ANNEXURE III e

☎: General: 0471- 2318910, 2318154, 2318314, 2318355 Chairman: 2318320 Member Secretary: 2318301
E-mail: ms.kspcb@gov.in FAX: 0471 – 2318314, 2318322 web: www.kspcb.kerala.gov.in
KERALA STATE POLLUTION CONTROL BOARD
കേരള സംസ്ഥാന മലിനീകരണ നിയന്ത്രണ ബോർഡ്
Pattom P.O., Thiruvananthapuram – 695 004
പട്ടം പി.ഒ., തിരുവനന്തപുരം – 695 004

E-Office File No: KSPCB/772/2022-EE-5 Date: 30/09/2022

From

The Member Secretary

To

The Member Secretary
Central Pollution Control Board
Parivesh Bhawan, East Arjun Nagar,
Delhi- 110032
e-mail: mscb.cpcb.nic.in,
hwmd.cpcb@nic.in

Sub:- Annual Inventory on Hazardous Waste Management for the year 2021-2022– reg.

Sir,

The Annual Inventory on generation and Management of Hazardous and other wastes for the year 2021-2022 is submitted herewith for your kind information and necessary action.

Yours faithfully,

Enclosure: As above

MEMBER SECRETARY

Copy to:

The Director,
Regional Directorate ,Central Pollution Control Board
Nisarga Bhavan, Thimmaiah Road,
2nd Main Road, Shivanagar
Basaveshwar Nagar, Bengaluru, Karnataka - 560 079
e-mail: zobangalore.cpcb@nic.in

Submission of Annual Inventory on Hazardous and Other Waste Management

Name of SPCB KERALA — **Year: -2021-2022**

A1 Details on Hazardous Waste Generation

Sl. No.	Name of the District	Total Number of HW Generating Industry	Number of Units Posessing authorisation	Number of Units excempted from obtaining Authorisation	Number of HW Units submitted annual returns	Authorized Quantity of Hazardous Waste (Metric Tonne)					Quantity of HW Generated during the year (Metric Tonne)					Details on Import and Export of Hazardous Waste			
						Landfillable	Incinerable	Recyclable	Utilizable	Total Quantity	Landfillable	Incinerable	Recyclable	Utilizable	Total Quantity	Quantity of HW Imported during the year (Metric	Type of HW *	Quantity of HW exported during the	Type of HW*
					1	2	3	4	5		6	7	8	9		10	11	12	13
1	Trivandrum	149	149	0	12	2488.29	0	46.12	0	2534.41	2488.29	0	46.12	0	2534.41	0			0
2	Kollam	158	158	0	158	20000	0	296.2	0	20296.2	14173.34	0	296.2	0	14469.54	0	0	0	0
3	Alappuzha	57	57	0	18	2058.694	0	188.22	0	2246.914	2058.694	0	188.22	0	2246.914	0	0	0	0
4	Pathanamthitta	31	31	0	27	41.79	0	88.533	0	130.323	41.79	0	88.53	0	130.32	0	0	0	0
5	Kottayam	61	61	0	16	458.4	0	595.36	0	1053.76	122.674	0	193.446	0	316.12	0	0	0	0
6	Idukki	58	58	0	42	33	0	96.06	0	129.06	31.67	0	40.5	0	72.17	0	0	0	0
7	Ernakulam	720	720	0	215	16746	1132	15968.976	2888.74	36735.717	14482.1835	0	4620.4045	2686.44	21789.028	0	0	0	0
8	Thrissur	233	181	0	48	213.623	0	253.43	0	467.053	105.86	0	72.948	0	178.808	0	0	0	0
9	Palakkad	75	75	0	75	4000	0	3164.793	0	7164.79	3097.254	0	1165.398	0	4262.652	0	0	0	0
10	Malappuram	32	28 (4 KSRTC DEPOT)	0	32	14487.26	0	353.4435	0	14840.704	14487.26	0	353.4435	0	14840.7035	0	0	0	0
11	Kozhikode	103	103	0	23	218.948	0	165.019	0	383.967	43.98	0	25.02	0	69.00	0	0	0	0
12	Wayanad	41	41	0	36	0	0	40	0	40	0	0	30.8	0	30.8	0	0	0	0
13	Kannur	269	269	0	76	104.83	0	100.11	0	204.94	104.83	0	100.11	0	204.94	0	0	0	0
14	Kasaragod	36	36	0	35	2.2255	0	103.654	0	105.8795	2.2255	0	103.654	0	105.8795	0	0	0	0
	Total	**2023**	**1967**	**0**	**813**	**60853.0605**	**1132**	**21459.9185**	**2888.7**	**86333.72**	**51240.051**	**0**	**7324.794**	**2686.44**	**61251.285**	**0**	**0**	**0**	**0**

Note:*Please specify category also(i.e.Schedule 111-PartA/B/D OF HOWM Rules with Basel Number

A2 Details on Inter-state Movement of Hazardous Waste for Recycling /Utilisation/Disposal								
S. No	Hazardous Waste	Hazardous Waste received from other State/UT		Hazardous Waste sent to other state/UT				
		Name of State/UT from which waste received	Quantity received (MT)	Name of State/UT where waste sent (MT)	Quantity sent (MT)			
		14	15	16	17			
1	For disposal at common secured landfill							
2	For disposal at common Incinerator							
3	For recycling by Schedule IV recyclers			3S RECLAIMERS, PLOT No-G-13/3/midc Ahamed Nagar,	0.7			
4	For Utilization in co-processing (cement plants)							
5	For non-captive utilization based on CPCBs SOPs							

A3 Details on Hazardous Waste Recycled and Utlized											
S.No.	Name of the District	Recycling / Utilization of hazardous waste (generated within the State/ UT)							Recycling/Utilization of hazardous waste (received from other Stae/UT)		
				Quantity Utilized (MT)						Quantity Utilized (MT)	
		Quantity of waste recycled (listed under Schedule-IV Hazardous Wastes)		Co-processing in Cement plant		Non-captive utilization based on CPCBs SOPs		Captive utilization of hazardous waste and other	Quantity of waste Recycled (listed under Schedule-IV Hazardous Wastes)(MT)	Co-processing in Cement plant	Non-captive utilization based on CPCBs SOPs
		Generated within state	Imported	Generated within state	Imported	Generated within state	Imported				
		18	19	20	21	22	23	24	25	26	27
1	Trivandrum	46.12	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
2	Kollam	296.2	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
3	Alappuzha	188.22	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
4	Pathanamthitta	88.533	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
5	Kottayam	193.446	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
6	Idukki	40.5	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
7	Ernakulam	4620.405	NIL	NIL	NIL	NIL	NIL	2684	NIL	NIL	NIL
8	Thrissur	72.948	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
9	Palakkad	1075.66	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
10	Malapuram	353.4435	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
11	Kozhikode	25.02	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
12	Wayanad	30.8	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
13	Kannur	100.11	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
14	Kasaragod	102.697	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
	Total	**7234.102**	**NIL**	**NIL**	**NIL**	**NIL**	**NIL**	**2684**	**NIL**	**NIL**	**NIL**

Recycling units collect the waste from all districts

A4 Details on Hazardous Waste Disposed							
S. No.	Name of the District	Disposal of Hazardous waste (generated within the State/UT)				Disposal of Hazardous waste (received from other State/UT)	
		Quantity Disposed in Secured Landfill (MT)		Quantity Disposed through Incinerator (MT)		Quantity Disposed in common(MT)	
		Common	Captive	Common	Captive	SLF	Incinerator
		28	29	30	31	32	33
1	Trivandrum	2488.29	NIL	NIL	NIL	NIL	NIL
2	Kollam	0	14173.34	NIL	NIL	NIL	NIL
3	Alappuzha	2058.694	NIL	NIL	NIL	NIL	NIL
4	Pathanamthitta	41.78	NIL	NIL	NIL	NIL	NIL
5	Kottayam	122.674	NIL	NIL	NIL	NIL	NIL
6	Idukki	31.67	NIL	NIL	NIL	NIL	NIL
7	Ernakulam	14482.18	NIL	NIL	NIL	NIL	NIL
8	Thrissur	105.86	NIL	NIL	NIL	NIL	NIL
9	Palakkad	2933.425	NIL	NIL	NIL	NIL	NIL
10	Malapuram	14487.26	NIL	NIL	NIL	NIL	NIL
11	Kozhikode	43.98	NIL	NIL	NIL	NIL	NIL
12	Wayanad	0	NIL	NIL	NIL	NIL	NIL
13	Kannur	104.83	NIL	NIL	NIL	NIL	NIL
14	Kasaragod	2.1105	NIL	NIL	NIL	NIL	NIL
	Total	**36902.757**	**14173.34**	**NIL**	**NIL**	**NIL**	**NIL**

A5 Details on Hazardous Waste Stored at Occupier Premises									
S.No	Name of the District	Total Quantity of HW stored at Occupier premises at the beginning to the financial yeari.e. 1st April (MT)				Total Quantity of HW stored at Occupier premises at the end of financial year i.e. 31st March (MT)			
		Landfillable	Incinerable	Recyclable	Utilizable	Landfillable	Incinerable	Recyclable	Utilizable
		34	35	36	37	38	39	40	41
1	Trivandrum	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
2	Kollam	83352.87	Nil	Nil	Nil	97526.21	Nil	Nil	Nil
3	Alappuzha	NA	NA	NA	NA	NA	NA	NA	NA
4	Pathanamthitta	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
5	Kottayam	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
6	Idukki	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
7	Ernakulam	1.6	NIL	1.44	3.08976	NIL	NIL	NIL	4.0905
8	Thrissur	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
9	Palakkad	124.282	0	8.432	0	163.8285	0	8.5012	0
10	Malapuram	0	NIL	NIL	NIL	0	NIL	NIL	NIL
11	Kozhikode	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
12	Wayanad	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
13	Kannur	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
14	Kasaragod	NIL	NIL	NIL	NIL	0.115	NIL	0.957	NIL
	TOTAL	83477.2	NIL	9.872	3.08976	97690.154	NIL	9.4582	4.0905

A6 Details on management of Other Waste (Domestically generated and imported)																		
S.No.	Name of the District	*Number of units authorized for recycling /utilization of Other Waste (MT)		Authorized capacity (MT)		Quantity of other waste Imported from other country (MT)	Basel Number	Name of country	Quantity of other waste exported to other country (MT)	Type and category	Name of Country	Quantity of other waste domestically generated (MT)	Quantity of other waste received from other state (MT)	Quantity of other waste sent to other state (MT)	Quantity of other waste (Schedule III waste B and D) utilized/recycled during the year April-March (MT)		Other waste sent for disposal to Common TSDF (MT)
		Other Waste Schedule III-Part B	Other Waste Schedule III-Part D	Other Waste Schedule III-Part B	Other Waste Schedule III-Part D										Imported	Domestically generated	
		42	43	44	45	46	46(i)	46(ii)	47	47(i)	47(ii)	48	49	50	51	52	53
1	Trivandrum	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
2	Kollam	Nil	Nil	NA	NA	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
3	Alappuzha	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
4	Pathanamthitta	Nil	Nil	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
5	Kottayam	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
6	Idukki	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
7	Ernakulam	NIL	5	NIL	17800 MT/ Annum	8405.902 MT	B1010,B3020	MULTIPLE	NA	NA	NA	NA	NA	NA	8405.902 MT	NA	NA
8	Thrissur	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
9	Palakkad	0	19	0	1810000	2291.051	B1010,B3020	MULTIPLE	0	NA	NA	132337.51	0	0	2291.051	132337.51	NIL
10	Malapuram	NIL	2	NIL	165	165	NIL	NIL	nil	NIL	NIL	NIL	NIL	NIL	165	NIL	NIL
11	Kozhikode	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
12	Wayanad	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
13	Kannur	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
14	Kasaragod	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
	TOTAL	NIL	21	NIL	1827965	10861.953						132337.51			10861.953	132337.51	
Total																	

Note:In case of traders,please provide name of the traders,quantity and category of other waste imported and name of actual user to whom the same has been sent

Quantity of HW generated during recycling/ utilization of other waste (MT)	**Quantity of HW sent for disposal (MT) (as given at 54)**	**Quantity ofn other waste stored at occupiers premises (MT) (Including imported and domestically generated)**	
		at the beginning of the financial year	**at the end of financial year**
54	**54(i)**	**55**	**56**
NIL	NIL	NIL	NIL
NIl	NIl	NIl	NIl
Nil	Nil	Nil	Nil
NA	NA	NA	NA
NIL	NIL	NIL	NIL
NIL	NIL	NIL	NIL
NA	NA	NA	NA
NIL	NIL	NIL	NIL
NIL	NIL	NIL	NIL
NIL	NIL	NIL	NIL
NIL	NIL	NIL	NIL
Nil	**Nil**	**Nil**	**Nil**
NIL	NIL	NIL	NIL
NIL	NIL	NIL	NIL

