

Environmental Impact Assessment

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August 2023

Maldives: Greater Malé Waste-to-Energy Project – Waste to Energy Plant (Part H)

Appendices

Prepared by the Ministry of Environment, Climate Change and Technology for the Ministry of Finance and the Asian Development Bank. This is an updated version of the draft originally posted in July 2020 available on <https://www.adb.org/projects/documents/mld-51077-003-eia-2>.

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M9	Serranidae	Anyperodon leucogrammicus	Rare
M9	Serranidae	Cephalopholis argus	Rare
M9	Serranidae	Cephalopholis leopardus	Rare
M9	Serranidae	Pseudanthias evansi	Rare
M9	Tetraodontidae	Canthigaster valentini	Rare

Fish Census data M10

Site	Family	Scientific.Name	Abundance
M10	Acanthuridae	Acanthurus leucosternon	Rare
M10	Acanthuridae	Acanthurus nigricauda	Rare
M10	Acanthuridae	Acanthurus thompsoni	Rare
M10	Acanthuridae	Ctenochaetus binotatus	Rare
M10	Acanthuridae	Ctenochaetus striatus	Rare
M10	Acanthuridae	Ctenochaetus truncatus	Rare
M10	Acanthuridae	Naso brevirostris	Rare
M10	Acanthuridae	zebrasoma desjardini	Rare
M10	Acanthuridae	Zebrasoma scopas	Rare
M10	Balistidae	Balistapus undulatus	Rare
M10	Balistidae	Melichthys indicus	Rare
M10	Balistidae	Odonus niger	Rare
M10	Chaetodontidae	Chaetodon falcula	Rare
M10	Chaetodontidae	Chaetodon guttatissimus	Rare
M10	Chaetodontidae	Forcipiger flavissimus	Rare
M10	Chaetodontidae	Hemitaenichthys zoster	Rare
M10	Chaetodontidae	Heniochus diphreutes	Rare
M10	Chaetodontidae	Heniochus pleurotaenia	Rare
M10	Gobiidae	Ptereleotris evides	Rare
M10	Holocentridae	Myripristis kuntee	Rare
M10	Labridae	Labroides dimidiatus	Rare
M10	Labridae	Pseudocheilinus hexataenia	Rare
M10	Labridae	Thalassoma amblycephalum	Rare
M10	Labridae	Thalassoma janseni	Rare
M10	Mullidae	Parupeneus barberinus	Rare
M10	Nemipteridae	Scolopsis bilineata	Rare
M10	Pomacanthidae	Centropyge multispinis	Rare
M10	Pomacentridae	Chromis dimidiata	Rare

M10	Pomacentridae	Chromis dimidiata	Abundant
M10	Pomacentridae	Chromis opercularis	Rare
M10	Pomacentridae	Chromis ternatensis	Rare
M10	Pomacentridae	Chromis weberi	Rare
M10	Pomacentridae	Plectroglyphidodon lacrymatus	Rare
M10	Pomacentridae	Pomacentrus nagasakiensis	Rare
M10	Pomacentridae	Pomacentrus philippinus	Rare
M10	Scaridae	Chlorurus sordidus	Rare
M10	Scaridae	Scarus frenatus	Rare
M10	Scaridae	Scarus niger	Rare
M10	Scorpaenidae	Scorpaenopsis oxycephala	Rare
M10	Serranidae	Cephalopholis argus	Rare
M10	Serranidae	Epinephelus spilotoceps	Rare
M10	Serranidae	Pseudanthias evansi	Rare
M10	Zanclidae	Zanclus cornutus	Rare

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Environmental Monitoring Report - November 2022



REPUBLIC OF MALDIVES

MINISTRY of ENVIRONMENT, CLIMATE CHANGE and TECHNOLOGY

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EMPLOYER

REPRESENTATIVE

FICHTNER

Review & Approval:

EPC CONTRACTOR:



ALKE-ALKATAŞ JV

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Thilafushi

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1. INTRODUCTION

This is the environmental monitoring report of air quality, seawater and ground water quality result conducted in November 2022 prepared as part of the pre-construction & construction stage monitoring of the waste to energy (WtE) facility at Thilafushi, Maldives. Environmental monitoring is a contractual requirement of the DBO in the Environmental Impact Assessment report prepared for the project. This report presents results of the environmental monitoring of air quality, seawater and ground water assessments conducted in November 2022 as part the requirements of the EIA monitoring and the Project Environmental Management Plan that is being developed to meet the anticipated environment impacts, health and safety, as well as to ensure the sustainability of the Project.

2. AMBIENT AIR QUALITY ASSESSMENT

Preconstruction environmental monitoring of the ambient air quality was conducted in November 2022 from 28-30th at seven locations: 6 locations at Thilafushi (AQ1, AQ2, and AQ3 in the EIA and the ASR 2, ASR3 and ASR5 recommended for monitoring in the EIA Report) and one location at Villingili (AQ4) **Figure 1**. PM10, PM2.5, SO2, NO2 and O3 parameters were monitored by using air quality monitoring stations based on sensor technology. TSPs were measured by dust sampling devices conforming to the international HSE-MDHS 14/3. As recommended in the EIA report air quality was measured 24 hours at each station.


Figure 1: Sampling Locations Pre-construction Ambient Air Quality monitoring stations



2.1 Results

Table 1: summary of pre-construction air quality monitoring results for November 2022

Reading Description	Parameters / Results ^b				
	PM10	PM2.5	SO2	NO2	TSP 24 hour average
	µg/m ³	µg/m ³	µg/m ³	µg/m ³	
Thilafushi Downwind (AQ-1) (29th November 2022)					
Minimum	19.1	4.93	8.23	4.28	121.14
Maximum	64.10	21.30	81.78	105.13	
Mean	33.06	10.52	30.78	45.18	
Thilafushi Crosswind (AQ-2) (28th November 2022)					
Minimum	27.1	8.63	00	00	71.75
Maximum	85.5	54.4	00	00	
Mean	44.87	15.85	00	00	
Thilafushi Downwind (AQ-3) (28th November 2022)					
Minimum	17.9	6.57	00	00	208.34
Maximum	81.4	22.6	21.25	44.06	
Mean	29.23	9.25	3.81	9.85	

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Reading Description	Parameters / Results ^b				TSP 24 hour average
	PM10 µg/m ³	PM2.5 µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	
Vilingili Island (AQ-4) (30th November 2022)					
Minimum	20.4	7.51	00	00	63.2
Maximum	59.2	28.6	1.85	23.29	
Mean	30.67	12.06	0.08	4.03	
Thilafushi (ASR2) (29th November 2022)					
Minimum	10.5	3.94	00	00	57.08
Maximum	92.4	35.2	00	00	
Mean	30.45	9.83	00	00	
Thilafushi (ASR3) (30th November 2022)					
Minimum	23.4	4.85	18.77	23.16	119.13
Maximum	92.8	42.4	110.08	113.25	
Mean	40.55	14.84	66.25	52.53	
Thilafushi (ASR5) (30th November 2022)					
Minimum	15.4	6.05	00	00	84.21
Maximum	57.4	25	00	00	
Mean	28.59	10.19	00	00	
WHO Standard (µg/m³)	50.0^a	25.0^a	20.0^a	200.0^b 40.0^c	

a Based on 24-hour averaging period; b Based on 1-hour averaging period; c Based on 1-year averaging period

Ambient air quality results obtained from the preconstruction monitoring in November 2022 indicated mixed results when compared with the WHO guidelines for ambient air quality.

- (i) The hourly mean PM10 and values recorded in all stations are lower than WHO standards for such pollutants which is equivalent to 50 µg/m³ based on 24 hour averaging period. While Pm2.5 slightly exceeds WHO standards at station AQ2 and is just below the borderline at station ASR3. At station AQ1 and ASR3, SO₂ and NO₂ levels exceeds WHO standard for these two substances which is 25 and 20 subsequently.

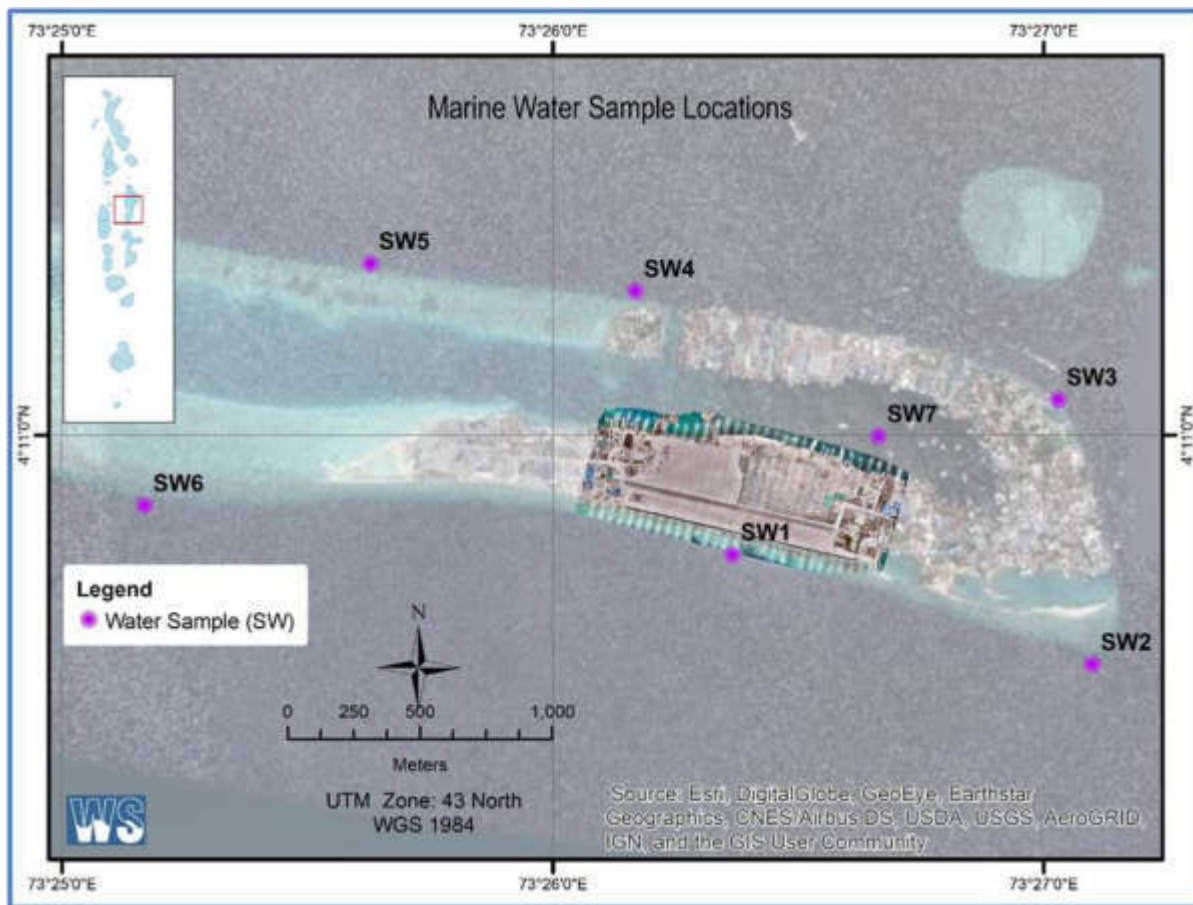
According to air quality measurement data of November 2022, the background air quality values comply with air quality standards.

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3. MARINE WATER QUALITY

Marine water quality monitoring of the pre-construction stage, sea water was sampled on 29th November 2022 from the same 7 locations in the original EIA report **Figure 2** after establishment of GPS locations obtained from the report. Laboratory analysis of sea water were done for heavy metals (As, Cr, Cu, Ni, Pb, Zn, Hg, Cd), Ammonia, nitrates, PH, Turbidity, Salinity, BOD Oil and grease from Bureau Veritas laboratory, Sri Lanka. The samples were carried to Sri Lanka and delivered to the laboratory within 24 hours from field sampling, All the samples are kept in ice boxes to maintain the appropriate temperature and conserve the sample. In-situ recording of pH, Temperature DO and EC for each sample conducted by using a handheld Hach SensION +MM156 water quality measurement meter. These results show compliance with the Maldives Marine Monitoring Standards. Copies of the laboratory analyses are consolidated in Appendix 1.

Figure 2: Marine Water Quality Monitoring Sampling Locations



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3.1 Results

Summary of results of marine water samples collected on 29th November 2022 is given in

Table 2 and original Standards. The results show PH levels in all stations higher than the notational standards and the Total Suspended Solids higher than the national standard in stations 3,4, and 7 Copies of the laboratory analyses are consolidated in Annex 1

Table 2: Pre-construction Sea water quality monitoring results November 2022 from sites SW1 to SW7


Parameters	Sites Date of Sampling: 03 July 2018							LOQ ¹	Unit	Test Method	Corresponding Maldivian Marine Monitoring Standard	
	SW 1	SW2	SW3	SW4	SW5	SW6	SW7				Parameter	Reference
Temperature at receiving (°C)	29.4	28.7	28.9	28.9	29.6	29.3	30.1	-	°C	Hatch Multimeter	18 – 32 °C	GBRMPA, 2009 ²
Biological Oxygen Demand (BOD)	2	2	2	1	2	3	2	< 1 mg/l	mg/l	APHA 23 rd Edition – 5210D	<2mg/l	
Dissolved Oxygen (DO)	7.24	7.03	7.14	7.01	7.03	7.02	7.1			Hatch Multimeter		
Total Suspended Solids	4	3	6	6	3	3	8	-	mg/l	APHA 23 rd ed – 5520 B	3 – 5 NTU (max)	
pH at 24°C	8.56	8.52	8.51	8.49	8.41	8.55	8.30	-	-	Hatch Multimeter	8 – 8.3	
Nitrate (NO ₃ ⁻)	0.3	0.5	0.3	0.3	0.3	0.4	0.4	-	mg/l	APHA 4500 – NO ₃ -B	< 5mg /l	
Oil & Grease	ND	ND	ND	ND	ND	ND	ND	2	mg/l	APHA 5520B	n/a	
Free Ammonia (NH ₃)	ND	ND	ND	ND	ND	ND	ND	0.02	mg/l	SLS 614 Appendix A:2013	2 – 3 mg/l (max)	
Salinity	35	35	36	36	35	33	36	-	ppt	Salinity refractometer	32 – 42 ppt	GBRMPA, 2009
Heavy Metals												
Arsenic (As)	ND	ND	ND	ND	ND	ND	ND	0.001	mg/l	CPSD-AN-00581-MTHD with ICP-MS	n/a	
Cadmium (Cd)	ND	ND	ND	ND	ND	ND	ND	0.0001	mg/l		n/a	
Lead (Pb)	ND	ND	ND	ND	ND	ND	ND	0.001	mg/l		n/a	
Mercury (Hg)	ND	ND	ND	ND	ND	ND	ND	0.00005	mg/l		n/a	
Nickel (Ni)	ND	ND	ND	ND	ND	ND	ND	0.001	mg/l		n/a	
Copper (Cu)	ND	ND	ND	ND	ND	ND	ND	0.001	mg/l		n/a	
Zinc (Zn)	ND	ND	ND	ND	ND	ND	ND	0.001	mg/l		n/a	
Chromium (Cr)	ND	ND	ND	ND	ND	ND	ND	0.001	mg/l		n/a	

¹ Limit of Quantitation: the lowest concentration of the contaminant that can be reliably measured

² Great Barrier Reef Marine Park Authority (2009) Outlook Report 2009

Table 3: Field recordings of sea water quality parameters recorder on 16th June 2022

Parameter	SW1	SW2	SW3	SW4	SW5	SW6	SW7
pH	8.56	8.52	8.51	8.49	8.41	8.55	8.30
EC (µs/cm)	44.9	44.8	44.9	45.3	44.6	44.7	45.4
DO (mg/l)	7.24	7.03	7.14	7.01	7.03	7.02	7.1
Temperature °C	29.4	28.7	28.9	29.6	29.6	29.3	30.1

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4. GROUNDWATER QUALITY

Environmental monitoring of ground water quality of pre-construction period was conducted on 30th November 2022. Water samples were collected from 7 monitoring stations. Samples were not able to collect from location 5 which is located in the WAMCO. Water was not able to obtained from station 5 because no water found in the well at both low and high tides. It seems that somehow the sample well was not properly made so the well is somehow filled with sediment. The well was constructed by MTCC and assigned to the EPC contractor to obtain samples for environmental monitoring. Therefore, it is suggested to make a new well in the area.

Figure 3: Ground water sampling locations for pre-construction monitoring stations



For each location, the samples were collected from mid-water level carried for laboratory testing in Sri Lanka. General sampling procedure involves washing the sampling bottle glass/ with water from the sampling points. For microbial tests, samples were collected in sterile glass bottles and tested in the MWSC laboratory.

In-situ recording of pH, Temperature DO and EC for each sample conducted by using a handheld Hach SensION +MM156 water quality measurement meter.

4.1 Results

Summary of results are given in

Table 4 and the laboratory analysis original sheets are given in Annex 2.

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Table 4: Preconstruction Groundwater Quality baseline assessment Test Results


Parameters	Results								LoQ	Unit	Test Method
	GW1	GW2	GW3	GW4	GW5	GW6	GW7	GW8			
Physical Appearance	Clear with particles	Clear with particles	Pale yellow with particles	Pale yellow with particles		Clear with particles	Clear with particles	Clear with particles	-	-	Visual
BOD	3	3	3			6	3	4	-	mg/l	HACH Method 8043
Nitrate*	0.3	3.9	4.6			0.3	1	0.1	-	mg/l	HACH Method 8171
COD*									0.05	mg/l	HACH Method 8000
DO	8.87	8.92	9.07	8.2		8.6	9.02	8.81	-	mg/l	In-house Test method (Adapted from HACH BOD LDO® Probe (Model LBOD10101) manual)
Chloride	99	21100	3750			188	14	49			In-house Test method (Adapted from M926 Chloride analyzer Operation Manual)
Sulphate	<10(LoQ)10 mg/L	3050	225			95	16	41			HACH Method 8051
Phosphate	0.15	0.10	0.32			0.15	0.23	0.06			HACH Method 8048
Turbidity*	0.4	0.2	0.3	0.1		0.5	2.8	0.5	-	NTU	APHA 23rd ed: 2017: 2130 B
pH at 25°C*	7.3	7.2	8.5	7.6		7.6	7.5	7.6	-	mg/l	APHA 23rd ed: 2017 :4500H+
Total Coliform	>2420 (01/12/2022 15:00)	3(01/12/2022 15:00)	>2420 (01/12/2022 15:00)			>2420 (01/12/2022 15:00)	>2420 (01/12/2022 15:00)	>2420 (01/12/2022 15:00)			Colilert®-18/Quantitray®2000
Iron (as Fe) *	ND	ND	ND	ND		ND	0.02	ND	-	mg/l	CPSD-AN-0581:2019-V15by ICP-MS

Parameters	Results								LoQ	Unit	Test Method
	GW1	GW2	GW3	GW4	GW5	GW6	GW7	GW8			
Manganese (as Mn)	ND	ND	ND	ND		0.018	ND	ND	-	mg/l	CPSD-AN-0581:2019-V15by ICP-MS
Arsenic (as As)	ND	ND	ND	ND		ND	ND	ND	0.001	mg/l	CPSD-AN-0581:2019-V15by ICP-MS
Total Suspended Solids*	ND	ND	ND	ND		6	38	13	-	mg/l	APHA 23rd ed: 20 7: 2540 C
Electrical Conductivity at 25°C*	481	58000	10800	5700		1206	571	582	-	mS/cm	APHA 23rd ed: 20 7: 2510 B
Cadmium (as Cd)*	ND	ND	ND	ND		ND	ND	ND	0.0001	mg/l	CPSD-AN-00581:2019-V15by ICP-MS
Lead (as Pb)"	ND	ND	ND	ND		ND	ND	ND	0.001	mg/l	CPSD-AN-00581:2019-V15by ICP-MS
Mercury (as Hg)	ND	ND	ND	ND		ND	ND	ND		mg/l	CPSD-AN-00581:2019-V15by ICP-MS
Oil and Grease	ND	ND	ND	ND		ND	ND	ND		mg/l	APHA 23rd ed: 20 7: 5520 B
Polynuclear Aromatic Hydrocarbons*											
Naphthalene	ND	ND	ND	ND		ND	ND	ND	1	µg/l	CPSD -AN-00576
Acenaphthylene	ND	ND	ND	ND		ND	ND	ND	1	µg/l	CPSD -AN-00576
Acenaphthene	ND	ND	ND	ND		ND	ND	ND	1	µg/l	CPSD -AN-00576
Fluorene	ND	ND	ND	ND		ND	ND	ND	1	µg/l	CPSD -AN-00576
Phenanthrene	ND	ND	ND	ND		ND	ND	ND	1	µg/l	CPSD -AN-00576
Anthracene	ND	ND	ND	ND		ND	ND	ND	1	µg/l	CPSD-AN-00576
Fluoranthene	ND	ND	ND	ND		ND	ND	ND	1	µg/l	CPSD -AN-00576
Pyrene	ND	ND	ND	ND		ND	ND	ND	1	µg/l	CPSD -AN-00576
Benzo[a] anthracene	ND	ND	ND	ND		ND	ND	ND	1	µg/l	CPSD -AN-00576
Chrysene	ND	ND	ND	ND		ND	ND	ND	1	µg/l	CPSD -AN-00576
Benzo[a]pyrene	ND	ND	ND	ND		ND	ND	ND	1	µg/l	CPSD -AN-00576
Benzo[e]pyrene	ND	ND	ND	ND		ND	ND	ND	1	µg/l	CPSD -AN-00576
Indeno[1,2,3-cd]pyrene	ND	ND	ND	ND		ND	ND	ND	1	µg/l	CPSD -AN-00576
Dibenzo [a,h]anthracene	ND	ND	ND	ND		ND	ND	ND	1	µg/l	CPSD -AN-00576
Benzo[g,h,i]perylene	ND	ND	ND	ND		ND	ND	ND	1	µg/l	CPSD -AN-00576
Benzo[b]fluoranthene	ND	ND	ND	ND		ND	ND	ND	1	µg/l	CPSD -AN-00576
Benzo[i]fluoranthene	ND	ND	ND	ND	ND	ND	ND	ND	1	µg/l	CPSD -AN-00576
Benzo[k]fluoranthene	ND	ND	ND	ND	ND	ND	ND	ND	1	µg/l	CPSD -AN-00576

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Table 5: Field recordings of Ground water quality parameters recorder on 30th November 2022

Parameter	GW1	GW2	GW3	GW4	GW5	GW6	GW7	GW8
pH	8.49	7.69	8.70	8.15		8	8.19	8.20
EC (µs/cm)	470	44500	10550	1514		1303	534	551
DO (mg/l)	8.87	8.92	9.07	8.2		8.6	9.02	8.81
Temperature °C	27.5	29.9	29.3	28.4		29.9	30.8	31.0

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ANNEX 1: STANDARD LABORATORY REPORTS OF SEAWATER ANALYSIS



TEST REPORT



Report No: (7422)332-0111

Dec 13, 2022

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Attn: Servet Burak Ozdemir

Customer: Alke – Alkatay Joint Venture (Pvt) Ltd
Address : H.H. Moomiyaage, 5A, Asaree Hingun 20265, K. Male', Maldives
Date of Sample Received: Nov 30, 2022
Date of Testing Started: Nov 30, 2022
Date of Testing Completed: Dec 13, 2022

Sample Description: **Sample Received as:**
 A water samples contained in sealed glass & plastic bottles

Sample Identified by the Client as:
 SW-01
 1.5L Plastic Bottle, 1L Glass Bottle & 0.5L Plastic Bottle

Sample Drawn By BVCPS NO

Photo of the Submitted Samples



**Bureau Veritas Consumer
Products Services Lanka (Pvt)
Ltd.**

No. 570, Galle Road, Katubeddi, Morutera, Sri Lanka
 Tel: (9411) 230111-115 (dedicated line), Fax: (9411)
 112622196 & 199
 Email: trqps.lanka@lv.bureauveritas.com

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Dec 13, 2022

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TEST RESULTS

No.	Parameters	Results	LOQ	Unit	Test Method
1	Free Ammonia (as NH ₃)*	ND	0.02	mg/L	SLS 614 Appendix A: 2013
2	Biological Oxygen Demand (BOD ₅) @ 20°C	2	-	mg/L	APHA 23rd ed: 2017 : 5210D
3	Total Suspended Solids (TSS)	4	-	mg/L	APHA 23rd ed: 2017 : 2540D
4	Salinity*	35	-	‰	By salinity refractometer
5	Nitrate (as NO ₃)*	0.3	-	mg/L	APHA 23rd ed: 2017: 4500 -NO ₃ - B
6	Oil & Grease	ND	2.0	mg/L	APHA 23rd ed: 2017 :5520B
7	Arsenic (as As)	ND	0.001	mg/L	CPSD-AN-00581: 2019 V15 by ICP-MS
8	Copper (as Cu)	ND	0.001	mg/L	
9	Nickel (as Ni)	ND	0.001	mg/L	
10	Cadmium (as Cd)	ND	0.0001	mg/L	
11	Total Chromium (as Cr)	ND	0.001	mg/L	
12	Lead (as Pb)	ND	0.001	mg/L	
13	Mercury (as Hg)	ND	0.00005	mg/L	
14	Zinc (as Zn)	ND	0.001	mg/L	

*Test not covered ISO 17025: 2017 by Sri Lanka Accreditation Board for conformity assessment.

