



ANNEX E

AIR QUALITY



ANNEX E1

CALIBRATION CERTIFICATES FOR AIR
QUALITY



SUB-CONTRACTING REPORT

CONTACT	: MR MAGNUM FAN	WORK ORDER	: HK2502558
CLIENT	: ENVIROTECH SERVICES CO.		
ADDRESS	: RM 712, 7/F, MY LOFT 9 HOI WING ROAD, TUEN MUN, N.T. HK	SUB-BATCH	: 1
		DATE RECEIVED	: 15-JAN-2025
		DATE OF ISSUE	: 21-JAN-2025
PROJECT	: ----	NO. OF SAMPLES	: 1
		CLIENT ORDER	: ----

General Comments

- Sample information (Project name, Sample ID, Sampling date/time, etc.) is provided by client.
- Result(s) of sample(s) is/are reported on as received basis, unless otherwise specified. The result(s) is/are related only to the item(s) tested.
- Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in ambient condition.
- Calibration was subcontracted to Envirotech Services Company.

Signatories

This document has been signed by those names that appear on this report and are the authorised signatories

Signatories

Position

Richard Fung

Managing Director

This report supersedes any previous report(s) with the same work order number.

All pages of this report have been checked and approved for release.

ALS Technichem (HK) Pty Ltd
Part of the **ALS Laboratory Group**

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Tel. +852 2610 1044 Fax. +852 2610 2021 www.alsglobal.com

WORK ORDER : HK2502558
SUB-BATCH : 1
CLIENT : ENVIROTECH SERVICES CO.
PROJECT : ----



ALS Lab ID	Client's Sample ID	Sample Type	Sample Date	External Lab Report No.
HK2502558-001	Sibata LD-3B (456666)	Equipments	02-Jan-2025	S/N: 456666

----- END OF REPORT -----



Envirotech Services Co.

Rm. 712, 7/F
My Loft,
9 Hoi Wing Road,
Tuen Mun, H.K.
Tel : 2560 8450
Fax : 2560 8553
E-mail: envirotech@netvigator.com

Equipment Verification Report (TSP)

Equipment Calibrated:

Type: Laser Dust Monitor
Manufacturer: Sibata LD-3B
Serial No.: 456666
Equipment Ref.: N/A
ALS Job Order: HK2500343

Standard Equipment

Standard Equipment: High Volume Sampler (TSP)
Location: Envirotech Room (Calibration Room)
Equipment Ref.: HVS 8162
Last Calibration Date: 1-Jan-2025

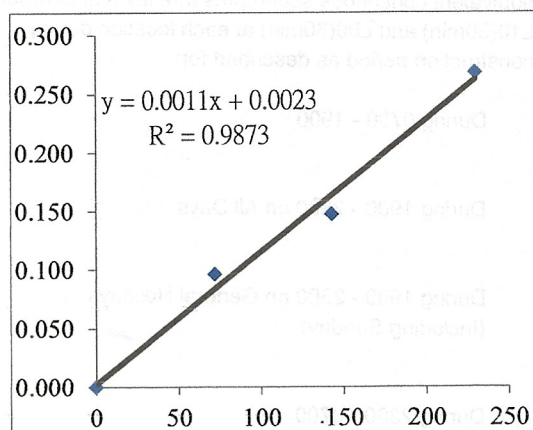
Equipment Verification Results:

Verification Date: 2-Jan-2025

Hour	Time	Mean Temp °C	Mean Pressure (hpa)	TSP Level in mg (Standard Equipment) (Y-Axis)	Total Count (Calibrated Equipment) (X-Axis)
1hr 00mins	0900-1000	16.1	1023	0.096	76
2hr 00mins	1005-1205	20.5	1022	0.147	160
3hr 00mins	1330-1630	21.0	1022	0.268	248

Linear Regression of Y or X

Slope (K-factor): 0.0011(mg)/Count
Correlation Coefficient (R): 0.9936
Date of Issue: 15-Jan-2025



Remarks:

1. Strong Correlation (>0.8)
2. Factor 0.0011 mg/Count should be applied for TSP monitoring

*If $R < 0.5$, repair or verification is required for the equipment

Operator: P.F.Yeung Signature P.F.Yeung Date: 15 Jan 2025

QC Reviewer: K.F.Ho Signature K.F.Ho Date: 15 Jan 2025

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Rm. 712, My Loft, Tuen Mun Date of Calibration: 1-Jan-25
 HVS ID: 8162 Next Calibration Date: 31-Mar-25
 Name and Model : TISCH HVS Model TE-5170 Operator: K.F.Ho

