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

South East New Territories (SENT) Landfill Extension

Annual Environmental Monitoring & Audit Review Report No.2

January 2021

ERM

2507, 25/F
One Harbourfront
18 Tak Fung Street
Hunghom, Kowloon
Hong Kong
T: 2271 3000
F: 2723 5660
www.erm.com

The business of sustainability

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

South East New Territories (SENT) Landfill Extension

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

Reference Document/Plan

Document/Plan to be Certified/Verified:	Annual Environmental Monitoring & Audit Review Report No.2 for South East New Territories (SENT) Landfill Extension
Date of Report:	29 January 2021

Reference EM&A Manual Requirement

EM&A Manual: Section 11.5

The Annual EM&A Review Report shall be prepared by the ET, certified by the ET Leader and verified by the IEC. The Annual EM&A Review 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.

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

Date: 29 January 2021

IEC Verification

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

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

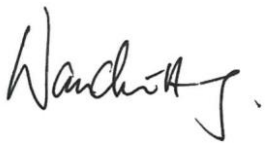
Date: 10/2/2021

South East New Territories (SENT) Landfill Extension

Annual Environmental Monitoring & Audit Review Report No.2

Environmental Resources Management

2507, 25/F, One Harbourfront
18 Tak Fung Street
Hunghom, Kowloon
Hong Kong
Telephone: (852) 2271 3000
Facsimile: (852) 2723 5660
E-mail: post.hk@erm.com
http://www.erm.com

Client:	Project No:
Green Valley Landfill Ltd.	0465169
Summary:	Date: 29 January 2021
This document presents the Annual EM&A Review Report No.2 for *South East New Territories (SENT) Landfill Extension*	Approved by:  Frank Wan *Partner*

0	Annual EM&A Review Report No.2	AL	FW	FW	29 Jan 21
Revision	Description	By	Checked	Approved	Date

Distribution

☐ Internal

☒ Public

☐ Confidential

OHSAS 18001:2007
Certificate No. OHS 515956

ISO 9001 : 2008
Certificate No. FS 32515

CONTENTS

ANNEXES

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

This Annual EM&A Review Report presents the EM&A works carried out during the period from 1 January to 31 December 2020 for the Project in accordance with the updated EM&A Manual.

Exceedance of Action and Limit Levels for Air Quality

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

Exceedance of Action and Limit Levels for Noise

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

Exceedance of Action and Limit Levels for Surface Water Quality

3 exceedances of the Limit Level for pH and 12 exceedances of the Limit Level for Suspended Solids (SS) were recorded for surface water quality impact monitoring in the reporting period. The exceedances were considered non Project-related upon further investigations, except the pH and SS exceedances at DP6 on 9 April 2020, SS exceedances at DP4 (Future, temporary) and DP6 on 28 May 2020, pH exceedance at DP4 (Future, temporary) on 4 June 2020, SS exceedance at DP4 (Future, temporary) on 15 July 2020, SS exceedances at DP4 (Future, temporary) and DP6 on 6 August 2020 and SS exceedance at DP6 on 15 October 2020 which were found deemed to Project-related activities.

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 of the Project commenced on 2 January 2019.

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

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

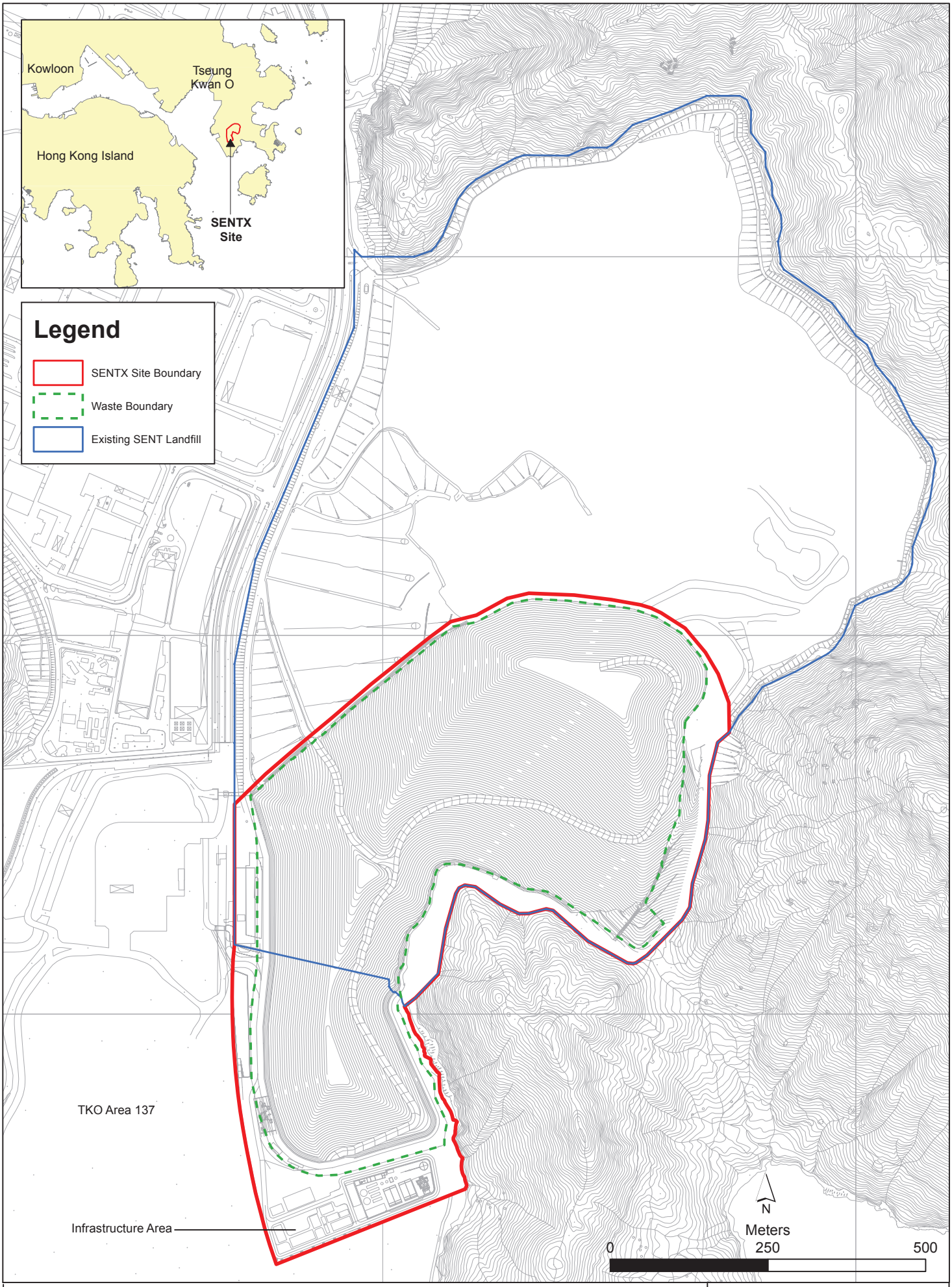


Figure 1.1

Layout Plan of SENTX

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

Environmental Resources Management

ERM

Table 1.1 Estimated Key Dates of Implementation Programme

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

The major construction works of the SENTX includes:

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

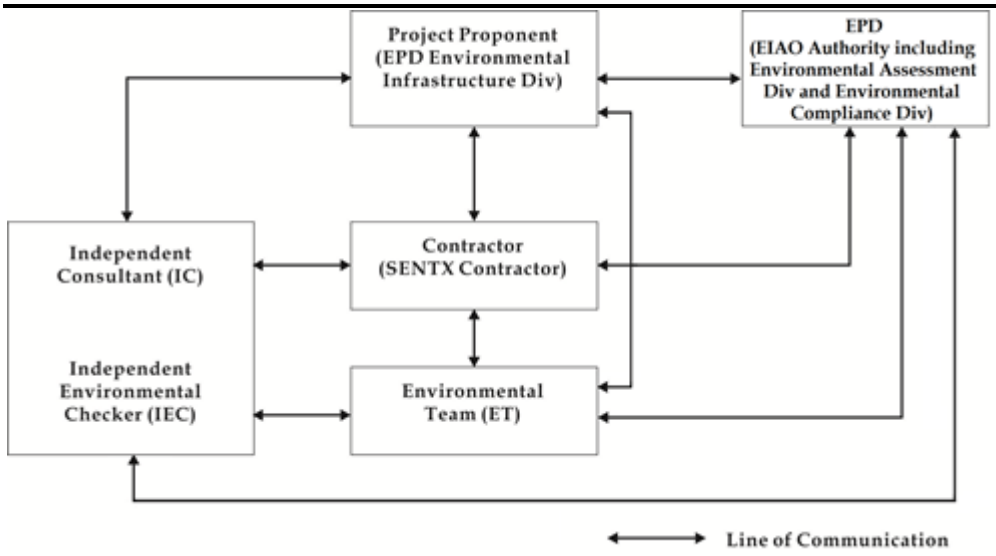
1.3 SCOPE OF THE EM&A REPORT

This is the Annual EM&A Review Report for the Project which summarises the key findings of the EM&A programme during the reporting period from 1 January to 31 December 2020 for the construction works.

1.4 PROJECT ORGANISATION

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

Figure 1.2 Organisation Chart



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

Table 1.2 Contact Information of Key Personnel

Party	Position	Name	Telephone
Contractor (Green Valley Landfill Limited)	Project Manager Complaint Hotline	Gary Barnicott	2706 8827 2706 8682
Environmental Team (ET) (ERM-Hong Kong, Limited)	ET Leader	Frank Wan	2271 3152
Independent Environmental Checker (IEC) (Meinhardt Infrastructure and Environment Limited)	IEC	W.K. Chiu	2858 0738

1.5 SUMMARY OF CONSTRUCTION WORKS

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

- Building services works and fitting-out works for Landfill Gas (LFG) Plant area;
- Paving works at LFG Plant area;
- Flares and cooling towers installation of LFG Plant;
- Laying cables in CLP room and energization of LFG plant;
- Drip leg and electro-mechanical installation at LFG Plant;
- Installation of canopy at LFG plant;

- Electro-mechanical installation at LFG plant;
- Dry testing at LFG plant;
- Installation of chimney at LFG plant;
- Civil provisional works of Leachate Treatment Plant (LTP) and superstructure of Bioplant building;
- Installation of ammonia stripping plant, equalization tank, sequencing batch reactor tank, treated effluent tank and Glass Reinforced Plastic (GRP) tanks at LTP area;
- Installation of accessories such as staircases, pipes and walkways for equalization tanks, sequencing batch reactor tanks, treated effluent tank, GRP tanks and other tanks at LTP area;
- Installation of cables and cable containment for LTP area;
- Building services works and fitting-out works for LTP area and installation of drip leg;
- Electro-mechanical installation (including pipe) at LTP area;
- Dry testing at LTP;
- Testing and commissioning at LTP;
- Rebar fixing, formwork and concreting to the superstructure of laboratory building;
- Building services works and fitting-out works for infrastructure buildings (EPD building, GVL building and laboratory building);
- Sewerage system works for infrastructure buildings;
- Water main pipe installation for infrastructure buildings;
- Low voltage (LV) cables laying to infrastructure buildings;
- Steel members installation for superstructure of maintenance building;
- Construction of perimeter bund for Cell 2X;
- Filling work at the transition area between buttress wall and Cell 2X and at West of Cell 3X;
- Finishing works for Western perimeter bund;
- Maintenance and improvement of the temporary surface water drainage;
- Shotcreting and mass concrete for Buttress Wall;

- Surface channel works at Buttress Wall;
- Construction of drop inlet shaft, MHX1 manhole and inlet and outlet box culverts;
- Installing groundwater pipe works from South to North at Eastern side from Cell 3X to 4X;
- Installation of riser pipes from sump pits to sump houses 1 and 2;
- Construction of sump house 1 and 2;
- Equipment installation at sump house 1 and 2;
- Structure work for sump house 3;
- Installation of HDPE pipes for leachate collection system;
- Excavating, removing and replacing unsuitable fill materials;
- Liner installation at Cell 1X and 2X;
- Placing leachate stone at Cell 2X;
- Construction of Cell 3X formation;
- Construction of Mechanically Stabilized Earth (MSE) wall;
- Construction of footing of vehicle washing facilities, weighbridge and guard house;
- Installation of steel members for vehicle washing facilities;
- Road pavement for the emergency vehicular access (EVA);
- Pipe rack installation;
- Installation of monitoring wells;
- Installation of diesel fuel tanks;
- Construction of plinths and footing of maintenance building;
- Construction of footing and superstructure of fire service tank room and water tank room;
- Windows and doors installation at fire service tank room and water service room;
- Construction of perimeter bund channel;
- Construction of pits and ducting for underground utilities;
- Underground utilities and pipes installation at waste reception area;

- Sewerage system works at waste reception area;
- Installation of water mains and telecom pipes;
- Laying of Extra-low voltage (ELV) and LV cables for draw pits and ducts; and
- Civil provision works (draw pits and ducts laying) for ELV and LV cables

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

1.6 SUMMARY OF EM&A PROGRAMME REQUIREMENTS

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

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

Parameters	Status
Air Quality	
Baseline Monitoring	The results of baseline air quality monitoring were reported in *Baseline Monitoring Report* and submitted to EPD under EP Condition 3.3
Impact Monitoring	On-going
Noise	
Baseline Monitoring	The results of baseline noise monitoring were reported in *Baseline Monitoring Report* and submitted to EPD under EP Condition 3.3
Impact Monitoring	On-going
Surface Water Quality	
Baseline Monitoring	The results of baseline surface water quality monitoring were reported in *Baseline Monitoring Report* and submitted to EPD under EP Condition 3.3
Impact Monitoring	On-going
Waste Management	
Waste Monitoring	On-going
Landscape and Visual	
Baseline Monitoring	The results of baseline landscape and visual monitoring were reported in *Baseline Monitoring Report* and submitted to EPD under EP Condition 3.3
Construction Phase Audit	On-going
Site Environmental Audit	
Regular Site Inspection	On-going
Complaint Hotline and Email Channel	On-going
Environmental Log Book	On-going
Groundwater Quality	
Pre-operation Baseline Monitoring	Commenced on 24 March 2020
Landfill Gas	
Pre-operation Baseline Monitoring	Commenced on 24 March 2020
Ambient VOCs, ammonia and H_2S	

Parameters	Status
Pre-operation Baseline Monitoring	Commenced on 27 May 2020

Taking into account the construction works, impact monitoring of air quality, noise, surface water quality and waste management were carried out in the reporting period. The monitoring schedule of air quality, noise and surface water quality monitoring are provided in *Annex C*. Groundwater and landfill gas pre-operation baseline monitoring and ambient VOCs, ammonia and H_2S pre-operation baseline monitoring were commenced on 24 March 2020 and 27 May 2020 respectively.

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

- Twelve environmental management meetings were held with the Contractor, ER, ET, IEC and EPD on 8 January, 27 February, 19 March, 23 April, 21 May, 18 June, 16 July, 20 August, 24 September, 22 October, 26 November and 22 December 2020; and
- Environmental toolbox trainings on the following topics were provided by the Contractor to the workers:
    - An Introduction to the Air Pollution Control (Smoke) Regulations on 6 January 2020;
    - Clean Recycling on 17 January 2020;
    - Quality Powered Mechanical Equipment on 11 February 2020;
    - Green Procurement on 24 February 2020;
    - Mosquito Control on 8 March 2020;
    - Illegal Dumping on 25 March 2020;
    - Trip-Ticket System on 6 April 2020;
    - VOC and Smog on 27 April 2020;
    - Air Pollution Control Regulation (Non-road Mobile Machinery (Emission)) on 8 May 2020;
    - Noise Control Ordinance on 22 May 2020;
    - Persistent Organic Pollutants on 12 June 2020;
    - Wastewater Management at Construction Site on 23 June 2020;

- Good Vehicle Maintenance Practice on 6 July 2020;
- Cut down Construction Dust on 23 July 2020;
- Mosquito Nuisance on 14 August 2020;
- Clean Recycling on 27 August 2020;
- Tree Protection Zone on 11 September 2020;
- Renewable Energy on 18 September 2020;
- Chemical Waste Handling on 6 October 2020;
- Dark Smoke on 20 October 2020;
- Green Procurement on 17 November 2020;
- Site Practice for Waste Reduction in Construction Industry on 25 November 2020;
- Air Pollution Control (NRMM) Regulation on 11 December 2020; and
- VOC and Smog on 16 December 2020.

1.7 STATUS OF STATUTORY ENVIRONMENTAL COMPLIANCE WITH THE ENVIRONMENTAL PERMIT

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

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

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

1.8 STATUS OF OTHER STATUTORY ENVIRONMENTAL REQUIREMENTS

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

Table 1.5 Status of Statutory Environmental Requirements

Description	Ref No.	Status
Environmental Permit	EP-308/2008	Granted on 5 August 2008
Variation of Environmental Permit	EP-308/2008/A	Granted on 6 January 2012
	EP-308/2008/B	Granted on 20 January 2017
Further Environmental Permit	FEP-01/308/2008/B	Granted on 16 May 2018
Water Discharge License under WPCO (Permit Holder: Chun Wo)	Licence No.: WT00033525-2019	Validity from 27 March 2019 to 31 March 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: Chun Wo)	5213-839-C3507-10	Issued on 23 August 2018
Registration as a Chemical Waste Producer (Permit Holder: REC)	5518-839-R2289-06	Issued on 24 October 2019
Construction Noise Permit (Permit Holder: GVL)	GW-RE0075-20	Validity from 12 February 2020 to 11 August 2020
	GW-RE0542-20	Validity from 1 September 2020 to 28 February 2021
Construction Noise Permit (Permit Holder: Chun Wo)	GW-RE1001-19	Validity from 16 December 2019 to 10 June 2020
	GW-RE0516-20	Validity from 17 June 2020 to 7 December 2020
	GW-RE1047-20	Validity from 9 December 2020 to 7 June 2021
Construction Noise Permit (Permit Holder: REC)	GW-RE0029-20	Validity from 20 January 2020 to 31 May 2020
	GW-RE0466-20	Validity from 1 June 2020 to 31 October 2020
	GW-RE0889-20	Validity from 1 November 2020 to 31 March 2021

2 EM&A RESULTS

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

2.1 AIR QUALITY MONITORING

2.1.1 Monitoring Requirements and Equipment

According to the updated EM&A Manual of the Project, impact air quality monitoring (dust, in term of Total Suspended Particulates (TSP)) was carried out at the two designated monitoring locations (i.e. DM1 and DM2) at a 6-day interval. It is proposed and agreed by IEC and EPD that the two existing TSP monitoring stations (i.e. TKO-A1 and TKO-A2a) currently operating by the Civil Engineering and Development Department (CEDD) can be used to monitor the 24-hour TSP impact associated with the SENTX construction. The dust monitoring results were obtained from CEDD on regular basis.

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

Table 2.1 Action and Limit Levels for 24-hour TSP

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

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

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

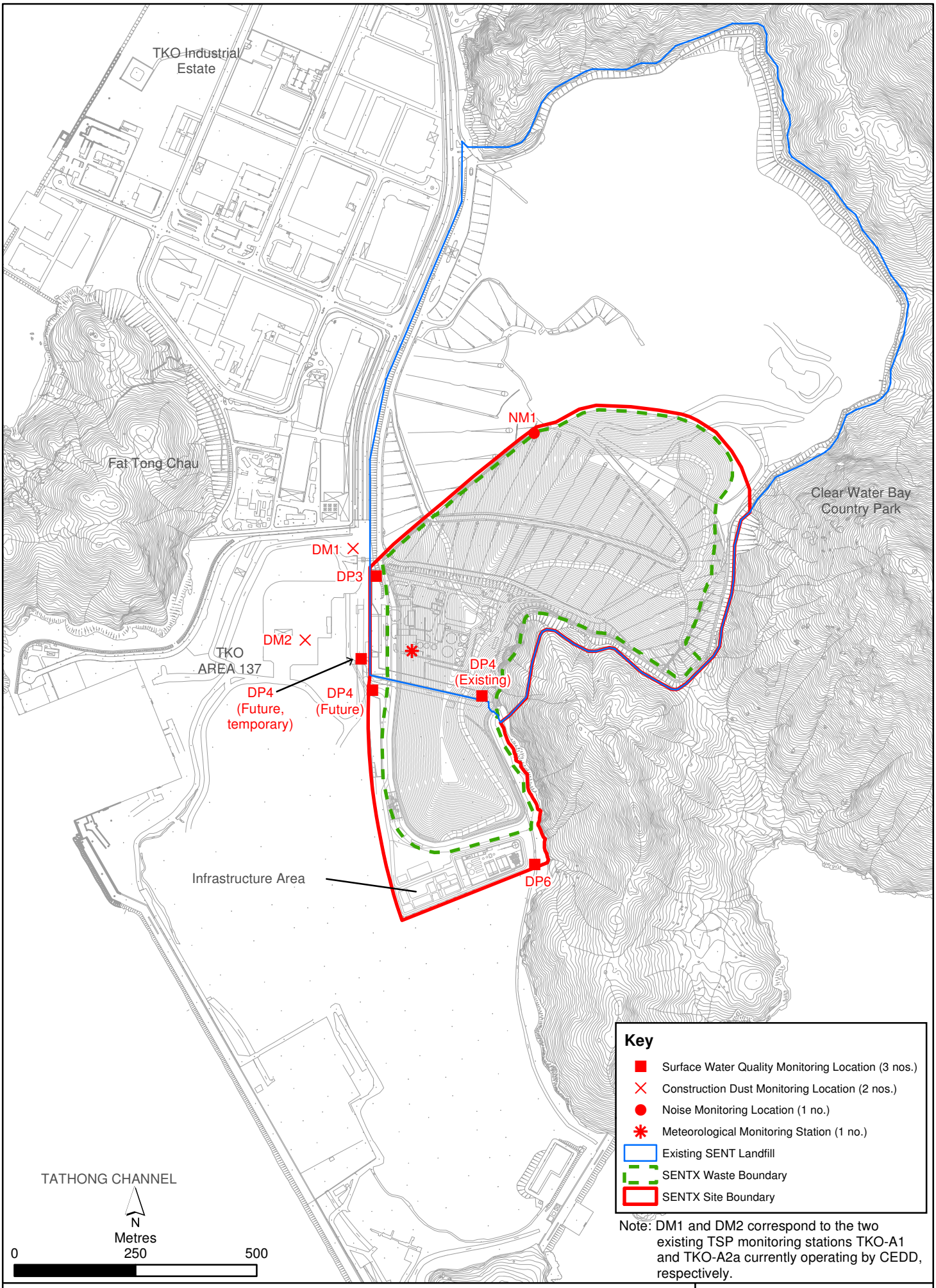


Figure 2.1

Environmental Impact Monitoring Locations

File: T:\GIS\CONTRACT\0465169\mxd\0465169_Environmental_Impact_Monitoring_Locations.mxd
Date: 28/5/2019

Environmental Resources Management

ERM

Table 2.2 Dust Monitoring Details

Monitoring Station	Location	Parameter	Frequency and Duration	Equipment
DM1	Site Egress of TKO Area 137 Fill Bank	24-hour TSP	Once every 6 days during the construction phase of the Project	HVS Greasby 105 (S/N: 9795 (ET/EA/003/18))
DM2	Combined Reception and Exit Office (CREO) of TKO Area 137 Fill Bank			HVS Andersen G1051 (S/N: 1176 (ET/EA/003/05))

2.1.2 Monitoring Schedule for the Reporting Period

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

2.1.3 Results and Observations

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

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

Month	Monitoring Station	24-hr TSP Concentration (μg m^{-3})		Action Level (μg/m^3)	Limit Level (μg/m^3)
		Average	Range		
January 2020	DM-1	110	95 - 124	204	260
	DM-2	96	82 – 108	193	260
February 2020	DM-1	103	93 - 117	204	260
	DM-2	90	83 – 104	193	260
March 2020	DM-1	102	91 - 113	204	260
	DM-2	90	85– 94	193	260
April 2020	DM-1	105	95 - 122	204	260
	DM-2	94	83 – 106	193	260
May 2020	DM-1	105	92 - 118	204	260
	DM-2	93	83 – 103	193	260
June 2020	DM-1	96	86 - 105	204	260
	DM-2	88	78 – 100	193	260
July 2020	DM-1	91	84 - 105	204	260
	DM-2	85	77 - 99	193	260
August 2020	DM-1	103	88 - 116	204	260
	DM-2	95	81 - 107	193	260
September 2020	DM-1	101	84 - 113	204	260
	DM-2	97	90 – 105	193	260
October 2020	DM-1	108	95 - 114	204	260
	DM-2	100	84 - 115	193	260
November 2020	DM-1	107	98 - 115	204	260
	DM-2	99	91 - 106	193	260
December 2020	DM-1	106	100 - 116	204	260
	DM-2	100	91 - 112	193	260

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

All the 24-hour TSP results measured at the two monitoring stations were below the Action and Limit Levels in the reporting period. No additional measure is thus required in accordance with the Event and Action Plan presented in *Annex D2*.

2.1.4 Meteorological Data

Meteorological data obtained from the on-site meteorological monitoring station at the existing SENT landfill (see *Figure 2.1*) were used for the dust monitoring and are shown in *Annex D3*. The meteorological station will be moved to a new location at SENTX infrastructure area as per the updated EM&A Manual after the construction of the new infrastructure area is completed. For the purpose of this EM&A programme, it is considered that meteorological data obtained at the existing SENT landfill meteorological monitoring station are representative of the Project area and could be used for the interpretation of the construction phase dust monitoring results.

2.2 NOISE MONITORING

2.2.1 Monitoring Requirements and Equipment

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

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

Table 2.4 Action and Limit Levels for Construction Noise

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

Notes:

(a) 75dB(A) along and at about 100m from the SENTX site boundary was set as the Action Level.

(b) Limits specified in the GW-TM and IND-TM for construction and operational noise, respectively.

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

designated monitoring station NM1 (see *Figure 2.1*) in accordance with the requirements stipulated in the updated EM&A Manual. Acoustic calibrator was deployed to check the sound level meter at a known sound pressure level. Details of the deployed equipment are provided in *Table 2.5*.

Table 2.5 Noise Monitoring Details

Monitoring Station (1)	Location	Parameter	Frequency and Duration	Equipment
NM1	SENTX Site Boundary (North)	$L_{eq\ (30\ min)}$ measurement between 07:00 and 19:00 hours on normal weekdays (Monday to Saturday)	Once per week for 30 mins during the construction period of the Project	Sound Level Meter: B&K 2238 (S/N: 2285722) (S/N: 2285762) Rion NL-31 (S/N: 00410221) Rion NL-52 (S/N: 00921191) (S/N: 00142581) Acoustic Calibrator: Rion NC-74 (S/N: 34657230) (S/N: 34657231) Rion NC-73 (S/N: 10655561) 3M AC-300 (S/N: AC300005555)

2.2.2 Monitoring Schedule for the Reporting Period

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

2.2.3 Results and Observations

A total of 53 impact noise monitoring events were scheduled during the reporting period. However, monitoring was not conducted on 18 March, 20 and 28 May, 19 and 27 August and 3 September 2020 due to adverse weather condition. The noise monitoring results are summarised in *Table 2.6* and graphically presented in *Annex E1*.

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

Month	Monitoring Station	Measured Noise Level $L_{eq\ (30\ min)}$, dB(A)		
		Average	Range	Action and Limit Level
January 2020	NM1	50.5	47.8 – 53.0	75
February 2020	NM1	52.7	51.9 – 53.8	75
March 2020	NM1	52.5	50.5 – 54.9	75
April 2020	NM1	53.1	52.6 – 53.8	75
May 2020	NM1	53.0	51.1 – 54.9	75
June 2020	NM1	56.0	54.8 – 57.0	75

Month	Monitoring Station	Measured Noise Level $L_{eq\ (30\ min)}$, dB(A)		
		Average	Range	Action and Limit Level
July 2020	NM1	55.1	53.6 – 56.8	75
August 2020	NM1	52.3	51.3 – 53.3	75
September 2020	NM1	53.1	51.7 – 55.2	75
October 2020	NM1	53.1	51.1 – 55.8	75
November 2020	NM1	50.7	48.1 – 52.2	75
December 2020	NM1	51.2	48.9 – 52.9	75

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

No exceedance of the Action and Limit Levels for construction 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 SURFACE WATER QUALITY MONITORING

2.3.1 Monitoring Requirements and Equipment

According to the updated EM&A Manual of the Project, impact surface water quality monitoring were carried out at the three designated surface water discharge points (i.e. DP3, DP4 and DP6) weekly to ensure that the SENTX will not cause adverse water quality impact. Temporary relocation of surface water discharge point DP4 to DP4 (Future, temporary) as an interim arrangement due to site constraints and construction sequence was approved by EPD on 14 May 2019. Impact surface water quality monitoring was carried out at DP4 (Future, temporary) (i.e. DP4T) from the monitoring event on 16 May 2019. In addition, suspension of impact surface water quality monitoring at DP3 was approved under the Baseline Monitoring Report by EPD on 24 July 2019 until the actual commencement of construction works affecting DP3 in 2021.

Dissolved Oxygen (DO) and pH value were measured *in situ* whereas the level of suspended solids (SS) were determined by ALS Technichem (HK) Pty Ltd (HOKLAS Registration No. 066).

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

Table 2.7 Action and Limit Levels for Surface Water Quality

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

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

Table 2.8 Impact Surface Water Quality Monitoring Details

Monitoring Station	Location	Frequency	Parameter	Equipment
DP4 (Future, temporary)	Surface water discharge point DP4	Weekly	•pH •DO •SS	YSI Professional Plus (S/N: 10G101946) (S/N: 15H103928) YSI Professional DSS (S/N: 17B102764) (S/N: 15H102620) (S/N: 15H103928) pH Meter AZ8685 (S/N:1259868)
DP6	Surface water discharge point DP6			

Notes:

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

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

2.3.2 Monitoring Schedule for the Reporting Period

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

2.3.3 Results and Observations

A total of 53 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 on the following monitoring events due to insufficient flow:

- January 2020 at all monitoring stations;
- 6, 12 and 27 February 2020 at all monitoring locations and 20 February 2020 at DP6;
- March 2020 at all monitoring stations;
- 2, 16 and 24 April 2020 at DP6 and 29 April 2020 at all monitoring locations;

- 7 and 14 May 2020 at all monitoring locations and 20 May 2020 at DP4 (Future, temporary);
- 4 and 17 June 2020 at DP6, 11 June 2020 at DP4 (Future, temporary) and 24 June 2020 at all monitoring locations;
- 9, 23 and 30 July 2020 at all monitoring locations and 15 July 2020 at DP6;
- 13 August 2020 at DP6 and 27 August 2020 at all monitoring locations;
- 10, 23 and 30 September 2020 at all monitoring locations and 17 September 2020 at DP4 (Future, temporary);
- 7, 21 and 29 October 2020 at all monitoring locations and 15 October 2020 at DP4 (Future, temporary);
- November 2020 at all monitoring stations; and
- December 2020 at all monitoring stations.

Monitoring was cancelled on 19 August and 3 September 2020 due to adverse weather condition. Impact water quality monitoring results and graphical presentations are provided in *Annex F1*.

Exceedances of the Action and Limit Levels were recorded for impact surface water quality monitoring in the reporting period and actions in accordance with the Event and Action Plan presented in *Annex F2* were undertaken. Investigations on the Action and Limit Levels exceedances were conducted and summarised in *Table 2.9* below. Investigation reports of the exceedances are presented in *Annex F3*.

Table 2.9 *Details of Exceedances of Action and Limit Levels for the Impact Surface Water Quality Monitoring*

Date	Monitoring Location	Parameter	Type of Exceedance	Remarks
20 February 2020	DP4 (Future, temporary)	SS	Limit Level	Non Project-related
9 April 2020	DP6	pH	Limit Level	Project-related
9 April 2020	DP6	SS	Limit Level	Project-related
28 May 2020	DP4 (Future, temporary)	SS	Limit Level	Project-related
28 May 2020	DP6	SS	Limit Level	Project-related
4 June 2020	DP4 (Future, temporary)	pH	Limit Level	Project-related
3 July 2020	DP4 (Future, temporary)	SS	Limit Level	Non Project-related
3 July 2020	DP6	SS	Limit Level	Non Project-related
15 July 2020	DP4 (Future, temporary)	SS	Limit Level	Project-related
6 August 2020	DP4 (Future, temporary)	SS	Limit Level	Project-related
6 August 2020	DP6	SS	Limit Level	Project-related
13 August 2020	DP6	SS	Limit Level	Non Project-related
17 September 2020	DP6	pH	Limit Level	Non Project-related
17 September 2020	DP6	SS	Limit Level	Non Project-related
15 October 2020	DP6	SS	Limit Level	Project-related

Based on the investigation conducted for each of the monitoring event with potential Action and Limit Levels exceedances with the Contractor, the ER and the IEC, the exceedances were considered non Project-related, except the pH and SS exceedances at DP6 on 9 April 2020, SS exceedances at DP4 (Future, temporary) and DP6 on 28 May 2020, pH exceedance at DP4 (Future, temporary) on 4 June 2020, SS exceedance at DP4 (Future, temporary) on 15 July 2020, SS exceedances at DP4 (Future, temporary) and DP6 on 6 August 2020 and SS exceedance at DP6 on 15 October 2020 which were found deemed to Project-related activities.

The Contractor shall implement all relevant mitigation measures for the construction works and maintain good site practice. The Contractor was reminded to control the surface water discharge from site to minimise the potential surface water impact in the coming rainy season. The ET will keep track on the monitoring data and ensure Contractor's compliance of the environmental requirements.

2.4 *LANDSCAPE AND VISUAL MONITORING*

2.4.1 *Monitoring Requirements*

According to the updated EM&A Manual of the Project, the monthly landscape and visual audit was conducted on 31 January, 26 February, 25 March, 20 April, 27 May, 22 June, 22 July, 24 August, 28 September, 21 October, 24 November and 23 December 2020 to monitor the implementation of the landscape and visual mitigation measures during construction phase.

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

2.4.2 Results and Observations

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

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

2.5 EM&A SITE INSPECTION

Site inspections were carried out on a weekly basis with the Contractor, IEC and ER to monitor the implementation of proper environmental pollution control and mitigation measures for air quality, noise, surface water quality and waste management under the Project. In the reporting period, 52 site inspections were carried out on the following dates:

- 8, 16, 22 and 30 January 2020;
- 6, 12, 20 and 27 February 2020;
- 5, 12, 19 and 26 March 2020;
- 2, 9, 16, 23 and 29 April 2020;
- 7, 14, 21 and 28 May 2020;
- 4, 11, 18 and 24 June 2020;
- 2, 9, 16, 23 and 30 July 2020;
- 6, 13, 20 and 27 August 2020;
- 3, 10, 17, 24 and 30 September 2020;
- 8, 15, 22 and 29 October 2020;
- 5, 12, 19 and 26 November 2020; and
- 3, 10, 17, 22 and 31 December 2020.

The Contractor has rectified all of the observations identified during environmental site inspections in the reporting period. Key environmental deficiencies identified and the corresponding rectification actions are presented in *Table 2.10*.

Table 2.10 *Summary of Environmental Deficiencies Identified and Corresponding Additional Control Measures*

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

2.6 *WASTE MANAGEMENT STATUS*

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

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

Table 2.11 Quantities of Different Waste Disposed and Imported Fill Materials

Month/ Year	Inert C&D Materials [(a)] (in '000m³)	Imported Fill (in '000kg) [(b)]		Inert Construction Waste Re-used (in '000m³)	Non-inert Construction Waste [(c)] (in '000m³)	Recyclable Materials [(d)] (in '000kg)	Chemical Wastes (in '000kg)
		Rock	Soil				
January 2020	0.583	0	1742.440	0	0.122	0	0
February 2020	0.260	0	1992.480	0	0.076	0	0.195
March 2020	0.093	0	0	0	0.138	0	0
April 2020	0.033	0	0	0	0.158	0	0
May 2020	0.018	0	0	0	0.199	0	0
June 2020	0.030	0	0	0	0.179	0	0
July 2020	0.709	0	21691.630	0	0.192	0	0
August 2020	0.277	0	9780.700	0	0.125	16.230	0.150
September 2020	0.462	0	0	0	0.213	0	0.002
October 2020	2.641	0	10890.45	0	0.143	0	0
November 2020	4.643	0	9492.530	0	0.144	0	0
December 2020	2.563	0	0	0	0.118	0	0

Notes:

(a) Inert construction wastes include hard rock and large broken concrete, and materials disposed as public fill. Density assumption: 1.6 (t/m³) for public fill

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

(c) Non-inert construction wastes include general refuse disposed at landfill. Density assumption: 0.9 (t/m³) for general refuse.

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

2.7 IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURES

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

2.8 SUMMARY OF EXCEEDANCES OF THE ENVIRONMENTAL QUALITY PERFORMANCE LIMIT

The 24-hour TSP monitoring results and construction noise monitoring results complied with the Action and Limit Levels in the reporting period. 3 exceedances of the Limit Level for pH and 12 exceedances of the Limit Level for Suspended Solids (SS) were recorded for surface water quality impact monitoring in the reporting period. The exceedances were considered non Project-related upon further investigations, except the pH and SS exceedances at DP6 on 9 April 2020, SS exceedances at DP4 (Future, temporary) and DP6 on 28 May 2020, pH exceedance at DP4 (Future, temporary) on 4 June 2020, SS exceedance at DP4 (Future, temporary) on 15 July 2020, SS exceedances at DP4 (Future, temporary) and DP6 on 6 August 2020 and SS exceedance at DP6 on 15 October 2020 which were found deemed to Project-related activities.

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

2.9 SUMMARY OF COMPLAINTS, NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

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

Statistics on complaints, notifications of summons and successful prosecutions are summarised in *Annex G*.

3 CONCLUSION AND RECOMMENDATION

This Annual EM&A Review Report presents the findings of the EM&A activities undertaken during the period from 1 January to 31 December 2020 in accordance with the updated EM&A Manual and the requirements of the Environmental Permit (*EP-308/2008/B)*.

Air quality (24-hour TSP), noise and water quality (DO, pH and SS) monitoring were carried out in the reporting period. Results for air quality monitoring (24-hour TSP) complied with the Action and Limit Levels in the reporting period. No Action and Limit Levels exceedances were recorded for construction noise monitoring. 3 exceedances of the Limit Level for pH and 12 exceedances of the Limit Level for Suspended Solids (SS) were recorded for surface water quality impact monitoring in the reporting period. The exceedances were considered non Project-related upon further investigations, except the pH and SS exceedances at DP6 on 9 April 2020, SS exceedances at DP4 (Future, temporary) and DP6 on 28 May 2020, pH exceedance at DP4 (Future, temporary) on 4 June 2020, SS exceedance at DP4 (Future, temporary) on 15 July 2020, SS exceedances at DP4 (Future, temporary) and DP6 on 6 August 2020 and SS exceedance at DP6 on 15 October 2020 which were found deemed to Project-related activities.

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.

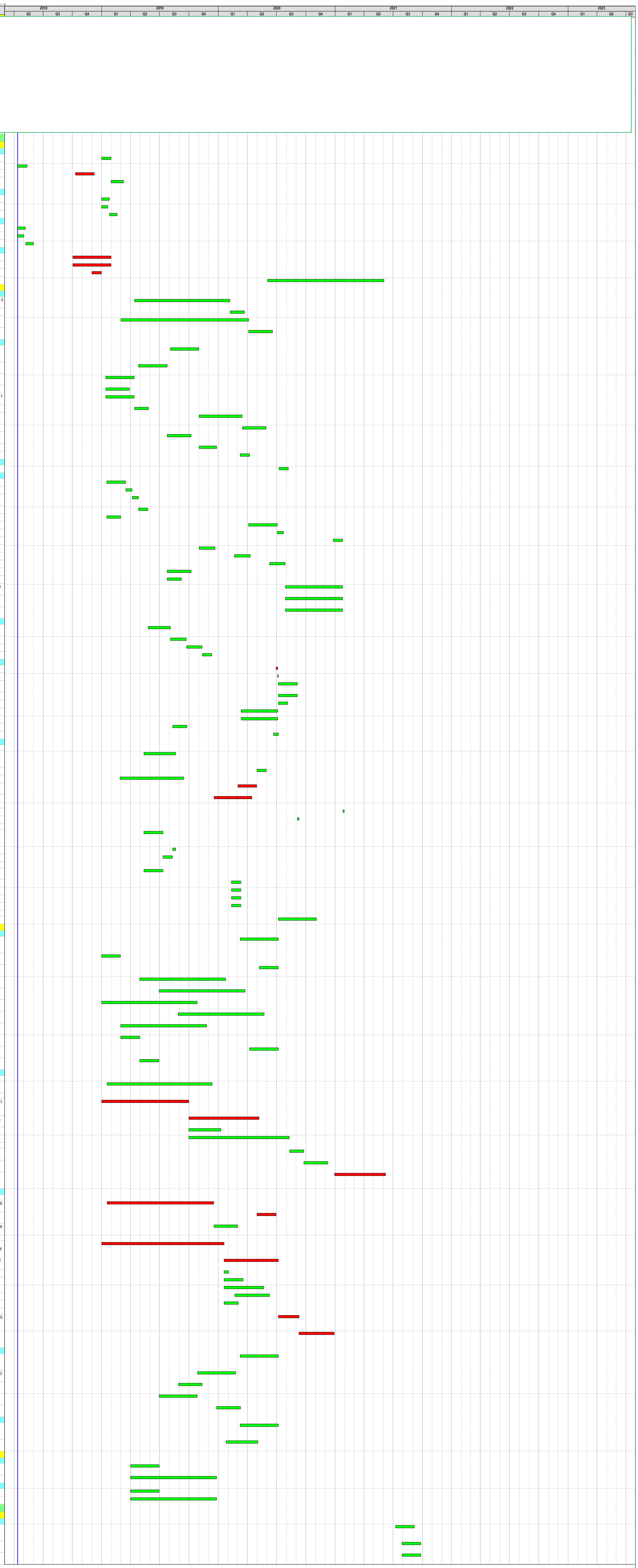
There were no complaints, notification of summons or prosecution recorded in the reporting period.

It is noted that most environmental pollution control and mitigation measures were properly implemented and the construction 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: FS, 63-4900: FS, 63-4600: FS, M11. 3: FS, M11. 4: FS
487	**SA2.5.04.D Part X1 Area D**			374	29-Jun-19	06-Jul-20	6		
488	5.04.D	54-4100	General Area & Access Road	120	09-Mar-20	06-Jul-20	6	23-1300: FS, 53-5500: SS, 53-5600: FF, 53-6200: SS, 53-6300: FF, 12-1000: FF, 11-1100: FS	32-2100: FS, 53-4800: FS, 53-4900: FS, 53-5000: FS, 53-7000: FS, M 8. 5: FS
489	5.04.D	54-4200	VWF Building	120	28-Oct-19	24-Feb-20	63	23-1300: FS, 23-5200: FS, 41-4500: FS, 11-1100: FS, 54-4300: SS 60	32-2100: FS, M 8. 4: FS, M 8. 6: FS -60, M 8. 7: FS, 12-1000: FS, 54-4500: SS 60
490	5.04.D	54-4300	Weighbridge	75	29-Aug-19	11-Nov-19	63	41-4200: FS, 23-1300: FS, 23-5200: FS, 11-1100: FS, 54-4400: SS 60	32-2100: FS, M 8. 6: FS -40, M 8. 7: FS, 54-4200: SS 60
491	5.04.D	54-4400	Weighmaster House	120	29-Jun-19	26-Oct-19	64	23-1300: FS, 23-5200: FS, 11-1100: FS, 54-2000: FS	32-2100: FS, M 8. 1: FS, 12-1000: FS, 54-4300: SS 60
492	5.04.D	54-4500	Wheel Wash Bath	75	27-Dec-19	10-Mar-20	63	23-1300: FS, 23-5200: FS, 41-4500: FS, 11-1100: FS, 54-4200: SS 60	32-2100: FS, M 8. 3: FS, 12-1000: FS, 54-4700: SS 30
493	**SA2.5.04.E Part X1 Area E & Part X2**			163	26-Jan-20	06-Jul-20	6		
494	5.04.E	54-4600	General Area & Access Road	120	09-Mar-20	06-Jul-20	6	53-5500: SS, 53-5600: FF, 53-6200: SS, 53-6300: FF, 12-1000: FF, 11-1100: FS, 11-1200: FS	32-2100: FS, 53-4900: FS, 53-5000: FS, 53-7000: FS
495	5.04.E	54-4700	Guard House & Entrance Gate	100	26-Jan-20	04-May-20	63	23-1300: FS, 23-5200: FS, 11-1100: FS, 11-1200: FS, 54-4500: SS 30	32-2100: FS, M 8. 2: FS, 12-1000: FS
496	**SA2.5.08 Landscape Works - Advance Screen Planting in CWB Country Park**			270	01-Apr-19	26-Dec-19	529		
497	**SA2.5.08.N Area N**			270	01-Apr-19	26-Dec-19	529		
498	5.08.N	58-1000	Advance Screen Planting	90	01-Apr-19*	29-Jun-19	529	23-7900: FS, 31-1100: FS, 11-1500: FS	14-1800: SS -60, 58-1100: SS, 68-1600: SS 30, M 3. 2: FS
499	5.08.N	58-1100	Establishment of Screen Planting	270	01-Apr-19*	26-Dec-19	529	58-1000: SS, 14-1800: FS	32-1500: FS
500	**SA2.5.08.S Area S**			270	01-Apr-19	26-Dec-19	529		
501	5.08.S	58-1200	Advance Screen Planting	90	01-Apr-19*	29-Jun-19	529	23-7900: FS, 31-1100: FS, 11-1500: FS	58-1300: SS, M 3. 2: FS
502	5.08.S	58-1300	Establishment of Screen Planting	270	01-Apr-19*	26-Dec-19	529	58-1200: SS	32-1500: FS
503	**SA2.6 Construction (Remaining Works)**			1474	01-Apr-19	13-Apr-23	30		
504	**SA2.6.02 Advance Works**			80	09-Jul-21	26-Sep-21	339		
505	**SA2.6.02.9 Demolition of SENT Infrastructure Area**			80	09-Jul-21	26-Sep-21	339		
506	6.02.9	62-1000	Existing SENT General Infrastructure Facility & Building	60	09-Jul-21	06-Sep-21	239	32-2100: FS, 12-1300: FS	23-2000: SS -90, 63-2800: FS, 63-2900: FS, 63-3000: FS, 63-4300: FS, M12. 4: FS -30, M12. 5: FS
507	6.02.9	62-1100	Existing SENT LTP	60	29-Jul-21	26-Sep-21	339	32-1500: FS, 12-1300: FS, 23-2200: FS	63-3000: FS, 63-4500: FS, M12. 4: FS -30, M12. 5: FS
508	6.02.9	62-1200	Existing SENT LFG	60	29-Jul-21	26-Sep-21	339	32-1500: FS, 12-1300: FS, 23-2200: FS	63-3000: FS, 63-4500: FS, M12. 4: FS -30, M12. 5: FS



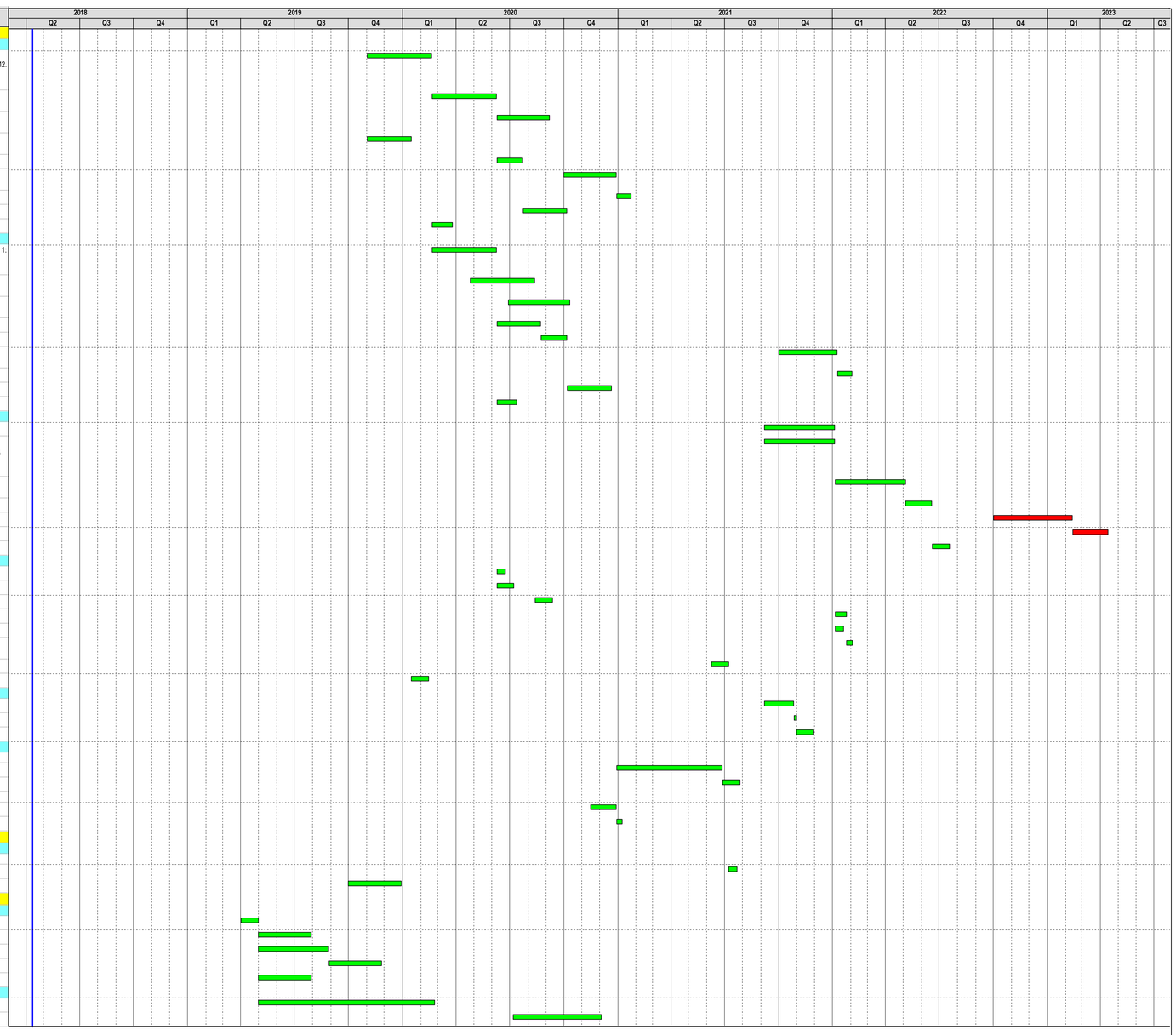
Remaining Work
Critical Remaining Work
Milestone