NOTE:

APHA: American Public Health Association, ND: Not Detected,

LOQ: Limit of Quantification, ‰ : Parts per thousand,

mg/l: milligrams per liter, ICP-MS: Inductively Coupled Plasma Mass Spectrometry.

Contact information for this report (Technical and General Inquiries and Feedback)

GENERAL INQUIRIES:		
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TECHNICAL INQUIRIES:		
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FEED BACK:		
KUMUDINI RATHNAYAKE – ASST. QA MANAGER	TEL: +94 768 229 455	E-MAIL: kumudinie.rathnayake@bureauveritas.com

REVIEWED BY: SHASHI MANDJ

BUREAU VERITAS CONSUMER PRODUCTS SERVICES LANKA (PVT) LTD.
AUTHORIZED SIGNATORY

APPROVED BY: 
RUWANI AMARASINGHE
ASSISTANT MANAGER –
FOOD & MICROBIOLOGY LABORATORY

END OF THE REPORT



TEST REPORT



Report No: (7422)334-0390

Dec 13, 2022

Page 1 of 2

Attn: Servet Burak Ozdemir

Customer: Alke – Alkatas Joint Venture (Pvt) Ltd
Address : H.H. Moomiyaage, 5A, Asaree Hingun 20265, K. Male', Maldives
Date of Sample Received: Nov 30, 2022
Date of Testing Started: Nov 30, 2022
Date of Testing Completed: Dec 13, 2022
Sample Description: **Sample Received as:**
 A water samples contained in sealed glass & plastic bottles

Sample Identified by the Client as:
 SW-02
 1.5L Plastic Bottle, 1L Glass Bottle & 0.5L Plastic Bottle

Sample Drawn By BVCPs NO

Photo of the Submitted Samples



**Bureau Veritas Consumer
Products Services Lanka (Pvt)
Ltd.**

No. 570, Galle Road, Katubeddi, Morotown, Sri Lanka
 Tel: (9411) 2350111-115 (dedicated lines), Fax: (9411)
 112622194 & 1199
 Email: svpn.lanka@bureauveritas.com

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TEST REPORT



Report No: (7422)334-0390

Dec 13, 2022

Page 2 of 2

TEST RESULTS

No.	Parameters	Results	LOQ	Unit	Test Method
1	Free Ammonia (as NH ₃)*	ND	0.02	mg/L	SLS 614 Appendix A: 2013
2	Biological Oxygen Demand (BOD ₅) @ 20°C	2	-	mg/L	APHA 23rd ed: 2017 : 5210D
3	Total Suspended Solids (TSS)	3	-	mg/L	APHA 23rd ed: 2017 : 2540D
4	Salinity*	35	-	‰	By salinity refractometer
5	Nitrate (as NO ₃)*	0.5	-	mg/L	APHA 23rd ed: 2017: 4500 -NO ₃ - B
6	Oil & Grease	ND	2.0	mg/L	APHA 23rd ed: 2017 :5520B
7	Arsenic (as As)	ND	0.001	mg/L	CPSD-AN-00581: 2019 V15 by ICP-MS
8	Copper (as Cu)	ND	0.001	mg/L	
9	Nickel (as Ni)	ND	0.001	mg/L	
10	Cadmium (as Cd)	ND	0.0001	mg/L	
11	Total Chromium (as Cr)	ND	0.001	mg/L	
12	Lead (as Pb)	ND	0.001	mg/L	
13	Mercury (as Hg)	ND	0.00005	mg/L	
14	Zinc (as Zn)	ND	0.001	mg/L	

*Test not covered ISO 17025: 2017 by Sri Lanka Accreditation Board for conformity assessment.

NOTE:

APHA: American Public Health Association, ND: Not Detected,

LOQ: Limit of Quantification, ‰ : Parts per thousand,

mg/l: milligrams per liter, ICP-MS: Inductively Coupled Plasma Mass Spectrometry.

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KUMUDINI RATHNAYAKE – ASST. QA MANAGER	TEL: +94 768 229 455	E-MAIL: kumudinie.rathnayake@bureauveritas.com

REVIEWED BY: SHASHI MANDJ

BUREAU VERITAS CONSUMER PRODUCTS SERVICES LANKA (PVT) LTD.
AUTHORIZED SIGNATORY



APPROVED BY: _____
RUWANI AMARASINGHE
ASSISTANT MANAGER –
FOOD & MICROBIOLOGY LABORATORY

END OF THE REPORT

	ENVIRONMENTAL MONITORING REPORT – NOVEMBER 2022	Document No	MDV-AAK-CEMPX-XX-RP-XXX-0001-000
		Rev. No / Date	00/31.12.2023
		Page No:	18/77



TEST REPORT



Report No: (7422)334-0387

Dec 14, 2022

Page 1 of 2

Attn: Servet Burak Ozdemir

Customer: Alke – Alkatag Joint Venture (Pvt) Ltd
Address : H.H. Moomiyaage, 5A, Asaree Hingun 20265, K. Male', Maldives
Date of Sample Received: Nov 30, 2022
Date of Testing Started: Nov 30, 2022
Date of Testing Completed: Dec 14, 2022
Sample Description: **Sample Received as:**
A water samples contained in sealed glass & plastic bottles

Sample Identified by the Client as:
SW-03
1.5L Plastic Bottle, 1L Glass Bottle & 0.5L Plastic Bottle

Sample Drawn By BVCPS NO

Photo of the Submitted Samples



Report Number
(7422)334-0387



Report Number
(7422)334-0387



Report Number
(7422)334-0387

Bureau Veritas Consumer Products Services Lanka (Pvt) Ltd.

No. 370, Galle Road, Katubedda, Morutera, Sri Lanka
Tel: (9411) 2550111-115 (dedicated lines), Fax: (9411) 11262196 & 119
Email: help.lanka@bureauveritas.com

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TEST REPORT



Report No: (7422)334-0387

Dec 14, 2022

Page 2 of 2

TEST RESULTS

No.	Parameters	Results	LOQ	Unit	Test Method
1	Free Ammonia (as NH ₃)*	ND	0.02	mg/L	SLS 614 Appendix A: 2013
2	Biological Oxygen Demand (BOD ₅) @ 20°C	2	-	mg/L	APHA 23rd ed: 2017 : 5210D
3	Total Suspended Solids (TSS)	6	-	mg/L	APHA 23rd ed: 2017 : 2540D
4	Salinity*	36	-	‰	Salinity-Refractometer
5	Nitrate (as NO ₃)*	0.3	-	mg/L	APHA 23rd ed: 2017: 4500 -NO ₃ - E
6	Oil & Grease	ND	2.0	mg/L	APHA 23rd ed: 2017 :5520B
7	Arsenic (as As)	ND	0.001	mg/L	CPSD-AN-00581: 2019 V15 by ICP-MS
8	Copper (as Cu)	ND	0.001	mg/L	
9	Nickel (as Ni)	ND	0.001	mg/L	
10	Cadmium (as Cd)	ND	0.0001	mg/L	
11	Total Chromium (as Cr)	ND	0.001	mg/L	
12	Lead (as Pb)	ND	0.001	mg/L	
13	Mercury (as Hg)	ND	0.00005	mg/L	
14	Zinc (as Zn)	ND	0.001	mg/L	

*Test not covered ISO 17025: 2017 by Sri Lanka Accreditation Board for conformity assessment.

NOTE:

APHA: American Public Health Association, ND: Not Detected,

LOQ: Limit of Quantification, µm: micrometer,

mg/l: milligrams per liter, ‰: Parts per thousand.

Contact information for this report (Technical and General Inquiries and Feedback)

GENERAL INQUIRIES:		
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FEED BACK:		
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REVIEWED BY: SHASHI MANDJ

BUREAU VERITAS CONSUMER PRODUCTS SERVICES LANKA (PVT) LTD.
AUTHORIZED SIGNATORY



APPROVED BY: _____
RUWANI AMARASINGHE
ASSISTANT MANAGER –
FOOD & MICROBIOLOGY LABORATORY

END OF THE REPORT



TEST REPORT



Report No: (7422)334-0394

Dec 13, 2022

Page 1 of 2

Attn: Servet Burak Ozdemir

Customer: Alke – Alkatas Joint Venture (Pvt) Ltd
Address : H.H. Moomiyaage, 5A, Asaree Hingun 20265, K. Male', Maldives
Date of Sample Received: Nov 30, 2022
Date of Testing Started: Nov 30, 2022
Date of Testing Completed: Dec 13, 2022
Sample Description: **Sample Received as:**
 A water samples contained in sealed glass & plastic bottles

Sample Identified by the Client as:
 SW-04
 1.5L Plastic Bottle, 1L Glass Bottle & 0.5L Plastic Bottle

Sample Drawn By BVCPS NO

Photo of the Submitted Samples



**Bureau Veritas Consumer
Products Services Lanka (Pvt)
Ltd.**

No. 570, Galle Road, Katubedda, Morotawa, Sri Lanka
 Tel: (9411) 2350111-115 (dedicated lines), Fax: (9411)
 112622194 & 199
 Email: bvcp.lanka@bureauveritas.com

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TEST REPORT



Report No: (7422)334-0394

Dec 13, 2022

Page 2 of 2

TEST RESULTS

No.	Parameters	Results	LOQ	Unit	Test Method
1	Free Ammonia (as NH ₃)*	ND	0.02	mg/L	SLS 614 Appendix A: 2013
2	Biological Oxygen Demand (BOD ₅) @ 20°C	1	-	mg/L	APHA 23rd ed: 2017 : 5210D
3	Total Suspended Solids (TSS)	6	-	mg/L	APHA 23rd ed: 2017 : 2540D
4	Salinity*	36	-	‰	By salinity refractometer
5	Nitrate (as NO ₃)*	0.3	-	mg/L	APHA 23rd ed: 2017: 4500 -NO ₃ - B
6	Oil & Grease	ND	2.0	mg/L	APHA 23rd ed: 2017 :5520B
7	Arsenic (as As)	ND	0.001	mg/L	CPSD-AN-00581: 2019 V15by ICP-MS
8	Copper (as Cu)	ND	0.001	mg/L	
9	Nickel (as Ni)	ND	0.001	mg/L	
10	Cadmium (as Cd)	ND	0.0001	mg/L	
11	Total Chromium (as Cr)	ND	0.001	mg/L	
12	Lead (as Pb)	ND	0.001	mg/L	
13	Mercury (as Hg)	ND	0.00005	mg/L	
14	Zinc (as Zn)	ND	0.001	mg/L	

*Test not covered ISO 17025: 2017 by Sri Lanka Accreditation Board for conformity assessment.

NOTE:

APHA: American Public Health Association, ND: Not Detected,

LOQ: Limit of Quantification, ‰ : Parts per thousand,

mg/l: milligrams per liter, ICP-MS- Inductively Coupled Plasma Mass Spectrometry.

Contact information for this report (Technical and General Inquiries and Feedback)

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TECHNICAL INQUIRIES:		
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FEED BACK:		
KUMUDINI RATHNAYAKE – ASST. QA MANAGER	TEL: +94 768 229 455	E-MAIL: kumudinie.rathnayake@bureauveritas.com

REVIEWED BY: SHASHI MANDJ

BUREAU VERITAS CONSUMER PRODUCTS SERVICES LANKA (PVT) LTD.
AUTHORIZED SIGNATORY

APPROVED BY: 
RUWANI AMARASINGHE
ASSISTANT MANAGER –
FOOD & MICROBIOLOGY LABORATORY.

END OF THE REPORT



TEST REPORT



Report No: (7422)334-0383

Dec 13, 2022

Page 1 of 2

Attn: Servet Burak Ozdemir

Customer: Alke – Alkatash Joint Venture (Pvt) Ltd
Address : H.H. Moomiyaage, 5A, Asaree Hingun 20265, K. Male', Maldives
Date of Sample Received: Nov 30, 2022
Date of Testing Started: Nov 30, 2022
Date of Testing Completed: Dec 13, 2022
Sample Description: **Sample Received as:**
 A water samples contained in sealed glass & plastic bottles

Sample Identified by the Client as:
 SW-05
 1.5L Plastic Bottle, 1L Glass Bottle & 0.5L Plastic Bottle

Sample Drawn By BVCPs NO

Photo of the Submitted Samples



**Bureau Veritas Consumer
Products Services Lanka (Pvt)
Ltd.**

No. 570, Galle Road, Katubeddi, Morotown, Sri Lanka
 Tel: (9411) 2350111-115 (dedicated lines), Fax: (9411)
 112622194 & 199
 Email: svpn.lanka@bureauveritas.com

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TEST REPORT



Report No: (7422)334-0383

Dec 13, 2022

Page 2 of 2

TEST RESULTS

No.	Parameters	Results	LOQ	Unit	Test Method
1	Free Ammonia (as NH ₃)*	ND	0.02	mg/L	SLS 614 Appendix A: 2013
2	Biological Oxygen Demand (BOD ₅) @ 20°C	2	-	mg/L	APHA 23rd ed: 2017 : 5210D
3	Total Suspended Solids (TSS)	3	-	mg/L	APHA 23rd ed: 2017 : 2540D
4	Salinity*	35	-	‰	By salinity refractometer
5	Nitrate (as NO ₃)*	0.3	-	mg/L	APHA 23rd ed: 2017: 4500 -NO ₃ - B
6	Oil & Grease	ND	2.0	mg/L	APHA 23rd ed: 2017 :5520B
7	Arsenic (as As)	ND	0.001	mg/L	CPSD-AN-00581: 2019 V15 by ICP-MS
8	Copper (as Cu)	ND	0.001	mg/L	
9	Nickel (as Ni)	ND	0.001	mg/L	
10	Cadmium (as Cd)	ND	0.0001	mg/L	
11	Total Chromium (as Cr)	ND	0.001	mg/L	
12	Lead (as Pb)	ND	0.001	mg/L	
13	Mercury (as Hg)	ND	0.00005	mg/L	
14	Zinc (as Zn)	ND	0.001	mg/L	

*Test not covered ISO 17025: 2017 by Sri Lanka Accreditation Board for conformity assessment.

NOTE:

APHA: American Public Health Association, ND: Not Detected,

LOQ: Limit of Quantification, ‰ : Parts per thousand,

mg/l: milligrams per liter, ICP-MS: Inductively Coupled Plasma Mass Spectrometry.

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REVIEWED BY: SHASHI MANDJ

BUREAU VERITAS CONSUMER PRODUCTS SERVICES LANKA (PVT) LTD.
AUTHORIZED SIGNATORY

APPROVED BY: 
RUWANI AMARASINGHE
ASSISTANT MANAGER –
FOOD & MICROBIOLOGY LABORATORY

END OF THE REPORT



TEST REPORT



Report No: (7422)334-0398

Dec 14, 2022

Page 1 of 2

Attn: Servet Burak Ozdemir

Customer: Alke – Alkatag Joint Venture (Pvt) Ltd
Address : H.H. Moomiyaage, 5A, Asaree Hingun 20265, K. Male', Maldives
Date of Sample Received: Nov 30, 2022
Date of Testing Started: Nov 30, 2022
Date of Testing Completed: Dec 14, 2022
Sample Description: **Sample Received as:**
 A water samples contained in sealed glass & plastic bottles

Sample Identified by the Client as:
 SW-06
 1.5L Plastic Bottle, 1L Glass Bottle & 0.5L Plastic Bottle

Sample Drawn By BVCPs NO

Photo of the Submitted Samples



**Bureau Veritas Consumer
Products Services Lanka (Pvt)
Ltd.**

No. 370, Galle Road, Kambokka, Morutena, Sri Lanka
 Tel: (9411) 2550111-115 (dedicated lines), Fax: (9411)
 112622196 & 199
 Email: bvcp.lanka@bureauveritas.com

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TEST REPORT



Report No: (7422)334-0398

Dec 14, 2022

Page 2 of 2

TEST RESULTS

No.	Parameters	Results	LOQ	Unit	Test Method
1	Free Ammonia (as NH ₃)*	ND	0.02	mg/L	SLS 614 Appendix A: 2013
2	Biological Oxygen Demand (BOD ₅) @ 20°C	3	-	mg/L	APHA 23rd ed: 2017 : 5210D
3	Total Suspended Solids (TSS)	3	-	mg/L	APHA 23rd ed: 2017 : 2540D
4	Salinity*	33	-	‰	Salinity-Refractometer
5	Nitrate (as NO ₃)*	0.4	-	mg/L	APHA 23rd ed: 2017: 4500 -NO ₃ - E
6	Oil & Grease	ND	2.0	mg/L	APHA 23rd ed: 2017 :5520B
7	Arsenic (as As)	ND	0.001	mg/L	CPSD-AN-00581: 2019 V15 by ICP-MS
8	Copper (as Cu)	ND	0.001	mg/L	
9	Nickel (as Ni)	ND	0.001	mg/L	
10	Cadmium (as Cd)	ND	0.0001	mg/L	
11	Total Chromium (as Cr)	ND	0.001	mg/L	
12	Lead (as Pb)	ND	0.001	mg/L	
13	Mercury (as Hg)	ND	0.00005	mg/L	
14	Zinc (as Zn)	ND	0.001	mg/L	

*Test not covered ISO 17025: 2017 by Sri Lanka Accreditation Board for conformity assessment.

NOTE:

APHA: American Public Health Association, ND: Not Detected,

LOQ: Limit of Quantification, µm: micrometer,

mg/l: milligrams per liter, ‰: Parts per thousand.

Contact information for this report (Technical and General Inquiries and Feedback)


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FEED BACK:		
KUMUDINI RATHNAYAKE – ASST. QA MANAGER	TEL: +94 768 229 455	E-MAIL: kumudinie.rathnayake@bureauveritas.com

REVIEWED BY: SHASHI MANDJ

BUREAU VERITAS CONSUMER PRODUCTS SERVICES LANKA (PVT) LTD.
AUTHORIZED SIGNATORY

APPROVED BY: 
RUWANI AMARASINGHE
ASSISTANT MANAGER –
FOOD & MICROBIOLOGY LABORATORY

END OF THE REPORT

	ENVIRONMENTAL MONITORING REPORT – NOVEMBER 2022	Document No	MDV-AAK-CEMPX-XX- RP-XXX-0001-000
		Rev. No / Date	00/31.12.2023
		Page No:	26/77



TEST REPORT



Report No: (7422)334-0401

Dec 14, 2022

Page 1 of 2

Attn: Servet Burak Ozdemir

Customer: Alke – Alkatag Joint Venture (Pvt) Ltd
Address : H.H. Moomiyaage, 5A, Asaree Hingun 20265, K. Male', Maldives
Date of Sample Received: Nov 30, 2022
Date of Testing Started: Nov 30, 2022
Date of Testing Completed: Dec 14, 2022
Sample Description: **Sample Received as:** A water samples contained in sealed glass & plastic bottles

Sample Identified by the Client as:
 SW-07
 1.5L Plastic Bottle, 1L Glass Bottle & 0.5L Plastic Bottle

Sample Drawn By BVCPSP NO

Photo of the Submitted Samples



Report Number (7422)334-0401



Report Number (7422)334-0401



Report Number (7422)334-0401

Bureau Veritas Consumer Products Services Lanka (Pvt) Ltd.

No. 370, Galle Road, Kambedda, Morutena, Sri Lanka
 Tel: (9411) 2350111-115 (dedicated lines), Fax: (9411) 11262196 & 119
 Email: bvcpn.lanka@bureauveritas.com

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TEST REPORT



Report No: (7422)334-0401

Dec 14, 2022

Page 2 of 2

TEST RESULTS

No.	Parameters	Results	LOQ	Unit	Test Method
1	Free Ammonia (as NH ₃)*	ND	0.02	mg/L	SLS 614 Appendix A: 2013
2	Biological Oxygen Demand (BOD ₅) @ 20°C	2	-	mg/L	APHA 23rd ed: 2017 : 5210D
3	Total Suspended Solids (TSS)	8	-	mg/L	APHA 23rd ed: 2017 : 2540D
4	Salinity*	36	-	‰	Salinity-Refractometer
5	Nitrate (as NO ₃ -)*	0.4	-	mg/L	APHA 23rd ed: 2017: 4500 -NO ₃ - B
6	Oil & Grease	ND	2.0	mg/L	APHA 23rd ed: 2017 :5520B
7	Arsenic (as As)	ND	0.001	mg/L	CPSD-AN-00581: 2019 V15 by ICP-MS
8	Copper (as Cu)	ND	0.001	mg/L	
9	Nickel (as Ni)	ND	0.001	mg/L	
10	Cadmium (as Cd)	ND	0.0001	mg/L	
11	Total Chromium (as Cr)	ND	0.001	mg/L	
12	Lead (as Pb)	ND	0.001	mg/L	
13	Mercury (as Hg)	ND	0.00005	mg/L	
14	Zinc (as Zn)	ND	0.001	mg/L	

*Test not covered ISO 17025: 2017 by Sri Lanka Accreditation Board for conformity assessment.

NOTE:

APHA: American Public Health Association, ND: Not Detected,

LOQ: Limit of Quantification, µm: micrometer,

mg/l: milligrams per liter, ‰: Parts per thousand.

