) Landfill Extension
Date	4 May 2023
Time	MWX-5: 11:16 MWX-8: 10:32
Monitoring Location	MWX-5, MWX-8
Parameter	Chemical Oxygen Demand (COD)
Limit Levels	MWX-5: >30 mg /L MWX-8: >50 mg /L
Measured Level	MWX-5: 38 mg /L MWX-8: 70 mg /L
Possible reason	Groundwater contaminated with leachate is commonly characterized by high COD and ammoniacal-nitrogen levels as a result of degradation of organic matters in the waste. The ammoniacal-nitrogen monitoring result at groundwater monitoring wells MWX-5 (2.44 mg/L) and MWX-8 (8.63 mg/L), and the COD monitoring results of the groundwater monitoring wells adjacent to MWX-5 (MWX-4: 29 mg/L and MWX-6: 36 mg/L) and MWX-8 (MWX-7: 29 mg/L and MWX-9: 6 mg/L) are well within the respective limit levels. Hence, there is a low possibility of the elevation of COD level at MWX-5 and MWX-8 is due to leachate contamination from SENTX operation or at least it is not conclusive to base on these results to demonstrate exceedance was due to leachate contamination. In accordance with Table 4.5b of the updated EM&A Manual, repeat measurement was conducted on 8 June 2023 to confirm findings. COD concentration of 26 mg/L and 36 mg/L (below the Limit Level) was measured at MWX-5 and MWX-8, respectively 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 COD concentration measured at MWX-5 and MWX-8 on 4 May 2023 could be due to localised organic matters within or around the monitoring wells and background fluctuation. Due to the presence of influencing factor from non-project source and the subsequent month monitoring results at MWX-5 and MWX-8 did not show any exceedance, there is no adequate

	evidence showing that the COD level exceedances measured at MWX-5 and MWX-8 on 4 May 2023 were deemed to Project-related activities. It should also be noted that although the COD level exceeded the limit level of the EM&A programme, it is still well within the WPCO effluent discharge limit of COD (80 mg/L) and the standard for effluents discharged into the inshore waters of the Junk Bay Water Control Zone as stipulated under Technical Memorandum Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters (80 mg/L). The slight exceedance of COD at MWX-5 and MWX-8 on 4 May 2023 will not cause adverse water quality impact to the Junk Bay Water Control Zone.
Action Taken / Action to be Taken	Examination of environmental performance of the Project will be continued during the weekly inspections. The Contractor is reminded to implement relevant and appropriate mitigation measures according to the updated EM&A Manual to avoid any exceedance of the Action and Limit Levels. ET will continue to closely monitor the groundwater quality monitoring results and collect additional data for investigation and further review, if necessary.
Remarks	-

Prepared by: Abbey Lau
Designation: Environmental Team
Date: 29 June 2023

Investigation Report of Environmental Quality Limit Exceedance

Project	South East New Territories (SENT) Landfill Extension
Date	17 – 22 June 2023
Monitoring Location	Pump Station No. 4X (Cell 4X)
Parameter	Leachate level
Limit Levels	> 186 cm
Measured Level	<u>Pump Station No. 4X (Average of Meter No. X-7 and No. X-8)</u> 17 June 2023: 234 cm 18 June 2023: 279 cm 19 June 2023: 299 cm 20 June 2023: 287 cm 21 June 2023: 260 cm 22 June 2023: 216 cm
Possible reason	From the on-site rainfall record of June 2023, heavy rainfall events (up to 90 mm per day) were recorded from 17 to 22 June 2023. Amber and red rainstorm warning signals were also issued by the Hong Kong Observatory on 17 and 18 June 2023. As confirmed by the Contractor, the leachate collection system and leachate treatment plant were under normal operating conditions during the reporting period. Accumulation of surface water at Cell 4X was observed during the reporting period, which could contribute to the leachate level exceedances. Based on this observation, the leachate level exceedances at Pump Station No. 4X were deemed to Project-related activities. It is understood that the large volume of leachate (contaminated surface runoff) accumulated at Cell 4X has exceeded the leachate treatment capacity (daily maximum effluent discharge volume of 1,633 m^3 recorded from 17 to 22 June 2023, with daily effluent discharge limit of 2,000 m^3 as stipulated in the WPCO license).
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 closely monitor the operating conditions of the leachate collection system (e.g. set alarm when the leachate level reach about 80% of the Limit Level) and pump out the leachate for treatment to avoid any exceedance of the Limit Level.
Remarks	-

Prepared by: Abbey Lau
Designation: Environmental Team
Date: 29 June 2023

Investigation Report of Environmental Quality Limit Exceedance

Project	South East New Territories (SENT) Landfill Extension
Date	11 July 2023
Time	11:35
Monitoring Location	MWX-7
Parameter	Chemical Oxygen Demand (COD)
Limit Levels	>36 mg /L
Measured Level	41 mg /L
Possible reason	Groundwater contaminated with leachate is commonly characterized by high COD and ammoniacal-nitrogen levels as a result of degradation of organic matters in the waste. The ammoniacal-nitrogen monitoring result at groundwater monitoring wells MWX-7 (5.16 mg/L) and the COD monitoring results of the groundwater monitoring wells adjacent to MWX-7 (MWX-6: 43 mg/L and MWX-8: 32 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 exceedance was due to leachate contamination. In accordance with Table 4.5b of the updated EM&A Manual, repeat measurement was conducted on 2 August 2023 to confirm findings. COD concentration of 28 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 location. 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 11 July 2023 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 and the subsequent month monitoring results at MWX-7 did not show any exceedance, there is no adequate evidence showing that the COD level exceedance measured at MWX-7 on 11 July 2023 was deemed to Project-related activities. It should also be noted that although the COD level exceeded the limit level of the EM&A programme, it is still well within the WPCO effluent discharge limit of COD (80 mg/L) and the standard

	for effluents discharged into the inshore waters of the Junk Bay Water Control Zone as stipulated under Technical Memorandum Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters (80 mg/L). The slight exceedance of COD at MWX-7 on 11 July 2023 will not cause adverse water quality impact to the Junk Bay Water Control Zone.
Action Taken / Action to be Taken	Examination of environmental performance of the Project will be continued during the weekly inspections. The Contractor is reminded to implement relevant and appropriate mitigation measures according to the updated EM&A Manual to avoid any exceedance of the Action and Limit Levels. ET will continue to closely monitor the groundwater quality monitoring results and collect additional data for investigation and further review, if necessary.
Remarks	-

Prepared by: Abbey Lau
Designation: Environmental Team
Date: 28 August 2023

Investigation Report of Environmental Quality Limit Exceedance

Project	South East New Territories (SENT) Landfill Extension
Date	2 August 2023
Time	16:03
Monitoring Location	MWX-6
Parameter	Chemical Oxygen Demand (COD)
Limit Level	>46 mg /L
Measured Level	49 mg /L
Possible reason	Groundwater contaminated with leachate is commonly characterized by high COD and ammoniacal-nitrogen levels as a result of degradation of organic matters in the waste. The ammoniacal-nitrogen monitoring result at groundwater monitoring wells MWX-6 (4.32 mg/L) and the COD monitoring results of the groundwater monitoring wells adjacent to MWX-6 (MWX-5: 24 mg/L and MWX-7: 28 mg/L) are well within the respective limit levels. Hence, there is a low possibility of the elevation of COD level at MWX-6 is due to leachate contamination from SENTX operation or at least it is not conclusive to base on these results to demonstrate exceedance was due to leachate contamination. In accordance with Table 4.5b of the updated EM&A Manual, repeat measurement was conducted on 22 September 2023 to confirm findings. COD concentration of 36 mg/L (below the Limit Level) was measured at MWX-6 during the sampling event, which demonstrate no consecutive groundwater quality impact at the monitoring location. 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-6 on 2 August 2023 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 and the subsequent month monitoring results at MWX-6 did not show any exceedance, there is no adequate evidence showing that the COD level exceedance measured at MWX-6 on 2 August 2023 was deemed to Project-related activities. It should also be noted that although the COD level exceeded the limit level of the EM&A programme, it is still well within the

	WPCO effluent discharge limit of COD (80 mg/L) and the standard for effluents discharged into the inshore waters of the Junk Bay Water Control Zone as stipulated under Technical Memorandum Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters (80 mg/L). The slight exceedance of COD at MWX-6 on 2 August 2023 will not cause adverse water quality impact to the Junk Bay Water Control Zone.
Action Taken / Action to be Taken	Examination of environmental performance of the Project will be continued during the weekly inspections. The Contractor is reminded to implement relevant and appropriate mitigation measures according to the updated EM&A Manual to avoid any exceedance of the Action and Limit Levels. ET will continue to closely monitor the groundwater quality monitoring results and collect additional data for investigation and further review, if necessary.
Remarks	-

Prepared by: Abbey Lau
Designation: Environmental Team
Date: 9 October 2023

Investigation Report of Environmental Quality Limit Exceedance

Project	South East New Territories (SENT) Landfill Extension
Date	4 August 2023
Time	14:17 and 14:25 (Duplicate)
Monitoring Location	DP4
Parameter	Surface Water (Suspended Solids (SS))
Limit Level	>20 mg/L
Measured Level	DP4: 57.4 mg /L DP4 (Duplicate): 46.3 mg /L
Possible reason	From the on-site rainfall record of July and August 2023, heavy rainfall events were recorded on 28 to 31 July and 4 August 2023 before the sampling event. Red and amber rainstorm warning signal were also issued by the Hong Kong Observatory on 29 and 31 August 2023, respectively. No works which may lead to potential SS increase (e.g. active stockpiling and excavation works) was conducted in the vicinity of surface water channel leading to DP4 on the sampling day based on on-site observations and construction activities described by the Contractor. During the sampling event, no raining was recorded and no other sources (e.g. other project sites) was identified in the vicinity of surface water channel leading to DP4 which might cause the SS exceedance at DP4. Site surface runoff at DP4 channel was treated by the Wetsep prior to discharge. The contaminated runoff from the unpaved areas during the previous rainfall events could also be the potential source of SS contributing to the exceedance. The SS exceedance at DP4 was therefore deemed to Project-related activities. In accordance with Table 4.5b of the updated EM&A Manual, repeat measurement was conducted on 15 August 2023 to confirm findings. Surface water samples with SS concentration of 12.2 mg/L and 12.6 mg/L (below the Limit Level) were sampled at DP4, which demonstrate no consecutive surface water quality impact at the monitoring location.
Action Taken / Action to be Taken	In accordance with Table 4.5b of the updated EM&A Manual, the monitoring frequency shall be increased to weekly until no exceedance of Limit Level. It should be noted that the turnaround time for the laboratory analysis of the surface water sample is 5 working days and the preliminary results for the monitoring event conducted on 4 August 2023 were available on 14 August 2023. Repeat measurement was conducted on 15 August 2023, and the SS results at DP4 are well below the Limit Level. Hence, the weekly

	surface water monitoring at DP4 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 and Limit Levels. In addition, the Contractor shall review the efficiency of the Wetsep near sediment trap and monitor the Wetsep operation regularly to ensure it is functioning properly at all times.
Remarks	-