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

GREEN VALLEY LANDFILL, LIMITED

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

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



Remaining Work
Critical Remaining Work
Milestone

Page : 4 of 4

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

GREEN VALLEY LANDFILL LIMITED

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

Annex B

Environmental Mitigation Implementation Schedule

Annex B Environmental Mitigation Implementation Schedule

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1) D C O/R A	What requirements or standards for the measure to achieve?	Implementation Status and Remarks
Air Quality – Construction Phase								
4.8.1	AQ1	<u>Blasting</u> • The area within 30m of the blasting area will be wetted prior to blasting. • Blasting will not be carried out when the strong wind signal or tropical cyclone warning signal No. 3 or higher is hoisted, unless this is with the express prior permission of the Commissioner of Mines. • loose material and stones in the Site will be removed prior to the blast operation • During blasting, blast nets, screens and other protective covers will be used to prevent the projection of flying fragments and material resulting from blasting	To minimise potential dust nuisance	Blasting area and 30m of blasting area	SENTX Contractor	✓	*Air Pollution Control (Construction Dust) Regulations*	Not applicable. Blasting is not required in the latest landfill design
4.8.1	AQ2	<u>Rock Drilling</u> • Watering will be carried out at the rock drilling activities to avoid fugitive dust emissions.	To minimise potential dust nuisance	Rock drilling area	SENTX Contractor	✓	*Air Pollution Control (Construction Dust) Regulations*	Not applicable. Rock drilling is not required in the latest landfill design

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

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1) D	C	O/R	A	What requirements or standards for the measure to achieve?	Implementation Status and Remarks
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 with water so as to ensure that the entire surface is wet.	To minimise potential dust nuisance	All construction works area	SENTX Contractor		✓			*Air Pollution Control (Construction Dust) Regulations* *HKAQO and EIAO-TM Annex 4*	Deficiency of mitigation measures but rectified by the Contractor
4.8.1	AQ5	<u>Loading, unloading or transfer of dusty materials</u> • All dusty materials will be sprayed with water immediately prior to any loading, unloading or transfer operation so as to maintain the dusty material wet.	To minimise potential dust nuisance	All construction works area	SENTX Contractor		✓			*Air Pollution Control (Construction Dust) Regulations* *HKAQO and EIAO-TM Annex 4*	Deficiency of mitigation measures but rectified by the Contractor
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	To minimise potential dust nuisance	Site boundary and entrance	SENTX Contractor		✓			*Air Pollution Control (Construction Dust) Regulations* *HKAQO and EIAO-*	Not applicable

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1) D	C	O/R	A	What requirements or standards for the measure to achieve?	Implementation Status and Remarks
		ground level will be provided along the entire length of that portion of the site boundary except for the site entrance or exit.								*TM Annex 4*	
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*	Not applicable
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*	Not applicable
4.8.1	AQ9	<u>Construction of the Superstructure of Building</u> • Effective dust screens, sheeting or netting will be provided to enclose the scaffolding from the ground level up to the highest level of the scaffolding.	To minimise potential dust nuisance	All construction works area	SENTX Contractor		✓			*Air Pollution Control (Construction Dust) Regulations* *HKAQO and EIAO-TM Annex 4*	Implemented

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1) D	C	O/R	A	What requirements or standards for the measure to achieve?	Implementation Status and Remarks
4.8.1	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 gaseous emissions.	To minimise potential dust nuisance	All construction works area	SENTX Contractor		✓			*HKAQO and EIAO-TM Annex 4*	Deficiency of mitigation measures but rectified by the Contractor
4.10.1	AQ12	Dust monitoring once every 6 days	Ensure the dust generated from the project meets the air quality requirement	At monitoring locations shown in *Figure 3.2a*	SENTX Contractor		✓			*HKAQO and EIAO-TM Annex 4*	Implemented
4.10.2	AQ41	Monitoring of ambient TSP once every 6 days	Ensure the dust emission from the project meets the dust requirement	At monitoring locations shown in *Figure 11.3a*	SENTX Contractor		✓	✓		*HKAQO* and *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											

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1) D	C	O/R	A	What requirements or standards for the measure to achieve?	Implementation Status and Remarks
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 possible; • Machines and plant (such as trucks) that may be in intermittent use will be shut down between work periods or should be throttled down to a minimum; • Plant known to emit noise strongly in one direction will, wherever possible, be orientated so that the noise is directed away from the nearby NSRs; and • Material stockpiles and other structures will be effectively utilised, wherever practicable, in screening noise from on-site construction activities.	To minimise potential construction noise nuisance.	All construction works area	SENTX Contractor		✓			*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) D	C	O/R	A	What requirements or standards for the measure to achieve?	Implementation Status and Remarks
5.8	N2	Weekly noise monitoring	Ensure noise generated from the project meets the criteria	At monitoring locations shown in *Figure 6.4a*	SENTX Contractor		✓			*Noise Control Ordinance (NCO) and EIAO-TM Annex 5*	Implemented
Water Quality – Construction Phase											
6.8.1	WQ1	Construction Runoff • Exposed soil areas will be minimised to reduce the contamination of runoff and erosion.	To minimise potential water quality impacts arising from the construction works	All construction works area	SENTX Contractor		✓			*ProPECC PN 1/94* *EIAO-TM Annex 6*	Deficiency of mitigation measures but rectified by the Contractor
6.8.1	WQ2	• 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*	Deficiency of mitigation measures but rectified by the Contractor
6.8.1	WQ3	• Silt removal facilities, channels and manholes will be maintained and the deposited silt and grit should be removed regularly to ensure they are functioning properly at all times.	To minimise potential water quality impacts arising from the construction works	All construction works area	SENTX Contractor		✓			*ProPECC PN 1/94* *WPCO* *EIAO-TM Annex 6*	Deficiency of mitigation measures but rectified by the Contractor
6.8.1	WQ4	• Temporary covers such as tarpaulin will also be provided to minimise the generation of high SS runoff.	To minimise potential water quality impacts arising from the construction works	All construction works area	SENTX Contractor		✓			*ProPECC PN 1/94* *WPCO*	Implemented
6.8.1	WQ5	• The surface runoff contained any oil	To minimise potential	All	SENTX		✓			*ProPECC PN 1/94*	Not applicable

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1) D	C	O/R	A	What requirements or standards for the measure to achieve?	Implementation Status and Remarks
		and grease will pass through the oil interceptors.	water quality impacts arising from the construction works	construction works area	Contractor					*WPCO* *EIAO-TM Annex 6*	
6.8.1	WQ6	• All sewer and drains will be sealed to prevent building debris, soil etc from entering public sewers/drains before commencing any demolition works	To minimise potential water quality impacts arising from the demolition works	Infrastructure area at existing SENT Landfill	SENTX Contractor		✓			*ProPECC PN 1/94* *WPCO* *EIAO-TM Annex 6*	Not applicable
6.8.1	WQ7	• During the excavation works for the twin drainage tunnels, the recycle water for cooling the cutter head of the TBM will be conveyed to the sedimentation tanks for treatment and most of the treated water will be reused, where applicable and as much as possible, in the boring operations.	To minimise potential water quality impacts arising from the tunnel works	Tunnel boring sites	SENTX Contractor		✓			*ProPECC PN 1/94* *WPCO* *EIAO-TM Annex 6*	Not applicable. Excavation of drainage tunnels is not required in the latest landfill design.
6.8.1	WQ8	• The fuel and waste lubricant oil from the on-site maintenance of machinery and equipment will be collected by a licensed chemical waste collector.	To minimise potential water quality impacts arising from improper handling of fuel and oil	SENTX Site	SENTX Contractor		✓			*ProPECC PN 1/94* *WPCO* *Waste Disposal Ordinance (WDO)*	Implemented
6.8.1	WQ9	• Implementation of excavation schedules, lining and covering of excavated stockpiles	To minimise contaminated stormwater run-off from the SENTX Site	All construction works	SENTX Contractor		✓			*ProPECC PN 1/94* *WPCO* *EIAO-TM Annex 6*	Implemented
6.13	WQ10	• Monitoring of surface water quality will be conducted on a regular basis as stated in the EM&A Manual.	To minimise potential water quality impacts on surface water arising from the construction works	SENTX Site	SENTX Contractor		✓			*WPCO* *Water-TM*	Implemented

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1) D	C	O/R	A	What requirements or standards for the measure to achieve?	Implementation Status and Remarks
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*	Reminder was given to the Contractor
6.8.2	WQ13	• A licensed waste collector will be employed to clean the chemical toilets on a regular basis.	To minimise potential water quality impacts arising from the sewage effluents	SENTX Site	SENTX Contractor		✓			*WPCO* *WDO*	Deficiency of mitigation measures but rectified by the Contractor
Waste Management – Construction Phase											
7.6.1	WM1	All the necessary waste disposal permits are obtained prior to the commencement of construction work.	To ensure compliance with relevant statutory requirements	Before construction works commence	SENTX Contractor	✓	✓			*WDO*	Implemented
7.6.1	WM2	<u>Management of Waste Disposal</u> The construction contractor will open a billing account with the EPD. Every construction waste or public fill load to be transferred to the Government waste disposal facilities such as public fill reception facilities, sorting facilities, landfills will required a valid "chit" which contains the information of the account holder to facilitate waste	To ensure that adverse environmental impacts are prevented	SENTX Site	SENTX Contractor		✓			*WDO* *Waste Disposal (Charges for Disposal of Construction Waste) Regulation;* *Works Bureau Technical Circular No.31/2004; 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) D	C	O/R	A	What requirements or standards for the measure to achieve?	Implementation Status and Remarks
		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.								*Annex 5 and Annex 6 of Appendix G of ETWBTC No. 19/2005)*	
7.6.1	WM3	<u>Measures for the Reduction of Construction Waste Generation</u> Inert and non-inert construction waste will be segregated and stored in different containers or skips to facilitate reuse or recycling of the inert waste and proper disposal of the non-inert construction waste. Specific areas of the work site will be designated for such segregation and storage if immediate use is not practicable.	To reduce construction waste generation	SENTX Site	SENTX Contractor		✓			*WDO* *EIAO-TM Annex 7*	Deficiency of mitigation measures but rectified by the Contractor
7.6.1	WM4	<u>Chemical Waste</u> 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*	To ensure proper handling of chemical waste	SENTX Site	SENTX Contractor		✓			*WDO* *Code of Practice on the Packaging, Handling and Storage of Chemical Wastes*	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) D C O/R A	What requirements or standards for the measure to achieve?	Implementation Status and Remarks
		Chemical Wastes.						
7.6.1	WM5	<u>Sewage</u>						
		An adequate number of portable toilets will be provided at the site to ensure that sewage from site staff is properly collected. The portable toilets will be desludged and maintained regularly by a specialist contractor.	To ensure proper handling of sewage	SENTX Site	SENTX Contractor	✓	*WDO* *EIAO-TM Annex 7*	Implemented
7.6.1 and SENTX latest design	WM6	<u>General Refuse</u>						
		General refuse will be stored in enclosed bins separately from construction and chemical wastes. The general refuse will be delivered to a transfer station or other landfill, separately from construction and chemical wastes, on a daily basis to reduce odour, pest and litter impacts. Recycling bins will be provided at strategic locations to facilitate recovery of aluminium can and waste paper from the SENTX Site. Materials recovered will be sold for recycling.	To ensure proper handling of general refuse	SENTX Site	SENTX Contractor	✓	*WDO* *EIAO-TM Annex 7*	Deficiency of mitigation measures but rectified by the Contractor
7.6.1	WM7	<u>Staff Training</u>						
		At the commencement of the construction works, training will be provided to workers on the concepts of site cleanliness and on appropriate waste management procedures, including	To ensure that adverse environmental impacts are prevented	SENTX Site	SENTX Contractor	✓		Implemented

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1) D	C	O/R	A	What requirements or standards for the measure to achieve?	Implementation Status and Remarks
		waste reduction, reuse and recycling.									
7.8	WM8	<u>Environmental Monitoring & Audit Requirements</u> Weekly audits of the waste management practices will be carried out during the construction phase. The audits examine all aspects of waste management including waste generation, storage, recycling, transport and disposal.	To ensure that adverse environmental impacts are prevented	SENTX Site	SENTX Contractor		✓			*WDO*	Implemented
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 Paragraphs 8.23 to 8.28 of EPD's *Guidance Note* will be followed.	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) D	C	O/R	A	What requirements or standards for the measure to achieve?	Implementation Status and Remarks
		In the event of the trigger levels being exceeded, it is recommended that a person, such as the Safety Officer, is nominated, with deputies, to be responsible for dealing with any emergency which may occur due to landfill gas. In an emergency situation, the nominated person, or his deputies, shall have the necessary authority and shall ensure that the confined space is evacuated and the necessary works implemented for reducing the concentrations of gas. The appropriate organisations shall be contact.									
8.6.3	LFG4	Implementation of engineering measures according to Contract Specification requirements. These measures will include the placement of liner and installation of landfill gas management system to contain, manage and control landfill gas.	To protect workers from landfill gas risk	SENTX Site	SENTX Contractor	✓	✓	✓	✓	*EIAO-TM Annex 7*	Implemented
8.6.3	LFG5	Engineering measures to significant engineering measures will be required in the design of the SENTX to protect the staff working in the infrastructure area. These measures include a combination of passive and active systems (examples are recommended in EPD's *Guidance Notes*). Landfill gas monitoring boreholes will be installed at the edge of the waste slope	To protect workers from landfill gas risk	Infrastructure Area	SENTX Contractor	✓	✓			*EPD's Landfill Gas Hazards Assessment Guidance Note* *EIAO-TM Annex 7*	Implemented

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1) D C O/R A	What requirements or standards for the measure to achieve?	Implementation Status and Remarks
		between the waste and the new infrastructure area to monitor the migration of landfill gas, if any.						
Ecology – Construction Phase								
9.10.2	EC1	Measures to control construction runoff: • 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*	Deficiency of mitigation measures but rectified by the Contractor
		• 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;					-	Deficiency of mitigation measures but rectified by the Contractor
		• Silt removal facilities, channels and manholes will be maintained and the deposited silt and grit will be removed regularly to ensure they are functioning properly at all times;					-	Deficiency of mitigation measures but rectified by the Contractor
		• Temporary covers such as tarpaulin will also be provided to minimise the generation of high suspended solids runoff;					-	Implemented

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1) D	C	O/R	A	What requirements or standards for the measure to achieve?	Implementation Status and Remarks
		• The surface runoff contained any oil and grease will pass through the oil interceptors; and,								-	Not applicable
		• Control measures, including implementation of excavation schedules, lining and covering of excavated stockpiles will be implemented to minimise contaminated stormwater run-off from the SENTX site.								-	Implemented
9.10.2 and SENTX latest design	EC2	<u>Good Construction Practice</u>: • Fences along the boundary of the SENTX Site will be erected before the commencement of works to prevent vehicle movements, and encroachment of personnel, onto adjacent areas. • The work site boundaries will be regularly checked to ensure that they are not breached and that damage does not occur to surrounding areas.	To minimise potential ecological impacts arising from the Project	SENTX Site	SENTX Contractor		✓			*EIAO-TM Annex 16*	Implemented
9.12.1	EC9	<u>Environmental Monitoring & Audit Requirements</u> The implementation of the ecological mitigation measures should be checked as part of the environmental monitoring and audit procedures during the	To ensure that adverse ecological impacts are prevented	SENTX	SENTX Contractor		✓	✓	✓	*EIAO-TM Annex 16*	Implemented

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1) D	C	O/R	A	What requirements or standards for the measure to achieve?	Implementation Status and Remarks
		construction period.									
Landscape and Visual – Construction Phase											
10.6.5	LV1	CM1 - The construction area and area allowed for the contractor's office, leachate treatment plant and laboratory areas will be minimised to a practical minimum, to avoid impacts on adjacent landscape.	To minimise the landscape and visual impacts	SENTX Site	SENTX Contractor		✓			*EIAO-TM Annex 18 and ETWBC 3/2006*	Implemented
10.6.5	LV2	CM2 - Topsoil, where identified, will be stripped and stored for re-use in the construction of the soft landscape works, where practical. The Contract Specification will include storage and reuse of topsoil as appropriate.	To minimise the landscape and visual impacts	All construction works area	SENTX Contractor		✓			*EIAO-TM Annex 18*	Not applicable
10.6.5	LV3	CM3 - All existing trees at the edges of the landfill will be carefully protected during construction. Detailed Tree Protection Specification will be provided in the Contract Specification. Under this Specification, the Contractor will be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in Contractor's works areas.	To minimise the landscape and visual impacts	Potential impacted area	SENTX Contractor		✓			*EIAO-TM Annex 18 and ETWBC 3/2006*	Implemented
10.6.5	LV4	CM4 - Trees unavoidably affected by the works will be transplanted, where necessary and practical. A detailed Tree	To minimise the landscape and visual impacts	Potential impacted area	SENTX Contractor	✓	✓			*EIAO-TM Annex 18 and ETWBC 3/2006*	Not applicable

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? (1) D	C	O/R	A	What requirements or standards for the measure to achieve?	Implementation Status and Remarks
		Transplanting Specification will be provided in the Contract Specification, if applicable. Sufficient time for necessary tree root and crown preparation periods will be allowed in the project programme.									
10.6.5 and SENTX latest design	LV5	CM5 - Within 3 months of taking possession of the SENTX Site, the Contractor will plant advance screen planting of native species at Light Standard size at 1.5m centres along the High Junk Peak Trail so as to screen views of the Works from the trail. Tree planting locations will be agreed with AFCD. Works will be completed within 9 months of taking possession of the SENTX Site.	To minimise the landscape and visual impacts	At High Junk Peak Hiking Trail	SENTX Contractor		✓			*EIAO-TM Annex 18*	Implemented
10.6.5	LV6	CM6 - The Contractor's office, leachate treatment plant and laboratory will be given an aesthetic treatment in earth tones to reduce their visual impact and albedo and blend them into the surrounding landscape.	To minimise the landscape and visual impacts	Infrastructure area	SENTX Contractor	✓	✓			*EIAO-TM Annex 18*	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	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) D	C	O/R	A	What requirements or standards for the measure to achieve?	Implementation Status and Remarks
		site, along access roads and in and around car parks. This will be supplemented with shrub planting, where appropriate.									
10.6.5	LV8	CM8 - Planting trials will be carried out in an on-site nursery prior to implementation of the first phase of restoration to establish the best planting matrix and management intensity of the recommended plant materials for the restoration.	To minimise the landscape and visual impacts	SENTX Site	SENTX Contractor		✓			*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

Annex C

Monitoring Schedule for This Reporting Period

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

January 2020

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

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

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

February 2020

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

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

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

March 2020

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

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

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

April 2020

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

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

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

May 2020

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

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

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

June 2020

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

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

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

July 2020

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

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

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

August 2020

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

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

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

September 2020

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

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

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

October 2020

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

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

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

November 2020

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

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

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

December 2020

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

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

Annex D

Air Quality

Annex D1

24-hour TSP Monitoring Results

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

Start Date	Start Time	Finish Date	Finish Time	Weather	24-hour TSP (µg/m3)
5 Jan 20	8:30	6 Jan 20	8:30	Cloudy	114
11 Jan 20	8:00	12 Jan 20	8:00	Fine	95
17 Jan 20	15:20	18 Jan 20	15:20	Cloudy	124
23 Jan 20	8:00	24 Jan 20	8:00	Fine	116
29 Jan 20	9:32	30 Jan 20	9:32	Fine	103
4 Feb 20	8:00	5 Feb 20	8:00	Cloudy	104
10 Feb 20	8:00	11 Feb 20	8:00	Cloudy	98
16 Feb 20	8:30	17 Feb 20	8:30	Rainy	117
22 Feb 20	8:00	23 Feb 20	8:00	Fine	105
28 Feb 20	9:05	29 Feb 20	9:05	Fine	93
5 Mar 20	8:30	6 Mar 20	8:30	Cloudy	94
11 Mar 20	9:25	12 Mar 20	9:25	Cloudy	105
17 Mar 20	8:00	18 Mar 20	8:00	Rainy	91
23 Mar 20	11:09	24 Mar 20	11:09	Fine	113
29 Mar 20	8:00	30 Mar 20	8:00	Rainy	107
4 Apr 20	8:00	5 Apr 20	8:00	Rainy	122
10 Apr 20	8:00	11 Apr 20	8:00	Fine	95
16 Apr 20	8:00	17 Apr 20	8:00	Fine	100
22 Apr 20	13:35	23 Apr 20	13:35	Rainy	111
28 Apr 20	8:00	29 Apr 20	8:00	Fine	95
4 May 20	13:00	5 May 20	13:00	Cloudy	118
10 May 20	8:00	11 May 20	8:00	Rainy	92
16 May 20	8:00	17 May 20	8:00	Cloudy	93
22 May 20	10:20	23 May 20	10:20	Rainy	115
28 May 20	8:00	29 May 20	8:00	Rainy	105
3 Jun 20	13:10	4 Jun 20	13:10	Rainy	104
9 Jun 20	8:00	10 Jun 20	8:00	Rainy	86
15 Jun 20	8:40	16 Jun 20	8:40	Cloudy	93
21 Jun 20	8:00	22 Jun 20	8:00	Rainy	91
27 Jun 20	8:00	28 Jun 20	8:00	Cloudy	105
3 Jul 20	9:50	4 Jul 20	9:50	Rainy	92
9 Jul 20	8:00	10 Jul 20	8:00	Fine	88
15 Jul 20	9:24	16 Jul 20	9:24	Cloudy	84
21 Jul 20	8:00	22 Jul 20	8:00	Fine	86
27 Jul 20	10:15	28 Jul 20	10:15	Fine	105
2 Aug 20	8:00	3 Aug 20	8:00	Rainy	103
8 Aug 20	8:00	9 Aug 20	8:00	Rainy	95
14 Aug 20	13:32	15 Aug 20	13:32	Cloudy	111
20 Aug 20	8:00	21 Aug 20	8:00	Rainy	116
26 Aug 20	9:05	27 Aug 20	9:05	Rainy	88
1 Sep 20	8:00	2 Sep 20	8:00	Rainy	113
7 Sep 20	11:00	8 Sep 20	11:00	Rainy	102
13 Sep 20	8:00	14 Sep 20	8:00	Cloudy	98
19 Sep 20	8:00	20 Sep 20	8:00	Rainy	84
25 Sep 20	13:05	26 Sep 20	13:05	Rainy	109
1 Oct 20	8:00	2 Oct 20	8:00	Cloudy	111
7 Oct 20	12:00	8 Oct 20	12:00	Cloudy	106
13 Oct 20	8:00	14 Oct 20	8:00	Rainy	95
19 Oct 20	8:40	20 Oct 20	8:40	Cloudy	106
25 Oct 20	8:00	26 Oct 20	8:00	Cloudy	113
31 Oct 20	8:00	1 Nov 20	8:00	Cloudy	114
6 Nov 20	13:00	7 Nov 20	13:00	Cloudy	112
12 Nov 20	8:00	13 Nov 20	8:00	Fine	108
18 Nov 20	13:15	19 Nov 20	13:15	Cloudy	101
24 Nov 20	8:00	25 Nov 20	8:00	Cloudy	98
30 Nov 20	9:30	1 Dec 20	9:30	Cloudy	115

Start Date	Start Time	Finish Date	Finish Time	Weather	24-hour TSP (µg/m3)
6 Dec 20	8:00	7 Dec 20	8:00	Cloudy	102
12 Dec 20	8:00	13 Dec 20	8:00	Cloudy	116
18 Dec 20	12:15	19 Dec 20	12:15	Cloudy	108
24 Dec 20	8:30	25 Dec 20	8:30	Cloudy	103
30 Dec 20	16:35	31 Dec 20	16:35	Cloudy	100
				Average	103
				Min	84
				Max	124

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

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

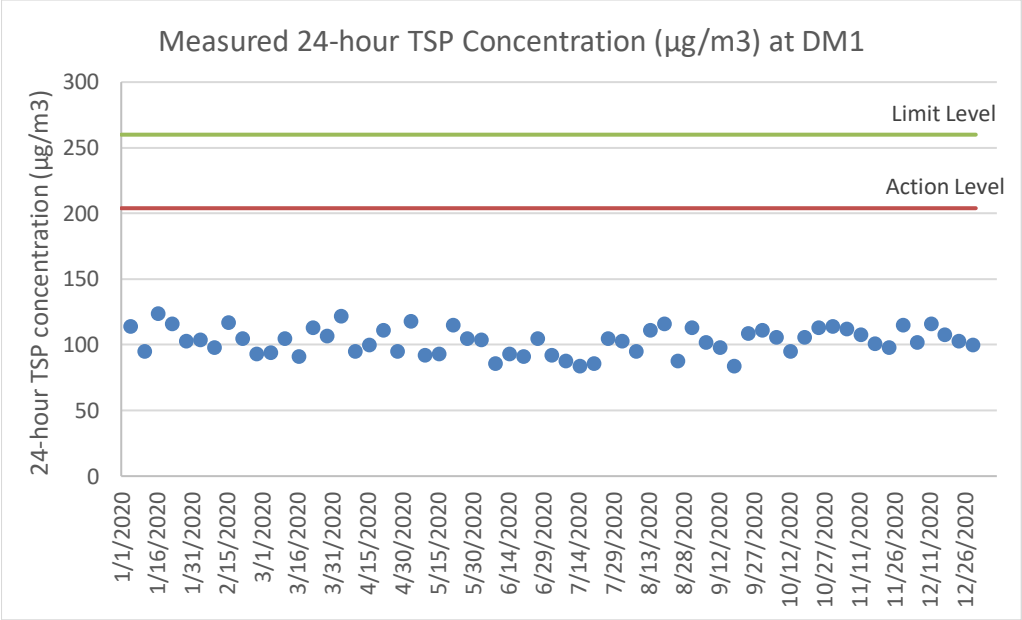


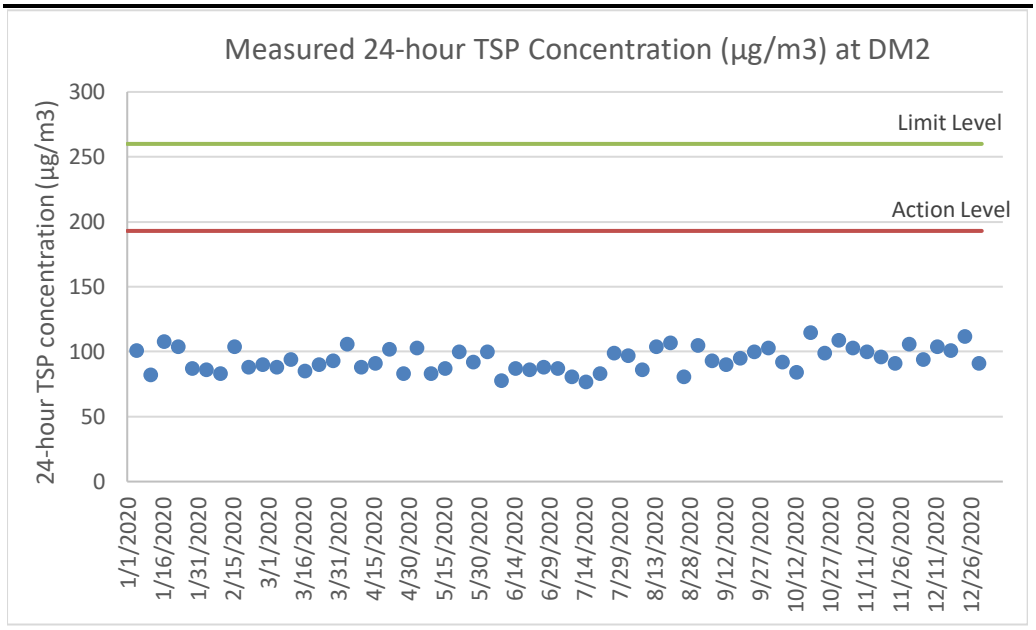
Table D1.2 24-hour TSP Monitoring Results at DM2

Start Date	Start Time	Finish Date	Finish Time	Weather	24-hour TSP (µg/m3)
5 Jan 20	8:30	6 Jan 20	8:30	Cloudy	101
11 Jan 20	8:00	12 Jan 20	8:00	Fine	82
17 Jan 20	15:30	18 Jan 20	15:30	Cloudy	108
23 Jan 20	8:00	24 Jan 20	8:00	Fine	104
29 Jan 20	9:45	30 Jan 20	9:45	Fine	87
4 Feb 20	8:00	5 Feb 20	8:00	Cloudy	86
10 Feb 20	8:00	11 Feb 20	8:00	Cloudy	83
16 Feb 20	8:30	17 Feb 20	8:30	Rainy	104
22 Feb 20	8:00	23 Feb 20	8:00	Fine	88
28 Feb 20	9:10	29 Feb 20	9:10	Fine	90
5 Mar 20	8:30	6 Mar 20	8:30	Cloudy	88
11 Mar 20	9:35	12 Mar 20	9:35	Cloudy	94
17 Mar 20	8:00	18 Mar 20	8:00	Rainy	85
23 Mar 20	11:15	24 Mar 20	11:15	Fine	90
29 Mar 20	8:00	30 Mar 20	8:00	Rainy	93
4 Apr 20	8:00	5 Apr 20	8:00	Rainy	106
10 Apr 20	8:00	11 Apr 20	8:00	Fine	88
16 Apr 20	8:00	17 Apr 20	8:00	Fine	91
22 Apr 20	13:45	23 Apr 20	13:45	Rainy	102
28 Apr 20	8:00	29 Apr 20	8:00	Fine	83
4 May 20	13:20	5 May 20	13:20	Cloudy	103
10 May 20	8:00	11 May 20	8:00	Rainy	83
16 May 20	8:00	17 May 20	8:00	Cloudy	87
22 May 20	10:25	23 May 20	10:25	Rainy	100
28 May 20	8:00	29 May 20	8:00	Rainy	92
3 Jun 20	13:16	4 Jun 20	13:16	Rainy	100
9 Jun 20	8:00	10 Jun 20	8:00	Rainy	78
15 Jun 20	8:44	16 Jun 20	8:44	Cloudy	87
21 Jun 20	8:00	22 Jun 20	8:00	Rainy	86
27 Jun 20	8:00	28 Jun 20	8:00	Cloudy	88
3 Jul 20	10:00	4 Jul 20	10:00	Rainy	87
9 Jul 20	8:00	10 Jul 20	8:00	Fine	81
15 Jul 20	9:38	16 Jul 20	9:38	Cloudy	77
21 Jul 20	8:00	22 Jul 20	8:00	Fine	83
27 Jul 20	10:20	28 Jul 20	10:20	Fine	99
2 Aug 20	8:00	3 Aug 20	8:00	Rainy	97
8 Aug 20	8:00	9 Aug 20	8:00	Rainy	86
14 Aug 20	13:37	15 Aug 20	13:37	Cloudy	104
20 Aug 20	8:00	21 Aug 20	8:00	Rainy	107
26 Aug 20	9:10	27 Aug 20	9:10	Rainy	81
1 Sep 20	8:00	2 Sep 20	8:00	Rainy	105
7 Sep 20	11:10	8 Sep 20	11:10	Rainy	93
13 Sep 20	8:00	14 Sep 20	8:00	Cloudy	90
19 Sep 20	8:00	20 Sep 20	8:00	Rainy	95
25 Sep 20	13:20	26 Sep 20	13:20	Rainy	100
1 Oct 20	8:00	2 Oct 20	8:00	Cloudy	103
7 Oct 20	12:00	8 Oct 20	12:00	Cloudy	92
13 Oct 20	8:00	14 Oct 20	8:00	Rainy	84
19 Oct 20	8:50	20 Oct 20	8:50	Cloudy	115
25 Oct 20	8:00	26 Oct 20	8:00	Cloudy	99
31 Oct 20	8:00	1 Nov 20	8:00	Cloudy	109
6 Nov 20	13:05	7 Nov 20	13:05	Cloudy	103
12 Nov 20	8:00	13 Nov 20	8:00	Fine	100
18 Nov 20	13:25	19 Nov 20	13:25	Cloudy	96
24 Nov 20	8:00	25 Nov 20	8:00	Cloudy	91
30 Nov 20	9:40	1 Dec 20	9:40	Cloudy	106
6 Dec 20	8:00	7 Dec 20	8:00	Cloudy	94

Start Date	Start Time	Finish Date	Finish Time	Weather	24-hour TSP (µg/m3)
12 Dec 20	8:00	13 Dec 20	8:00	Cloudy	104
18 Dec 20	12:25	19 Dec 20	12:25	Cloudy	101
24 Dec 20	8:30	25 Dec 20	8:30	Cloudy	112
30 Dec 20	16:45	31 Dec 20	16:45	Cloudy	91
				Average	94
				Min	77
				Max	115

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

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



Annex D2

Event and Action Plan for Dust Monitoring

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

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

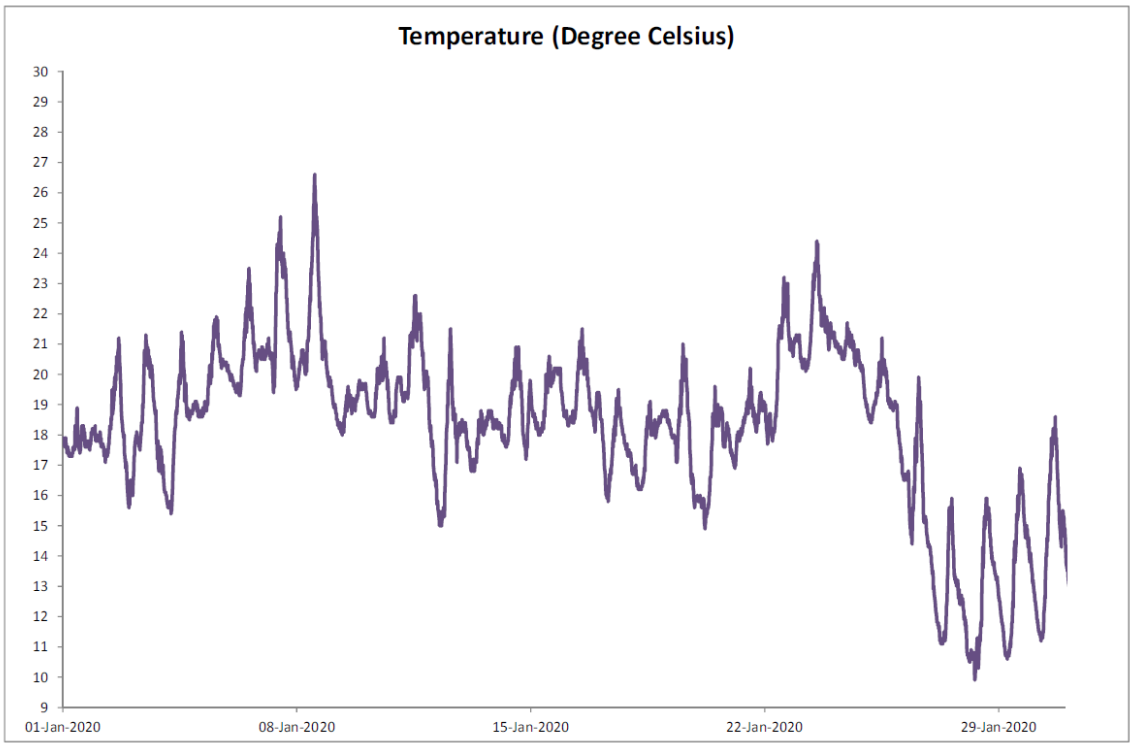
Event	Action		
	ET	IEC	Contractor
Limit Level			
Exceedance for one sample	• Identify the source(s) and investigate the cause(s) of exceedance • Prepare Notification of Exceedance within 24 hours • Inform Contractor, IEC, Project Proponent and EPD whether the cause of exceedance is due to the Project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

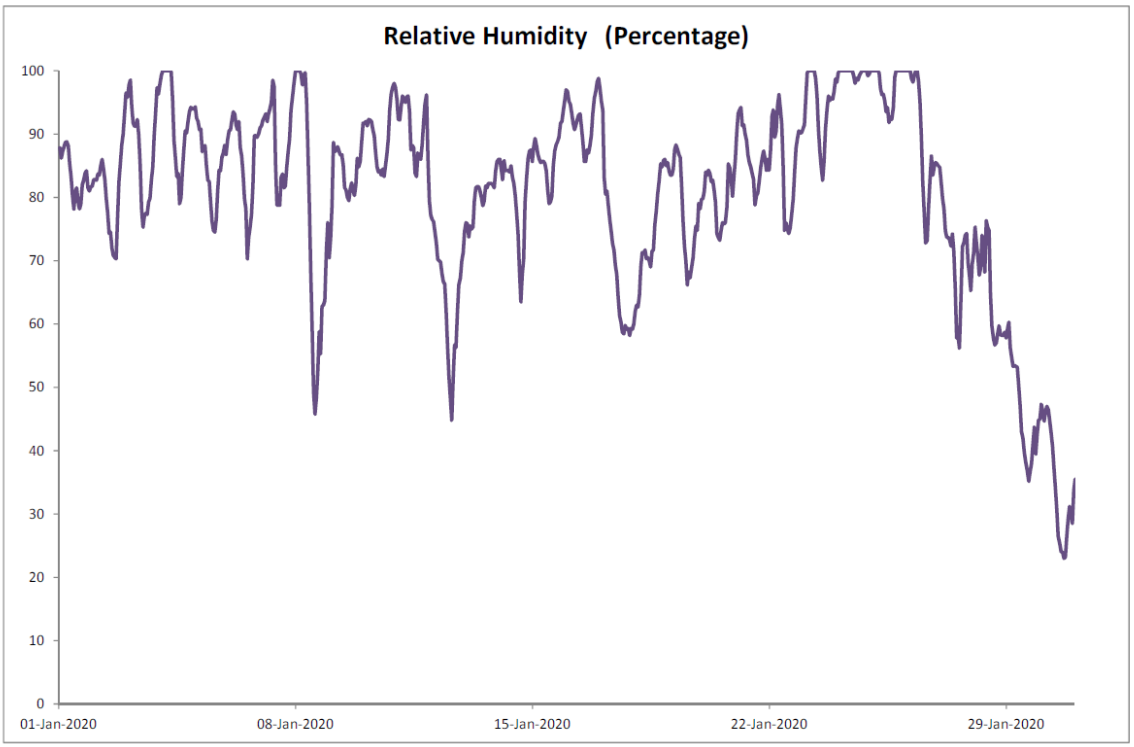
Annex D3

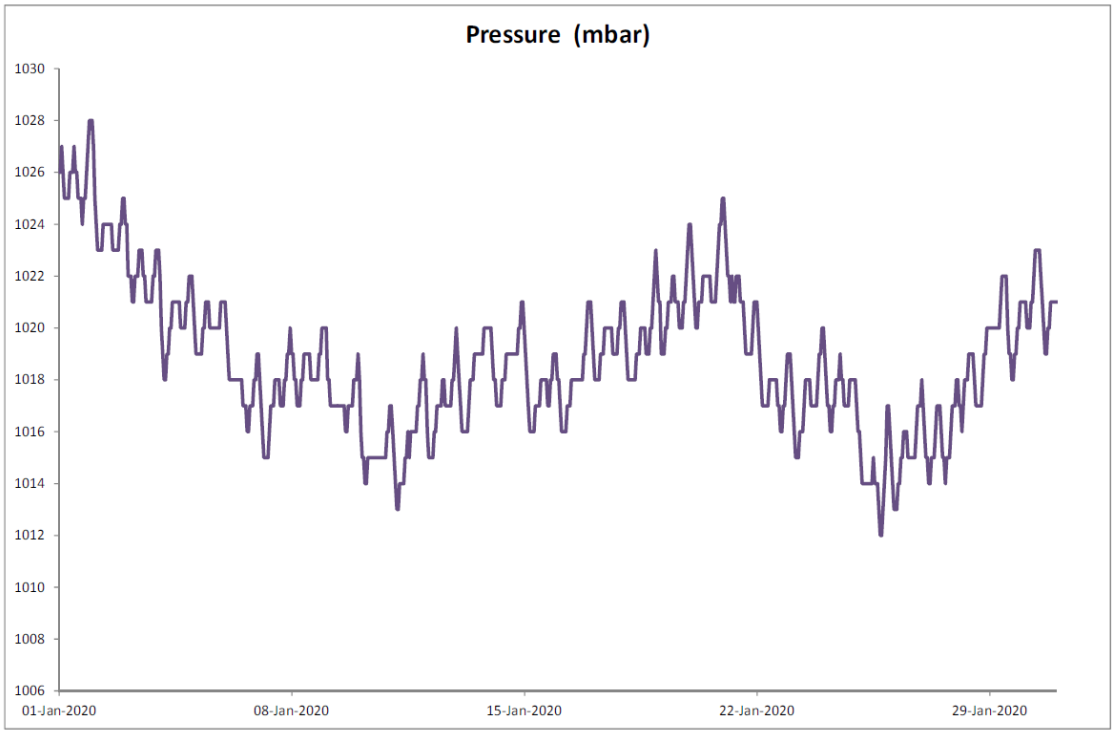
Meteorological Data

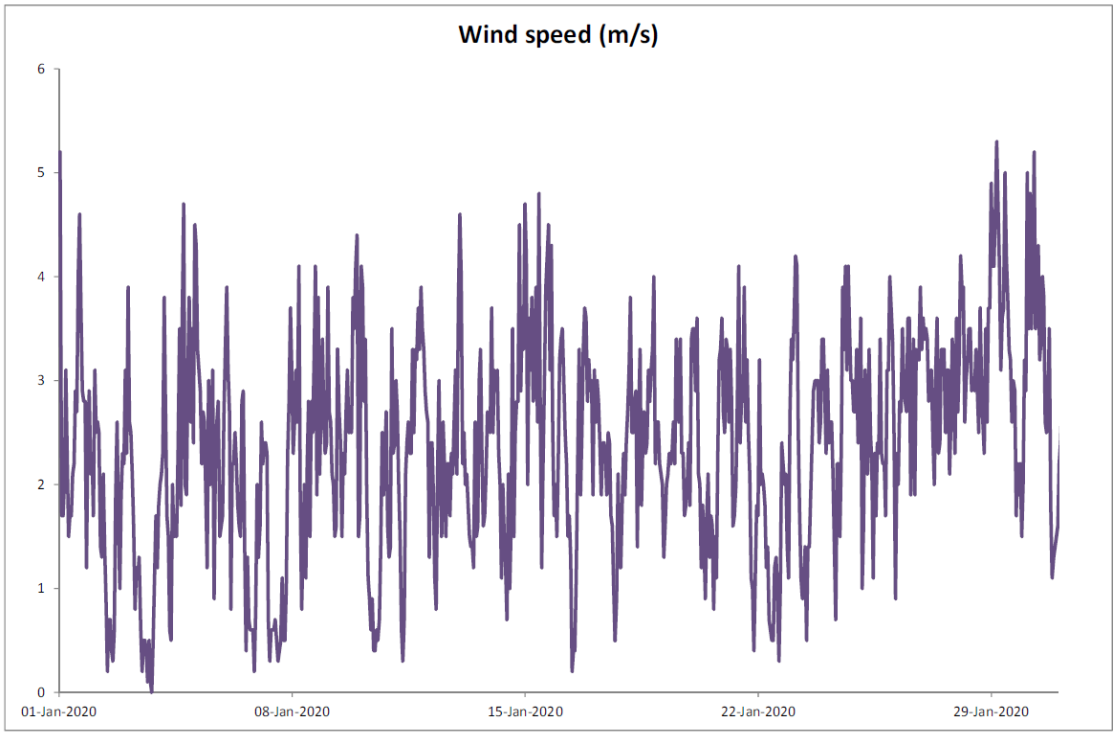
Annex D3 Meteorological Data

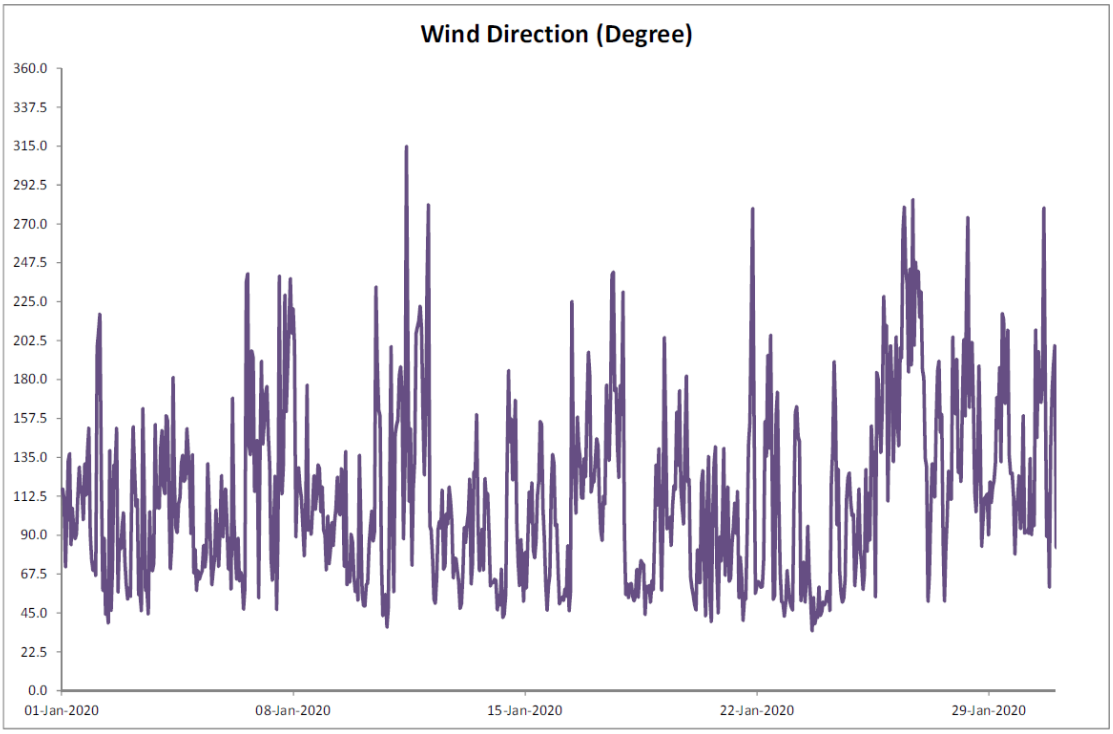
January 2020

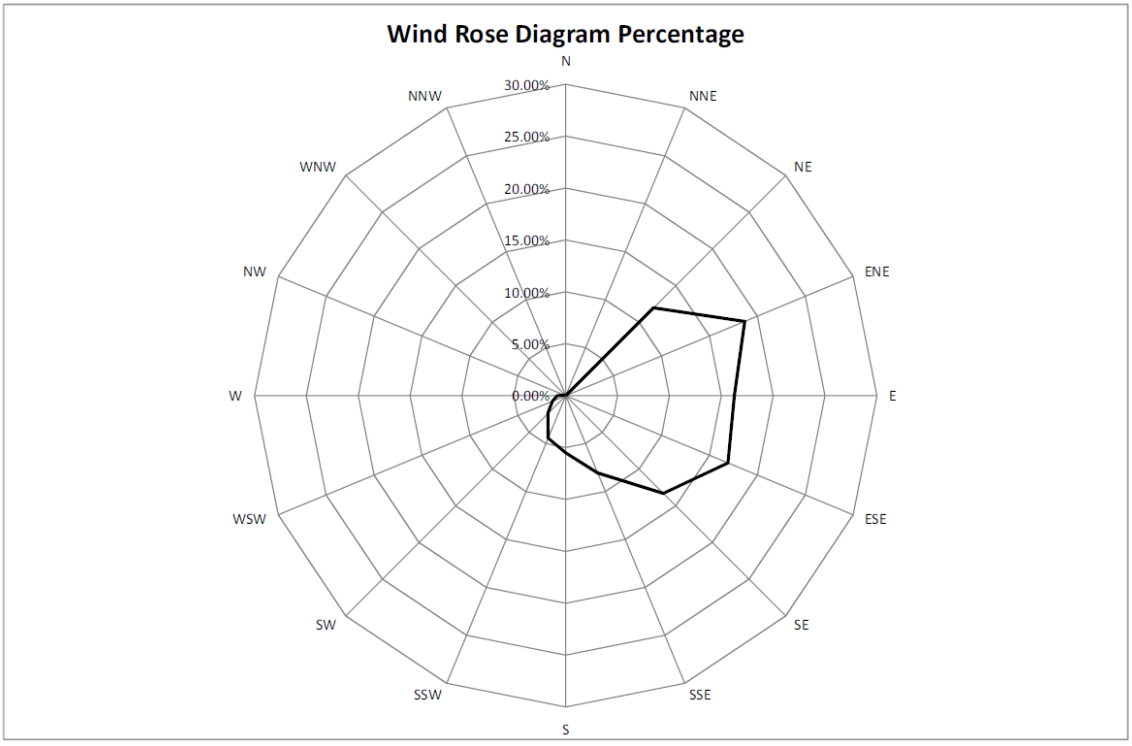


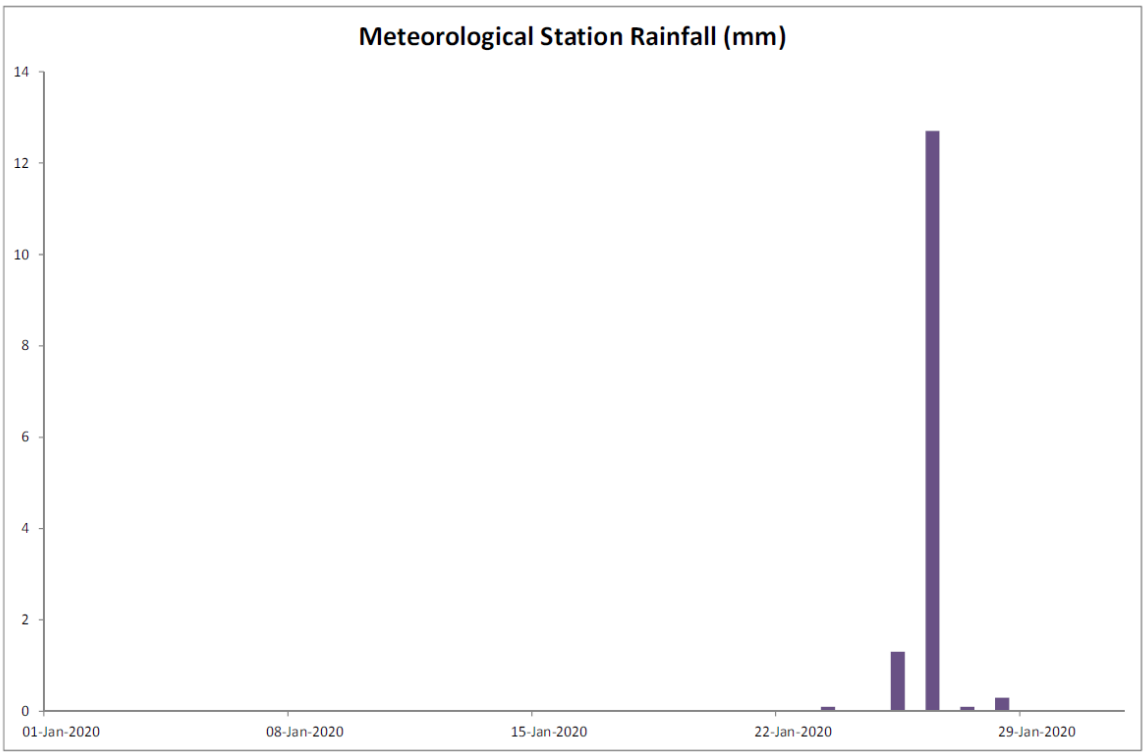



Pressure (mbar)
1030
1028
1026
1024
1022
1020
1018
1016
1014
1012
1010
1008
1006
01-Jan-2020
08-Jan-2020
15-Jan-2020
22-Jan-2020
29-Jan-2020