Contact information for this report (Technical and General Inquiries and Feedback)

GENERAL INQUIRIES:		
JAYAMEE DISSANAYAKE	TEL: +94 768 229 495	E-MAIL: envlab.lanka@bureauveritas.com
TECHNICAL INQUIRIES:		
RUWANI AMARASINGHE	TEL: +94 768 229 457	E-MAIL: ruwani.amarasinghe@bureauveritas.com
FEED BACK:		
KUMUDINI RATHNAYAKE – ASST. QA MANAGER	TEL: +94 768 229 455	E-MAIL: kumudinie.rathnayake@bureauveritas.com

REVIEWED BY: SHASHI MANDU

BUREAU VERITAS CONSUMER PRODUCTS SERVICES LANKA (PVT) LTD.
AUTHORIZED SIGNATORY

APPROVED BY: 
RUWANI AMARASINGHE
ASSISTANT MANAGER –
FOOD & MICROBIOLOGY LABORATORY

END OF THE REPORT

	ENVIRONMENTAL MONITORING REPORT – NOVEMBER 2022	Document No	MDV-AAK-CEMPX-XX- RP-XXX-0001-000
		Rev. No / Date	00/31.12.2023
		Page No:	28/77

Annex 2: Standard Laboratory reports of Ground water analysis




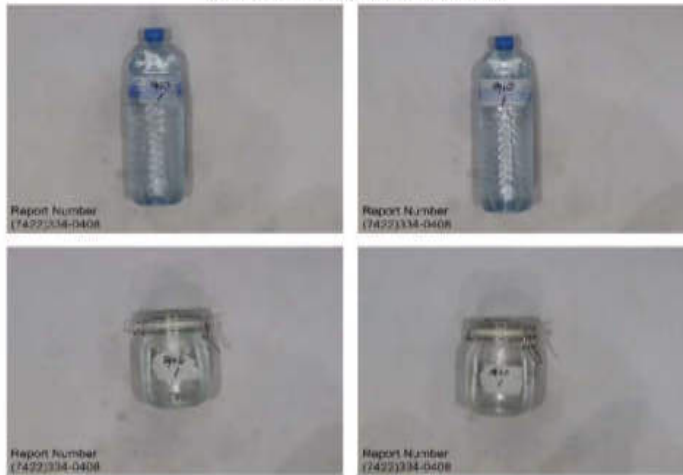
 BUREAU VERITAS	<h1 style="font-size: 2em;">TEST REPORT</h1>	 
Report No: (7422)334-0408		Dec 22, 2022
		Page 1 of 3
Attn: Servet Burak Ozdemir		
Customer:	Alke – Alkatas Joint Venture (Pvt) Ltd	
Address :	H.H. Moomiyaaqe, 5A, Asaree Hingun 20265, K. Male', Maldives	
Date of Sample Received:	Nov 30, 2022	
Date of Testing Started:	Nov 30, 2022	
Date of Testing Completed:	Dec 21, 2022	
Sample Description:	Sample Received as: A water samples contained in sealed glass & plastic bottles	
	Sample Identified by the Client as: GW-01 1.5L x 2 Plastic Bottles & 1L x 2 Glass Bottles	
Sample Drawn By BVCPS	NO	

Photo of the Submitted Samples



**Bureau Veritas Consumer
Products Services Lanka (Pvt)
Ltd.**

No. 570, Galle Road, Katubedda, Mountana, Sri Lanka
 Tel: (9411) 2350111-115 (dedicated lines), Fax: (9411)
 112622198 & 199
 Email: bvcps.lanka@ik.bureauveritas.com

This report is governed by, and incorporates by reference, the Conditions of Testing as posted at the date of issuance of this report at file.bureauveritas.com/bureauveritas/ik/eng/cot/iklab/uk/uk/uk/eng/cot/index.html and is intended for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any other or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. Measurement uncertainty is only provided upon request for accredited tests. Statements of conformity are based on single acceptance criteria without taking measurement uncertainty into account, unless otherwise requested in writing. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence or if you require measurement uncertainty, provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents.

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TEST REPORT



Report No: (7422)334-0408

Dec 22, 2022

Page 2 of 3

TEST RESULTS

No.	Parameters	Results	LOQ	Unit	Test Method
1	pH at 25°C	7.3	-	-	APHA 23rd ed: 2017: 4500H+B
2	Turbidity	0.4	-	NTU	APHA 23rd ed: 2017 :2130 B
3	Electrical Conductivity at 25°C	481	-	µS/cm	APHA 23rd ed: 2017: 2510 B
4	Total Suspended Solids (TSS)	ND	1	mg/L	APHA 23rd ed: 2017 : 2540D
5	Oil & Grease	ND	2.0	mg/L	APHA 23rd ed: 2017 :5520B
6	Arsenic (as As)	ND	0.001	mg/L	CPSD-AN-00581: 2019 V15 by ICP-MS
7	Iron (as Fe)	ND	0.001	mg/L	
8	Manganese (as Mn)	ND	0.001	mg/L	
9	Cadmium (as Cd)	ND	0.0001	mg/L	
10	Lead (as Pb)	ND	0.001	mg/L	
11	Mercury (as Hg)	ND	0.00005	mg/L	

No.	Parameters	Results	LOQ	Unit	Test Method
Polycyclic Aromatic Hydrocarbons (PAH)					
1	Naphthalene	ND	1.0	µg/l	CPSD –AN-00576:2019 V15 (In house method)
2	Benzo(a)anthracene	ND	1.0	µg/l	
3	Acenaphthylene	ND	1.0	µg/l	
4	Acenaphthene	ND	1.0	µg/l	
5	Fluoren	ND	1.0	µg/l	
6	Phenanthrene	ND	1.0	µg/l	
7	Anthracene	ND	1.0	µg/l	
8	Fluoranthene	ND	1.0	µg/l	
9	Pyrene	ND	1.0	µg/l	
10	Chrysen	ND	1.0	µg/l	
11	Benzo(b)fluoranthene	ND	1.0	µg/l	
12	Benzo(k)fluoranthene	ND	1.0	µg/l	
13	Dibenzo(a,h)anthracene	ND	1.0	µg/l	
14	Benzo(g,h,i)perylene	ND	1.0	µg/l	
15	Benzo(j)fluoranthene	ND	1.0	µg/l	
16	Benzo(a)pyrene*	ND	1.0	µg/l	
17	Benzo(e)pyrene*	ND	1.0	µg/l	
18	Indeno(1,2,3-cd) pyrene*	ND	1.0	µg/l	

TEST REPORT



Report No: (7422)334-0408

Dec 22, 2022

Page 3 of 3

*Test not covered ISO 17025: 2017 by Sri Lanka Accreditation Board for conformity assessment.

NOTE:

APHA: American Public Health Association,

ND: Not Detected,

LOQ: Limit of Quantification, mg/L: milligrams per liter,

NTU: Nephelometric Turbidity Units, °C :Celcius,

µg/L: Micrograms per liter, µS/cm: Micro Siemens per Centimeter,

ICP-MS: Inductively Coupled Plasma Mass Spectrometry

Contact information for this report (Technical and General Inquiries and Feedback)

GENERAL INQUIRIES:		
JAYAMEE DISSANAYAKE	TEL: +94 768 229 495	E-MAIL: envlab.lanka@bureauveritas.com
TECHNICAL INQUIRIES:		
RUWANI AMARASINGHE	TEL: +94 768 229 457	E-MAIL: ruwani.amarasinghe@bureauveritas.com
FEED BACK:		
KUMUDINI RATHNAYAKE – ASST. QA MANAGER	TEL: +94 768 229 455	E-MAIL: kumudinie.rathnayake@bureauveritas.com

REVIEWED BY: SHASHI MANOJ

BUREAU VERITAS CONSUMER PRODUCTS SERVICES LANKA (PVT) LTD.
AUTHORIZED SIGNATORY

APPROVED BY:


RUWANI AMARASINGHE

ASSISTANT MANAGER –

FOOD & MICROBIOLOGY LABORATORY

END OF THE REPORT



TEST REPORT



Report No: (7422)334-0353

Dec 22, 2022

Page 1 of 3

Attn: Servet Burak Ozdemir

Customer: Alke – Alkatas Joint Venture (Pvt) Ltd
Address : H.H. Moomiyaage, 5A, Asaree Hingun 20265, K. Male', Maldives
Date of Sample Received: Nov 30, 2022
Date of Testing Started: Nov 30, 2022
Date of Testing Completed: Dec 21, 2022
Sample Description: **Sample Received as:**
 A water samples contained in sealed glass & plastic bottles

Sample Identified by the Client as:
 GW-02
 1.5L x 2 Plastic Bottles & 1L x 2 Glass Bottles

Sample Drawn By BVCPS NO

Photo of the Submitted Samples



**Bureau Veritas Consumer
Products Services Lanka (Pvt)
Ltd.**

No. 570, Galle Road, Katubedde, Morutawa, Sri Lanka
 Tel: (9411) 2359111-115 (dedicated lines), Fax: (9411)
 113622198 & 199
 Email: bvcp.lanka@bureauveritas.com

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TEST REPORT



Report No: (7422)334-0353

Dec 22, 2022

Page 2 of 3

TEST RESULTS

No.	Parameters	Results	LOQ	Unit	Test Method
1	pH at 25°C	7.2	-	-	APHA 23rd ed: 2017: 4500H+B
2	Turbidity	0.2	-	NTU	APHA 23rd ed: 2017 :2130 B
3	Electrical Conductivity at 25°C	58000	-	µS/cm	APHA 23rd ed: 2017: 2510 B
4	Total Suspended Solids (TSS)	ND	1	mg/L	APHA 23rd ed: 2017 : 2540D
5	Oil & Grease	ND	2.0	mg/L	APHA 23rd ed: 2017 :5520B
6	Arsenic (as As)	ND	0.001	mg/L	CPSD-AN-00581: 2019 V15 by ICP-MS
7	Iron (as Fe)	ND	0.001	mg/L	
8	Manganese (as Mn)	ND	0.001	mg/L	
9	Cadmium (as Cd)	ND	0.0001	mg/L	
10	Lead (as Pb)	ND	0.001	mg/L	
11	Mercury (as Hg)	ND	0.00005	mg/L	

No.	Parameters	Results	LOQ	Unit	Test Method
Polycyclic Aromatic Hydrocarbons (PAH)					
1	Naphthalene	ND	1.0	µg/l	CPSD –AN-00576:2019 V15 (In house method)
2	Benzo(a)anthracene	ND	1.0	µg/l	
3	Acenaphthylene	ND	1.0	µg/l	
4	Acenaphthene	ND	1.0	µg/l	
5	Fluoren	ND	1.0	µg/l	
6	Phenanthrene	ND	1.0	µg/l	
7	Anthracene	ND	1.0	µg/l	
8	Fluoranthene	ND	1.0	µg/l	
9	Pyrene	ND	1.0	µg/l	
10	Chrysen	ND	1.0	µg/l	
11	Benzo(b)fluoranthene	ND	1.0	µg/l	
12	Benzo(k)fluoranthene	ND	1.0	µg/l	
13	Dibenzo(a,h)anthracene	ND	1.0	µg/l	
14	Benzo(g,h,i)perylene	ND	1.0	µg/l	
15	Benzo(j)fluoranthene	ND	1.0	µg/l	
16	Benzo(a)pyrene*	ND	1.0	µg/l	
17	Benzo(e)pyrene*	ND	1.0	µg/l	
18	Indeno(1,2,3-cd) pyrene*	ND	1.0	µg/l	

TEST REPORT



Report No: (7422)334-0353

Dec 22, 2022

Page 3 of 3

*Test not covered ISO 17025: 2017 by Sri Lanka Accreditation Board for conformity assessment.

NOTE:

APHA: American Public Health Association,

ND: Not Detected,

LOQ: Limit of Quantification, mg/L: milligrams per liter,

NTU: Nephelometric Turbidity Units, °C :Celcius,

µg/L: Micrograms per liter, µS/cm: Micro Siemens per Centimeter,

ICP-MS: Inductively Coupled Plasma Mass Spectrometry

Contact information for this report (Technical and General Inquiries and Feedback)

GENERAL INQUIRIES:		
JAYAMEE DISSANAYAKE	TEL: +94 768 229 495	E-MAIL: envlab.lanka@bureauveritas.com
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FEED BACK:		
KUMUDINI RATHNAYAKE – ASST. QA MANAGER	TEL: +94 768 229 455	E-MAIL: kumudinie.rathnayake@bureauveritas.com

REVIEWED BY: SHASHI MANOJ

BUREAU VERITAS CONSUMER PRODUCTS SERVICES LANKA (PVT) LTD.
AUTHORIZED SIGNATORY

APPROVED BY:


RUWANI AMARASINGHE

ASSISTANT MANAGER –
FOOD & MICROBIOLOGY LABORATORY

END OF THE REPORT



TEST REPORT



Report No: (7422)334-0367

Dec 22, 2022

Page 1 of 3

Attn: Servet Burak Ozdemir

Customer: Alke – Alkatas Joint Venture (Pvt) Ltd
Address : H.H. Moomiyaage, 5A, Asaree Hingun 20265, K. Male', Maldives
Date of Sample Received: Nov 30, 2022
Date of Testing Started: Nov 30, 2022
Date of Testing Completed: Dec 21, 2022
Sample Description: **Sample Received as:**
 A water samples contained in sealed glass & plastic bottles

Sample Identified by the Client as:
 GW-03
 1.5L x 2 Plastic Bottles & 1L x 2 Glass Bottles

Sample Drawn By BVCPS NO

Photo of the Submitted Samples



Report Number
(7422)334-0367



Report Number
(7422)334-0367



Report Number
(7422)334-0367



Report Number
(7422)334-0367

**Bureau Veritas Consumer
Products Services Lanka (Pvt)
Ltd.**

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TEST REPORT



Report No: (7422)334-0367

Dec 22, 2022

Page 2 of 3

TEST RESULTS

No.	Parameters	Results	LOQ	Unit	Test Method
1	pH at 25°C	8.5	-	-	APHA 23rd ed: 2017: 4500H+B
2	Turbidity	0.3	-	NTU	APHA 23rd ed: 2017 :2130 B
3	Electrical Conductivity at 25°C	10800	-	µS/cm	APHA 23rd ed: 2017: 2510 B
4	Total Suspended Solids (TSS)	ND	-	mg/L	APHA 23rd ed: 2017 : 2540D
5	Oil & Grease	ND	2.0	mg/L	APHA 23rd ed: 2017 :5520B
6	Arsenic (as As)	ND	0.001	mg/L	CPSD-AN-00581: 2019 V15 by ICP-MS
7	Iron (as Fe)	ND	0.001	mg/L	
8	Manganese (as Mn)	ND	0.001	mg/L	
9	Cadmium (as Cd)	ND	0.0001	mg/L	
10	Lead (as Pb)	ND	0.001	mg/L	
11	Mercury (as Hg)	ND	0.00005	mg/L	

No.	Parameters	Results	LOQ	Unit	Test Method
Polycyclic Aromatic Hydrocarbons (PAH)					
1	Naphthalene	ND	1.0	µg/l	CPSD –AN-00576:2019 V15 (In house method)
2	Benzo(a)anthracene	ND	1.0	µg/l	
3	Acenaphthylene	ND	1.0	µg/l	
4	Acenaphthene	ND	1.0	µg/l	
5	Fluoren	ND	1.0	µg/l	
6	Phenanthrene	ND	1.0	µg/l	
7	Anthracene	ND	1.0	µg/l	
8	Fluoranthene	ND	1.0	µg/l	
9	Pyrene	ND	1.0	µg/l	
10	Chrysen	ND	1.0	µg/l	
11	Benzo(b)fluoranthene	ND	1.0	µg/l	
12	Benzo(k)fluoranthene	ND	1.0	µg/l	
13	Dibenzo(a,h)anthracene	ND	1.0	µg/l	
14	Benzo(g,h,i)perylene	ND	1.0	µg/l	
15	Benzo(j)fluoranthene	ND	1.0	µg/l	
16	Benzo(a)pyrene*	ND	1.0	µg/l	
17	Benzo(e)pyrene*	ND	1.0	µg/l	
18	Indeno(1,2,3-cd) pyrene*	ND	1.0	µg/l	

TEST REPORT



Report No: (7422)334-0367

Dec 22, 2022

Page 3 of 3

*Test not covered ISO 17025: 2017 by Sri Lanka Accreditation Board for conformity assessment.

NOTE:

APHA: American Public Health Association,

ND: Not Detected,

LOQ: Limit of Quantification, mg/L: Milligrams per liter,

NTU: Nephelometric Turbidity Units, °C :Celcius,

µg/L: Micrograms per liter, µS/cm: Micro Siemens per Centimeter,

ICP-MS: Inductively Coupled Plasma Mass Spectrometry.


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KUMUDINI RATHNAYAKE – ASST. QA MANAGER	TEL: +94 768 229 455	E-MAIL: kumudinie.rathnayake@bureauveritas.com

REVIEWED BY: SHASHI MANOJ

BUREAU VERITAS CONSUMER PRODUCTS SERVICES LANKA (PVT) LTD.,
AUTHORIZED SIGNATORY

APPROVED BY:


RUWANI AMARASINGHE

ASSISTANT MANAGER –
FOOD & MICROBIOLOGY LABORATORY

END OF THE REPORT

TEST REPORT



Report No: (7422)334-0378

Dec 22, 2022

Page 2 of 3

TEST RESULTS

No.	Parameters	Results	LOQ	Unit	Test Method
1	pH at 25°C	7.6	-	-	APHA 23rd ed: 2017: 4500H+B
2	Turbidity	0.1	-	NTU	APHA 23rd ed: 2017: 2130 B
3	Electrical Conductivity at 25°C	5700	-	µS/cm	APHA 23rd ed: 2017: 2510 B
4	Total Suspended Solids (TSS)	ND	1	mg/L	APHA 23rd ed: 2017: 2540D
5	Oil & Grease	ND	2.0	mg/L	APHA 23rd ed: 2017: 5520B
6	Arsenic (as As)	ND	0.001	mg/L	CPSD-AN-00581: 2019 V 15 by ICP-MS
7	Iron (as Fe)	ND	0.001	mg/L	
8	Manganese (as Mn)	ND	0.001	mg/L	
9	Cadmium (as Cd)	ND	0.0001	mg/L	
10	Lead (as Pb)	ND	0.001	mg/L	
11	Mercury (as Hg)	ND	0.00005	mg/L	

No.	Parameters	Results	LOQ	Unit	Test Method
Polycyclic Aromatic Hydrocarbons (PAH)					
1	Naphthalene	ND	1.0	µg/l	CPSD-AN-00576: 2019 V 15 (In house method)
2	Benzo(a)anthracene	ND	1.0	µg/l	
3	Acenaphthylene	ND	1.0	µg/l	
4	Acenaphthene	ND	1.0	µg/l	
5	Fluorene	ND	1.0	µg/l	
6	Phenanthrene	ND	1.0	µg/l	
7	Anthracene	ND	1.0	µg/l	
8	Fluoranthene	ND	1.0	µg/l	
9	Pyrene	ND	1.0	µg/l	
10	Chrysen	ND	1.0	µg/l	
11	Benzo(b)fluoranthene	ND	1.0	µg/l	
12	Benzo(k)fluoranthene	ND	1.0	µg/l	
13	Dibenz(a,h)anthracene	ND	1.0	µg/l	
14	Benzo(g,h,i)perylene	ND	1.0	µg/l	
15	Benzo(j)fluoranthene	ND	1.0	µg/l	
16	Benzo(a)pyrene*	ND	1.0	µg/l	
17	Benzo(e)pyrene*	ND	1.0	µg/l	
18	Indeno(1,2,3-cd)pyrene*	ND	1.0	µg/l	

TEST REPORT



Report No: (7422)334-0378

Dec 22, 2022

Page 3 of 3

*Test not covered ISO 17025: 2017 by Sri Lanka Accreditation Board for conformity assessment.

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ND: Not Detected,

LOQ: Limit of Quantification, mg/L: milligrams per liter,

NTU: Nephelometric Turbidity Units, °C :Celcius,

µg/L: Micrograms per liter, µS/cm: Micro Siemens per Centimeter,

ICP-MS: Inductively Coupled Plasma Mass Spectrometry

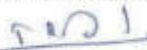
Contact information for this report (Technical and General Inquiries and Feedback)

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FEED BACK:		
KUMUDINI RATHNAYAKE – ASST. QA MANAGER	TEL: +94 768 229 455	E-MAIL: kumudini.rathnayake@bureauveritas.com

REVIEWED BY: SHASHI MANOJ

BUREAU VERITAS CONSUMER PRODUCTS SERVICES LANKA (PVT) LTD.
AUTHORIZED SIGNATORY

APPROVED BY:



RUWANI AMARASINGHE

ASSISTANT MANAGER –

FOOD & MICROBIOLOGY LABORATORY

END OF THE REPORT



TEST REPORT



Report No: (7422)334-0405

Dec 22, 2022

Page 1 of 3

Attn: Servet Burak Ozdemir

Customer: Alke – Alkatas Joint Venture (Pvt) Ltd
Address : H.H. Moomiyaage, 5A, Asaree Hingun 20265, K. Male', Maldives
Date of Sample Received: Nov 30, 2022
Date of Testing Started: Nov 30, 2022
Date of Testing Completed: Dec 21, 2022
Sample Description: **Sample Received as:**
 A water samples contained in sealed glass & plastic bottles

Sample Identified by the Client as:
 GW-06
 1.5L x 2 Plastic Bottles & 1L x 2 Glass Bottles

Sample Drawn By BVCPS NO

Photo of the Submitted Samples



Report Number
(7422)334-0405



Report Number
(7422)334-0405



Report Number
(7422)334-0405



Report Number
(7422)334-0405

**Bureau Veritas Consumer
Products Services Lanka (Pvt)
Ltd.**

No. 570, Galle Road, Katubedde, Morutawa, Sri Lanka
 Tel: (9411) 2350111-115 (dedicated lines), Fax: (9411)
 113622198 & 199
 Email: bvcp.lanka@bureauveritas.com

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TEST REPORT



Report No: (7422)334-0405

Dec 22, 2022

Page 2 of 3

TEST RESULTS

No.	Parameters	Results	LOQ	Unit	Test Method
1	pH at 25°C	7.6	-	-	APHA 23rd ed: 2017: 4500H+B
2	Turbidity	0.5	-	NTU	APHA 23rd ed: 2017 :2130 B
3	Electrical Conductivity at 25°C	1206	-	µS/cm	APHA 23rd ed: 2017: 2510 B
4	Total Suspended Solids (TSS)	6	-	mg/L	APHA 23rd ed: 2017 : 2540D
5	Oil & Grease	ND	2.0	mg/L	APHA 23rd ed: 2017 :5520B
6	Arsenic (as As)	ND	0.001	mg/L	CPSD-AN-00581: 2019 V15 by ICP-MS
7	Iron (as Fe)	ND	0.001	mg/L	
8	Manganese (as Mn)	0.018	-	mg/L	
9	Cadmium (as Cd)	ND	0.0001	mg/L	
10	Lead (as Pb)	ND	0.001	mg/L	
11	Mercury (as Hg)	ND	0.00005	mg/L	

No.	Parameters	Results	LOQ	Unit	Test Method
Polycyclic Aromatic Hydrocarbons (PAH)					
1	Naphthalene	ND	1.0	µg/l	CPSD –AN-00576:2019 V15 (In house method)
2	Benzo(a)anthracene	ND	1.0	µg/l	
3	Acenaphthylene	ND	1.0	µg/l	
4	Acenaphthene	ND	1.0	µg/l	
5	Fluoren	ND	1.0	µg/l	
6	Phenanthrene	ND	1.0	µg/l	
7	Anthracene	ND	1.0	µg/l	
8	Fluoranthene	ND	1.0	µg/l	
9	Pyrene	ND	1.0	µg/l	
10	Chrysen	ND	1.0	µg/l	
11	Benzo(b)fluoranthene	ND	1.0	µg/l	
12	Benzo(k)fluoranthene	ND	1.0	µg/l	
13	Dibenzo(a,h)anthracene	ND	1.0	µg/l	
14	Benzo(g,h,i)perylene	ND	1.0	µg/l	
15	Benzo(j)fluoranthene	ND	1.0	µg/l	
16	Benzo(a)pyrene*	ND	1.0	µg/l	
17	Benzo(e)pyrene*	ND	1.0	µg/l	
18	Indeno(1,2,3-cd) pyrene*	ND	1.0	µg/l	

TEST REPORT



Report No: (7422)334-0405

Dec 22, 2022

Page 3 of 3

*Test not covered ISO 17025: 2017 by Sri Lanka Accreditation Board for conformity assessment.