Prepared by: Abbey Lau
Designation: Environmental Team
Date: 28 August 2023

Investigation Report of Environmental Quality Limit Exceedance

Project	South East New Territories (SENT) Landfill Extension
Date	Pump Station No. 1X: 8 – 16 September 2023 Pump Station No. 3X: 8 – 20 September 2023 Pump Station No. 4X: 8 – 20 September 2023
Monitoring Location	Pump Station No. 1X (Cell 1X), Pump Station No. 3X (Cell 3X) and Pump Station No. 4X (Cell 4X)
Parameter	Leachate level
Limit Levels	Pump Station No. 1X: > 178 cm Pump Station No. 3X: > 175 cm Pump Station No. 4X: > 186 cm
Measured Level	<u>Pump Station No. 1X (Average of Meter No. X-1 and No. X-2)</u> 8 September 2023: 243 cm 9 September 2023: 235 cm 10 September 2023: 231 cm 11 September 2023: 228 cm 12 September 2023: 222 cm 13 September 2023: 218 cm 14 September 2023: 204 cm 15 September 2023: 186 cm 16 September 2023: 175 cm <u>Pump Station No. 3X (Average of Meter No. X-5 and No. X-6)</u> 8 September 2023: 194 cm 9 September 2023: 194 cm 10 September 2023: 211 cm 11 September 2023: 210 cm 12 September 2023: 213 cm 13 September 2023: 218 cm 14 September 2023: 218 cm 15 September 2023: 216 cm 16 September 2023: 218 cm 17 September 2023: 214 cm 18 September 2023: 209 cm 19 September 2023: 203 cm 20 September 2023: 192 cm <u>Pump Station No. 4X (Average of Meter No. X-7 and No. X-8)</u> 8 September 2023: 250 cm 9 September 2023: 272 cm 10 September 2023: 278 cm

	11 September 2023: 283 cm 12 September 2023: 279 cm 13 September 2023: 274 cm 14 September 2023: 273 cm 15 September 2023: 268 cm 16 September 2023: 263 cm 17 September 2023: 270 cm 18 September 2023: 262 cm 19 September 2023: 242 cm 20 September 2023: 206 cm
Possible reason	From the on-site rainfall record of September 2023, heavy rainfall events (up to 356 mm per day) were recorded from 7 to 15 September 2023. Amber, red and black rainstorm warning signals were also issued by the Hong Kong Observatory on 7, 8, 10, 14 and 15 September 2023. As confirmed by the Contractor, the leachate collection system and leachate treatment plant were under normal operating conditions during the reporting period. Accumulation of surface water at Cell 1X, 3X and 4X was observed during the reporting period, which could contribute to the leachate level exceedances. Based on this observation, the leachate level exceedances at Pump Station No. 1X, 3X and 4X were deemed to Project-related activities. It is understood that the large volume of leachate (contaminated surface runoff) accumulated at Cell 1X, 3X and 4X has exceeded the leachate treatment capacity (daily maximum effluent discharge volume of 1,783 m^3 recorded from 8 to 20 September 2023, with daily effluent discharge limit of 2,000 m^3 as stipulated in the WPCO license).
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 closely monitor the operating conditions of the leachate collection system (e.g. set alarm when the leachate level reach about 80% of the Limit Level) and pump out the leachate for treatment to avoid any exceedance of the Limit Level.
Remarks	-

Prepared by: Abbey Lau
Designation: Environmental Team
Date: 9 October 2023

Investigation Report of Environmental Quality Limit Exceedance

Project	South East New Territories (SENT) Landfill Extension
Date	22 September 2023
Time	11:32
Monitoring Location	MWX-7
Parameter	Chemical Oxygen Demand (COD)
Limit Level	>36 mg /L
Measured Level	40 mg /L
Possible reason	Groundwater contaminated with leachate is commonly characterized by high COD and ammoniacal-nitrogen levels as a result of degradation of organic matters in the waste. The ammoniacal-nitrogen monitoring result at groundwater monitoring wells MWX-7 (4.80 mg/L) and the COD monitoring results of the groundwater monitoring wells adjacent to MWX-7 (MWX-6: 36 mg/L and MWX-8: 32 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 exceedance was due to leachate contamination. In accordance with Table 4.5b of the updated EM&A Manual, repeat measurement was conducted on 12 October 2023 to confirm findings. COD concentration of 31 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 location. 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 22 September 2023 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 and the subsequent month monitoring results at MWX-7 did not show any exceedance, there is no adequate evidence showing that the COD level exceedance measured at MWX-7 on 22 September 2023 was deemed to Project-related activities. It should also be noted that although the COD level exceeded the limit level of the EM&A programme, it is still well within the

	WPCO effluent discharge limit of COD (80 mg/L) and the standard for effluents discharged into the inshore waters of the Junk Bay Water Control Zone as stipulated under Technical Memorandum Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters (80 mg/L). The slight exceedance of COD at MWX-7 on 22 September 2023 will not cause adverse water quality impact to the Junk Bay Water Control Zone.
Action Taken / Action to be Taken	Examination of environmental performance of the Project will be continued during the weekly inspections. The Contractor is reminded to implement relevant and appropriate mitigation measures according to the updated EM&A Manual to avoid any exceedance of the Action and Limit Levels. ET will continue to closely monitor the groundwater quality monitoring results and collect additional data for investigation and further review, if necessary.
Remarks	-

Prepared by: Abbey Lau
Designation: Environmental Team
Date: 7 November 2023

Investigation Report of Environmental Quality Limit Exceedance

Project	South East New Territories (SENT) Landfill Extension
Date	Pump Station No. 1X: 9 – 17 October 2023 Pump Station No. 2X: 11 October 2023 – 23 November 2023 Pump Station No. 3X: 9 October 2023 – 24 November 2023 Pump Station No. 4X: 9 October 2023 – 14 November 2023
Monitoring Location	Pump Station No. 1X (Cell 1X), Pump Station No. 2X (Cell 2X), Pump Station No. 3X (Cell 3X) and Pump Station No. 4X (Cell 4X)
Parameter	Leachate level
Limit Levels	Pump Station No. 1X: > 178 cm Pump Station No. 2X: > 180 cm Pump Station No. 3X: > 175 cm Pump Station No. 4X: > 186 cm
Measured Level	<u>Pump Station No. 1X (Meter No. X-1*)</u> 9 October 2023: 231 cm 10 October 2023: 233 cm 11 October 2023: 224 cm 12 October 2023: 244 cm 13 October 2023: 251 cm 14 October 2023: 240 cm 15 October 2023: 224 cm 16 October 2023: 208 cm 17 October 2023: 188 cm <u>Pump Station No. 2X (Average of Meter No. X-3 and No. X-4)</u> 11 October 2023: 284 cm 12 October 2023: 336 cm 13 October 2023: 332 cm 14 October 2023: 323 cm 15 October 2023: 314 cm 16 October 2023: 303 cm 17 October 2023: 298 cm 18 October 2023: 290 cm 19 October 2023: 278 cm 20 October 2023: 288 cm 21 October 2023: 289 cm 22 October 2023: 279 cm 23 October 2023: 278 cm 24 October 2023: 282 cm 25 October 2023: 297 cm 26 October 2023: 316 cm

	27 October 2023: 320 cm 28 October 2023: 316 cm 29 October 2023: 316 cm 30 October 2023: 319 cm 31 October 2023: 319 cm 1 November 2023: 320 cm 2 November 2023: 320 cm 3 November 2023: 319 cm 4 November 2023: 317 cm 5 November 2023: 316 cm 6 November 2023: 311 cm 7 November 2023: 315 cm 8 November 2023: 315 cm 9 November 2023: 315 cm 10 November 2023: 315 cm 11 November 2023: 315 cm 12 November 2023: 315 cm 13 November 2023: 315 cm 14 November 2023: 315 cm 15 November 2023: 315 cm 16 November 2023: 303 cm 17 November 2023: 289 cm 18 November 2023: 276 cm 19 November 2023: 263 cm 20 November 2023: 248 cm 21 November 2023: 253 cm 22 November 2023: 194 cm 23 November 2023: 154 cm (Please note that the leachate level recorded at Meter No. X-3 for Pump Station No. 2X on 23 November 2023 was 209 cm, which exceeded the Limit Level.) <u>Pump Station No. 3X (Average of Meter No. X-5 and No. X-6*)</u> 9 October 2023: 211 cm 10 October 2023: 358 cm 11 October 2023: 366 cm 12 October 2023: 364 cm 13 October 2023: 358 cm 14 October 2023: 353 cm 15 October 2023: 346 cm 16 October 2023: 338 cm 17 October 2023: 331 cm

	18 October 2023: 324 cm 19 October 2023: 324 cm 20 October 2023: 335 cm 21 October 2023: 335 cm 22 October 2023: 338 cm 23 October 2023: 342 cm 24 October 2023: 344 cm 25 October 2023: 344 cm 26 October 2023: 346 cm 27 October 2023: 349 cm 28 October 2023: 346 cm 29 October 2023: 345 cm 30 October 2023: 349 cm 31 October 2023: 349 cm 1 November 2023: 349 cm 2 November 2023: 351 cm 3 November 2023: 346 cm 4 November 2023: 340 cm 5 November 2023: 340 cm 6 November 2023: 338 cm 7 November 2023: 338 cm 8 November 2023: 338 cm 9 November 2023: 338 cm 10 November 2023: 338 cm 11 November 2023: 338 cm 12 November 2023: 340 cm 13 November 2023: 340 cm 14 November 2023: 340 cm 15 November 2023: 336 cm 16 November 2023: 307 cm 17 November 2023: 297 cm 18 November 2023: 283 cm 19 November 2023: 268 cm 20 November 2023: 254 cm 21 November 2023: 239 cm 22 November 2023: 223 cm 23 November 2023: 207 cm 24 November 2023: 189 cm <u>Pump Station No. 4X (Average of Meter No. X-7 and No. X-8)</u> 9 October 2023: 312 cm

	10 October 2023: 411 cm 11 October 2023: 384 cm 12 October 2023: 369 cm 13 October 2023: 358 cm 14 October 2023: 353 cm 15 October 2023: 346 cm 16 October 2023: 338 cm 17 October 2023: 327 cm 18 October 2023: 355 cm 19 October 2023: 358 cm 20 October 2023: 359 cm 21 October 2023: 360 cm 22 October 2023: 361 cm 23 October 2023: 362 cm 24 October 2023: 365 cm 25 October 2023: 364 cm 26 October 2023: 366 cm 27 October 2023: 368 cm 28 October 2023: 365 cm 29 October 2023: 365 cm 30 October 2023: 367 cm 31 October 2023: 367 cm 1 November 2023: 375 cm 2 November 2023: 375 cm 3 November 2023: 364 cm 4 November 2023: 358 cm 5 November 2023: 349 cm 6 November 2023: 338 cm 7 November 2023: 340 cm 8 November 2023: 325 cm 9 November 2023: 311 cm 10 November 2023: 296 cm 11 November 2023: 281 cm 12 November 2023: 259 cm 13 November 2023: 234 cm 14 November 2023: 199 cm (*Meter No. X-2 for Pump Station No. 1X and Meter No. X-5 for Pump Station No. 3X are on standby from 9 October 2023 to 14 November 2023.)