CONDITIONS

Sea Level Pressure (hpa)	1023	Corrected Pressure (mm Hg)	767.3
Temperature (°C)	15.8	Temperature (K)	288.8

CALIBRATION ORIFICE

Make:	TISCH	Qstd Slope	2.08315
Model:	TE-5025A	Qstd Intercept	-0.04938
Serial#:	2454		

CALIBRATION

Plate No.	H2O(L) (in)	H2O(R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC (corrected)	LINEAR REGRESSION
18	6.4	6.4	12.8	1.777	62	63.30	Slope= 35.208 Intercept= -0.0015 Corr. Coeff.= 0.9959
13	5.3	5.3	10.6	1.619	56	57.17	
10	4.2	4.2	8.4	1.444	48	49.00	
7	2.7	2.7	5.4	1.163	41	41.86	
5	1.7	1.7	3.4	0.927	32	32.67	

Calculations:

$$Qstd = 1/m[\text{Sqrt}(H2O(Pa/Pstd)(Tstd/Ta))-b]$$

$$IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$$

Qstd = standard flow rate

IC = corrected chart response

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K)

Pa = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

$$1/m(I)[\text{Sqrt}(298/Tav)(Pav/760)]-b)$$

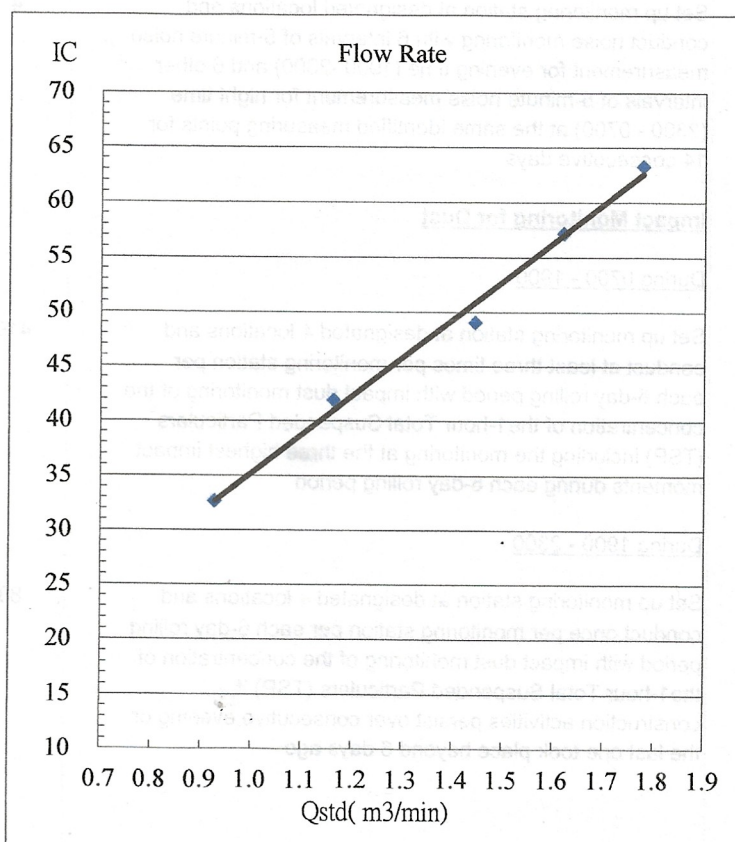
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure



Certificate of Calibration

Calibration Certification Information

Cal. Date: December 2, 2024 Roots-meter S/N: 438320 Ta: 293 °K
Operator: Jim Tisch Pa: 757.4 mm Hg
Calibration Model #: TE-5025A Calibrator S/N: 2454

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.4200	3.2	2.00
2	3	4	1	1.0170	6.4	4.00
3	5	6	1	0.9090	7.9	5.00
4	7	8	1	0.8700	8.8	5.50
5	9	10	1	0.7140	12.8	8.00