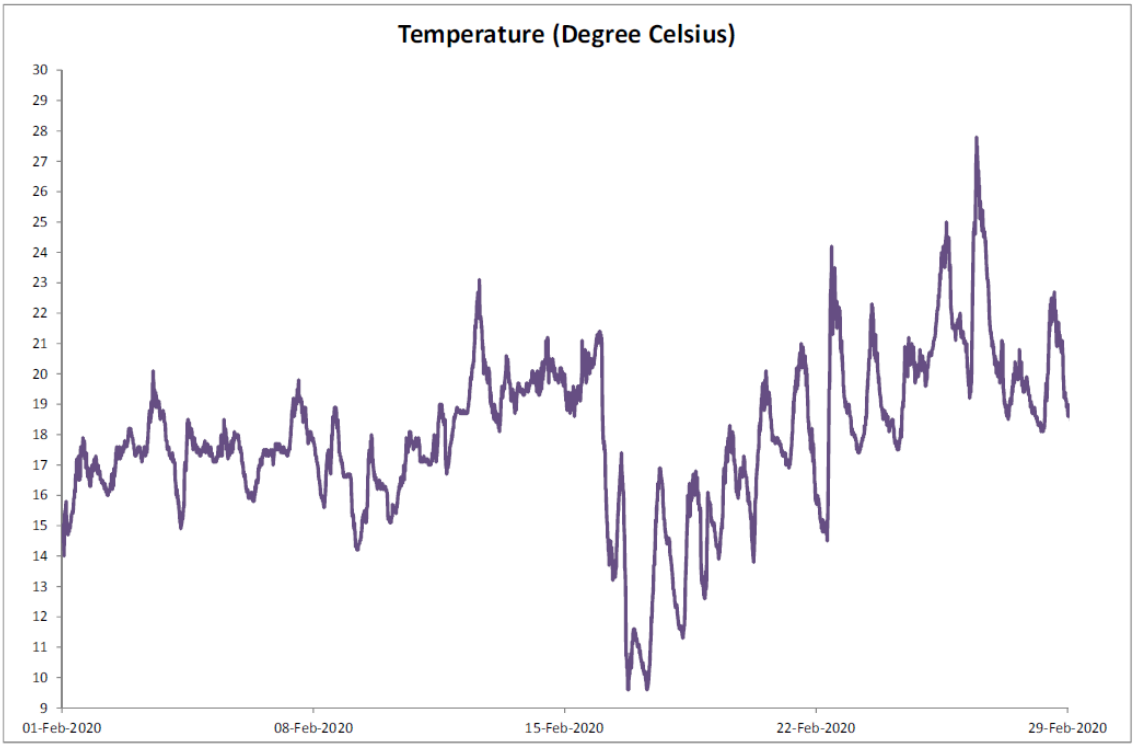

Wind speed (m/s)
6
5
4
3
2
1
0
01-Jan-2020
08-Jan-2020
15-Jan-2020
22-Jan-2020
29-Jan-2020

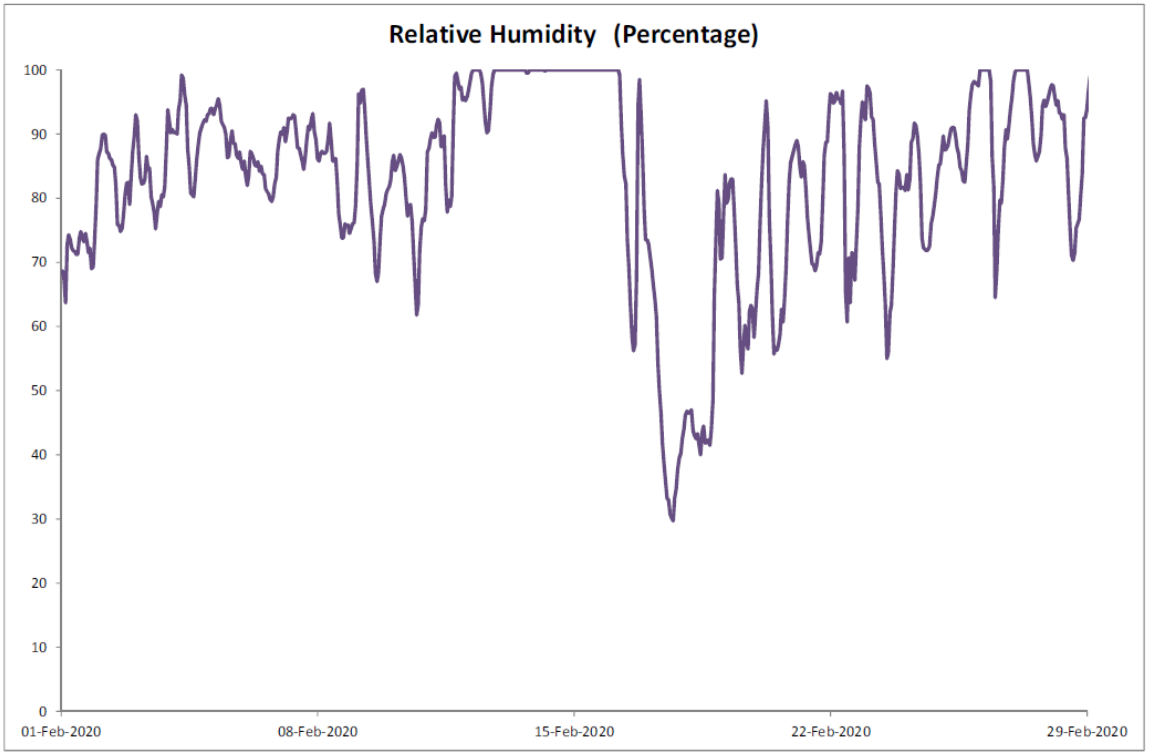

Wind Direction (Degree)
360.0
337.5
315.0
292.5
270.0
247.5
225.0
202.5
180.0
157.5
135.0
112.5
90.0
67.5
45.0
22.5
0.0
01-Jan-2020
08-Jan-2020
15-Jan-2020
22-Jan-2020
29-Jan-2020

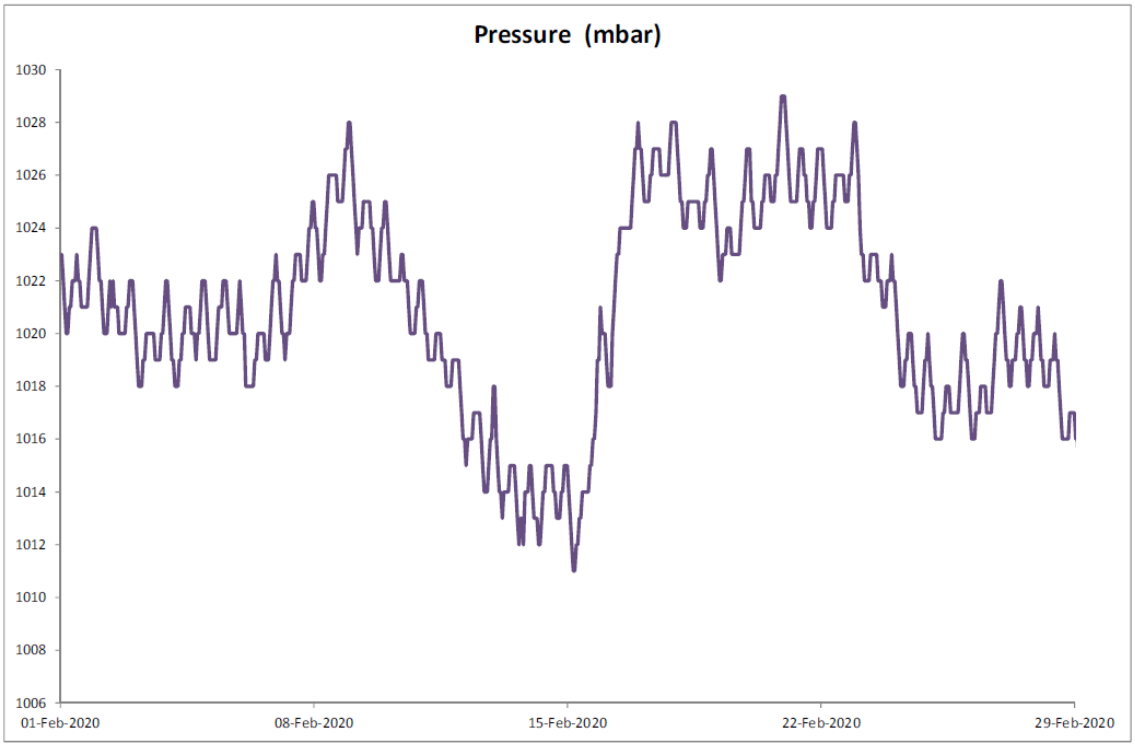

Wind Rose Diagram Percentage
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
NW
WNW
NNW
30.00%
25.00%
20.00%
15.00%
10.00%
5.00%
0.00%

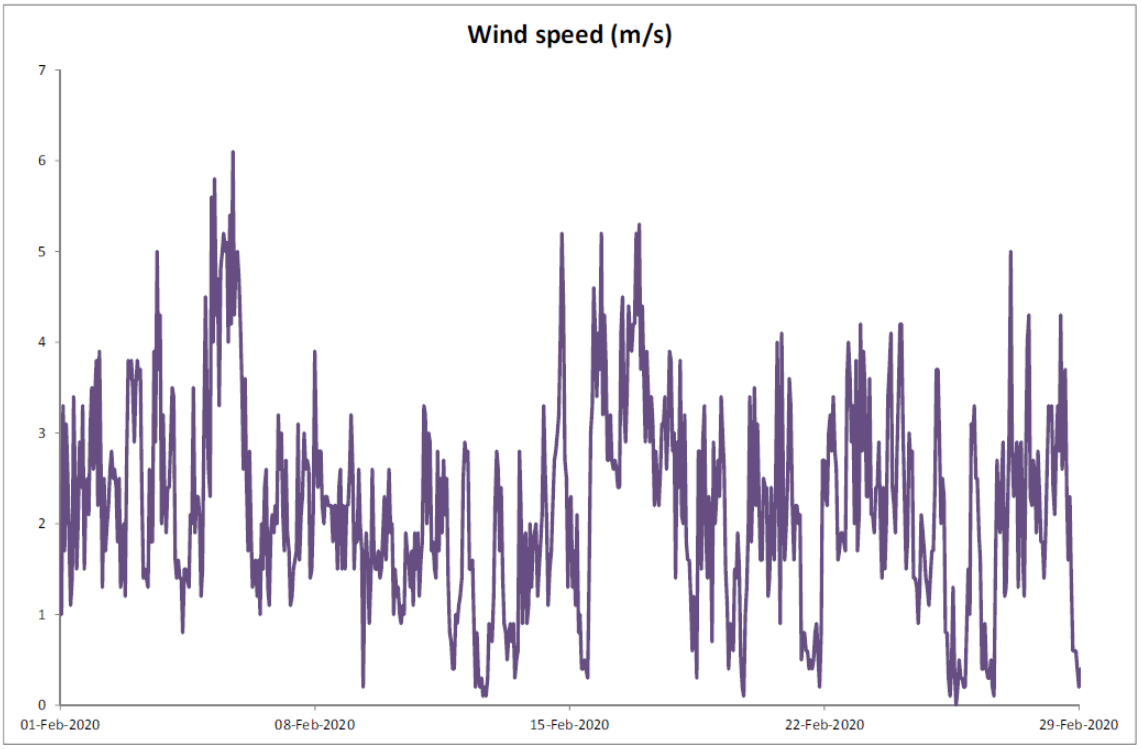


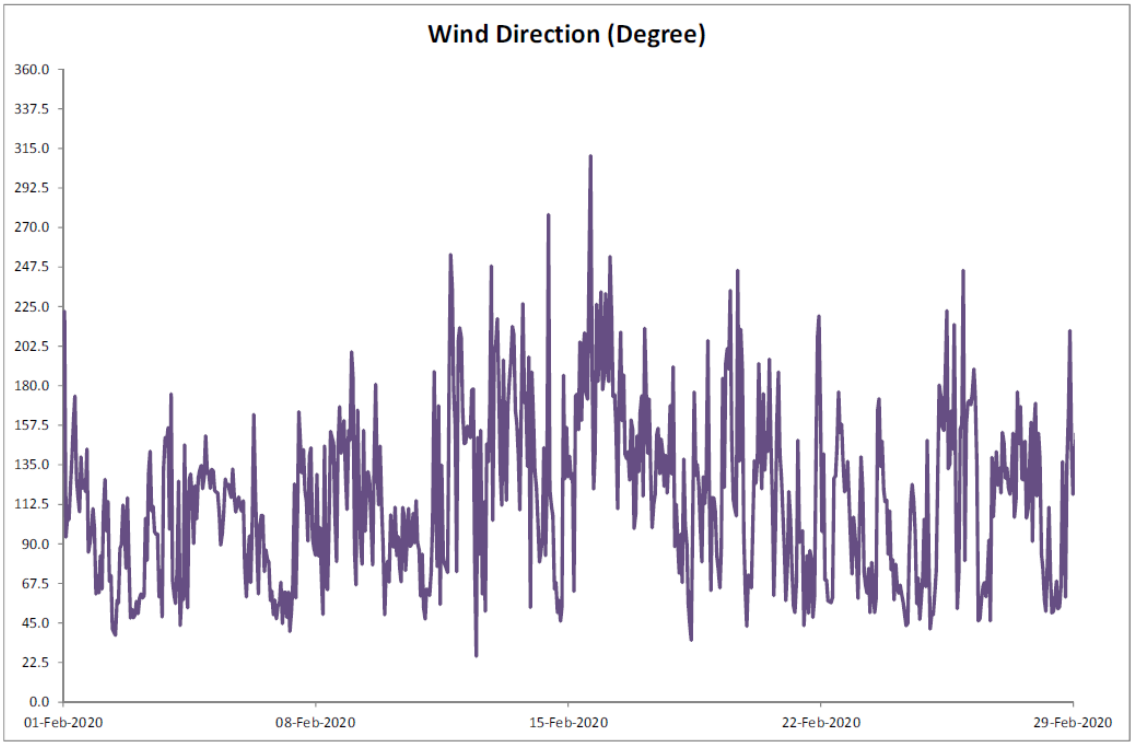
February 2020

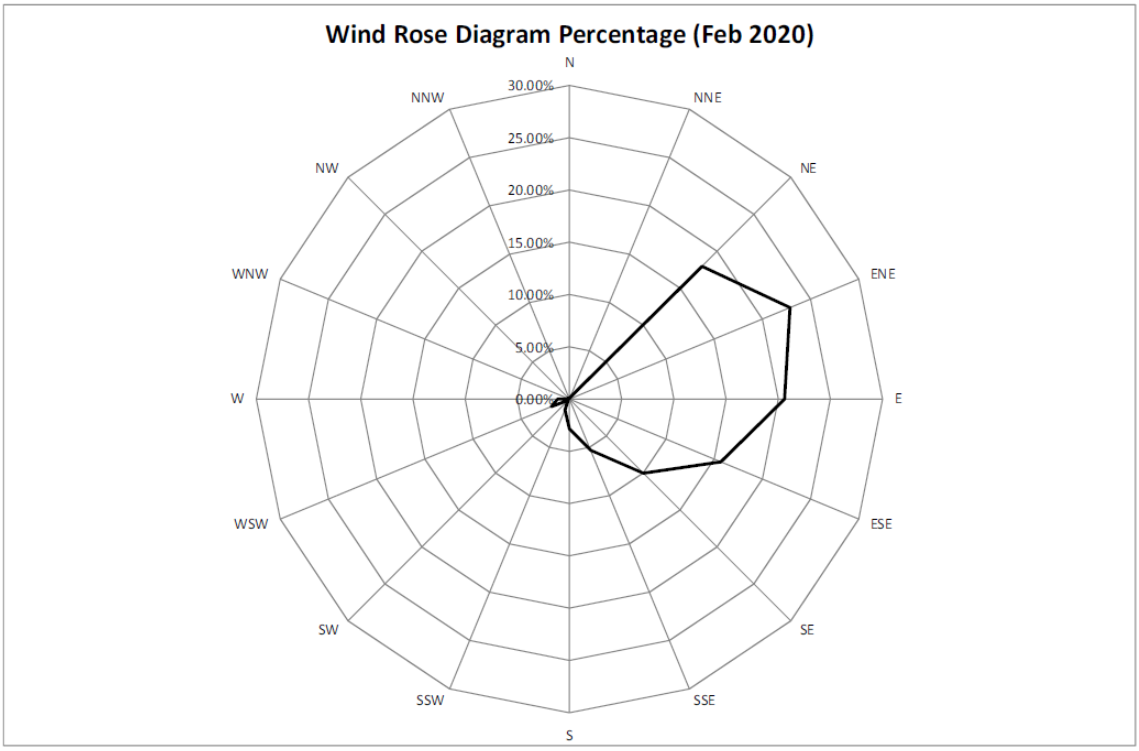


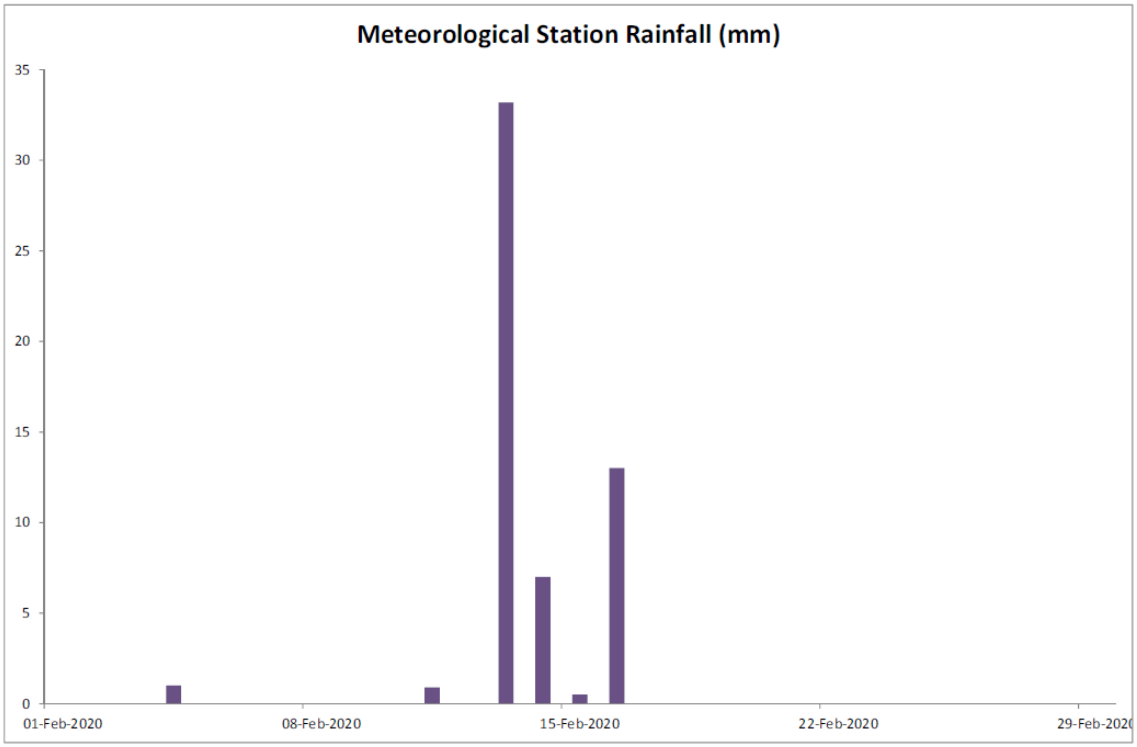

Relative Humidity (Percentage)
100
90
80
70
60
50
40
30
20
10
0
01-Feb-2020
08-Feb-2020
15-Feb-2020
22-Feb-2020
29-Feb-2020


Pressure (mbar)
1030
1028
1026
1024
1022
1020
1018
1016
1014
1012
1010
1008
1006
01-Feb-2020
08-Feb-2020
15-Feb-2020
22-Feb-2020
29-Feb-2020

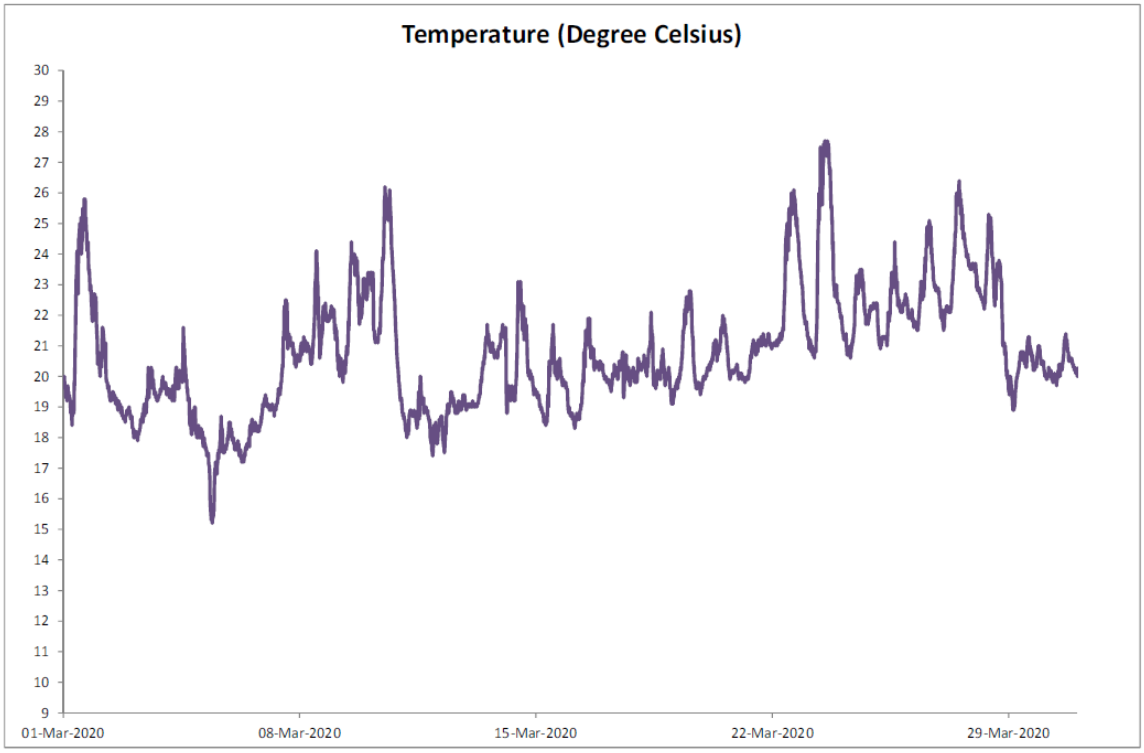

Wind speed (m/s)
7
6
5
4
3
2
1
0
01-Feb-2020
08-Feb-2020
15-Feb-2020
22-Feb-2020
29-Feb-2020

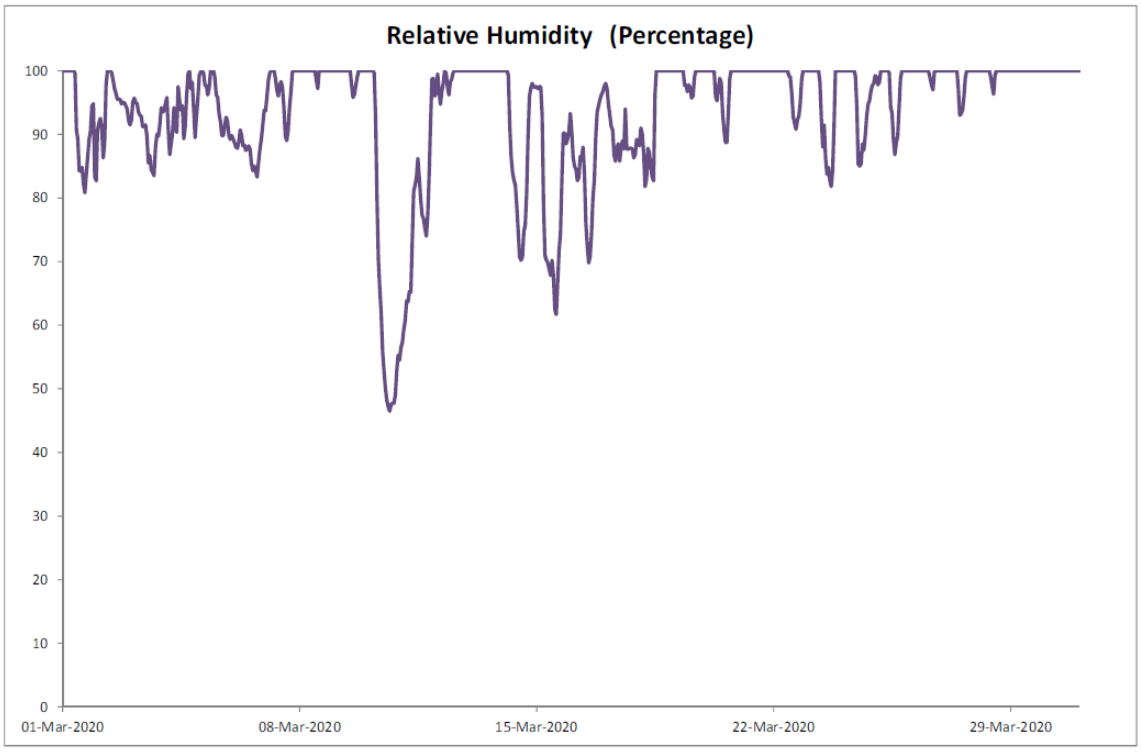

Wind Direction (Degree)
360.0
337.5
315.0
292.5
270.0
247.5
225.0
202.5
180.0
157.5
135.0
112.5
90.0
67.5
45.0
22.5
0.0
01-Feb-2020
08-Feb-2020
15-Feb-2020
22-Feb-2020
29-Feb-2020

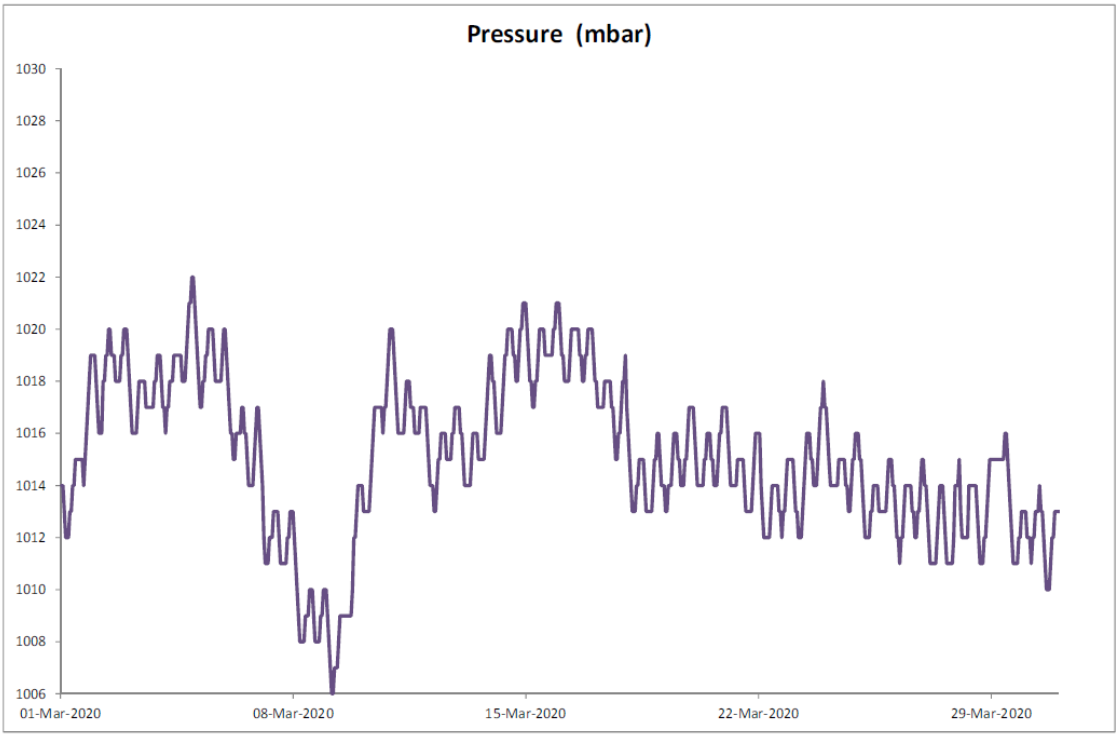

Wind Rose Diagram Percentage (Feb 2020)
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
30.00%
25.00%
20.00%
15.00%
10.00%
5.00%
0.00%

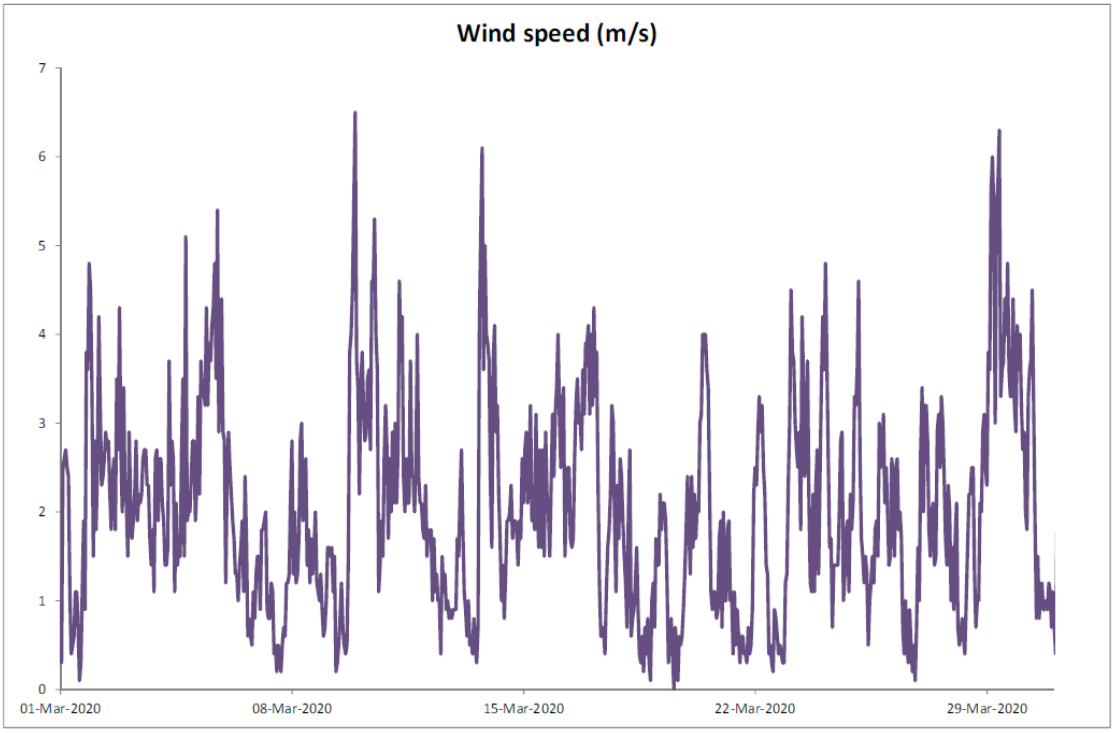

Meteorological Station Rainfall (mm)
35
30
25
20
15
10
5
0
01-Feb-2020
08-Feb-2020
15-Feb-2020
22-Feb-2020
29-Feb-2020

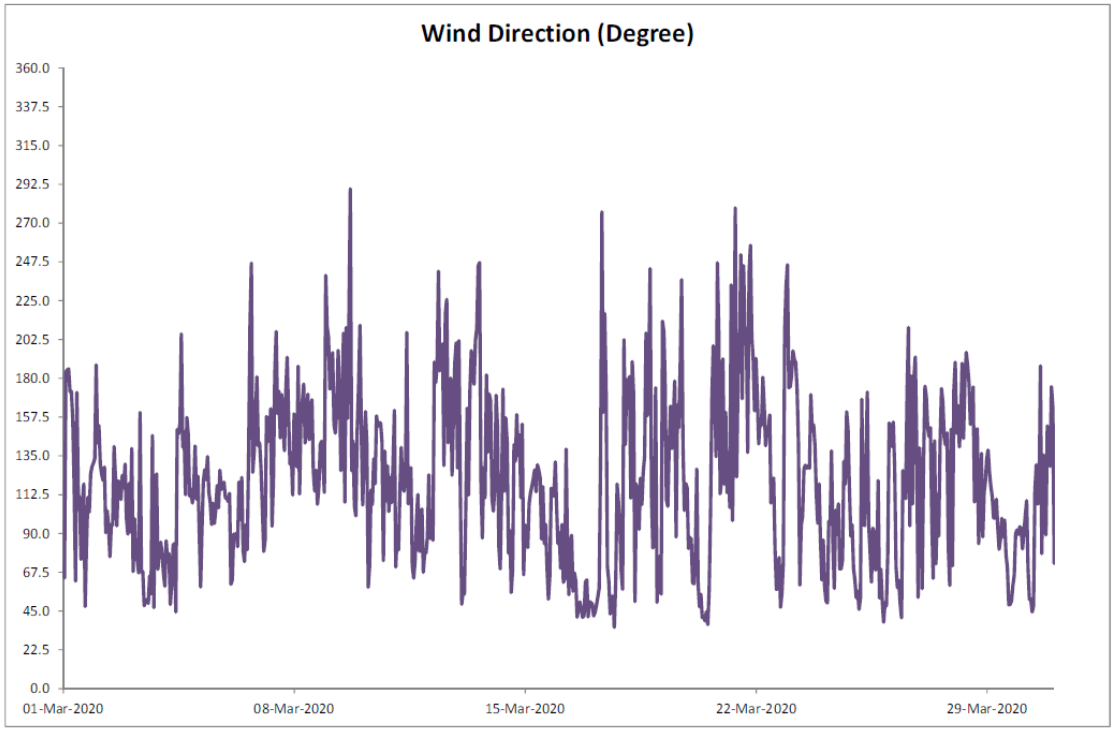
March 2020

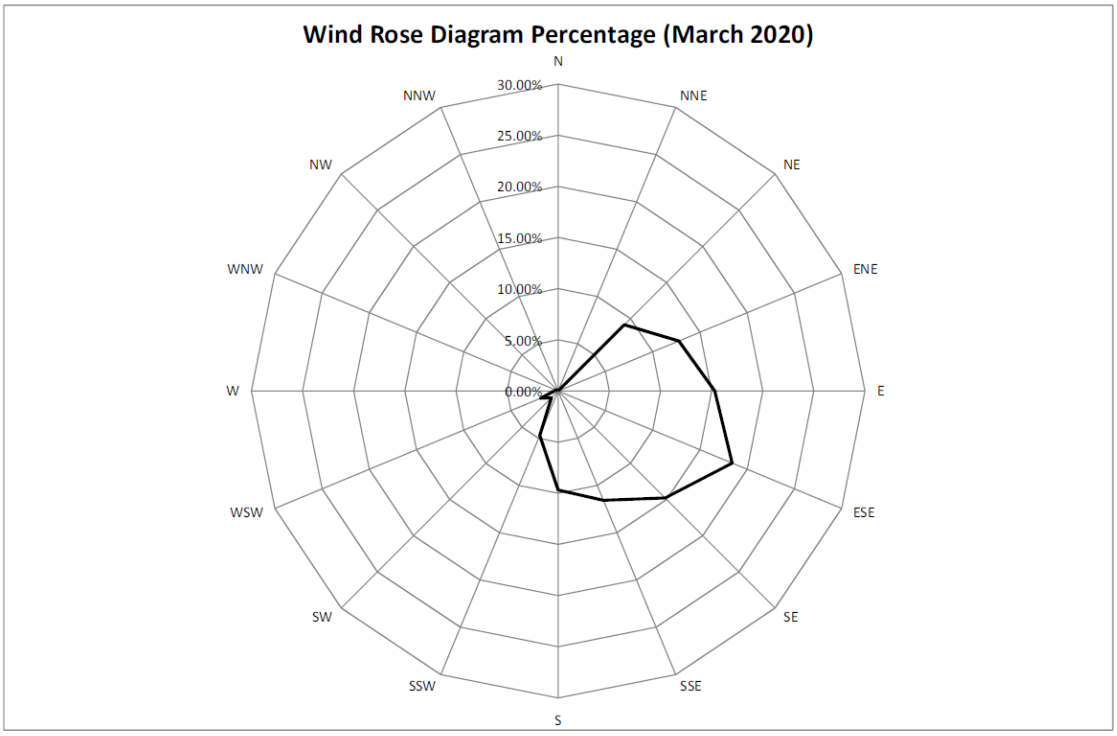

Temperature (Degree Celsius)
30
29
28
27
26
25
24
23
22
21
20
19
18
17
16
15
14
13
12
11
10
9
01-Mar-2020
08-Mar-2020
15-Mar-2020
22-Mar-2020
29-Mar-2020

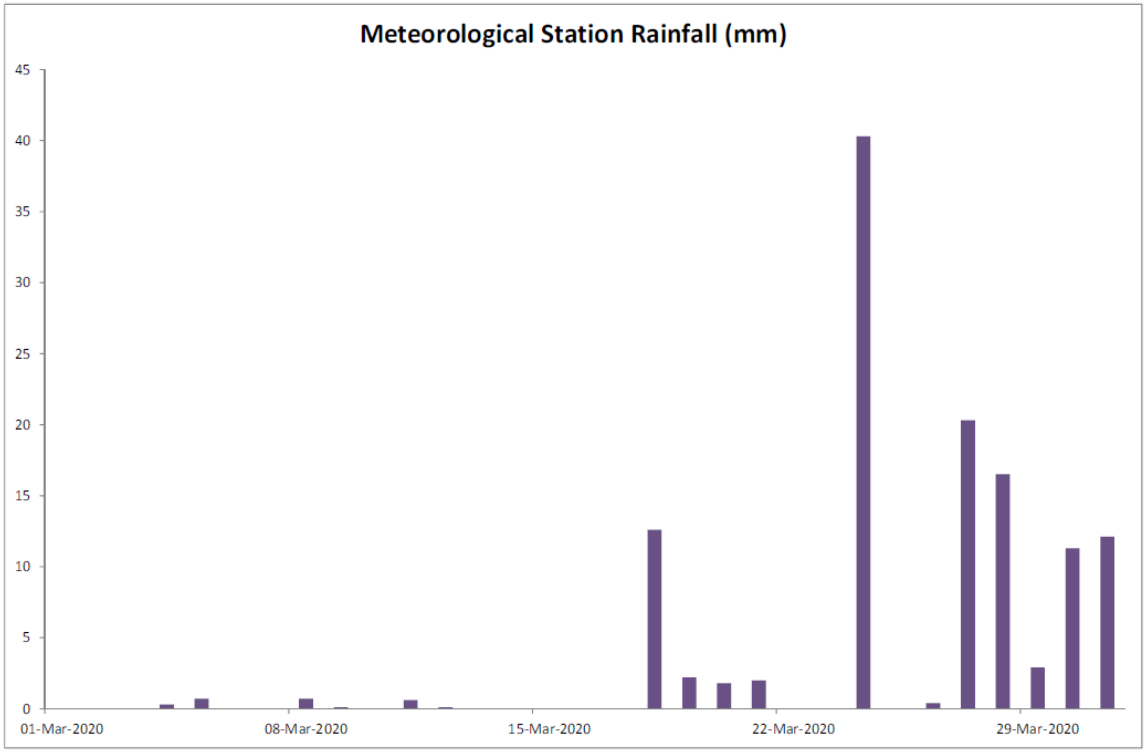

Relative Humidity (Percentage)
100
90
80
70
60
50
40
30
20
10
0
01-Mar-2020
08-Mar-2020
15-Mar-2020
22-Mar-2020
29-Mar-2020


Pressure (mbar)
1030
1028
1026
1024
1022
1020
1018
1016
1014
1012
1010
1008
1006
01-Mar-2020
08-Mar-2020
15-Mar-2020
22-Mar-2020
29-Mar-2020

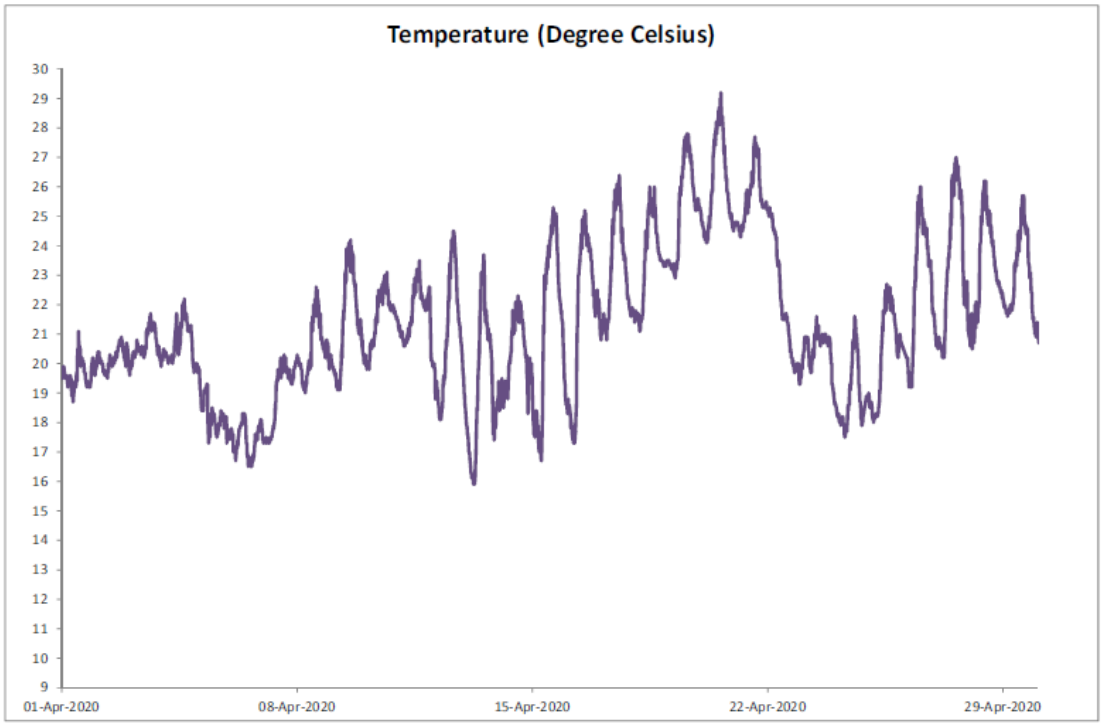

Wind speed (m/s)
7
6
5
4
3
2
1
0
01-Mar-2020
08-Mar-2020
15-Mar-2020
22-Mar-2020
29-Mar-2020

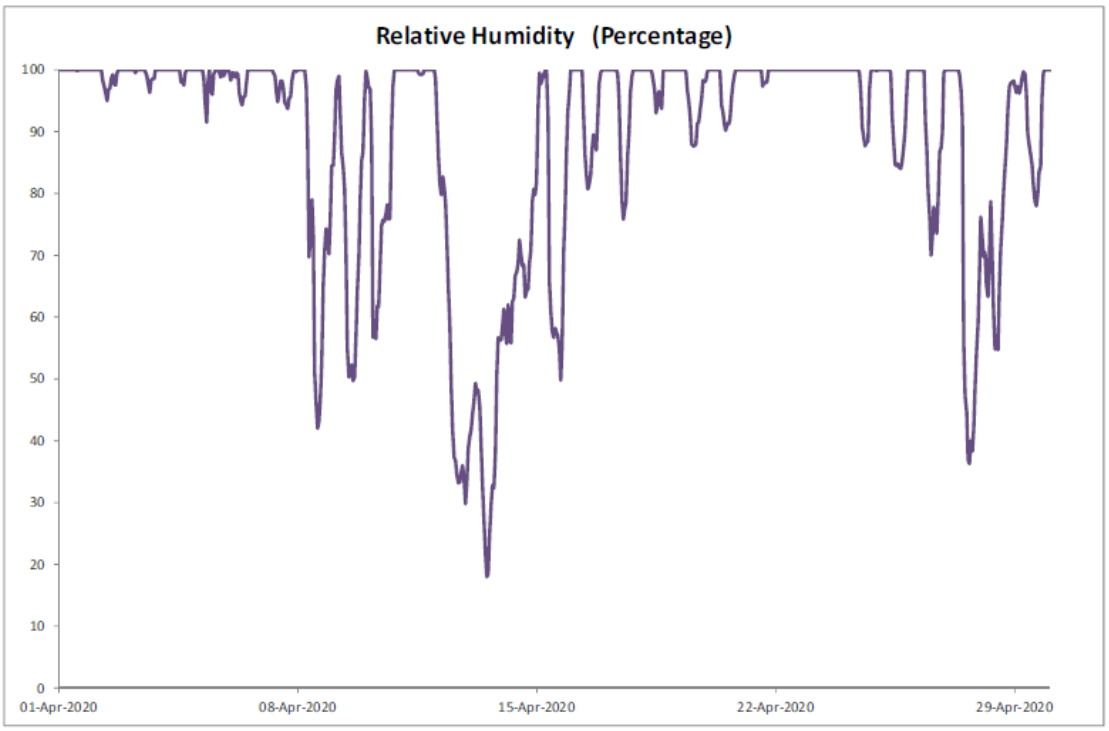

Wind Direction (Degree)
360.0
337.5
315.0
292.5
270.0
247.5
225.0
202.5
180.0
157.5
135.0
112.5
90.0
67.5
45.0
22.5
0.0
01-Mar-2020
08-Mar-2020
15-Mar-2020
22-Mar-2020
29-Mar-2020

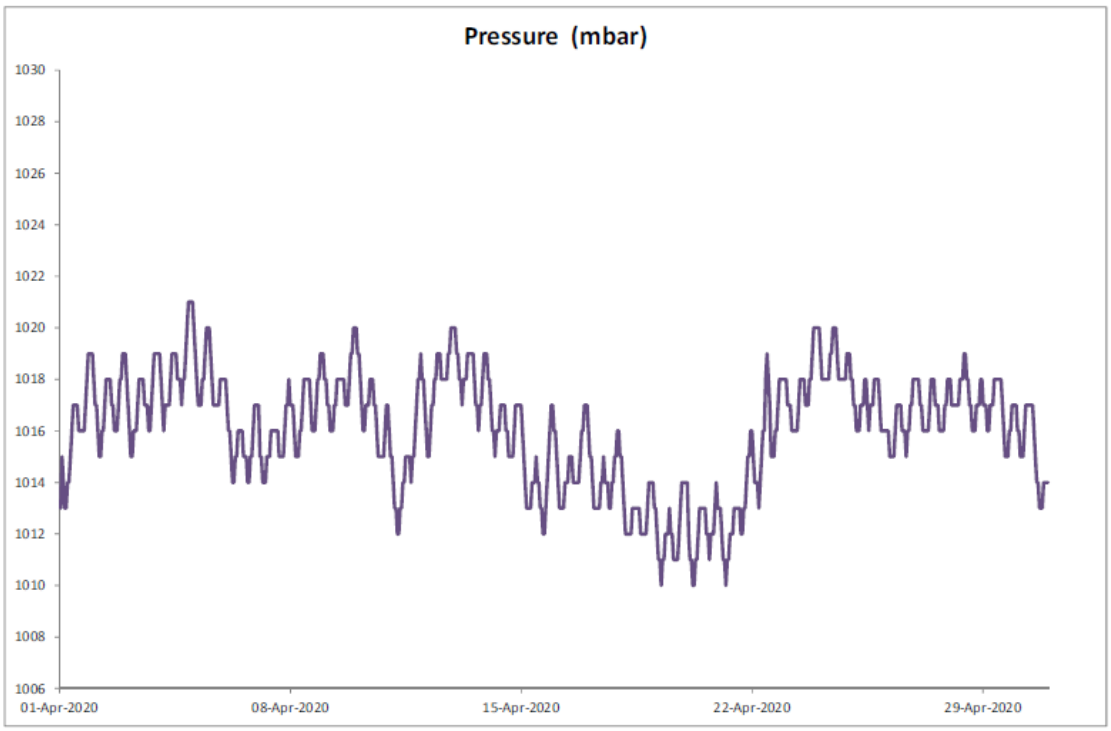

Wind Rose Diagram Percentage (March 2020)
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
30.00%
25.00%
20.00%
15.00%
10.00%
5.00%
0.00%