Possible reason	From the on-site rainfall record of October and November 2023, heavy rainfall events (up to 210 mm per day) were recorded from 9 October to 24 November 2023. Amber, red and black rainstorm warning signals were also issued by the Hong Kong Observatory on 8 and 9 October 2023. As confirmed by the Contractor, the leachate collection system and leachate treatment plant were under normal operating conditions and routine maintenance during the reporting period. Accumulation of surface water at Cell 1X, 2X, 3X and 4X was observed during the reporting period, which could contribute to the leachate level exceedances. Based on this observation, the leachate level exceedances at Pump Station No. 1X, 2X, 3X and 4X were deemed to Project-related activities. It is understood that the large volume of leachate (contaminated surface runoff) accumulated at Cell 1X, 2X, 3X and 4X has exceeded the leachate treatment capacity (daily maximum effluent discharge volume of 1,776 m^3 recorded from 9 October to 24 November 2023, with daily effluent discharge limit of 2,000 m^3 as stipulated in the WPCO license).
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 closely monitor the operating conditions of the leachate collection system (e.g. set alarm when the leachate level reach about 80% of the Limit Level) and pump out the leachate for treatment to avoid any exceedance of the Limit Level.
Remarks	-

Prepared by: Abbey Lau
Designation: Environmental Team
Date: 12 December 2023

Investigation Report of Environmental Quality Limit Exceedance

Project	South East New Territories (SENT) Landfill Extension
Date	7 November 2023
Time	14:40
Monitoring Location	MWX-7
Parameter	Chemical Oxygen Demand (COD)
Limit Level	>36 mg /L
Measured Level	38 mg /L
Possible reason	Groundwater contaminated with leachate is commonly characterized by high COD and ammoniacal-nitrogen levels as a result of degradation of organic matters in the waste. The ammoniacal-nitrogen monitoring result at groundwater monitoring wells MWX-7 (6.53 mg/L) and the COD monitoring results of the groundwater monitoring wells adjacent to MWX-7 (MWX-6: 35 mg/L and MWX-8: 24 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 exceedance was due to leachate contamination. In accordance with Table 4.5b of the updated EM&A Manual, repeat measurement was conducted on 14 December 2023 to confirm findings. COD concentration of 18 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 location. 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 7 November 2023 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 and the subsequent month monitoring results at MWX-7 did not show any exceedance, there is no adequate evidence showing that the COD level exceedance measured at MWX-7 on 7 November 2023 was deemed to Project-related activities. It should also be noted that although the COD level exceeded the limit level of the EM&A programme, it is still well within the

	WPCO effluent discharge limit of COD (80 mg/L) and the standard for effluents discharged into the inshore waters of the Junk Bay Water Control Zone as stipulated under Technical Memorandum Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters (80 mg/L). The slight exceedance of COD at MWX-7 on 7 November 2023 will not cause adverse water quality impact to the Junk Bay Water Control Zone.
Action Taken / Action to be Taken	Examination of environmental performance of the Project will be continued during the weekly inspections. The Contractor is reminded to implement relevant and appropriate mitigation measures according to the updated EM&A Manual to avoid any exceedance of the Action and Limit Levels. ET will continue to closely monitor the groundwater quality monitoring results and collect additional data for investigation and further review, if necessary.
Remarks	-

Prepared by: Abbey Lau
Designation: Environmental Team
Date: 4 January 2024

Investigation Report of Environmental Quality Limit Exceedance

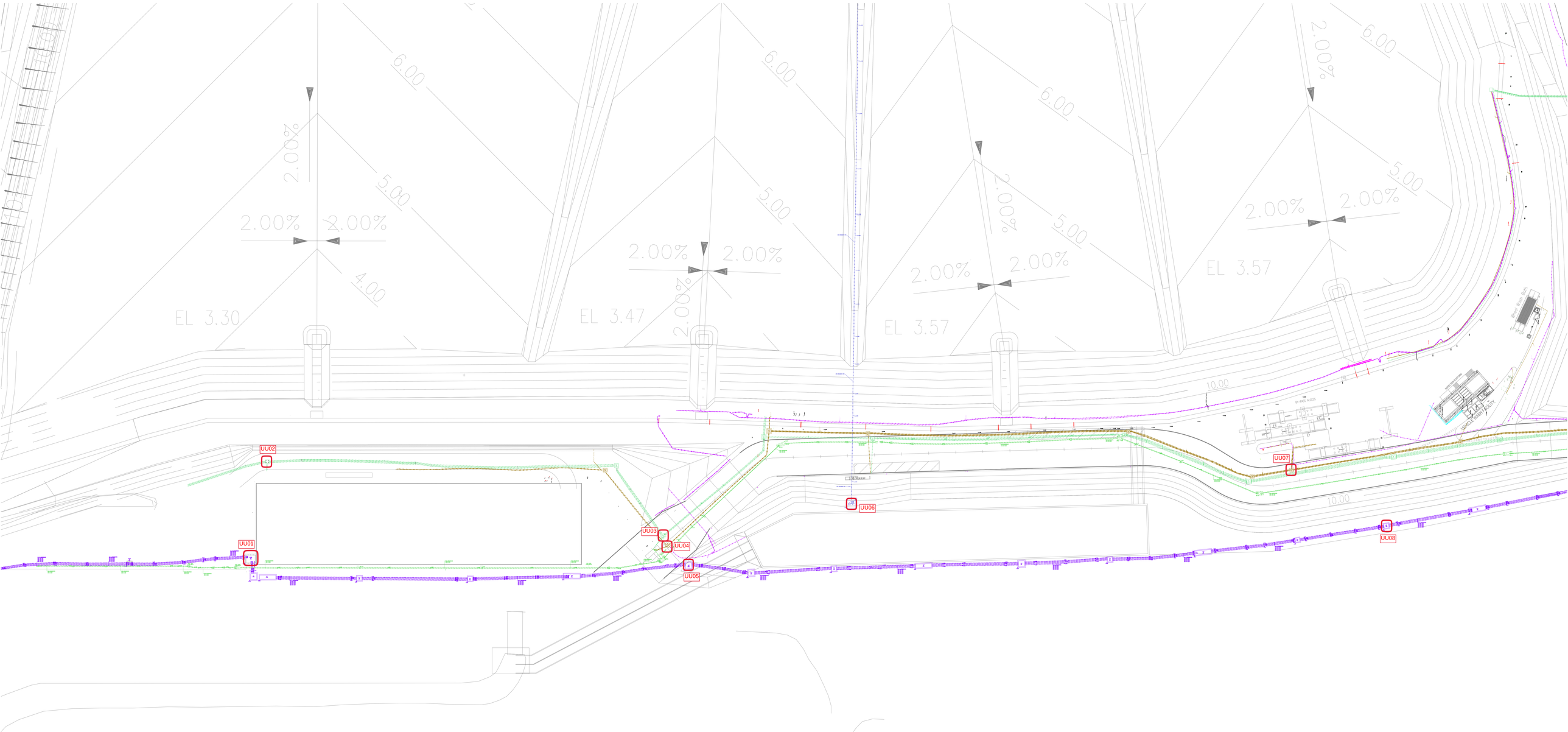
Project	South East New Territories (SENT) Landfill Extension
Date	14 December 2023
Time	11:21
Monitoring Location	MWX-6
Parameter	Chemical Oxygen Demand (COD)
Limit Level	>46 mg /L
Measured Level	54 mg /L
Possible reason	Groundwater contaminated with leachate is commonly characterized by high COD and ammoniacal-nitrogen levels as a result of degradation of organic matters in the waste. The ammoniacal-nitrogen monitoring result at groundwater monitoring wells MWX-6 (4.36 mg/L) and the COD monitoring results of the groundwater monitoring wells adjacent to MWX-6 (MWX-5: 28 mg/L and MWX-7: 18 mg/L) are well within the respective limit levels. Hence, there is a low possibility of the elevation of COD level at MWX-6 is due to leachate contamination from SENTX operation or at least it is not conclusive to base on these results to demonstrate exceedance was due to leachate contamination. In accordance with Table 4.5b of the updated EM&A Manual, repeat measurement was conducted on 8 January 2024 to confirm findings. COD concentration of 49 mg/L was measured at MWX-6 during the sampling event. MWX-6 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-6 on 14 December 2023 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 exceedance measured at MWX-6 on 14 December 2023 was deemed to Project-related activities. It should also be noted that although the COD level exceeded the limit level of the EM&A programme, it is still well within the WPCO effluent discharge limit of COD (80 mg/L) and the standard for effluents discharged into the inshore waters of the Junk Bay

	Water Control Zone as stipulated under Technical Memorandum Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters (80 mg/L). The slight exceedance of COD at MWX-6 on 14 December 2023 will not cause adverse water quality impact to the Junk Bay Water Control Zone.
Action Taken / Action to be Taken	Examination of environmental performance of the Project will be continued during the weekly inspections. The Contractor is reminded to implement relevant and appropriate mitigation measures according to the updated EM&A Manual to avoid any exceedance of the Action and Limit Levels. ET will continue to closely monitor the groundwater quality monitoring results and collect additional data for investigation and further review, if necessary.
Remarks	-