A7-A Details of Domestic Hazardous Wastes Resulting from Enforcement of Other Regulation									
S.No.	Name of the District	Name and Address of deposition centres authorized for collection	Authorized capacity (MT)	Quantity of domestic HW received at deposition centres (MT)	Quantity of domestic HW sent for recycling / utilization (MT)	Quantity of domestic HW sent to common TSDF (MT)		Quantity of hazardous waste stored at deposition centres (MT)	
						SLF	Incinerator	at the beginning of the financial year i.e.1st April	at the end of financial year i.e. 31st March
		57	58	59	60	61	62	63	64
1	Trivandrum	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
2	Kollam	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
3	Alappuzha	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
4	Pathanamthitta	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
5	Kottayam	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
6	Idukki	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
7	Ernakulam	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
8	Thrissur	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
9	Palakkad	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
10	Malapuram	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
11	Kozhikode	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
12	Wayanad	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
13	Kannur	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
14	Kasaragod	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
	TOTAL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL

A7-B Details ofFluorescent and Other Mercury containing lamps resulting from Enforcement of Other Regulation

Sl.No.	Name of the District	Name and Address of collectionm centres authorized for collection	Authorized capacity (MT)	Quantity of waste received at collection centres (MT)	Quantity of waste sent for recycling /utilization (MT)	Quantity of waste sent to common TSDF (MT)	Quantity of hazardous waste stored at collection centres (MT)	
							at the beginning of the financial year i.e.1st April	at the end of financial year i.e.31st March
		65	66	67	68	69	70	71
1	Trivandrum	NIL	NIL	NIL	NIL	NIL	NIL	NIL
2	Kollam	NIL	NIL	NIL	NIL	NIL	NIL	NIL
3	Alappuzha	NIL	NIL	NIL	NIL	NIL	NIL	NIL
4	Pathanamthitta	NIL	NIL	NIL	NIL	NIL	NIL	NIL
5	Kottayam	NIL	NIL	NIL	NIL	NIL	NIL	NIL
6	Idukki	NIL	NIL	NIL	NIL	NIL	NIL	NIL
7	Ernakulam	Kerala Enviro Infrastructure Ltd Common TSDF project, Inside FACT CD Campus, Ambalamedu, Kochi - 682 303, Kerla	90 MT	NIL	NIL	18.625	35.05	33.56

8	Thrissur	NIL	NIL	NIL	NIL	NIL	NIL	NIL
9	Palakkad	NIL	NIL	NIL	NIL	NIL	NIL	NIL
10	Malapuram	NIL	NIL	NIL	NIL	NIL	NIL	NIL
11	Kozhikode	NIL	NIL	NIL	NIL	NIL	NIL	NIL
12	Wayanad	NIL	NIL	NIL	NIL	NIL	NIL	NIL
13	Kannur	NIL	NIL	NIL	NIL	NIL	NIL	NIL
14	Kasaragod	NIL	NIL	NIL	NIL	NIL	NIL	NIL
	TOTAL		**90**	**NIL**	**NIL**	**18.625**	**35.05**	**33.56**

A8 Details of waste collectors													
S.No.	Name of the District	Name and address of waste collectors	Authorized capacity (MT)	Quantity of waste received at collection centres (MT)		Quantity of waste sent for recycling /utilization (MT)		Quantity of waste sent to common TSDF		Quantity of waste stored at beginning of the year financial year i.e.1st April (MT)		Quantity of waste stored at end of the year financial year i.e.31st March (MT)	
				Hazardous Waste	Other Waste	Hazardous Waste	Other Waste	Hazardous Waste	Other Waste	Hazardous Waste	Other Waste	Hazardous Waste	Other Waste
		72	73	74	75	76	77	78	79	80	81	82	83
1	Trivandrum	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
2	Kollam	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
3	Alappuzha	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
4	Pathanamthitta	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
5	Kottayam	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
6	Idukki	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
7	Ernakulam	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
8	Thrissur	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
9	Palakkad	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
10	Malapuram	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
11	Kozhikode	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
12	Wayanad	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
13	Kannur	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
14	Kasargod	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
	Total	**NIL**	**NIL**	**NIL**	**NIL**	**NIL**	**NIL**	**NIL**	**NIL**	**NIL**	**NIL**	**NIL**	**NIL**

Recycling units collect the waste from all districts

B. Annual Inventory on Recycling/ Utilization/ Pre-processing/ Co-Processing of Hazardous and Other Waste

Name of SPCB: Kerala PCB				Year:2021-22	
S. No.	**Type of Recycling Facilities**	**No of Facilities authorized for recycling /utilization/Pre-processing/Co-processing**	**Total Authorized Capacity (MTA)**	**Quantity Recycled /Utilized/Pre-processed/Co-processed (MT) during the year**	
				Imported Quantity	**Other Than Imported Quantity**
		84	85	86	87
1	Hazardous Waste				
A	**Commonly Recyclable HW**				
1	Brass Dross	NA	NA	NA	NA
2	Zinc Bearing Wastes	NA	NA	NA	NA
3	Copper Bearing Waste	NA	NA	NA	NA
4	Spent catalyst containing nickel, cadmium, Zinc, copper, arsenic, vanadium and cobalt	1(recycler)	72	0	0
5	Lead bearing waste including battery waste	NA	NA	NA	NA
6	E-Waste	NA	NA	NA	NA
7	Paint and ink Sludge/ residues	NA	NA	NA	NA
8	Used Oil+ Waste Oil	6 recycler and 1 utilizer	45804.6 MT for recycling and 92 MT for utilization	0	8457.6797 MT recycled+ 9.22 MT utilized
9	Oil Sludge from ETP	1 utilizer	10711.24 MT for utilization		2702.493 MT utilized
	Total (Recylcler + Utilizer)	7 recyclers and 2 utilizers	45876.6 MT for recycling and 10803.24 MT for utilization		8457.6797 MT recycled and 2711.713 MT utilized
B	**Non-Captive utilization based on CPCBs SOPs**				
1	spent solvents				
2	Residue generated from LD				
3	recover-Platinum,				
4	generated from packling				
5	containing Molybdenum				
6	contaminated				
	Total				
C	Captive utilization of hazardous wastes for which SOP has not been prepared by CPCB				
1					

2					
	Total				
D	**Pre-processing of hazardous waste**				
1					
2					
	hazardous and other wastes				
	Total				
E	**Co-processing in Cement Plants**				
1					
2					
	hazardous and other wastes				
	Total				
II	**Other Waste**				
A	**Other Waste recyclers**				
B	**Utilizers (Under Rule 9) of other waste**	19	1810000	2291.05	132337.5115
	TOTAL				
C	**Utilizers (under captive utilization) of other waste**				
D	**Pre-processors of other waste**				
E	**Co-processors of other waste**				

D1-B Details on disposal of Other Waste in Common TSDF(s)

Name of SPCB **Kerala PCB** **Year:2021-22**

S.No		Name and Address of the TSDF	Quantity of Stock at the		*Quantity of Other Waste		Quantity of Other Waste		Quantity in Stock at the end		Cumulative other waste disposed by	
			Landfillable	Incinerable	For Landfillable	For incineration	Quantity Landfilled directly	Quantity Incinerated	Landfillable	Incinerable	SLF	Incinerator
		107	108	109	110	111	112	113	114	115	116	117
1	Trivandrum	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
2	Kollam	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
3	Alappuzha	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
4	Pathanamthitta	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
5	Kottayam	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
6	Idukki	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
7	Ernakulam	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
8	Thrissur	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
9	Palakkad	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
10	Malappuram	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
11	Kozhikode	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
12	Wayanad	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
13	Kannur	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
14	Kasaragod	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL

D1 A Details on disposal of Hazardous Waste in Common TSDF(s)

Name of SPCB: Kerala PCB **Year:2021-22**

S.No		Name and Address of the TSDF	Quantity in Stock at the beginning of the year (MT)		*Quantity of Hazardous Waste received(MT)		Quantity of Hazardous Waste Disposed(MT)		Quantity in Stocks at the end of the year(MT)		Cumulative HW disposed by the end of financial year(MT)		Capacity		
			Landfillable	Incinerable	For Landfillable	For incineration	For Landfillable	Quantity Incinerated	Landfillable	Incinerable	SLF	Incinerator	Incinerator(T/H)	Incinerator(Kcal)	Landfillable (MT/A)
		92	93	94	95	96	97	98	99	100	101	102	103	104	105
1	Trivandrum	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
2	Kollam	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
3	Alappuzha	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
4	Pathanamthitta	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
5	Kottayam	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
6	Idukki	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
7	Ernakulam	Kerala Enviro Infrastructure Ltd Common TSDF project, Kochi	2234.619	NIL	37172.043	NIL	18669.1	NIL	24554.9	NIL	23157.315	NIL	NIL	NIL	50000
8	Thrissur	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
9	Palakkad	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
10	Malappuram	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
11	Kozhikode	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL

12	Wayanad	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
13	Kannur	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
14	Kasaragod	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
	Total		2234.619	NIL	37172.043	NIL	18669.1	NIL	24554.9	NIL	23157.315	NIL	NIL	NIL	50000

*Including wastes received from other State/UT

Design life of SLF(in years)
106
NIL
NIL
NIL
NIL
NIL
NIL
20
NIL
NIL
NIL
NIL

NIL
NIL
NIL
20

D2 Details on Captive TSDF (S)

Name of SPCB : : Kerala PCB		Year:2021-22						
S. No	Name and Address of Captive facility	Type of facility (landfillable/incinerable/both)	Capacity		HW disposed during the year (MT)		Cumulative HW disposed till the end of financial year (MT)	
			Incinerator	Landfill (MT/A)	SLF	Incinerator	SLF	Incinerator
	118	119	120	121	122	123	124	125
1	The Kerala Minerals and Metals Ltd., Chavara, Kollam	SLF	Nil	20000	14173.34	Nil	97526.21	Nil
2	FACT CD	NA	NA	NA	NA	NA	NA	NA
3	IRE,Udyogamondal	Land fill	0	3000	0	0	0	0
4	HIL,Udhyogamondal	Both	0	480	0	0	0	not available
5	TCC	Land fill	0	3000	0	0	261.16	0

D3 Details on Common TSDF(s) involved in disposal of Domestic Hazardous Waste and Fluorescent and Other Mercury containing lamps

Name of SPCB : Kerala PCB					Year:2021-22						
S .No		Quantity of domestic HW received	Name and address deposition center from where such waste receiv	Quantity of fluorescent and other mercury containing lamps received	Name and address of collection centre from where such waste received	Hazardous Waste Disposed (MT)		Quantity of waste stored (MT)			
						Domestic HW	Fluorescent and other mercury containing lamps	Quantity of waste stored (MT)		Fluorescent and other mercury containing lamps	
								at Occupier premi	at Occupier premis	at the beginning of the	at the end of financial year
	176	177	178	179	180	181	182	183	184	185	186
1	Kerala Enviro Infrastructure Ltd Common TSDF project, Kochi	NA	NA	18.625	Directly received to KEIL		16.2	NA	NA	35.05	33.56

C	List of authorized Recyclers/Utilizers/Pre-processors/Co-processors of Hazardous Waste				
Name of SPCB: Kerala PCB			Year:2021-22		
S.No	Name & Address of the Facility	Type of Hazardous	Authorized Recycling/Ut	Quantity Imported	Quantity Other than
	79	88	89	90	91
I.	**Hazardous Wastes**				
A	**List of Authorized Recyclers of hazardous waste**				
1	**Petrolive Petroleums(Angel group), Erikkulam(PO), Madikkai , Neeleswar,Kasaragod,671314**	Used Oil	**3600**	**0**	**368**
		Waste Oil	**3600**	**0**	**0**
2	M/s CEE JEE Lubricants, IDA,Edayar	Used oil	7200	**0**	575.04
		waste oil	5475	**0**	0.89
3	M/s Excel petrochemical, Industrial Development Area, Edayar.	Used oil	1200	**0**	282.49
4	APJ REFINERIES PRIVATE LIMITED NEW INDUSTRIAL DEVELOPMENT AREA, KANJIKODE, PALAKKAD	Used Oil Waste Oil	14600 8760	0 0	4815.1314 720.9252
5	SWARAJ BIO FUEL ENERGY VIII/1256, NIDA, Kanjikode West, Pudussery central Village, Palakkad,	Used Oil Waste Oil	1000 1000	0 0	785.3031 909.9
6	K.J. Lubes, Mannuthy, THRISSUR	Used oil	1278	Nil (Currently not working)	
7	Aaron International ,Industrial Development Plot,Parakkulam,Anakkara P O, Palakkad	Spent Catalyst	72	0	0
	Total		45804.6 MT	0	8457.6797 MT
B	**List of Authorized Utilizers(under Rule 9) of hazardous waste**				
1	BPCL KOCHI, Ernakulam	Oil Sludge	10711.24 MT		2702.493
2	FACT-CD, KOCHI, Ernakulam	Used Oil	92		9.22
	Total		**10803.24 MT**		**2711.713 MT**
C	**List of Authorized Utilizers(under captive utilization)of hazardous waste**				
1					
2					
	Total				
D	**List of Authorized Pre-processors of hazardous waste**				
1					
2					