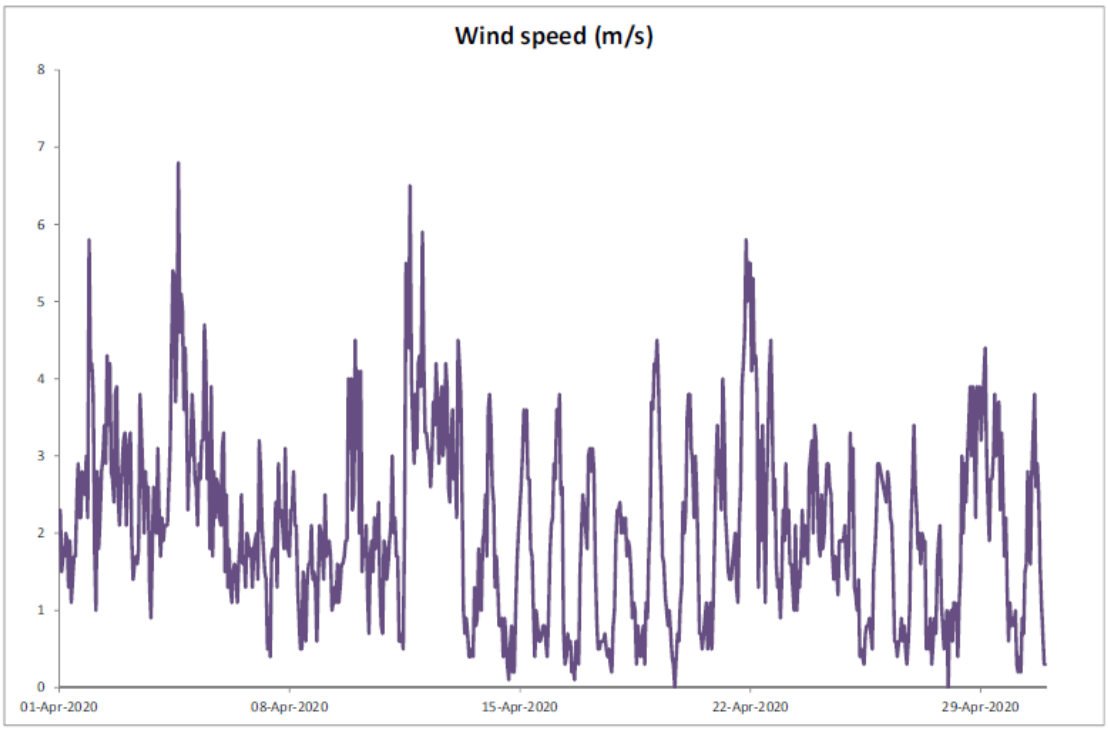

Meteorological Station Rainfall (mm)
45
40
35
30
25
20
15
10
5
0
01-Mar-2020
08-Mar-2020
15-Mar-2020
22-Mar-2020
29-Mar-2020

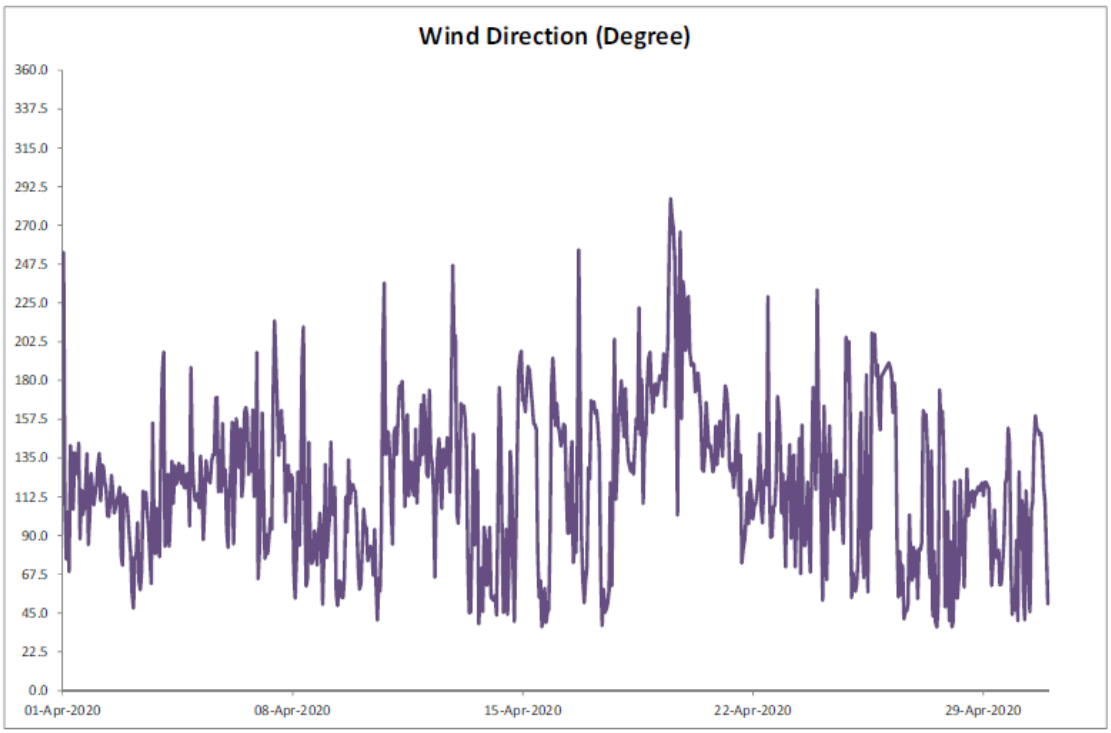
April 2020

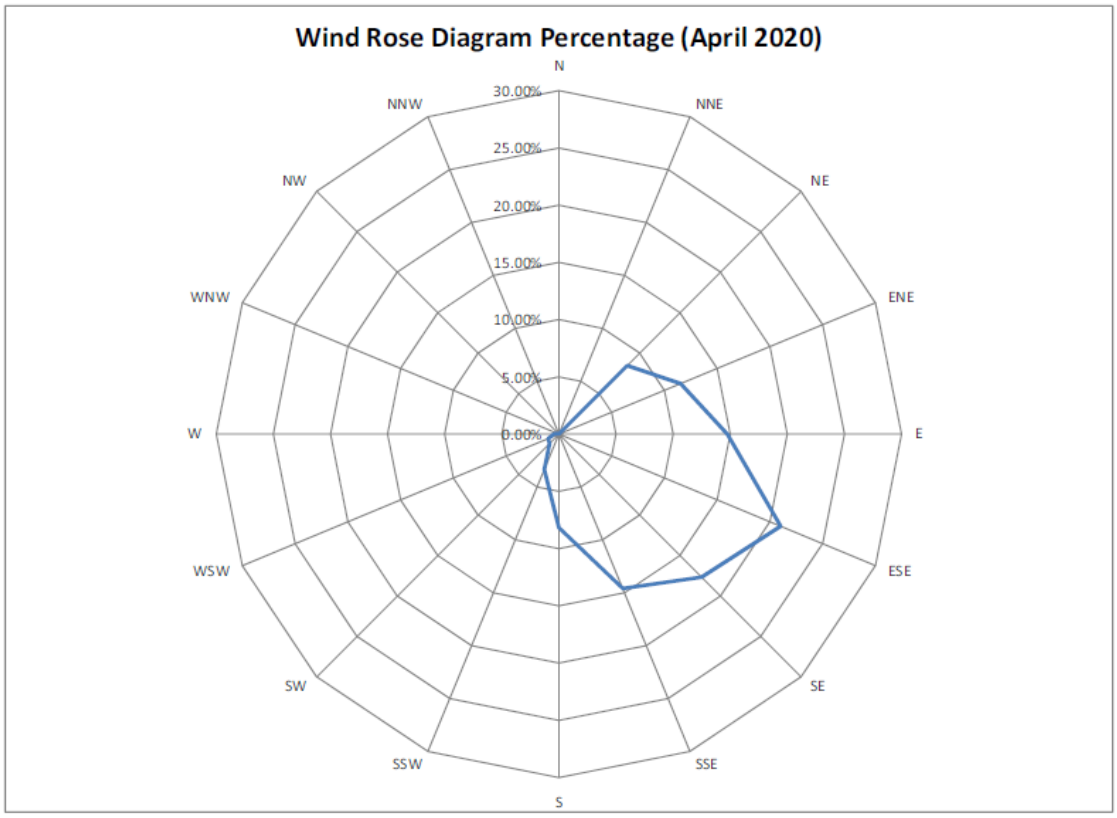

Temperature (Degree Celsius)
30
29
28
27
26
25
24
23
22
21
20
19
18
17
16
15
14
13
12
11
10
9
01-Apr-2020
08-Apr-2020
15-Apr-2020
22-Apr-2020
29-Apr-2020

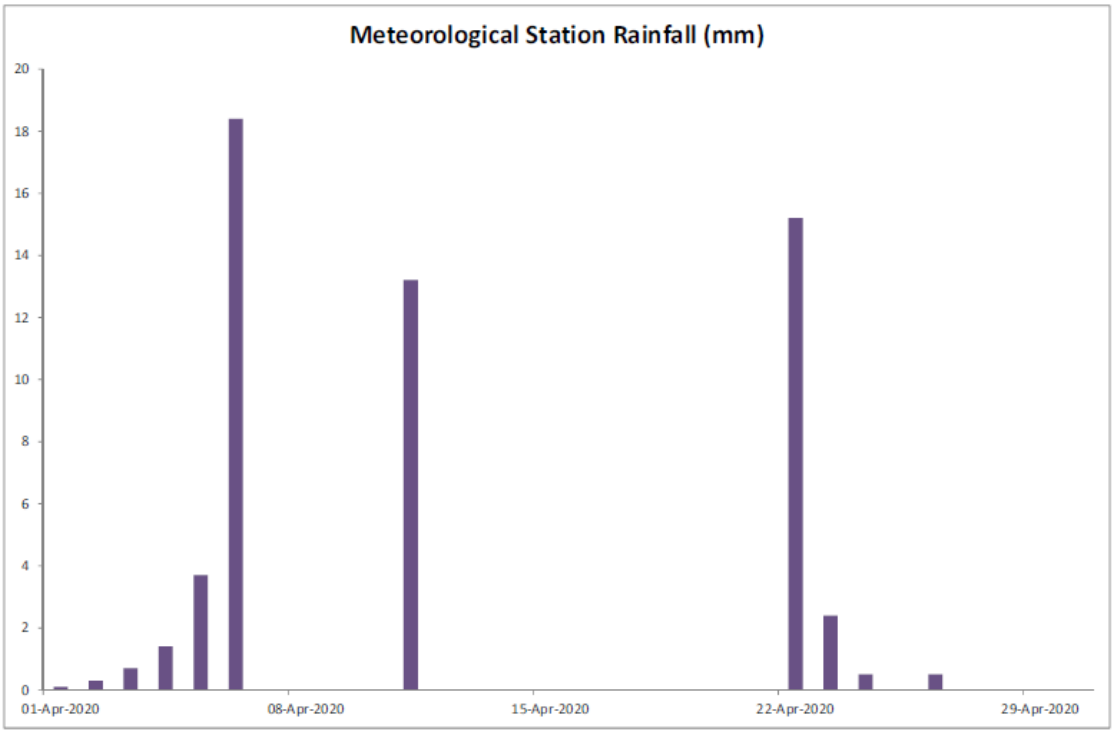

Relative Humidity (Percentage)
100
90
80
70
60
50
40
30
20
10
0
01-Apr-2020
08-Apr-2020
15-Apr-2020
22-Apr-2020
29-Apr-2020


Pressure (mbar)
1030
1028
1026
1024
1022
1020
1018
1016
1014
1012
1010
1008
1006
01-Apr-2020
08-Apr-2020
15-Apr-2020
22-Apr-2020
29-Apr-2020

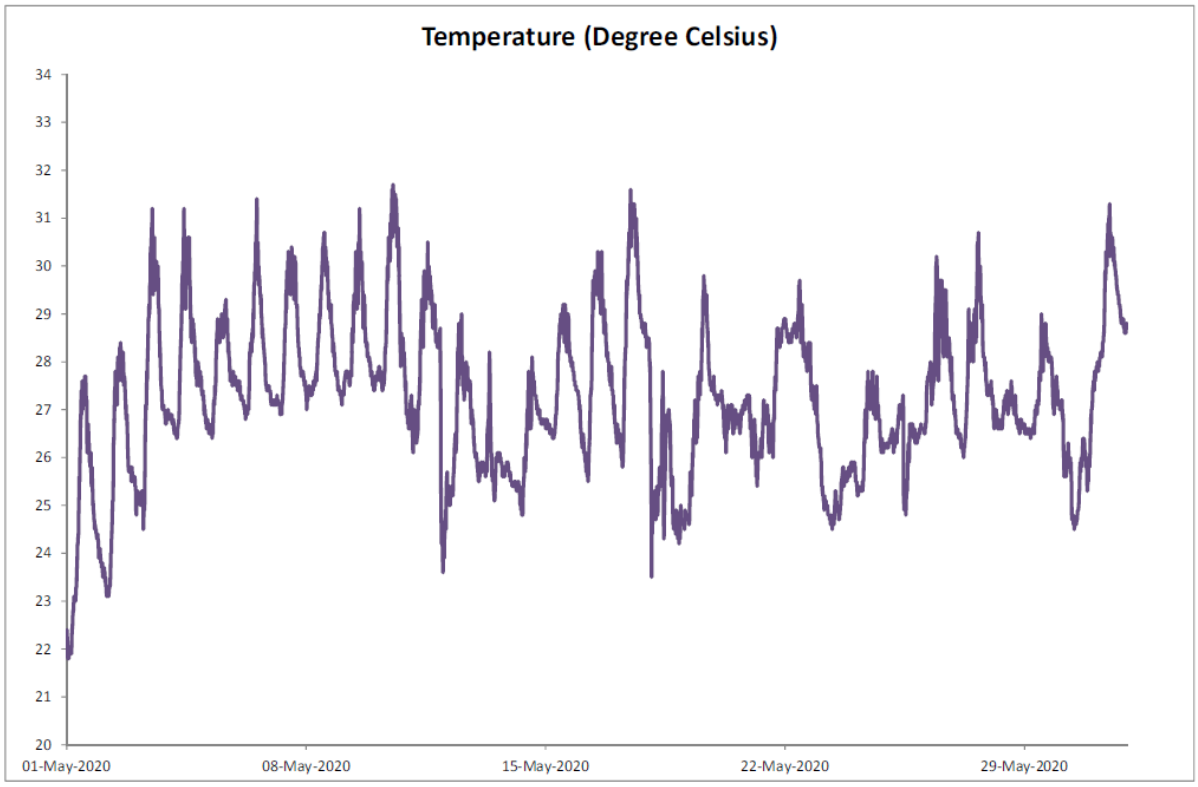

Wind speed (m/s)
8
7
6
5
4
3
2
1
0
01-Apr-2020
08-Apr-2020
15-Apr-2020
22-Apr-2020
29-Apr-2020

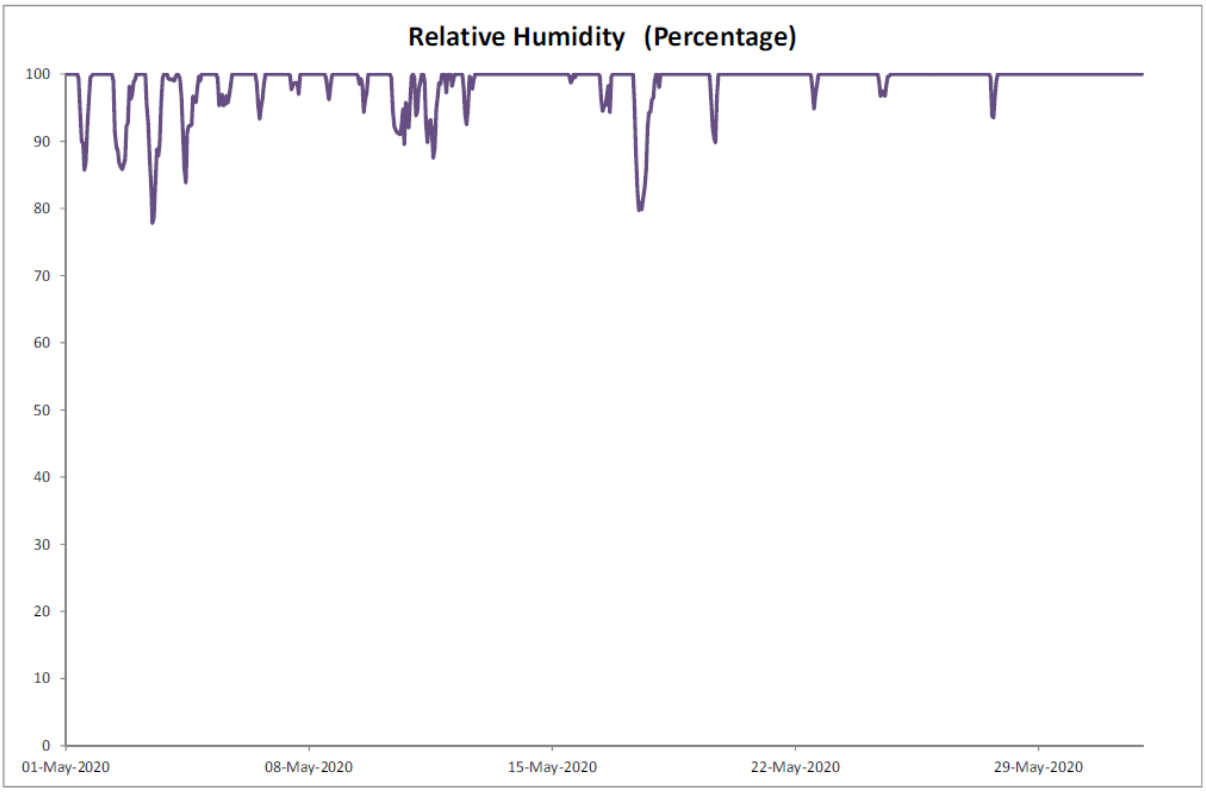

Wind Direction (Degree)
360.0
337.5
315.0
292.5
270.0
247.5
225.0
202.5
180.0
157.5
135.0
112.5
90.0
67.5
45.0
22.5
0.0
01-Apr-2020
08-Apr-2020
15-Apr-2020
22-Apr-2020
29-Apr-2020

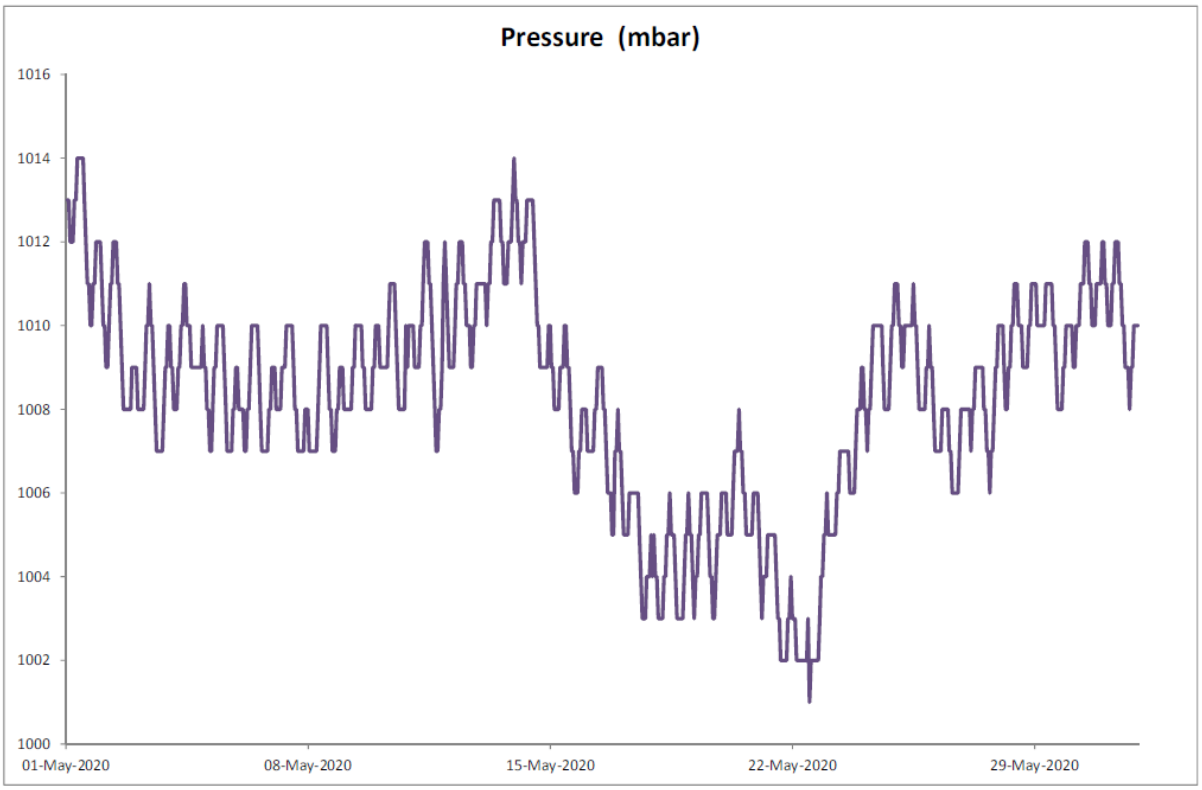

Wind Rose Diagram Percentage (April 2020)
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
30.00%
25.00%
20.00%
15.00%
10.00%
5.00%
0.00%

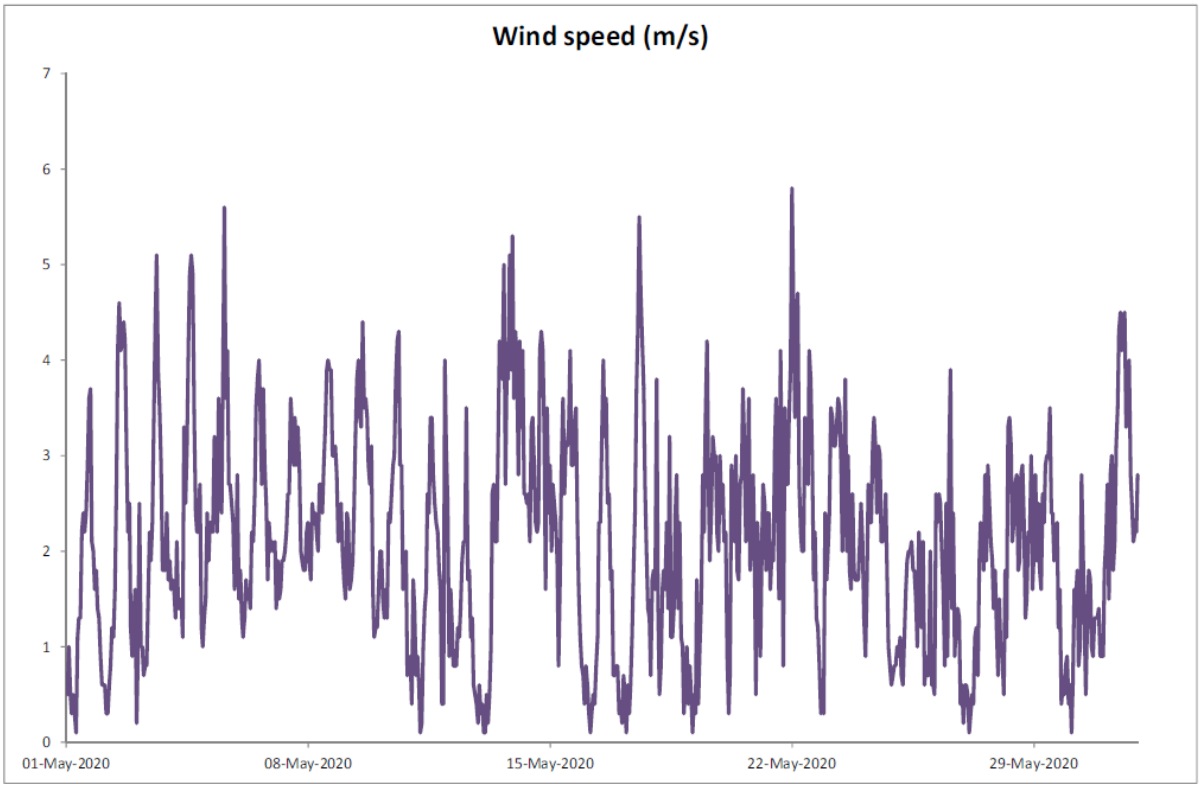

Meteorological Station Rainfall (mm)
20
18
16
14
12
10
8
6
4
2
0
01-Apr-2020
08-Apr-2020
15-Apr-2020
22-Apr-2020
29-Apr-2020

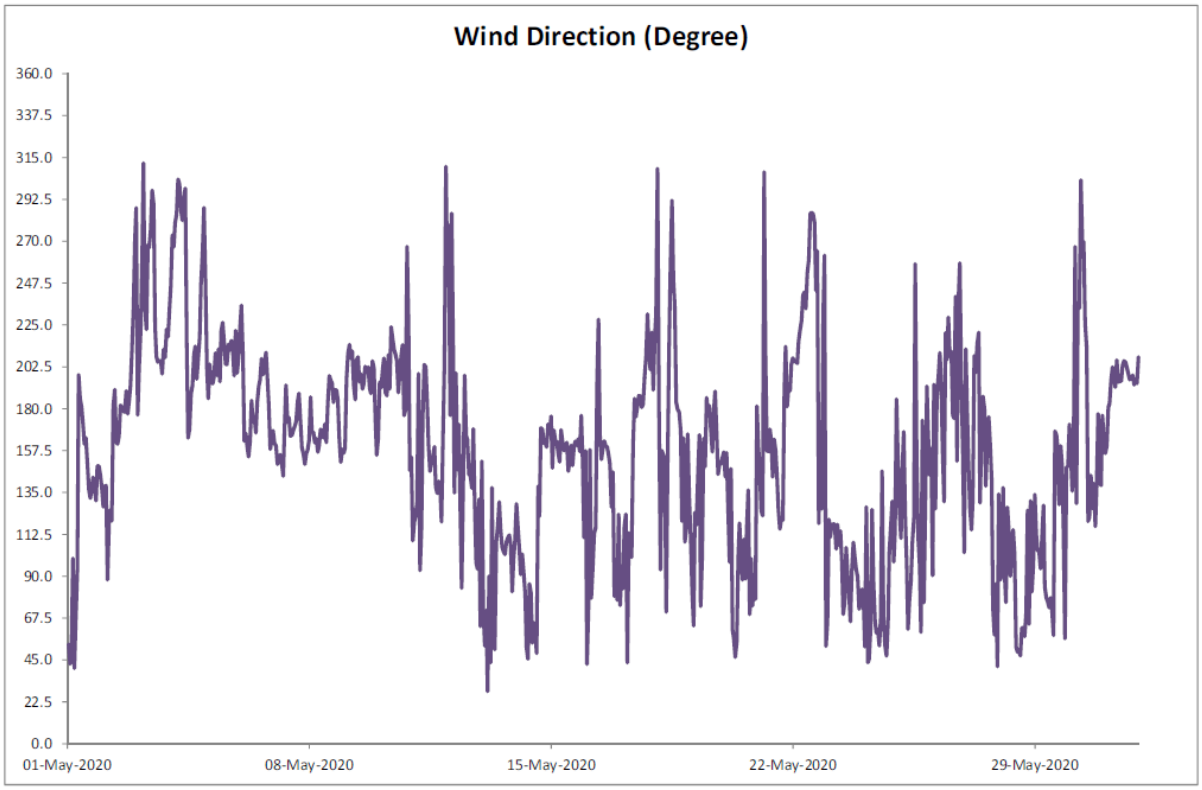
May 2020

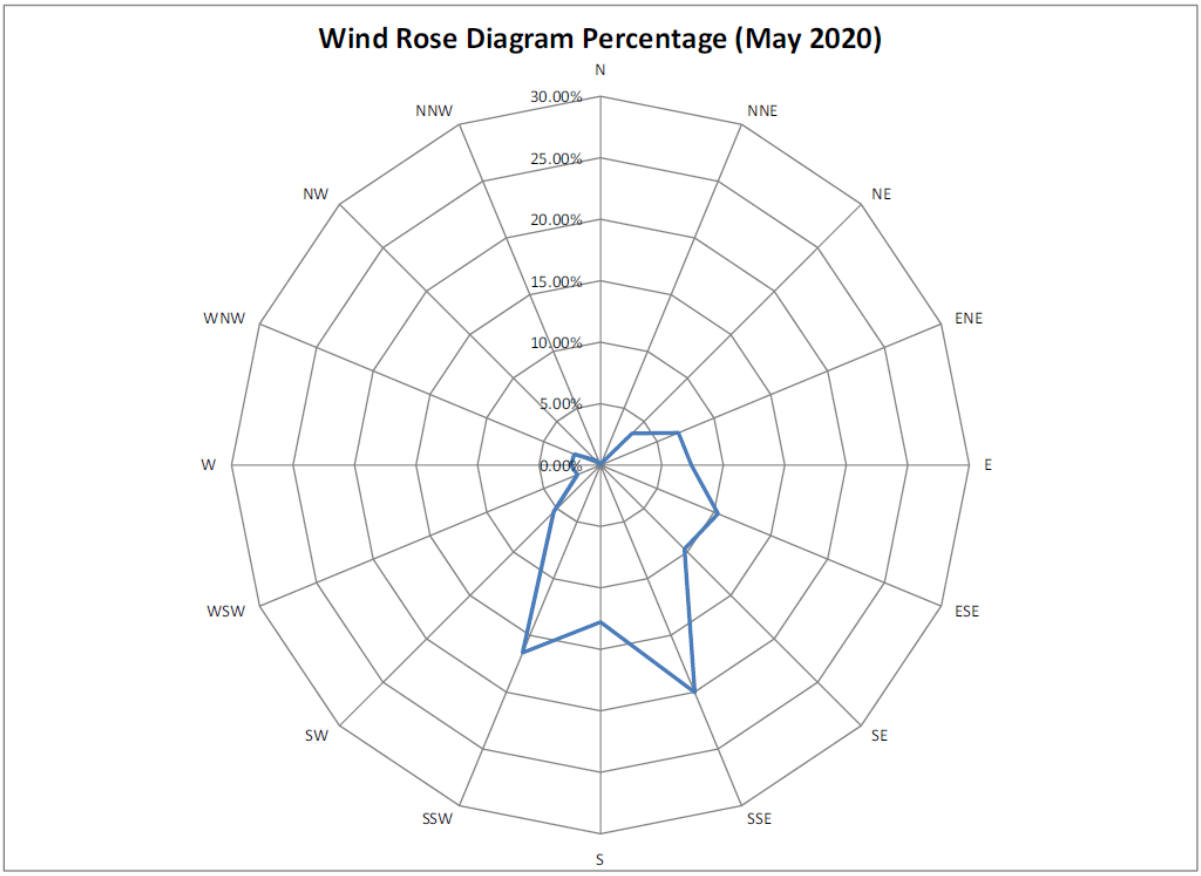

Temperature (Degree Celsius)
34
33
32
31
30
29
28
27
26
25
24
23
22
21
20
01-May-2020
08-May-2020
15-May-2020
22-May-2020
29-May-2020

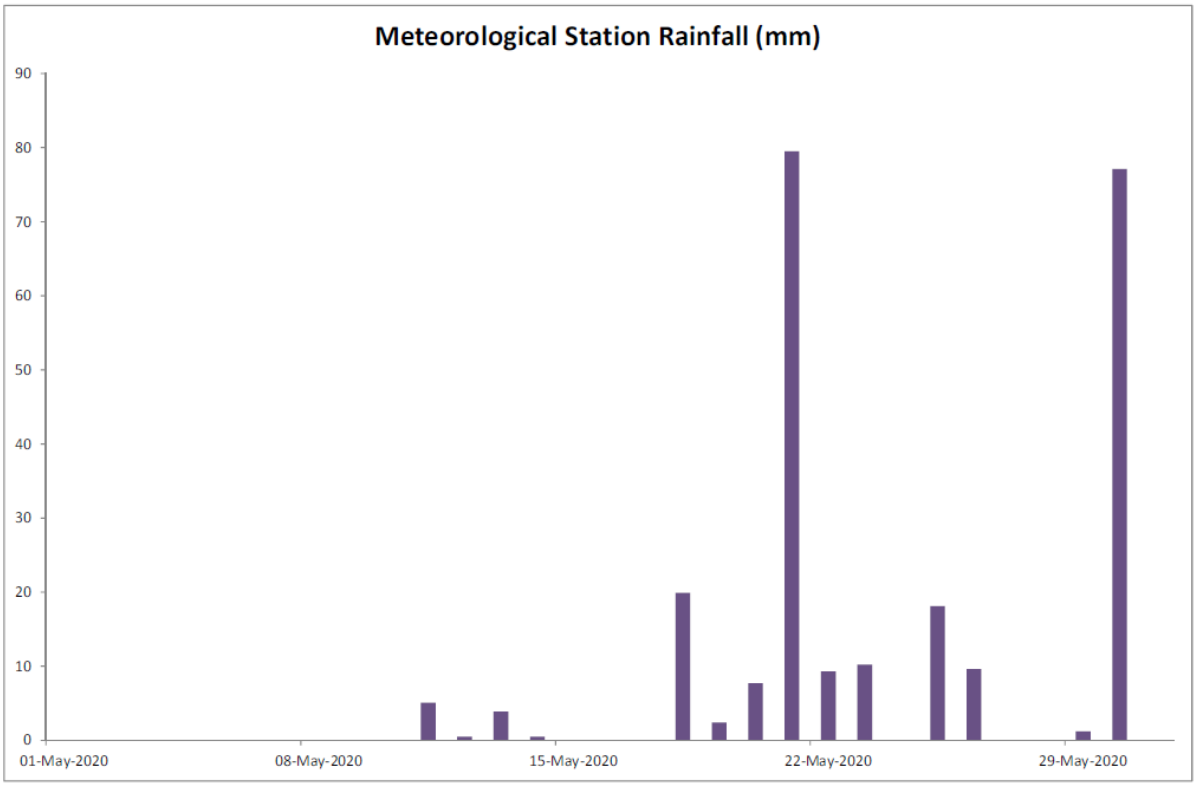

Relative Humidity (Percentage)
100
90
80
70
60
50
40
30
20
10
0
01-May-2020
08-May-2020
15-May-2020
22-May-2020
29-May-2020


Pressure (mbar)
1016
1014
1012
1010
1008
1006
1004
1002
1000
01-May-2020
08-May-2020
15-May-2020
22-May-2020
29-May-2020

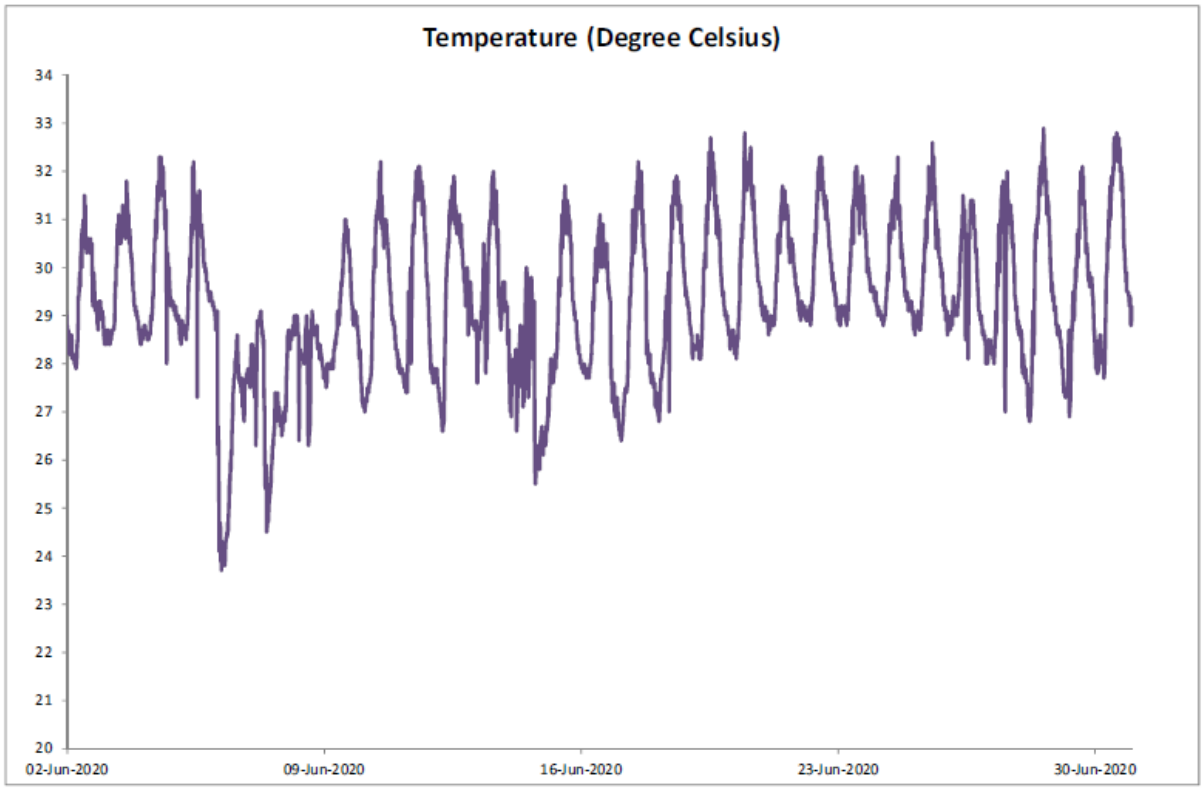

Wind speed (m/s)
7
6
5
4
3
2
1
0
01-May-2020
08-May-2020
15-May-2020
22-May-2020
29-May-2020

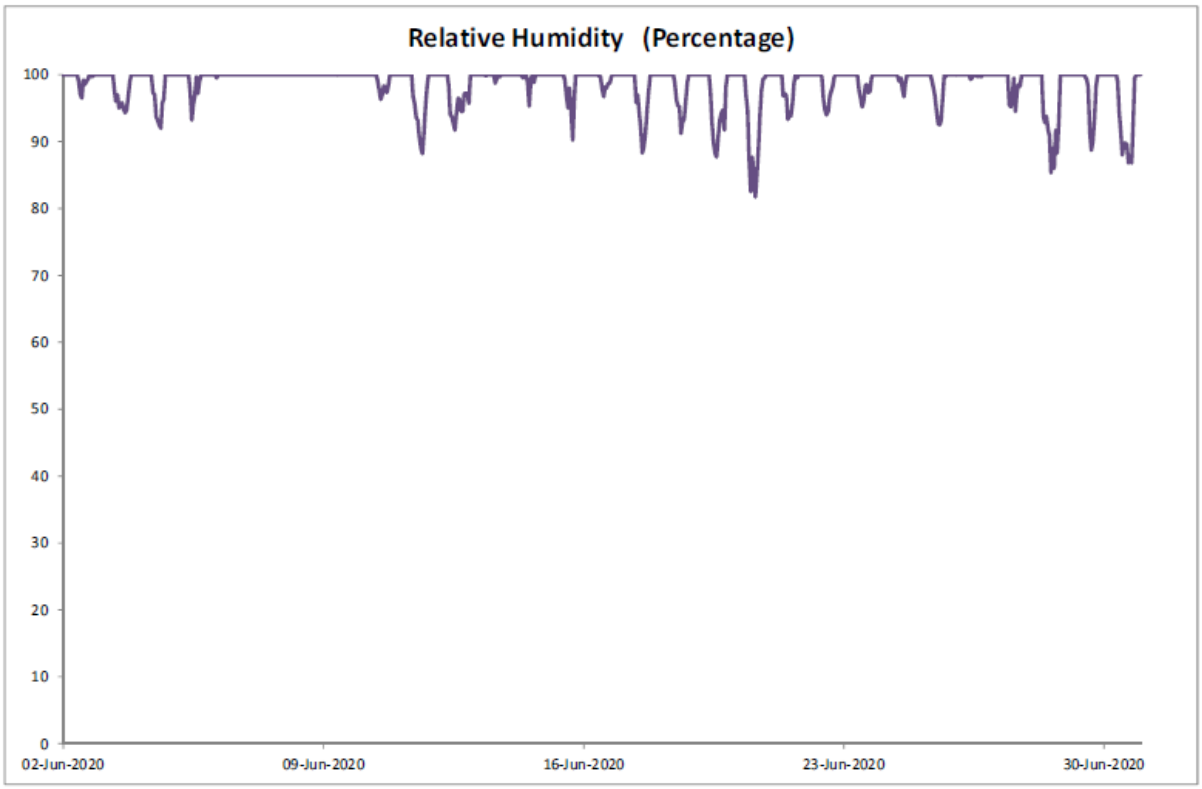

Wind Direction (Degree)
360.0
337.5
315.0
292.5
270.0
247.5
225.0
202.5
180.0
157.5
135.0
112.5
90.0
67.5
45.0
22.5
0.0
01-May-2020
08-May-2020
15-May-2020
22-May-2020
29-May-2020

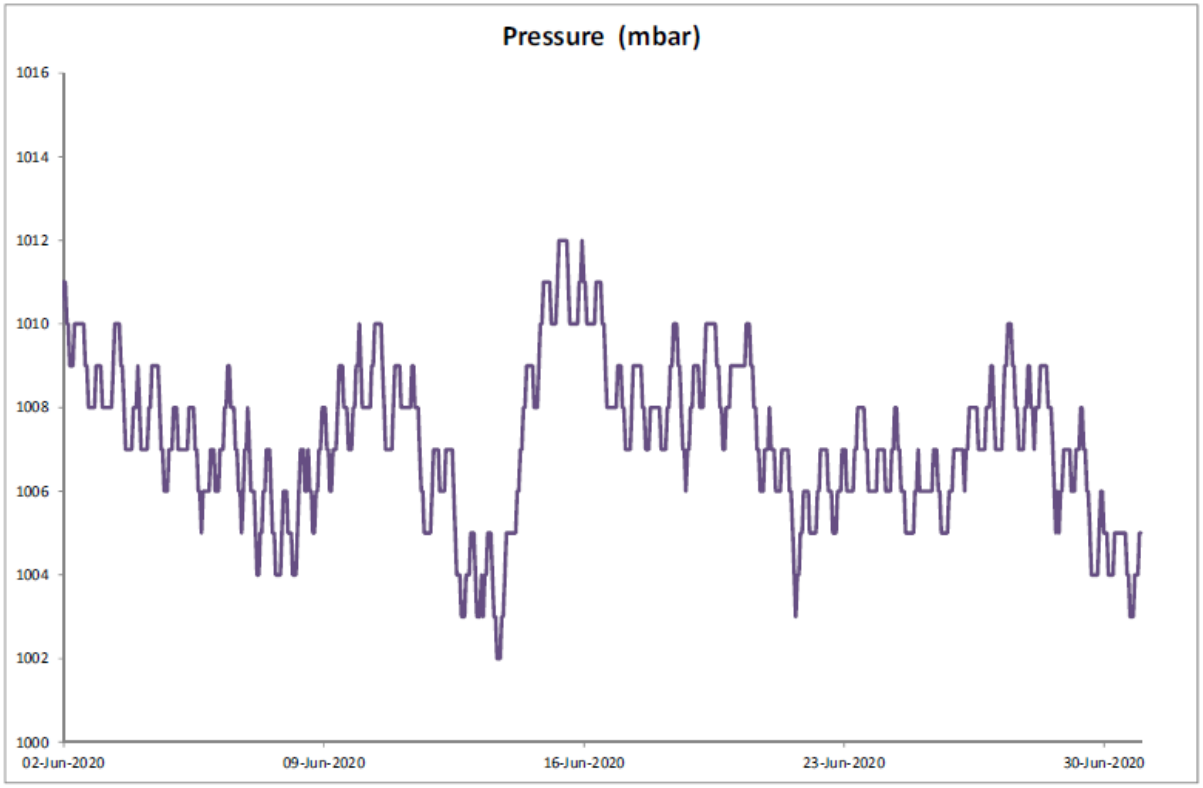

Wind Rose Diagram Percentage (May 2020)
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
30.00%
25.00%
20.00%
15.00%
10.00%
5.00%
0.00%

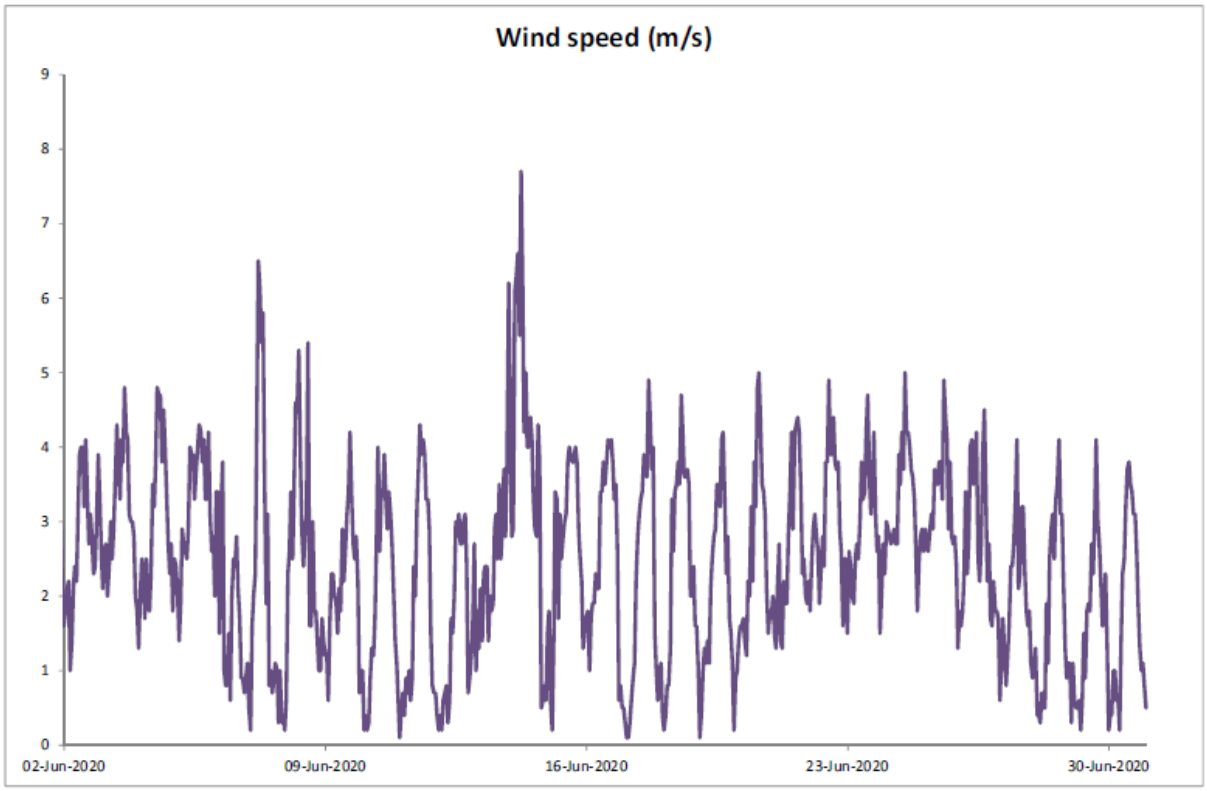

Meteorological Station Rainfall (mm)
90
80
70
60
50
40
30
20
10
0
01-May-2020
08-May-2020
15-May-2020
22-May-2020
29-May-2020

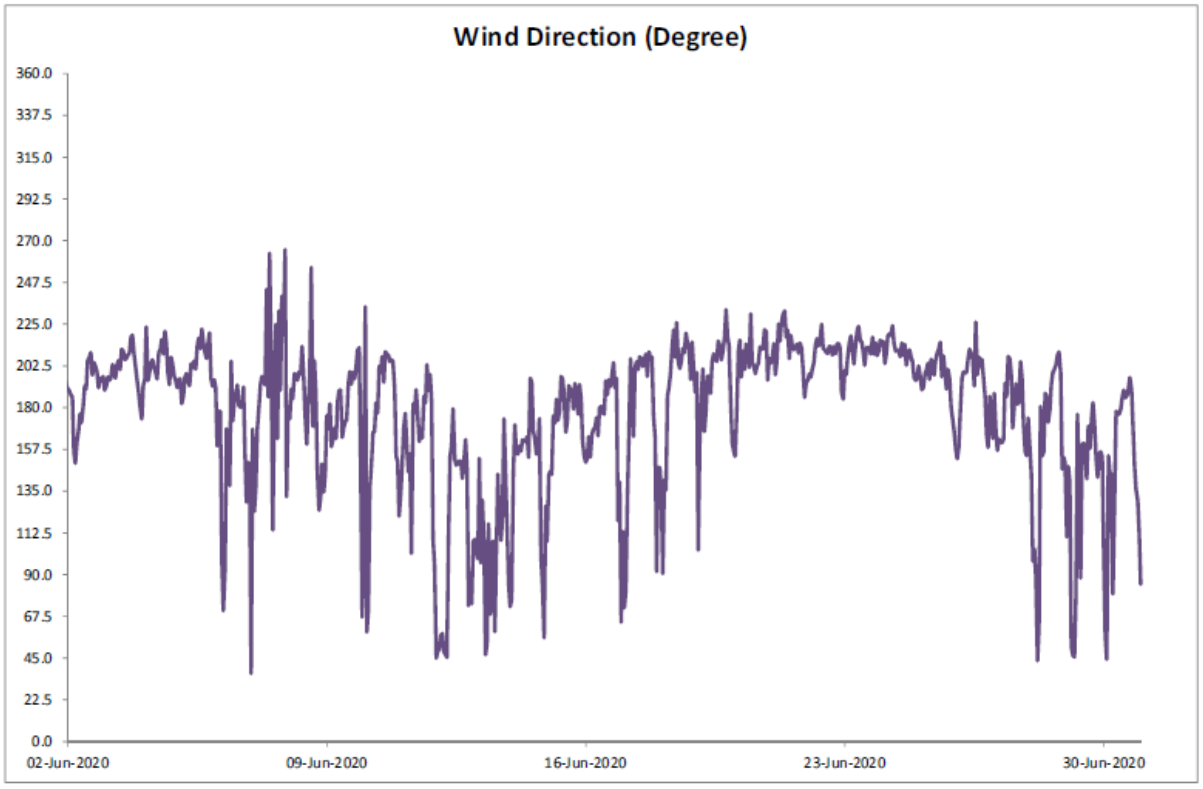
June 2020

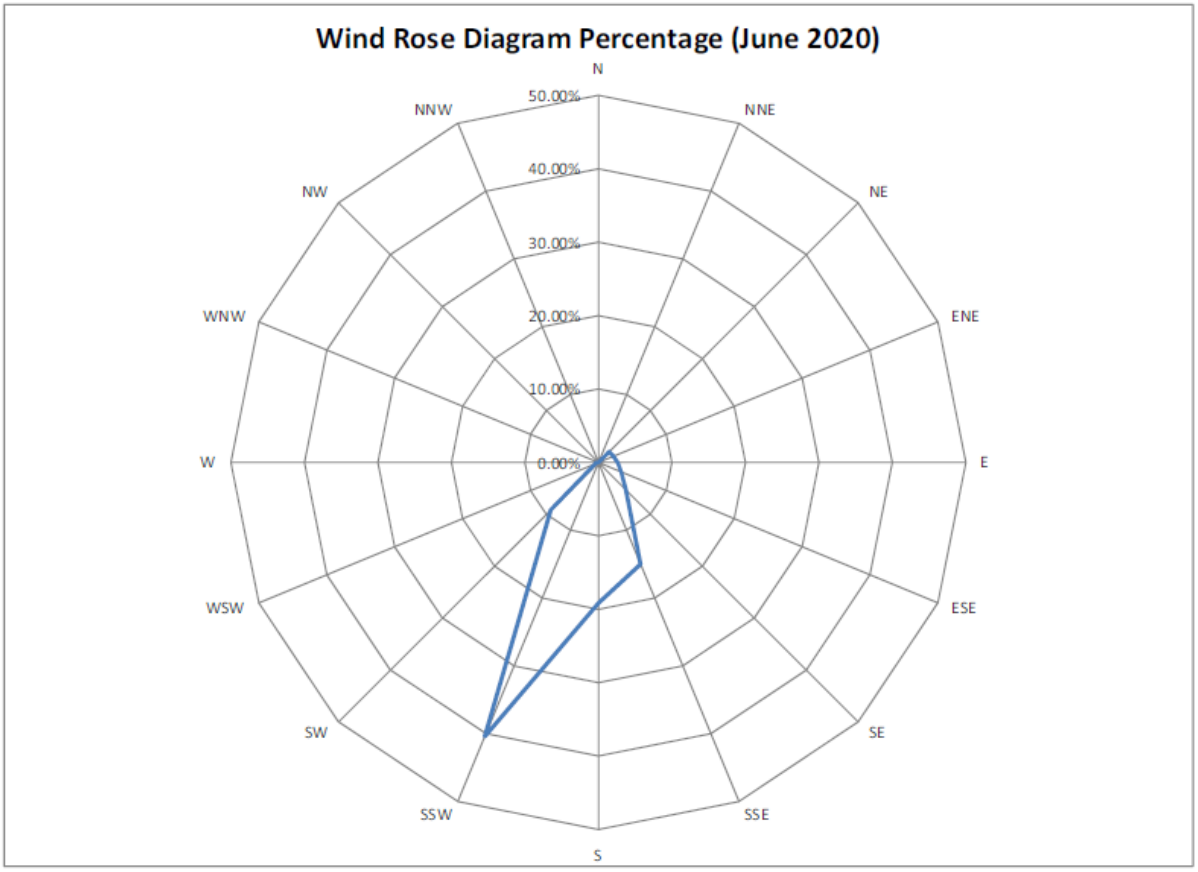

Temperature (Degree Celsius)
34
33
32
31
30
29
28
27
26
25
24
23
22
21
20
02-Jun-2020
09-Jun-2020
16-Jun-2020
23-Jun-2020
30-Jun-2020