Prepared by: Abbey Lau
Designation: Environmental Team
Date: 29 January 2024

ANNEX G LANDFILL GAS

ANNEX G1 LANDFILL GAS MONITORING LOCATIONS FOR SERVICE VOIDS, UTILITIES AND MANHOLES ALONG THE SITE BOUNDARY AND WITHIN THE SENTX SITE


6.00
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EL 3.47
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UU23
HARD STANDING
EPD BUILDING
CIVIL BUILDING
CAR PARK
LABORATORY BUILDING
MAINTENANCE BUILDING
EQUIPMENT STORAGE AREA (SOFT STANDING)
VEHICLE WASH FACILITY
INSPECTION PLATFORM
Wheel Wash Bath
LANDFILL GAS CONTROL ROOM & SWITCHROOM
DIESEL FUEL TANKS
PETROLEUM STORE
BIOPLANT BUILDING
EPD CONFERENCE ROOM
CAR PARK SHELTER
WATER TANK

ANNEX G2 LANDFILL GAS MONITORING RESULTS

TABLE G2.1 LANDFILL GAS MONITORING RESULTS AT PERIMETER LFG MONITORING WELLS

January 2023				
Location	**Water Level (mPD)**	**Methane (% (v/v))**	**Carbon Dioxide (% (v/v))**	**Oxygen (% (v/v))**
LFG1	2.50	0.0	0.3	18.1
LFG2	2.25	0.0	0.3	19.9
LFG3	2.44	0.0	0.9	19.4
LFG4	2.50	0.0	0.1	20.5
LFG5	2.48	0.0	0.0	20.7
LFG6	2.32	0.0	0.1	20.6
LFG7	2.31	0.0	0.0	18.9
LFG8	2.40	0.0	0.0	21.0
LFG9	2.29	0.0	0.1	12.8
LFG10	2.21	0.0	0.1	15.9
LFG11	2.14	0.0	0.2	13.9
LFG12	2.16	0.0	0.0	20.9
LFG13	2.05	16.5	0.0	6.6
LFG14	1.94	0.0	0.0	17.8
LFG15	2.14	0.0	0.0	20.9
LFG16	2.20	0.0	0.1	20.9
LFG17	2.36	0.0	0.6	15.5
LFG18	2.03	0.0	0.2	20.4
LFG19	2.33	0.0	0.1	8.8
LFG20	2.16	0.0	0.2	20.6
LFG21	2.33	0.1	2.6	11.0
LFG22	2.28	0.1	0.6	18.6
LFG23	12.23	0.1	1.8	17.1
LFG24	5.99	0.1	0.5	20.4
GP1	Probe bent	0.3	5.6	13.5
GP2 (shallow)	Probe bent	0.2	1.7	16.6
GP2 (deep)	Probe bent	0.2	6.3	13.9
GP3 (shallow)	Probe bent	0.2	0.1	21.0
GP3 (deep)	Probe bent	0.2	0.2	20.8
GP4 (shallow)	Probe bent	0.1	0.1	20.9
GP4 (deep)	Probe bent	0.1	0.1	20.9
GP5 (shallow)	Probe bent	0.1	4.5	8.5
GP5 (deep)	38.47	0.1	0.1	21.0
GP6	36.90	0.1	5.2	15.3
GP7	36.19	0.1	0.1	21.0

GP12	1.23	0.0	0.0	21.0
GP15	2.69	0.0	0.1	20.9
P7	2.54	0.0	0.0	21.0
P8	2.57	0.0	0.0	21.0
P9	2.42	0.0	0.1	20.9
February 2023				
Location	**Water Level (mPD)**	**Methane (% (v/v))**	**Carbon Dioxide (% (v/v))**	**Oxygen (% (v/v))**
LFG1	2.45	0.1	0.3	17.9
LFG2	2.31	0.1	0.4	18.6
LFG3	2.48	0.2	0.1	20.2
LFG4	2.37	0.2	0.1	19.2
LFG5	2.63	0.2	0.2	10.2
LFG6	2.31	0.3	0.1	19.6
LFG7	2.56	0.0	0.0	20.3
LFG8	2.42	0.0	0.1	20.2
LFG9	2.30	0.0	0.9	6.0
LFG10	1.90	0.0	0.1	20.4
LFG11	1.45	0.0	0.2	8.7
LFG12	2.05	0.0	0.0	20.3
LFG13	2.01	18.5	0.4	1.4
LFG14	1.71	0.0	0.1	20.6
LFG15	2.01	0.0	0.1	20.2
LFG16	2.09	0.0	0.1	17.6
LFG17	2.28	0.0	0.3	20.2
LFG18	2.30	0.0	0.7	18.7
LFG19	2.32	0.0	0.1	20.9
LFG20	2.28	0.0	0.3	20.2
LFG21	2.34	0.0	0.1	20.6
LFG22	2.38	0.0	0.2	20.1
LFG23	12.51	0.0	2.6	16.9
LFG24	5.97	0.0	0.3	20.2
GP1	Probe bent	0.0	5.2	14.3
GP2 (shallow)	Probe bent	0.0	3.0	12.5
GP2 (deep)	Probe bent	0.0	7.0	11.7
GP3 (shallow)	Probe bent	0.0	0.0	20.7
GP3 (deep)	Probe bent	0.0	0.0	20.8
GP4 (shallow)	Probe bent	0.0	0.1	20.6
GP4 (deep)	Probe bent	0.0	0.3	20.0

GP5 (shallow)	Probe bent	0.0	4.2	6.7
GP5 (deep)	38.33	0.0	0.1	20.6
GP6	36.39	0.0	5.5	14.6
GP7	35.91	0.0	0.0	20.9
GP12	1.91	0.1	0.0	20.2
GP15	2.41	0.0	0.0	20.3
P7	2.30	0.0	0.1	20.2
P8	2.50	0.0	0.2	20.0
P9	2.18	0.0	0.1	20.3
March 2023				
Location	**Water Level (mPD)**	**Methane (% (v/v))**	**Carbon Dioxide (% (v/v))**	**Oxygen (% (v/v))**
LFG1	3.88	0.1	0.2	18.1
LFG2	4.13	0.1	0.1	18.8
LFG3	3.76	0.1	0.1	20.2
LFG4	4.01	0.1	0.1	20.0
LFG5	3.63	0.1	0.3	8.0
LFG6	4.11	0.2	0.2	19.4
LFG7	3.83	0.0	0.0	19.8
LFG8	3.85	0.0	0.0	19.9
LFG9	3.82	0.0	0.0	20.0
LFG10	3.97	0.0	0.0	19.8
LFG11	3.98	0.0	0.0	5.2
LFG12	3.88	0.0	0.0	19.7
LFG13	3.97	21.4	0.0	1.0
LFG14	5.24	0.0	0.0	19.9
LFG15	5.40	0.0	0.6	12.6
LFG16	5.08	0.0	0.1	19.5
LFG17	4.95	0.0	0.0	20.2
LFG18	5.36	0.0	0.1	19.5
LFG19	5.26	0.0	0.0	20.2
LFG20	5.54	0.0	0.8	18.3
LFG21	7.13	0.0	1.8	14.2
LFG22	7.84	0.0	0.0	20.2
LFG23	14.65	0.0	1.0	18.5
LFG24	26.35	0.0	0.3	19.8
GP1	Probe bent	0.0	5.5	14.6
GP2 (shallow)	Probe bent	0.0	1.4	16.4
GP2 (shallow)	Probe bent	0.0	6.3	16.3

GP2 (deep)	Probe bent	0.0	0.0	20.1
GP3 (shallow)	Probe bent	0.0	0.5	19.2
GP3 (deep)	Probe bent	0.0	0.1	20.1
GP4 (shallow)	Probe bent	0.0	0.3	19.7
GP4 (deep)	Probe bent	0.0	3.2	9.9
GP5 (shallow)	14.14	0.0	0.1	20.0
GP5 (deep)	11.69	0.0	4.6	15.4
GP6	3.02	0.0	0.0	20.3
GP7	2.64	0.1	0.0	20.1
GP12	3.94	0.1	0.0	19.8
GP15	3.60	0.1	0.0	19.9
P7	3.11	0.1	0.0	19.9
P8	2.23	0.0	0.0	19.9
P9	3.88	0.1	0.2	18.1
April 2023				
Location	**Water Level (mPD)**	**Methane (% (v/v))**	**Carbon Dioxide (% (v/v))**	**Oxygen (% (v/v))**
LFG1	2.56	0.0	0.4	16.8
LFG2	2.69	0.0	0.6	17.2
LFG3	2.61	0.0	2.8	15.4
LFG4	2.45	0.0	0.1	19.5
LFG5	3.07	0.0	0.3	8.4
LFG6	2.73	0.0	0.1	19.5
LFG7	2.64	0.0	0.0	19.2
LFG8	2.27	0.0	0.0	19.8
LFG9	2.30	0.0	0.0	9.8
LFG10	1.98	0.0	0.2	10.3
LFG11	2.22	0.0	0.2	5.0
LFG12	1.97	0.0	0.0	19.4
LFG13	2.17	25.8	0.0	2.1
LFG14	2.53	0.0	0.1	9.0
LFG15	1.93	0.1	0.9	11.9
LFG16	2.51	0.0	0.1	20.1
LFG17	2.54	1.3	1.5	2.5
LFG18	2.47	0.0	0.2	19.3
LFG19	2.17	0.0	0.2	5.8
LFG20	3.03	0.0	0.7	17.3
LFG21	2.26	0.0	1.3	15.2
LFG22	2.77	0.0	1.3	10.4