	Total				
E	**List of Authorized Co-processors of hazardous waste**				
1					
2					
	Total				
II.					
	Other Waste				
A	**List of Authorized recyclers of other other waste**				
1					
2					
	Total				
B	**List of Authorized Utilizers(under Rule 9) of other waste**				
1	CPS Steel India (P) Ltd.,	Iron and steel	**100000**	**0**	**0**
2	Gasha Steels Pvt Ltd,Nida	Iron and steel	**100000**	**0**	**107760.69**
3	Mannarkad Steels Pvt Ltd.	Iron and steel	**100000**	**0**	**0**
4	MPS Steel P Ltd,Nida	Iron and steel	**100000**	**0**	**0**
5	Beepath Castings (P) Ltd.	Iron and steel	**100000**	**0**	**9296.593**
6	Kairali Steels & Alloys,	Iron and steel	**100000**	**0**	**0**
7	Minar Alloys And Forigns Pvt Lt	Iron and steel	**100000**	**0**	**0**
8	Bhoopathi Steels (P) Ltd.,	Iron and steel	**100000**	**1393.535**	**3029.591**
9	CHIRAKKAL STEELS PVT LTD	Iron and steel	**100000**	**400**	**0**
10	M/s. Paragon Steels (P) Ltd.,	Iron and steel	**100000**	**0**	**0**
11	Manjallur.	Iron and steel	**100000**	**0**	**0**
12	Thieh Ingots Pvt.Ltd	Iron and steel	**100000**	**0**	**0**
13	World Wide Iron And Steel	Iron and steel	**100000**	**0**	**0**
14	Yessem Steel Productions	Iron and steel	**100000**	**0**	**0**
15	South Malabar Steels &	Iron and steel	**100000**	**0**	**0**
16	Vanchinad Forgings Pvt. Ltd.,	Iron and steel	**100000**	**207**	**3608**
17	Kuttippulan Iron & Steel Co.	Iron and steel	**100000**	**0**	**0**
18	AP STEEL REROLLING MILL I	Iron and steel	**100000**	**20**	**200**
19	KUNNATH PAPER MILL		**10000**	**270.516**	**8442.6375**
	Total		**1810000**	**2291.051**	**132337.5115**
C	**List of Authorized Utilizers(under captive utilization) of other waste**				
1					
2					
	Total				
D	**List of Authorized Pre-processors of other waste**				
1					
2					
	Total				
E	**List of Authorized Co-processors of other waste**				
1					
2					
	Total				

ANNEXURE III f

KERALASTATE POLLUTION CONTROL BOARD
കേരള സംസ്ഥാന മലിനീകരണ നിയന്ത്രണ ബോർഡ്
Pattom P.O., Thiruvananthapuram – 695 004
പട്ടം പി.ഒ., തിരുവനന്തപുരം – 695 004

PCB/HO/PLA/AR/20/2021-22 Date: 15/10/2022

From

The Member Secretary

To

The Member Secretary
Central Pollution Control Board
Parivesh Bhavan
East Arjun Nagar
New Delhi - 110032

Sub: Annual report (AR) on Plastic Waste Rules, 2016 for the year 2021-22 - reg.
Ref: Plastic Waste Management Rules, 2016

Sir,

The Annual Report (AR) on Plastic Waste Management Rules, 2016 for the period of 2021-22 is submitted herewith in prescribed format.

Yours faithfully

MEMBER SECRETARY

Encl: As above

Copy to:

1. The Regional Director, CPCB, Bangalore
2. All Ros and Dos
3. IT Cell

FORM-VI

STATE-WISE STATUS OF IMPLEMENTATION OF PLASTIC WASTE MANAGEMENT RULES, 2016, AS AMENDED 2018
ANNUAL REPORT 2021-22

Name of the SPCB/ PCC	Reference of Plastic Waste generation Fees per annum (PPA)*	Implementation of ban on thickness of less than 50 microns carry bags (original +recycled). (Rule 4(c)	Details of Plastic Waste Management (PWM) e.g Collection, Segregation, Disposal (Co-Processing, Road construction, etc.) Rules (5 & 6)-(Action Plan)	Particulars of plastic ban on usage of Plastic carry bags (through Executive Order) Attach copy of such Notification or Executive Order	No. of registered Manufacturing/Recycling Units (Rule 13)			No. of unregistered Manufacturing or Recycling Units (in consideration per complaints received). (Rule 13)	Status of Marking, Labelling on carry bags (Rule 11) Specify No. of units not complied	No. of violation & action taken on non- compliance as of provision as of PWM Rules, 2016, amended (, 2018)(Rule 12)	Quantity getting of carry bags from producers, brand owners and importers (Rule 10)	Status of submission of Annual Report by ULBs to SPCB/PCCs (Rule 16)	Submission of Annual Report to CPCB (Rule 17)
					Plastic Units	Compostable Plastic Units	Plastic Units						
KERALA STATE POLLUTION CONTROL BOARD	Report enclosed as Annexure I	Report enclosed as Annexure II	Report enclosed as Annexure III	Report enclosed as Annexure IV	Manufacturers/ producers- 556 Recyclers- 123	Manufacturers- 2	233	No of unregistered plastic recyclers - Action is being taken to bring all units under the purview of the Board	Usage of plastic carrybags irrespective of thickness banned in the State w.e.f 01/01/2020 Vide G.O.(Ms)No. 6/2019 Env dated 27/12/2019, G.O.(Ms) No. 2/2020 /ENVT dated 27-1-2020; vide GO as G.O.(Ms) No.4/2020 Env dated 16/02/2020 and G.O.(Ms)No. 2/2021/ENVT dated 26/03/2021	1) Order issued to all Local Bodies for ban on use, manufacture, storage and sale of Single Use plastic items w.e.f 01/01/2020 2) Directions issued to Urban Commissioner, Director of Panchayat, all local bodies regarding the direction received from CPCB dated on 05.07.2022 3) Directions issued to Additional Chief Secretary regarding the direction received from CPCB dated on 11.07.2022 4) Directions issued to District Collector, Additional Chief Secretary, Health and Fisheries, Urban Commissioner on 25.07.2022, regarding field inspection on plastic recycling, sale and usage of Single Use Plastic items and E&HC meeting. 5) Directions issued to Urban Director, Director of Panchayat regarding Directions received from CPCB+ dated on 05.08.2022 6) Directions issued to Additional Chief Secretary regarding the direction received from CPCB dated on 05.08.2022 7) Directions issued to all local bodies ban on non-woven plastic dated on 07.01.2022. 8) State wide caution published on News paper @ 07.07.2022, 01.08.2022, 09.07.2022 & 11.08.2022 9) Direction issued to Urban Director, Director of Panchayat regarding Direction received from CPCB/SLIP compliance monitoring period, SLIP grievance app & SLIP grievance Portal dated on 26.08.2022 10) Directions issued to plastic units to obtain EPR registration dated on 06.09.2022 11) Direction issued on Plastic Waste Fineries on dated on 01.09.2022 The Board officers along with the officials of Departments conducted inspections for the strict implementation of single use plastic ban in the State. Violations were observed in 119 establishments and an amount of Rs. 5,15,000/- was imposed as fine and Rs.9,10,000/- was collected. Confiscation of banned items was also done for the strict implementation of ban in the State. The Board inspected various shops and hotels/ places "Manglaland Thiruvananthapuram Dist on 21/03/2022 and 13 kg of banned single use plastic were caught in this inspection another inspection was carried out in Kollam city and fine of Rs 1,50,000/- For banned items of 1.100kg has Single use plastic is collected. Alappuzha District police filing banned single use plastic, imposed fine Rs 84000/- (Rupees eighty four thousand) 150000/- Report enclosed as Annexure VI	Usage of plastic carrybags irrespective of thickness banned in the State w.e.f 01/01/2020 Vide G.O.(Ms)No. 6/2019 Env dated 27/12/2019,G.O.(Ms) No. 2/2020 /ENVT dated 27-1-2020; vide GO as G.O.(Ms) No.4/2020 Env dated 16/02/2020 and G.O.(Ms)No. 2/2021/ENVT dated 26/03/2021	373 local bodies (64 urban) Report enclosed as annexure VIII	14.10.2022

Annexure I (Column 2)

Details of Plastic waste management details		
PW Generated (TPA)	**PW Collected (TPA)**	**PW Processed (TPA)**
71000 TPA	67348.79 TPA	Clean Kerala Company has collected 612.84 MT of scheduled plastic during the year 2021-22 about 529.8 MT & 6.15 MT of plastic. In addition to this District wise webinars were conducted 500 TPA were collected by various other authorised collectors has been utilised for road tarring by PWD & BHAI respectively 6684.79 MT of plastic is recyled to varrious products by various authorised recyclers . Almost all the brand owners who obtained registration from the Central Pollution Control have not furnished reports to the State Pollution Control Board and hence it is not possible to quantify or verify the quantity of plastic waste if any taken back by them. From these annual reports received, the Board is not able to verify the genuenity of reports.

Annexure II (Column 3)

STATUS OF IMPLEMENTATION OF BAN ON CARRYBAGS WITH THICKNESS < 75 Micron

Items	Status
Implementation of thickness of less than 75 microns carry bags (virgin/ recycled) (with effect from the 30th September, 2021) (Rule 4(e) August 12, 2021)	Ban on single use plastic items in the State w.e.f 01/01/2020 Vide G.O.(Ms) No. 6/2019 Env dated 27/11/2019; (Plastic carry bags irrespective of thickness are included in the single use plastic ban.) vide GO no: G.O.(Ms) No.4/2020 Envt dated 16/02/2020 and G.O.(Ms)No.2/2020/ENVT dated 28/02/2021. **SEDF Project:** MOU was signed between Kerala State Pollution Control Board & Socio Economic Unit Foundation for conducting the assessment of plastic product (SUP) & SUP alternatives. The copy of the report submitted by SEUF is enclosed as Annexure IX. **Webinars:** 1. Awareness session on plastic pollution and single use plastic dated 18.10.2021. Focus: University of Kerala 2. Awareness session on plastic pollution and single use plastic dated 30.10.2021 Focus: Trivandrum 3. Awareness session on plastic pollution and single use plastic dated 03.11.2021 Focus: Kannur and Kasargod 4. Awareness session on plastic pollution and single use plastic dated 09.11.2021 Focus:Kozhikode & Wayanad 5. Awareness session on plastic pollution and single use plastic dated 12.11.2021 Focus: Malappuram 6. Awareness session on plastic pollution and single use plastic dated 18.12.2021 Focus: Ernakulam 7. All India Radio (AIR) on Awareness on Plastic Waste Management in Kerala dated 25/06/2021. 8.Awareness on Plastic Waste Management and Marine littering in DD channel dated 23/12/2021. 9.Advertisement is given in Magazine **Brochure:** 1.Message circulated to communicate the idea of preventing plastic pollution as part Christmas 2021. 2.Message circulated to communicate the idea of preventing plastic pollution dated 20/08/2021. The details of the awareness program conduct by the Kerala State Pollution Control Board is enclosed as Annexure X

Annexure-III(Column 4)

ACTION PLAN FOR PLASTIC WASTE MANAGEMENT

Sl. No.	Items	Current Status	Desirable Levels	Gap between current status and desirable level	Timelines
1	What is the quantity of plastic waste generated (Annual Report from Vl pt. 2.6)(TPD)	71000 TPA	67548 TPA	3451.23	6 months (MCF, MRF, Hazardous waste are being set up)
2(a)	Number of registered plastic manufacturing units	536			
2(b)	Capacity of registered plastic manufacturing units (TPD)	Being collected			
3(a)	Total No of ULBs	93 (87 Municipality and 6 Corporation)			
3(b)	Percentage of ULBs which have set-up of plastic waste management system as per Rule 6(2)?	98.92	100	1.08	6 months
3(c)	Percentage of ULBs having facilities for collection of segregated waste	91.3	100	8.7	6 months
3(d)	Percentage of ULBs Material Recovery Facility	70.96	100	29.04	6 months
4(a)	Total No. of Panchayat	941			
4(b)	Percentage of Gram Panchayat which have setup of plastic waste management system as per Rule?	31.74	100	68.26	6 months
4(c)	Percentage of GPs having facilities for collection of segregated waste	87.25	100	12.75	6 months
4(d)	Percentage of GPs having Material Recovery Facility	66.29	100	33.71	6 months
5(a)	No. of registered Producers/brandowners/importers as per	34 no.s			
5(b)	Percentage of Producers/brandowners/Importers which have engaged with ULBs for EWM				
5(c)	Percentage of ULBs which have set-up system for plastic waste management with assistance of producers been set-up?Rule	1.1	100	98.9	6 months
6(a)	Number of registered plastic waste recyclers	123			
6(b)	Capacity of recycler (TPD)	600 TPD			
7	Status of Utilization of plastic waste (Annual Report from Vl pt.4)				
7(a)	Quantity of Plastic waste utilized in recycling (TPD)	600 TPD			
7(b)	Quantity of Plastic waste utilized in recycling Road Construction	9615.75 TPA			
7(c)	Quantity of waste co-processed in plastic waste in cement kilns	1300.5 TPA			
7(d)	Quantity of waste utilized in production of RDF	Nil			
7(e)	Quantity of plastic waste used in production of waste to oil	Nil			
7(f)	Quantity of plastic waste used in other purpose (Please specify)	Nil			
8(a)	No of Units registered manufacturing compostable plastic	3 units			