Data Tabulation

Vstd (m3)	Qstd (x-axis)	$\sqrt{\Delta H \left(\frac{Pa}{Pstd} \right) \left(\frac{Tstd}{Ta} \right)}$ (y-axis)	Va	Qa (x-axis)	$\sqrt{\Delta H \left(\frac{Ta}{Pa} \right)}$ (y-axis)
1.0093	0.7108	1.4238	0.9958	0.7013	0.8796
1.0051	0.9883	2.0136	0.9916	0.9750	1.2439
1.0031	1.1035	2.2512	0.9896	1.0886	1.3907
1.0018	1.1515	2.3611	0.9884	1.1361	1.4586
0.9965	1.3956	2.8476	0.9831	1.3769	1.7592
QSTD	m=	2.08315	QA	m=	1.30443
	b=	-0.04938		b=	-0.03050
	r=	0.99985		r=	0.99985

Calculations

Vstd=	$\Delta Vol((Pa-\Delta P)/Pstd)(Tstd/Ta)$	Va=	$\Delta Vol((Pa-\Delta P)/Pa)$
Qstd=	Vstd/ΔTime	Qa=	Va/ΔTime
For subsequent flow rate calculations:			
Qstd=	$1/m \left(\left(\sqrt{\Delta H \left(\frac{Pa}{Pstd} \right) \left(\frac{Tstd}{Ta} \right)} \right) - b \right)$	Qa=	$1/m \left(\left(\sqrt{\Delta H \left(\frac{Ta}{Pa} \right)} \right) - b \right)$

Standard Conditions

Tstd:	298.15 °K
Pstd:	760 mm Hg
Key	
ΔH: calibrator manometer reading (in H2O)	
ΔP: roots-meter manometer reading (mm Hg)	
Ta: actual absolute temperature (°K)	
Pa: actual barometric pressure (mm Hg)	
b: intercept	
m: slope	

RECALIBRATION

US EPA recommends annual recalibration per 1998 40 Code of Federal Regulations Part 50 to 51, Appendix B to Part 50, Reference Method for the Determination of Suspended Particulate Matter in the Atmosphere, 9.2.17, page 30



SUB-CONTRACTING REPORT

CONTACT	: MR MAGNUM FAN	WORK ORDER	: HK2509157
CLIENT	: ENVIROTECH SERVICES CO.		
ADDRESS	: RM 712, 7/F, MY LOFT 9 HOI WING ROAD, TUEN MUN, N.T. HK	SUB-BATCH	: 1
		DATE RECEIVED	: 6-MAR-2025
		DATE OF ISSUE	: 11-MAR-2025
PROJECT	: ----	NO. OF SAMPLES	: 1
		CLIENT ORDER	: ----

General Comments

- Sample information (Project name, Sample ID, Sampling date/time, etc.) is provided by client.
- Result(s) of sample(s) is/are reported on as received basis, unless otherwise specified. The result(s) is/are related only to the item(s) tested.
- Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in ambient condition.

Signatories

This document has been signed by those names that appear on this report and are the authorised signatories

Signatories

Position

Richard Fung

Managing Director

This report supersedes any previous report(s) with the same work order number.

All pages of this report have been checked and approved for release.

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WORK ORDER : HK2509157
SUB-BATCH : 1
CLIENT : ENVIROTECH SERVICES CO.
PROJECT : ----



ALS Lab ID	Client's Sample ID	Sample Type	Sample Date	External Lab Report No.
HK2509157-001	Sibata LD-5R (841723)	Equipments	25-Feb-2025	S/N: 841723

----- END OF REPORT -----



Envirotech Services Co.

Rm. 712, 7/F
My Loft,
9 Hoi Wing Road,
Tuen Mun, H.K.
Tel : 2560 8450
Fax : 2560 6553
E-mail: envirotech@netvigator.com

Equipment Verification Report (TSP)

Equipment Calibrated:

Type: Laser Dust Monitor
Manufacturer: Sibata LD-5R
Serial No.: 841723
Equipment Ref.: N/A
ALS Job Order: HK2507883

Standard Equipment

Standard Equipment: High Volume Sampler (TSP)
Location: Envirotech Room (Calibration Room)
Equipment Ref.: HVS 8162
Last Calibration Date: 1-Jan-2025