NOTE:

APHA: American Public Health Association,

ND: Not Detected,

LOQ: Limit of Quantification, mg/L: milligrams per liter,

NTU: Nephelometric Turbidity Units, °C :Celcius,

µg/L: Micrograms per liter, µS/cm: Micro Siemens per Centimeter,

ICP-MS: Inductively Coupled Plasma Mass Spectrometry

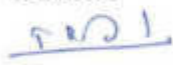
Contact information for this report (Technical and General Inquiries and Feedback)

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FEED BACK:		
KUMUDINI RATHNAYAKE – ASST. QA MANAGER	TEL: +94 768 229 455	E-MAIL: kumudinie.rathnayake@bureauveritas.com

REVIEWED BY: SHASHI MANOJ

BUREAU VERITAS CONSUMER PRODUCTS SERVICES LANKA (PVT) LTD.
AUTHORIZED SIGNATORY

APPROVED BY:


RUWANI AMARASINGHE

ASSISTANT MANAGER –
FOOD & MICROBIOLOGY LABORATORY

END OF THE REPORT



TEST REPORT



Report No: (7422)334-0375

Dec 22, 2022

Page 1 of 3

Attn: Servet Burak Ozdemir

Customer: Alke – Alkatas Joint Venture (Pvt) Ltd
Address : H.H. Moomiyaage, 5A, Asaree Hingun 20265, K. Male', Maldives
Date of Sample Received: Nov 30, 2022
Date of Testing Started: Nov 30, 2022
Date of Testing Completed: Dec 21, 2022
Sample Description: Sample Received as:
 A water samples contained in sealed glass & plastic bottles

Sample Identified by the Client as:
 GW-07
 1.5L x 2 Plastic Bottles & 1L x 2 Glass Bottles

Sample Drawn By BVCPS NO

Photo of the Submitted Samples



Report Number
(7422)334-0375



Report Number
(7422)334-0375



Report Number
(7422)334-0375



Report Number
(7422)334-0375

Bureau Veritas Consumer Products Services Lanka (Pvt) Ltd.

No. 570, Galle Road, Katubedde, Morutawa, Sri Lanka
 Tel: (9411) 2359111-115 (dedicated lines), Fax: (9411)
 113622198 & 199
 Email: bvcp.lanka@bureauveritas.com

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TEST REPORT



Report No: (7422)334-0375

Dec 22, 2022

Page 2 of 3

TEST RESULTS

No.	Parameters	Results	LOQ	Unit	Test Method
1	pH at 25°C	7.5	-	-	APHA 23rd ed: 2017: 4500H+B
2	Turbidity	2.8	-	NTU	APHA 23rd ed: 2017 :2130 B
3	Electrical Conductivity at 25°C	571	-	µS/cm	APHA 23rd ed: 2017: 2510 B
4	Total Suspended Solids (TSS)	38	-	mg/L	APHA 23rd ed: 2017 : 2540D
5	Oil & Grease	ND	2.0	mg/L	APHA 23rd ed: 2017 :5520B
6	Arsenic (as As)	ND	0.001	mg/L	CPSD-AN-00581: 2019 V15 by ICP-MS
7	Iron (as Fe)	0.02	-	mg/L	
8	Manganese (as Mn)	ND	0.001	mg/L	
9	Cadmium (as Cd)	ND	0.0001	mg/L	
10	Lead (as Pb)	ND	0.001	mg/L	
11	Mercury (as Hg)	ND	0.00005	mg/L	

No.	Parameters	Results	LOQ	Unit	Test Method
Polycyclic Aromatic Hydrocarbons (PAH)					
1	Naphthalene	ND	1.0	µg/l	CPSD –AN-00576:2019 V15 (In house method)
2	Benzo(a)anthracene	ND	1.0	µg/l	
3	Acenaphthylene	ND	1.0	µg/l	
4	Acenaphthene	ND	1.0	µg/l	
5	Fluoren	ND	1.0	µg/l	
6	Phenanthrene	ND	1.0	µg/l	
7	Anthracene	ND	1.0	µg/l	
8	Fluoranthene	ND	1.0	µg/l	
9	Pyrene	ND	1.0	µg/l	
10	Chrysen	ND	1.0	µg/l	
11	Benzo(b)fluoranthene	ND	1.0	µg/l	
12	Benzo(k)fluoranthene	ND	1.0	µg/l	
13	Dibenzo(a,h)anthracene	ND	1.0	µg/l	
14	Benzo(g,h,i)perylene	ND	1.0	µg/l	
15	Benzo(j)fluoranthene	ND	1.0	µg/l	
16	Benzo(a)pyrene*	ND	1.0	µg/l	
17	Benzo(e)pyrene*	ND	1.0	µg/l	
18	Indeno(1,2,3-cd) pyrene*	ND	1.0	µg/l	

TEST REPORT



Report No: (7422)334-0375

Dec 22, 2022

Page 3 of 3

*Test not covered ISO 17025: 2017 by Sri Lanka Accreditation Board for conformity assessment.

NOTE:

APHA: American Public Health Association,

ND: Not Detected,

LOQ: Limit of Quantification, mg/L: milligrams per liter,

NTU: Nephelometric Turbidity Units, °C :Celcius,

µg/L: Micrograms per liter, µS/cm: Micro Siemens per Centimeter,

ICP-MS: Inductively Coupled Plasma Mass Spectrometry

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FEED BACK:		
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REVIEWED BY: SHASHI MANOJ

BUREAU VERITAS CONSUMER PRODUCTS SERVICES LANKA (PVT) LTD.
AUTHORIZED SIGNATORY

APPROVED BY:


RUWANI AMARASINGHE

ASSISTANT MANAGER –
FOOD & MICROBIOLOGY LABORATORY

END OF THE REPORT



TEST REPORT



Report No: (7422)334-0411

Dec 22, 2022

Page 1 of 3

Attn: Servet Burak Ozdemir

Customer: Alke – Alkatas Joint Venture (Pvt) Ltd
Address : H.H. Moomiyaage, 5A, Asaree Hingun 20265, K. Male', Maldives
Date of Sample Received: Nov 30, 2022
Date of Testing Started: Nov 30, 2022
Date of Testing Completed: Dec 21, 2022
Sample Description: **Sample Received as:**
 A water samples contained in sealed glass & plastic bottles

Sample Identified by the Client as:
 GW-08
 1.5L x 2 Plastic Bottles & 1L x 2 Glass Bottles

Sample Drawn By BVCPS NO

Photo of the Submitted Samples



Bureau Veritas Consumer Products Services Lanka (Pvt) Ltd.

No. 570, Galle Road, Katubedde, Morutawa, Sri Lanka
 Tel: (9411) 2359111-115 (dedicated lines), Fax: (9411)
 113622198 & 199
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TEST REPORT



Report No: (7422)334-0411

Dec 22, 2022

Page 2 of 3

TEST RESULTS

No.	Parameters	Results	LOQ	Unit	Test Method
1	pH at 25°C	7.6	-	-	APHA 23rd ed: 2017: 4500H+B
2	Turbidity	0.5	-	NTU	APHA 23rd ed: 2017 :2130 B
3	Electrical Conductivity at 25°C	582	-	µS/cm	APHA 23rd ed: 2017: 2510 B
4	Total Suspended Solids (TSS)	13	-	mg/L	APHA 23rd ed: 2017 : 2540D
5	Oil & Grease	ND	2.0	mg/L	APHA 23rd ed: 2017 :5520B
6	Arsenic (as As)	ND	0.001	mg/L	CPSD-AN-00581: 2019 V15 by ICP-MS
7	Iron (as Fe)	ND	0.001	mg/L	
8	Manganese (as Mn)	ND	0.001	mg/L	
9	Cadmium (as Cd)	ND	0.0001	mg/L	
10	Lead (as Pb)	ND	0.001	mg/L	
11	Mercury (as Hg)	ND	0.00005	mg/L	

No.	Parameters	Results	LOQ	Unit	Test Method
Polycyclic Aromatic Hydrocarbons (PAH)					
1	Naphthalene	ND	1.0	µg/l	CPSD –AN-00576:2019 V15 (In house method)
2	Benzo(a)anthracene	ND	1.0	µg/l	
3	Acenaphthylene	ND	1.0	µg/l	
4	Acenaphthene	ND	1.0	µg/l	
5	Fluoren	ND	1.0	µg/l	
6	Phenanthrene	ND	1.0	µg/l	
7	Anthracene	ND	1.0	µg/l	
8	Fluoranthene	ND	1.0	µg/l	
9	Pyrene	ND	1.0	µg/l	
10	Chrysen	ND	1.0	µg/l	
11	Benzo(b)fluoranthene	ND	1.0	µg/l	
12	Benzo(k)fluoranthene	ND	1.0	µg/l	
13	Dibenzo(a,h)anthracene	ND	1.0	µg/l	
14	Benzo(g,h,i)perylene	ND	1.0	µg/l	
15	Benzo(j)fluoranthene	ND	1.0	µg/l	
16	Benzo(a)pyrene*	ND	1.0	µg/l	
17	Benzo(e)pyrene*	ND	1.0	µg/l	
18	Indeno(1,2,3-cd) pyrene*	ND	1.0	µg/l	

TEST REPORT



Report No: (7422)334-0411

Dec 22, 2022

Page 3 of 3

*Test not covered ISO 17025: 2017 by Sri Lanka Accreditation Board for conformity assessment.

NOTE:

APHA: American Public Health Association,

ND: Not Detected,

LOQ: Limit of Quantification, mg/L: milligrams per liter,

NTU: Nephelometric Turbidity Units, °C :Celcius,

µg/L: Micrograms per liter, µS/cm: Micro Siemens per Centimeter,

ICP-MS: Inductively Coupled Plasma Mass Spectrometry

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FEED BACK:		
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REVIEWED BY: SHASHI MANOJ

BUREAU VERITAS CONSUMER PRODUCTS SERVICES LANKA (PVT) LTD.
AUTHORIZED SIGNATORY

APPROVED BY:


RUWANI AMARASINGHE

ASSISTANT MANAGER –
FOOD & MICROBIOLOGY LABORATORY

END OF THE REPORT

Mah' Water & Sewerage Company Pvt Ltd
Water Quality Assessment Laboratory
D. No. 10/2006, Mah' Water & Sewerage Company Pvt Ltd, Plot No. 10/2006, Sector 10,
Gurgaon, Haryana, India. Phone: +91 1299 221111, Fax: +91 1299 221112



WATER QUALITY TEST REPORT
Report No: 0671006

LB-TEST-090

Customer Information:
Name: Mah' Water & Sewerage Company Pvt Ltd
DOB: 06/08/2017

Report Date: 01/12/2022
Lab Requested On: 11/12/2022
Sampled/Received Date: 01/12/2022
Date of Analysis: 01/12/2022 - 01/12/2022

Parameter Description –	Q006	Q007	Q001	TEST METHOD	UNIT
Sample Type –	Surface Water	Surface Water	Surface Water		
Sample No	0021000	0021001	0021002		
Sample Date –	2021/12/01 10:30	2021/12/01 10:30	2021/12/01 10:30		
PARAMETER	ANALYSIS RESULT				
Physical Appearance	Clear with particles	Clear with particles	Clear with particles		
Colour	10	10	00	Colour: Hazen (20°C) or Platinum-Cobalt (20°C) (Standard Method)	mg/L
Turbidity	0.0	0.0	0.0	ISO 7027 Method 871	mg/L
Sulphate	00	10	<10 (0.02 to 10 mg/L)	MOCA Method 801	mg/L
Phosphate	0.10	0.20	0.00	MOCA Method 800	mg/L
Dissolved Oxygen (DO)	0.01	0.02	0.07	Procedure: 4450 DO (Standard Method) 2540 DO (HACH DOBRO Lab-on-line monitor)	mg/L
Unfiltered Residual Chlorine (URCL)	0	0	0	MOCA Method 802	mg/L
Total Chlorine	<100 (0.1 to 1000 mg/L)	<100 (0.1 to 1000 mg/L)	<100 (0.1 to 1000 mg/L)	Colorimetric Method (DPD)	mg/L

Units: mg/L, M/Mean Pvt Ltd, 0671006 - Road Probable Number

Checked by

10/11/2022
Assistant Quality Manager

Approved by

Assistant General Manager - Quality

Notes:
Sampling Authority: Sampling was not done by QWQC Laboratory.
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Parameters controlled by ISIRI under ISIRI 1522:2017.

	ENVIRONMENTAL MONITORING REPORT – NOVEMBER 2022	Document No	MDV-AAK-CEMPX-XX- RP-XXX-0001-000
		Rev. No / Date	00/31.12.2023
		Page No:	51/77

Annex 3: Ambient air quality field recording



GOVERNMENT of MALDIVES

WtE Energy Facility Project

BACKGROUND AIR QUALITY MEASUREMENT REPORT



Thilafushi Island/MALDIVES

MALDIVES 2022



AIRS Air Quality Management Services Ltd
Mustafa Kemal Mah. Via Green Is Mrk. B-36
Cankaya Ankara TURKEY
Tel: +90 312 221 02 45 Fax: +90 312 221 02 45
www.airsaqms.com

Test Report

Customer Name/Address	Alke Alkatas Joint Venture Pvt Ltd H.H.Moomiyaage 5A Asaree Hingun K.Male 20265 MALDIVES
Order No.	EN-M/2207/417_01
Name and Identity of test item	Inmission (Air Quality)
Remarks	-
Date of Test	29.11.2022-30.11.2022
Number of Pages of the Report	27 Pages
Test Method	Air Quality Sensors HSE-MDHS 14/3
Test results	The test results are given in the measurement result tables.
Environmental conditions	Environmental conditions during the measurement are given in the measurement result tables.
Comments	-

The test and/or measurement results, the uncertainties (if applicable) with confidence probability and test methods are given on the following pages which are part of this report.

Reporter and Approval

Ismail Ulusoy
Environmental Engineer





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2. MEASUREMENT METHODS	6
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1. INTRODUCTION

This report has been prepared with the aim of determining the air quality in the sensitive receptors located in the impact area of the The Greater Malé Waste to Energy Project. Air quality results were determined for PM₁₀, PM_{2.5}, NO₂, SO₂, TSP and O₃ parameters.

2. MEASUREMENT METHODS

PM₁₀, PM_{2.5}, SO₂, and NO₂ parameters were monitored by using air quality monitoring stations based on sensor technology. TSP's were measured by dust sampling devices conforming to the international HSE-MDHS 14/3. Ideally as recommended in the EIA report air quality should be measured 24 hours at each station, all measurements were made at each point within this framework 24 hours a day.

The US EPA refers to the term 'air sensor' as a class of non-regulatory technology that is low-cost, portable, capable of measuring several pollutants simultaneously, and often easier to operate than regulatory stations. For example, monitoring air pollution with reference measurement methods (regulatory stations) requires skilled operators to maintain and calibrate measuring instruments. On the other hand, air sensors describe the hardware and software set that can be operated without human intervention and enable unskilled users to monitor air pollution without additional technical knowledge.

Sensor specifications which are used for measurement study are shown below.

Sensor Name	Sensor Type	Accuracy r ² -score*	Range
PM2.5	Laser scattering	>0.9	0 to 1000 µg/m ³
PM10	Laser scattering	>0.9	0 to 1000 µg/m ³
NO ₂	Electro chemical	>0.82	0 to 5000 ppb
SO ₂	Electro chemical	>0.82	0 to 5000 ppb
Temperature	CMOS IC	0.9	-20°C to 60°C
Humidity	CMOS IC	0.9	5% to 95%

The accuracy of these low-cost sensors is as critical as measuring the air quality. With the smart calibration process, low-cost sensors are corrected and accurate compared to reference stations. The Smart Calibration Algorithm consists of the below operational steps shown figure below.



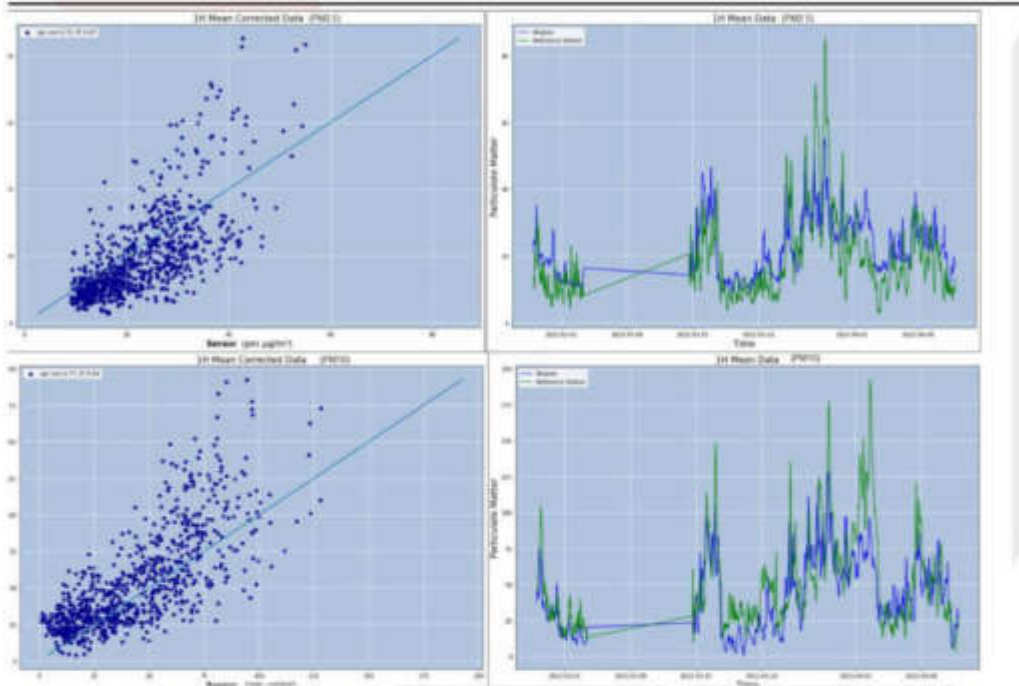
Sensor Units were calibrated using reference stations for a period before the deployment. The calibration process for particle matter and gas pollutants measurement is explained below.

Table 1 Calibration Process for Pollutants

Description	Methodology	
	NO ₂ -SO ₂ -O ₃	PM ₁₀ -PM _{2.5}
Installation	Near Reference Station (3/4 meters)	Near Reference Station (3/4 meters)
Pre-Test	Quality Check in zero air conditions	Quality Check in zero air conditions
Co-located Period	4-5 weeks	8 weeks
Sampling Period	30 seconds. Hourly mean is used because the reference station measurements are hourly.	60 seconds. Hourly mean is used because the reference station measurements are hourly.
Validation	Cross-validation is used. Also, some ranges of measurement are eliminated, where the reference station is not available.	Cross-validation is used. Also, some ranges of measurement are eliminated, where the reference station is not available.
Calibration Procedure	is obtained via R ² and spearman correlation	is obtained via R ² and spearman correlation

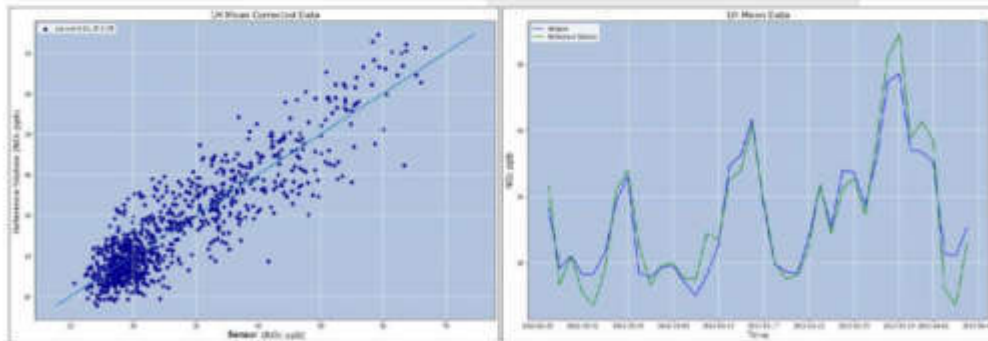
Calibration Result for PM

The corrected measurement results after the Smart Calibration Process are shown in the figures below. The correlation between Sensor Unit's PM_{2.5} measurements between Reference Station's PM_{2.5} measurements for hourly and daily mean of data is 0.73, and the correlation between Sensor Unit's PM₁₀ measurements between Reference Station's PM₁₀ measurements for hourly and daily mean of data is 0.77.



Calibration Result for Gases

The corrected measurement results after the Smart Calibration Process are shown in the figures below. The correlation between Sensor Unit's NO₂ measurements between Reference Station's NO₂ measurements for hourly and daily mean of data is respectively 0.823, 0.898





2.1. FIELD APPLICATION

This section describes how the measurements, the general methodology of which is given above, are applied in the field.

Preliminary Preparations

Preliminary preparations for air quality measuring stations with sensors include factory calibrations and field calibrations. Factory calibrations are provided by the sensor manufacturer. Stations capable of making reference measurements were used for field calibrations, as described above. For this purpose, a 1-month comparison measurement was carried out at a reference station in the Turkish air quality monitoring network and the calibration factors were applied.

For TSP measurements, filter conditioning was carried out in the laboratory. For this purpose, cassettes and filters were conditioned for 24 hours in a room conditioned at 25 degrees Celsius and 50% humidity and were tared.

During Measurements

Air quality measurements were made with four sets of devices. AQ1, AQ2, AQ3 and ASR2 measurements were made with these devices on the first day, and ASR 3, ASR5 and AQ4 points were measured on the second day.

The locations of the sampling points are determined in the macro scale ESIA report. A site visit was made and a location was determined at the micro scale where the devices would be placed.

Measurements were made at a height of 1.5 to 4 meters from the ground, depending on the suitability of the sampling point.

24-hour measurements were made at each point. Parameters measured with sensor devices consist of the averages of instantaneous measurements taken at 10-minute intervals. For TSP measurements, 24-hour uninterrupted sampling was carried out.

After Measurements

The values after the measurements were taken by reading directly on the air quality measuring devices with sensors.

In TSP measurements, the filters were brought to the laboratory, conditioned for 24 hours at 25 degrees Celsius and 50% humidity for 24 hours and weighed. The 24-hour dust amount was found by subtracting the last weighing result from the first weighing result.



3. MEASUREMENT LOCATION

For the Preconstruction baseline environmental assessment of the ambient air quality was conducted at seven locations: 6 locations at Thilafushi (AQ1, AQ2, and AQ3 in the EIA and the ASR 2, ASR3 and ASR5 recommended for monitoring in the EIA Report) and one location at Villingili (AQ4).

Table 2 Sampling Point Coordinates and Sampling dates

No	Location	Description	Distance to Source (meters)
1	AQ1	Represents dense industrial area	650
2	AQ2	Represents dense industrial area	1000
3	AQ3	Represents dense industrial area	500
4	ASR2	Represents dense industrial area	700
5	ASR3	Represents dense industrial area	500
6	ASR5	Represents dense industrial area	1000
7	AQ4	Represents dense housing and population area	4500



Figure 1 Sampling Points on satellite Map



4. LEGAL FRAMEWORK

Within the scope of the project, particle matter (PM₁₀-PM_{2.5}), NO₂, SO₂ AND TSP emissions were measured. It is known that Maldives does not have a national air quality policy. Therefore, international standards were used for the evaluation. WHO defines limit values in "Air quality guidelines for particulate matter, ozone, nitrogen dioxide and sulfur dioxide" document. European Union directives also have limit values for air pollution prevention (EU Council Directive 2008/50/EC relating to health based standards and objectives for a number of pollutants in ambient air). Germany has an air pollution control regulation titled "Technical Instructions on Air Quality Control" (Technische Anleitung zur Reinhaltung der Luft) and commonly referred to as the TA Luft and determines the limit values to protect the general public and the neighborhood against harmful effects of air pollution on the environment. Comparison of these limit values and chosen parameters and values for the modeling study according to these standards are shown in Table 3.

Table 3. Limit Values Stipulated in the International Legislation

Pollutant	Averaging Period	TA Luft	EU	WHO Ambient Air Quality Guideline Value	Project Standards
Particular Matter <10 µm (PM ₁₀)	24 hours	50 µg/m ³	50 µg/m ³	45 µg/m ³	45 µg/m ³
	1-year	40 µg/m ³	40 µg/m ³	15 µg/m ³	15 µg/m ³
Particular Matter <2.5 µm (PM _{2.5})	24 hours	-	-	15 (not to be exceeded more than 3-4 times a year)	15
	1-year	-	20	5	5
Nitrogen Dioxide (NO ₂)	1-hour	200 µg/m ³	200 µg/m ³	-	200 µg/m ³
	24 hours	-	-	25 µg/m ³	25 µg/m ³
	1-year	40 µg/m ³	40 µg/m ³	10 µg/m ³	10 µg/m ³
Sulphur Dioxide (SO ₂)	1-hour	350 µg/m ³	350 µg/m ³	-	350 µg/m ³
	24 hours	125 µg/m ³	125 µg/m ³	40 µg/m ³	40 µg/m ³
	1-year	50 µg/m ³	-	-	50 µg/m ³
TSP*	-	-	-	-	-

*There is no limit value for TSP.