8(b)	Total capacity of units manufacturing compostable plastic	104 TPM
9(a)	No. of unregistered plastic manufacturing or recycling units (Annual Report format pt.7)	Nil
10	Whether local bodies have framed bye-laws [Rule 4(4)]?	Yes
11	Whether plastic carry bags & plastic sheet of thickness<50microns banned or not [Rule 4(c)]?	Banned
12	Has complete ban on plastic carry bags been imposed? (Annual Report format pt.3)	Yes
13	Status of action taken on non-compliance of PWM Rules (Annual Report format pt.9)	The Board officers along with the officials of departments conducted inspections for the strict implementation of single use plastic ban in the State. Violations were observed in 193 establishments and an amount of Rs 7,15,000/- was imposed as fine and Rs.3,33,000/- was obtained. Confiscation of banned items was also done for the strict implementation of ban in the State. The Board inspected various shops and market places throughout Thiruvananthapuram district on 21/05/2022 and 12 kg of banned single use plastic items caught in this inspection another inspection was carried out in Kollam city and fine of Rs.1,90,000/- . Pathanamthitta 611.1558kg ban Single use plastic collected. Alappuzha District collected 30kg banned single use plastic ,imposed fine Rs 90000/- Idukki 0.363 Tthere penalty 150000/-.
14	Status of making & labeling on plastic carry bags & multi layered packaging	Single use Plastic is banned in Kerala
15	Whether State Level Advisory Committee is constituted or not? [Rule 16] If yes, details of number of meetings conducted in a year	Yes
16	Status of phasing out of manufacture and use multi layered plastic which is non-recyclable or non-energy recoverable or with	PVC flex has been banned in the State.
17		
a	Details of Action taken to ensure that plastic waste is not burnt [Rule-6(g)]	Instruction given to local bodies
b	Details of Action taken w.r.t. engagement of civil societies/groups with waste pickers [Rule-6(f)]	Local bodies with Haritakarma Senas associated with waste pickers
c	Details of Action taken w.r.t. creating awareness among stakeholders [Rule 6(e)]	Awareness Programmes were conducted at State, District and Institutional levels.

	Annexure IV (Column 5)					
	Details of units producing restricted Single Use Plastic items					
S.No.	Items	Total No of units	Operating Units (No.)	Capacity of operating units (TPD)	Closed Units (No.)	Capacity of closed units (TPD)
1	Ear buds with plastic sticks	NIL				
2	Plastic sticks for balloons					
3	Plastic flags					
4	Candy sticks					
5	Ice-cream sticks					
6	Polystyrene [Thermocol] for decoration					
7	Plates, cups, glasses, cutlery such as forks, spoons, knives, straw, trays,					
8	Wrapping or packing films around sweet boxes, invitation cards, and cigarette packets					
9	Plastic or PVC banners less than 100 micron, stirrers					
10	Plastic Sheets < 50 micron					
11	Plastic Bags < 75 micron					

*Ban on single use plastic items in the State w.e.f 01/01/2020 Vide G.O.(Ms) No. 6/2019 Env dated 7/11/2019, G.O. (Ms) No. 2/2020 /ENVT dated 27-1-2020 | Vide GO no G.O. (Ms) No. 4/2020 Envt dated 16/12/2020 and G.O.(Ms)No 2/2021ENVT dated 28/02/2021 G.O. (Rt) No. 37/2021/ Envt. dated 04/08/ 2021. Plastic carry bags irrespective of thickness are included in the single use plastic ban.

Annexure V (Column 6)					
Details of Registered Plastic Manufacturers (Column 6)					
S.No.	Name of the unit	Capacity	MLP/ Rigid/ Flexible/ Recycler/ Co-processing/ Compostable / Others (Please specify)	Status (Operating/Closed)	Production capacity (TPD)
1 (KOTTAYAM)	Royal Plasto Products	107.5hp	Plastic sheet	Operating	450 kg/d
2	PEARL INDUSTRIES	NA	NA	Closed	NA
3	INDIAN POLYMERS	169.6HP	POLYTHENE BAGS AND LATEX COLLECTION CUP	Operating	1170 kg/d
4	Aiswarya polyflex pvt.ltd	40hp	Polyprinted packing bag	Operating	100 kg/d
5	M/S SOORYA PLASTICS	20hp	NA	NA	NA
6	Poly print Industries	15hp	Polyprinted packing bag	Partially working	600kg/d
7	DILEEP PLASTICS	35hp	NA	Operating	NA
8	St. Jude Polymer Industries	100hp	NA	Operating	NA
9	HINDUSTAN POLYMER PRODUCTS	42.5hp	NA	Operating	310 kg/d
10	M/S FESTEL TANKS PVT.LTD	75hp	NA	Operating	NA
11	M/S SOBHA PLASTIC INDUSTRIES	NA	NA	Closed	NA
12	M/S ZION PRINTERS	NA	Polythene and plastic processed products manufacturing (virgin plastic	Operating	NA
13	M/s SHARON POLYMERS	60hp	Plastic bag and sheet without printing	Operating	600 kg/d
14	M/s SHARON PLASTICS	60hp	Plastic bag and sheet without printing	Operating	600 kg/d
15	M/S SOORYA POLYMER INDUSTRIES	20hp	NA	Operating	NA
16	KANGATHOSHIBA YIL TRADE LINKS		NA	Closed	NA
17	AISWARYA PLASTICS	30hp	Plastic sheets	Operating	400 kg/d
18	Premier Plastic Products, Vattoor P.O., Chothipuzha, Changanassery.	20hp	NA	Operating	NA
19	DELTA ENTERPRISES	60hp	NA	Operating	NA
20	M/S ROYAL PLASTICS	65hp	NA	Operating	NA

21	FRIENDS STEEL INDUSTRIES	17.25hp	NA	Operating	NA
22	M/S JOASH PLASTO KRAFT	26.47hp	NA	Operating	NA
23	SHEELA PLASTICS	10hp	NA	Operating	NA
24	Gilbert Polymers	37.5hp	NA	Operating	NA
25	ATLAS INDUSTRIES	78.9hp	Printed polythene films/bags	Operating	425 kg/d
26	COLOURDOT INDUSTRIES	42hp	NA	Operating	
27	M/S ASSOCIATED POLYMERS	24hp	NA	Operating	400 kg/d
28	Associated Extrusions	NA	NA	Closed	NA
29	M/S ASSOCIATED PLASTICS	56HP	NA	Operating	400 kg/d
30	M/S MAMPARAMPIL POLYMERS	150 HP	NA	Operating	
31	SURABHI POLYMERS	48 HP	NA	Operating	240 kg/d
32	Mannariyil Industries	NA	Plastic bags for textile purpose	Operating	NA
33	Jaison Impex	10 HP	NA	Operating	NA
34	M/S MAMPARAMPIL POLY PACKS	114 HP	NA	Operating	NA
35	M/S VINTAJE PACKS	250 HP (Unit in ICE condition)	NA	Operating	NA
36	M/S P FOR POLYMERS	20 HP	NA	Operating	NA
37	M/S SUPREME CLEARPET PREFORMS	10 HP	NA	Operating	NA
38	HI-TECH PLASTICS	NA	NA	Closed	NA
39	M/S Swathy Plastic Lamination Chirakkadavu East	5HP	NA	Operating	NA
40	Allied rubber and Plastics	NA	Polythene tubings	Operating	250 kg/d
41	HEXATON POLY PLAST	10 HP		Operating	
42	Tallstream Rubber and Plastics	NA	Polythene tubings	Operating	250 kg/d
43	M/S PADINJAREKARA POLYMERS PRIVATE LTD	46 HP	Plastic carry bags and packing materials	Operating	26 ton/d
44	D COMPANY	2 HP	NA	Operating	NA
45	M/S COLOUR PACK	40 HP	Plastic bag	Operating	300 kg/d
46	M/S GALLANT PLASTICS	73.5 HP	NA	Operating	NA
47	M/S JOHNSON PLASTICS	NA	NA	Operating	2.5 ton/day
48	EMDEES POLYMER PRODUCTS	34 HP	NA	Operating	NA
49	M/S RENON PLASTICS	48HP	Polythene packing material and Printed bags	Operating	300kg/day

50	ANCHAM PLASTIC INDUSTRIES, VAZHOOR,	NA	NA	NA	NA
51	Toyota Rathinsons	NA	NA	Closed	NA
52	M/S ABEYSON POLYMERS	75 HP	Plastic carry bags,ring/sealing sheet and metrol tube	Operating	300 KG/D
53 (DG-2)	M/s. ALFIA PLASTICS	Plastic Waste - 150 Kilogram Plastic chips - 850 Kilogram Colour Pigments - 03 Kilogram	Recycler	Operating	
54	M/s. STAR PLASTICS	Plastic Scrap /Day - 300 Kilogram	Recycler	Operating	
55	M/s. FATHIMA PLASTICS	Waste plastics - 350 Kilogram	Recycler	Operating	
56	M/s. F.F. PLASTICS	Waste plastics - 1500 Kilogram	Recycler	Operating	
57	M/s. P.M. PLASTICS	Cleaned Waste plastics - 500 Kg	Recycler		
58	M/s. K.K.M. PLASTICS	Waste Plastics - 1250 Kilogram	Recycler		
59	M/s. EVERSHINE PLASTICS	Plastic Granuales - 1.4 Metric Tonne. Waste Plastic - 1.5 Metric Tonne	Recycler	Operating	
60	M/s. C.K.T. PLASTICS	Waste Plastics - 8.50 Metric tonnes	Recycler	Operating	
61	M/s. P M PLASTIC REPROCESSING UNIT	Plastic Waste - 850 Kilogram	Recycler		
62	M/s. NEDUNGATTUKUDY PLASTICS	Waste plastic - 30 Metric Tonnes	Recycler	Operating	
63	M/s. INFA PLASTICS	Waste Plastics - 125 Metric Tonnes	Recycler	Operating	
64	M/s. A-ONE BOTTLES & PLASTICS	Waste Plastics - 8.50 Metric Tonnes	Recycler	Operating	
65	M/s. CROWN PLASTICS	Waste plastic - 900 Kilogram	Recycler	Closed	

66	M/s. RISWAN PLASTIC	Waste Plastic - 5 Metric Tonnes	Recycler		
67	M/s. PLASTIC INDUSTRY	Scrap Plastic Baskets & Bottles after use 1000 Kilogram	Recycler		
68	M/s. EXCEL PLASTICS	Plastic scraps 20 Metric Tonnes	Recycler	Operating	
69	M/s. CREATIVE PLASTIC	Plastic Waste 200 Kilogram	Recycler	Operating	
70	M/s. JAMEELA PLASTICS	Waste Plastics - 500 Kilogram	Recycler	Closed	
71	M/s. HAMARA PLASTICS	Waste Plastic - 1.5 Metric Tonnes	Recycler	Operating	
72	M/s. SUPER LION PLASTICS	Plastic items - 500 Kilogram	Recycler		
73	M/s. TRAVANCORE PLASTIC	Plastic Chips - 800 Kilogram	Recycler	Operating	
74	M/s. SUBAIDA PLASTICS	Plastic Scrap - 667 Kilogram	Recycler	Operating	
74	M/s. ADIVADU PLASTICS	Waste Plastic - 300 Kilogram	Recycler		
76	M/s. KALIMATTAM PLASTIC INDUSTRIES	Plastic scrap - 1200 Kilogram Plastic Granuales - 2400 Kilogram	Recycler		
77	M/s. P.K.A PLASTICS	Waste Plastic - 200 Kilogram	Recycler	Operating	
78	M/s. THEKKEKUDY PLASTICS	Plastic Scraps - 667 Kilogram	Recycler	Operating	
79	M/s. RIFA PLASTICS	Waste Plastic - 1 Metric Tonnes	Recycler	Operating	
80	K.M. PLASTICS	Plastic Scrap – 800 Kilogram	Recycler	Operating	
81	M/s. MPS PLASTIC WORKS	Waste plastic - 300 Kilogram	Recycler		