LFG23	12.53	0.0	0.4	19.5
LFG24	5.81	0.0	0.0	20.3
GP1	Probe bent	0.0	4.3	15.2
GP2 (shallow)	Probe bent	0.0	1.3	10.4
GP2 (deep)	Probe bent	0.0	4.9	19.5
GP3 (shallow)	Probe bent	0.0	0.0	20.4
GP3 (deep)	Probe bent	0.0	0.0	20.4
GP4 (shallow)	Probe bent	0.0	0.0	20.3
GP4 (deep)	Probe bent	0.0	0.1	20.2
GP5 (shallow)	Probe bent	0.0	0.8	18.8
GP5 (deep)	37.99	0.0	0.1	20.2
GP6	36.07	0.0	5.6	13.6
GP7	35.84	0.0	0.2	19.8
GP12	2.25	0.0	0.2	19.7
GP15	2.59	0.0	0.0	20.2
P7	2.47	0.0	0.1	20.1
P8	2.45	0.0	0.0	20.2
P9	2.64	0.0	0.3	19.6
May 2023				
Location	**Water Level (mPD)**	**Methane (% (v/v))**	**Carbon Dioxide (% (v/v))**	**Oxygen (% (v/v))**
LFG1	2.51	0.0	0.7	15.6
LFG2	2.80	0.0	0.8	18.0
LFG3	2.61	0.0	3.2	15.1
LFG4	2.50	0.0	0.0	16.9
LFG5	2.66	0.0	0.9	15.3
LFG6	2.25	0.0	0.1	20.1
LFG7	2.98	0.0	0.0	18.0
LFG8	2.71	0.0	0.1	20.4
LFG9	4.20	0.0	0.3	10.2
LFG10	2.12	0.0	0.2	7.6
LFG11	3.00	0.0	0.2	4.6
LFG12	2.36	0.0	0.0	20.3
LFG13	2.28	0.4	0.0	19.7
LFG14	4.18	0.0	0.1	17.4
LFG15	2.38	0.0	0.6	15.6
LFG16	2.94	0.0	0.2	20.3
LFG17	4.45	0.0	0.1	19.7
LFG18	2.28	0.0	0.1	20.4

LFG19	3.00	0.0	0.0	6.9
LFG20	3.40	0.0	0.0	18.1
LFG21	5.38	0.0	0.9	11.7
LFG22	4.53	0.0	1.2	11.5
LFG23	12.49	0.0	0.1	20.0
LFG24	5.76	0.0	0.0	20.0
GP1	Probe bent	0.0	7.5	0.6
GP2 (shallow)	Probe bent	0.0	1.2	16.9
GP2 (deep)	Probe bent	0.0	0.4	19.1
GP3 (shallow)	Probe bent	0.0	0.1	19.7
GP3 (deep)	Probe bent	0.0	0.0	19.7
GP4 (shallow)	Probe bent	0.0	0.5	19.5
GP4 (deep)	Probe bent	0.0	0.2	19.4
GP5 (shallow)	Probe bent	0.0	0.2	19.3
GP5 (deep)	37.55	0.0	0.2	19.5
GP7	31.15	0.0	4.8	14.5
GP12	36.06	0.0	0.2	19.5
GP15	2.15	0.0	0.1	20.8
P7	1.81	0.0	0.1	20.9
P8	2.34	0.0	0.1	20.1
P9	2.76	0.0	0.1	20.3
June 2023				
Location	**Water Level (mPD)**	**Methane (% (v/v))**	**Carbon Dioxide (% (v/v))**	**Oxygen (% (v/v))**
LFG1	2.83	0.0	1.2	16.8
LFG2	2.56	0.0	1.5	18.9
LFG3	3.70	0.0	3.8	13.7
LFG4	2.46	0.0	0.0	19.7
LFG5	2.55	0.0	0.3	7.9
LFG6	2.50	0.0	0.0	20.0
LFG7	2.42	0.0	0.0	17.7
LFG8	2.54	0.0	0.0	20.0
LFG9	2.15	0.0	0.3	8.8
LFG10	2.44	0.0	0.1	13.3
LFG11	2.31	0.0	0.3	3.7
LFG12	2.43	0.0	0.0	20.1
LFG13	2.25	0.5	0.1	6.4
LFG14	1.97	0.0	0.3	8.4
LFG15	2.41	0.6	0.5	13.8

LFG16	3.90	0.0	0.0	20.3
LFG17	2.41	2.6	1.1	0.2
LFG18	3.66	0.0	0.0	20.3
LFG19	2.41	0.0	0.1	19.8
LFG20	2.64	0.0	4.5	5.8
LFG21	2.41	0.0	2.2	9.8
LFG22	3.40	0.0	0.0	20.2
LFG23	12.93	0.0	0.0	20.1
LFG24	7.54	0.0	8.4	19.0
GP1	Probe bent	0.0	0.1	20.3
GP2 (shallow)	Probe bent	0.0	0.2	19.7
GP2 (deep)	Probe bent	0.0	0.3	19.9
GP3 (shallow)	Probe bent	0.0	1.0	18.9
GP3 (deep)	Probe bent	0.0	0.0	20.2
GP4 (shallow)	Probe bent	0.0	0.1	20.1
GP4 (deep)	Probe bent	0.0	0.1	20.0
GP5 (shallow)	Probe bent	0.0	0.4	19.3
GP5 (deep)	38.00	0.0	0.0	20.0
GP6	36.00	0.0	4.3	14.8
GP7	34.95	0.0	0.1	19.7
GP12	1.91	0.0	0.1	19.9
GP15	2.65	0.0	0.0	20.1
P7	3.16	0.0	0.1	20.1
P8	2.50	0.0	0.4	19.6
P9	2.18	0.0	0.1	20.0
July 2023				
Location	**Water Level (mPD)**	**Methane (% (v/v))**	**Carbon Dioxide (% (v/v))**	**Oxygen (% (v/v))**
LFG1	2.8	0.2	1.8	16.8
LFG2	2.86	0.2	1.7	17.4
LFG3	3.22	0.1	0.0	19.2
LFG4	3.12	0.1	0.0	18.9
LFG5	4.23	0.1	0.2	7.5
LFG6	3.02	0.1	0.1	19.2
LFG7	3.7	0.1	0.0	14.5
LFG8	3.41	0.0	0.0	19.1
LFG9	3.35	0.0	0.1	16.5
LFG10	3.08	0.0	0.0	19.2
LFG11	3.2	0.0	0.3	8.3

LFG12	3.42	0.0	0.0	19.3
LFG13	3.14	0.5	0.0	18.8
LFG14	3.58	0.0	0.0	19.6
LFG15	2.48	0.0	0.0	19.5
LFG16	3.73	0.0	0.0	19.3
LFG17	3.22	0.0	0.0	19.4
LFG18	4.15	0.0	0.0	19.4
LFG19	5.02	0.0	0.1	19.1
LFG20	4.59	0.0	0.1	19.2
LFG21	4.25	0.0	0.7	18.2
LFG22	0.31	0.0	0.0	19.0
LFG23	13.8	0.0	0.0	19.2
LFG24	7.02	0.0	0.1	19.2
GP1	Probe Bent	0.1	8.0	4.9
GP2 (shallow)	Probe Bent	0.1	0.2	19.8
GP2 (deep)	Probe Bent	0.1	8.2	8.4
GP3 (shallow)	Probe Bent	0.1	1.6	17.6
GP3 (deep)	Probe Bent	0.1	0.6	19.1
GP4 (shallow)	Probe Bent	0.1	0.4	19.3
GP4 (deep)	Probe Bent	0.1	0.2	19.3
GP5 (shallow)	Probe Bent	0.1	0.9	19.2
GP5 (deep)	39.77	0.1	0.1	19.3
GP6	38.83	0.0	1.7	19.0
GP7	37.55	0.0	0.0	19.3
GP12	1.22	0.2	0.1	19.2
GP15	3.12	0.2	0.1	19.2
P7	2.81	0.2	0.0	20.0
P8	2.90	0.2	0.1	20.2
P9	2.61	0.2	0.1	20.4
August 2023				
Location	**Water Level (mPD)**	**Methane (% (v/v))**	**Carbon Dioxide (% (v/v))**	**Oxygen (% (v/v))**
LFG1	3.29	0.0	1.5	16.8
LFG2	1.93	0.0	2.2	16.3
LFG3	3.03	0.0	0.0	18.9
LFG4	2.65	0.0	0.0	18.8
LFG5	3.08	0.0	0.0	18.5
LFG6	3.12	0.0	0.1	18.2
LFG7	4.56	0.0	0.0	18.7

LFG8	2.85	0.0	0.0	20.1
LFG9	3.14	0.0	0.0	19.1
LFG10	3.72	0.0	0.0	15.6
LFG11	3.1	0.0	0.2	6.5
LFG12	2.78	0.0	0.0	20.0
LFG13	2.63	16.0	0.1	5.0
LFG14	3.11	0.0	0.0	18.0
LFG15	2.66	0.0	0.2	16.6
LFG16	4.16	0.0	0.0	19.9
LFG17	2.92	0.0	0.4	4.5
LFG18	4.23	0.0	0.0	19.8
LFG19	3.48	0.0	0.1	19.4
LFG20	3.16	0.0	3.2	13.0
LFG21	3.26	0.0	0.5	18.2
LFG22	2.86	0.0	0.1	18.8
LFG23	12.9	0.0	0.0	19.4
LFG24	6.35	0.0	0.0	19.4
GP1	Probe Bent	0.3	10.6	6.3
GP2 (shallow)	Probe Bent	0.2	0.8	18.8
GP2 (deep)	Probe Bent	0.2	0.3	18.8
GP3 (shallow)	Probe Bent	0.1	3.5	14.5
GP3 (deep)	Probe Bent	0.1	0.0	19.1
GP4 (shallow)	Probe Bent	0.1	0.4	18.1
GP4 (deep)	Probe Bent	0.1	0.2	18.9
GP5 (shallow)	Probe Bent	0.0	6.3	11.2
GP5 (deep)	39.33	0.0	0.6	18.6
GP6	38.56	0.0	2.7	16.0
GP7	36.86	0.0	0.0	19.1
GP12	2.45	0.0	0.0	18.1
GP15	3.08	0.0	0.1	19.7
P7	3.22	0.0	0.1	19.3
P8	2.81	0.0	0.1	19.5
P9	2.74	0.0	0.1	20.0
September 2023				
Location	**Water Level (mPD)**	**Methane (% (v/v))**	**Carbon Dioxide (% (v/v))**	**Oxygen (% (v/v))**
LFG1	2.89	0.1	1.1	14.9
LFG2	3.85	0.1	1.5	16.4
LFG3	3.35	0.0	0.0	19.6