5. RESULTS

Table 4 Measurement Results for Location 1

Location	Sampling Date	Air Quality Results ($\mu\text{g}/\text{m}^3$)					Ambient Conditions	
		PM ₁₀	PM _{2.5}	NO ₂	SO ₂	TSP (24 Hours Average)	Humidity (%)	Temperature (°C)
AQ1	2022-11-28 12:00:00	39.40	9.36	100.00	36.35	121.14	48.08	36.81
	2022-11-28 13:00:00	39.50	8.75	105.13	38.14		52.07	35.03
	2022-11-28 14:00:00	40.30	8.98	78.64	14.22		50.72	35.88
	2022-11-28 15:00:00	64.10	19.90	60.71	19.63		49.49	36.03
	2022-11-28 16:00:00	32.50	11.10	80.30	20.60		53.42	33.39
	2022-11-28 17:00:00	31.70	11.70	43.75	8.23		60.93	28.95
	2022-11-28 18:00:00	53.70	21.30	25.36	11.87		65.20	27.35
	2022-11-28 19:00:00	30.80	12.20	19.55	10.93		67.87	26.58
	2022-11-28 20:00:00	26.30	10.40	8.70	24.32		70.14	26.16
	2022-11-28 21:00:00	24.10	9.75	11.27	31.43		71.71	25.89
	2022-11-28 22:00:00	23.70	9.72	7.50	28.19		73.18	25.56
	2022-11-28 23:00:00	23.00	9.61	12.38	41.85		74.69	25.35
	2022-11-29 00:00:00	24.10	10.30	4.28	37.32		75.95	25.12
	2022-11-29 01:00:00	22.10	9.40	8.70	23.44		77.16	24.94
	2022-11-29 02:00:00	20.00	8.59	10.18	27.51		78.42	25.01
	2022-11-29 03:00:00	20.70	9.10	7.60	19.00		79.07	24.84
	2022-11-29 04:00:00	19.10	8.20	1.80	17.40		80.35	24.57
	2022-11-29 05:00:00	30.40	11.00	14.97	18.15		81.13	25.00
	2022-11-29 06:00:00	22.80	4.93	36.02	39.22		78.56	28.28
	2022-11-29 07:00:00	35.40	8.46	101.55	49.17		68.75	31.86
2022-11-29 08:00:00	44.90	11.40	91.89	53.55	62.93	33.89		
2022-11-29 09:00:00	43.10	10.60	100.17	81.78	58.81	34.92		
2022-11-29 10:00:00	41.10	9.31	80.30	46.30	57.54	35.09		
2022-11-29 11:00:00	40.70	8.42	73.68	40.00	55.42	35.70		
Hourly Limit Values	TA Luft	-	-	200	350	-	-	-
	EU	-	-	200	350	-	-	-
	WHO Ambient Air Quality Guideline Value	-	-	-	-	-	-	-
24 h Average		33.06	10.52	45.18	30.78	121.14	66.32	29.68
Daily Limit Values	TA Luft	50	-	-	125	-	-	-
	EU	50	-	-	125	-	-	-
	WHO Ambient Air Quality Guideline Value	45	15	25	40	-	-	-

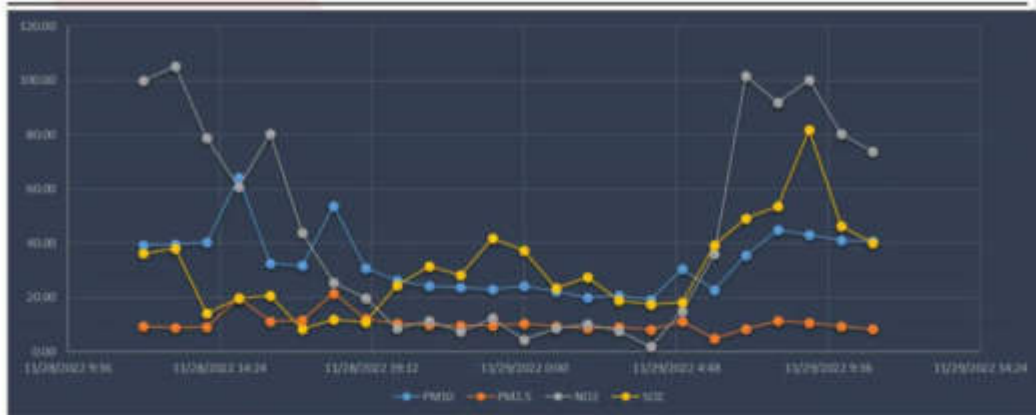


Figure 2 Measurement Graphs for Location AQ1



Table 5 Measurement Results for Location 2

Location	Sampling Date	Results ($\mu\text{g}/\text{m}^3$)					Ambient Conditions	
		PM ₁₀	PM _{2.5}	NO ₂	SO ₂	TSP (24 Hours Average)	Humidity (%)	Temperatu re (°C)
AQ2	2022-11-28 12:00:00	34.9	8.9	0.00	0.00	71.75	44.86	33.91
	2022-11-28 13:00:00	35.6	9.75	0.00	0.00		45.96	33.11
	2022-11-28 14:00:00	40.6	12.1	0.00	0.00		47.06	32.41
	2022-11-28 15:00:00	36.1	11.1	0.00	0.00		48.98	31.32
	2022-11-28 16:00:00	34	11.6	0.00	0.00		54.28	29.21
	2022-11-28 17:00:00	35	13	0.00	0.00		58.86	27.52
	2022-11-28 18:00:00	85.5	33.4	0.00	0.00		61.07	26.55
	2022-11-28 19:00:00	35.9	14.1	0.00	0.00		61.37	26.26
	2022-11-28 20:00:00	51.9	20.8	0.00	0.00		64.69	25.92
	2022-11-28 21:00:00	49	20.2	0.00	0.00		66.15	25.59
	2022-11-28 22:00:00	39.6	16.3	0.00	0.00		66.17	25.50
	2022-11-28 23:00:00	36.3	15	0.00	0.00		67.50	25.25
	2022-11-29 00:00:00	51.2	21.5	0.00	0.00		67.74	25.13
	2022-11-29 01:00:00	34.7	14.7	0.00	0.00		68.55	24.72
	2022-11-29 02:00:00	34.7	14.8	0.00	0.00		73.09	24.79
	2022-11-29 03:00:00	34.7	15	0.00	0.00		71.68	24.32
	2022-11-29 04:00:00	27.1	11.4	0.00	0.00		72.08	24.89
	2022-11-29 05:00:00	27.4	8.63	0.00	0.00		62.09	29.40
	2022-11-29 06:00:00	35.3	9.88	0.00	0.00		51.95	32.47
	2022-11-29 07:00:00	48.3	14.4	0.00	0.00		49.63	33.20
2022-11-29 08:00:00	38	10.3	0.00	0.00	48.56	33.43		
2022-11-29 09:00:00	159	54.4	0.00	0.00	48.72	33.45		
2022-11-29 10:00:00	35.9	9.31	0.00	0.00	47.73	33.72		
2022-11-29 11:00:00	36.2	9.78	0.00	0.00	48.97	33.18		
Hourly Limit Values	TA Luft	-	-	200	350	-	-	-
	EU	-	-	200	350	-	-	-
	WHO Ambient Air Quality Guideline Value	-	-	-	-	-	-	-
Average		44.87	15.85	0.00	0.00	71.75	58.24	28.97
Daily Limit Values	TA Luft	50	-	-	125	-	-	-
	EU	50	-	-	125	-	-	-
	WHO Ambient Air Quality Guideline Value	45	15	25	40	-	-	-



Figure 3 Measurement Graphs for Location AQ2



Table 6 Measurement Results for Location 3

Location	Sampling Date	Results ($\mu\text{g}/\text{m}^3$)					Ambient Conditions	
		PM ₁₀	PM _{2.5}	NO ₂	SO ₂	TSP* (24 Hours Average)	Humidity (%)	Temperat ure (°C)
AQ3	2022-11-28 12:00:00	81.4	22.6	54.92	4.30	208.34	45.03	37.75
	2022-11-28 13:00:00	46.6	12.8	44.06	0.00		53.09	34.22
	2022-11-28 14:00:00	30.6	7.34	28.69	0.00		56.75	33.11
	2022-11-28 15:00:00	33.4	9.25	21.52	15.21		58.51	32.01
	2022-11-28 16:00:00	34.9	11.1	22.08	2.96		62.40	30.26
	2022-11-28 17:00:00	31.8	11.3	18.08	0.00		68.41	28.22
	2022-11-28 18:00:00	30.4	11.3	0.00	0.00		72.40	27.43
	2022-11-28 19:00:00	22.6	8.11	0.00	0.00		73.14	27.21
	2022-11-28 20:00:00	27.8	10.4	0.00	0.00		73.80	27.19
	2022-11-28 21:00:00	21	7.5	0.00	0.00		74.37	27.11
	2022-11-28 22:00:00	20.1	7.23	0.00	0.00		76.34	27.04
	2022-11-28 23:00:00	20.5	7.56	0.00	0.00		77.30	26.84
	2022-11-29 00:00:00	20.2	7.63	0.00	0.00		78.29	26.64
	2022-11-29 01:00:00	20.7	7.97	3.64	0.00		79.88	26.55
	2022-11-29 02:00:00	17.9	7.01	0.00	8.33		82.44	26.33
	2022-11-29 03:00:00	21.9	8.84	0.00	5.58		82.34	26.35
	2022-11-29 04:00:00	23.7	10	2.44	9.13		83.58	26.00
	2022-11-29 05:00:00	19.8	7.65	0.00	3.32		82.34	26.71
	2022-11-29 06:00:00	23.4	6.57	0.00	0.00		72.13	30.01
	2022-11-29 07:00:00	29.1	8.19	0.00	0.00		67.42	31.01
	2022-11-29 08:00:00	30	8.11	5.87	0.00		66.12	31.63
2022-11-29 09:00:00	29.2	7.37	0.00	12.41	64.65	32.15		
2022-11-29 10:00:00	34.2	9.22	6.83	21.25	64.45	32.37		
2022-11-29 11:00:00	30.2	6.91	28.25	8.86	62.03	33.26		
Hourly Limit Values	TA Luft	-	-	200	350	-	-	-
	EU	-	-	200	350	-	-	-
	WHO Ambient Air Quality Guideline Value	-	-	-	-	-	-	-
Average		29.23	9.25	9.85	3.81	208.34	69.88	29.48
Daily Limit Values	TA Luft	50	-	-	-	-	-	-
	EU	50	-	-	-	-	-	-
	WHO Ambient Air Quality Guideline Value	45	15	25	-	-	-	-

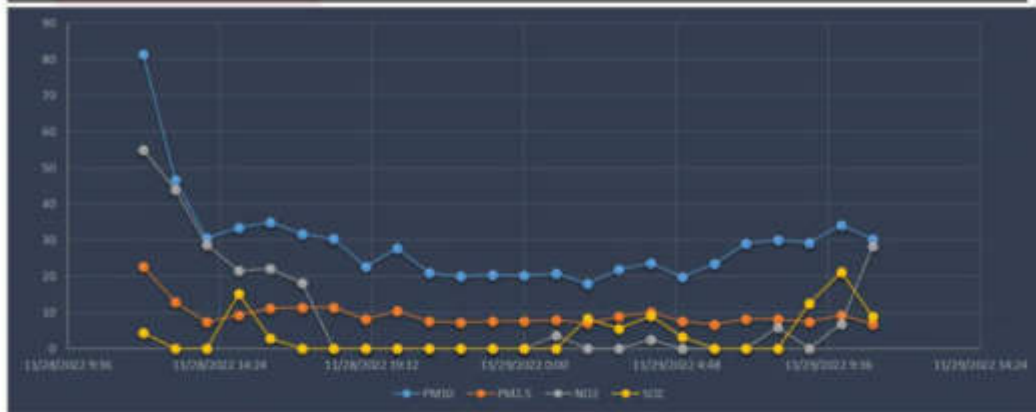


Figure 4 Measurement Graphs for Location AQ3



Table 7 Measurement Results for Location 4

Location	Sampling Date	Results (µg/m ³)					Ambient Conditions	
		PM ₁₀	PM _{2.5}	NO _x	SO ₂	TSP (24 Hours Average)	Humidity (%)	Temperature (°C)
ASR2	2022-11-28 12:00:00	31	5.92	0.00	0.00	57.08	54.97	35.11
	2022-11-28 13:00:00	32.6	6.77	0.00	0.00		54.67	34.87
	2022-11-28 14:00:00	29.5	6.29	0.00	0.00		57.21	33.86
	2022-11-28 15:00:00	29.2	7.28	0.00	0.00		60.63	32.33
	2022-11-28 16:00:00	43.5	14.1	0.00	0.00		63.30	30.94
	2022-11-28 17:00:00	92.4	35.2	0.00	0.00		69.59	27.76
	2022-11-28 18:00:00	24.2	9.19	0.00	0.00		73.88	26.62
	2022-11-28 19:00:00	61.4	25.5	0.00	0.00		75.67	26.33
	2022-11-28 20:00:00	33.4	13.9	0.00	0.00		78.15	26.03
	2022-11-28 21:00:00	18.2	7.25	0.00	0.00		79.84	25.84
	2022-11-28 22:00:00	22.3	9.31	0.00	0.00		80.59	25.58
	2022-11-28 23:00:00	27.9	12.2	0.00	0.00		82.51	25.40
	2022-11-29 00:00:00	17.6	7.69	0.00	0.00		84.94	25.30
	2022-11-29 01:00:00	14.5	6.26	0.00	0.00		84.50	25.16
	2022-11-29 02:00:00	12	5.33	0.00	0.00		86.76	25.09
	2022-11-29 03:00:00	10.5	4.86	0.00	0.00		88.46	24.95
	2022-11-29 04:00:00	11.4	5.42	0.00	0.00		89.06	24.81
	2022-11-29 05:00:00	8.94	3.94	0.00	0.00		89.34	25.39
	2022-11-29 06:00:00	18.7	4.24	0.00	0.00		74.08	30.52
	2022-11-29 07:00:00	42.2	11.8	0.00	0.00		64.96	32.86
2022-11-29 08:00:00	32.7	7.01	0.00	0.00	60.12	34.40		
2022-11-29 09:00:00	32	6.3	0.00	0.00	58.01	35.00		
2022-11-29 10:00:00	50.1	13.2	0.00	0.00	57.65	35.26		
2022-11-29 11:00:00	34.6	6.98	0.00	0.00	57.40	35.42		
Hourly Limit Values	TA Luft	-	-	200	350	-	-	-
	EU	-	-	200	350	-	-	-
	WHO Ambient Air Quality Guideline Value	-	-	-	-	-	-	-
Average		30.45	9.83	0.00	0.00	57.08	71.93	29.37
Daily Limit Values	TA Luft	50	-	-	125	-	-	-
	EU	50	-	-	125	-	-	-
	WHO Ambient Air Quality Guideline Value	45	15	25	40	-	-	-

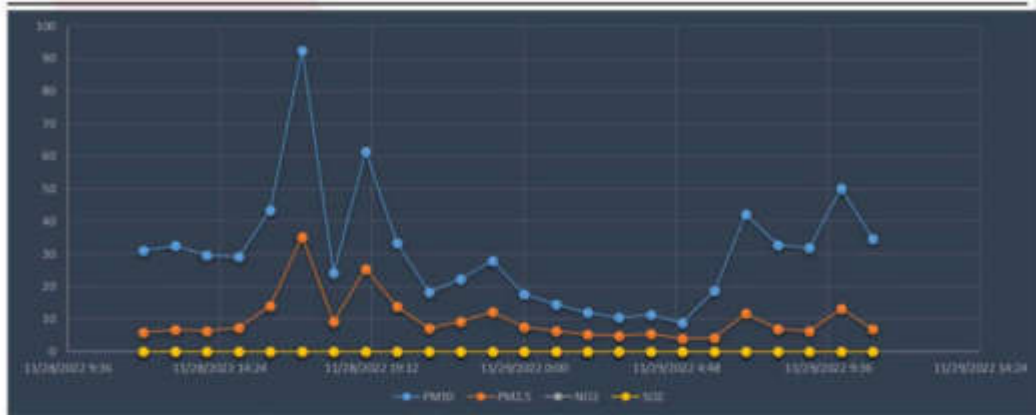


Figure 5 Measurement Graphs for Location ASR2



Table 8 Measurement Results for Location 5

Location	Sampling Date	Results ($\mu\text{g}/\text{m}^3$)				Ambient Conditions		
		PM ₁₀	PM _{2.5}	NO _x	SO _x	TSP (24 Hours Average)	Humidity (%)	Temperature (°C)
ASRS	11/29/2022 15:00	38.1	13	66.43	36.03	119.33	63.92	29.45
	11/29/2022 16:00	32.5	11.5	51.50	106.85		68.16	28.39
	11/29/2022 17:00	28.5	9.96	41.59	40.63		69.41	28.18
	11/29/2022 18:00	29.7	10.6	47.38	19.97		71.13	28.01
	11/29/2022 19:00	32.5	12.1	41.17	87.95		72.74	27.63
	11/29/2022 20:00	28.8	10.6	46.56	62.70		73.74	27.59
	11/29/2022 21:00	29.7	11.2	30.00	66.08		73.87	27.33
	11/29/2022 22:00	27.3	10.3	30.41	100.09		74.95	27.08
	11/29/2022 23:00	26.6	10.2	25.07	96.16		75.80	26.86
	11/30/2022 0:00	24.9	9.63	23.16	53.95		76.67	26.60
	11/30/2022 1:00	23.4	8.86	33.30	52.99		77.99	26.89
	11/30/2022 2:00	25.2	9.62	33.30	44.85		78.72	27.05
	11/30/2022 3:00	39.7	15.6	46.72	87.32		79.00	27.42
	11/30/2022 4:00	92.8	42.4	63.15	84.92		89.08	25.54
	11/30/2022 5:00	50.7	23.4	40.04	18.77		91.91	26.10
	11/30/2022 6:00	46.2	17	68.70	79.93		81.75	30.05
	11/30/2022 7:00	60.7	20.2	56.29	73.47		73.88	32.16
	11/30/2022 8:00	57.2	17.7	65.40	76.41		71.65	33.28
	11/30/2022 9:00	49	13.7	112.58	59.74		67.31	34.21
	11/30/2022 10:00	59.8	17.9	82.78	26.29		61.42	34.18
11/30/2022 11:00	61.4	22.2	113.25	87.21	71.69	30.61		
11/29/2022 12:00	52.6	21.1	41.57	29.75	80.79	28.32		
11/29/2022 13:00	19.2	4.85	47.46	110.08	83.39	30.58		
11/29/2022 14:00	36.6	12.6	52.98	87.87	82.46	30.36		
Hourly Limit Values	TA Loft	-	-	200	200	-	-	-
	EU	-	-	200	350	-	-	-
	WHO Ambient Air Quality Guideline Value	-	-	-	-	-	-	-
Average		40.55	14.84	52.53	66.25	119.33	75.48	28.91
Daily Limit Values	TA Loft	50	-	-	125	-	-	-
	EU	50	-	-	125	-	-	-
	WHO Ambient Air Quality Guideline Value	45	15	25	40	-	-	-

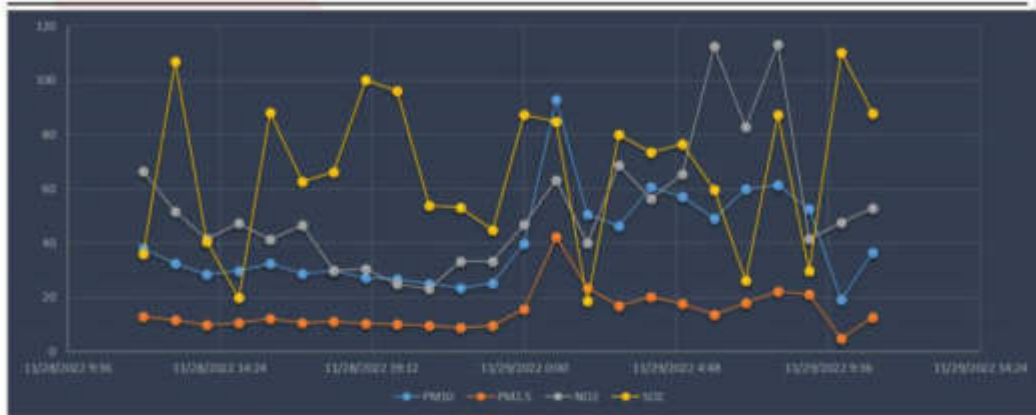


Figure 6 Measurement Graphs for Location ASR3



Table 9 Measurement Results for Location 6

Location	Sampling Date	Results (µg/m ³)					Ambient Conditions	
		PM ₁₀	PM _{2.5}	NO _x	SO _x	TSP (24 Hours Average)	Humidity (%)	Temperature (°C)
ASRS	11/29/2022 15:00	24.5	8.21	0.00	0.00	84.21	72.53	28.31
	11/29/2022 16:00	21	7.26	0.00	0.00		76.44	27.64
	11/29/2022 17:00	20.3	7.09	0.00	0.00		77.32	27.50
	11/29/2022 18:00	19.4	6.95	0.00	0.00		80.05	27.34
	11/29/2022 19:00	20.1	7.45	0.00	0.00		80.87	27.07
	11/29/2022 20:00	17.9	6.7	0.00	0.00		82.22	26.83
	11/29/2022 21:00	18.5	7.06	0.00	0.00		82.75	26.73
	11/29/2022 22:00	18	6.89	0.00	0.00		83.19	26.75
	11/29/2022 23:00	16.3	6.36	0.00	0.00		84.07	26.45
	11/30/2022 0:00	16.7	6.73	0.00	0.00		85.27	26.28
	11/30/2022 1:00	15.4	6.05	0.00	0.00		86.00	26.52
	11/30/2022 2:00	16.4	6.39	0.00	0.00		85.83	26.73
	11/30/2022 3:00	23.3	9.26	0.00	0.00		85.39	27.16
	11/30/2022 4:00	52.1	25	0.00	0.00		94.24	25.51
	11/30/2022 5:00	31.3	15	0.00	0.00		93.45	26.27
	11/30/2022 6:00	31.8	11.6	0.00	0.00		85.30	29.49
	11/30/2022 7:00	37	10.8	0.00	0.00		74.41	32.07
	11/30/2022 8:00	40	11	0.00	0.00		69.88	33.11
	11/30/2022 9:00	41.8	10.5	0.00	0.00		66.03	34.54
	11/30/2022 10:00	43.6	11	0.00	0.00		64.16	34.76
11/30/2022 11:00	57.4	22	0.00	0.00	78.45	29.21		
11/29/2022 12:00	43	15.6	0.00	0.00	80.64	29.99		
11/29/2022 13:00	30.9	10.1	0.00	0.00	83.41	30.47		
11/29/2022 14:00	29.5	9.59	0.00	0.00	82.33	30.27		
Hourly Limit Values	TA Luft	-	-	200	350	-	-	-
	EU	-	-	200	350	-	-	-
	WHO Ambient Air Quality Guideline Value	-	-	-	-	-	-	-
Average		28.59	10.19	0.00	0.00	84.21	80.59	28.63
Daily Limit Values	TA Luft	50	-	-	125	-	-	-
	EU	50	-	-	125	-	-	-
	WHO Ambient Air Quality Guideline Value	45	15	25	40	-	-	-