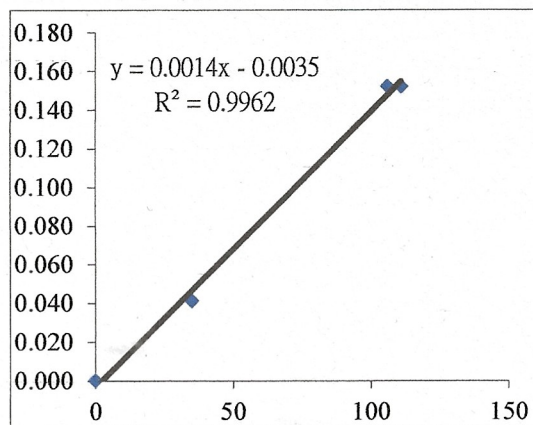
Equipment Verification Results:

Verification Date: 25-Feb-2025

Hour	Time	Mean Temp °C	Mean Pressure (hpa)	TSP Level in mg (Standard Equipment) (Y-Axis)	Total Count (Calibrated Equipment) (X-Axis)
1hr 00mins	1005-1105	16.2	1022.3	0.041	35
2hr 00mins	1310-1510	18.1	1022.5	0.152	106
3hr 00mins	1515-1815	18.2	1022.6	0.152	111

Linear Regression of Y or X

Slope (K-factor): 0.0014(mg)/Count
Correlation Coefficient (R): 0.9981
Date of Issue: 4-Mar-2025



Remarks:

1. Strong Correlation (>0.8)
2. Factor 0.0014(mg)/Count should be applied for TSP monitoring

*If $R < 0.5$, repair or verification is required for the equipment

Operator: P.F.Yeung Signature: *Pai* Date: 04 March 2025

QC Reviewer: K.F.Ho Signature: *at* Date: 04 March 2025

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Rm. 712, My Loft, Tuen Mun	Date of Calibration:	1-Jan-25
HVS ID: 8162	Next Calibration Date:	31-Mar-25
Name and Model : TISCH HVS Model TE-5170	Operator:	K.F.Ho

CONDITIONS

Sea Level Pressure (hpa)	1023	Corrected Pressure (mm Hg)	767.3
Temperature (°C)	15.8	Temperature (K)	288.8

CALIBRATION ORIFICE

Make:	TISCH	Qstd Slope	2.08315
Model:	TE-5025A	Qstd Intercept	-0.04938
Serial#:	2454		

CALIBRATION

Plate No.	H2O(L) (in)	H2O(R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC (corrected)	LINEAR REGRESSION
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10	4.2	4.2	8.4	1.444	48	49.00	
7	2.7	2.7	5.4	1.163	41	41.86	
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Calculations:

$$Qstd = 1/m[\text{Sqrt}(H2O(Pa/Pstd)(Tstd/Ta))-b]$$

$$IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$$

Qstd = standard flow rate

IC = corrected chart response

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K)

Pa = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

$$1/m((I)[\text{Sqrt}(298/Tav)(Pav/760)]-b)$$

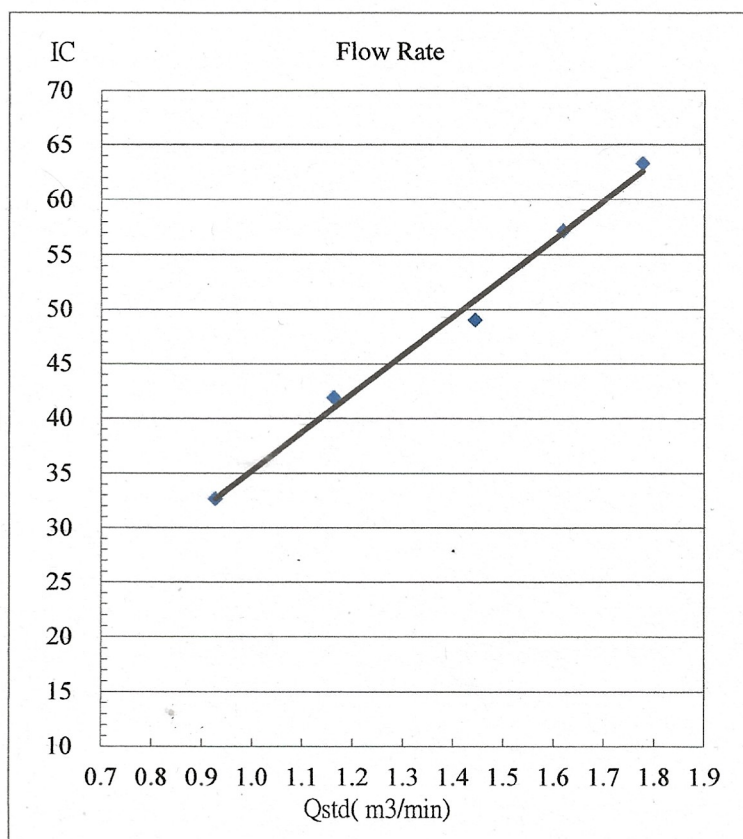
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure