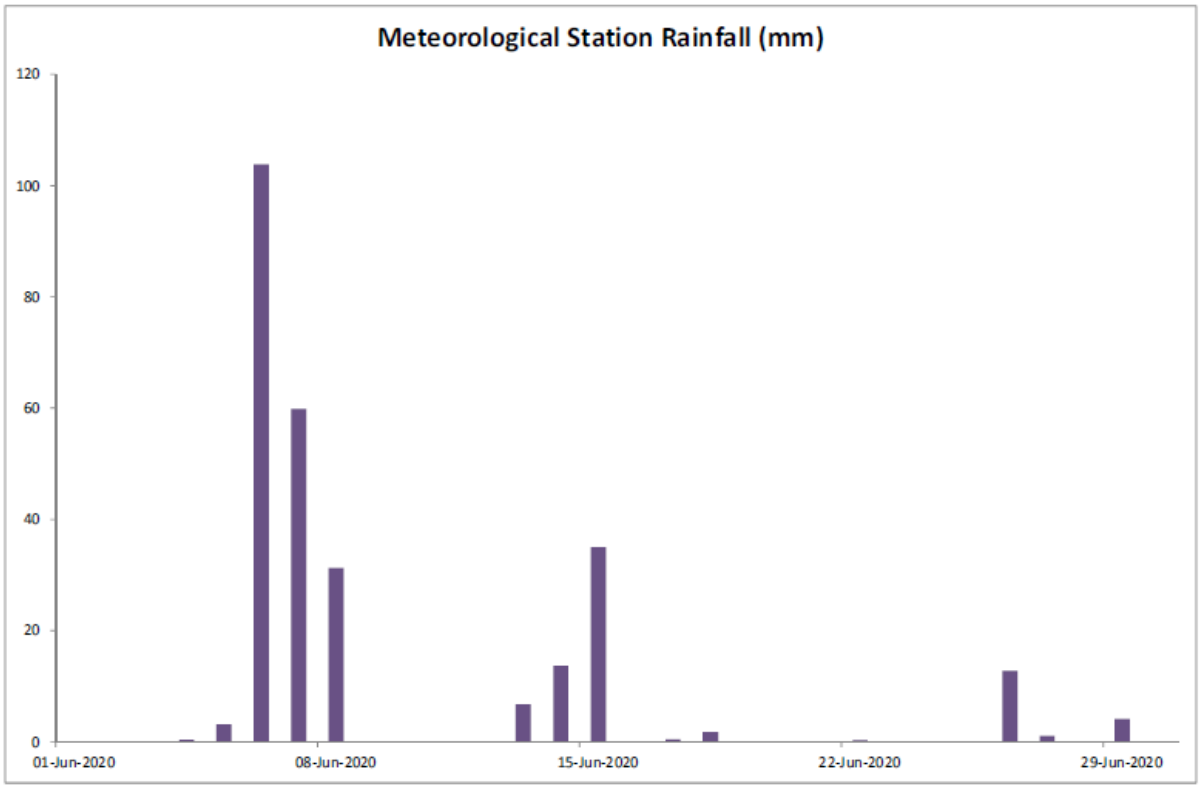

Relative Humidity (Percentage)
100
90
80
70
60
50
40
30
20
10
0
02-Jun-2020
09-Jun-2020
16-Jun-2020
23-Jun-2020
30-Jun-2020


Pressure (mbar)
1016
1014
1012
1010
1008
1006
1004
1002
1000
02-Jun-2020
09-Jun-2020
16-Jun-2020
23-Jun-2020
30-Jun-2020

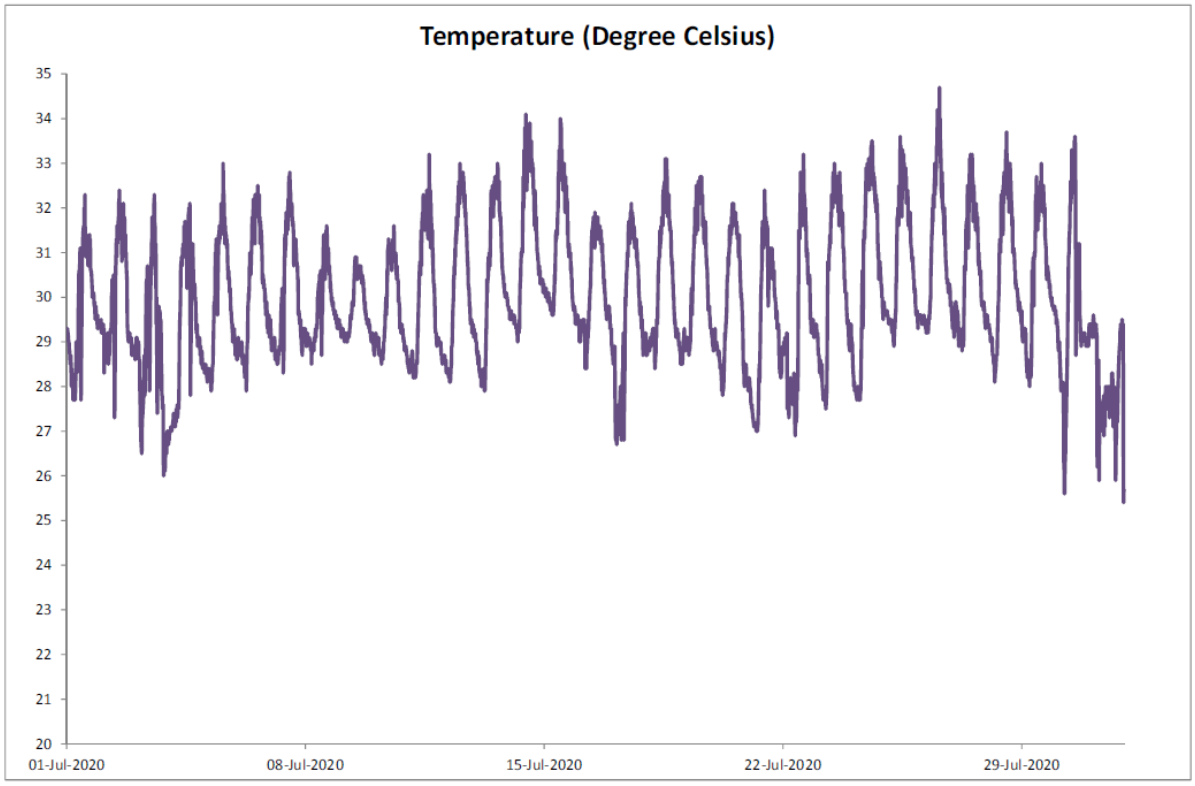

Wind speed (m/s)
9
8
7
6
5
4
3
2
1
0
02-Jun-2020
09-Jun-2020
16-Jun-2020
23-Jun-2020
30-Jun-2020

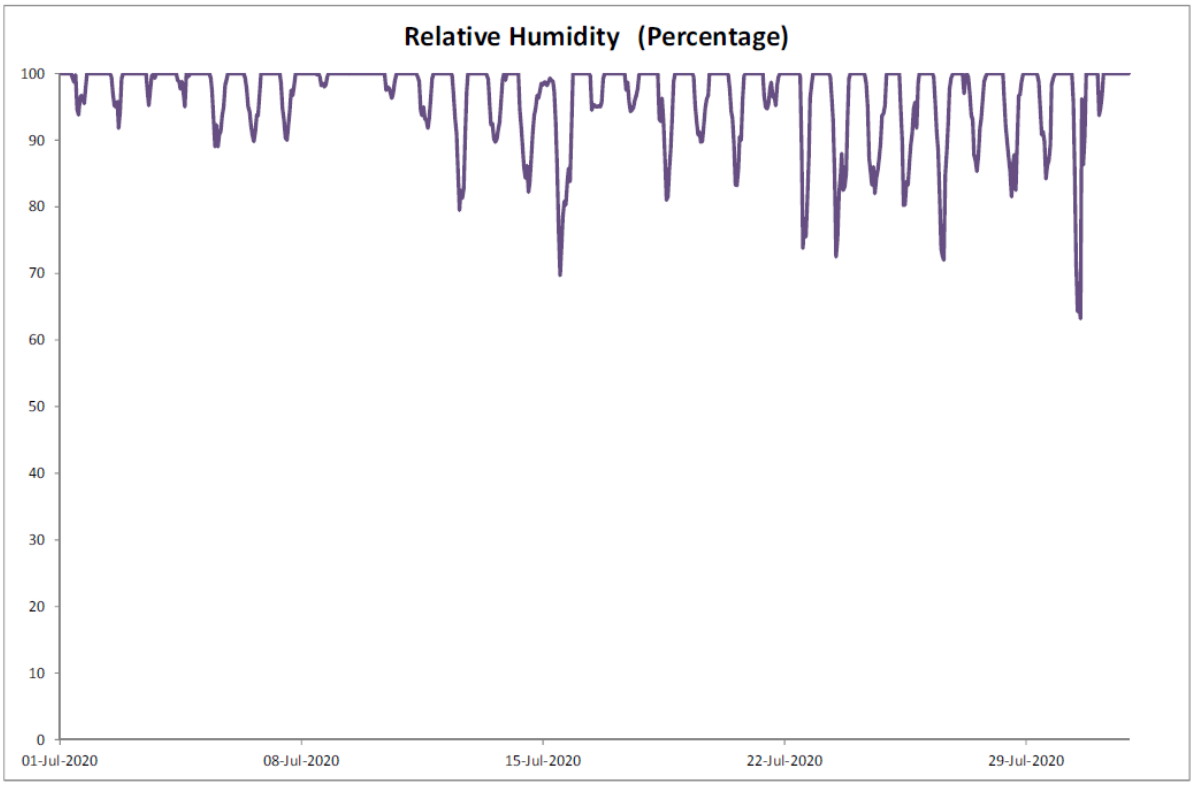

Wind Direction (Degree)
360.0
337.5
315.0
292.5
270.0
247.5
225.0
202.5
180.0
157.5
135.0
112.5
90.0
67.5
45.0
22.5
0.0
02-Jun-2020
09-Jun-2020
16-Jun-2020
23-Jun-2020
30-Jun-2020

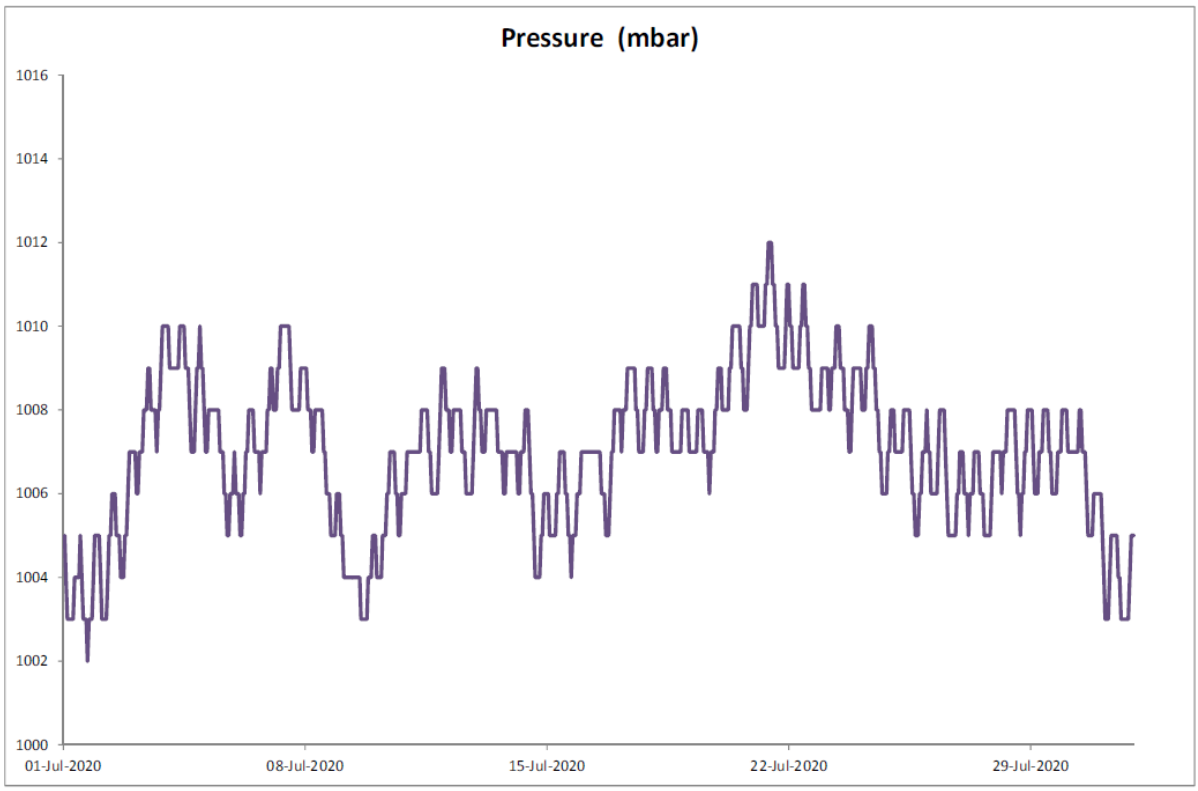

Wind Rose Diagram Percentage (June 2020)
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%

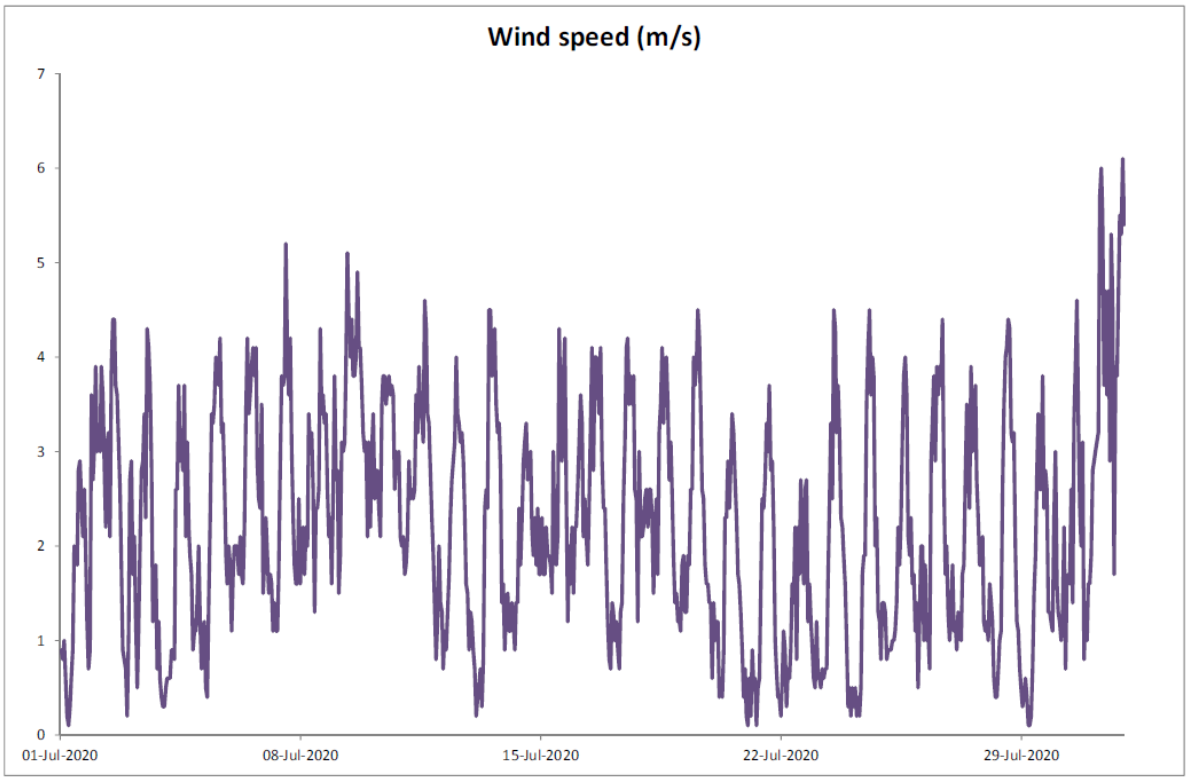

Meteorological Station Rainfall (mm)
120
100
80
60
40
20
0
01-Jun-2020
08-Jun-2020
15-Jun-2020
22-Jun-2020
29-Jun-2020

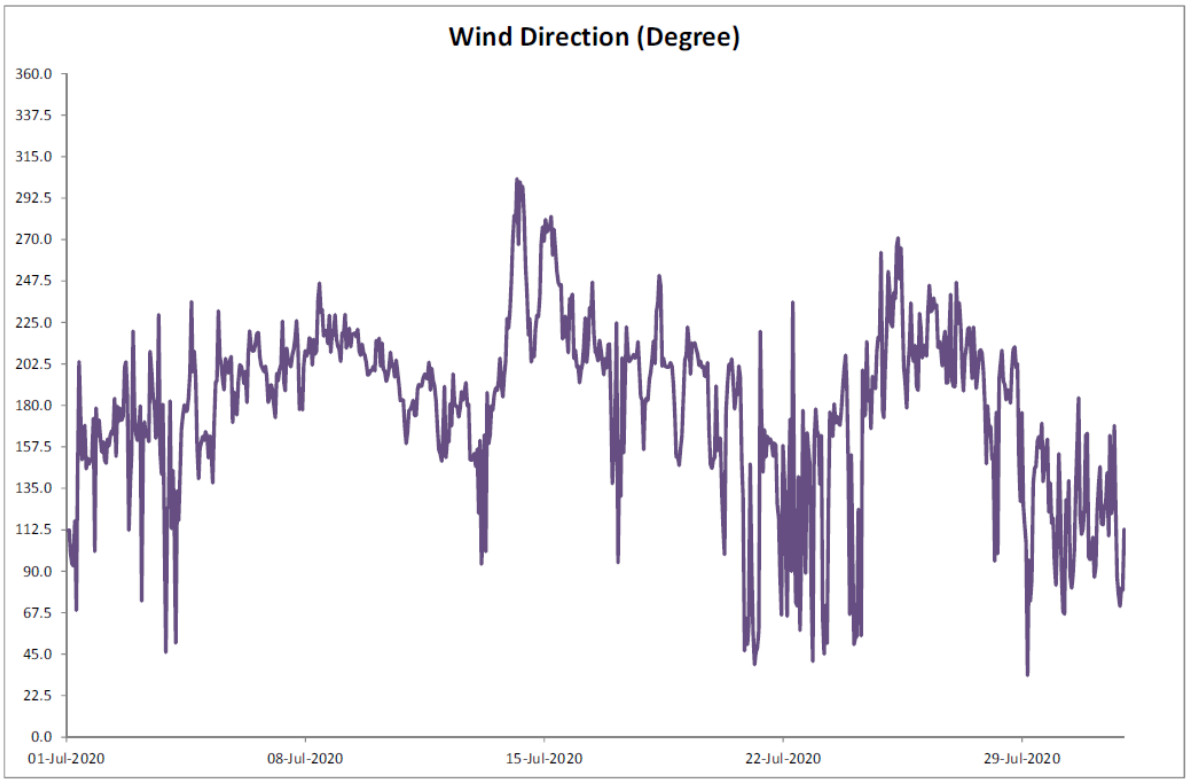
July 2020

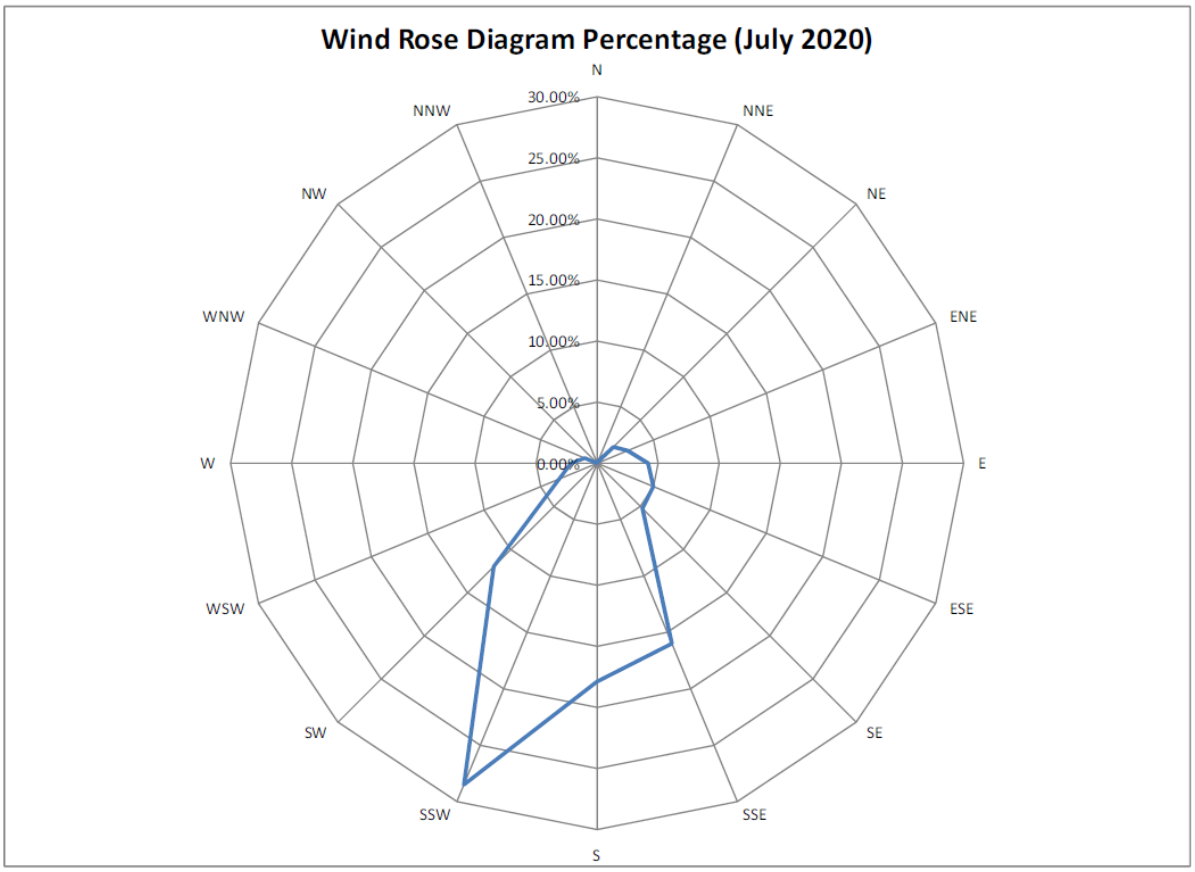

Temperature (Degree Celsius)
35
34
33
32
31
30
29
28
27
26
25
24
23
22
21
20
01-Jul-2020
08-Jul-2020
15-Jul-2020
22-Jul-2020
29-Jul-2020

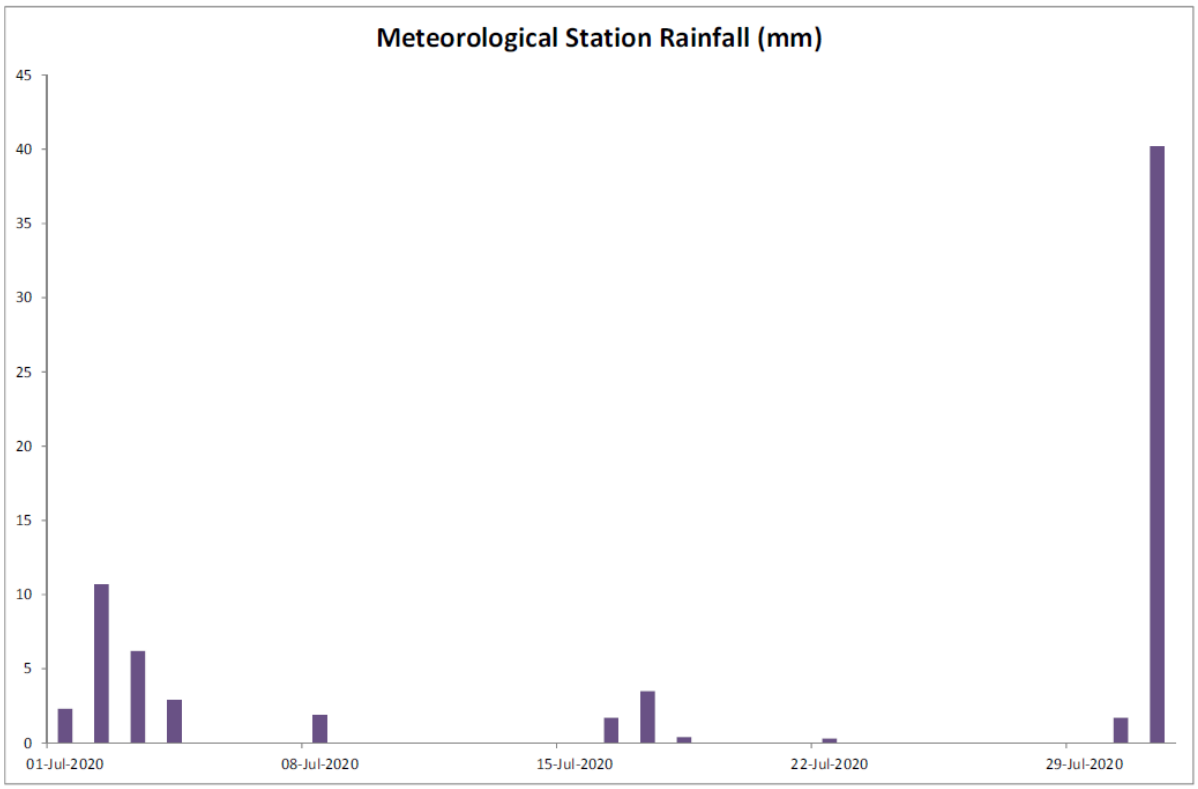

Relative Humidity (Percentage)
100
90
80
70
60
50
40
30
20
10
0
01-Jul-2020
08-Jul-2020
15-Jul-2020
22-Jul-2020
29-Jul-2020


Pressure (mbar)
1016
1014
1012
1010
1008
1006
1004
1002
1000
01-Jul-2020
08-Jul-2020
15-Jul-2020
22-Jul-2020
29-Jul-2020

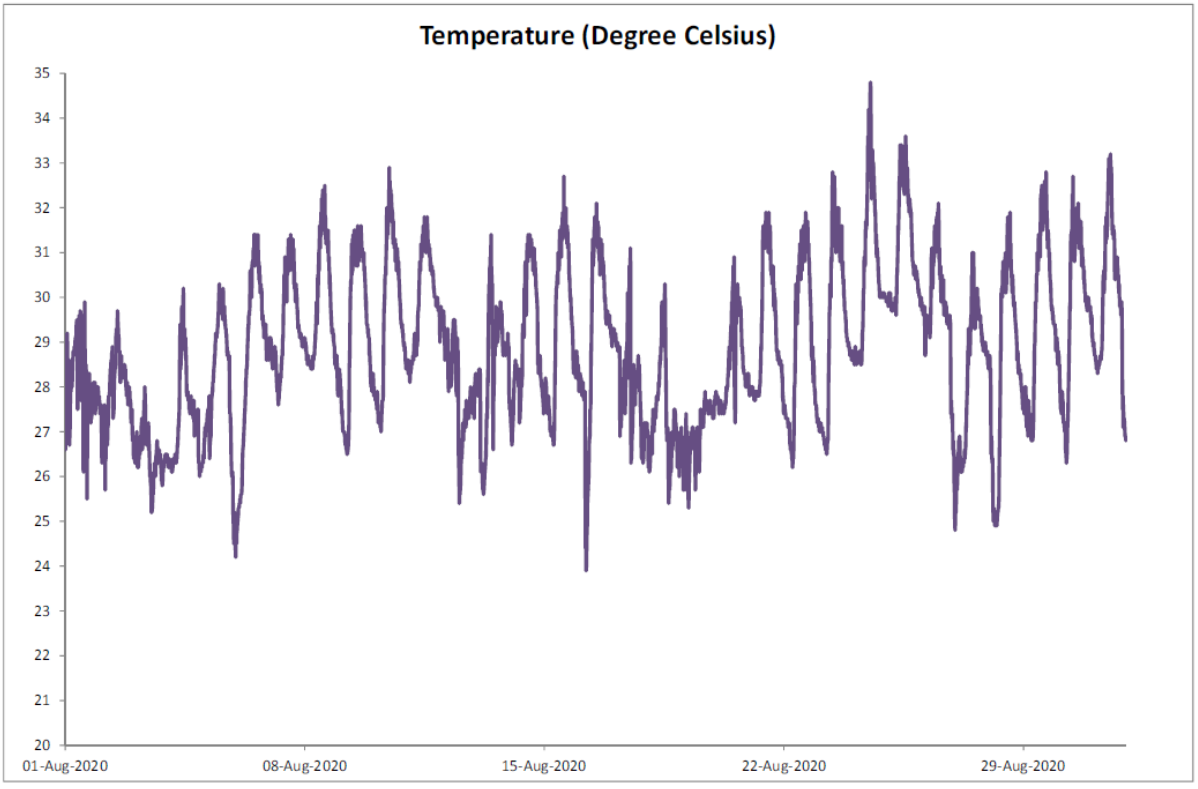

Wind speed (m/s)
7
6
5
4
3
2
1
0
01-Jul-2020
08-Jul-2020
15-Jul-2020
22-Jul-2020
29-Jul-2020

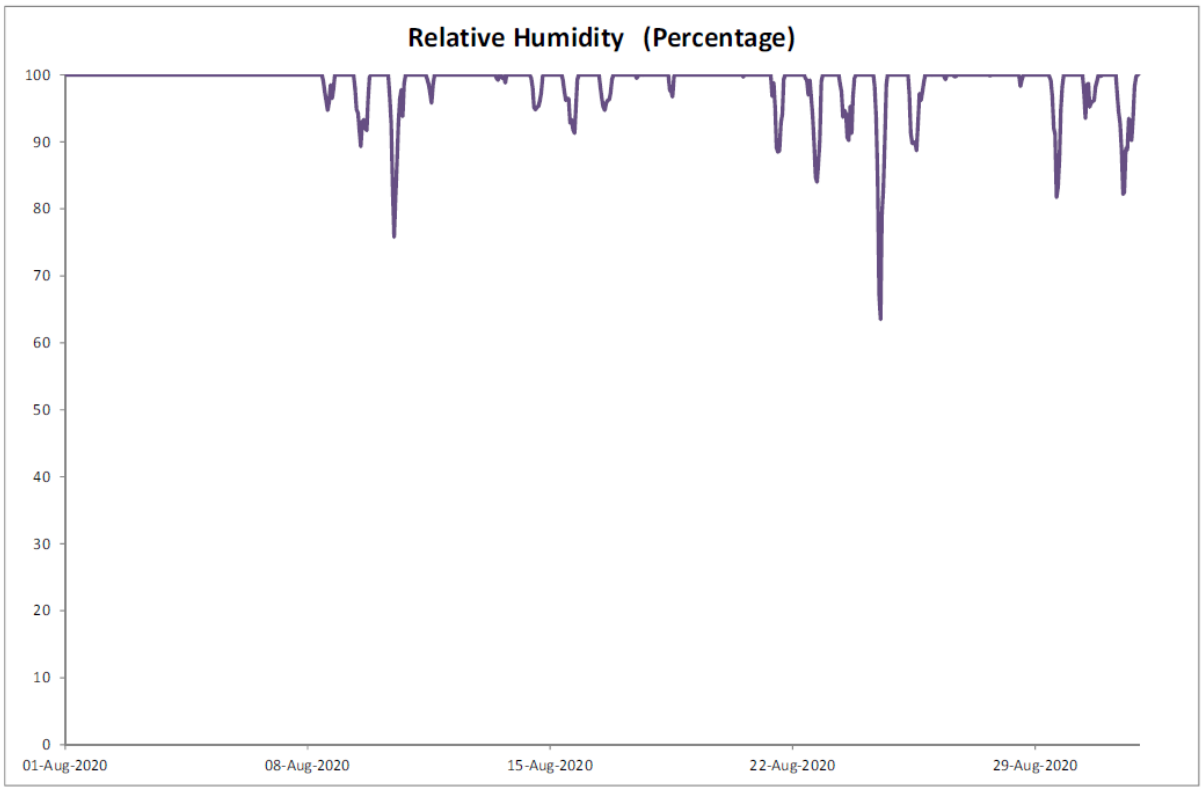

Wind Direction (Degree)
360.0
337.5
315.0
292.5
270.0
247.5
225.0
202.5
180.0
157.5
135.0
112.5
90.0
67.5
45.0
22.5
0.0
01-Jul-2020
08-Jul-2020
15-Jul-2020
22-Jul-2020
29-Jul-2020

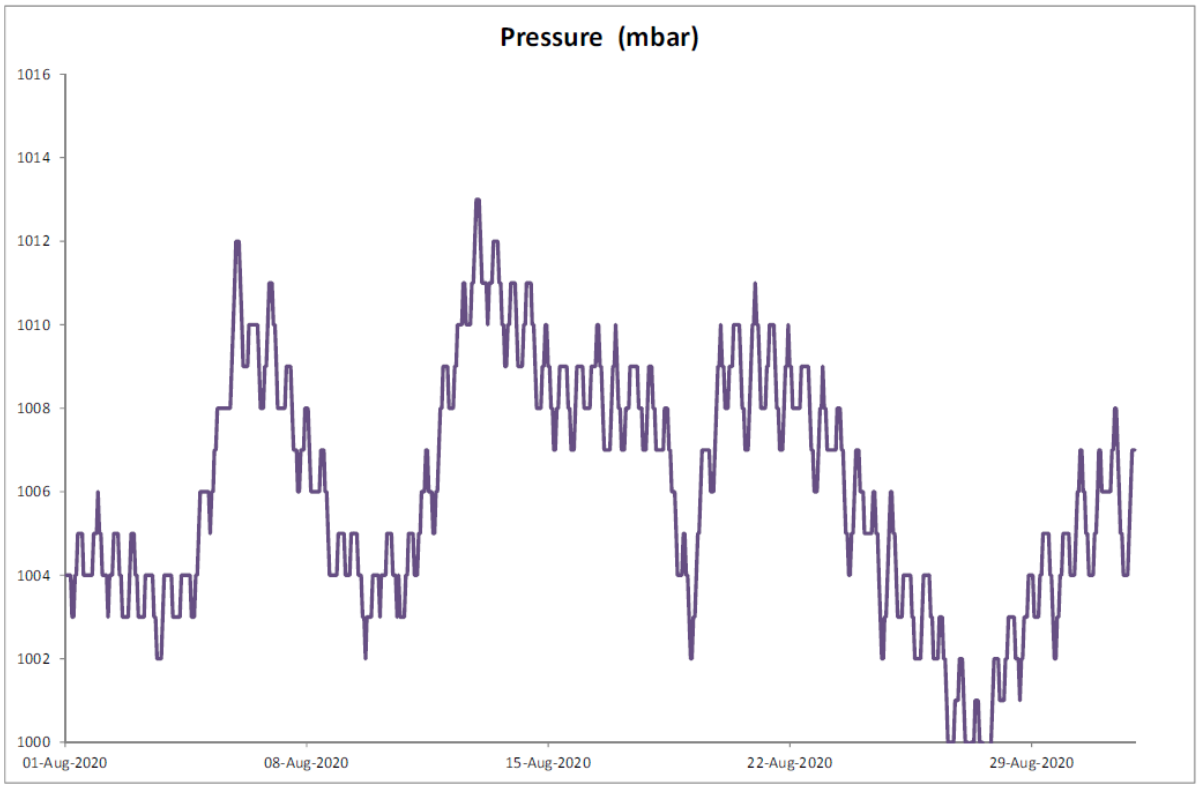

Wind Rose Diagram Percentage (July 2020)
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
30.00%
25.00%
20.00%
15.00%
10.00%
5.00%
0.00%

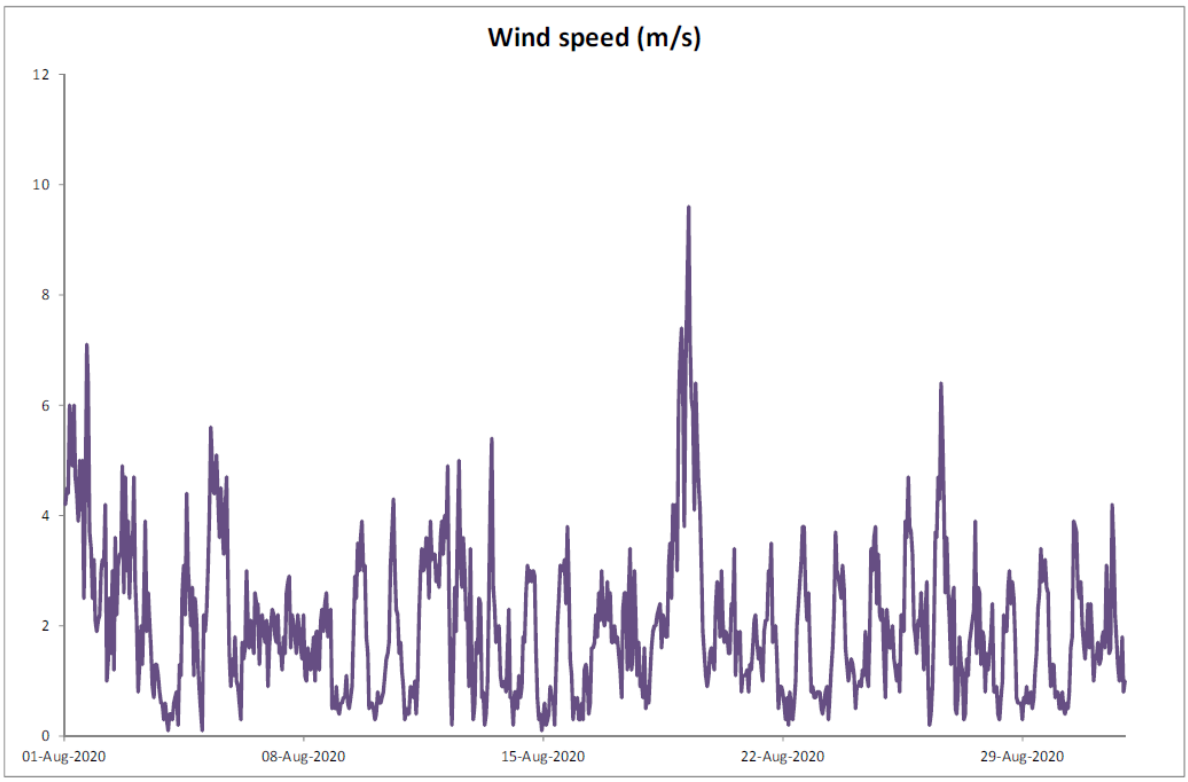

Meteorological Station Rainfall (mm)
45
40
35
30
25
20
15
10
5
0
01-Jul-2020
08-Jul-2020
15-Jul-2020
22-Jul-2020
29-Jul-2020

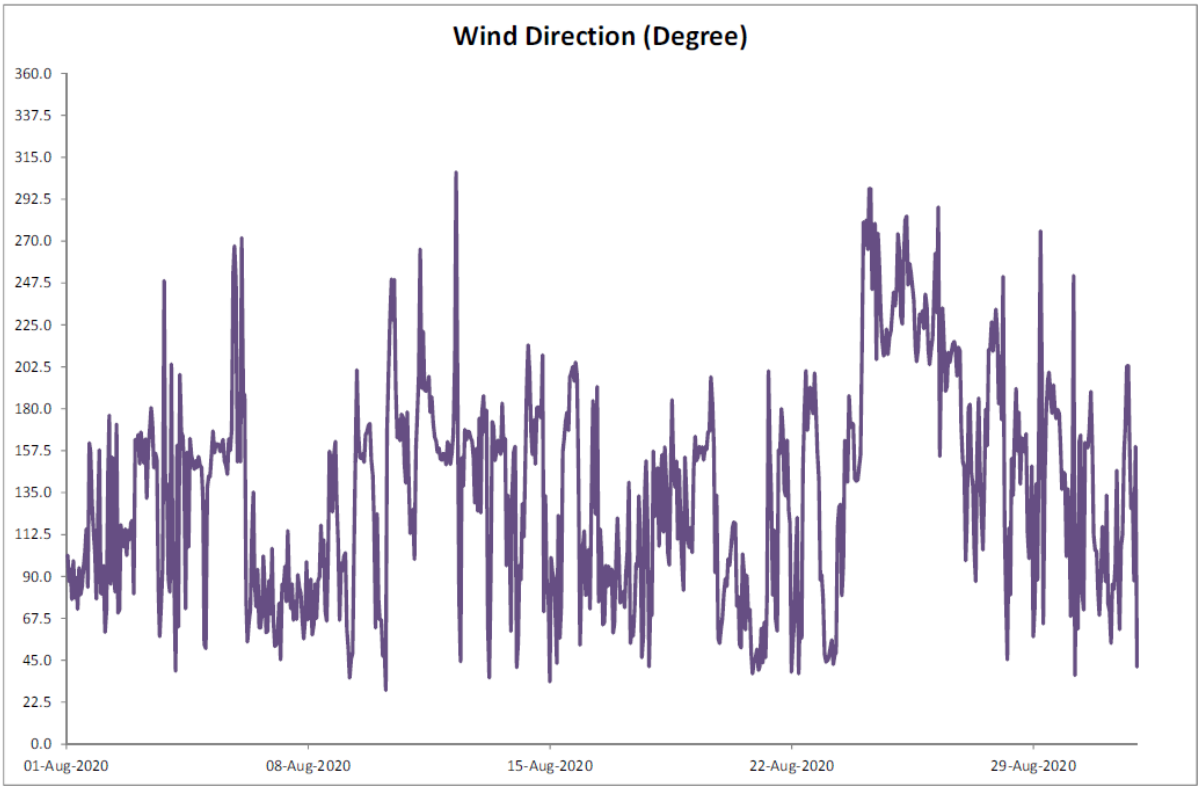
August 2020

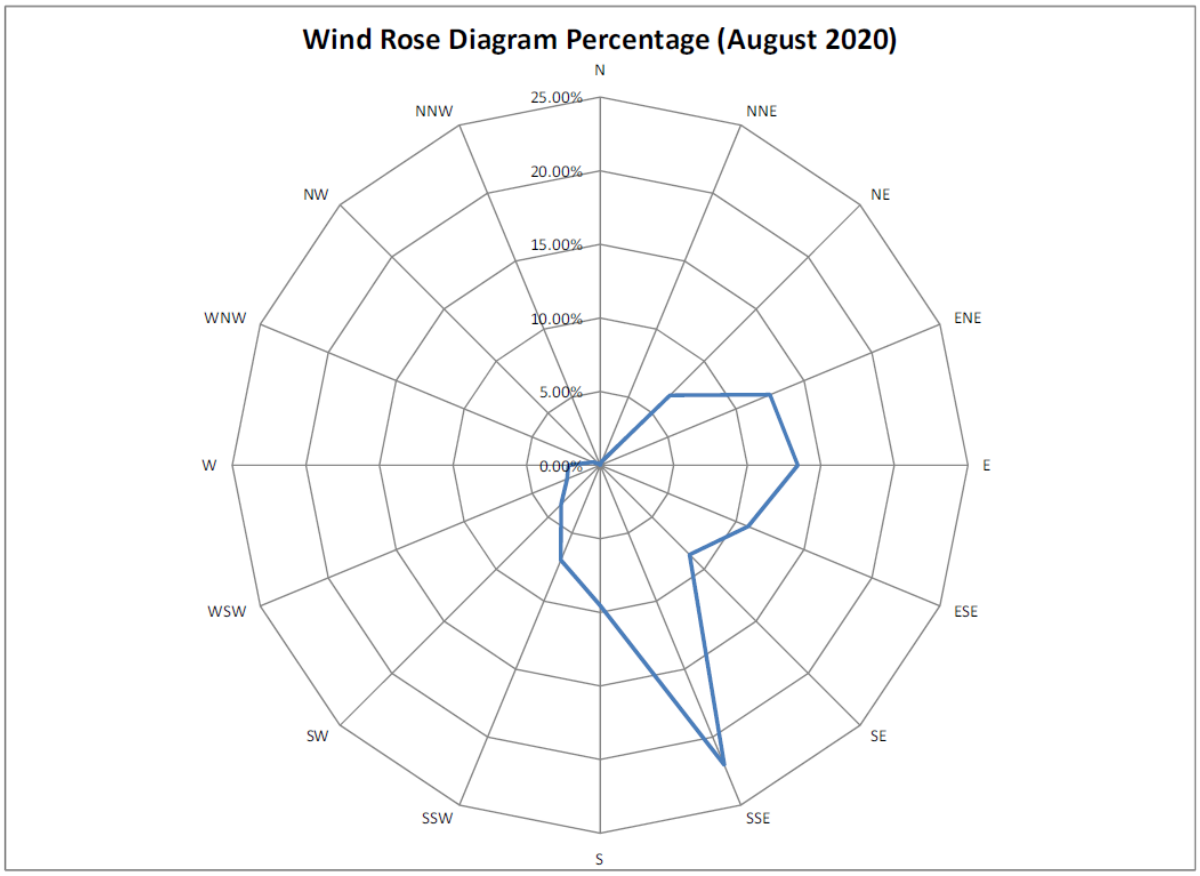

Temperature (Degree Celsius)
35
34
33
32
31
30
29
28
27
26
25
24
23
22
21
20
01-Aug-2020
08-Aug-2020
15-Aug-2020
22-Aug-2020
29-Aug-2020

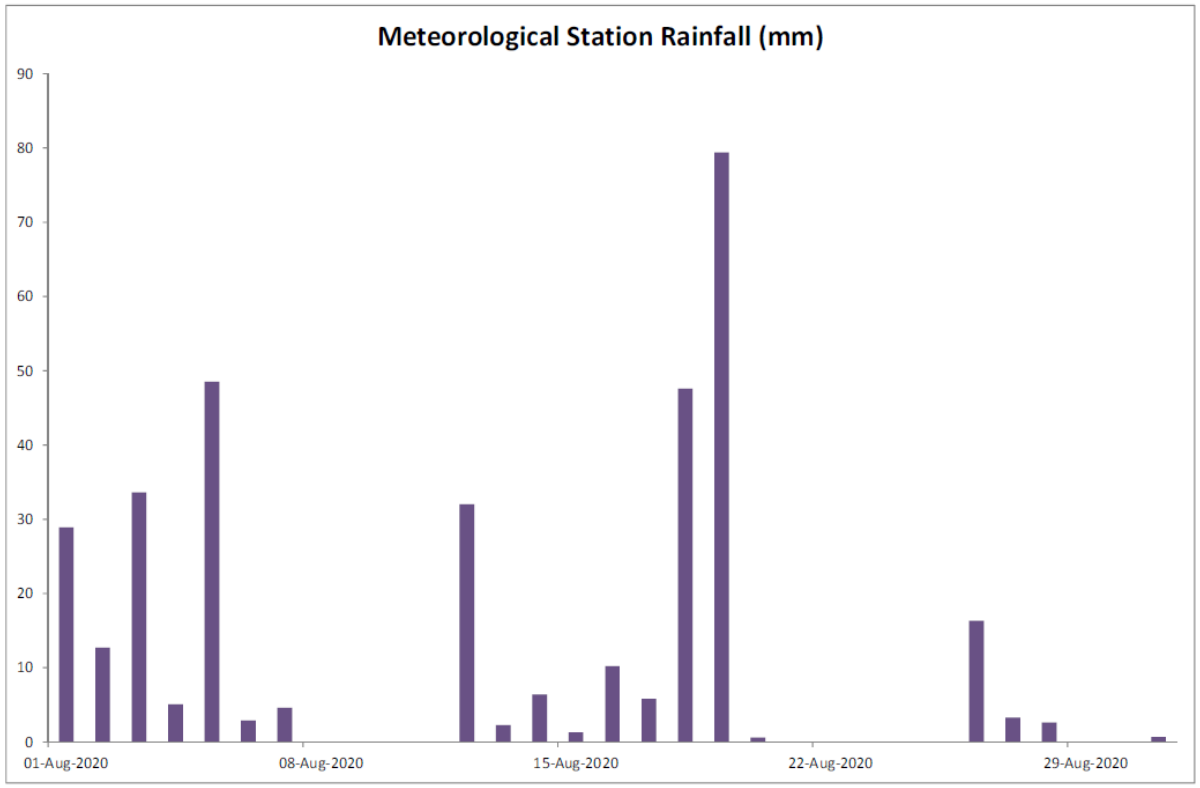

Relative Humidity (Percentage)
100
90
80
70
60
50
40
30
20
10
0
01-Aug-2020
08-Aug-2020
15-Aug-2020
22-Aug-2020
29-Aug-2020