LFG4	3.31	0.0	0.0	19.3
LFG5	2.79	0.0	0.0	19.4
LFG6	3.08	0.0	0.3	17.9
LFG7	3.68	0.0	0.0	19.1
LFG8	3.46	0.0	0.0	18.1
LFG9	2.94	0.0	0.0	18.2
LFG10	2.99	0.0	0.0	18.9
LFG11	2.91	0.0	0.0	18.8
LFG12	3.07	0.1	0.0	18.9
LFG13	2.63	1.0	0.0	18.1
LFG14	3.16	0.1	0.0	18.1
LFG15	2.49	0.0	0.0	18.2
LFG16	3.52	0.1	0.0	19.8
LFG17	2.92	0.1	0.0	19.8
LFG18	4.14	0.1	0.0	19.9
LFG19	4.21	0.1	0.0	19.5
LFG20	5.12	0.2	0.1	19.2
LFG21	4.26	0.2	0.2	18.7
LFG22	4.16	0.2	0.2	18.3
LFG23	12.91	0.1	0.0	20.1
LFG24	6.75	0.1	0.0	20.2
GP1	No safe access due to tree falling blocked the road access			
GP2 (shallow)	No safe access due to tree falling blocked the road access			
GP2 (deep)	No safe access due to tree falling blocked the road access			
GP3 (shallow)	No safe access due to tree falling blocked the road access			
GP3 (deep)	No safe access due to tree falling blocked the road access			
GP4 (shallow)	No safe access due to tree falling blocked the road access			
GP4 (deep)	No safe access due to tree falling blocked the road access			
GP5 (shallow)	No safe access due to tree falling blocked the road access			
GP5 (deep)	No safe access due to tree falling blocked the road access			
GP6	No safe access due to tree falling blocked the road access			
GP7	No safe access due to tree falling blocked the road access			
GP12	2.45	0.1	0.3	18.1
GP15	No safe access due to tree falling blocked the road access			
P7	2.98	0.0	0.1	19.9
P8	No safe access due to tree falling blocked the road access			
P9	No safe access due to tree falling blocked the road access			

October 2023				
Location	**Water Level (mPD)**	**Methane (% (v/v))**	**Carbon Dioxide (% (v/v))**	**Oxygen (% (v/v))**
LFG1	3.4	0.1	1.6	16.1
LFG2	3.35	0.1	2.2	16.3
LFG3	3.2	0.1	0.0	19.4
LFG4	3.04	0.0	0.1	18.6
LFG5	2.84	0.0	0.1	13.7
LFG6	3.48	0.0	0.0	19.5
LFG7	2.84	0.0	0.0	18.9
LFG8	3.11	0.0	0.0	18.6
LFG9	3.31	0.0	0.0	19.4
LFG10	2.97	0.0	0.0	19.4
LFG11	2.44	0.0	0.0	16.5
LFG12	2.94	0.0	0.0	19.5
LFG13	3.2	0.0	0.0	19.7
LFG14	4.74	0.0	0.0	16.9
LFG15	4.34	0.0	0.0	19.6
LFG16	3.59	0.0	0.0	19.7
LFG17	3.94	0.0	0.0	19.6
LFG18	3.42	0.0	0.0	18.7
LFG19	3.41	0.0	0.1	18.5
LFG20	2.46	0.0	0.1	18.4
LFG21	4.92	0.0	0.3	18.6
LFG22	6.05	0.0	0.0	19.7
LFG23	14.4	0.0	0.0	19.7
LFG24	25.5	0.0	0.0	19.7
GP1	Probe Bent	0.0	6.8	9.7
GP2 (shallow)	Probe Bent	0.0	0.9	18.9
GP2 (deep)	Probe Bent	0.0	0.0	20.0
GP3 (shallow)	Probe Bent	0.0	0.2	19.7
GP3 (deep)	Probe Bent	0.0	0.1	19.8
GP4 (shallow)	Probe Bent	0.0	1.3	18.0
GP4 (deep)	Probe Bent	0.0	0.4	19.4
GP5 (shallow)	Probe Bent	0.0	1.7	10.7
GP5 (deep)	10.03	0.0	0.1	19.7
GP6	8.33	0.0	4.4	14.8
GP7	2.06	0.0	0.1	19.6
GP12	2.06	0.1	0.0	19.6

GP15	3.3	0.1	0.0	20.3
P7	2.75	0.1	0.1	19.7
P8	2.68	0.1	0.0	20.7
P9	2.45	0.2	0.0	18.4
November 2023				
Location	**Water Level (mPD)**	**Methane (% (v/v))**	**Carbon Dioxide (% (v/v))**	**Oxygen (% (v/v))**
LFG1	2.88	0.2	0.8	18.5
LFG2	2.69	0.2	0.9	18.9
LFG3	3.71	0.1	1.4	17.9
LFG4	3.25	0.0	0.1	19.2
LFG5	3.93	0.0	0.1	15.0
LFG6	3.74	0.0	0.1	19.4
LFG7	3.1	0.0	0.0	19.9
LFG8	2.98	0.0	0.0	19.9
LFG9	3.16	0.0	0.0	19.9
LFG10	2.89	0.0	0.0	19.7
LFG11	3.16	0.0	0.0	11.4
LFG12	2.82	0.0	0.0	19.7
LFG13	2.58	0.0	0.0	19.7
LFG14	2.64	0.0	0.0	19.7
LFG15	2.59	0.0	0.0	19.5
LFG16	3.14	0.0	0.1	19.5
LFG17	3.27	0.0	0.1	19.5
LFG18	3.91	0.0	0.2	19.4
LFG19	4.05	0.0	0.1	19.4
LFG20	3.95	0.1	1.1	17.5
LFG21	3.87	0.1	0.1	19.8
LFG22	3.52	0.2	0.1	19.9
LFG23	12.95	0.0	0.0	20.2
LFG24	6.52	0.0	0.0	20.1
GP1	Probe Bent	0.0	7.2	8.3
GP2 (shallow)	Probe Bent	0.0	0.8	18.7
GP2 (deep)	Probe Bent	0.0	5.2	14.7
GP3 (shallow)	Probe Bent	0.0	0.9	19.2
GP3 (deep)	Probe Bent	0.0	0.1	20.1
GP4 (shallow)	Probe Bent	0.0	0.5	19.6
GP4 (deep)	Probe Bent	0.0	0.2	20.2
GP5 (shallow)	Probe Bent	0.0	9.9	12.4

GP5 (deep)	40.2	0.0	0.0	20.0
GP6	38.43	0.0	1.2	18.1
GP7	36.65	0.0	0.6	19.4
GP12	2.77	0.1	0.0	18.9
GP15	2.76	0.0	0.1	20.0
P7	2.81	0.1	0.0	14.9
P8	2.82	0.0	0.1	20.1
P9	2.98	0.1	0.0	20.0
December 2023				
Location	**Water Level (mPD)**	**Methane (% (v/v))**	**Carbon Dioxide (% (v/v))**	**Oxygen (% (v/v))**
LFG1	2.96	0.2	0.2	20.2
LFG2	2.51	0.2	0.5	20.2
LFG3	2.77	0.0	1.4	20.0
LFG4	2.81	0.0	0.0	19.4
LFG5	4.01	0.0	0.0	17.5
LFG6	3.4	0.0	0.1	19.1
LFG7	2.71	0.0	0.0	19.4
LFG8	2.64	0.0	0.1	19.5
LFG9	2.56	0.0	0.2	17.1
LFG10	2.57	0.0	0.0	16.8
LFG11	2.41	0.0	0.1	10.3
LFG12	2.48	0.0	0.0	20.1
LFG13	2.34	15.9	0.3	5.9
LFG14	2.01	0.0	0.0	19.8
LFG15	2.16	0.0	0.0	19.8
LFG16	2.91	0.0	0.0	19.9
LFG17	3.05	0.0	0.0	19.9
LFG18	3.69	0.0	1.1	17.3
LFG19	4.36	0.0	0.3	19.1
LFG20	3.64	0.0	0.0	19.9
LFG21	3.79	0.0	0.0	19.9
LFG22	3.64	0.0	0.0	19.9
LFG23	12.76	0.0	0.0	19.8
LFG24	6.54	0.0	0.0	19.8
GP1	Probe Bent	0.0	0.1	20.1
GP2 (shallow)	Probe Bent	0.0	0.8	18.8
GP2 (deep)	Probe Bent	0.0	0.1	20.1
GP3 (shallow)	Probe Bent	0.0	0.1	20.1

GP3 (deep)	Probe Bent	0.0	0.2	19.9
GP4 (shallow)	Probe Bent	0.0	0.5	19.6
GP4 (deep)	Probe Bent	0.0	0.2	19.8
GP5 (shallow)	Probe Bent	0.0	0.1	19.8
GP5 (deep)	39.15	0.0	0.1	19.8
GP6	37.67	0.0	0.1	19.7
GP7	36.70	0.0	0.1	19.7
GP12	2.43	0.2	0.0	20.7
GP15	3.53	0.1	0.0	20.1
P7	3.28	0.1	0.4	19.1
P8	2.97	0.1	0.0	20.3
P9	2.82	0.1	0.0	20.1

TABLE G2.2 LANDFILL GAS MONITORING RESULTS AT SERVICE VOIDS, UTILITIES PITS AND MANHOLES

January 2023			
Location	**Methane (% (v/v))**	**Carbon Dioxide (% (v/v))**	**Oxygen (% (v/v))**
UU01	0.00	0.0	20.8
UU02	0.00	0.1	20.7
UU03	0.00	0.0	20.7
UU04	0.00	0.0	20.7
UU05	0.00	0.0	20.6
UU06	0.00	0.0	20.6
UU07	0.00	0.1	20.6
UU08	0.00	0.0	20.5
UU09	0.00	0.1	20.3
UU10	0.00	0.0	20.1
UU11	0.00	0.1	19.8
UU12	Voided due to latest site programme and on-going operation work		
UU13	0.00	0.1	19.9
UU14	0.00	0.1	20.1
UU15	0.00	0.1	20.4
UU16	0.00	0.0	20.7
UU17	Voided due to latest site programme and on-going operation work		
UU18	0.00	0.1	20.5
UU19	0.00	0.1	20.6
UU20	0.00	0.0	20.7
UU21	0.00	0.0	20.7
UU22	0.00	0.0	20.6
UU23	0.00	0.0	20.6
UU24	0.00	0.0	20.6
UU25	0.00	0.0	20.6
UU26	0.00	0.0	20.6
UU27	0.00	0.1	19.4
UU28	0.00	0.1	19.6
February 2023			
Location	**Methane (% (v/v))**	**Carbon Dioxide (% (v/v))**	**Oxygen (% (v/v))**
UU01	0.0	0.1	20.3
UU02	0.0	0.1	20.3
UU03	0.0	0.1	20.3
UU04	0.0	0.1	20.3
UU05	0.0	0.1	20.4