Certificate of Calibration

Calibration Certification Information

Cal. Date: December 2, 2024

Rootsmeter S/N: 438320

Ta: 293 °K

Operator: Jim Tisch

Pa: 757.4 mm Hg

Calibration Model #: TE-5025A

Calibrator S/N: 2454

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
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2	3	4	1	1.0170	6.4	4.00
3	5	6	1	0.9090	7.9	5.00
4	7	8	1	0.8700	8.8	5.50
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1.0051	0.9883	2.0136	0.9916	0.9750	1.2439
1.0031	1.1035	2.2512	0.9896	1.0886	1.3907
1.0018	1.1515	2.3611	0.9884	1.1361	1.4586
0.9965	1.3956	2.8476	0.9831	1.3769	1.7592
QSTD	m=	2.08315	QA	m=	1.30443
	b=	-0.04938		b=	-0.03050
	r=	0.99985		r=	0.99985

Calculations

Vstd=	$\Delta Vol((Pa-\Delta P)/Pstd)(Tstd/Ta)$	Va=	$\Delta Vol((Pa-\Delta P)/Pa)$
Qstd=	Vstd/ΔTime	Qa=	Va/ΔTime
For subsequent flow rate calculations:			
Qstd= $1/m \left(\left(\sqrt{\Delta H \left(\frac{Pa}{Pstd} \right) \left(\frac{Tstd}{Ta} \right)} \right) - b \right)$		Qa= $1/m \left(\left(\sqrt{\Delta H \left(\frac{Ta}{Pa} \right)} \right) - b \right)$	

Standard Conditions

Tstd:	298.15 °K
Pstd:	760 mm Hg
Key	
ΔH: calibrator manometer reading (in H2O)	
ΔP: rootsmeter manometer reading (mm Hg)	
Ta: actual absolute temperature (°K)	
Pa: actual barometric pressure (mm Hg)	
b: intercept	
m: slope	

RECALIBRATION

US EPA recommends annual recalibration per 1998 40 Code of Federal Regulations Part 50 to 51, Appendix B to Part 50, Reference Method for the Determination of Suspended Particulate Matter in the Atmosphere, 9.2.17, page 30



ANNEX E2

MONITORING SCHEDULE FOR AIR
QUALITY

Tung Chung New Town Extension (East)
Air Quality Monitoring Schedule (October 2025)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1-Oct	2-Oct	3-Oct	4-Oct
5-Oct	6-Oct	7-Oct	8-Oct	9-Oct	10-Oct	11-Oct
Air Quality Monitoring						Air Quality Monitoring
12-Oct	13-Oct	14-Oct	15-Oct	16-Oct	17-Oct	18-Oct
					Air Quality Monitoring	
19-Oct	20-Oct	21-Oct	22-Oct	23-Oct	24-Oct	25-Oct
				Air Quality Monitoring		
26-Oct	27-Oct	28-Oct	29-Oct	30-Oct	31-Oct	
		Air Quality Monitoring				