Pressure (mbar)
1016
1014
1012
1010
1008
1006
1004
1002
1000
01-Aug-2020
08-Aug-2020
15-Aug-2020
22-Aug-2020
29-Aug-2020

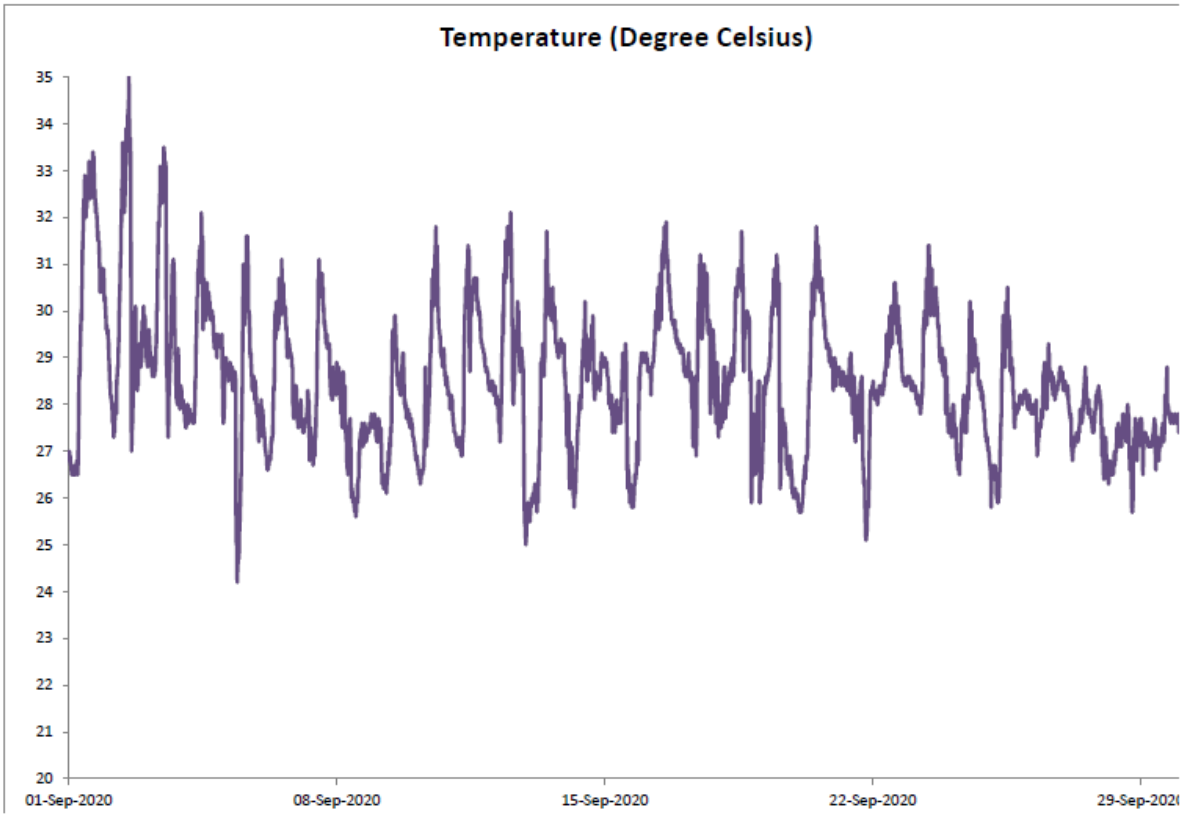

Wind speed (m/s)
12
10
8
6
4
2
0
01-Aug-2020
08-Aug-2020
15-Aug-2020
22-Aug-2020
29-Aug-2020

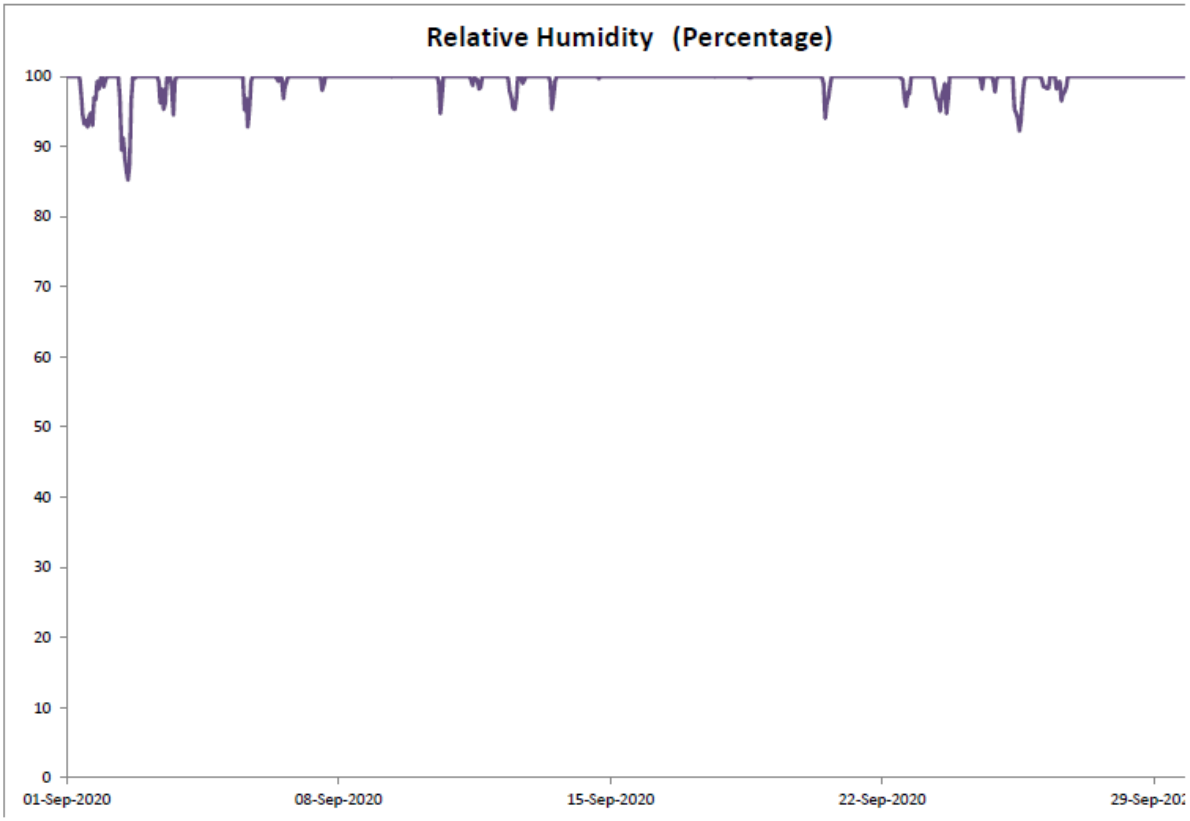

Wind Direction (Degree)
360.0
337.5
315.0
292.5
270.0
247.5
225.0
202.5
180.0
157.5
135.0
112.5
90.0
67.5
45.0
22.5
0.0
01-Aug-2020
08-Aug-2020
15-Aug-2020
22-Aug-2020
29-Aug-2020

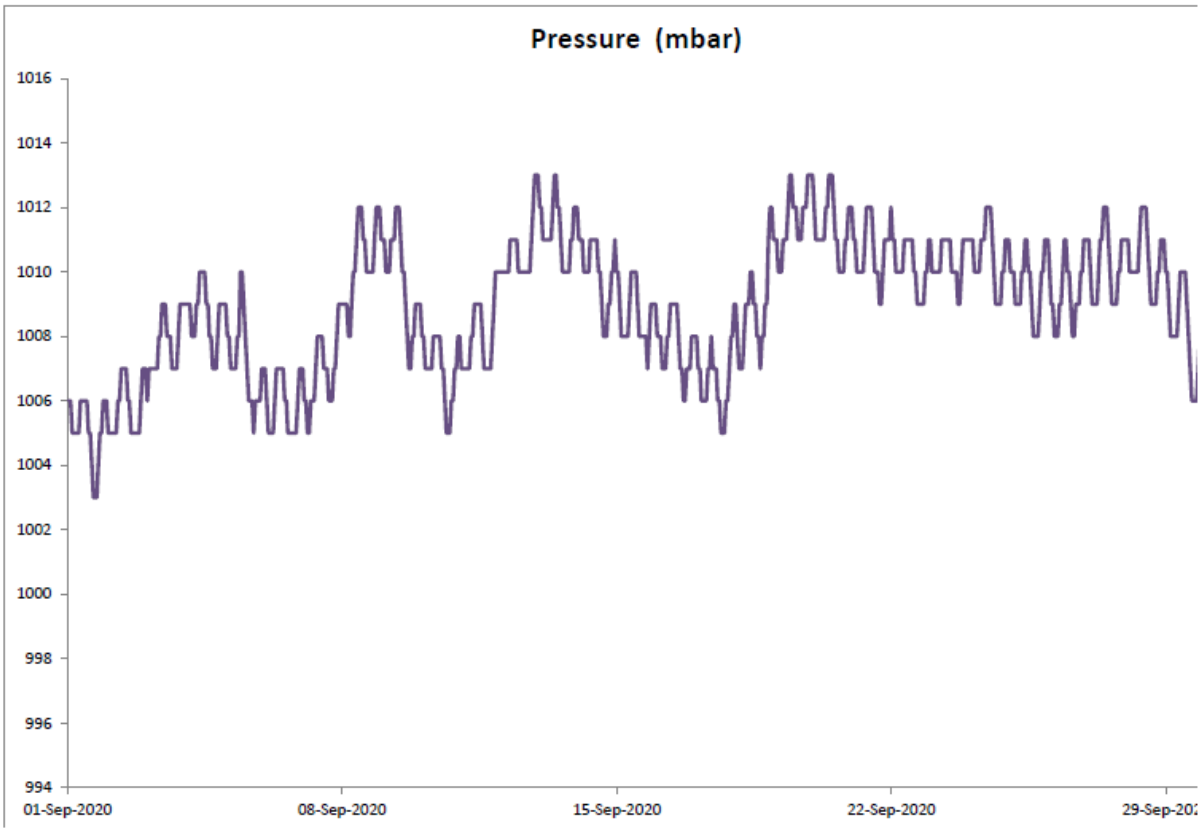

Wind Rose Diagram Percentage (August 2020)
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
25.00%
20.00%
15.00%
10.00%
5.00%
0.00%

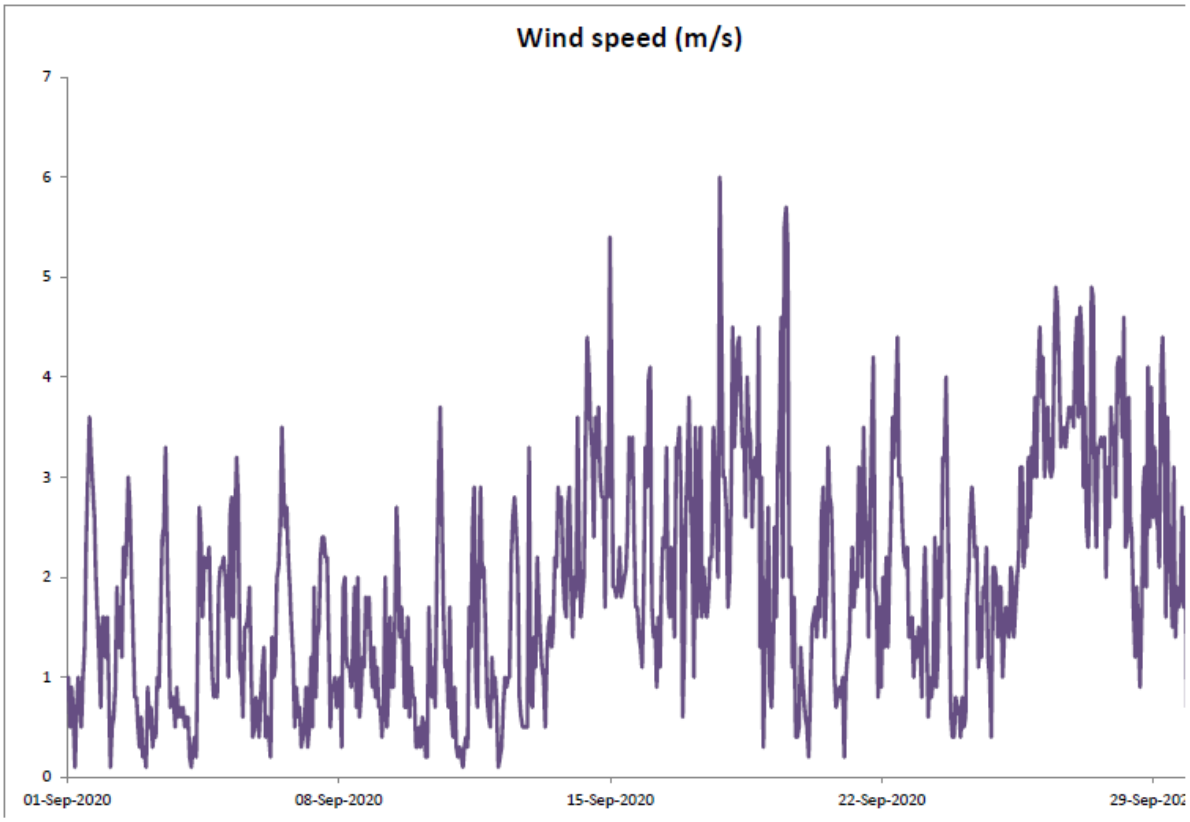

Meteorological Station Rainfall (mm)
90
80
70
60
50
40
30
20
10
0
01-Aug-2020
08-Aug-2020
15-Aug-2020
22-Aug-2020
29-Aug-2020

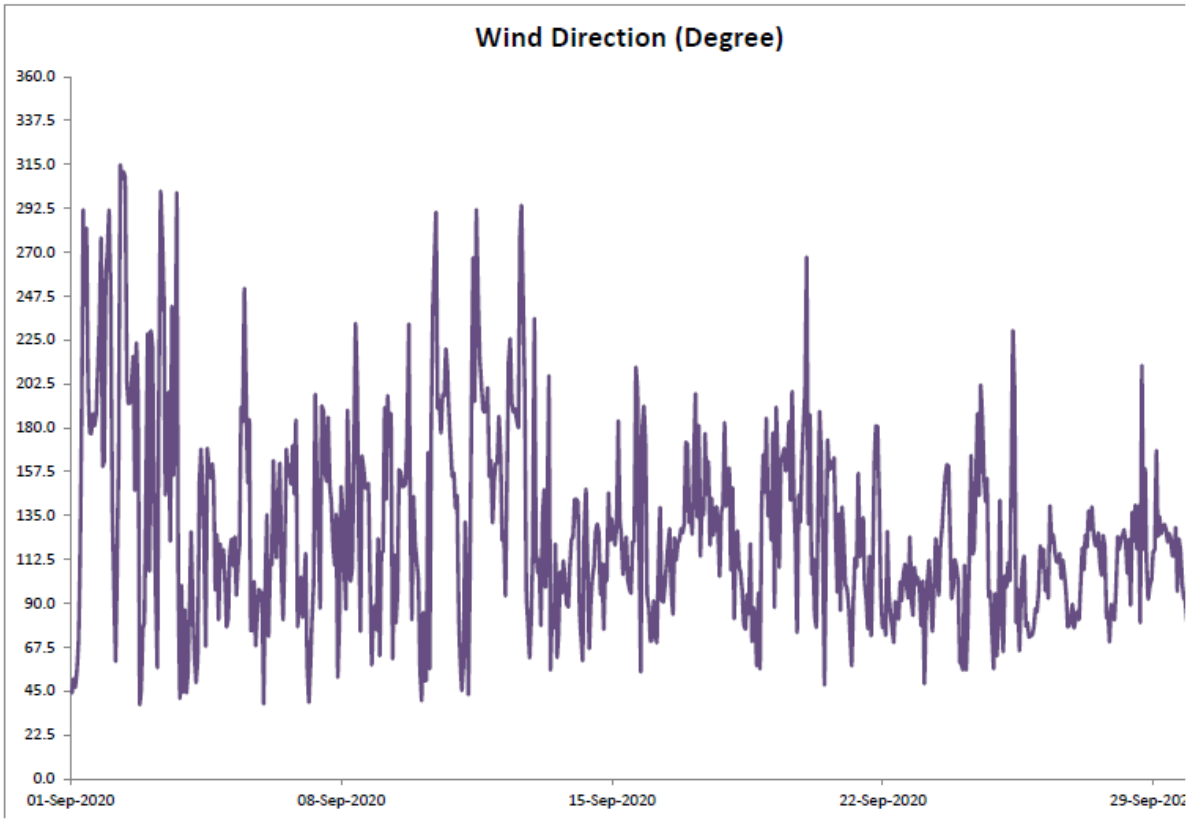
September 2020

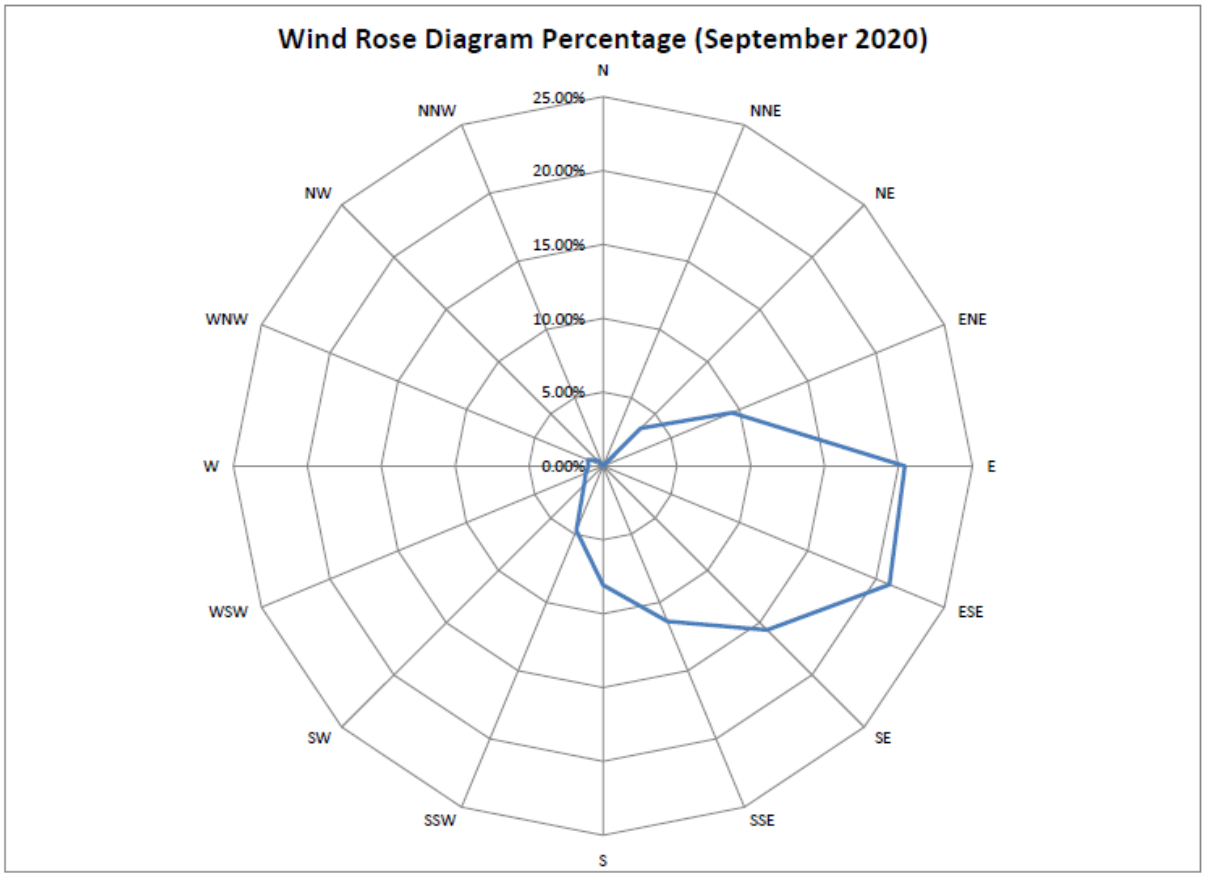


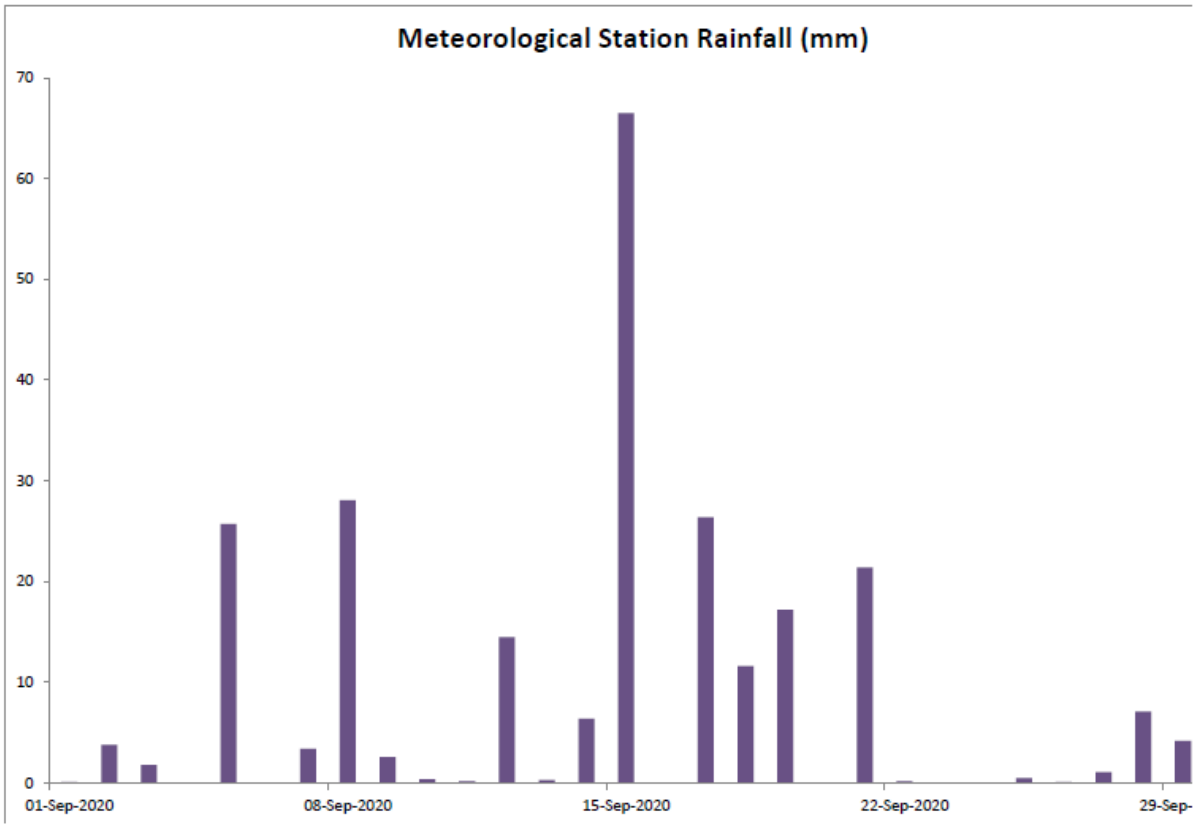



Pressure (mbar)
1016
1014
1012
1010
1008
1006
1004
1002
1000
998
996
994
01-Sep-2020
08-Sep-2020
15-Sep-2020
22-Sep-2020

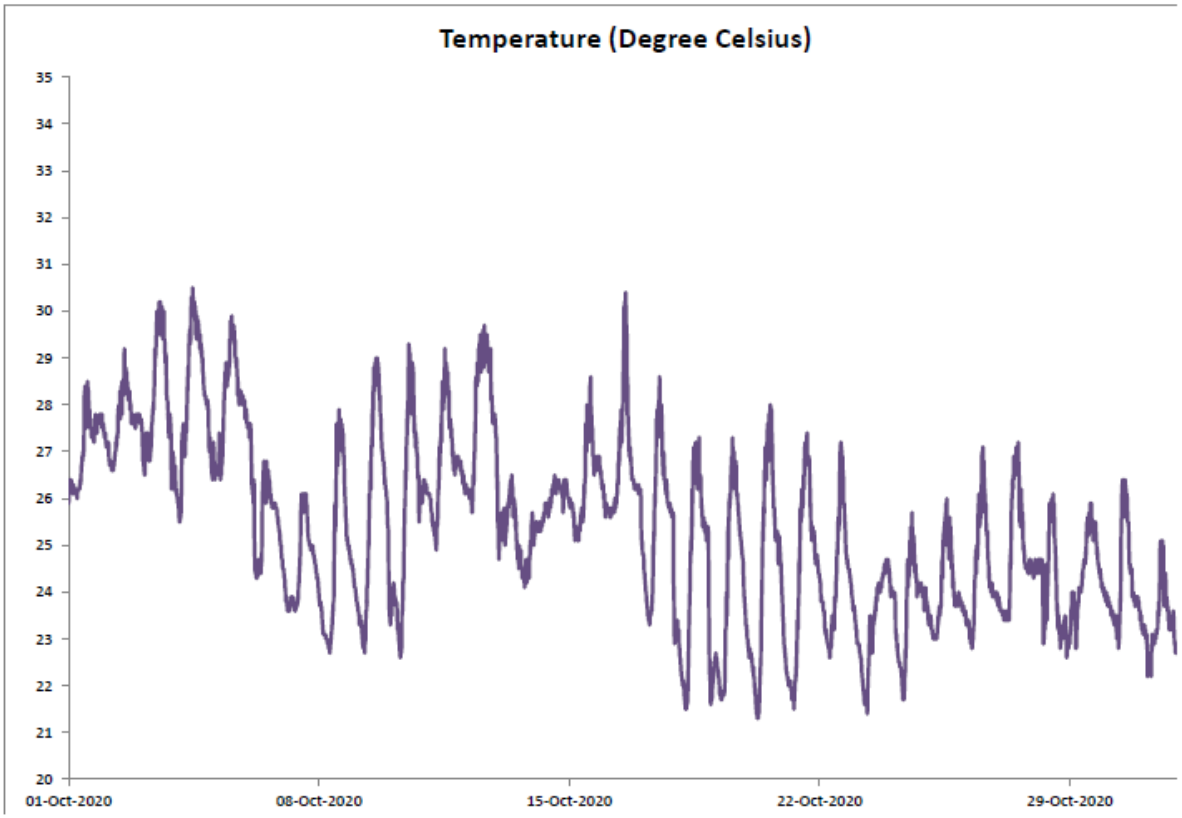

Wind speed (m/s)
7
6
5
4
3
2
1
0
01-Sep-2020
08-Sep-2020
15-Sep-2020
22-Sep-2020

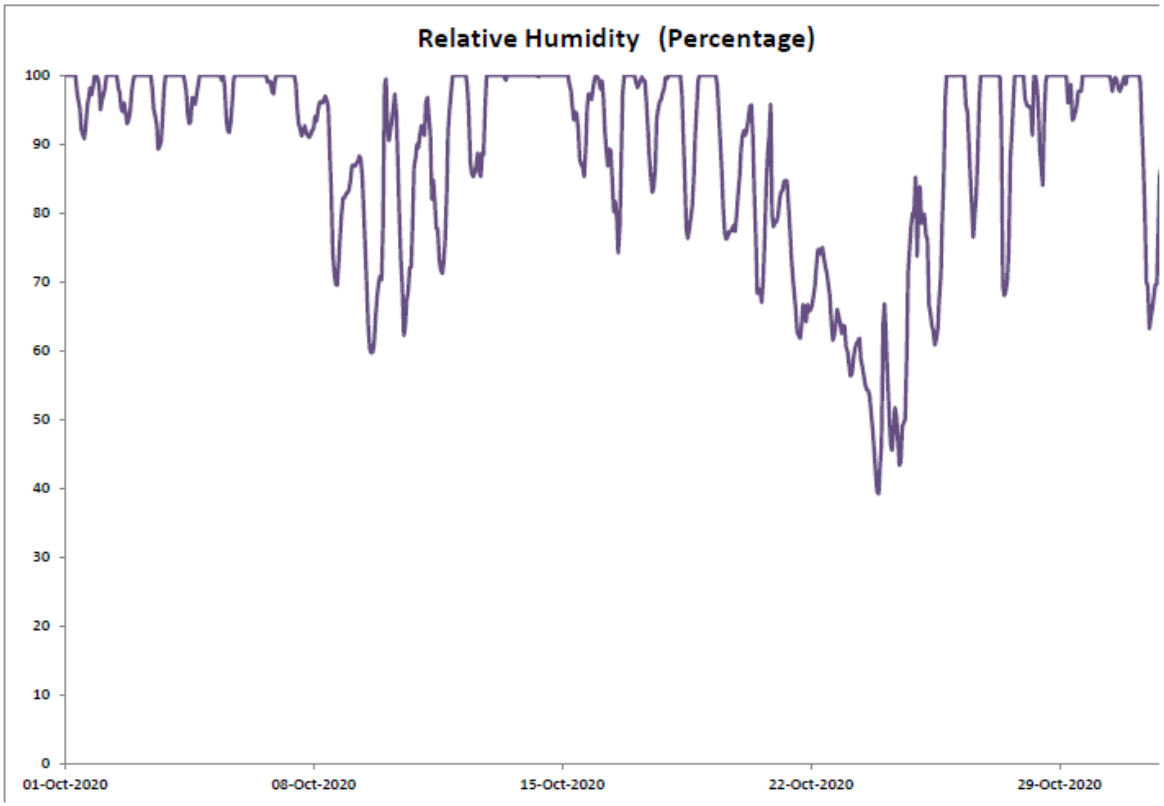

Wind Direction (Degree)
360.0
337.5
315.0
292.5
270.0
247.5
225.0
202.5
180.0
157.5
135.0
112.5
90.0
67.5
45.0
22.5
0.0
01-Sep-2020
08-Sep-2020
15-Sep-2020
22-Sep-2020
29-Sep-202

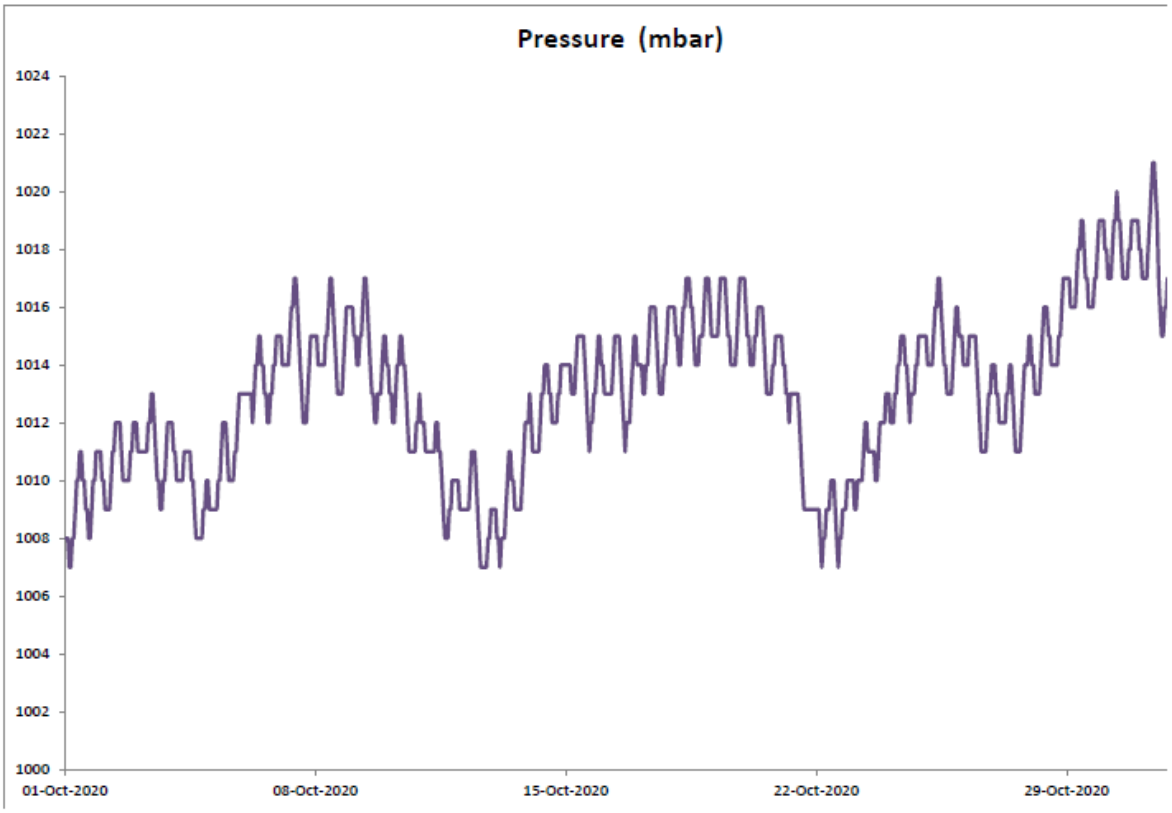

Wind Rose Diagram Percentage (September 2020)
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
25.00%
20.00%
15.00%
10.00%
5.00%
0.00%

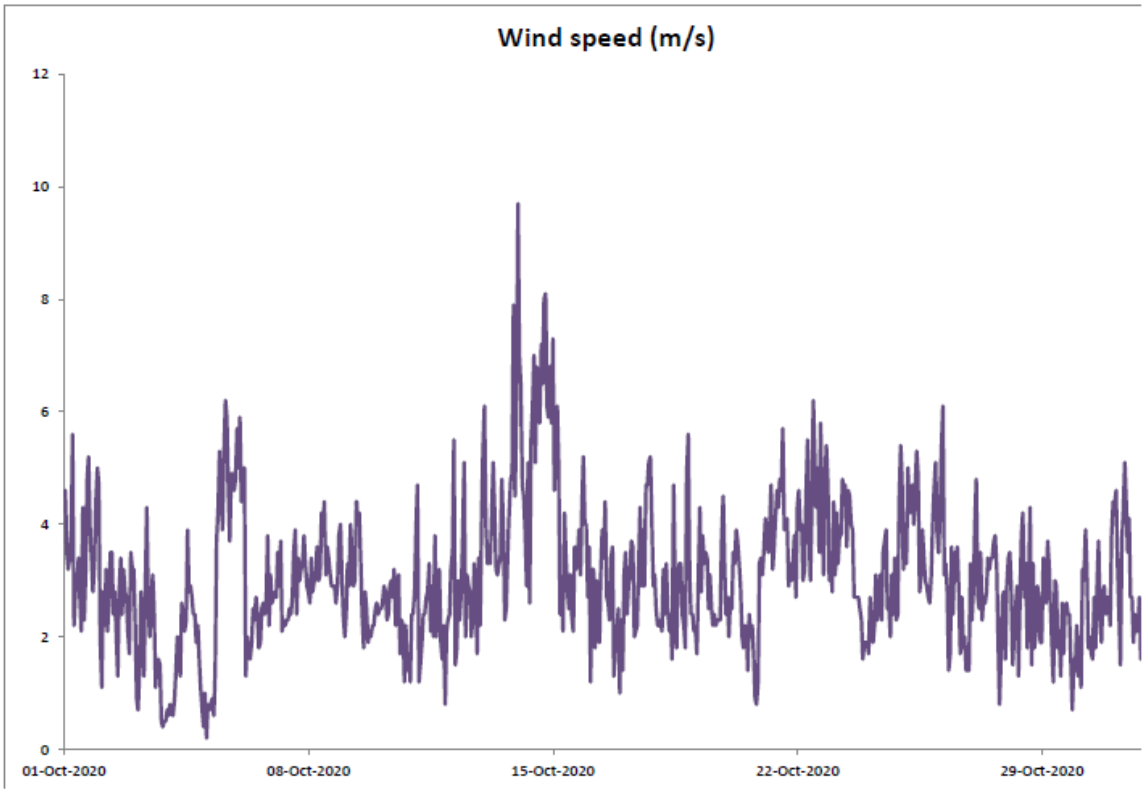


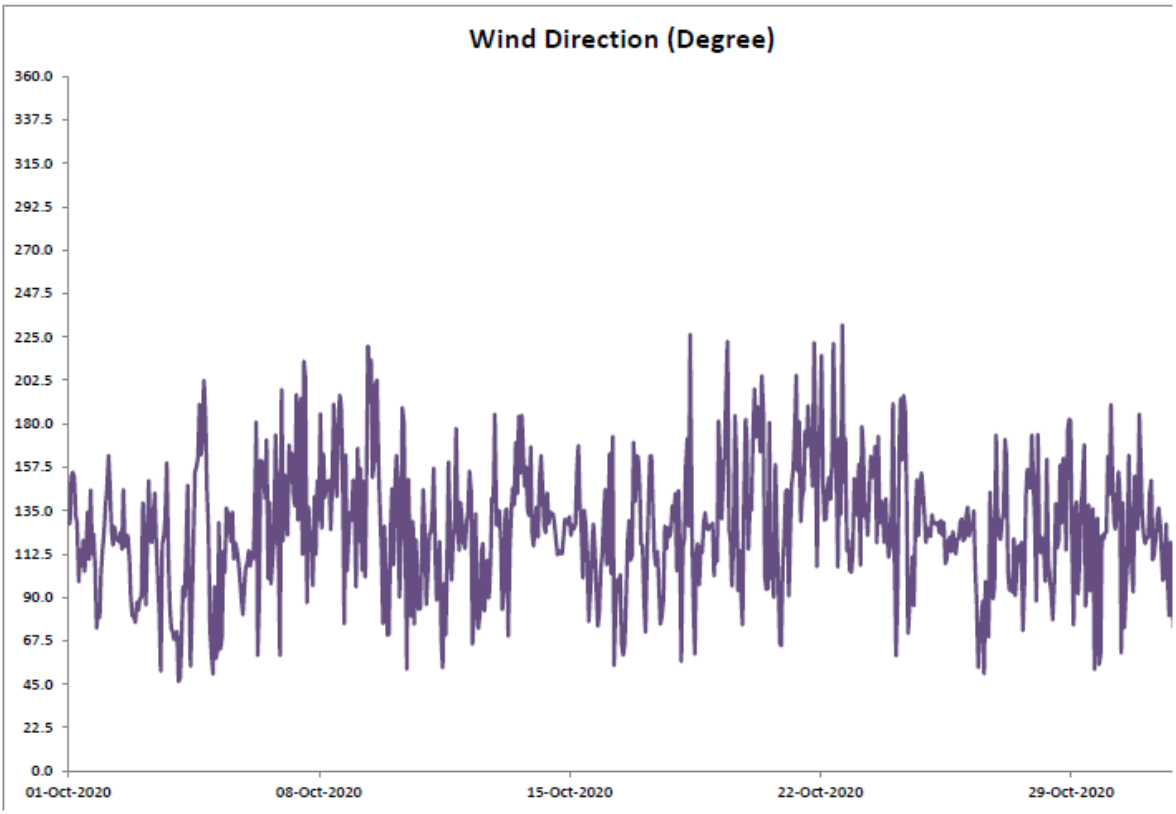
October 2020

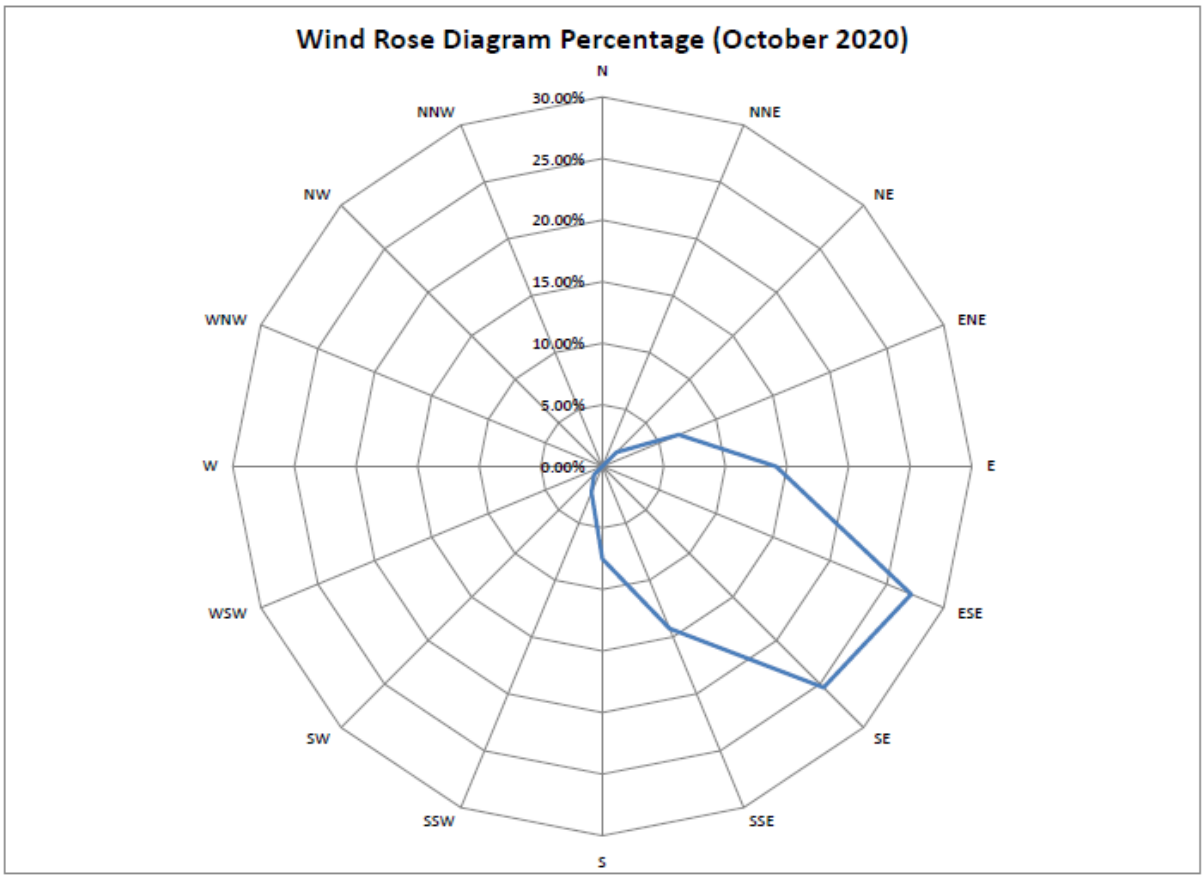


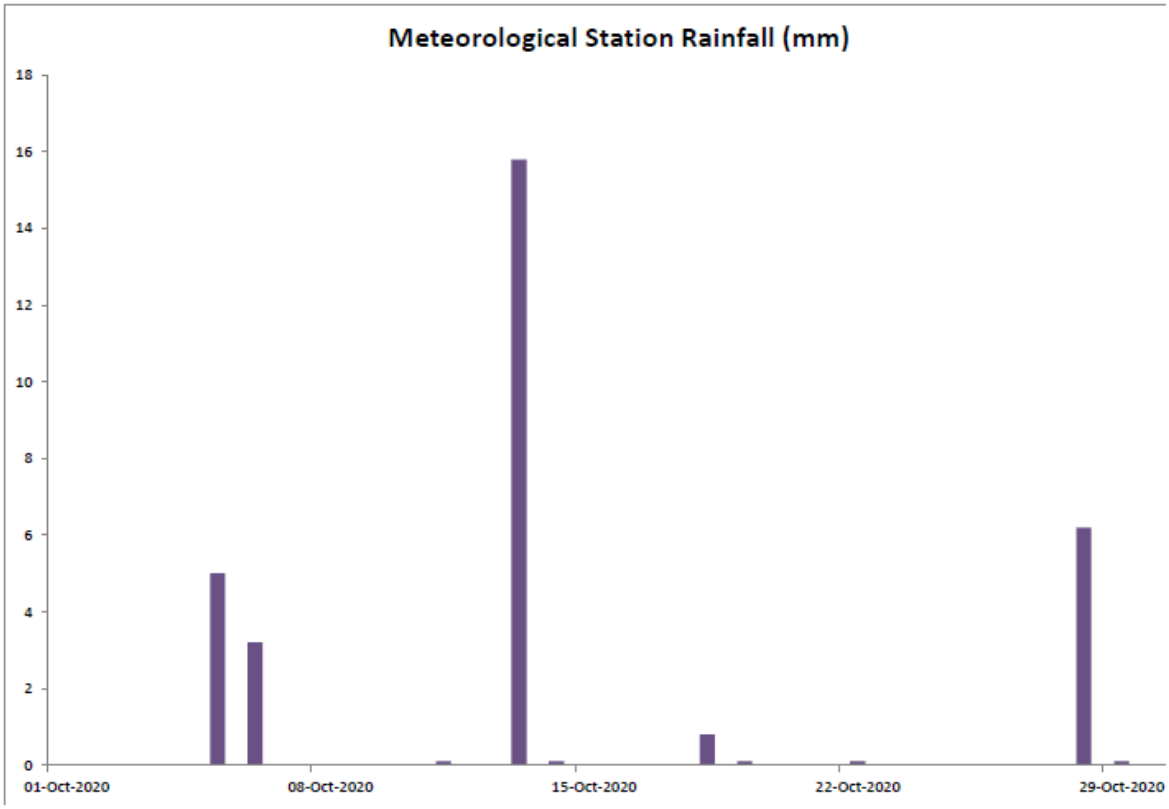

Relative Humidity (Percentage)
100
90
80
70
60
50
40
30
20
10
0
01-Oct-2020
08-Oct-2020
15-Oct-2020
22-Oct-2020
29-Oct-2020


Pressure (mbar)
1024
1022
1020
1018
1016
1014
1012
1010
1008
1006
1004
1002
1000
01-Oct-2020
08-Oct-2020
15-Oct-2020
22-Oct-2020
29-Oct-2020

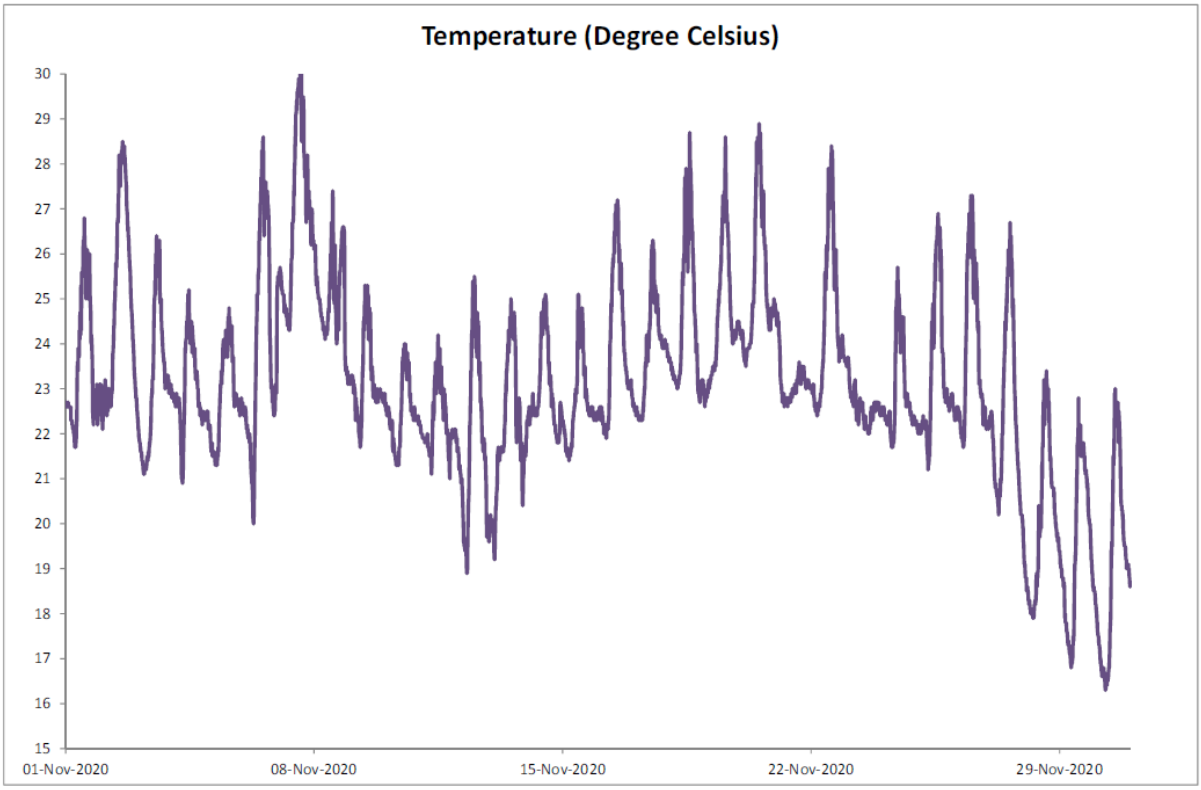

Wind speed (m/s)
12
10
8
6
4
2
0
01-Oct-2020
08-Oct-2020
15-Oct-2020
22-Oct-2020
29-Oct-2020