82	M/s. Ms. MARIA PLASTICS	Waste Plastic - 1000 Kilogram	Recycler		
83	M/s. SARU PLASTICS	Waste plastics - 1000 Kilogram	Recycler	Closed	
84	M/s. GREESHMA PLASTICS	PVC door waste and virgin plastics -200 Kilogram	Recycler	Closed	
85	M/s. NAIVE PLASTICS	Plastic waste - 1200 Kilogram	Recycler		
86	M/s. RECPO PLASTICS	Waste plastics - 1000 Kilogram	Recycler		
87	M/s. KOTTAKUZHYIL POLYMERS	Waste plastic - 1000 Kilogram	Recycler		
88	M/s. CHEERAKATTIL POLYMERS	Waste plastic - 1.50 Metric Tonnes	Recycler		
89	M/s. FRIENDS POLYMERS	Waste Plastics - 500 Kilogram	Recycler		
90	M/s. UNITED POLYMERS	Plastic waste - 0.10 Metric Tonne	Recycler		
91	M/s. CHITTUPARAMBIL POLYMERS	Waste plastic - 20 Metric Tonnes	Recycler	Operating	
92	M/s. GREEN INDUSTRIES	Recycled plastic chips - 2 Metric Tonne	Recycler	Operating	
93	M/s. MEDROOF POLYMERS	Used Plastic - 600 Kilogram	Recycler	Operating	
94	M/s. RR POLYMERS	Plastic Granuals 420 Kilogram Waste Plastic - 300 Kilogram	Recycler	Operating	
95	M/s. STAR POLYMERS	Waste plastic- 15 Metric Tonnes	Recycler		
96	M/s. SUVARNA F P PRODUCTS	Scrap Plastic - 500 Kilogram	Recycler		
97	M/s. UNITED INDUSTRIES	Plastic Chips- 1500 Kilogram	Recycler	Operating	
98	M/s. UNITED MPOLYMERS	Plastic waste - 0.10 Metric Tonne	Recycler	Operating	

99	M/s. VENGOLA POLYMERS	Plastic Waste - 1.25 Metric Tonnes	Recycler		
100	M/s. MALAYATTOOR POLYMERS	HDPE, LDPE (RECYCLED) LLDPE & PPE Granules - 45 Kilogram	Recycler	Operating	
101	M/s. DIAMOND POLYMERS	ASTIC GRANULES- 1.2 Metric Tonnes	Recycler	Operating	
102	M/s. P M PLASTICS	Plastic Chips (Grade -1) - 420 Kilogram Plastic Chips (Grade -2) 70 Kilogram	Recycler	Operating	
103	M/s. INDO POLYMERS		Recycler		
104	M/s. AGORAN PLASTICS		Recycler		
105	M/s. MALABAR POLYMERS		Recycler		
106 (PAL AKK AD)	AKASH PETS	490 Kilogram	PET PREFORM @490 Kilogram PET BOTTLES @14500 Numbers	Operating	0.54
107	ALPHA PAPER CUPS	77250 Numbers	PAPER CUPS @77250 Numbers	Operating	77250 Numbers
108	AYISHA PLASTICS	600 Kilogram	PLASTIC GRANULES @600 Kilogram	Operating	0.66
109	BROTHERS POLYMERS	3800 NUMBERS	P P FOOD CONTAINER 3800 NUMBERS	Operating	3800 NUMBERS
110	CLARITY PLASTICS	1000 KILOGRAM PER DAY	POLY PROPYLENE COVERS @1000 KILOGRAM PER DAY	Operating	1.102
111	CRYSTAL PET & ALLIED INDUSTRIES	18000 Numbers, 10000 Numbers	PET BOTTLES @18000 Numbers PET JARS @10000 Numbers	Operating	18000 Numbers, 10000 Numbers
112	Golden Agencies	1700 Kilogram	Compostable plastic garbage bags (including garbage bags for Hospital use) @ 1700 Kilogram per day	Operating	1.871
113	JOHN POLYMERS	1600 KG	PET PREFORM & PET BOTTLES 1600 KG	Operating	1.763
114	MARAYUR POLYFORMS PRIVATE LIMITED	1000 KG, 200 KG, 2000 KG	PET BOTTLE 1000 KG, PET PREFORM 200 Kilogram EXTRUDED PLASTIC FILMS(HDPE,LDPE,LLDPE) Kilogram 2000	Operating	3.527
115	MAS MAKE POLYMERS	600 Kilogram	THERMOCOLE PLATE @600 Kilogram	Closed	0.661
116	MOTHER PLASTICS	350KG	PLASTIC CONTAINERS 350KG	Operating	0.385
117	Periyanayaki Amman Plastics	990KG	PP Cover 990 KG	Operating	1.091

118	PLASCO POLYMERS	6000 NOS.	HDPE Bottles 6000 NUMBERS	Operating	6000 NOS.
119	Prabhat Plastics	300 NUMBERS	Plastics Bottles 300 NUMBERS	Operating	300 NUMBERS
120	Reliance Poly Bag Industries	45 KG	HM,HDPE,LDPE,Virgin Sheets,Packing Materials etc 45 KG	Operating	0.049
121	SEARON PLAST	200 KG, 400 KG	Plastic Bags Without Printing 200 KG, Plastic Sheets With Printing 400 KG	Operating	0.601
122	Sheen Polymers	20000 NOS	PET BOTTLE 20000 NOS	Operating	20000 NOS
123	SKYLARK PLASTICS	2.4 Metric Tonnes	PET preform @2.4 Metric Tonnes	Operating	2.4
124	SREE VISHNU POLYMERS	500KG	P P COVER 500KG	Operating	0.551
125	SRIRAM PET BOTTLES	20000 NOS.	PET BOTTLE 20000 NOS.	Operating	20000 NOS.
126	STAR PACKAGINGS	5000 Numbers/day	PET BOTTLES @5000 Numbers/day	Operating	5000 NOS.
127	STAR PET PRODUCTS	1000 Numbers	PET BOTTLES @1000 Numbers	Operating	1000 Numbers
128	SUPREME POLYMERS	5000 Numbers	PET BOTTLES @5000 Numbers	Operating	5000 Numbers
129	XL Plastics and Rubbers	400 KG	Polythene Cover Sheet 400 KG	Operating	0.44
130	Asian polymers	2000 NOS.	PET BOTTLE 2000 NOS.	Operating	2000 NOS.
131	Asra plastic	15 KG	Plastic Bottles 15 KG	Operating	0.016
132	HN polymers	250 KG	POLYTHENE PACKING COVER 250 KG	Operating	0.275
133	Intotek Industries Pvt Limited	30000 Numbers, 6500 NOS.	FREEOKM BOTTLES @30000 Numbers CONTAINER BOTTLES @6500 Numbers HDPE CONTAINER BOTTLES @6500 Numbers	Operating	30000 Numbers, 6500 NOS.
134	Micro engineering	50000 nos	HDPE bottles 50000 nos.	Operating	50000 nos
135	Micro plast	50000 nos.	HDPE bottles 50000 nos.	Operating	50000 nos.
136	GLOBAL PIPES	300kg	Manufacturing of plastic flexible pipes@300kg from plastic scraps,cost and granules	Operating	0.33
137	MALABAR PROCESS(PLASTIC RECYCLING UNIT)	1000 Kilogram	GRANULES AND LUMPS @1000 Kilogram	Operating	1.1
138	Paralghad Pet Bottle	120000 Numbers	Pet Bottles @120000 Numbers	Operating	120000 Numbers
139	THAMMA POLYMERS	1800 KG	POLYPROPYLENE COVERS @ 1800 KG	Operating	1.8
140	BROCADE INDIA POLYTEX LIMITED-UNIT- II	100 MT	PP WOVEN BAGS & JUMBO BAGS (FIBI) 300 MT	Operating	100 MT
141	VM POLYTEX LTD	6 MT	PP WOVEN BAGS	Operating	6 MT
142	SURYA BOTTLES	4.5 MT	PLASTIC CHIPS @4.5 Metric Tonnes	Operating	4.5 MT
143	ERAVIKKAL POLYMERS	1 MT	PVC CHIPS @1 Metric Tonnes/day	Operating	1 MT
144	APSAL PLASTICS	3 MT	Plastic Chips -3 Metric Tonnes	Operating	3 MT
145	MALABAR RECYCLING	500 KG	PLASTIC CHIPS 500 Kilogram	Operating	0.5 MT

146	AL-AMEEN PLASTICS	500 KG	PLASTIC CHIPS 500 Kilogram	Operating	0.5 MT
147	A.B.S INTERNATIONAL	180 KG/DAY	SORTED SCRAP PLASTIC @180 Kilogram per day	Operating	0.18 MT
148	PLASTO WAVE	900 KG/DAY	CRUSHED PLASTIC @900 Kilogram	Operating	0.9 MT
149	Oasis Plastic Reprocessing	3 MT	Plastic chips 3 MT	Operating	3 MT
150	WE-ONE INDUSTRIES	800 KG/DAY	Plastic chips @ 800 kg	Operating	0.8 MT
151	TECHNEED PLASTICS	5 MT	PLASTIC CHIPS(MONTHLY) @5 Metric Tonnes	Operating	5 MT
152	REAL PLASTICS	800 KG/DAY	PLASTIC CHIPS @800 Kilogram	Operating	0.8 MT
153	REEMA POLYMERS	325 Kilogram/Day	BOTTLE CHIPS @325 Kilogram	Operating	0.325 MT
154	POOLAKKAL POLYMERS	750 KG/DAY	RECYCLED PLASTIC GRANULES @750 Kilogram	Operating	0.75 MT
155	ADHIL PLASTICS	1000 Kg/day	PLASTIC CHIPS 1000 Kilogram	Operating	1 MT
156	ALATHUR PLASTICS	750 KG/DAY	CRUSHED PLASTIC CHIPS @750 Kilogram	Operating	0.75 MT
157	AL SINAN PLASTIC GRINDING MILL	100 kg/day	PLASTIC CHIPS 100 Kilogram	Operating	0.1 MT
158	ATLAS ENTERPRISES	500 kg/day	GRANULES @500 Kilogram/day	Operating	0.5 MT
159	BISMI PLASTIC CUTTING UNIT	500 kg/day	Plastic Chips @0.5 Metric Tonnes	Operating	0.5 MT
160	GOODWILL POLYMART	1000 kg/day	GRANULES AND LUMPS @1000 Kilogram	Operating	1 MT
161	KAKKANADAN PLASTIC CHIPS	1900 KG/day	PLASTIC CHIPS @1900 Kilogram per day	Operating	1.9 MT
162	M H PLASTIC REPROCESSING UNIT	250 kg/day	PLASTIC GRANULES@250 Kilogram	Operating	0.25 MT
163	PALAKKURISSI PLASTIC CHIPS	300 kg/day	PLASTIC CHIPS 300 Kilogram	Operating	0.3 MT
164	TKC LAKSHMI PLASTICS	1 MT	PLASTIC CHIPS @1 Metric Tonnes per day	Operating	1 MT
165 (PATH ANA METHI TTA)	P R PLASTIC	700 kg/day	PLASTIC CHIPS (Shredded Plastic) @650 Kilogram REJECT @50 Kilogram	Operating	0.7 MT
166	Lakshmi Polymer Industries, Chooralode P.O, Adoor	Polythene bags of sheets-190 kg/day, Polythene printed bags-100 kg/day	Polythene bags of sheets,Polythene printed bags	29-02-2028	Polythene bags of sheets-190 kg/day, Polythene printed bags-100 kg/day
167	VIJAY POLY PACK, Vadakkadathukavu P.O	Polythene bags/ Sheets- 148 kg/day	Polythene bags /sheets and printed bags	31.12.222	Polythene bags/ Sheets- 148 kg/day
168	S.S. Polymers, Kottamukal, Adoor	Polythene bags and Sheets- 95 kg/day	Polythene bags & Sheets	31.12.222	Polythene bags and Sheets- 95 kg/day

169	Unitech Polyflex, Aruvapuram	Extruder LDPE-100 KG/DAY, Printed LDPE-100 kg/day	Printed LDPE bags	30.06.2023	Extruder LDPE-100 KG/DAY, Printed LDPE-100 kg/day
170	Vijay Polymers, Kinfra Food Industrial Park, Elamatroor, Adoor	PP Granules-120 Tons/year, HDPE Granules-70 tonne/year, ABS Granules-15 tonne/year	HDPE/PP Granules	30.06.2019	PP Granules-120 Tons/year, HDPE Granules-70 tonne/year, ABS Granules-15 tonne/year
171 (ALAPPUZHA)	Sun Polymers Mangappuram P.O Cherthala-688 558	66 HP	Polythene Bag, Sheet	Operating	
172	TG Polymers & Co Muhamma P.O Cherthala-688 525	140.8 HP	Printed LDPE/LLDPE/HM Poly Bag/Sheet,PP Bag/Sheet	Operating	
173	Ven Pan Plastics XII/276 Industrial Development Area Vadackal Alappuzha.		PACKING MINERALS 4388 Kilogram	Operating	
174	Keerthi PVC Products (P) Ltd Kumarapuram P.O Harippad Alappuzha-690548	98 HP	RIGID PVC PIPE @550 Kilogram	Operating	
175	Arun Plastics Vadackal Alappuzha-688 003		PACKING MATERIAL	Operating	
176	Vellapally Plastics Mariam Bazar, CMC III, Cherthala	49 HP	PLASTIC BAGS AND ROLLS 300 Kilogram	Operating	
177	Essar Polymers Industrial Estate Kolbhoodar Kallimel P.O Mavelikkara		POLYTHENE SHEETS & BAGS 240 Kilogram	Operating	
178	Poly Mould India Victory Building Pathiramad P.O Cherthala		BATHROOM DOOR ,HAND RAIL,SPORTS GOODS, OTHER DECORATIVE ITEMS	Operating	
179	Modern Polymers Eruva West Kayamkulam Alappuzha	9.5 HP	PRINTED POLYTHENE COVER 100 Kilogram	Operating	
180	Mariya Packaging Industries , muhamma p.o, Alleppey	148.25 HP	Plastic Products @130 Kilogram Aluminium brackets&channels,angles @130 Kilogram	Operating	