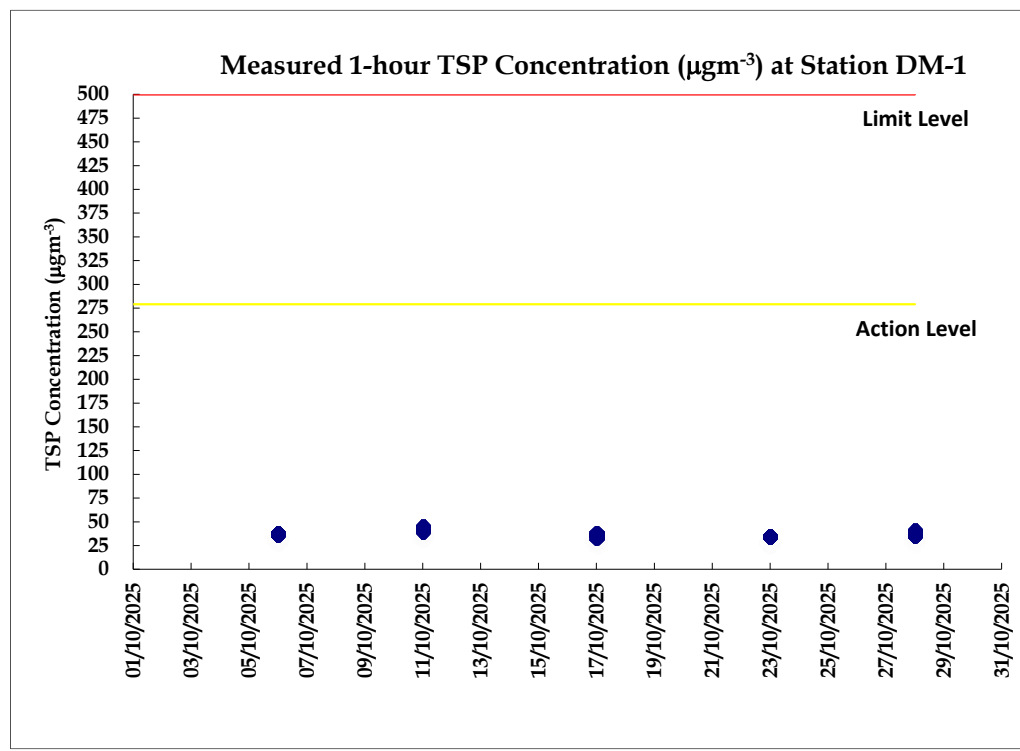
ANNEX E3

MONITORING RESULTS FOR AIR
QUALITY

Table E3 *Data for 1-hr TSP Monitoring at Station DM-1*

Date	Start Time	Finish Time	Weather	1-hour TSP ($\mu\text{g}/\text{m}^3$)
6/10/2025	9:00	10:00	Sunny	38
6/10/2025	10:00	11:00	Sunny	36
6/10/2025	11:00	12:00	Sunny	37
11/10/2025	9:00	10:00	Sunny	40
11/10/2025	10:00	11:00	Sunny	41
11/10/2025	11:00	12:00	Sunny	45
17/10/2025	14:00	15:00	Sunny	38
17/10/2025	15:00	16:00	Sunny	33
17/10/2025	16:00	17:00	Sunny	36
23/10/2025	14:00	15:00	Cloudy	35
23/10/2025	15:00	16:00	Cloudy	34
23/10/2025	16:00	17:00	Cloudy	34
28/10/2025	9:03	10:03	Cloudy	41
28/10/2025	10:03	11:03	Cloudy	39
28/10/2025	11:03	12:03	Cloudy	35

Figure E3 Graphical Presentation for 1-hr TSP Monitoring at Station DM-1





ANNEX E4

EVENT AND ACTION PLAN FOR AIR
QUALITY

Annex E4 *Event and Action Plan for Air Quality*

Event	Action			
	ET	IEC	ER	Contractor
Action level exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform IEC and ER; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method.	1. Notify Contractor.	1. Rectify any unacceptable practice; 2. Amend working methods if appropriate.
Action level exceedance for two or more consecutive samples	1. Identify source; 2. Inform IEC and ER; 3. Advise the ER on the effectiveness of the proposed remedial measures; 4. Repeat measurements to confirm findings; 5. Increase monitoring frequency to daily; 6. Discuss with IEC and Contractor on remedial actions required; 7. If exceedance continues, arrange meeting with IEC and ER; 8. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ET on the effectiveness of the proposed remedial measures; 5. Supervise Implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Submit proposals for remedial to ER within 3 working days of notification; 2. Implement the agreed proposals; 3. Amend proposal if appropriate.

Event	Action			
	ET	IEC	ER	Contractor
Limit level exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform ER, Contractor and EPD; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily; 5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed remedial measures; 5. Supervise implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Amend proposal if appropriate.
Limit level exceedance for two or more consecutive samples	1. Notify IEC, ER, Contractor and EPD; 2. Identify source; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency to daily; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Arrange meeting with IEC and ER to discuss the remedial actions to be taken; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.