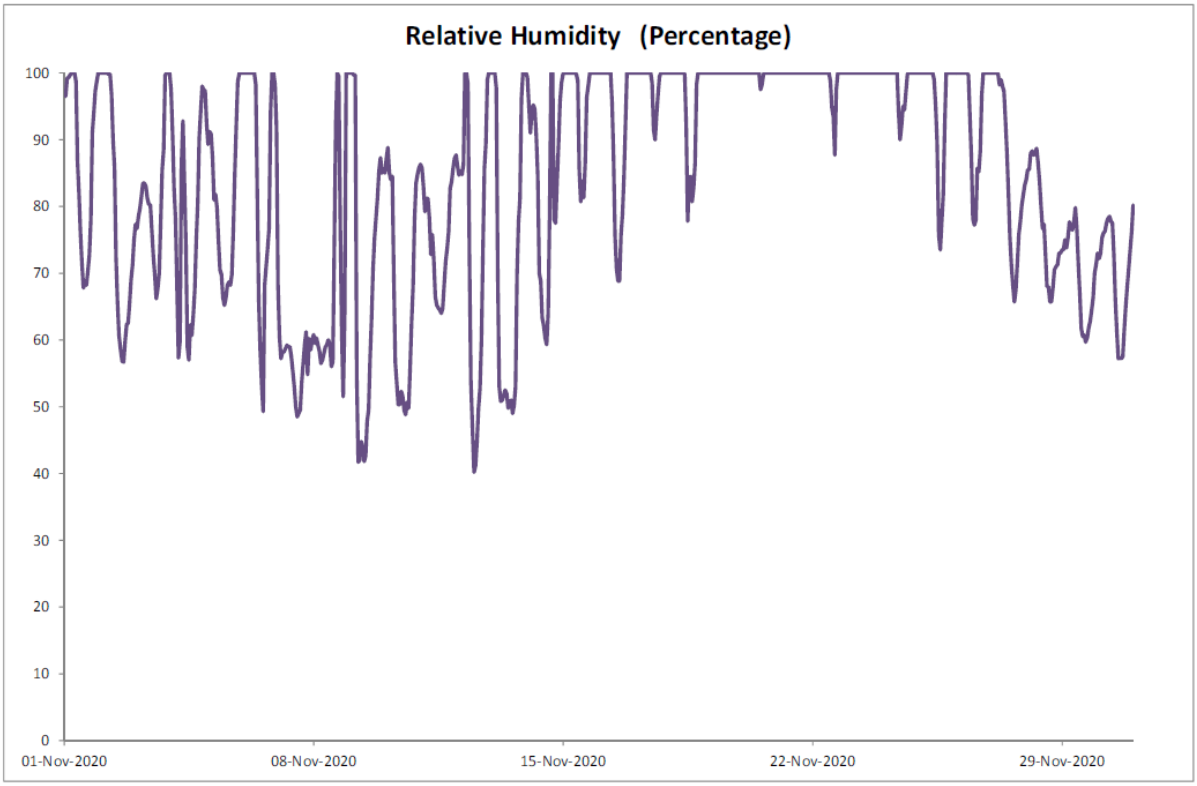

Wind Direction (Degree)
360.0
337.5
315.0
292.5
270.0
247.5
225.0
202.5
180.0
157.5
135.0
112.5
90.0
67.5
45.0
22.5
0.0
01-Oct-2020
08-Oct-2020
15-Oct-2020
22-Oct-2020
29-Oct-2020

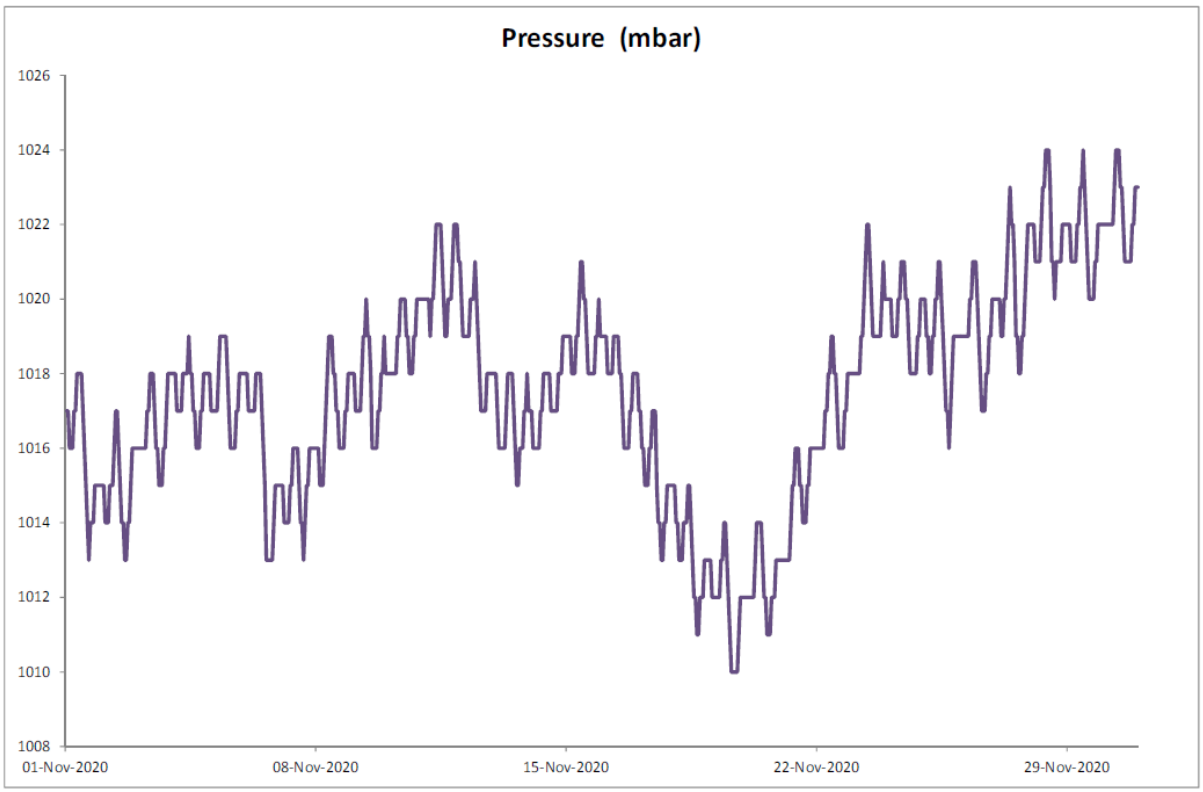


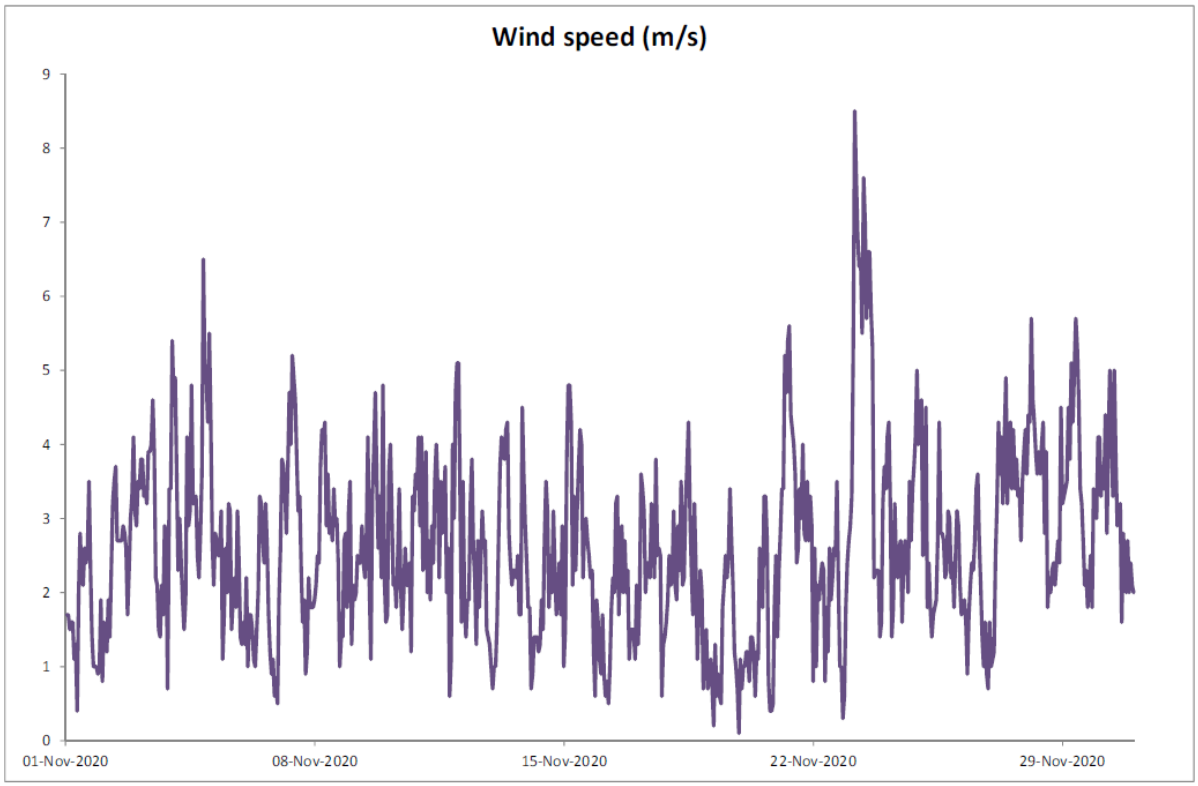


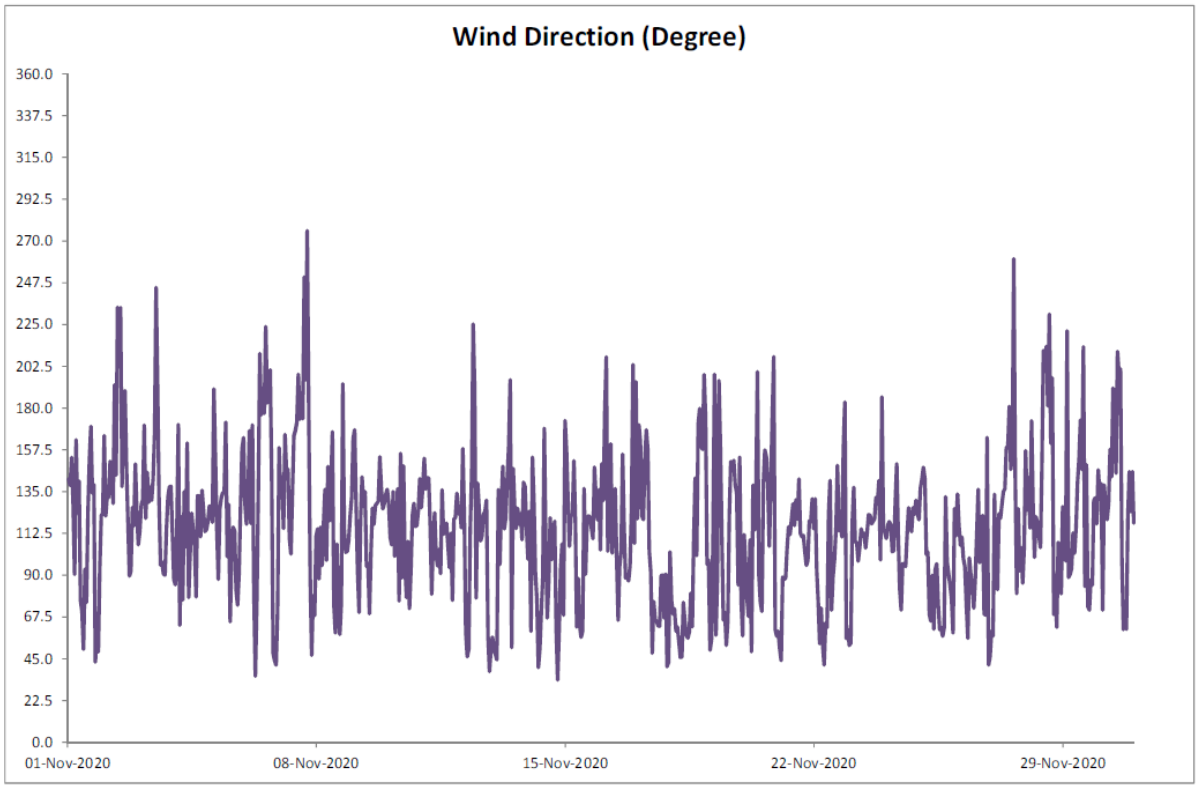
November 2020

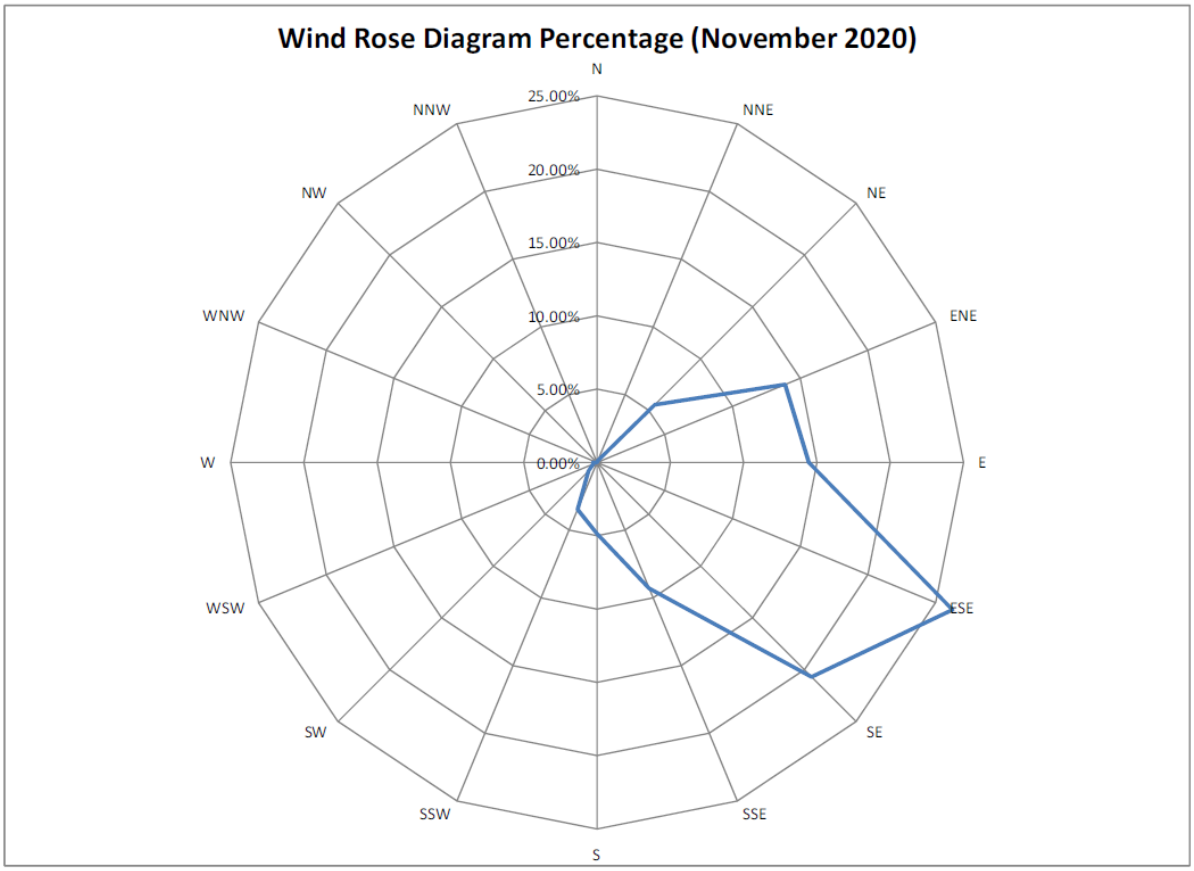

Temperature (Degree Celsius)
30
29
28
27
26
25
24
23
22
21
20
19
18
17
16
15
01-Nov-2020
08-Nov-2020
15-Nov-2020
22-Nov-2020
29-Nov-2020

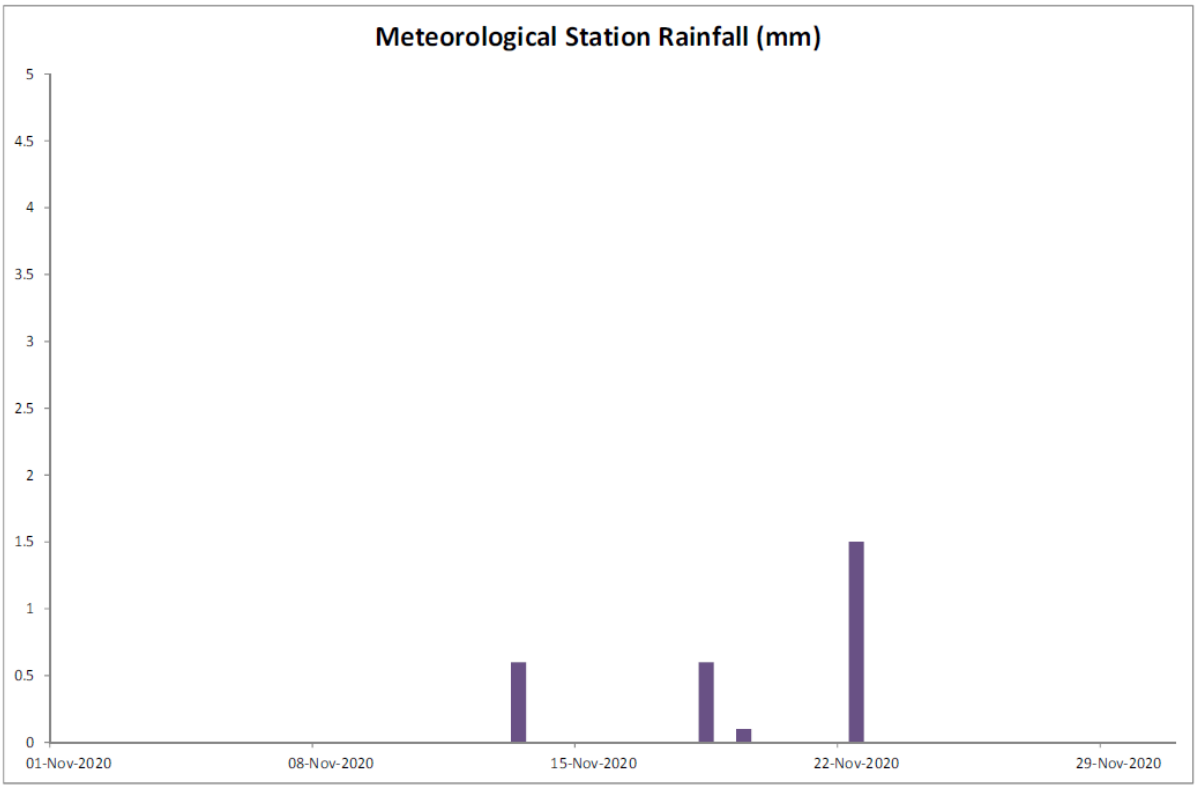

Relative Humidity (Percentage)
100
90
80
70
60
50
40
30
20
10
0
01-Nov-2020
08-Nov-2020
15-Nov-2020
22-Nov-2020
29-Nov-2020


Pressure (mbar)
1026
1024
1022
1020
1018
1016
1014
1012
1010
1008
01-Nov-2020
08-Nov-2020
15-Nov-2020
22-Nov-2020
29-Nov-2020

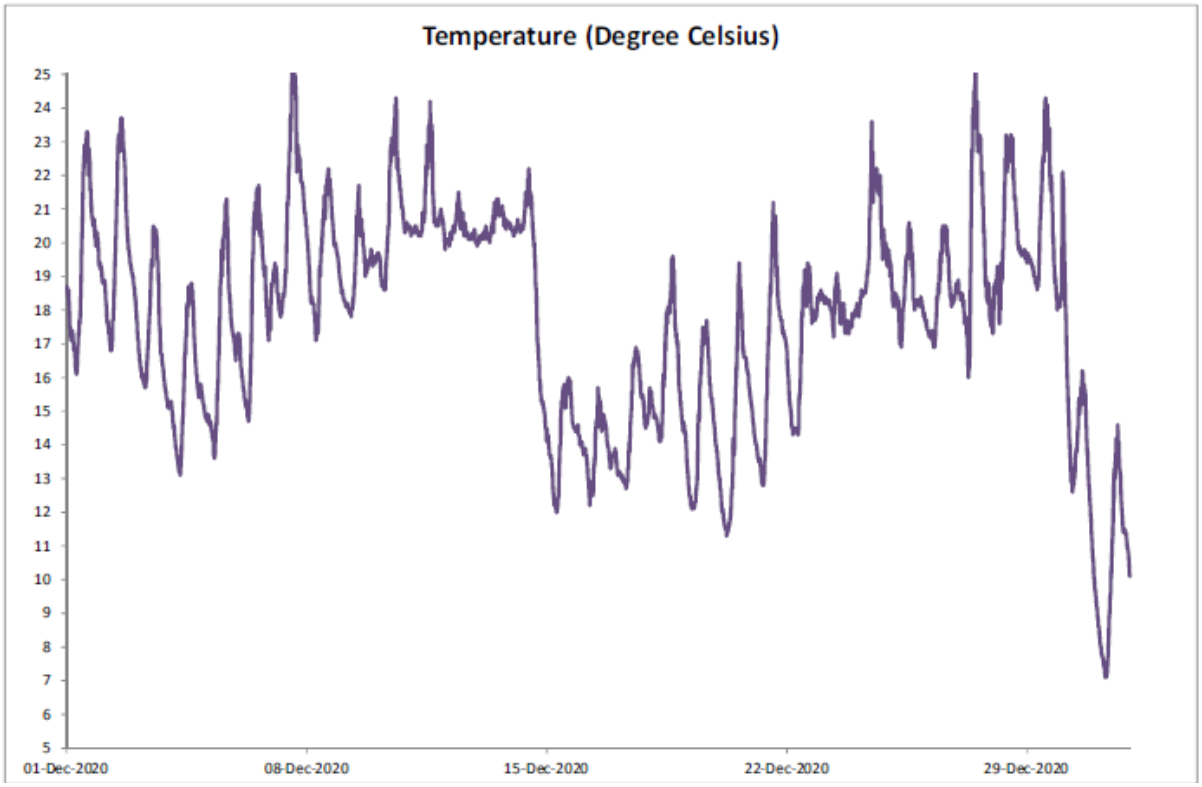

Wind speed (m/s)
9
8
7
6
5
4
3
2
1
0
01-Nov-2020
08-Nov-2020
15-Nov-2020
22-Nov-2020
29-Nov-2020

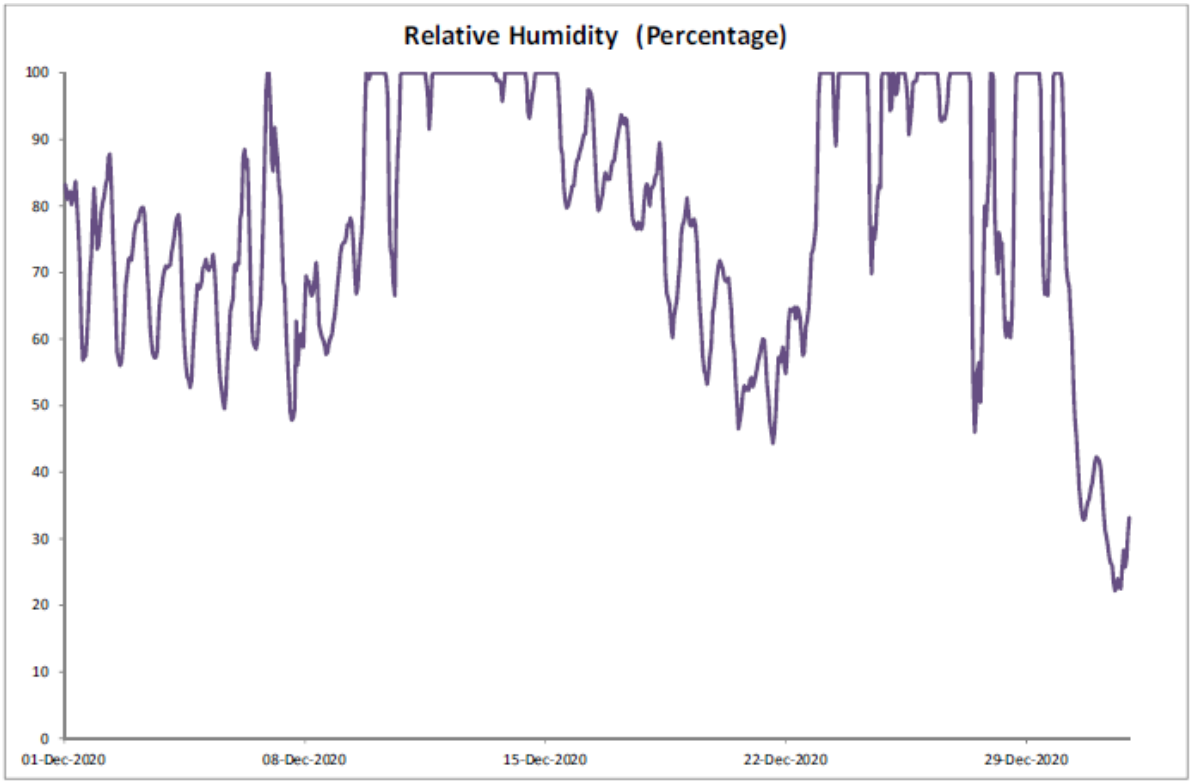

Wind Direction (Degree)
360.0
337.5
315.0
292.5
270.0
247.5
225.0
202.5
180.0
157.5
135.0
112.5
90.0
67.5
45.0
22.5
0.0
01-Nov-2020
08-Nov-2020
15-Nov-2020
22-Nov-2020
29-Nov-2020

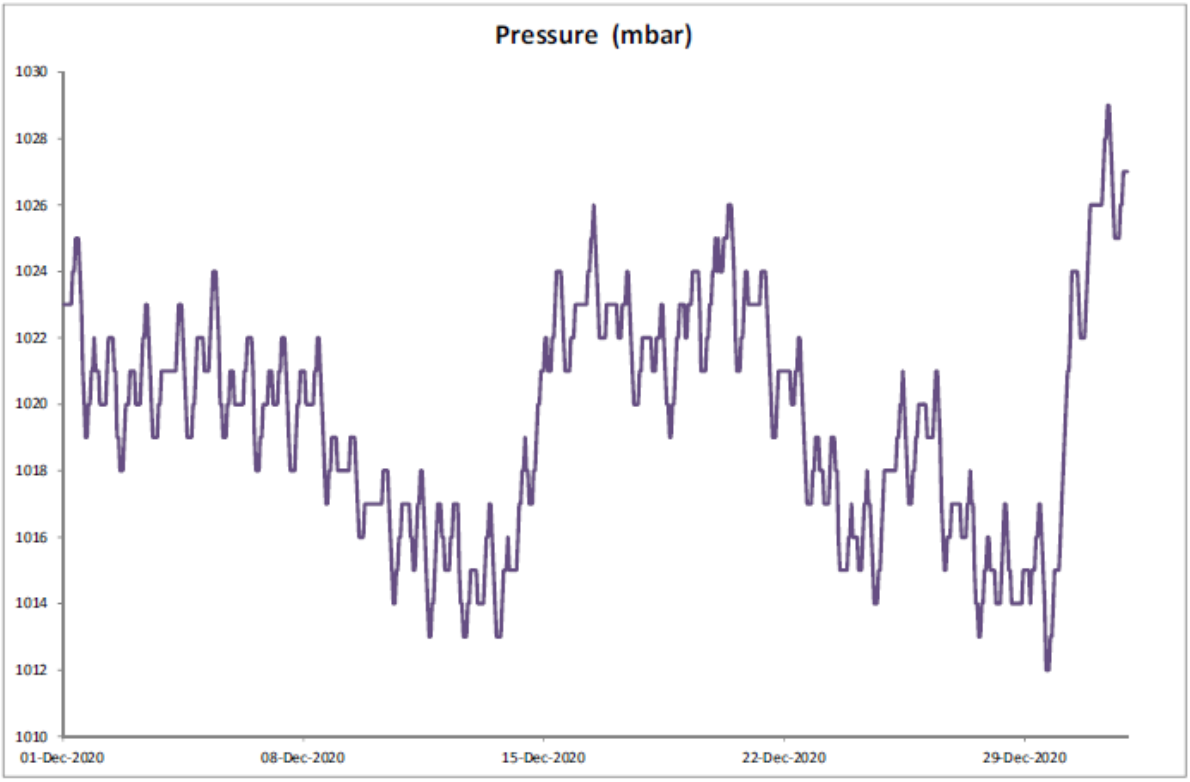

Wind Rose Diagram Percentage (November 2020)
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
25.00%
20.00%
15.00%
10.00%
5.00%
0.00%

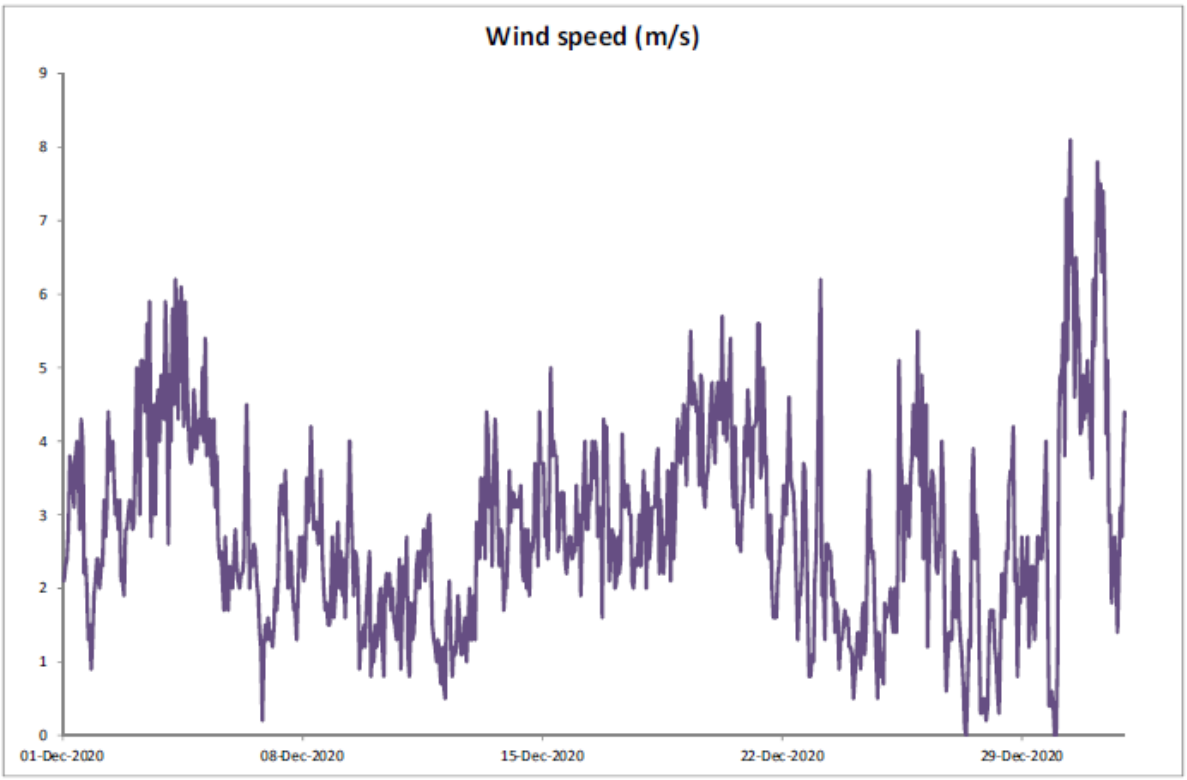


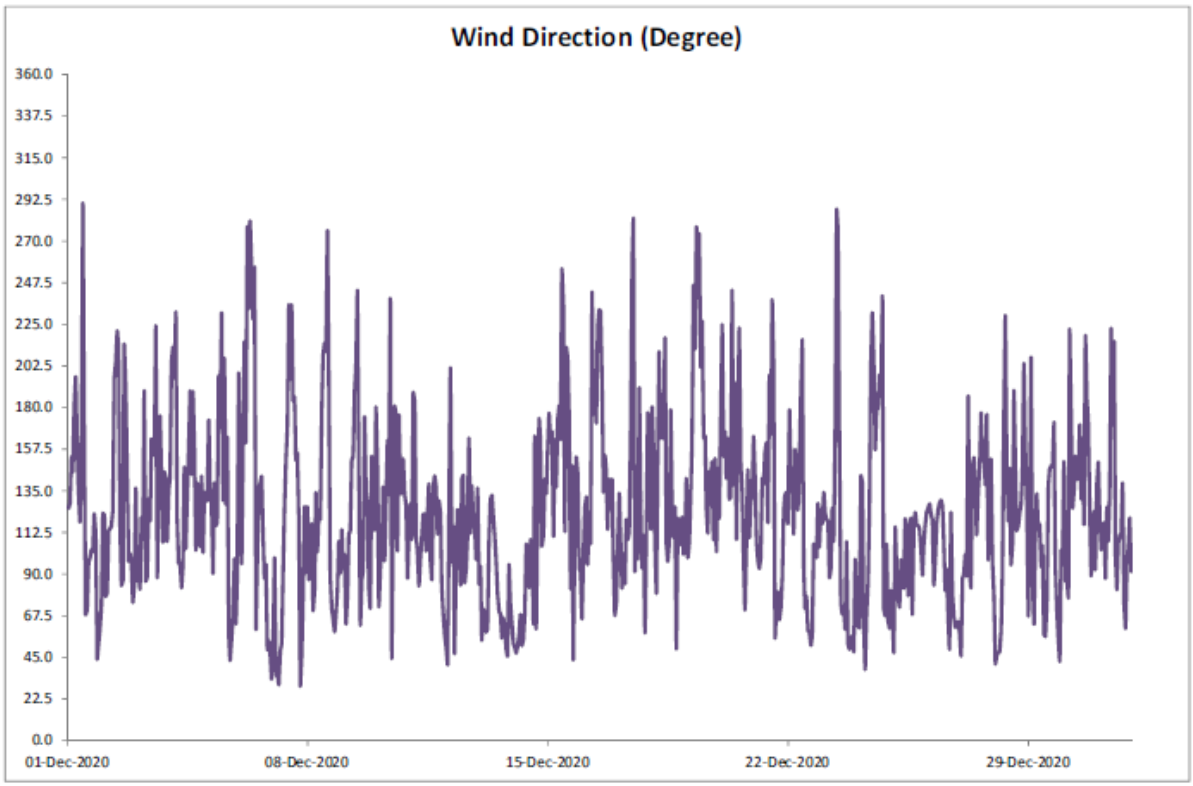
December 2020

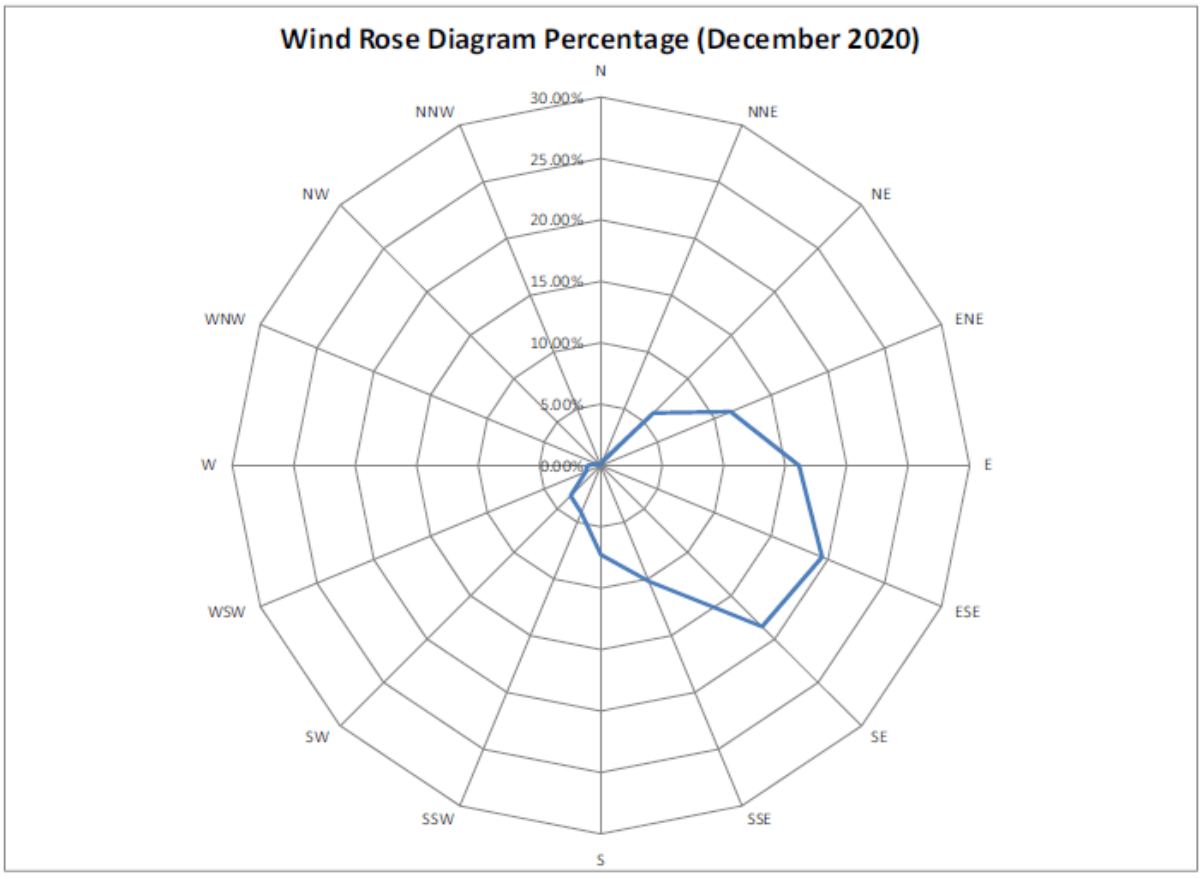


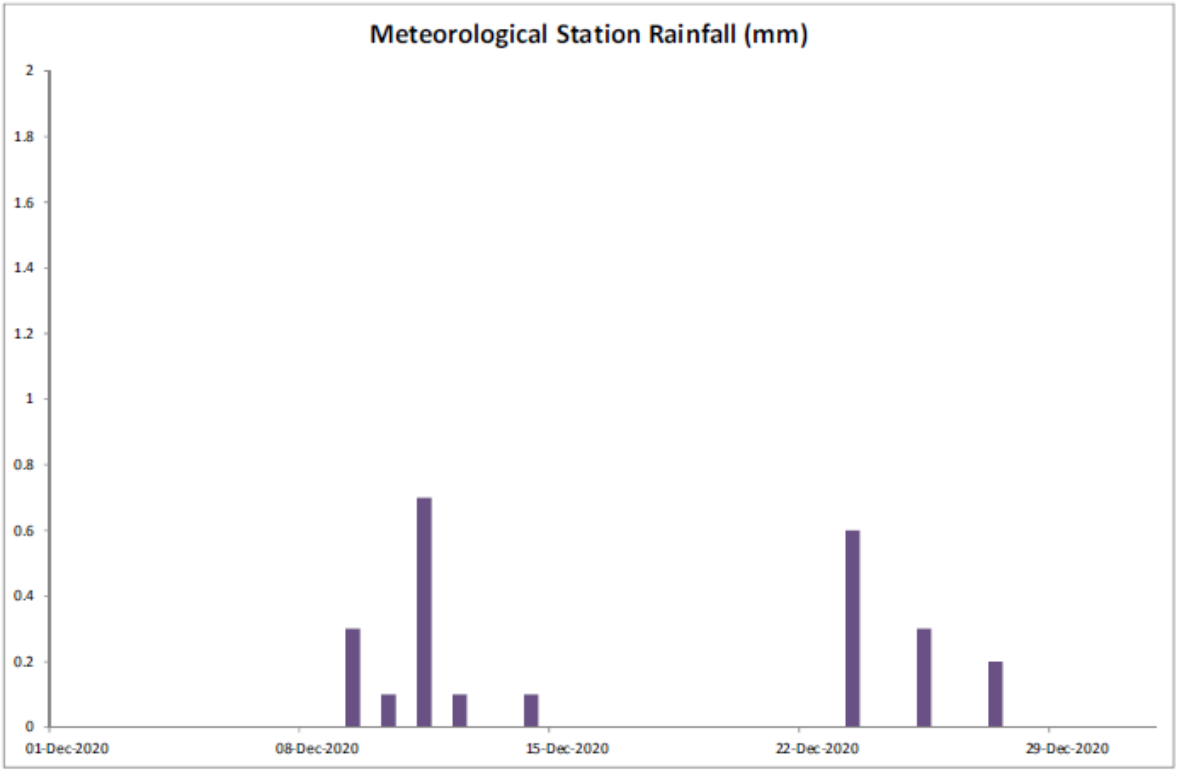

Relative Humidity (Percentage)
100
90
80
70
60
50
40
30
20
10
0
01-Dec-2020
08-Dec-2020
15-Dec-2020
22-Dec-2020
29-Dec-2020


Pressure (mbar)
1030
1028
1026
1024
1022
1020
1018
1016
1014
1012
1010
01-Dec-2020
08-Dec-2020
15-Dec-2020
22-Dec-2020
29-Dec-2020


Wind speed (m/s)
9
8
7
6
5
4
3
2
1
0
01-Dec-2020
08-Dec-2020
15-Dec-2020
22-Dec-2020
29-Dec-2020


Wind Direction (Degree)
360.0
337.5
315.0
292.5
270.0
247.5
225.0
202.5
180.0
157.5
135.0
112.5
90.0
67.5
45.0
22.5
0.0
01-Dec-2020
08-Dec-2020
15-Dec-2020
22-Dec-2020
29-Dec-2020


Wind Rose Diagram Percentage (December 2020)
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%


Meteorological Station Rainfall (mm)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
01-Dec-2020
08-Dec-2020
15-Dec-2020
22-Dec-2020
29-Dec-2020

Annex E

Noise

Annex E1

Noise Monitoring Results

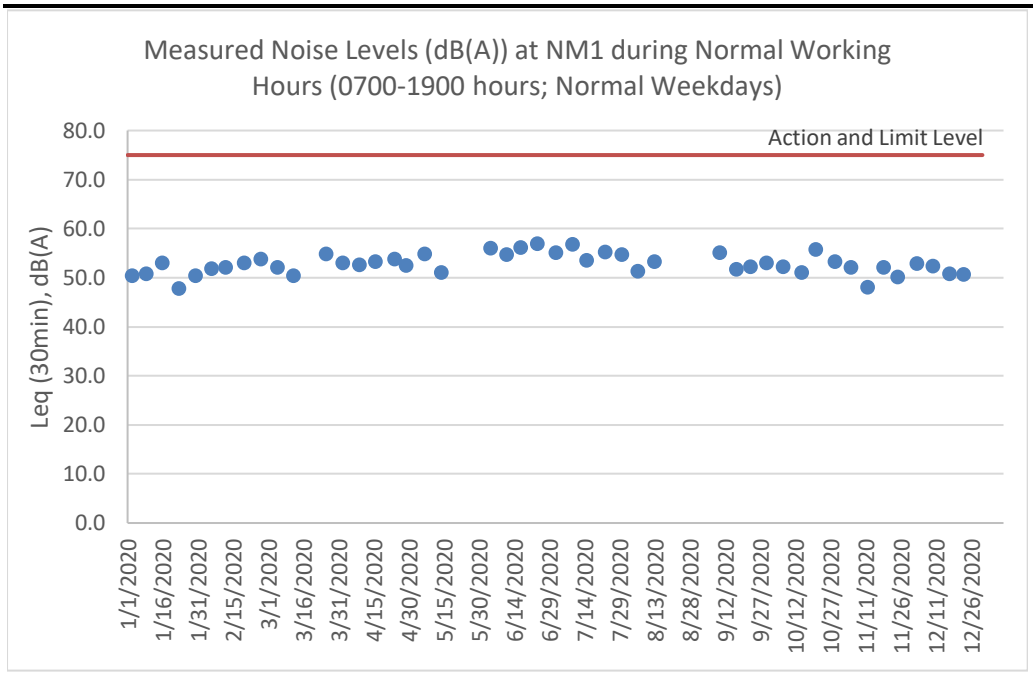
Table E1.1 Measured Noise Levels (dB(A)) at NM1 during Normal Working Hours (0700-1900 hours; Normal Weekdays)

Date	Start Time	Finish Time	Weather	$L_{10\ (30min)}$	$L_{90\ (30min)}$	$L_{eq\ (30min)}$
3 Jan 20	14:36	15:06	Sunny	51.5	47.5	50.4
9 Jan 20	14:29	14:59	Sunny	52.0	48.5	50.8
16 Jan 20	14:38	15:06	Sunny	54.0	48.5	53.0
23 Jan 20	14:58	15:28	Sunny	49.5	45.0	47.8
30 Jan 20	13:34	14:04	Sunny	52.0	48.0	50.4
6 Feb 20	14:27	14:57	Sunny	54.0	48.5	51.9
12 Feb 20	14:39	15:09	Sunny	53.5	48.5	52.1
20 Feb 20	14:35	15:05	Sunny	54.0	48.5	53.1
27 Feb 20	14:39	15:09	Sunny	56.0	50.0	53.8
5 Mar 20	14:36	15:06	Sunny	54.0	47.5	52.2
12 Mar 20	14:31	15:01	Cloudy	51.5	48.5	50.5
18 Mar 20	NA	NA	Rainy	Monitoring was cancelled due to adverse weather.		
26 Mar 20	14:43	15:13	Sunny	57.0	51.5	54.9
2 Apr 20	15:11	15:41	Cloudy	55.5	49.5	53.1
9 Apr 20	15:22	15:52	Sunny	52.5	47.5	52.7
16 Apr 20	14:55	15:25	Sunny	55.0	51.0	53.3
24 Apr 20	13:23	13:53	Cloudy	54.0	50.0	53.8
29 Apr 20	14:45	15:15	Sunny	54.0	47.5	52.6
7 May 20	14:36	15:06	Sunny	56.5	52.5	54.9
14 May 20	14:33	15:03	Sunny	52.5	47.5	51.1
20 May 20	NA	NA	Rainy	Monitoring was cancelled due to adverse weather.		
28 May 20	NA	NA	Rainy	Monitoring was cancelled due to adverse weather.		
4 Jun 20	15:09	15:39	Sunny	57.5	53.5	56.1
11 Jun 20	15:31	16:01	Sunny	57.0	52.0	54.8
17 Jun 20	15:01	15:31	Sunny	57.5	53.0	56.2
24 Jun 20	14:33	15:03	Sunny	58.5	53.5	57.0
2 Jul 20	15:27	15:57	Sunny	56.5	53.0	55.2
9 Jul 20	14:48	15:18	Sunny	59.0	53.5	56.8
15 Jul 20	15:34	16:04	Sunny	58.4	51.2	53.6
23 Jul 20	14:38	15:08	Sunny	59.8	53.4	55.3
30 Jul 20	14:39	15:09	Sunny	58.5	52.5	54.8
6 Aug 20	14:21	14:51	Sunny	52.5	47.5	51.3
13 Aug 20	15:08	15:38	Sunny	55.0	50.0	53.3
19 Aug 20	NA	NA	Rainy	Monitoring was cancelled due to adverse weather.		
27 Aug 20	NA	NA	Rainy	Monitoring was cancelled due to adverse weather.		
3 Sep 20	NA	NA	Pouring	Monitoring was cancelled due to adverse weather.		
10 Sep 20	14:49	15:19	Sunny	56.5	52.5	55.2
17 Sep 20	15:02	15:32	Sunny	53.5	49.0	51.7
23 Sep 20	14:32	15:02	Sunny	54.0	50.0	52.3
30 Sep 20	14:44	15:14	Sunny	55.0	49.5	53.0
7 Oct 20	14:56	15:26	Sunny	53.5	50.0	52.3
15 Oct 20	15:08	15:38	Sunny	52.5	48.0	51.1
21 Oct 20	14:07	14:37	Sunny	57.9	52.7	55.8
29 Oct 20	14:36	15:06	Cloudy	56.3	48.8	53.3
5 Nov 20	14:33	15:03	Sunny	53.5	48.0	52.1
12 Nov 20	14:34	15:04	Sunny	50.0	45.5	48.1
19 Nov 20	14:48	15:18	Sunny	54.1	49.4	52.2
25 Nov 20	13:25	13:55	Sunny	52.0	47.0	50.2
3 Dec 20	14:37	15:07	Sunny	54.6	50.2	52.9
10 Dec 20	13:43	14:13	Cloudy	53.6	49.0	52.4

Date	Start Time	Finish Time	Weather	$L_{10\ (30min)}$	$L_{90\ (30min)}$	$L_{eq\ (30min)}$
17 Dec 20	14:40	15:10	Cloudy	52.5	48.0	50.9
23 Dec 20	14:44	15:14	Cloudy	52.0	47.0	50.7
31 Dec 20	13:54	14:24	Sunny	50.5	45.5	48.9
					Average	52.8
					Min	47.8
					Max	57.0

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

Figure E1.1 Graphical Presentation for Noise Monitoring at NM1



Annex E2

Event and Action Plan for Noise Monitoring

Annex E2 Event and Action Plan for Construction Noise

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

Annex F

Surface Water Quality

Annex F1

Surface Water Quality Monitoring Results

Table F1.1 Surface Water Quality Monitoring Results at DP4T

Date	Time	Weather Condition	Water Appearance	Water Condition	Water Temperature (°C)	Dissolved Oxygen (DO) (mg/L)	pH	Suspended Solids (SS) (mg/L)	Remarks
3 Jan 20	14:18	Sunny	Unable to collect water sample due to insufficient flow						-
9 Jan 20	14:12	Sunny	Unable to collect water sample due to insufficient flow						-
16 Jan 20	14:18	Sunny	Unable to collect water sample due to insufficient flow						-
23 Jan 20	14:43	Sunny	Unable to collect water sample due to insufficient flow						-
30 Jan 20	13:49	Sunny	Unable to collect water sample due to insufficient flow						-
6 Feb 20	14:13	Sunny	Unable to collect water sample due to insufficient flow						-
12 Feb 20	14:23	Sunny	Unable to collect water sample due to insufficient flow						-
20 Feb 20	14:06	Sunny	Colourless	Semi-clear	17.7	9.83	7.91	18.6	-
20 Feb 20	14:17	Sunny	Colourless	Semi-clear	17.9	9.80	7.60	20.7	DP4 (Future, temporary) (Duplicate)
27 Feb 20	14:22	Sunny	Unable to collect water sample due to insufficient flow						-
5 Mar 20	14:24	Sunny	Unable to collect water sample due to insufficient flow						-
12 Mar 20	14:22	Cloudy	Unable to collect water sample due to insufficient flow						-
18 Mar 20	15:27	Rainy	Unable to collect water sample due to insufficient flow						-
26 Mar 20	14:32	Sunny	Unable to collect water sample due to insufficient flow						-
2 Apr 20	14:41	Cloudy	Light yellow	Clear	19.3	9.17	8.36	9.8	-
2 Apr 20	14:51	Cloudy	Light yellow	Clear	19.3	9.21	8.06	10.8	DP4 (Future, temporary) (Duplicate)
9 Apr 20	15:09	Sunny	Light yellow	Semi-clear	23.4	8.36	8.38	8.9	-
16 Apr 20	14:32	Sunny	Colourless	Clear	25.4	8.40	7.51	5.8	-
16 Apr 20	14:41	Sunny	Colourless	Clear	25.6	8.40	7.43	6.6	DP4 (Future, temporary) (Duplicate)
24 Apr 20	13:54	Cloudy	Colourless	Clear	20.2	8.67	8.05	7.7	-
24 Apr 20	14:04	Cloudy	Colourless	Clear	20.2	8.56	7.95	8.2	DP4 (Future, temporary) (Duplicate)
29 Apr 20	14:24	Sunny	Unable to collect water sample due to insufficient flow						-
7 May 20	14:24	Sunny	Unable to collect water sample due to insufficient flow						-
14 May 20	14:18	Sunny	Unable to collect water sample due to insufficient flow						-
20 May 20	14:24	Cloudy	Unable to collect water sample due to insufficient flow						-
28 May 20	15:13	Rainy	Light yellow	Semi-clear	27.6	7.81	7.78	42.2	-
4 Jun 20	14:35	Sunny	Light yellow	Semi clear	30.3	7.96	8.53	8.2	-
4 Jun 20	14:35	Sunny	Light yellow	Semi clear	30.1	7.99	8.49	-	DP4 (Future, temporary) (Remeasurement)

Date	Time	Weather Condition	Water Appearance	Water Condition	Water Temperature (°C)	Dissolved Oxygen (DO) (mg/L)	pH	Suspended Solids (SS) (mg/L)	Remarks
4 Jun 20	14:46	Sunny	Light yellow	Semi clear	30.4	8.05	8.45	8.4	DP4 (Future, temporary) (Duplicate)
4 Jun 20	14:46	Sunny	Light yellow	Semi clear	30.4	8.08	8.45	-	DP4 (Future, temporary) (Duplicate) (Remeasurement)
11 Jun 20	15:12	Sunny	Unable to collect water sample due to insufficient flow						-
17 Jun 20	14:26	Sunny	Colourless	Clear	30.3	7.41	8.04	10.6	-
17 Jun 20	14:35	Sunny	Colourless	Clear	30.2	7.42	7.62	10.2	DP4 (Future, temporary) (Duplicate)
24 Jun 20	14:19	Sunny	Unable to collect water sample due to insufficient flow						-
3 Jul 20	15:06	Cloudy	Light yellow	Semi clear	32.4	7.54	6.35	18.6	-
9 Jul 20	14:28	Sunny	Unable to collect water sample due to insufficient flow						-
15 Jul 20	14:46	Sunny	Light yellow	Semi clear	31.8	6.82	7.99	28.2	-
15 Jul 20	15:03	Sunny	Light yellow	Semi clear	32	6.83	7.85	27.8	DP4 (Future, temporary) (Duplicate)
23 Jul 20	14:24	Sunny	Unable to collect water sample due to insufficient flow						-
30 Jul 20	14:26	Sunny	Unable to collect water sample due to insufficient flow						-
6 Aug 20	16:14	Sunny	Light yellow	Semi clear	29.3	7.68	7.40	66.1	-
13 Aug 20	14:56	Sunny	Unable to collect water sample due to insufficient flow						-
19 Aug 20	14:39	Rainy	Monitoring was cancelled due to adverse weather						-
27 Aug 20	15:44	Rainy	Unable to collect water sample due to insufficient flow						-
3 Sep 20	NA	Pouring	Monitoring was cancelled due to adverse weather						-
10 Sep 20	15:19	Sunny	Unable to collect water sample due to insufficient flow						-
17 Sep 20	14:48	Sunny	Unable to collect water sample due to insufficient flow						-
23 Sep 20	14:16	Sunny	Unable to collect water sample due to insufficient flow						-
30 Sep 20	14:17	Sunny	Unable to collect water sample due to insufficient flow						-
7 Oct 20	14:29	Sunny	Unable to collect water sample due to insufficient flow						-
15 Oct 20	14:40	Sunny	Unable to collect water sample due to insufficient flow						-
21 Oct 20	13:45	Sunny	Unable to collect water sample due to insufficient flow						-
29 Oct 20	14:06	Cloudy	Unable to collect water sample due to insufficient flow						-
5 Nov 20	14:27	Sunny	Unable to collect water sample due to insufficient flow						-
12 Nov 20	14:20	Sunny	Unable to collect water sample due to insufficient flow						-
19 Nov 20	14:35	Sunny	Unable to collect water sample due to insufficient flow						-
25 Nov 20	14:27	Sunny	Unable to collect water sample due to insufficient flow						-
3 Dec 20	14:22	Sunny	Unable to collect water sample due to insufficient flow						-
10 Dec 20	14:01	Cloudy	Unable to collect water sample due to insufficient flow						-
17 Dec 20	14:27	Cloudy	Unable to collect water sample due to insufficient flow						-
23 Dec 20	14:34	Cloudy	Unable to collect water sample due to insufficient flow						-

Date	Time	Weather Condition	Water Appearance	Water Condition	Water Temperature (°C)	Dissolved Oxygen (DO) (mg/L)	pH	Suspended Solids (SS) (mg/L)	Remarks
31 Dec 20	13:32	Cloudy		Unable to collect water sample due to insufficient flow					-
					Average	8.20	7.91	17.6	-
					Min	6.82	6.35	5.8	-
					Max	9.83	8.53	66.1	-
Notes: DP4 was temporary relocated to DP4 (Future, temporary) (i.e. DP4T) as an interim discharge point from the monitoring event on 16 May 2019.									