181	Sri Vinayaka Roto Packages, Ramapuram, Keerikkad P.O	28 HP	PRINTED PLASTIC COVER 950 Kilogram	Operating	
182	Friends Polymers,ID PLOT,Vazhakkol,Alappuzh a	50 HP	R.P GRANULES SHEET 300 Kilogram	Operating	
183	Kavalakkal Industries, Kavalakkal House, Kollakadavu PO, Cherupuzhay, Alappuzha	7.5 HP	PLASTIC @2.50 Kg/day	Operating	
184	KERALA ENGINEERS HOLDING (I)PVT LTD PALLIPPURAM P.O CHERTHALA	121.5 HP	PLASTIC CAPS & CLOSERS	Operating	
185	Mathya Plastic and aluminium Industries	64.4 HP	Powder coated Aluminium channels @ 200 sq.mt	Operating	
186	M/S ENKEY PLASTICS HIGH SCHOOL ROAD POOCHACKAL P OCHERTHALAALAPPU ZHA	10.5 HP	Industrial plastic components @ 4000 nos.s	operating	
187	M/S ASIAN PLASTICS ID PLOT, VADACKAL, PUNNAPRA, ALAPPUZHA 688003	40 HP	Plastic Chips @50 Metric Tonnes	operating	
188	JASIL PLASTIC INDUSTRIES NEAR FIRE STATION,KAYAMKUL AM 690502	10HP	GRINDING CHIPS @700 Kilogram	operating	
189	BALAJI PLASTICS L U T-CMC-19 , CHERTHALA 688524	10HP	POLY BAG @398 Kilogram	operating	
190	Spin tech Fittings India Pvt. Ltd. Mini Industrial Estate, Kottampuram P.O, Mannar, Alappuzha	25 HP	CIRCULAR JUNCTION BOXES	Operating	
191	LEKSHMI INDUSTRIES LEKSHMI INDUSTRIES THOTTAPALLY ALAPPUZHA 688563	1 HP	PVC Belt	Operating	
192	Rima Plastic Avaloikonna P O, Alappuzha 688005	40 HP	JUNCTION BOX ACCESSORIES	closed	
193	NOVA PAPER PRODUCTS, 33/930 C ATHIPARAMBU, VELLAKINAR, ALAPPUZHA			Converted to Paper cup manufacturing unit	

194	KOLAM	Anju Bags,Kundapuram		Recycles	Operating	Shop Carry bag-50 nos per day
195		Lalu plastic,Kanagapally		Recycles	Operating	Plastic Sheet at 200 kg/day
196		Mahadeva Industries,Thodiyoor		Recycles	Operating	Plastic LDPE HDPE LPVC Crushed-60 kg/day
197		Nanna Plasto Kannankoor		Recycles	Operating	PVC Products-1900 Nos/day
198		PLASTOTECH,Kollam		Recycles	Operating	Flooring Floats,Bottleneck Containers 50 kg/day
199		Polymers Thekkom,Bhanuvilavu		Recycles	Operating	Reprocessed plastic granules 25 nos/day
200		Sea plastic		Recycles	Operating	Plastic granules,Lunch box,pencil box
201	MAL APPU RAM)	INSTA WOOD EXTRUSIONS CO.	670 m2/ day	PVC foam board	Operating	670 m2/ day
202		LAMIT POLYMERS	600 nos per day	PVC pipes	Operating	600 nos per day
203		GLITTER SACHET INDIA PRIVATE LIMITED	150000 nos per day	Thermocol containers	Operating	150000 nos per day
204		AYAMON INDIA POLYMERS	1200 kg per day	Plastic recycling and pipe making	Operating	1200 kg per day
205		PLASMA POLYMERS	100 kg per day	PVC pipes	Operating	100 kg per day
206		GLOBAL LEAD INDUSTRIES AND MANUFACTURING	6.5 metric ton	Plastic chips, granules, baling non biodegradable plastic	Operating	6.5 metric ton
207		K TECH MARKETING	8 nos per day	PVC box	Operating	8 nos per day
208		ACCUPACK INDUSTRIES PVT LTD	250 kg per day	Plastic press print	Operating	250 kg per day
209		GEO PLASTICS ART POLYMERS	1500 nos	PVC Conduits	Operating	1500 nos
210		HI TECH FLEXO PACK	100 kg per day	PLASTIC FLEX PRINTS	Operating	100 kg per day
211		PANCO PLASTIC	1 Ton per day	Plastic flower pot	Operating	1 Ton per day
212		SPARK PPOLYMERS	500 piece per day	Polypropylene junction box	Operating	500 piece per day
213		TEKSTONE	250 tiles per day	Recycle plastic block to tile	Operating	250 tiles per day

214	KPA POLYMERS	600 kg per day	Plastic and PVC pipes	Operating	600 kg per day
215	APH PLASTICS	250 tiles per day	Plastic reprocess into granules	Operating	250 tiles per day
216	SAI PLASTICS	600 kg per day	Plastic mug	Operating	600 kg per day
217	NEW HARI POLY PACKINGS	500 kg per day	LF polythene packaging sheet	Operating	500 kg per day
218	VARADIYIL PLASTICS	500 kg per day	Plastic chips	Operating	500 kg per day
219	AGNISH PLAST INDIA PVT LTD	17000 nos per day	Plastic utensils	Operating	17000 nos per day
220	AKSHEEN	700 nos per day	Medicinal pet bottles of 5 ML, 10 ML, 30 ML	Operating	700 nos per day
221	SATHYASAI PACKAGINGS AND SOFT DRINKS	6500 nos per day	Pet bottles and jars	Operating	6500 nos per day
222	MALABAR EXTRUSIONS	1000 nos per day	PVC pipes	Operating	1000 nos per day
223	POLYFLEX PACKAGING INDUSTRIES	NA	plastic cover prints	Operating	N.A
224	FORTUNER PLASTIC PVT LTD	2000 nos per day	Plastic buckets	Operating	2000 nos per day
225	POLYDON PROCESSORS	50 kg per day	PLASTIC CONTAINERS	Operating	50 kg per day
226(DUPLICATE)	Paruthi Agencies, Kolani P.O Thodupuzha	25 Kg/Day	Plastic and PVC processed goods	Operating	25 Kg/Day
227	Anula Plastics, Pakorkavu Central P.O Peruvanthanam	140 Kg/Day	Plastic and PVC processed goods	Operating	140 Kg/Day
228	Dowell Polymers, Kalayanthani P.O Thodupuzha 685588	Water tanks:- 1000 L-6 Nos./d 750 L-7Nos./d & 500 L-10 Nos./d	Polythene and plastic	Operating	Water tanks:- 1000 L-6 Nos./d 750 L-7Nos./d & 500 L-10 Nos./d
229	A.R.Industries, Mallassserithi P.O, Thodupuzha	Plastic roll cutting-500 Kg/d	Plastic rolls	Closed	Plastic roll cutting-500 Kg/d
230	Bijoys Industries , Kodikulam P.O Thodupuzha	Black hose HDPipe- 500 Kg/d	Polythene pipe	Operating	Black hose HDPipe- 500 Kg/d
231	Fast Associates, Muthalakkodam P.O, Thodupuzha – 685585	Paper plate - 25000 Nos./day	Paper plate		Paper plate - 25000 Nos./day
232	Highrange Polymers Pvt Ltd., Mini Industrial Estate, Pannimattam P.O, Thodupuzha – 685588	Water tanks:- 1) 1000 L-10 Nos./d 2) 750 L-5 Nos./d 3) 500 L-15 Nos./d	Water tank		Water tanks:- 1) 1000 L-10 Nos./d 2) 750 L-5 Nos./d 3) 500 L-15 Nos./d
233	Krishna Poly Flex, ELP Mutton, Thodupuzha	Polythene bag- 140 Kg/d	Polythene bag		Polythene bag- 140 Kg/d

234	Mega Plastic Works, Rajakkad P.O, Muthukuram, Idukki	Polythene bag-148Kg/day	Polythene bag		Polythene bag-148Kg/day
235	Modern Plastic Industries, Thodupuzha P.O – 685584	Plastic moulded bottle, jars and caps – 1000Nos/day	Plastic		Plastic moulded bottle, jars and caps – 1000Nos/day
236	Pet Plast, Building No VII/39, Manakkad P.O, Thodupuzha	Pet bottle or pet jar – 5000Nos/day	Pet bottle	Operating	Pet bottle or pet jar – 5000Nos/day
237	Streamline Polymers, Market Road, Thodupuzha – 685584	PVC PIPES @17.7 MT/M	PVC Pipes		PVC PIPES @17.7 MT/M
238	Suraas Plastic Industries, Thodupuzha East P.O, Idukki	Polythene pipe 500 kg/day, Water tank 500 kg/day	Polythene pipe	Operating	Polythene pipe 500 kg/day, Water tank 500 kg/day
239	Victory Plastics, Mini Industrial Estate, Muttom, Thodupuzha, Idukki	Plastic granules-250 Kg/d	Plastic unit		Plastic granules-250 Kg/d
240	Winsun Plastics , Olamattom , Thodupuzha	PVC PIPES @35.87 Metric Tonnes/month	Plastic unit	Operating	PVC PIPES @35.87 Metric Tonnes/month
241	Aarish Packaging, Eshwary P.O, Thodupuzha	Pet bottle – 15000Nos/day	Pet bottle	Operating	Pet bottle – 15000Nos/day
242	Sree Plastic, Kuruthokulu, Thodupuzha East	PVC Pipe- 300 Kg	PVC Pipes	Operating	PVC Pipe- 300 Kg
243	3 star Pet Blowers, Anakkal P.O, Thodupuzha	Pet Bottles-4800 Nos/day	Pet bottle	Operating	Pet Bottles-4800 Nos/day
244	Mariya Polymers, Neyyassery P.O, Kanjirappuzha	Polythene cover P.P- 300Kg/d, Polythene cover HM/HDPE-300kg/day, Polythene cover-LLDPE -300 kg/day, Polythene cover-LDPE-300 kg/day	Polythene Cover	Operating	Polythene cover P.P- 300Kg/d, Polythene cover -HM/HDPE-300kg/day, Polythene cover LLDPE -300 kg/day, Polythene cover LDPE-300 kg/day
245	White Rock Plastic Industry, Kanjirakkal P O,Pallivasal	Plastic Broom 800/d Brush 600/d	Plastic Broom & Brush		Plastic Broom 800/d Brush 600/d
246	Kalaranganath P V C Scrap Unit, Kanthiyur P O, Pallikavala	P V C Granules-450kg/d	P V C Scrap		P V C Granules-450kg/d

247	K K J Polymers, puthuppariyaram P O,Arikkadu	Plastic Bottles-12000nos a/d	Plastic Bottles	Operating	Plastic Bottles-12000nos a/d
248	Noor Industries, Soorya Building, Ramanagalam road, Thodupuzha	Pet Bottles (500 ml & above), Cola Bottles of 200 ml, Club Soda	Plastic Bottles	Operating	Pet Bottles (500 ml & above), Cola Bottles of 200 ml, Club Soda
249	Moon Industries, Soorya Building, Ramanagalam road, Thodupuzha	Pet Bottles (500 ml & above), Cola Bottles of 200 ml, Club Soda	Plastic Bottles	Operating	Pet Bottles (500 ml & above), Cola Bottles of 200 ml, Club Soda
250	Adian Pet, Muthalakodam P O, Ramapuram	1350 Kg/Day	Polythene and plastic processed products manufacturing (virgin plastic) -Plastic bailing unit	Closed	1350 Kg/Day
251	Technic Polymers, Nedumudi P O, Mavelikkara	150 kg/Day	Polythene and plastic processed products manufacturing (virgin plastic) - Cover for stabilizers	Operating	150 kg/Day
252	Mahavir Industries, Olanattom P O, Olanattom, Thodupuzha	150 kg/Day	Polythene and plastic processed products manufacturing (virgin plastic) - Polythene Cover	Operating	150 kg/Day
253	O V T Plastics, Edavetty P O, Edavetty	200 Bottles/Day	Polythene and plastic processed products manufacturing (virgin plastic) - Hinano Medicine bottles	Operating	200 Bottles/Day
254	J B Park, Udumbannoor P O, Udumbannoor	200 Kg/Day	Polythene and plastic processed products manufacturing (virgin plastic) - Packing cover for bakery products	Operating	200 Kg/Day
255(THRISSUR)	MK PLASTICS, P.O.URAKAM POOCHINNIPADAM THRISSUR	PACKING SHIM= 200 Nos	Manufacturer	Operating	PACKING SHIM= 200 Nos
256	ADITHYA POLYMER MOULDERS, V II PURAM P O, CHALAKUDY, THRISSUR DIST	PACKING MATERIAL=	Manufacturer	Operating	PACKING MATERIAL=
257	SELFSHINE POLYMERS INDIA PRIVATE LIMITED, HIGH TECH PROJECT DIVISION, KRISHNA KRIPA COMPLEX, MELAMKOL ROAD, NATTIYANCHIRA, CHELAKKARA	PVC PIPES=200kg	Manufacturer	Operating	PVC PIPES=200kg
258	ALSA POLYMERS, VALIYAPA RAMBU KURUVILASSERY P.O, MALA THRISSUR	MEDICAL TUBES = 154kg, HOSPITAL TUBES=154kg, PLASTICS PRODUCTS=153kg	Manufacturer	Operating	MEDICAL TUBES = 154kg, HOSPITAL TUBES=154kg, PLASTICS PRODUCTS=153kg