Figure 7 Measurement Graphs for Location ASR2



Table 10 Measurement Results for Location 7

Location	Sampling Date	Results ($\mu\text{g}/\text{m}^3$)				TSP (24 Hours Average)	Ambient Conditions	
		PM ₁₀	PM _{2.5}	NO ₂	SO ₂		Humidity (%)	Temperature (°C)
AQ4	11-29-2022 12:00	28.7	9.24	11.26	0.00	63.20	69.99	29.39
	11-29-2022 13:00	26.4	8.64	0.00	0.00		71.47	28.87
	11-29-2022 14:00	27.6	9.65	0.45	0.00		73.42	28.27
	11-29-2022 15:00	24.7	8.73	0.00	0.00		73.92	27.69
	11-29-2022 16:00	23.4	8.32	0.00	0.00		76.85	27.70
	11-29-2022 17:00	23.8	8.54	0.00	0.00		76.39	27.59
	11-29-2022 18:00	25	9.26	0.00	0.00		77.58	27.41
	11-29-2022 19:00	24.2	8.99	0.00	0.00		78.54	27.34
	11-29-2022 20:00	22.8	8.53	0.00	0.00		78.43	27.03
	11-29-2022 21:00	21.1	7.86	0.00	0.00		78.92	26.97
	11-29-2022 22:00	23	8.86	0.00	0.00		79.91	26.86
	11-29-2022 23:00	22.4	8.72	0.00	0.00		80.31	26.63
	11-30-2022 0:00	21.3	8.09	0.00	0.00		81.18	27.00
	11-30-2022 1:00	20.4	7.51	0.00	0.00		81.19	27.25
	11-30-2022 2:00	39.4	16	3.63	0.00		82.45	27.31
	11-30-2022 3:00	59.2	28.6	2.47	0.00		91.56	24.96
	11-30-2022 4:00	37.7	18.4	0.00	0.00		91.78	25.34
	11-30-2022 5:00	37.7	17.7	9.51	0.00		92.15	26.45
	11-30-2022 6:00	39	15.8	13.65	0.00		87.35	28.61
	11-30-2022 7:00	29.5	10.7	0.00	0.00		85.91	29.20
11-30-2022 8:00	38.8	13.4	4.10	0.00	81.44	30.47		
11-30-2022 9:00	33.3	11	23.22	0.00	79.79	30.30		
11-30-2022 10:00	35.8	16.5	23.29	1.85	92.80	26.78		
11-30-2022 11:00	50.8	20.4	5.11	0.00	84.65	28.41		
Hourly Limit Values	TA Luft	-	-	200	350	-	-	
	EU	-	-	200	350	-	-	
	WHO Ambient Air Quality Guideline Value	-	-	-	-	-	-	
Average		30.67	12.06	4.03	0.08	63.20	81.17	27.66
Daily Limit Values	TA Luft	50	-	-	125	-	-	
	EU	50	-	-	125	-	-	
	WHO Ambient Air Quality Guideline Value	45	15	25	40	-	-	

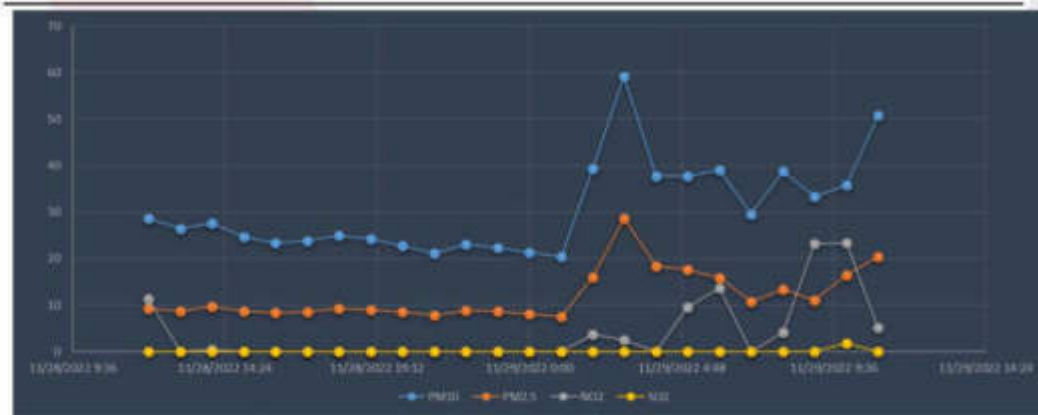


Figure 8 Measurement Graphs for Location AQ4

	ENVIRONMENTAL MONITORING REPORT – NOVEMBER 2022	Document No	MDV-AAK-CEMPX-XX- RP-XXX-0001-000
		Rev. No / Date	00/31.12.2023
		Page No:	77/77

6. ASSESSMENT

The air quality measurement study was carried out with the aim of determining the air pollutants on ambient air quality. Results were assessed according to the TA LUFT, EU Council Directive 2008/50/EC and WHO limit values and this report was prepared. According to air quality measurement studies, background air quality values are comply with air quality standards.

Baseline Data Gathering Monitoring Report

October 2022

GOVERNMENT of MALDIVES

WtE Energy Facility Project

BACKGROUND AIR QUALITY MEASUREMENT REPORT



Thilafushi Island/MALDIVES



AIRS Air Quality Management Services Ltd
Mustafa Kemal Mah. Via Green Is Mrk. B-36
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Tel: +90 312 221 02 45 Fax: +90 312 221 02 45
www.airsaqms.com

Test Report

Customer Name/Address	Alke Alkatas Joint Venture Pvt Ltd H.H.Moomiyaage 5A Asaree Hingun K.Male 20265 MALDIVES
Order No.	EN-M/2207/417_01
Name and identity of test item	Immission (Air Quality)
Remarks	-
Date of Test	17.10.2022-18.10.2022
Number of Pages of the Report	25 Pages
Test Method	Air Quality Sensors HSE-MDHS 14/3
Test results	The test results are given in the measurement result tables.
Environmental conditions	Environmental conditions during the measurement are given in the measurement result tables.
Comments	-

The test and/or measurement results, the uncertainties (if applicable) with confidence probability and test methods are given on the following pages which are part of this report.

Reporter and Approval
Ismail Ulusoy Environmental Engineer

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1. INTRODUCTION

This report has been prepared with the aim of determining the air quality in the sensitive receptors located in the impact area of the The Greater Malé Waste to Energy Project. Air quality results were determined for PM₁₀, PM_{2.5}, NO₂, SO₂, TSP and O₃ parameters.

2. MEASUREMENT METHODS

PM₁₀, PM_{2.5}, SO₂, and NO₂ parameters were monitored by using air quality monitoring stations based on sensor technology. TSP's were measured by dust sampling devices conforming to the international HSE-MDHS 14/3. Ideally as recommended in the EIA report air quality should be measured 24 hours at each station, all measurements were made at each point within this framework 24 hours a day.

The US EPA refers to the term 'air sensor' as a class of non-regulatory technology that is low-cost, portable, capable of measuring several pollutants simultaneously, and often easier to operate than regulatory stations. For example, monitoring air pollution with reference measurement methods (regulatory stations) requires skilled operators to maintain and calibrate measuring instruments. On the other hand, air sensors describe the hardware and software set that can be operated without human intervention and enable unskilled users to monitor air pollution without additional technical knowledge.

Sensor specifications which are used for measurement study are shown below.

Sensor Name	Sensor Type	Accuracy r ² -score*	Range
PM2.5	Laser scattering	>0.9	0 to 1000 µg/m ³
PM10	Laser scattering	>0.9	0 to 1000 µg/m ³
NO ₂	Electro chemical	>0.82	0 to 5000 ppb
SO ₂	Electro chemical	>0.82	0 to 5000 ppb
Temperature	CMOS IC	0.9	-20°C to 60°C
Humidity	CMOS IC	0.9	5% to 95%

The accuracy of these low-cost sensors is as critical as measuring the air quality. With the smart calibration process, low-cost sensors are corrected and accurate compared to reference stations. The Smart Calibration Algorithm consists of the below operational steps shown figure below.



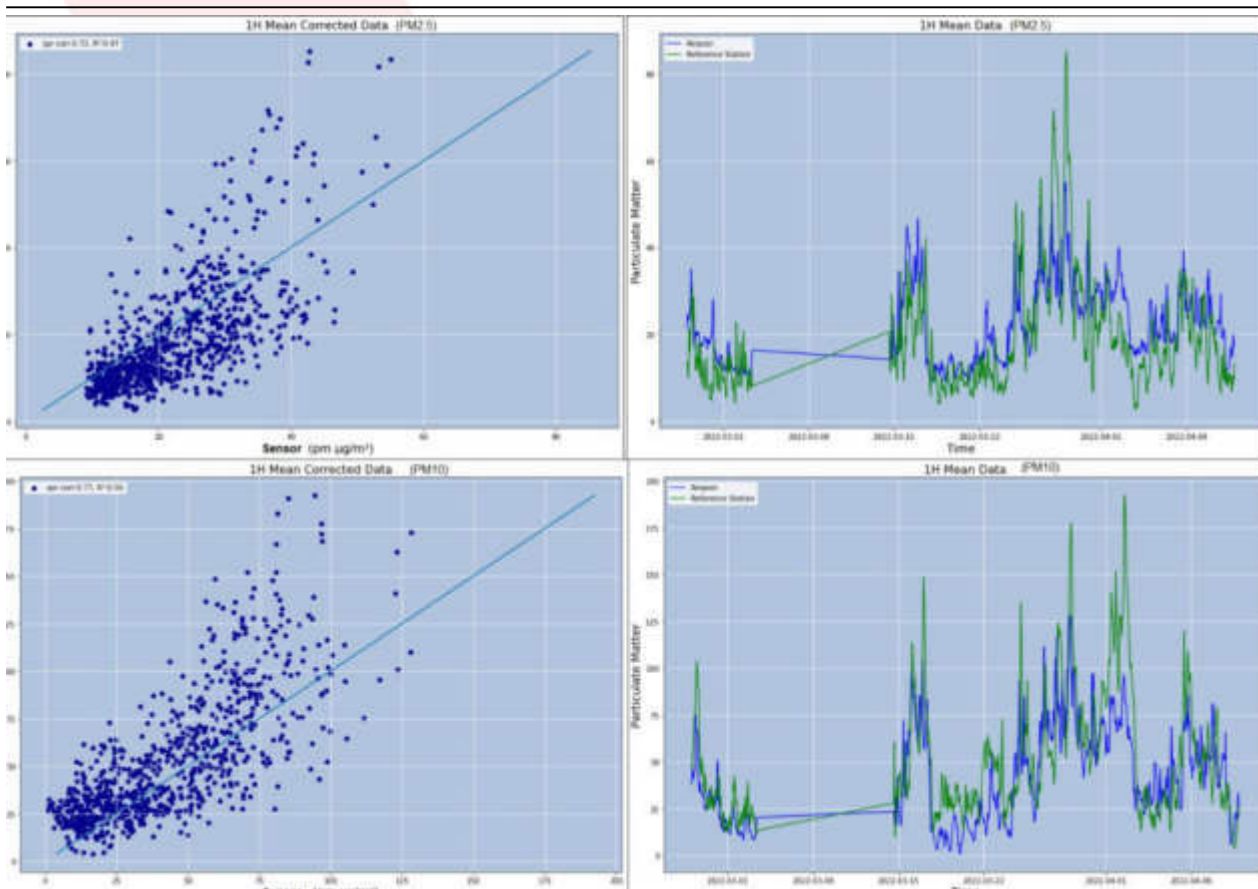
Sensor Units were calibrated using reference stations for a period before the deployment. The calibration process for particle matter and gas pollutants measurement is explained below.

Table 1 Calibration Process for Pollutants

Description	Methodology	
	NO ₂ -SO ₂ -O ₃	PM ₁₀ -PM _{2.5}
Installation	Near Reference Station (3/4 meters)	Near Reference Station (3/4 meters)
Pre-Test	Quality Check in zero air conditions	Quality Check in zero air conditions
Co-Located Period	4-5 weeks	8 weeks
Sampling Period	30 seconds. Hourly mean is used because the reference station measurements are hourly.	60 seconds. Hourly mean is used because the reference station measurements are hourly.
Validation	Cross-validation is used. Also, some ranges of measurement are eliminated, where the reference station is not available.	Cross-validation is used. Also, some ranges of measurement are eliminated, where the reference station is not available.
Calibration Procedure	is obtained via R ² and spearman correlation	is obtained via R ² and spearman correlation

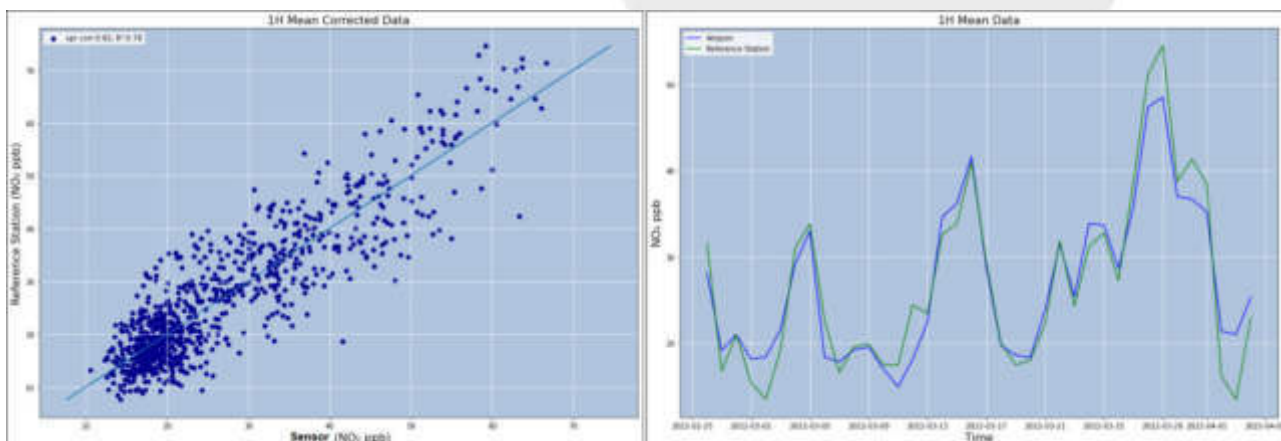
Calibration Result for PM

The corrected measurement results after the Smart Calibration Process are shown in the figures below. The correlation between Sensor Unit’s PM_{2.5} measurements between Reference Station’s PM_{2.5} measurements for hourly and daily mean of data is 0.73, and the correlation between Sensor Unit’s PM₁₀ measurements between Reference Station’s PM₁₀ measurements for hourly and daily mean of data is 0.77.



Calibration Result for Gases

The corrected measurement results after the Smart Calibration Process are shown in the figures below. The correlation between Sensor Unit's NO₂ measurements between Reference Station's NO₂ measurements for hourly and daily mean of data is respectively 0.823, 0.898



2.1. FIELD APPLICATION

This section describes how the measurements, the general methodology of which is given above, are applied in the field.

Preliminary Preparations

Preliminary preparations for air quality measuring stations with sensors include factory calibrations and field calibrations. Factory calibrations are provided by the sensor manufacturer. Stations capable of making reference measurements were used for field calibrations, as described above. For this purpose, a 1-month comparison measurement was carried out at a reference station in the Turkish air quality monitoring network and the calibration factors were applied.

For TSP measurements, filter conditioning was carried out in the laboratory. For this purpose, cassettes and filters were conditioned for 24 hours in a room conditioned at 25 degrees Celsius and 50% humidity and were tared.

During Measurements

Air quality measurements were made with four sets of devices. AQ1, AQ2, AQ3 and ASR2 measurements were made with these devices on the first day, and ASR 3, ASR5 and AQ4 points were measured on the second day.

The locations of the sampling points are determined in the macro scale ESIA report. A site visit was made and a location was determined at the micro scale where the devices would be placed.

Measurements were made at a height of 1.5 to 4 meters from the ground, depending on the suitability of the sampling point.

24-hour measurements were made at each point. Parameters measured with sensor devices consist of the averages of instantaneous measurements taken at 10-minute intervals. For TSP measurements, 24-hour uninterrupted sampling was carried out.

After Measurements

The values after the measurements were taken by reading directly on the air quality measuring devices with sensors.

In TSP measurements, the filters were brought to the laboratory, conditioned for 24 hours at 25 degrees Celsius and 50% humidity for 24 hours and weighed. The 24-hour dust amount was found by subtracting the last weighing result from the first weighing result.

3. MEASUREMENT LOCATION

For the Preconstruction baseline environmental assessment of the ambient air quality was conducted at seven locations: 6 locations at Thilafushi (AQ1, AQ2, and AQ3 in the EIA and the ASR 2, ASR3 and ASR5 recommended for monitoring in the EIA Report) and one location at Villingili (AQ4).

Table 2 Sampling Point Coordinates and Sampling dates

No	Location	Description	Distance to Source (meters)
1	AQ1	Represents dense industrial area	650
2	AQ2	Represents dense industrial area	1000
3	AQ3	Represents dense industrial area	500
4	ASR2	Represents dense industrial area	700
5	ASR3	Represents dense industrial area	500
6	ASR5	Represents dense industrial area	1000
7	AQ4	Represents dense housing and population area	4500



Figure 1 Sampling Points on satellite Map

4. LEGAL FRAMEWORK

Within the scope of the project, particle matter (PM₁₀-PM_{2.5}), NO₂, SO₂ AND TSP emissions were measured. It is known that Maldives does not have a national air quality policy. Therefore, international standards were used for the evaluation. WHO defines limit values in “Air quality guidelines for particulate matter, ozone, nitrogen dioxide and sulfur dioxide” document. European Union directives also have limit values for air pollution prevention (EU Council Directive 2008/50/EC relating to health based standards and objectives for a number of pollutants in ambient air). Germany has an air pollution control regulation titled "Technical Instructions on Air Quality Control" (Technische Anleitung zur Reinhaltung der Luft) and commonly referred to as the TA Luft and determines the limit values to protect the general public and the neighborhood against harmful effects of air pollution on the environment. Comparison of these limit values and chosen parameters and values for the modeling study according to these standards are shown in Table 3.

Table 3. Limit Values Stipulated in the International Legislation

Pollutant	Averaging Period	TA Luft	EU	WHO Ambient Air Quality Guideline Value	Project Standards
Particular Matter <10 µm (PM ₁₀)	24 hours	50 µg/m ³	50 µg/m ³	45 µg/m ³	45 µg/m ³
	1-year	40 µg/m ³	40 µg/m ³	15 µg/m ³	15 µg/m ³
Particular Matter <2.5 µm (PM _{2.5})	24 hours	-	-	15 (not to be exceeded more than 3-4 times a year)	15
	1-year	-	20	5	5
Nitrogen Dioxide (NO _x)	1-hour	200 µg/m ³	200 µg/m ³	-	200 µg/m ³
	24 hours	-	-	25 µg/m ³	25 µg/m ³
	1-year	40 µg/m ³	40 µg/m ³	10 µg/m ³	10 µg/m ³
Sulphur Dioxide (SO ₂)	1-hour	350 µg/m ³	350 µg/m ³	-	350 µg/m ³
	24 hours	125 µg/m ³	125 µg/m ³	40 µg/m ³	40 µg/m ³
	1-year	50 µg/m ³	-	-	50 µg/m ³
TSP*	-	-	-	-	-

*There is no limit value for TSP.

5. RESULTS

Table 4 Measurement Results for Location 1

Location	Sampling Date	Air Quality Results ($\mu\text{g}/\text{m}^3$)					Ambient Conditions	
		PM ₁₀	PM _{2.5}	NO ₂	SO ₂	TSP (24 Hours Average)	Humidity (%)	Temperature (°C)
AQ1	2022-10-17 12:00:00	23.9	7.43	12.39	4.13	41.4	86.4	26.6
	2022-10-17 13:00:00	18.2	5.83	13.20	4.40		85.8	26.7
	2022-10-17 14:00:00	18.6	5.96	12.34	4.11		85.4	26.3
	2022-10-17 15:00:00	14.8	4.39	10.32	3.44		86.2	26.3
	2022-10-17 16:00:00	15.1	4.65	10.63	5.32		86.6	26.3
	2022-10-17 17:00:00	14.8	4.53	7.51	3.76		86.5	25.6
	2022-10-17 18:00:00	15.9	5.01	7.36	3.68		86.3	25.6
	2022-10-17 19:00:00	13.8	4.08	7.70	3.85		88.1	25.5
	2022-10-17 20:00:00	17	5.31	7.98	3.99		90.1	24.6
	2022-10-17 21:00:00	14.5	4.66	8.97	2.99		90.2	24.5
	2022-10-17 22:00:00	13.1	4.15	7.51	2.50		90.7	25.3
	2022-10-17 23:00:00	15.8	5.35	6.58	2.19		92.0	25.3
	2022-10-18 00:00:00	15.5	5.35	8.38	2.79		93.2	26.2
	2022-10-18 01:00:00	14.8	3.94	8.76	2.92		84.9	29.4
	2022-10-18 02:00:00	15.6	3.91	7.76	2.59		73.1	30.7
	2022-10-18 03:00:00	25.8	8.64	11.67	5.84		68.7	31.7
	2022-10-18 04:00:00	19.3	5.45	8.92	2.97		72.6	30.0
	2022-10-18 05:00:00	27.3	7.24	10.77	3.59		73.6	29.8
	2022-10-18 06:00:00	41.3	13.3	17.25	8.63		80.1	27.7
	2022-10-18 07:00:00	27.1	11.6	17.03	8.52		81.1	27.6
	2022-10-18 08:00:00	33.2	15.5	9.46	4.73		83.4	27.6
2022-10-18 09:00:00	26.3	12.9	7.84	2.61	82.3	27.6		
2022-10-18 10:00:00	47.8	22.4	3.03	1.52	82.5	27.5		
2022-10-18 11:00:00	25.5	13	2.61	0.87	83.2	27.4		
Hourly Limit Values	TA Luft	-	-	200	350	-	-	-
	EU	-	-	200	350	-	-	-
	WHO Ambient Air Quality Guideline Value	-	-	-	-	-	-	-
24 h Average		21.46	7.69	9.42	3.83	41.4	83.9	27.2
Daily Limit Values	TA Luft	50	-	-	125	-	-	-
	EU	50	-	-	125	-	-	-
	WHO Ambient Air Quality Guideline Value	45	15	25	40	-	-	-