UU06	0.0	0.1	20.4
UU07	0.0	0.1	20.5
UU08	0.0	0.0	20.3
UU09	0.0	0.1	20.4
UU10	0.0	0.1	20.4
UU11	0.0	0.1	20.4
UU12	Voided due to latest site programme and on-going operation work		
UU13	0.0	0.1	20.5
UU14	0.0	0.1	20.5
UU15	0.0	0.1	20.3
UU16	0.0	0.1	20.1
UU17	Voided due to latest site programme and on-going operation work		
UU18	0.0	0.1	20.2
UU19	0.0	0.1	20.4
UU20	0.0	0.1	20.1
UU21	0.0	0.1	20.1
UU22	0.0	0.1	20.2
UU23	0.0	0.1	20.2
UU24	0.0	0.1	20.3
UU25	0.0	0.1	20.3
UU26	0.0	0.0	20.4
UU27	0.0	0.1	20.4
UU28	0.0	0.1	20.5
March 2023			
Location	**Methane (% (v/v))**	**Carbon Dioxide (% (v/v))**	**Oxygen (% (v/v))**
UU01	0.1	0.1	20.3
UU02	0.1	0.0	20.5
UU03	0.0	0.0	20.0
UU04	0.0	0.0	20.1
UU05	0.0	0.0	20.2
UU06	0.0	0.0	20.3
UU07	0.0	0.0	20.0
UU08	0.0	0.0	20.3
UU09	0.0	0.0	20.1
UU10	0.0	0.0	20.1
UU11	0.0	0.0	20.2
UU12	Voided due to latest site programme and on-going operation work		
UU13	0.0	0.0	20.2

UU14	0.0	0.0	20.3
UU15	0.0	0.0	20.2
UU16	0.0	0.0	20.1
UU17	Voided due to latest site programme and on-going operation work		
UU18	0.0	0.0	20.1
UU19	0.0	0.0	20.1
UU20	0.0	0.0	20.0
UU21	0.0	0.0	20.0
UU22	0.0	0.0	20.0
UU23	0.0	0.0	20.0
UU24	0.0	0.0	19.9
UU25	0.0	0.1	20.0
UU26	0.0	0.0	20.3
UU27	0.0	0.0	20.3
UU28	0.0	0.0	20.4
April 2023			
Location	**Methane (% (v/v))**	**Carbon Dioxide (% (v/v))**	**Oxygen (% (v/v))**
UU01	0.0	0.0	19.7
UU02	0.0	0.0	19.7
UU03	0.0	0.0	19.8
UU04	0.0	0.0	19.9
UU05	0.0	0.0	19.6
UU06	0.0	0.0	19.6
UU07	0.0	0.0	19.9
UU08	0.0	0.0	19.6
UU09	0.0	0.0	19.6
UU10	0.0	0.0	19.6
UU11	0.0	0.0	19.6
UU12	Voided due to latest site programme and on-going operation work		
UU13	0.0	0.0	19.6
UU14	0.0	0.0	19.7
UU15	0.0	0.0	19.7
UU16	0.0	0.0	19.8
UU17	Voided due to latest site programme and on-going operation work		
UU18	0.0	0.0	19.7
UU19	0.0	0.0	20.0
UU20	0.0	0.0	19.8
UU21	0.0	0.0	19.8

UU22	0.0	0.0	19.9
UU23	0.0	0.0	19.8
UU24	0.0	0.0	19.9
UU25	0.0	0.0	20.0
UU26	0.0	0.0	20.0
UU27	0.0	0.0	19.6
UU28	0.0	0.0	19.7
May 2023			
Location	**Methane (% (v/v))**	**Carbon Dioxide (% (v/v))**	**Oxygen (% (v/v))**
UU01	0.0	0.0	20.0
UU02	0.0	0.0	20.0
UU03	0.0	0.0	20.1
UU04	0.0	0.0	20.1
UU05	0.0	0.0	20.0
UU06	0.0	0.0	20.0
UU07	0.0	0.0	20.1
UU08	0.0	0.0	20.0
UU09	0.1	0.1	20.0
UU10	0.1	0.1	20.1
UU11	0.1	0.1	20.2
UU12	Voided due to latest site programme and on-going operation work		
UU13	0.1	0.1	20.2
UU14	0.1	0.1	20.2
UU15	0.1	0.1	20.0
UU16	0.0	0.0	20.2
UU17	Voided due to latest site programme and on-going operation work		
UU18	0.0	0.1	20.1
UU19	0.0	0.0	20.1
UU20	0.0	0.0	20.1
UU21	0.0	0.0	20.1
UU22	0.0	0.0	20.1
UU23	0.0	0.0	20.1
UU24	0.0	0.0	20.1
UU25	0.0	0.0	20.1
UU26	0.0	0.0	20.1
UU27	0.0	0.0	20.1
UU28	0.0	0.0	20.0

June 2023			
Location	**Methane (% (v/v))**	**Carbon Dioxide (% (v/v))**	**Oxygen (% (v/v))**
UU01	0.0	0.0	20.0
UU02	0.0	0.0	20.9
UU03	0.0	0.0	20.1
UU04	0.0	0.0	20.1
UU05	0.0	0.0	20.1
UU06	0.0	0.0	20.0
UU07	0.0	0.0	20.0
UU08	0.0	0.0	20.1
UU09	0.0	0.0	20.1
UU10	0.0	0.0	19.6
UU11	0.0	0.0	20.3
UU12	Voided due to latest site programme and on-going operation work		
UU13	0.0	0.0	20.2
UU14	0.0	0.0	20.2
UU15	0.0	0.0	20.0
UU16	0.0	0.0	20.2
UU17	Voided due to latest site programme and on-going operation work		
UU18	0.0	0.0	20.0
UU19	0.0	0.0	20.1
UU20	0.0	0.0	20.2
UU21	0.0	0.0	20.1
UU22	0.0	0.0	20.1
UU23	0.0	0.0	20.1
UU24	0.0	0.0	20.1
UU25	0.0	0.0	20.1
UU26	0.0	0.0	20.1
UU27	0.0	0.0	20.2
UU28	0.0	0.0	20.2
July 2023			
Location	**Methane (% (v/v))**	**Carbon Dioxide (% (v/v))**	**Oxygen (% (v/v))**
UU01	0.2	0.0	19.2
UU02	0.1	0.0	19.1
UU03	0.1	0.0	19.3
UU04	0.1	0.0	19.4
UU05	0.0	0.0	19.4
UU06	0.0	0.0	19.5

UU07	0.1	0.0	19.2
UU08	0.0	0.0	19.2
UU09	0.0	0.0	19.8
UU10	0.0	0.0	19.6
UU11	0.0	0.0	19.6
UU12	Voided due to latest site programme and on-going operation work		
UU13	0.0	0.0	19.5
UU14	0.0	0.0	19.4
UU15	0.0	0.0	19.6
UU16	0.0	0.0	19.5
UU17	Voided due to latest site programme and on-going operation work		
UU18	0.0	0.0	19.5
UU19	0.0	0.0	19.3
UU20	0.0	0.0	19.4
UU21	0.0	0.0	19.4
UU22	0.0	0.0	19.4
UU23	0.0	0.0	19.4
UU24	0.0	0.0	19.5
UU25	0.0	0.0	19.5
UU26	0.0	0.0	19.5
UU27	0.0	0.0	19.5
UU28	0.0	0.0	19.6
August 2023			
Location	**Methane (% (v/v))**	**Carbon Dioxide (% (v/v))**	**Oxygen (% (v/v))**
UU01	0.0	0.0	18.8
UU02	0.0	0.0	18.8
UU03	0.1	0.0	18.4
UU04	0.0	0.0	18.4
UU05	0.0	0.0	18.5
UU06	0.0	0.0	18.6
UU07	0.0	0.0	18.8
UU08	0.0	0.0	18.9
UU09	0.1	0.0	20.1
UU10	0.1	0.0	20.0
UU11	0.2	0.0	20.1
UU12	Voided due to latest site programme and on-going operation work		
UU13	0.2	0.0	20.2
UU14	0.2	0.1	20.2

UU15	0.1	0.0	19.8
UU16	0.1	0.0	19.7
UU17	Voided due to latest site programme and on-going operation work		
UU18	0.1	0.0	19.5
UU19	0.0	0.0	18.9
UU20	0.1	0.0	19.4
UU21	0.1	0.0	19.3
UU22	0.1	0.0	19.2
UU23	0.0	0.0	19.2
UU24	0.0	0.0	18.9
UU25	0.0	0.0	19.0
UU26	0.0	0.0	18.8
UU27	0.0	0.0	18.6
UU28	0.0	0.0	18.6
September 2023			
Location	**Methane (% (v/v))**	**Carbon Dioxide (% (v/v))**	**Oxygen (% (v/v))**
UU01	0.0	0.0	19.5
UU02	0.0	0.0	19.4
UU03	0.0	0.0	19.4
UU04	0.0	0.0	19.4
UU05	0.0	0.0	19.4
UU06	0.0	0.0	19.3
UU07	0.2	0.0	20.4
UU08	0.0	0.0	19.4
UU09	0.0	0.0	19.6
UU10	0.0	0.0	19.6
UU11	0.0	0.0	19.5
UU12	Voided due to latest site programme and on-going operation work		
UU13	0.0	0.0	19.4
UU14	0.0	0.0	19.5
UU15	0.0	0.0	19.5
UU16	0.1	0.0	20.1
UU17	Voided due to latest site programme and on-going operation work		
UU18	0.0	0.0	19.4
UU19	0.1	0.0	20.2
UU20	0.0	0.0	19.5
UU21	0.0	0.0	19.5
UU22	0.0	0.0	19.5

UU23	0.0	0.0	19.6
UU24	0.0	0.0	19.4
UU25	0.0	0.0	19.5
UU26	0.0	0.0	19.6
UU27	0.0	0.0	19.5
UU28	0.0	0.0	19.4
October 2023			
Location	**Methane (% (v/v))**	**Carbon Dioxide (% (v/v))**	**Oxygen (% (v/v))**
UU01	0.1	0.0	19.4
UU02	0.1	0.0	19.6
UU03	0.0	0.0	19.5
UU04	0.0	0.0	19.5
UU05	0.0	0.0	19.6
UU06	0.0	0.0	19.6
UU07	0.0	0.0	19.5
UU08	0.0	0.0	19.5
UU09	0.0	0.0	19.6
UU10	0.0	0.0	19.7
UU11	0.0	0.0	19.8
UU12	Voided due to latest site programme and on-going operation work		
UU13	0.0	0.0	19.9
UU14	0.0	0.0	19.8
UU15	0.0	0.0	19.8
UU16	0.0	0.0	19.8
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	0.0	0.0	19.5
UU20	0.0	0.0	19.7
UU21	0.0	0.0	19.7
UU22	0.0	0.0	19.8
UU23	0.0	0.0	19.9
UU24	0.0	0.0	19.8
UU25	0.0	0.0	19.8
UU26	0.0	0.0	19.8
UU27	0.0	0.0	19.8
UU28	0.0	0.0	19.8