Table F1.2 Surface Water Quality Monitoring Results at DP6

Date	Time	Weather Condition	Water Appearance	Water Condition	Water Temperature (°C)	Dissolved Oxygen (DO) (mg/L)	pH	Suspended Solids (SS) (mg/L)	Remarks
3 Jan 20	14:10	Sunny		Unable to collect water sample due to insufficient flow					-
9 Jan 20	14:05	Sunny		Unable to collect water sample due to insufficient flow					-
16 Jan 20	14:05	Sunny		Unable to collect water sample due to insufficient flow					-
23 Jan 20	14:36	Sunny		Unable to collect water sample due to insufficient flow					-
30 Jan 20	13:38	Sunny		Unable to collect water sample due to insufficient flow					-
6 Feb 20	14:06	Sunny		Unable to collect water sample due to insufficient flow					-
12 Feb 20	14:12	Sunny		Unable to collect water sample due to insufficient flow					-
20 Feb 20	14:01	Sunny		Unable to collect water sample due to insufficient flow					-
27 Feb 20	14:10	Sunny		Unable to collect water sample due to insufficient flow					-
5 Mar 20	14:08	Sunny		Unable to collect water sample due to insufficient flow					-
12 Mar 20	14:07	Cloudy		Unable to collect water sample due to insufficient flow					-
18 Mar 20	15:03	Rainy		Unable to collect water sample due to insufficient flow					-
26 Mar 20	14:11	Sunny		Unable to collect water sample due to insufficient flow					-
2 Apr 20	14:24	Cloudy		Unable to collect water sample due to insufficient flow					-
9 Apr 20	14:23	Sunny	Light brown	Turbid	22.7	9.01	9.65	107	-
9 Apr 20	14:23	Sunny	Light brown	Turbid	22.5	9.04	9.46	-	DP6 (Remeasurement)
9 Apr 20	14:34	Sunny	Light brown	Turbid	22.7	9.06	9.6	114	DP6 (Duplicate)
9 Apr 20	14:34	Sunny	Light brown	Turbid	22.6	9.04	9.62	-	DP6 (Duplicate) (Remeasurement)
16 Apr 20	14:16	Sunny		Unable to collect water sample due to insufficient flow					-
24 Apr 20	13:47	Cloudy		Unable to collect water sample due to insufficient flow					-
29 Apr 20	14:10	Sunny		Unable to collect water sample due to insufficient flow					-
7 May 20	14:12	Sunny		Unable to collect water sample due to insufficient flow					-
14 May 20	14:03	Sunny		Unable to collect water sample due to insufficient flow					-

Date	Time	Weather Condition	Water Appearance	Water Condition	Water Temperature (°C)	Dissolved Oxygen (DO) (mg/L)	pH	Suspended Solids (SS) (mg/L)	Remarks
20 May 20	14:12	Cloudy	Colourless	Clear	27.2	8.01	8.21	6.1	-
20 May 20	14:16	Cloudy	Colourless	Clear	27.2	8.01	8.25	6.2	DP6 (Duplicate)
28 May 20	14:48	Rainy	Light yellow	Semi-clear	27.7	7.5	7.32	17.7	-
28 May 20	14:57	Rainy	Light yellow	Semi-clear	27.7	7.43	7.12	16.4	DP6 (Duplicate)
4 Jun 20	14:33	Sunny	Unable to collect water sample due to insufficient flow						-
11 Jun 20	14:30	Sunny	Colourless	Clear	32.8	7.34	7.86	5.1	-
11 Jun 20	14:42	Sunny	Colourless	Clear	32.7	7.33	8.02	3.2	DP6 (Duplicate)
17 Jun 20	14:10	Sunny	Unable to collect water sample due to insufficient flow						-
24 Jun 20	14:05	Sunny	Unable to collect water sample due to insufficient flow						-
3 Jul 20	14:36	Cloudy	Light yellow	Semi clear	34.2	7.20	6.62	14.0	-
3 Jul 20	14:45	Cloudy	Light yellow	Semi clear	34.3	7.11	6.33	14.4	DP6 (Duplicate)
9 Jul 20	14:13	Sunny	Unable to collect water sample due to insufficient flow						-
15 Jul 20	14:31	Sunny	Unable to collect water sample due to insufficient flow						-
23 Jul 20	14:09	Sunny	Unable to collect water sample due to insufficient flow						-
30 Jul 20	14:14	Sunny	Unable to collect water sample due to insufficient flow						-
6 Aug 20	15:34	Sunny	Light yellow	Semi clear	31.6	6.95	7.78	420.0	-
6 Aug 20	15:43	Sunny	Light yellow	Semi clear	31.5	6.88	7.81	432.0	DP6 (Duplicate)
13 Aug 20	14:25	Sunny	Light yellow	Semi clear	29.7	6.85	8.28	30.9	-
13 Aug 20	14:34	Sunny	Light yellow	Semi clear	30.0	6.85	8.20	30.2	DP6 (Duplicate)
19 Aug 20	14:35	Rainy	Monitoring was cancelled due to adverse weather						-
27 Aug 20	15:38	Rainy	Unable to collect water sample due to insufficient flow						-
3 Sep 20	NA	Pouring	Monitoring was cancelled due to adverse weather						-
10 Sep 20	15:03	Sunny	Unable to collect water sample due to insufficient flow						-
17 Sep 20	14:27	Sunny	Light yellow	Semi clear	29.1	7.55	8.94	62.9	-
17 Sep 20	14:36	Sunny	Light yellow	Semi clear	28.9	7.52	8.94	-	DP6 (Remeasurement)
17 Sep 20	14:27	Sunny	Light yellow	Semi clear	29.0	7.58	8.87	62.1	DP6 (Duplicate)
17 Sep 20	14:36	Sunny	Light yellow	Semi clear	29.0	7.61	8.89	-	DP6 (Duplicate) (Remeasurement)
23 Sep 20	14:05	Sunny	Unable to collect water sample due to insufficient flow						-
30 Sep 20	14:10	Sunny	Unable to collect water sample due to insufficient flow						-
7 Oct 20	14:18	Sunny	Unable to collect water sample due to insufficient flow						-
15 Oct 20	14:12	Sunny	Light yellow	Semi clear	25.8	8.33	7.60	18.6	-
15 Oct 20	14:26	Sunny	Light yellow	Semi clear	25.9	8.38	7.70	18.3	DP6 (Duplicate)
21 Oct 20	13:52	Sunny	Unable to collect water sample due to insufficient flow						-
29 Oct 20	14:24	Cloudy	Unable to collect water sample due to insufficient flow						-
5 Nov 20	14:18	Sunny	Unable to collect water sample due to insufficient flow						-
12 Nov 20	14:08	Sunny	Unable to collect water sample due to insufficient flow						-
19 Nov 20	14:30	Sunny	Unable to collect water sample due to insufficient flow						-

Date	Time	Weather Condition	Water Appearance	Water Condition	Water Temperature (°C)	Dissolved Oxygen (DO) (mg/L)	pH	Suspended Solids (SS) (mg/L)	Remarks
25 Nov 20	14:22	Sunny		Unable to collect water sample due to insufficient flow					-
3 Dec 20	14:26	Sunny		Unable to collect water sample due to insufficient flow					-
10 Dec 20	13:40	Cloudy		Unable to collect water sample due to insufficient flow					-
17 Dec 20	14:16	Cloudy		Unable to collect water sample due to insufficient flow					-
23 Dec 20	14:23	Cloudy		Unable to collect water sample due to insufficient flow					-
31 Dec 20	13:22	Cloudy		Unable to collect water sample due to insufficient flow					-
					Average	7.75	8.23	76.6	-
					Min	6.85	6.33	3.2	-
					Max	9.06	9.65	432.0	-

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

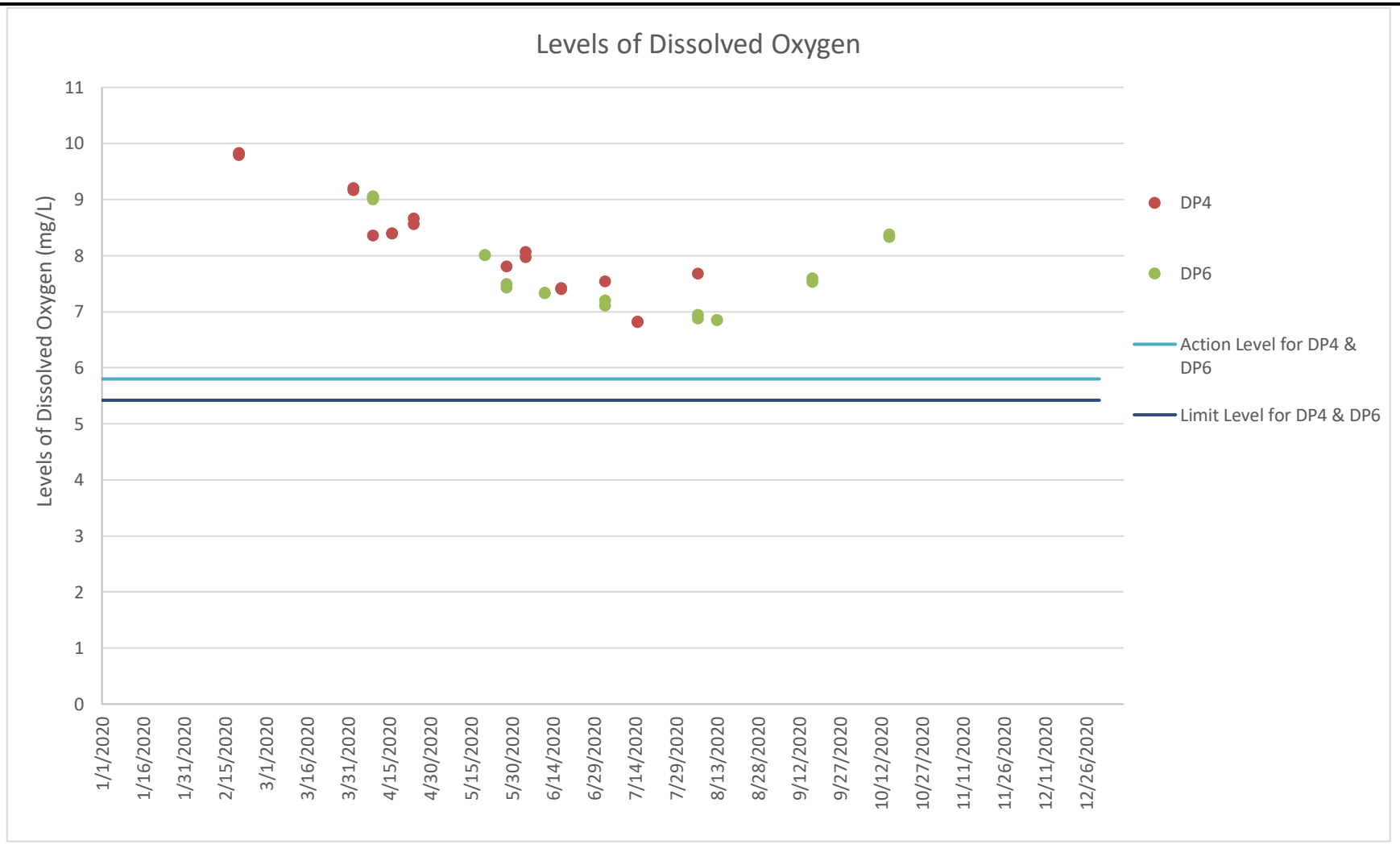


Figure F1.2 Graphical Presentation for Surface Water Quality Monitoring (pH)

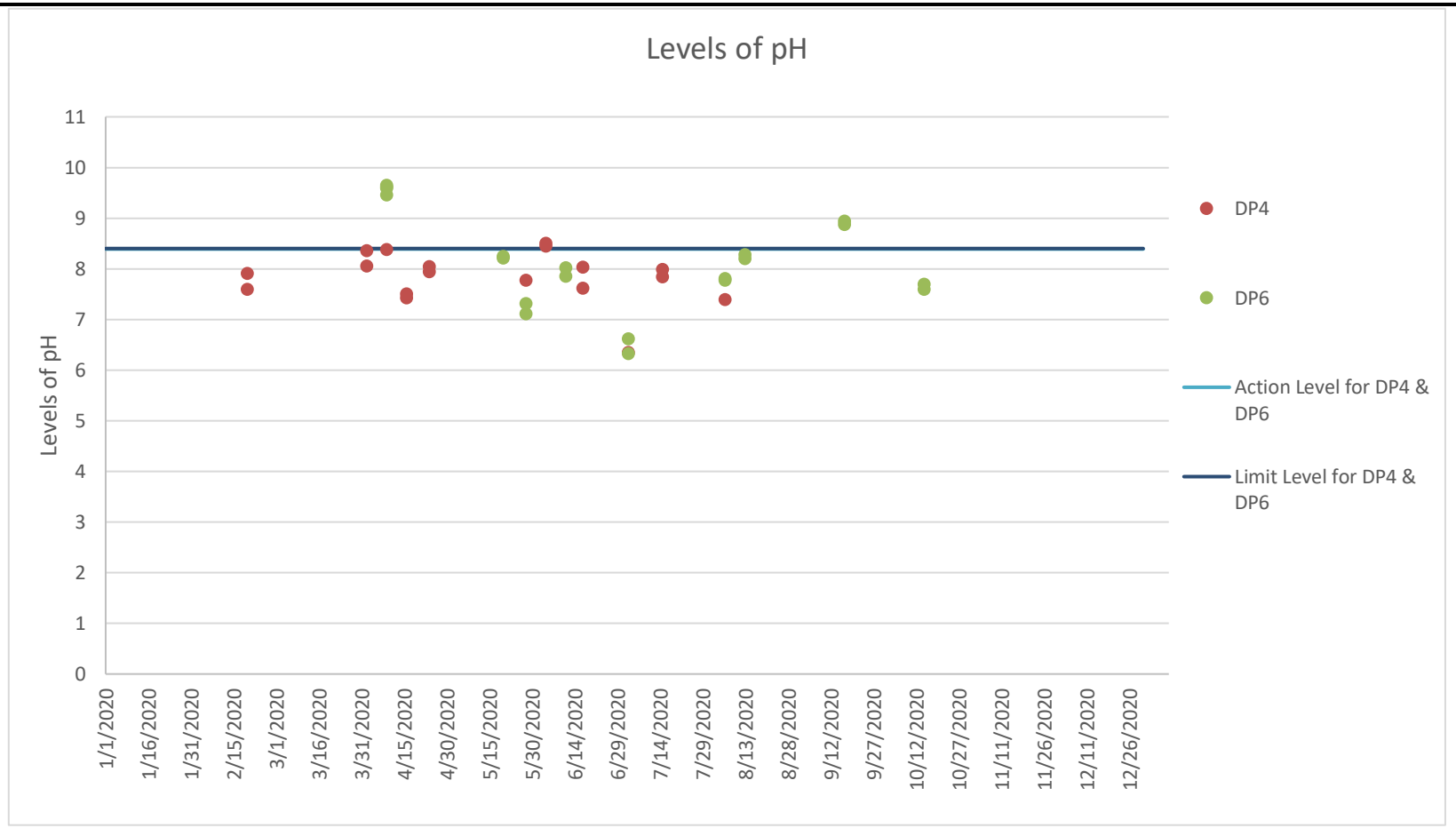
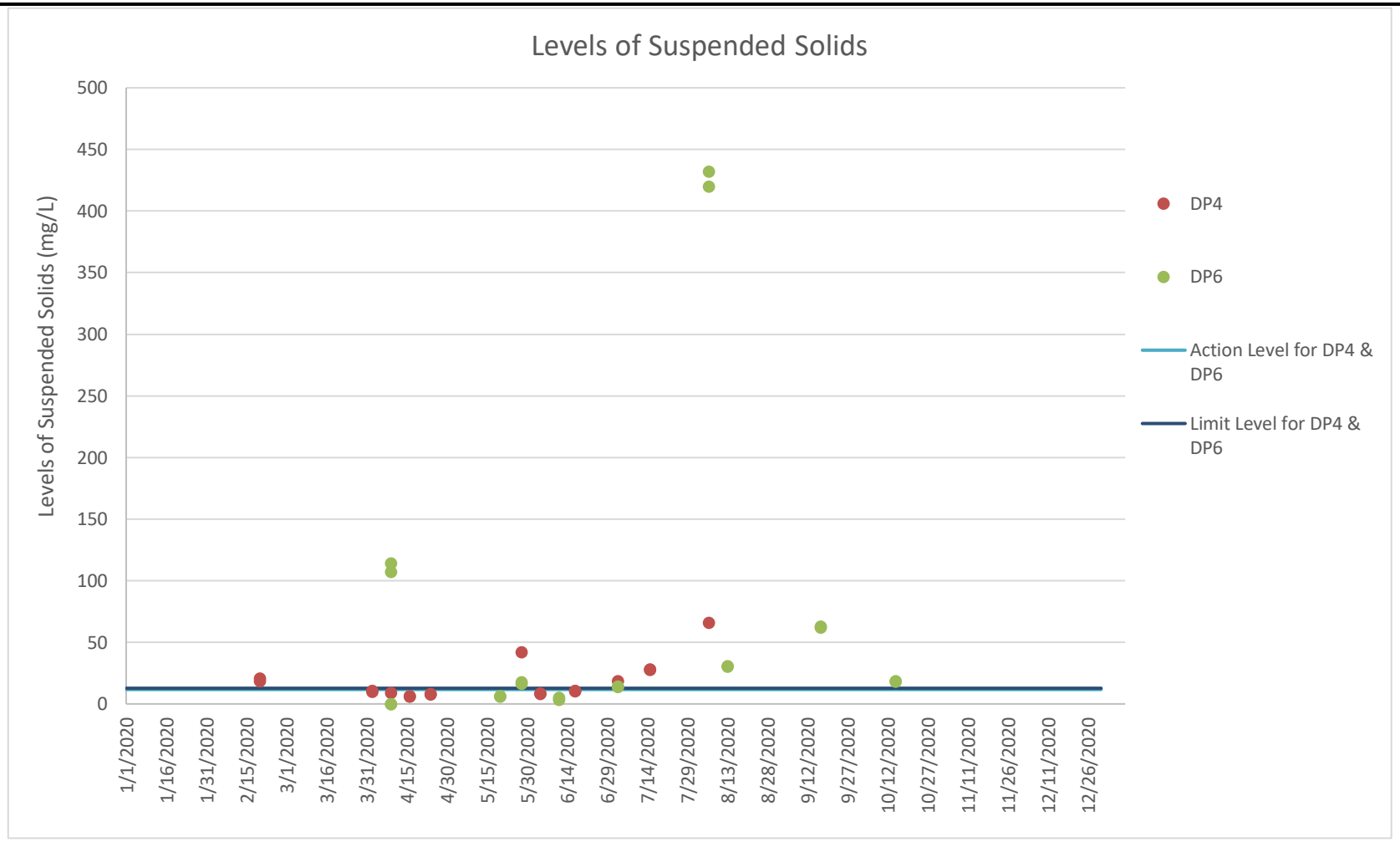


Figure F1.3 Graphical Presentation for Surface Water Quality Monitoring (SS)



Annex F2

Event and Action Plan for Surface Water Quality Monitoring

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

Event	Action		
	ET	**IEC**	**Contractor**
Action Level being exceeded by one sampling day	• Repeat *in situ* measurement to confirm findings • Identify the source(s) and investigate the cause(s) of exceedance • Prepare Notification of Exceedance within 24 hours • Inform Contractor, IEC and Project Proponent whether the cause of exceedance is due to the Project • Repeat measurement on the next day of exceedance if exceedance is due to the Project	• Verify the Notification of Exceedance • Check monitoring data submitted by ET • Check Contractor's working methods	• Rectify any unacceptable practice • Amend working methods if appropriate
Action Level being exceeded by two consecutive sampling days	• Repeat *in situ* measurement to confirm findings • Identify the source(s) and investigate the cause(s) of exceedance • Prepare Notification of Exceedance within 24 hours • Inform Contractor, IEC and Project Proponent whether the cause of exceedance is due to the Project • Discuss with Contractor and IEC for remedial measures required • Ensure remedial measures are properly implemented • Increase the monitoring frequency to daily if exceedance is due to the Project and continue until no exceedance of Action Level	• Verify the Notification of Exceedance • Check monitoring data submitted by ET • Check Contractor's working methods • Discuss with ET Leader and Contractor on proposed remedial measures • Review proposals on remedial measures • Audit the implementation of the remedial measures • Audit the effectiveness of the implemented remedial measures	• Submit proposals for remedial measures to IEC • Implement the agreed proposals • Amend proposal if appropriate

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

Annex F3

Investigation Reports of Environmental Quality Limit Exceedance

Investigation Report of Environmental Quality Limit Exceedance

Project	South East New Territories (SENT) Landfill Extension
Date	20 February 2020
Time	DP4T: 14:06 and 14:17 (Duplicate)
Monitoring Location	DP4T
Parameter	Surface Water (Suspended Solids (SS))
Action / Limit Levels	DP4T: Action level: >11.7 mg/L Limit level: >12.7 mg/L
Measured Level	DP4T: 18.6 mg/L DP4T (Duplicate): 20.7 mg/L
Possible reason	No works which may lead to potential SS increase was conducted in the vicinity of surface water channel leading to DP4T on the sampling day based on on-site observations and construction activities described by the Contractor. During the sampling event, no potential surface water discharge or overflow to the DP4T channel was observed. Site water discharged to the DP4T channel was treated by the Wetsep prior to discharge. Wetsep near DP4T was functioning properly during the sampling event. Environmental deficiency was not observed during the weekly site inspection in the morning. The Contractor has complied with the recommendations and conditions outlined in the updated EM&A Manual. As no potential source from the Project-related activities which may lead to SS increase was identified, and the Contractor has implemented relevant mitigation measures recommended in the updated EM&A Manual, there is no adequate evidence showing that the SS exceedance at DP4T 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 Level.
Remarks	-

Prepared by: Abbey Lau
Designation: Environmental Team
Date: 9 March 2020

Investigation Report of Environmental Quality Limit Exceedance

Project	South East New Territories (SENT) Landfill Extension
Date	9 April 2020
Time	DP6: 14:23 hrs and 14:34 hrs (Duplicate)
Monitoring Location	DP6
Parameter	Surface Water (pH)
Action / Limit Levels	DP6: Action level: >8.39 Limit level: >8.40
Measured Level	DP6: 9.65 & 9.46 DP6 (Duplicate): 9.60 & 9.62
Possible reason	No works which may lead to potential pH increase (e.g. concreting works) was conducted in the vicinity of surface water channel leading to DP6 on and before the sampling day based on on-site observations and construction activities described by the Contractor. During the sampling event, no potential surface water overflow to the DP6 channel was observed. Berm was constructed along the DP6 channel to collect the surface runoff which was treated by the Wetsep prior to discharge. Yet during the sampling event, it was observed that the Wetsep near DP6 was not functioning properly with reference to the on-site checking of the treated water at the outlet of the Wetsep. The pH display of the Wetsep was found not functioning properly while the pH of the treated water at the Wetsep outlet (i.e. 9.55) exceeded the Action and Limit Level. Based on the above, the pH exceedance at DP6 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 Level. In addition, the Contractor shall repair the pH display and review the efficiency of the Wetsep at DP6. The Contractor shall also check and monitor the Wetsep operation regularly to ensure it is functioning properly at all times and the quality of the treated water comply with the discharge standard.
Remarks	-

Prepared by: Abbey Lau
Designation: Environmental Team
Date: 22 April 2020

Investigation Report of Environmental Quality Limit Exceedance

Project	South East New Territories (SENT) Landfill Extension
Date	9 April 2020
Time	DP6: 14:23 hrs and 14:34 hrs (Duplicate)
Monitoring Location	DP6
Parameter	Surface Water (Suspended Solids (SS))
Action / Limit Levels	DP6: Action level: >11.7 mg/L Limit level: >12.7 mg/L
Measured Level	DP6: 107 mg/L DP6 (Duplicate): 114 mg/L
Possible reason	No works which may lead to potential SS increase was conducted in the vicinity of surface water channel leading to DP6 on and before the sampling day based on on-site observations and construction activities described by the Contractor. During the sampling event, no potential surface water overflow to the DP6 channel was observed. Berm was constructed along the DP6 channel to collect the surface runoff which was treated by the Wetsep prior to discharge. Yet during the sampling event, it was observed that the Wetsep near DP6 was not functioning properly with reference to the on-site checking of the treated water at the outlet of the Wetsep. The treated water was observed to be muddy at the Wetsep outlet. Based on the above, the SS exceedance at DP6 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 Level. In addition, the Contractor shall review the efficiency of the Wetsep at DP6 and check and monitor the Wetsep operation regularly to ensure it is functioning properly at all times and the quality of the treated water comply with the discharge standard.
Remarks	-

Prepared by: Abbey Lau
Designation: Environmental Team
Date: 22 April 2020

Investigation Report of Environmental Quality Limit Exceedance

Project	South East New Territories (SENT) Landfill Extension
Date	28 May 2020
Time	DP4T: 15:13 DP6: 14:48 and 14:57 (Duplicate)
Monitoring Location	DP4T and DP6
Parameter	Surface Water (Suspended Solids (SS))
Action / Limit Levels	DP4T and DP6: Action level: >11.7 mg/L Limit level: >12.7 mg/L
Measured Level	DP4T: 42.2 mg/L DP6: 17.7 mg/L DP6 (Duplicate): 16.4 mg/L
Possible reason	DP4T: 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 DP4T on the sampling day based on on-site observations and construction activities described by the Contractor. During the sampling event, no potential surface water overflow to the DP4T channel was observed. Surface runoff collected at DP4T channel was treated by the Wetsep prior to discharge. Environmental deficiency was not observed during the weekly site inspection in the morning. The Contractor has taken the necessary control /mitigation measures outlined in the updated EM&A Manual. From the on-site rainfall record of May 2020, heavy rainfall event was recorded on 22, 23, 25 and 26 May 2020. Red rainstorm warning signal was issued by the Hong Kong Observatory on 25 May 2020. No raining was recorded during the sampling event. During the sampling event, no other sources (e.g. existing SENT Landfill and Clearwater Bay Country Park) was identified in the vicinity of surface water channel leading to DP4T which might cause the SS exceedance at DP4T. Contaminated runoff from the haul road and other unpaved areas during the previous rainfall events could be the potential source of SS contributing to the exceedance. The SS exceedance at DP4T was therefore deemed to Project-related activities. DP6: 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 DP6 on the sampling day based on on-site observations and construction activities described by the Contractor. During the sampling event, no potential surface water overflow to the DP6 channel was observed. Silt fencing was

	constructed along the DP6 channel to minimise SS runoff to the channel. Surface runoff collected at DP6 channel was treated by the Wetsep prior to discharge. Environmental deficiency was not observed during the weekly site inspection in the morning. The Contractor has taken the necessary control /mitigation measures outlined in the updated EM&A Manual. From the on-site rainfall record of May 2020, heavy rainfall event was recorded on 22, 23, 25 and 26 May 2020. Red rainstorm warning signal was also issued by the Hong Kong Observatory on 25 May 2020. During the sampling event, no other sources (e.g. (e.g. Clearwater Bay Country Park) was identified in the vicinity of surface water channel leading to DP6 which might cause the SS exceedance at DP6. Contaminated runoff from the haul road and other unpaved areas during the previous rainfall events could be the potential source of SS contributing to the exceedance. The SS exceedance at DP6 was therefore deemed to Project-related activities. It should be noted that although the measured SS level exceeded the limit level of the EM&A programme, it is still well within the WPCO effluent discharge limit of SS for the Junk Bay Water Control Zone (30 mg/L). The discharge of surface water with this SS level from DP6 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 Level. In addition, the Contractor is reminded to compact the exposed soil at the site to minimise SS runoff and review the treatment capacity and the number of the Wetseps to ensure all surface water is treated before discharge at DP4T and DP6.
Remarks	-

Prepared by: Abbey Lau
Designation: Environmental Team
Date: 27 July 2020

Investigation Report of Environmental Quality Limit Exceedance

Project	South East New Territories (SENT) Landfill Extension
Date	4 June 2020
Time	DP4T: 14:35 and 14:46 (Duplicate)
Monitoring Location	DP4T
Parameter	Surface Water (pH)
Action / Limit Levels	DP4T: Action level: >8.39 Limit level: >8.40
Measured Level	DP4T: 8.53 & 8.49 DP4T (Duplicate): 8.45 & 8.45
Possible reason	No works which may lead to potential pH increase (e.g. concreting works) was conducted in the vicinity of surface water channel leading to DP4T on and before the sampling day based on on-site observations and construction activities described by the Contractor. During the sampling event, no potential surface water overflow to the DP4T channel was observed. Surface runoff collected at DP4T channel was treated by the Wetsep prior to discharge. Yet during the sampling event, it was observed that the Wetsep near DP4T was not functioning properly with reference to the on-site checking of the treated water at the outlet of the processing chamber of the Wetsep. The pH display of the Wetsep was found not functioning properly while the pH of the treated water (i.e. 8.53) exceeded the Action and Limit Level. Based on the above, the pH exceedance at DP4T was deemed to Project-related activities. However, it is noted that the Water Pollution Control Ordinance (WPCO) water discharge licence was obtained by the Contractor for the operation of the Wetsep near DP4T and the allowable discharge limit for pH is 6 to 9. The treated water from the Wetsep did not exceed the WPCO discharge limit and cause any adverse water quality impact.
Action Taken / Action to be Taken	Examination of environmental performance of the Project will be continued during the weekly inspections. The Contractor is reminded to implement relevant and appropriate mitigation measures according to the updated EM&A Manual to avoid any exceedance of the Action and Limit Level. In addition, the Contractor shall repair the pH display and review the efficiency of the Wetsep at DP4T. The Contractor shall also check and monitor the Wetsep operation regularly to ensure it is functioning properly at all times and the quality of the treated water comply with the discharge standard.
Remarks	-

Prepared by:	Abbey Lau
Designation:	Environmental Team
Date:	30 June 2020

Investigation Report of Environmental Quality Limit Exceedance

Project	South East New Territories (SENT) Landfill Extension
Date	3 July 2020
Time	DP4T: 15:06 DP6: 14:36 and 14:45 (Duplicate)
Monitoring Location	DP4T and DP6
Parameter	Surface Water (Suspended Solids (SS))
Action / Limit Levels	DP4T and DP6: Action level: >11.7 mg/L Limit level: >12.7 mg/L
Measured Level	DP4T: 18.6 mg/L DP6: 14.0 mg/L DP6 (Duplicate): 14.4 mg/L
Possible reason	DP4T: From the on-site rainfall record of July 2020, rainfall event was recorded on 2 July 2020 before the sampling event on 3 July 2020. On 2 July 2020, muddy surface water overflow from other project site to the sediment trap leading to DP4T was observed. The sample taken at DP4T on the day might not represent the surface water runoff from SENTX and further upstream. In addition, no works which may lead to potential SS increase (e.g. active stockpiling and excavation works) was conducted in the vicinity of surface water channel leading to DP4T on the sampling day based on on-site observations and construction activities described by the Contractor. Site runoff discharged to the DP4T channel was treated by the Wetsep prior to discharge. Wetsep near DP4T and sediment trap were functioning properly during the sampling event. Environmental deficiency was not observed during the weekly site inspection on 2 July 2020 morning. The Contractor has complied with the recommendations and conditions outlined in the updated EM&A Manual. Due to presence of the influencing factor other project site and no potential source from the Project-related activities which may lead to SS increase was identified, there is no adequate evidence showing that the SS exceedance at DP4T was deemed to Project-related activities. It should be noted that although the measured SS level exceeded the limit level of the EM&A programme, it is still well within the WPCO effluent discharge limit of SS for the Junk Bay Water Control Zone (30 mg/L). The discharge of surface water with this SS level from DP4T will not cause adverse water quality impact to the Junk Bay Water Control Zone.

	DP6: From the on-site rainfall record of July 2020, rainfall event was recorded on 2 July 2020 before the sampling event on 3 July 2020. On 2 July 2020, muddy surface water overflow from other project site to the temporary drain along southern site boundary leading to DP6 was observed. The sample taken at DP6 on the day might not represent the surface water runoff from SENTX and further upstream. In addition, no works which may lead to potential SS increase (e.g. active stockpiling and excavation works) was conducted in the vicinity of surface water channel leading to DP6 on the sampling day based on on-site observations and construction activities described by the Contractor. Site runoff discharged to the DP6 channel was treated by the Wetsep prior to discharge. Wetsep near DP6 was functioning properly during the sampling event. Environmental deficiency was not observed during the weekly site inspection on 2 July 2020 morning. The Contractor has complied with the recommendations and conditions outlined in the updated EM&A Manual. Due to presence of the influencing factor other project site and no potential source from the Project-related activities which may lead to SS increase was identified, there is no adequate evidence showing that the SS exceedance at DP6 was deemed to Project-related activities. It should be noted that although the measured SS level exceeded the limit level of the EM&A programme, it is still well within the WPCO effluent discharge limit of SS for the Junk Bay Water Control Zone (30 mg/L). The discharge of surface water with this SS level from DP6 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 Level. In addition, the Contractor was reminded to discuss the surface water overflow and drainage issues with WSD/ CEDD so that there will be no surface water runoff from other project site to the SENTX boundary.
Remarks	-

Prepared by: Abbey Lau
Designation: Environmental Team
Date: 22 July 2020

Investigation Report of Environmental Quality Limit Exceedance

Project	South East New Territories (SENT) Landfill Extension
Date	15 July 2020
Time	DP4T: 14:46 and 15:03 (Duplicate)
Monitoring Location	DP4T
Parameter	Surface Water (Suspended Solids (SS))
Action / Limit Levels	DP4T: Action level: >11.7 mg/L Limit level: >12.7 mg/L
Measured Level	DP4T: 28.2 mg/L DP4T (Duplicate): 27.8 mg/L
Possible reason	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 DP4T on the sampling day based on on-site observations and construction activities described by the Contractor. During the sampling event, no potential surface water overflow to the DP4T channel was observed. Surface runoff collected at DP4T channel was treated by the Wetsep prior to discharge. Environmental deficiency was not observed during on-site investigation. The Contractor has taken the necessary control /mitigation measures outlined in the updated EM&A Manual. From the on-site rainfall record of July 2020, no rainfall event was recorded from 9 to 14 July 2020 before the sampling event on 15 July 2020. During the sampling event, no other sources (e.g. upstream or other project sites) was identified in the vicinity of surface water channel leading to DP4T which might cause the SS exceedance at DP4T. Contaminated runoff from the unpaved areas and other construction works could be the potential source of SS contributing to the exceedance. The SS exceedance at DP4T was therefore deemed to Project-related activities. It should be noted that although the measured SS level exceeded the limit level of the EM&A programme, it is still well within the WPCO effluent discharge limit of SS for the Junk Bay Water Control Zone (30 mg/L). The discharge of surface water with this SS level from DP4T 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 Level. In addition, the Contractor is reminded to compact the exposed soil at the site to minimise SS runoff.

Remarks	-

Prepared by: Abbey Lau
Designation: Environmental Team
Date: 23 November 2020

Investigation Report of Environmental Quality Limit Exceedance

Project	South East New Territories (SENT) Landfill Extension
Date	6 August 2020
Time	DP4T: 16:14 DP6: 15:34 and 15:43 (Duplicate)
Monitoring Location	DP4T and DP6
Parameter	Surface Water (Suspended Solids (SS))
Action / Limit Levels	Action level: >11.7 mg/L Limit level: >12.7 mg/L
Measured Level	DP4T: 66.1 mg/L DP6: 420 mg/L DP6 (Duplicate): 432 mg/L
Possible reason	DP4T: 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 DP4T on the sampling day based on on-site observations and construction activities described by the Contractor. During the sampling event, surface water overflow from the sediment trap to the DP4T channel which was not treated by the Wetsep prior to discharge was observed. Environmental deficiencies on maintenance of temporary drains and surface water management were observed during the weekly site inspection in the morning. From the on-site rainfall record of August 2020, heavy rainfall event was recorded on 1, 2, 3 and 5 August 2020 before the sampling event. Amber rainstorm warning signal was also issued by the Hong Kong Observatory on 5 August 2020. 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 DP4T which might cause the SS exceedance at DP4T. Contaminated runoff from the haul road and other unpaved areas during the previous rainfall events could be the potential source of SS contributing to the exceedance. The SS exceedance at DP4T was therefore deemed to Project-related activities. DP6: 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 DP6 on the sampling day based on on-site observations and construction activities described by the Contractor. During the sampling event, potential surface water overflow to the DP6 channel was observed. Surface runoff collected at DP6 channel was treated by the Wetsep prior to

	discharge. Environmental deficiencies on maintenance of temporary drains and surface water management were observed during the weekly site inspection in the morning. From the on-site rainfall record of August 2020, heavy rainfall event was recorded on 1, 2, 3 and 5 August 2020 before the sampling event. Amber rainstorm warning signal was also issued by the Hong Kong Observatory on 5 August 2020. During the sampling event, no raining was recorded and no other sources (e.g. Clearwater Bay Country Park, other project sites) was identified in the vicinity of surface water channel leading to DP6 which might cause the SS exceedance at DP6. Contaminated runoff from the haul road and other unpaved areas during the previous rainfall events could be the potential source of SS contributing to the exceedance. The SS exceedance at DP6 was therefore 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 Level. In addition, the Contractor is reminded to compact the exposed soil at the site to minimise SS runoff.
Remarks	-

Prepared by: Abbey Lau
Designation: Environmental Team
Date: 23 November 2020

Investigation Report of Environmental Quality Limit Exceedance

Project	South East New Territories (SENT) Landfill Extension
Date	13 August 2020
Time	14:25 and 14:34 (Duplicate)
Monitoring Location	DP6
Parameter	Surface Water (Suspended Solids (SS))
Action / Limit Levels	Action level: >11.7 mg/L Limit level: >12.7 mg/L
Measured Level	DP6: 30.9 mg/L DP6 (Duplicate): 30.2 mg/L
Possible reason	From the on-site rainfall record of August 2020, heavy rainfall event was recorded on 12 August 2020 before the sampling event. On 12 August 2020, muddy surface water discharge and overflow from other project site to the temporary drain along southern site boundary leading to DP6 was observed. The sample taken at DP6 on the day might not represent the surface water runoff from SENTX and further upstream. In addition, no works which may lead to potential SS increase (e.g. active stockpiling and excavation works) was conducted in the vicinity of surface water channel leading to DP6 on the sampling day based on on-site observations and construction activities described by the Contractor. During the sampling event, no potential surface water overflow to the DP6 channel was observed. Silt fencing was constructed along the DP6 channel to minimise SS runoff to the channel. Site surface runoff collected at DP6 channel was treated by the Wetsep prior to discharge. Environmental deficiency was not observed during the weekly site inspection on 13 August 2020 morning. The Contractor has implemented the surface water control and mitigation measures recommended in the updated EM&A Manual. Due to presence of the influencing factor other project sites and no potential source from the Project-related activities which may lead to SS increase was identified, there is no adequate evidence showing that the SS exceedance at DP6 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 Level. In addition, the Contractor was reminded to discuss the surface

	water drainage and overflow issues with WSD/ CEDD so that there will be no surface water runoff from other project site to the SENTX boundary.
Remarks	-

Prepared by: Abbey Lau
Designation: Environmental Team
Date: 23 November 2020

Investigation Report of Environmental Quality Limit Exceedance

Project	South East New Territories (SENT) Landfill Extension
Date	17 September 2020
Time	14:27 and 14:36 (Duplicate)
Monitoring Location	DP6
Parameter	Surface Water (pH)
Action / Limit Levels	Action level: >8.39 Limit level: >8.40
Measured Level	DP6: 8.94 & 8.94 DP6 (Duplicate): 8.87 & 8.89
Possible reason	From the on-site rainfall record of September 2020, heavy rainfall events were recorded on 14 to 17 September 2020 before the sampling event. Amber rainstorm warning signal was also issued by the Hong Kong Observatory on 15 September 2020. On 15 September 2020, muddy surface water discharge and overflow from other project sites to the temporary drain along southern site boundary leading to DP6 was observed. The sample taken at DP6 on the day might not represent the surface water runoff from SENTX and further upstream. In addition, no works which may lead to potential pH increase (e.g. concreting works) was conducted in the vicinity of surface water channel leading to DP6 on the sampling day based on on-site observations and construction activities described by the Contractor. Site surface runoff collected at DP6 channel was treated by the Wetsep prior to discharge. Wetsep near DP6 was functioning properly during the sampling event. Environmental deficiency was not observed during the weekly site inspection on 17 September 2020 morning before the surface water monitoring. The Contractor has implemented the surface water control and mitigation measures recommended in the updated EM&A Manual. Due to presence of the influencing factor other project site and no potential source from the Project-related activities which may lead to pH increase was identified, there is no adequate evidence showing that the pH exceedance at DP6 was deemed to Project-related activities. It is also noted that the Water Pollution Control Ordinance (WPCO) water discharge licence was obtained by the Contractor for the operation of the Wetsep near DP6 and the allowable discharge limit for pH is 6 to 9. The treated water from the Wetsep did not exceed the WPCO discharge limit and cause any adverse water quality impact.

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 discuss the surface water drainage and overflow issues with WSD/ CEDD so that there will be no surface water runoff from other project site to the SENTX boundary.
Remarks	-

Prepared by: Abbey Lau
Designation: Environmental Team
Date: 29 September 2020

Investigation Report of Environmental Quality Limit Exceedance

Project	South East New Territories (SENT) Landfill Extension
Date	17 September 2020
Time	14:27 and 14:36 (Duplicate)
Monitoring Location	DP6
Parameter	Surface Water (Suspended Solids (SS))
Action / Limit Levels	Action level: >11.7 mg/L Limit level: >12.7 mg/L
Measured Level	DP6: 62.9 mg/L DP6 (Duplicate): 62.1 mg/L
Possible reason	From the on-site rainfall record of September 2020, heavy rainfall events were recorded on 14 to 17 September 2020 before the sampling event. Amber rainstorm warning signal was also issued by the Hong Kong Observatory on 15 September 2020. On 15 September 2020, muddy surface water discharge and overflow from other project site to the temporary drain along southern site boundary leading to DP6 was observed. The sample taken at DP6 on the day might not represent the surface water runoff from SENTX and further upstream. In addition, no works which may lead to potential SS increase (e.g. active stockpiling and excavation works) was conducted in the vicinity of surface water channel leading to DP6 on the sampling day based on on-site observations and construction activities described by the Contractor. Site surface runoff collected at DP6 channel was treated by the Wetsep prior to discharge. Environmental deficiency was not observed during the weekly site inspection on 17 September 2020 morning. The Contractor has implemented the surface water control and mitigation measures recommended in the updated EM&A Manual. Due to presence of the influencing factor other project sites and no potential source from the Project-related activities which may lead to SS increase was identified, there is no adequate evidence showing that the SS exceedance at DP6 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 Level. In addition, the Contractor was reminded to discuss the surface water drainage and overflow issues with WSD/ CEDD so that

	there will be no surface water runoff from other project site to the SENTX boundary.
Remarks	-

Prepared by: Abbey Lau
Designation: Environmental Team
Date: 9 October 2020

Investigation Report of Environmental Quality Limit Exceedance

Project	South East New Territories (SENT) Landfill Extension
Date	15 October 2020
Time	14:12 and 14:26 (Duplicate)
Monitoring Location	DP6
Parameter	Surface Water (Suspended Solids (SS))
Action / Limit Levels	Action level: >11.7 mg/L Limit level: >12.7 mg/L
Measured Level	DP6: 18.6 mg/L DP6 (Duplicate): 18.3 mg/L
Possible reason	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 DP6 on the sampling day based on on-site observations and construction activities described by the Contractor. During the sampling event, no potential surface water overflow to the DP6 channel was observed. Silt fencing was constructed along the DP6 channel to minimise SS runoff to the channel. Surface runoff collected at DP6 channel was treated by the Wetsep prior to discharge. Environmental deficiency was not observed during the weekly site inspection in the morning. The Contractor has taken the necessary control /mitigation measures outlined in the updated EM&A Manual. From the on-site rainfall record of October 2020, heavy rainfall event was recorded on 13 October 2020. No. 8 tropical cyclone signal was also issued by the Hong Kong Observatory on 13 October 2020. During the sampling event, no raining was recorded and no other sources (e.g. Clearwater Bay Country Park, other project sites) was identified in the vicinity of surface water channel leading to DP6 which might cause the SS exceedance at DP6. Contaminated runoff from the haul road and other unpaved areas during the previous rainfall events could be the potential source of SS contributing to the exceedance. The SS exceedance at DP6 was therefore deemed to Project-related activities. It should be noted that although the measured SS level exceeded the limit level of the EM&A programme, it is still well within the WPCO effluent discharge limit of SS for the Junk Bay Water Control Zone (30 mg/L). The discharge of surface water with this SS level from DP6 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 Level. In addition, the Contractor is reminded to compact the exposed soil at the site to minimise SS runoff.
Remarks	-

Prepared by: Abbey Lau
Designation: Environmental Team
Date: 4 November 2020

Annex G

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

Table G1 Cumulative Statistics on Exceedances

		Total No. recorded in this reporting period	Total No. recorded since project commencement
Air Quality (24-hr TSP)	Action	0	0
	Limit	0	0
Noise	Action	0	0
	Limit	0	0
Surface Water Quality	Action	0	0
	Limit	15	47

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

Reporting Period	Cumulative Statistics		
	Complaints	Notifications of Summons	Prosecutions
This Reporting Period (1 January – 31 December 2020)	0	0	0
Total no. received since project commencement	1	0	0