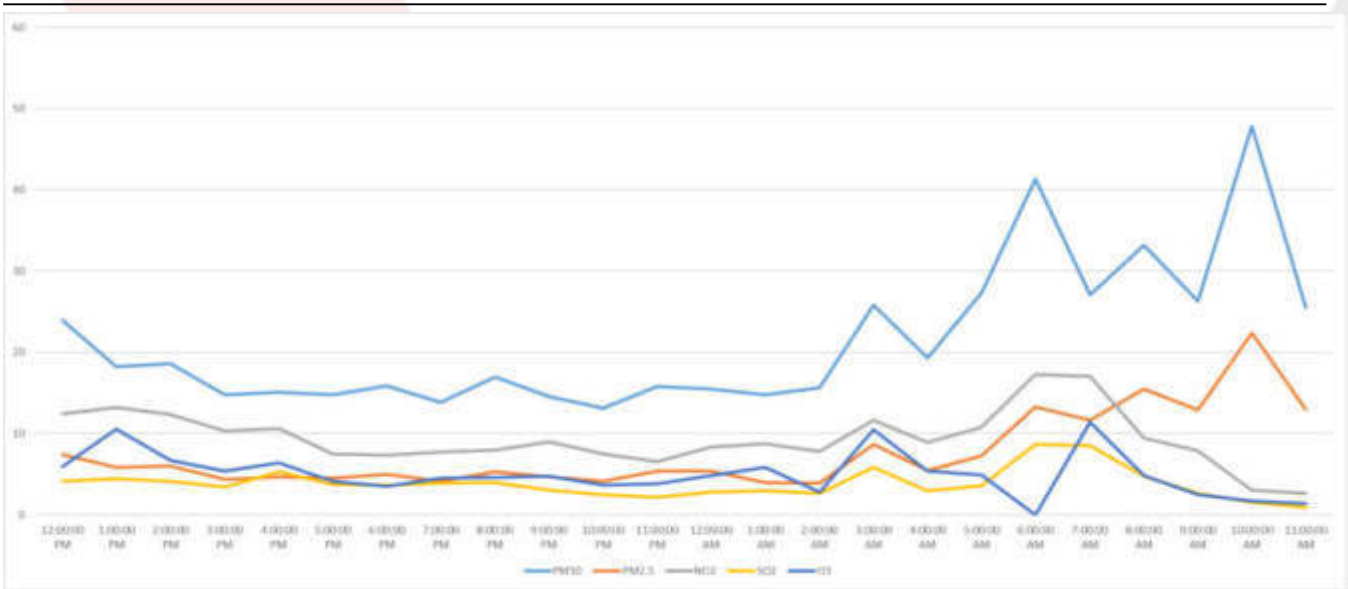


Figure 2 Measurement Graphs for Location AQ1

Table 5 Measurement Results for Location 2

Location	Sampling Date	Results (µg/m ³)					Ambient Conditions	
		PM ₁₀	PM _{2.5}	NO ₂	SO ₂	TSP (24 Hours Average)	Humidity (%)	Temperature (°C)
AQ2	2022-10-17 12:00:00	14.2	4.37	2.57	5.96	27.1	81.7	26.7
	2022-10-17 13:00:00	11.3	3.13	3.60	0.00		82.1	26.9
	2022-10-17 14:00:00	11.4	3.32	3.85	0.00		81.1	26.5
	2022-10-17 15:00:00	11	3.11	0.00	0.00		81.8	26.5
	2022-10-17 16:00:00	10.2	2.8	0.00	0.00		81.9	26.5
	2022-10-17 17:00:00	11.7	3.61	0.00	0.00		81.9	25.8
	2022-10-17 18:00:00	11.3	3.67	0.00	0.00		82.4	25.8
	2022-10-17 19:00:00	11.7	3.78	0.00	0.00		83.2	25.7
	2022-10-17 20:00:00	10	3.11	0.00	0.00		85.1	24.9
	2022-10-17 21:00:00	11.3	3.7	0.00	0.00		85.0	24.6
	2022-10-17 22:00:00	12.6	3.73	0.00	0.00		84.8	25.5
	2022-10-17 23:00:00	16.6	2.74	0.00	0.00		84.4	25.4
	2022-10-18 00:00:00	20.6	3.17	3.85	1.63		91.0	26.5
	2022-10-18 01:00:00	23	5.01	3.79	2.55		80.9	32.5
	2022-10-18 02:00:00	25.9	4.78	3.85	0.00		76.1	30.5
	2022-10-18 03:00:00	39.8	12.7	2.18	0.00		75.4	29.3
	2022-10-18 04:00:00	38.9	15.8	10.16	0.00		73.6	29.9
	2022-10-18 05:00:00	31.6	14.7	3.73	0.00		73.1	29.9
	2022-10-18 06:00:00	28.8	14.1	6.95	11.98		66.6	31.1
	2022-10-18 07:00:00	14.8	3.13	0.04	0.00		70.8	29.7
	2022-10-18 08:00:00	15.9	3.91	0.56	0.00		74.0	28.6
	2022-10-18 09:00:00	13.9	3.62	0.47	0.00		78.3	28.0
2022-10-18 10:00:00	13.1	3.55	0.64	0.00	79.2	28.3		
2022-10-18 11:00:00	12.7	3.54	1.30	0.00	78.1	27.9		
Hourly Limit Values	TA Luft	-	-	200	350	-	-	-
	EU	-	-	200	350	-	-	-
	WHO Ambient Air Quality Guideline Value	-	-	-	-	-	-	-
Average		14.2	4.37	2.57	5.96	27.1	79.7	27.6
Daily Limit Values	TA Luft	50	-	-	125	-	-	-
	EU	50	-	-	125	-	-	-
	WHO Ambient Air Quality Guideline Value	45	15	25	40	-	-	-

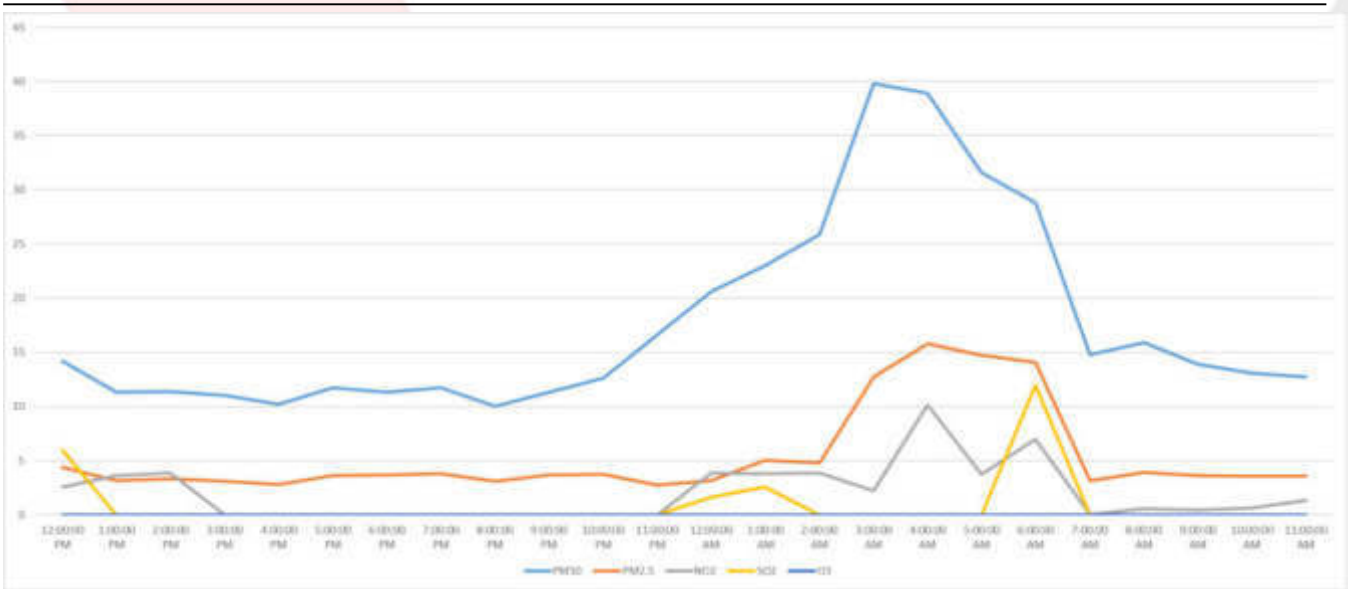


Figure 3 Measurement Graphs for Location AQ2

Table 6 Measurement Results for Location 3

Location	Sampling Date	Results (µg/m ³)				Ambient Conditions		
		PM ₁₀	PM _{2.5}	NO ₂	SO ₂	TSP (24 Hours Average)	Humidity (%)	Temperature (°C)
AQ3	2022-10-17 12:00:00	30.5	7.81	0	0	38.6	86.5	26.6
	2022-10-17 13:00:00	30.8	8.69	0	0		85.9	26.6
	2022-10-17 14:00:00	26	8.69	0	0		85.8	26.3
	2022-10-17 15:00:00	22.9	7.94	0	3.6		86.4	26.2
	2022-10-17 16:00:00	21.3	7.31	0	0		86.7	26.3
	2022-10-17 17:00:00	21.8	7.5	0	0		87.0	25.7
	2022-10-17 18:00:00	21.7	7.5	0	0		87.9	25.6
	2022-10-17 19:00:00	20.6	7.09	0	0		88.3	25.5
	2022-10-17 20:00:00	20.8	7.24	0	1.25		89.9	24.8
	2022-10-17 21:00:00	20.2	7.1	0	0		90.9	24.6
	2022-10-17 22:00:00	18.7	6.48	0	0		89.8	25.4
	2022-10-17 23:00:00	21.2	7.58	0	0		90.3	25.4
	2022-10-18 00:00:00	21.8	7.85	0	0		92.8	27.2
	2022-10-18 01:00:00	20.7	7.32	0	0		88.5	30.3
	2022-10-18 02:00:00	21.3	7.59	0	0		83.0	31.8
	2022-10-18 03:00:00	21.6	7.59	0	0		76.1	30.8
	2022-10-18 04:00:00	20.7	6.86	0	0		72.6	31.7
	2022-10-18 05:00:00	23.7	7.7	0	0		68.7	32.4
	2022-10-18 06:00:00	25	8.1	0	0		68.8	31.7
	2022-10-18 07:00:00	27.9	9.04	0	0		71.3	30.2
	2022-10-18 08:00:00	49.5	14.8	0	0		76.8	28.5
	2022-10-18 09:00:00	35.6	12.9	9.5	3.16		81.5	27.9
2022-10-18 10:00:00	31.2	13.9	4.5	1.5	83.5	27.8		
2022-10-18 11:00:00	27.9	13.4	2.6	0.86	81.4	27.8		
Hourly Limit Values	TA Luft	-	-	200	350	-	-	
	EU	-	-	200	350	-	-	
	WHO Ambient Air Quality Guideline Value	-	-	-	-	-	-	
Average		25.14	8.67	0.69	0.50	83.3	27.8	
Daily Limit Values	TA Luft	50	-	-	-	-	-	
	EU	50	-	-	-	-	-	
	WHO Ambient Air Quality Guideline Value	45	15	25	-	-	-	

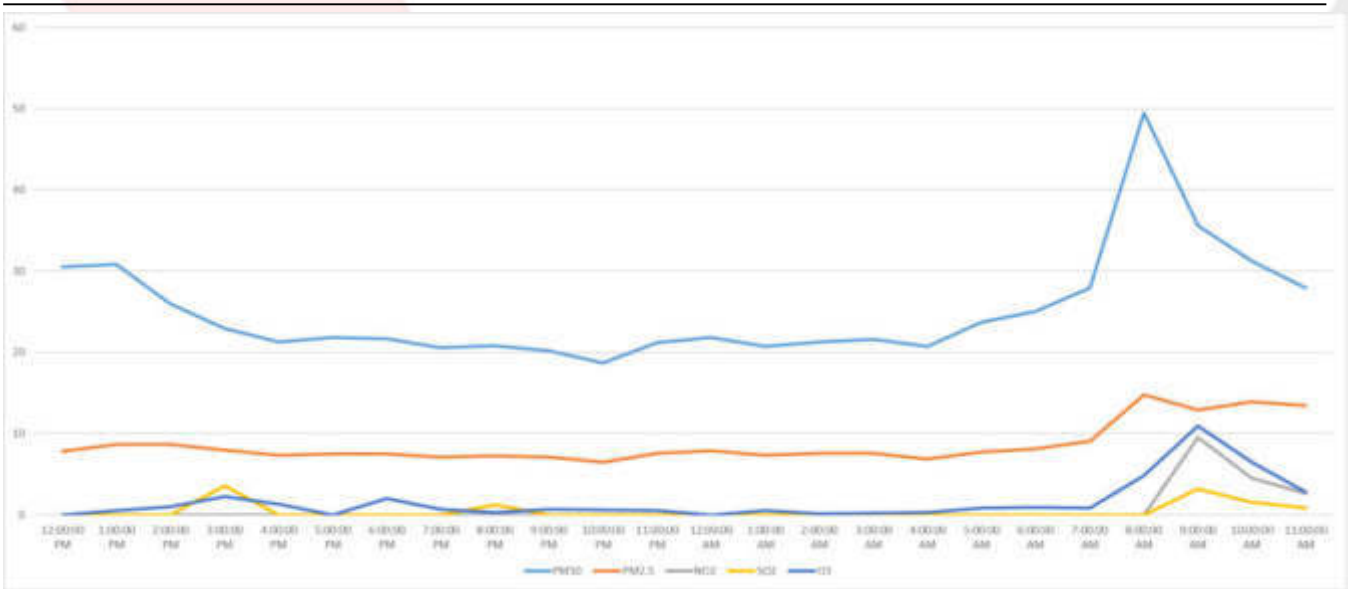


Figure 4 Measurement Graphs for Location AQ3

Table 7 Measurement Results for Location 4

Location	Sampling Date	Results (µg/m ³)				TSP (24 Hours Average)	Ambient Conditions	
		PM ₁₀	PM _{2.5}	NO ₂	SO ₂		Humidity (%)	Temperature (°C)
ASR2	2022-10-17 12:00:00	26.9	7.52	10.18	5.1	30.9	69.7	26.1
	2022-10-17 13:00:00	18.9	4.56	11.22	5.6		69.5	26.3
	2022-10-17 14:00:00	23.9	7.43	12.38	4.1		69.5	25.9
	2022-10-17 15:00:00	18.5	5.96	13.42	6.7		70.0	25.9
	2022-10-17 16:00:00	18.3	5.79	11.66	3.9		70.2	25.9
	2022-10-17 17:00:00	14.8	4.39	10.31	5.2		70.1	25.2
	2022-10-17 18:00:00	15.6	4.88	10.00	5.0		70.2	25.2
	2022-10-17 19:00:00	14.9	4.56	7.51	3.8		71.0	25.1
	2022-10-17 20:00:00	14.8	4.52	7.13	2.4		72.6	24.2
	2022-10-17 21:00:00	13.8	4.12	7.82	2.6		73.1	23.9
	2022-10-17 22:00:00	16.4	5.13	8.13	2.7		73.2	24.8
	2022-10-17 23:00:00	14.8	4.84	8.75	4.4		73.0	24.9
	2022-10-18 00:00:00	13.4	4.28	6.99	2.3		74.4	25.8
	2022-10-18 01:00:00	12.8	4.05	10.00	5.0		74.9	28.2
	2022-10-18 02:00:00	16.2	5.68	7.97	2.7		74.0	30.1
	2022-10-18 03:00:00	15.1	4.02	8.44	2.8		64.8	30.9
	2022-10-18 04:00:00	15.7	3.87	7.67	3.8		55.4	32.6
	2022-10-18 05:00:00	22.1	6.99	10.37	5.2		51.2	33.1
	2022-10-18 06:00:00	20.1	5.56	8.76	4.4		50.8	32.8
	2022-10-18 07:00:00	31.2	8.57	12.22	4.1		52.4	30.8
	2022-10-18 08:00:00	35.6	12.7	16.43	5.5		59.5	28.2
	2022-10-18 09:00:00	26.8	11.7	16.37	5.5		64.5	27.5
2022-10-18 10:00:00	31.8	14.9	8.93	4.5	66.4	27.4		
2022-10-18 11:00:00	26.1	13	5.82	2.9	65.1	27.5		
Hourly Limit Values	TA Luft	-	-	200	350	-	-	-
	EU	-	-	200	350	-	-	-
	WHO Ambient Air Quality Guideline Value	-	-	-	-	-	-	-
Average		19.94	6.63	9.94	4.18	30.9	66.9	27.4
Daily Limit Values	TA Luft	50	-	-	125	-	-	-
	EU	50	-	-	125	-	-	-
	WHO Ambient Air Quality Guideline Value	45	15	25	40	-	-	-

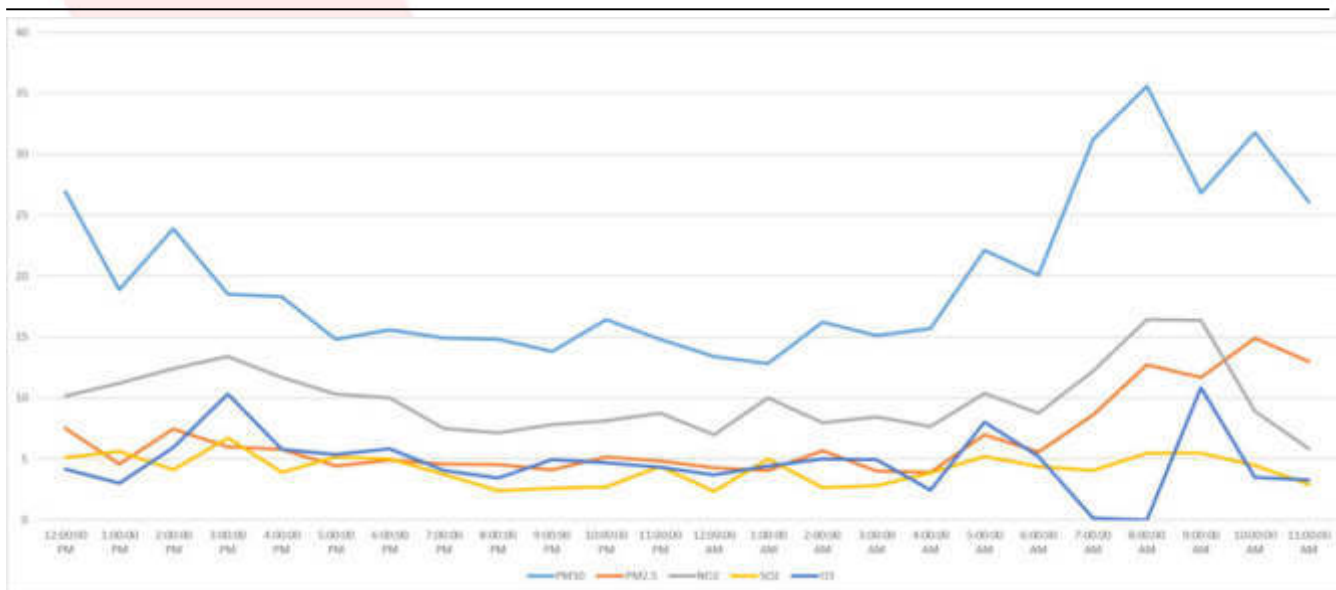


Figure 5 Measurement Graphs for Location ASR2

Table 8 Measurement Results for Location 5

Location	Sampling Date	Results ($\mu\text{g}/\text{m}^3$)					Ambient Conditions	
		PM ₁₀	PM _{2.5}	NO ₂	SO ₂	TSP (24 Hours Average)	Humidity (%)	Temperature (°C)
ASR3	10/18/2022 12:00	15.9	3.91	0.0	0.0	40.3	81.1	27.6
	10/18/2022 13:00	13.9	3.62	0.0	0.0		83.4	27.6
	10/18/2022 14:00	13.1	3.55	0.0	0.0		82.3	27.6
	10/18/2022 15:00	12.7	3.54	0.0	0.0		82.5	27.5
	10/18/2022 16:00	12.8	3.64	0.0	0.0		83.2	27.4
	10/18/2022 17:00	12.8	3.65	0.0	0.0		85.2	27.2
	10/18/2022 18:00	13.4	3.9	0.0	0.0		84.4	27.2
	10/18/2022 19:00	10.7	2.86	0.0	0.0		85.5	27.2
	10/18/2022 20:00	12	3.56	0.0	0.0		84.1	27.9
	10/18/2022 21:00	10.8	3.24	0.0	0.0		73.6	31.4
	10/18/2022 22:00	9.84	2.8	0.0	0.0		70.0	32.0
	10/18/2022 23:00	9.53	2.65	0.0	0.0		68.3	32.7
	10/19/2022 0:00	7.61	1.75	0.0	0.0		69.0	33.2
	10/19/2022 1:00	10.1	2.93	0.0	0.0		72.6	30.1
	10/19/2022 2:00	10.1	2.81	0.0	0.0		59.2	25.0
	10/19/2022 3:00	12.4	3.23	0.0	0.0		59.1	21.0
	10/19/2022 4:00	14.5	3.43	0.0	0.0		79.9	24.1
	10/19/2022 5:00	17.7	2.63	0.0	0.0		76.1	29.8
	10/19/2022 6:00	21.6	2.91	0.0	0.0		76.7	29.3
	10/19/2022 7:00	23.2	3.72	0.0	0.0		79.7	28.4
	10/19/2022 8:00	21.7	2.9	0.0	0.0		80.3	28.2
	10/19/2022 9:00	22.2	2.92	0.0	0.0		81.4	28.0
	10/19/2022 10:00	17	3.25	0.0	0.0		81.8	28.0
10/19/2022 11:00	25.5	7.72	0.0	0.0	81.4	28.0		
Hourly Limit Values	TA Luft	-	-	200	200	-	-	-
	EU	-	-	200	350	-	-	-
	WHO Ambient Air Quality Guideline Value	-	-	-	-	-	-	-
Average		14.63	3.38	0.00	0.00	40.3	77.5	28.2
Daily Limit Values	TA Luft	50	-	-	125	-	-	-
	EU	50	-	-	125	-	-	-
	WHO Ambient Air Quality Guideline Value	45	15	25	40	-	-	-

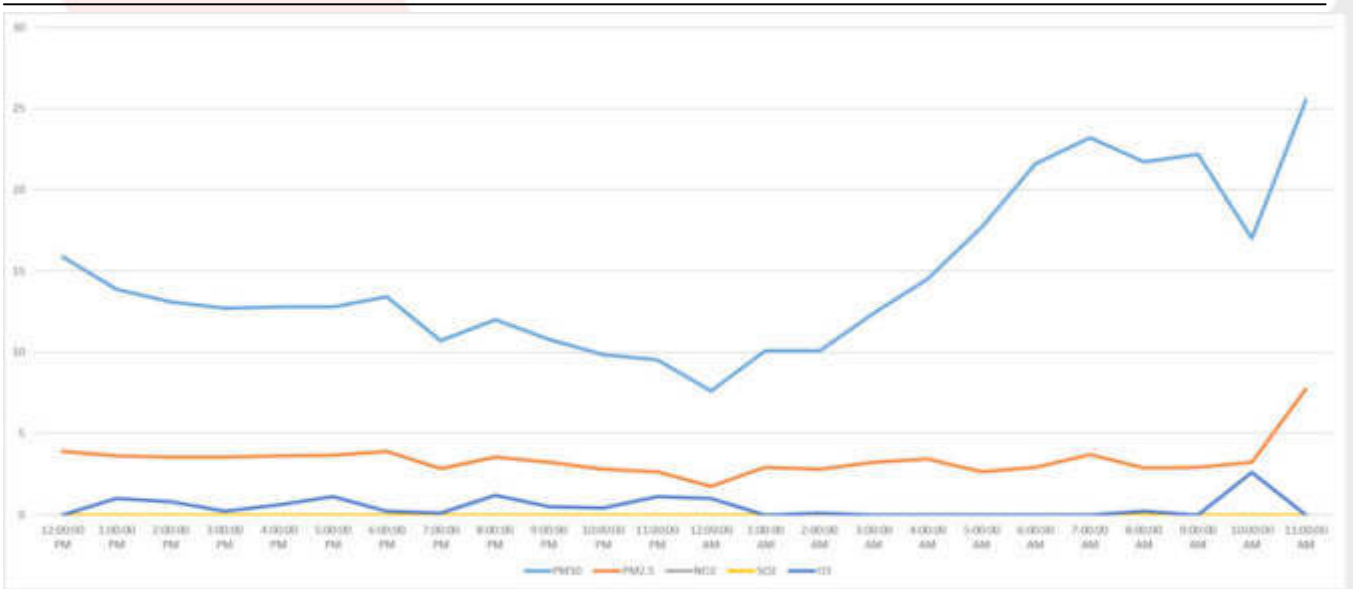


Figure 6 Measurement Graphs for Location ASR3

Table 9 Measurement Results for Location 6

Location	Sampling Date	Results ($\mu\text{g}/\text{m}^3$)					Ambient Conditions	
		PM ₁₀	PM _{2.5}	NO ₂	SO ₂	TSP (24 Hours Average)	Humidity (%)	Temperature (°C)
ASR5	10/18/2022 12:00	16.5	6.41	10.09	3.36	28.0	70.7	29.5
	10/18/2022 13:00	15	5.52	10.74	3.58		74.2	28.5
	10/18/2022 14:00	15.7	5.74	10.05	3.35		78.1	28.1
	10/18/2022 15:00	17.9	6.65	8.40	4.20		79.0	28.4
	10/18/2022 16:00	15.9	5.9	8.65	2.88		78.3	27.8
	10/18/2022 17:00	15.4	5.75	6.11	3.06		79.5	27.9
	10/18/2022 18:00	16.8	6.39	5.99	2.00		79.7	27.9
	10/18/2022 19:00	15.5	6.15	6.27	2.09		78.7	27.9
	10/18/2022 20:00	13.1	5.11	6.49	2.16		79.0	27.9
	10/18/2022 21:00	18.4	7.6	7.30	3.65		78.9	27.8
	10/18/2022 22:00	16.4	7.24	6.12	2.04		81.4	27.4
	10/18/2022 23:00	14.9	6.8	5.35	1.78		80.9	27.3
	10/19/2022 0:00	8.87	3.45	6.82	2.27		81.9	27.3
	10/19/2022 1:00	13.3	5.53	7.13	3.57		82.7	27.3
	10/19/2022 2:00	4.78	1.5	6.32	3.16		78.5	28.8
	10/19/2022 3:00	7.16	1.5	9.50	4.75		76.2	29.3
	10/19/2022 4:00	26.2	7.43	7.26	2.42		77.4	29.0
	10/19/2022 5:00	22.3	6.78	8.76	2.92		73.7	30.0
	10/19/2022 6:00	21.7	6.08	14.04	4.68		71.1	32.7
	10/19/2022 7:00	21.2	5.78	13.87	4.62		56.8	26.6
10/19/2022 8:00	26.9	7.52	7.70	3.85	57.8	22.4		
10/19/2022 9:00	18.9	4.56	6.38	2.13	59.2	20.8		
10/19/2022 10:00	23.9	7.43	2.47	0.82	59.3	19.3		
10/19/2022 11:00	18.5	5.96	2.13	1.07	62.7	19.0		
Hourly Limit Values	TA Luft	-	-	200	350	-	-	-
	EU	-	-	200	350	-	-	-
	WHO Ambient Air Quality Guideline Value	-	-	-	-	-	-	-
Average		16.88	5.78	7.66	2.93	28.0	74	27
Daily Limit Values	TA Luft	50	-	-	125	-	-	-
	EU	50	-	-	125	-	-	-
	WHO Ambient Air Quality Guideline Value	45	15	25	40	-	-	-