November 2023			
Location	**Methane (% (v/v))**	**Carbon Dioxide (% (v/v))**	**Oxygen (% (v/v))**
UU01	0.0	0.0	19.8
UU02	0.0	0.0	19.8
UU03	0.0	0.0	19.7
UU04	0.0	0.0	19.7
UU05	0.0	0.0	19.6
UU06	0.0	0.0	19.6
UU07	0.0	0.0	19.7
UU08	0.0	0.0	19.4
UU09	0.0	0.0	19.2
UU10	0.0	0.0	19.1
UU11	0.0	0.0	19.2
UU12	Voided due to latest site programme and on-going operation work		
UU13	0.0	0.0	19.2
UU14	0.0	0.0	19.2
UU15	0.0	0.0	19.2
UU16	0.0	0.0	19.3
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	0.0	0.0	19.7
UU20	0.0	0.0	19.3
UU21	0.0	0.0	19.2
UU22	0.0	0.0	19.2
UU23	0.0	0.0	19.3
UU24	0.0	0.0	19.2
UU25	0.0	0.0	19.1
UU26	0.0	0.0	19.2
UU27	0.0	0.0	19.2
UU28	0.0	0.0	19.2
December 2023			
Location	**Methane (% (v/v))**	**Carbon Dioxide (% (v/v))**	**Oxygen (% (v/v))**
UU01	0.0	0.0	20.0
UU02	0.0	0.0	19.8
UU03	0.0	0.0	19.9
UU04	0.0	0.0	20.0
UU05	0.0	0.0	20.2
UU06	0.0	0.0	20.2

UU07	0.0	0.0	19.9
UU08	0.0	0.0	20.0
UU09	0.0	0.0	20.3
UU10	0.0	0.0	20.3
UU11	0.0	0.0	20.2
UU12	Voided due to latest site programme and on-going operation work		
UU13	0.0	0.0	20.2
UU14	0.0	0.0	20.2
UU15	0.0	0.0	20.1
UU16	0.0	0.0	20.1
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	0.0	0.0	20.0
UU20	0.0	0.0	20.0
UU21	0.0	0.0	20.2
UU22	0.0	0.0	20.2
UU23	0.0	0.0	20.1
UU24	0.0	0.0	20.1
UU25	0.0	0.0	20.1
UU26	0.0	0.0	20.1
UU27	0.0	0.0	20.3
UU28	0.0	0.0	20.3

TABLE G2.3 LANDFILL GAS BULK GAS SAMPLING MONITORING RESULTS

February 2023		
Parameters	**LFG2**	**LFG8**
Methane (% (v/v))	<0.0200	<0.020
Carbon Dioxide (% (v/v))	0.318	0.068
Oxygen (% (v/v))	19	21.1
Nitrogen (% (v/v))	80.9	78.9
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
May 2023		
Parameters	**LFG1**	**LFG8**
Methane (% (v/v))	<0.020	<0.020
Carbon Dioxide (% (v/v))	0.549	0.066
Oxygen (% (v/v))	16.1	20.0
Nitrogen (% (v/v))	81.3	77.5
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
August 2023		
Parameters	**LFG2**	**LFG8**
Methane (% (v/v))	<0.020	<0.020
Carbon Dioxide (% (v/v))	<0.020	<0.020
Oxygen (% (v/v))	20.6	20.5
Nitrogen (% (v/v))	76.5	76.4
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
November 2023		
Parameters	**LFG2**	**LFG8**
Methane (% (v/v))	0.750	0.096
Carbon Dioxide (% (v/v))	<0.020	<0.020
Oxygen (% (v/v))	19.3	20.3
Nitrogen (% (v/v))	77	76.6
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 G2.4 FLAMMABLE GAS SURFACE EMISSION MONITORING RESULTS

February 2023							
Time	**GPS Coordinates Latitude (N)**	**Longitude (E)**	**Weather Condition**	**Temperature (°C)**	**Wind Direction (Deg)**	**Wind Speed (m/s)**	**Monitoring Results (ppm)**
13:44	22°16'29"	114°16'35"	Cloudy	18.9	205	3.5	16
May 2023							
Time	**GPS Coordinates Latitude (N)**	**Longitude (E)**	**Weather Condition**	**Temperature (°C)**	**Wind Direction (Deg)**	**Wind Speed (m/s)**	**Monitoring Results (ppm)**
13:54	22°16'30"	114°16'36"	Cloudy	26.9	004	2.2	6
14:20	22°16'28"	114°16'26"	Cloudy	28.3	174	1.2	6
August 2023							
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.							
November 2023							
Time	**GPS Coordinates Latitude (N)**	**Longitude (E)**	**Weather Condition**	**Temperature (°C)**	**Wind Direction (Deg)**	**Wind Speed (m/s)**	**Monitoring Results (ppm)**
10:46	22°16'29"	114°16'10"	Sunny	22.1	313	2.7	12
10:50	22°16'26"	114°16'34"	Sunny	23.2	311	3.2	15
10:57	22°16'19"	114°16'35"	Sunny	22.3	331	5.0	15
11:03	22°16'17"	114°16'33"	Sunny	22.7	88	3.2	17
11:09	22°16'50"	114°16'21"	Sunny	23.0	124	3.0	17
11:11	22°16'20"	114°16'27"	Sunny	23.4	335	2.9	17
11:30	22°16'29"	114°16'27"	Sunny	23.2	9	3.0	5

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 G4 INVESTIGATION REPORTS OF ENVIRONMENTAL QUALITY LIMIT EXCEEDANCE

Investigation Report of Environmental Quality Limit Exceedance

Project	South East New Territories (SENT) Landfill Extension
Date	13 April 2023
Time	11:59
Monitoring Location	LFG13
Parameter	Methane
Limit Levels	22.5%
Measured Level	25.8%
Possible reason	During the landfill gas monitoring event, methane was not detected at the landfill gas monitoring wells adjacent to LFG13 (LFG12 and LFG14: 0%). In addition, no exceedance of Limit Levels for landfill gas monitoring at service voids, utilities pits and manholes (conducted on 11 April 2023) was recorded in the reporting period. Hence, there is a low possibility that the elevation of methane level at LFG13 is due to landfill gas migration from SENTX operation or at least it is not conclusive to base on these results to demonstrate that the exceedance was due to landfill gas migration. Repeat measurement was conducted on 17 and 18 April 2023 to confirm findings. Methane (ranged from 21.0% to 21.4%%) was detected at LFG13 on these additional daily sampling events, but the measured levels were below the limit level. 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 level of methane detected at LFG13 on 13 April 2023 could be due to localised organic matters within or around the monitoring wells and background fluctuation with relevance to the installation of liner system at Cell 4X which avoid the escape of methane gas into the atmosphere. Due to the presence of influencing factor from non-project source, there is no adequate evidence showing that the methane exceedance measured at LFG13 on 13 April 2023 was deemed to Project-related activities.
Action Taken / Action to be Taken	Examination of environmental performance of the Project will be continued during the weekly inspections. The Contractor is reminded to implement relevant and appropriate mitigation measures according to the updated EM&A Manual to avoid any exceedance of the Action and Limit Levels.

	ET will continue to closely monitor the landfill gas monitoring results and collect additional data for investigation and further review, if necessary.
Remarks	-

Prepared by: Abbey Lau
Designation: Environmental Team
Date: 25 April 2023

Investigation Report of Environmental Quality Limit Exceedance

Project	South East New Territories (SENT) Landfill Extension
Date	5 June 2023
Time	11:00
Monitoring Location	LFG24
Parameter	Carbon Dioxide
Limit Levels	4.7%
Measured Level	8.4%
Possible reason	During the landfill gas monitoring event, carbon dioxide was not detected at the landfill gas monitoring wells adjacent to LFG24 (LFG23: 0.0% and GP7: 0.1%). All landfill gas (methane) monitoring results are well within the respective Limit Levels. In addition, no exceedance of Limit Levels for landfill gas monitoring at service voids, utilities pits and manholes (conducted on 5 June 2023) was recorded in the reporting period. Hence, there is a low possibility that the elevation of carbon dioxide level at LFG24 is due to landfill gas migration from SENTX operation or at least it is not conclusive to base on these results to demonstrate that the exceedance was due to landfill gas migration. Repeat measurement was conducted on 11 July 2023 to confirm findings. No carbon dioxide was detected at LFG24 during the sampling event, which demonstrate no consecutive landfill gas impact at the monitoring well. It is possible that the elevated level of carbon dioxide detected at LFG24 on 5 June 2023 could be due to background fluctuation. Due to the background influencing factor and the subsequent monitoring result at LFG24 did not show any exceedance, there is no adequate evidence showing that the carbon dioxide exceedance measured at LFG24 on 5 June 2023 was deemed to Project-related activities.
Action Taken / Action to be Taken	Examination of environmental performance of the Project will be continued during the weekly inspections. The Contractor is reminded to implement relevant and appropriate mitigation measures according to the updated EM&A Manual to avoid any exceedance of the Action and Limit Levels. ET will continue to closely monitor the landfill gas monitoring results and collect additional data for investigation and further review, if necessary.
Remarks	-

Prepared by: Abbey Lau
Designation: Environmental Team
Date: 11 July 2023

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	14	17
Air Quality (Odour)	Action	0	0
	Limit	0	0
Air Quality (Emissions of Thermal Oxidiser)	Limit	4	4
Air Quality (Emissions of Landfill Gas Flare)	Limit	1	5
Air Quality (Emissions of Landfill Gas Generator)	Limit	0	0
Noise	Action	0	0
	Limit	0	0
Water Quality (Surface Water)	Limit	1	61
Water Quality (Leachate)	Limit	0	1
Water Quality (Leachate Level)	Limit	178	194
Water Quality (Groundwater)	Limit	9	18
Landfill Gas (Perimeter Landfill Gas Monitoring Wells)	Limit	2	4
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 Dec 2023)	0	0	0
Total no. received since project commencement	1	0	0

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Hong Kong
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Ireland
Italy
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Mexico
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