259	UNITED POLIMERS,P.O KANJIRAPPILLY, (VIA)CHALAKUDY, MUNIPPARA, THRISSUR	PET PREFORMS=1.16078 Metric Tonnes	Manufacture	Operating	PET PREFORMS=1.39078 Metric Tonnes
260	DOT INDUSTRIES, THACHAMPILLY ROAD, KODAKKALLY	MOTOR COVER 100 Nos, TOILET SEAT=70 Nos, FLUSH TANK=70 Nos	Manufacture	Operating	MOTOR COVER 100 Nos, TOILET SEAT=70 Nos, FLUSH TANK=70 Nos
261	A.R TRADERS, A.R TRADERS KARUR,AVANUR P.O AVANOOR POST THRISSUR	PLASTIC CHIPS=495kg	Manufacturer	Operating	PLASTIC CHIPS=495kg
262	SANJO POLYMERS, POOKULAM P O THRISSUR DISTRICT	Knitt Hose Pipe packingmaterials =500kg	Manufacturer	Operating	Knitt Hose Pipe packingmaterials=500kg
263	SAJIS REHAB CENTRE, KATTILAPOOVAM P.O, THRISSUR	ORTHOTIC PRODUCT=15 Nos	Manufacturer	Operating	ORTHOTIC PRODUCT=15 Nos
264	EVERSHINE PLASTICS, P.O ANNAKARA THRISSUR 680508	PLASTIC SUTHALI=1906 g	Manufacturer	Operating	PLASTIC SUTHALI=690 kg
265	AVILINSEKY PLASTIC INDUSTRIES, MADAKKATHARA P.O, WEST VELLANIKKARA, THRISSUR	PLASTIC POTS=6000Nos	Manufacture	Operating	PLASTIC POTS=6000Nos
266	SUPREME POLYMERS, P.O THRIKKUR KALLUR THRISSUR	PACKING COVER=2000kg	Manufacturer	Operating	PACKING COVER=2000kg
267	DOKUN GROUP,NEAR VELLACODE CANAL, KIRALOOR, MUNDUR	PLASTIC CHIPS=1500kg	Manufacturer	Operating	PLASTIC CHIPS=1500kg
268	MCF POLYMER INDUSTRIES PRIVATE LIMITED, Ward No: VI,Muriyad, Thanvarilaalu Road,Near A1 Pipes Company,Muriyad P.O,Thrissur -680683	POT=2750 Nos, TRAY=1200 Nos	Manufacturer	Operating	POT=2750 Nos, TRAY=1200 Nos

269	SREE POLYMERS,CHENGAL OOR,CHENGALOOR P.O., THRISSUR	plastic pet bottles=30000Kg	Manufacturer	Operating	plastic pet bottles=30000Kg
270	INNOVINE BIOMEDICALS PRIVATE LIMITED, ASHTAMICHIRA P.O, THRISSUR-680731	Petri Plates=200 Nos, ESR Pipettes=200 Nos, Tubes (centrifuge,antigen,self standing)=200 Nos, Urine Container (100ml,60ml,50ml,40ml,30ml)=250 Nos, 100ml (S) Red Plain (WON=200 Nos, Blood Collection Tubes=200 Nos, Embedding Cassette and Embedding Ring=250 Nos, Jig,Pipettes,Plastic Tips,RIA Vials= 250 Nos	Manufacturer	Operating	Petri Plates=200 Nos, ESR Pipettes=200 Nos, Tubes (centrifuge,antigen,self standing)=200 Nos, Urine Container (100ml,60ml,50ml,40ml,30ml)=250 Nos, 100ml (S) Red Plain (WON)=200 Nos, Blood Collection Tubes=200 Nos, Embedding Cassette and Embedding Ring=250 Nos, Jig,Pipettes,Plastic Tips,RIA Vials= 250 Nos
271	ULTIMATE MOULDS AND PRODUCTS,ASHTAMICHIRA P.O THRISSUR-680731	Lab Items(Centrifuge Tubes,Self Standing Tubes)=45 MT, Lab Items(Blood Collection Tubes,Containers)=45 MT	Manufacturer	Operating	Lab Items(Centrifuge Tubes,Self Standing Tubes)=45 MT, Lab Items(Blood Collection Tubes,Containers)=45 MT
272	OCEAN POLYMER INDUSTRIES PVT.LTD,V/33, MARAR ROAD, VELAPPAYA, P.O MEDICAL COLLEGE, THRISSUR	Door Frames and Window Frames= 650 Nos, PVC PIPES = 800 Kilogram	Manufacturer	Operating	Door Frames and Window Frames= 650 Nos, PVC PIPES = 800 Kilogram
273	SREE MADHAVA PET PRODUCTS,P.O.VENGANELLUR,CHELAKKARA THRISSUR	BOTTLE=7500 Nos	Manufacturer	Operating	BOTTLE=7500 Nos

276	ALFA PLAST,AMBAZHAKAD, ASHTAMICHIRA P.O, THRISSUR - 680731	ALL SIZE SCREW PLUGS =150 kg	Manufacturer	Operating	ALL SIZE SCREW PLUGS =150 kg
277	BLUEBELL TECHNOLOGIES,PAZHAYANNUR P.O., THRISSUR.	FABRICATION CORNERS=4000 Nos	Manufacturer	Operating	FABRICATION CORNERS=4000 Nos
278	QUALITY POLY PACK,CHUNKAM, VELLUR P.O THRISSUR	PLASTIC BOTTLE & JARS = 3 Metric Tonnes	Manufacturer	Operating	PLASTIC BOTTLE & JARS = 3 Metric Tonnes
277	MR-TECH PIPES,MADATHUMPADY P.O MALA,THRISSUR, KERALA-680733	PVC PIPES = 1000 Kilogram, FITTINGS = 100 Kilogram	Manufacturer	Operating	PVC PIPES = 1000 Kilogram, FITTINGS = 100 Kilogram
278	CHEMMANNUR POLYMER PRODUCTS,P.O MULAMKUNNATHUKAVU THRISSUR.	PLASTIC BOTTLES & JARS = 5 Metric Tonnes	Manufacturer	Operating	PLASTIC BOTTLES & JARS = 5 Metric Tonnes
279	ALPHA INDUSTRIES,MARATHAKKARA P.O, PUZHAMBALLAM, THRISSUR	FISHING FLOATS = 100 Kilogram	Manufacturer	Operating	FISHING FLOATS = 100 Kilogram
280	KAIZEN POLYMERS,THANGALOOR P.O, THRISSUR - 680590	VALVE = 100 Numbers, BOX = 100 Numbers	Manufacturer	Operating	VALVE = 100 Numbers, BOX = 100 Numbers
281	DREAM PLASTICS,MINALOOR P.O, THRISSUR - 680581	INJECTION MOULDING = 40 Kilogram	Manufacturer	Operating	INJECTION MOULDING = 40 Kilogram
282	MANERIMPAL PLASTICS INDUSTRIES,POOKKAT PILLY P.O., MARATHAMKODE., THRISSUR	BATHROOM FITINGS = 500 Numbers	Manufacturer	Operating	BATHROOM FITINGS = 500 Numbers
283	PRUDENT ENTERPRISES,New Anjaneali, Vappacha-Chemkalam, P.O Chathur, Thrissur 680571	Plastic Profiles = 5000 Numbers, Spectacle Cases = 300 Numbers	Manufacturer	Operating	Plastic Profiles = 5000 Numbers, Spectacle Cases = 300 Numbers
284	JENPLAST INDUSTRIES,NEDUPULPHA P.O THRISSUR	PLASTICS MOULDING ITEMS = 100 Kilogram	Manufacturer	Operating	PLASTICS MOULDING ITEMS = 100 Kilogram

285	DOT INDUSTRIES,THACHA MPILLY ROAD, KOOTHRIKKULLY	MOTOR COVER = 100 Numbers, TOILET SEAT = 70 Numbers, FLUSH TANK = 70 Numbers	Manufacture	Operating	MOTOR COVER = 100 Numbers, TOILET SEAT = 70 Numbers, FLUSH TANK = 70 Numbers
286	Raj Polymers,Enkakkad P O, Thrissur - 680589	PLASTIC CONTAINERS = 400 Kilogram	Manufacture	Operating	PLASTIC CONTAINERS = 400 Kilogram
287	PAL-S BOTTLES,EDAKKULAM, THANGALOOR P O, THRISSUR	PLASTIC BOTTLES = 1500 Numbers	Manufacture	Operating	PLASTIC BOTTLES = 1500 Numbers
288	ST JOSEPH ENGINEERING WORKS,P.O NETTISSERY, MUKKATTUKARA, THRISSUR	ENGINEERING WORK (JOB WORK) = 150 Kilogram, JUG MOULD = 25 Kilogram, TRUSS WORK (JOB WORK) = 125 Kilogram, PLASTIC POTS = 300 Kilogram	Manufacturer	Operating	ENGINEERING WORK (JOB WORK) = 150 Kilogram, JUG MOULD = 25 Kilogram, TRUSS WORK (JOB WORK) = 125 Kilogram, PLASTIC POTS = 300 Kilogram
289	SUBAD POLY SACKS-UNIT I,DOOR No.V/2 NALUKKETU P.O KORATTY THRISSUR	HDPE WOVEN SACKS = 714 Kilogram, SILPAULIN SHEETS = 615 Kilogram	Manufacturer	Operating	HDPE WOVEN SACKS = 714 Kilogram, SILPAULIN SHEETS = 615 Kilogram
290	B M POLY PACKS LLP,B M Poly Packs LLP V E Puram P O Chalakudy	PACKING MATERIAL = 100 Kilogram	Manufacturer	Operating	PACKING MATERIAL = 100 Kilogram
291	NAVABHARATH TRUST GURUVAYOR,KAIPAKAMBU P.O., THRISSUR	PLASTIC BEADS = 200 Numbers	Manufacturer	Operating	PLASTIC BEADS = 200 Numbers
292	AVILISSERY PLASTIC INDUSTRIES,MADAKKATHARA P O, WEST VELLANIKKARA, THRISSUR	PLASTIC POTS = 600 Numbers	Manufacturer	Operating	PLASTIC POTS = 600 Numbers

293	ASIAN MANUFACTURERS,KO TTEPADAM, VELLANIKKARA, THRISSUR - 680656	PLASTIC INJECTION MOULDING = 1000 Numbers	Manufacturer	Operating	PLASTIC INJECTION MOULDING = 1000 Numbers
294	MASTER PLASTIC INDUSTRIES,MASTER PLASTIC INDUSTRIES , P.O ANDOOR , THRISSUR	CANDLE STAND = 100 Numbers, PHOTOFRAME = 100 Numbers	Manufacturer	Operating	CANDLE STAND = 100 Numbers, PHOTOFRAME = 100 Numbers
295	MAXIN PLASTICS,P O OLLUR	PLASTIC BOTTELS & CAP = 2500 Numbers	Manufacturer	Operating	PLASTIC BOTTELS & CAP = 2500 Numbers
296	SHINE POLYMERS UNIT 9,SIDCO MINI INDUSTRIAL ESTATE P.O KURUVILASSERY MALA THRISSUR	PET BOTTLE = 10000 Numbers	Manufacturer	Operating	PET BOTTLE = 10000 Numbers
297	SHINE POLYMERS NO 1,SIDCO INDUSTRIAL ESTATE P.O KURUVILASSERY THRISSUR	PET BOTTLE = 20000 Numbers	Manufacturer	Operating	PET BOTTLE = 20000 Numbers
298	ANJALI PLASTICS,M/S ANJALI PLASTICS VIII/383-B KADAVALLUR PANCHAYATH, P.O KORATTIKARA THRISSUR-680543	PLASTIC CAP,BUSH ETC. = 40 Kilogram	Manufacturer	Operating	PLASTIC CAP,BUSH ETC. = 40 Kilogram
299	PRIYA POLIMERS,P.O.PERINC HERY THRISSUR	PLASTIC GOODS = 500 Numbers, PLASTICS BUCKETS = 500 Numbers	Manufacturer	Operating	PLASTIC GOODS = 500 Numbers, PLASTICS BUCKETS = 500 Numbers
300	DIVINE POLY PACK,9/245, KOLANGATTUKARA, KUTTOOR- VARADAM ROAD, THRISSUR	GROW BAG = 200 Kilogram	Manufacturer	Operating	GROW BAG = 200 Kilogram
301	A-STAR POYMER,7/370 THEKKEKARA ROAD VENGILISSERY VELUR, 680661	PVC COMPOUND MIXER = 3 Metric Tonnes	Manufacturer	Operating	PVC COMPOUND MIXER = 3 Metric Tonnes