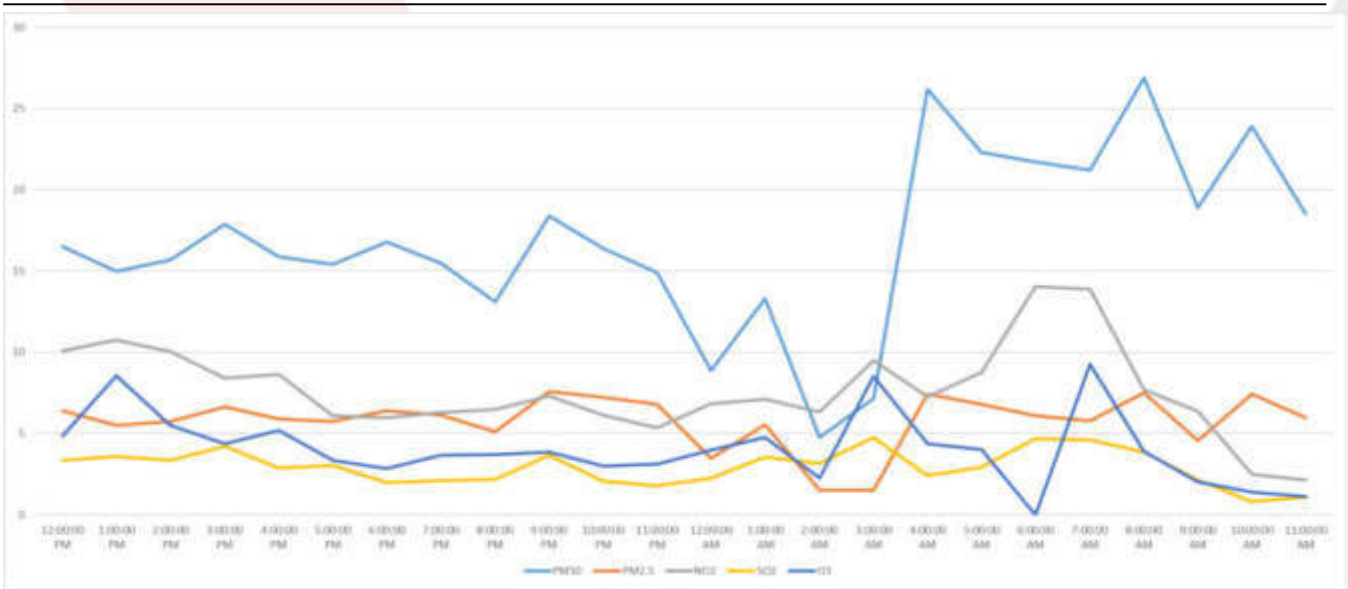


Figure 7 Measurement Graphs for Location ASR2

Table 10 Measurement Results for Location 7

Location	Sampling Date	Results ($\mu\text{g}/\text{m}^3$)				TSP (24 Hours Average)	Ambient Conditions	
		PM ₁₀	PM _{2.5}	NO ₂	SO ₂		Humidity (%)	Temperature (°C)
AQ4	10/18/2022 12:00	22.4	7.45	0.04	0.00	39.4	71.1	30.4
	10/18/2022 13:00	22	7.5	0.56	0.00		76.7	28.3
	10/18/2022 14:00	23.4	8.22	0.47	0.00		81.6	27.7
	10/18/2022 15:00	20.5	6.99	0.64	0.00		83.4	27.7
	10/18/2022 16:00	22.4	7.79	1.30	0.00		81.6	27.9
	10/18/2022 17:00	22.1	7.7	0.00	0.00		83.5	27.8
	10/18/2022 18:00	22.7	8.06	0.00	0.00		83.9	27.7
	10/18/2022 19:00	21.7	7.75	0.00	0.00		84.9	27.5
	10/18/2022 20:00	21.9	7.89	0.00	0.00		84.8	27.4
	10/18/2022 21:00	20.4	7.3	1.54	0.00		85.0	27.3
	10/18/2022 22:00	20.5	7.31	0.25	0.00		85.9	27.2
	10/18/2022 23:00	20	7.09	0.00	0.00		85.4	27.3
	10/19/2022 0:00	22.1	7.98	0.46	0.00		85.8	27.3
	10/19/2022 1:00	22.4	7.97	0.77	0.00		85.2	27.3
	10/19/2022 2:00	23.4	7.95	2.44	0.00		83.9	27.9
	10/19/2022 3:00	25.9	8.3	0.00	0.00		80.6	29.0
	10/19/2022 4:00	49.3	16.3	0.00	0.00		79.7	29.4
	10/19/2022 5:00	25.6	6.49	0.51	0.00		83.0	28.8
	10/19/2022 6:00	28	7.44	0.00	0.00		76.5	30.1
	10/19/2022 7:00	27.9	7.33	0.00	0.00		72.9	31.6
10/19/2022 8:00	28.7	7.71	3.08	0.00	59.1	26.8		
10/19/2022 9:00	34.2	9.91	7.67	0.00	58.8	21.5		
10/19/2022 10:00	30.7	9.19	11.3 1	1.85	60.9	20.6		
10/19/2022 11:00	22.5	6.56	7.32	0.00	60.7	19.3		
Hourly Limit Values	TA Luft	-	-	200	350	-	-	
	EU	-	-	200	350	-	-	
	WHO Ambient Air Quality Guideline Value	-	-	-	-	-	-	
Average		25.03	8.09	1.60	0.07	39.4	78.1	27.2
Daily Limit Values	TA Luft	50	-	-	125	-	-	
	EU	50	-	-	125	-	-	
	WHO Ambient Air Quality Guideline Value	45	15	25	40	-	-	

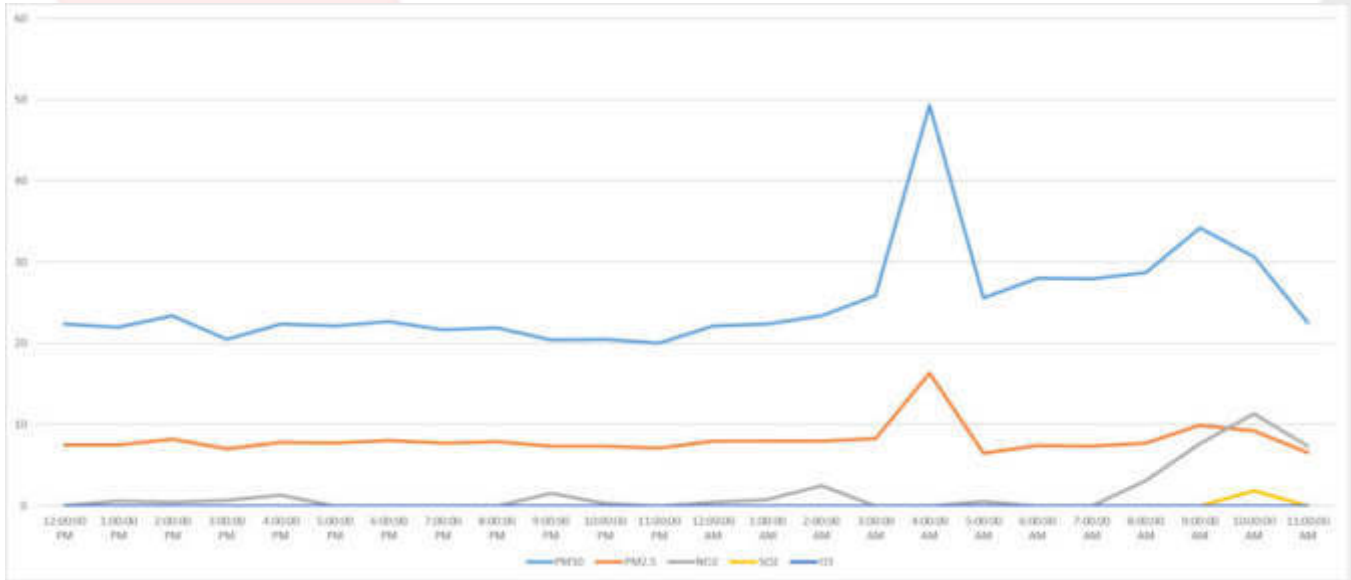




Figure 8 Measurement Graphs for Location AQ4

6. ASSESSMENT

The air quality measurement study was carried out with the aim of determining the air pollutants on ambient air quality. Results were assessed according to the TA LUFT, EU Council Directive 2008/50/EC and WHO limit values and this report was prepared. According to air quality measurement studies, background air quality values are comply with air quality standards.

MARINEWATER TEST RESULTS

 <p>BUREAU VERITAS</p>	74/RPT/ 04714
<h1>TEST REPORT</h1>	
Report No: (7422)168-0279	Jun 30, 2022
	Page 1 of 2
Attn: Mr. Sujith Sudhakaran	
Customer:	Alke Alkatas Joint Venture (Pvt) Ltd
Address :	H.H. Moomiyaage, 5A, Asaree Hingun, 20265 Male, Maldives
Date of Sample Received:	Jun 17, 2022
Date of Testing Started:	Jun 17, 2022
Date of Testing Completed:	Jun 24, 2022
Sample Description:	<p>Sample Received as: A water samples contained in sealed plastic containers</p> <p>Sample Identified by the Client as: Water Sample (1.5L, 1L, 500ml x 2 bottles) SW-3</p>
Sample Drawn By BVCPS	NO
<u>Photo of the Submitted Sample</u>	
	
<p>Bureau Veritas Consumer Products Services Lanka (Pvt) Ltd.</p> <p>No. 970, Galle Road, Kandyella, Mirisawa, Sri Lanka Tel: (94) (1) 2380111-115 (Mainland Lines), Fax: (94) (1) 112622198 & 199 Email: sujith.sudhak@bv.com</p>	<p><small>This report is generated by, and incorporates by reference, the Conditions of Testing as posted at the date of issuance of this report at http://www.bureauveritas.com and is intended for your exclusive use. Any copying or replication of this report in or for any other person or entity, or use of our name or trademarks, is prohibited only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. Measurement uncertainty is only provided where required for accredited tests. Statements of conformity are based on single measurement unless noted. Testing measurements uncertainty also stated, unless otherwise specified in writing. You have 30 days from date of issuance of this report to notify us of any material error or omission caused by our negligence or if you require measurement uncertainty provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the contents of the report contents.</small></p> <p><small>The content of the PDF file is in accordance with the original issued reports for reference only. This Test Report cannot be reproduced, except in full, without your written permission of the company.</small></p>



TEST REPORT

Report No: (7422)168-0279

Jun 30, 2022

Page 2 of 2

TEST RESULTS

No.	Parameters	Results	LOQ	Unit	Test Method
1	Biological Oxygen Demand (BOD ₅) @ 20°C	3	-	mg/L	APHA 23rd ed: 2017 : 5210D
2	Total Suspended Solids (TSS)	4	-	mg/L	APHA 23rd ed: 2017 : 2540D
3	Oil & Grease	ND	2.0	mg/L	APHA 23rd ed: 2017 :5520B
4	Free Ammonia (as NH ₃)*	ND	0.02	mg/L	SLS 614 Appendix A: 2013
5	Nitrate (as NO ₃)*	0.2	-	mg/L	APHA 23rd ed: 2017: 4500 -NO ₃ - B
6	Arsenic (as As)	ND	0.001	mg/L	CPSD-AN-00581: 2019 V15 by ICP-MS
7	Copper (as Cu)	0.083	-	mg/L	
8	Nickel (as Ni)	ND	0.001	mg/L	
9	Cadmium (as Cd)	ND	0.0001	mg/L	
10	Total Chromium (as Cr)	ND	0.001	mg/L	
11	Lead (as Pb)	ND	0.001	mg/L	
12	Mercury (as Hg)	ND	0.00005	mg/L	
13	Zinc (as Zn)	0.005	-	mg/L	
14	Salinity*	36		ppt	By Salinity Refractometer

*Test not covered ISO 17025: 2017 by Sri Lanka Accreditation Board for conformity assessment.

NOTE:

APHA: American Public Health Association, ND: Not Detected.

LOQ: Limit of Quantification, mg/l: milligrams per liter, ppt: Parts per thousand.

ICP-MS: Inductively coupled plasma mass spectrometry.

Contact information for this report (Technical and General Inquiries and Feedback)

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KUMUDINI RATHNAYAKE - ASST. QA MANAGER	TEL: +94 768 229 455	E-MAIL: kumudinie.rathnayake@lk.bureauveritas.com

REVIEWED BY: SHASHI MANOJ

BUREAU VERITAS CONSUMER PRODUCTS SERVICES LANKA (PVT) LTD.
AUTHORIZED SIGNATORY

APPROVED BY:  SHASHI MANOJ

ASSISTANT GENERAL MANAGER -
OPERATIONS/TECHNICAL

END OF THE REPORT.

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74/RPT/ 04712

TEST REPORT

Report No: (7422)168-0278

Jun 30, 2022

Page 1 of 2

Attn: Mr. Sujith Sudhakaran

Customer: Alke Alkatas Joint Venture (Pvt) Ltd
Address : H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Maldives
Date of Sample Received: Jun 17, 2022
Date of Testing Started: Jun 17, 2022
Date of Testing Completed: Jun 24, 2022
Sample Description: **Sample Received as:**
A water samples contained in sealed plastic containers
Sample Identified by the Client as:
Water Sample (1.5L, 1L, 500ml x 2 bottles)
SW-4
Sample Drawn By BVCPS: NO

Photo of the Submitted Sample



Bureau Veritas Consumer Products Services Lanka (Pvt) Ltd.

No. 570, Galle Road, Katubedda, Moratuwa, Sri Lanka
Tel. (94) (1) 250311-215 (dedicated lines), Fax: (94) (1)
112622198 & 199
Email: bang.lanka@bureauveritas.com

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74/RPT/ 04713

TEST REPORT

Report No: (7422)168-0278

Jun 30, 2022

Page 2 of 2

TEST RESULTS

No.	Parameters	Results	LOQ	Unit	Test Method
1	Biological Oxygen Demand (BOD5) @ 20°C	3	-	mg/L	APHA 23rd ed: 2017 : 5210D
2	Total Suspended Solids (TSS)	5	-	mg/L	APHA 23rd ed: 2017 : 2540D
3	Oil & Grease	ND	2.0	mg/L	APHA 23rd ed: 2017 :5520B
4	Free Ammonia (as NH ₃)*	ND	0.02	mg/L	SLS 614 Appendix A: 2013
5	Nitrate (as NO ₃)*	0.2	-	mg/L	APHA 23rd ed: 2017: 4500 -NO ₃ - B
6	Arsenic (as As)	ND	0.001	mg/L	CPSD-AN-00581: 2019 V15 by ICP-MS
7	Copper (as Cu)	0.053	-	mg/L	
8	Nickel (as Ni)	ND	0.001	mg/L	
9	Cadmium (as Cd)*	ND	0.0001	mg/L	
10	Total Chromium (as Cr)	ND	0.001	mg/L	
11	Lead (as Pb)	ND	0.001	mg/L	
12	Mercury (as Hg)	ND	0.00005	mg/L	
13	Zinc (as Zn)	0.007	-	mg/L	
14	Salinity*	36	-	ppt	By Salinity Refractometer

*Test not covered ISO 17025: 2017 by Sri Lanka Accreditation Board for conformity assessment.

NOTE:

APHA: American Public Health Association, ND: Not Detected,

LOQ: Limit of Quantification, mg/l: milligrams per liter, ppt: Parts per thousand,

ICP-MS: Inductively coupled plasma mass spectrometry

Contact information for this report (Technical and General inquiries and Feedback)

GENERAL INQUIRIES:		
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TECHNICAL INQUIRIES:		
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FEED BACK:		
KUMUDINI RATHNAYAKE – ASST. QA MANAGER	TEL: +94 768 229 455	E-MAIL: kumudinie.rathnayake@ik.bureauveritas.com

REVIEWED BY: SHASHI MANOJ

BUREAU VERITAS CONSUMER PRODUCTS SERVICES LANKA (PVT) LTD.

AUTHORIZED SIGNATORY

APPROVED BY:


SONALI NANKANDALA

ASSISTANT GENERAL MANAGER -
OPERATIONS/TECHNICAL

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**BUREAU
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74/RPT/ 04710

TEST REPORT

Report No: (7422)168-0277

Jun 30, 2022

Page 1 of 2

Attn: Mr. Sujith Sudhakaran

Customer: Alke Alkatas Joint Venture (Pvt) Ltd
Address : H.H. Moomiyaage, 5A, Asaree Hingun, 20265 Male, Maldives
Date of Sample Received: Jun 17, 2022
Date of Testing Started: Jun 17, 2022
Date of Testing Completed: Jun 24, 2022
Sample Description: **Sample Received as:**
A water samples contained in sealed plastic containers

Sample Identified by the Client as:
Water Sample (1.5L, 1L, 500ml x 2 bottles)
SW-5

Sample Drawn By BVCPs NO

Photo of the Submitted Sample



**Bureau Veritas Consumer
Products Services Lanka (Pvt)
Ltd.**

No. 570, Galle Road, Katubeddi, Moratuwa, Sri Lanka
Tel: (9411) 2350111-115 (dedicated lines), Fax: (9411)
112622196 & 199
Email: sujith.sudhakaran@bv.com

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74/RPT/ 04711

TEST REPORT

Report No: (7422)168-0277

Jun 30, 2022

Page 2 of 2

TEST RESULTS

No.	Parameters	Results	LOQ	Unit	Test Method
1	Biological Oxygen Demand (BOD ₅) @ 20°C	2	-	mg/L	APHA 23rd ed: 2017 : 5210D
2	Total Suspended Solids (TSS)	3	-	mg/L	APHA 23rd ed: 2017 : 2540D
3	Oil & Grease	ND	2.0	mg/L	APHA 23rd ed: 2017 :5520B
4	Free Ammonia (as NH ₃)*	ND	0.02	mg/L	SLS 614 Appendix A: 2013
5	Nitrate (as NO ₃)*	0.1	-	mg/L	APHA 23rd ed: 2017: 4500 -NO ₃ - B
6	Arsenic (as As)	ND	0.001	mg/L	CPSD-AN-00581: 2019 V15 by ICP-MS
7	Copper (as Cu)	0.045	-	mg/L	
8	Nickel (as Ni)	ND	0.001	mg/L	
9	Cadmium (as Cd)	ND	0.0001	mg/L	
10	Total Chromium (as Cr)	ND	0.001	mg/L	
11	Lead (as Pb)	ND	0.001	mg/L	
12	Mercury (as Hg)	ND	0.00005	mg/L	
13	Zinc (as Zn)	0.004	-	mg/L	
14	Salinity*	36	-	ppt	By Salinity Refractometer

*Test not covered ISO 17025: 2017 by Sri Lanka Accreditation Board for conformity assessment.

NOTE:

APHA: American Public Health Association, ND: Not Detected.

LOQ: Limit of Quantification, mg/l: milligrams per liter, ppt: Parts per thousand.

ICP-MS: Inductively coupled plasma mass spectrometry.

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REVIEWED BY: SHASHI MANOJ

BUREAU VERITAS CONSUMER PRODUCTS SERVICES LANKA (PVT) LTD.
AUTHORIZED SIGNATORY

APPROVED BY:

SONALI NAKANDALA

ASSISTANT GENERAL MANAGER -
OPERATIONS/TECHNICAL

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74/RPT/ 04708

TEST REPORT

Report No: (7422)168-0275

Jun 30, 2022

Page 1 of 2

Attn: Mr. Sujith Sudhakaran

Customer: Alke Alkatas Joint Venture (Pvt) Ltd
Address : H.H. Moomiyaage, 5A, Asaree Hingun, 20265 Male, Maldives
Date of Sample Received: Jun 17, 2022
Date of Testing Started: Jun 17, 2022
Date of Testing Completed: Jun 24, 2022
Sample Description: **Sample Received as:**
A water samples contained in sealed plastic containers

Sample Identified by the Client as:
Water Sample (1.5L, 1L, 500ml x 2 bottles)
SW-6

Sample Drawn By BVCPS NO

Photo of the Submitted Sample



Bureau Veritas Consumer Products Services Lanka (Pvt) Ltd.

No. 570, Dulla Road, Katabedde, Morutawa, Sri Lanka
Tel: (9411) 2550111-115 (dedicated lines), Fax: (9411)
112622198 & 199
Email: svps.lanka@bv.com, bureauveritas.com

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TEST REPORT

Report No: (7422)168-0275

Jun 30, 2022

Page 2 of 2

TEST RESULTS

No.	Parameters	Results	LOQ	Unit	Test Method
1	Biological Oxygen Demand (BOD5) @ 20°C	1	-	mg/L	APHA 23rd ed: 2017 : 5210D
2	Total Suspended Solids (TSS)	3	-	mg/L	APHA 23rd ed: 2017 : 2540D
3	Oil & Grease	ND	2.0	mg/l.	APHA 23rd ed: 2017 :5520B
4	Free Ammonia (as NH ₃)*	ND	0.02	mg/L	SLS 614 Appendix A: 2013
5	Nitrate (as NO ₃)*	0.2	-	mg/L	APHA 23rd ed: 2017: 4500 -NO ₃ -B
6	Arsenic (as As)	ND	0.001	mg/L	CPSD-AN-00581: 2019 V15 by ICP-MS
7	Copper (as Cu)	0.039	-	mg/L	
8	Nickel (as Ni)	ND	0.001	mg/L	
9	Cadmium (as Cd)	ND	0.0001	mg/L	
10	Total Chromium (as Cr)	ND	0.001	mg/L	
11	Lead (as Pb)	ND	0.001	mg/L	
12	Mercury (as Hg)	ND	0.00005	mg/L	
13	Zinc (as Zn)	0.004	-	mg/L	
14	Salinity*	36	-	ppt	By Salinity Refractometer

*Test not covered ISO 17025: 2017 by Sri Lanka Accreditation Board for conformity assessment.

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APHA: American Public Health Association, ND: Not Detected.

LOQ: Limit of Quantification, mg/l: milligrams per liter, ppt: Parts per thousand.

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APPROVED BY: 
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