302	FIZA PLASTICS,APPEKKAD U P.O FATTIPARAMB THRUVILLWAMALA THRISSUR	PLASTIC GRINDING = 800 Kilogram	Manufacturer	Operating	PLASTIC GRINDING = 800 Kilogram
303	SOUTHERN PLASTOWARE PVT LTD,THARKKATTUSSERY ROAD, THALORE P.O., THRISSUR	PLASTIC HOUSEHOLD ARTICLES AND PACKING MATERIALS = 2400 Metric Tonnes	Manufacturer	Operating	PLASTIC HOUSEHOLD ARTICLES AND PACKING MATERIALS = 2400 Metric Tonnes
304	Ozone Polymer Technologies Private Limited,Plot No.20, I.D.P, Ayyanthanm, Mundur P.O, Thrissur-680561	Suction Hose = 1000 Kilogram	Manufacturer	Operating	Suction Hose = 1000 Kilogram
305	EG ECO SOLUTIONS LLP,363/5/8/A/16,ETTUMANA,KARUVANNUR	BAILED PLASTICS = 2000 Kilogram	Manufacturer	Operating	BAILED PLASTICS = 2000 Kilogram
306	SMART PLAST,SHED NO.2, MINI INDUSTRIAL ESTATE, PUTHANMADAM,KUNNU, M.G.KAVU P.O, THRISSUR	PVC BALL VALVES = 20000 Numbers, PVC MOTOR COVERS = 3000 Numbers, PVC FLOAT BALL = 5000 Numbers	Manufacturer	Operating	PVC BALL VALVES = 20000 Numbers, PVC MOTOR COVERS = 3000 Numbers, PVC FLOAT BALL = 5000 Numbers
307	VELAKODE RUBBER AND RECLAIMS PRIVATE LIMITED,VELAKODE INDUSTRIAL DEVELOPMENT PLOT, MUNDOOR P.O , THRISSUR – 680541	Plastic Furniture & House Hold Items = 2 Metric Tonnes	Manufacturer	Operating	Plastic Furniture & House Hold Items = 2 Metric Tonnes
308	KIK Plastics Private Limited,Velakode Industrial Development Plot, Mundoor P.O, Thrissur - 680541	Injection Moulded Items = 800 Kilogram	Manufacturer	Operating	Injection Moulded Items = 800 Kilogram
309	J.J PLASTICS,CHATHAN MASTER ROAD, P.O ANANDAPURAM, THRISSUR - 680309	PVC PIPE = 130 Kilogram	Manufacturer	Operating	PVC PIPE = 130 Kilogram

310	SELFSHINE POLYMERS INDIA PRIVATE LIMITED,DOOR NO.XI/39C,THRUVILWAMALA	PVC PIPES = 150 Kilogram	Manufacture	Operating	PVC PIPES = 150 Kilogram
311	3 STAR POLYMERS,VELANKANNI TOWER, KADUKUTTY P.O,	MULDED PLASTIC = 7 Kilogram	Manufacture	Operating	MULDED PLASTIC = 7 Kilogram
312	RAINBOW PLASTICS,RAINBOW PLASTICS YUVARAJMI NAGAR, AVITTATHUR	plastic item(decorative items) = 40 Kilogram	Manufacture	Operating	plastic item(decorative items) = 40 Kilogram
313	NEW ERA PLASTIC PRODUCTS,MUDICODE,KOOTTALA P.O, THRISSUR DISTRICT	JEWELLERY PACKING BOX = 2000 Numbers	Manufacture	Operating	JEWELLERY PACKING BOX = 2000 Numbers
314	A .R TRADERS,A.R TRADERS KARUR,AVANUR P.O AYANOOR POST THRISSUR	PLASTIC CHIPS = 495 Kilogram	Manufacture	Operating	PLASTIC CHIPS = 495 Kilogram
315	PUNARTHAM PLASTICS,THALAKKOTTUKARA, KECHERY VIA, THRISSUR-680501	PVC GARDEN PIPE = 150 Kilogram, RECYCLING PLASTICS = 500 Kilogram	Manufacture	Operating	PVC GARDEN PIPE = 150 Kilogram, RECYCLING PLASTICS = 500 Kilogram
316	SELECT INDUSTRIES,MANNAMPETTA, VARAKKARA P.O, THRISSUR-680319	PVC PIPES = 900 Kilogram	Manufacture	Operating	PVC PIPES = 900 Kilogram
317	VALLACHIRA PLASTICS,THAMPURATTIMOOLA VETTUKADU P.O PUTHUR THRISSUR	BLOW MOULDING PLASTIC ITEMS = 250 Kilogram	Manufacture	Operating	BLOW MOULDING PLASTIC ITEMS = 250 Kilogram
318	VKC PLASTICS,MARATTIANKODE P.O,THRISSUR-680604	PIPE FITTINGS = 1500 Numbers	Manufacture	Operating	PIPE FITTINGS = 1500 Numbers
319	G.R PLASTICS,INDUSTRIAL ESTATE OLLUR THRISSUR	PLASTIC CAN = 45 Kilogram	Manufacture	Operating	PLASTIC CAN = 45 Kilogram
320	MARIYA PLASTICS,VADAMA P O,MALA (via),THRISSUR-680736	HOOKS,RUNNER,PLUG,BUSH etc. = 15 Kilogram	Manufacture	Operating	HOOKS,RUNNER,PLUG,BUSH etc. = 15 Kilogram

321	SELZEL POLYMERS,XV/ 195, I.D.P. AYYANKUNNU, MUNDUR P.O.,	PLASTIC WATER TANK,BARRELS = 6500 Numbers, BLOW MOULDED DRUMS AND WATER TANKS = 9 Metric Tonnes	Manufacturer	Operating	PLASTIC WATER TANK, BARRELS = 6500 Numbers, BLOW MOULDED DRUMS AND WATER TANKS = 9 Metric Tonnes
322	STAR PACKAGINGS,18/432/2B, WARRIAM ROAD, ARANATTUKARA,THRISSUR - 680618	HDPE BOTTLES = 10000 Numbers, LDPE BOTTLES = 20000 Numbers	Manufacturer	Operating	HDPE BOTTLES = 10000 Numbers, LDPE BOTTLES = 20000 Numbers
323	ST. JOSEPH INDUSTRIES,BONIVEL LA, SOUTH UKORAY, PUDUKAD P.O,THRISSUR-680301	PLASTIC PARTS OF PRESSURE COOKER AND RICE COOKER = 1000 Numbers	Manufacturer	Operating	PLASTIC PARTS OF PRESSURE COOKER AND RICE COOKER = 1000 Numbers
324	ELWIN PLASTICS,MUKKATTUKARA ,P O NETTISSERY, THRISSUR	PVC PIPES = 157 Metric Tonnes	Manufacturer	Operating	PVC PIPES = 157 Metric Tonnes
325	ELWIN PVC PIPES,NETTISSERY P O, MUKKATTUKARA, THRISSUR	PVC PIPES = 140 Metric Tonnes	Manufacturer	Operating	PVC PIPES = 140 Metric Tonnes
326	PRINCE PLASTIC,PRINCE PLASTIC PLOT NO-112 SIDCO INDUSTRIAL ESTATE OLLUR THRISSUR	PLASTIC CAP & LID = 100 Kilogram, PLASTIC HOUSE HOLD ITEMS = 200 Kilogram	Manufacturer	Operating	PLASTIC CAP & LID = 100 Kilogram, PLASTIC HOUSE HOLD ITEMS = 200 Kilogram
327	AMMA PLASTICS & METALS INDUSTRIES,ROOM NO 8, AYYANKUNNU PO MUNDUR, THRISSUR DT.	PVC DOOR FITTINGS = 3 Metric Tonnes	Manufacturer	Operating	PVC DOOR FITTINGS = 3 Metric Tonnes

328	NANO PLAST,PLOT NO. 2R, AYYANKUNNU PO MUNDUR, THRISSUR DT.	PVC DOOR FITTINGS = 17 Metric Tonnes	Manufacture	Operating	PVC DOOR FITTINGS = 17 Metric Tonnes
329	NIRMAL PET PRODUCTS,P.O ELAYALLY THRISSUR	PET BOTTLES = 3800 Numbers	Manufacture	Operating	PET BOTTLES = 3800 Numbers
330	POLYON INDUSTRIES,PLOT NO 21, IDP YELAKKODE, MUNDOOR PO, THRISSUR DT.	PVC BOARD/SHEET (8X4') = 5000 Numbers	Manufacture	Operating	PVC BOARD/SHEET (8X4') = 5000 Numbers
331	THICHUR PLASTIC INDUSTRIES,C - 6 OLLUR INDUSTRIAL ESTATE OLLUR PO	PLASTIC PRODUCTS = 175 Kilogram	Manufacture	Operating	PLASTIC PRODUCTS = 175 Kilogram
332	PRIYA POLYMERS,CONVENT ROAD CHIYYARAM P.O THRISSUR	PLASTIC CAP AND LID = 50 Kilogram, CONTAINERS = 50 Kilogram, BUCKET = 100 Kilogram, OTHER PLASTIC MOLDED ITEMS = 50 Kilogram	Manufacture	Operating	PLASTIC CAP AND LID = 50 Kilogram, CONTAINERS = 50 Kilogram, BUCKET = 100 Kilogram, OTHER PLASTIC MOLDED ITEMS = 50 Kilogram
333	PRIYA PLASTICS,CONVENT ROAD CHIYYARAM P.O THRISSUR	HANGER = 50 Kilogram, PLASTIC CAP = 50 Kilogram, BUCKET = 50 Kilogram, INJECTION MOLDING ITEMS = 50 Kilogram	Manufacture	Operating	HANGER = 50 Kilogram, PLASTIC CAP = 50 Kilogram, BUCKET = 50 Kilogram, INJECTION MOLDING ITEMS = 50 Kilogram
334	POLO PLASTICS,P.O KURICHIKKARA POOANNEMKADU MADAKKATHARA THRISSUR	PLASTIC CAP = 100 Kilogram, CONTAINERS = 100 Kilo Liters, OTHER PLASTIC MOLDED ITEMS = 100 Kilogram	Manufacture	Operating	PLASTIC CAP = 100 Kilogram, CONTAINERS = 100 Kilo Liters, OTHER PLASTIC MOLDED ITEMS = 100 Kilogram

335	POLO POLYMER,VILADOM KAMAVARMAPURAM P.O THRISSUR	INJECTION MOLDING ITEMS = 100 Kilogram, PLASTIC CAP = 50 Kilogram, CONTAINERS = 50 Kilogram, MUG = 50 Kilogram	Manufacturer	Operating	INJECTION MOLDING ITEMS = 100 Kilogram, PLASTIC CAP = 50 Kilogram, CONTAINERS = 50 Kilogram, MUG = 50 Kilogram
336	DEEPA PLASTICS & POLYMERS,PARAPPUR, KARA P.O, THRISSUR, KERALA-680310	FLUSHING CISTERN = 100 Numbers, TOILET SEAT & COVES = 86 Numbers	Manufacturer	Operating	FLUSHING CISTERN = 100 Numbers, TOILET SEAT & COVES = 86 Numbers
337	M/S . GV POLYPET,INDUSTRIAL DEVELOPMENT PLOT , KUNNAMKULAM THRISSUR	PLASTIC PRODUCT = 300 Numbers	Manufacturer	Operating	PLASTIC PRODUCT = 300 Numbers
338	ALIGUR PRODUCTS,KARAMUC K KANDASSANKADAVU U P.O THRISSUR	PVC PROFILES = 200 Kilogram	Manufacturer	Operating	PVC PROFILES = 200 Kilogram
339	AMBADY PLASTICS,THAIKKATT UNNIRY P.O OLLUR THRISSUR	PLASTIC CONTAINERS = 3000 Numbers	Manufacturer	Operating	PLASTIC CONTAINERS = 3000 Numbers
340	DHEXCEL,DHEXCEL ,SHED NO 8 , STREET C , MINI INDUSTRIAL ESTATE , PERINGANDOOR P.O	PLASTIC MOULD = 45 Kilogram	Manufacturer	Operating	PLASTIC MOULD = 45 Kilogram
341	PERFECT DIES & TOOLS,PLOT NO.68, AYYANKUNNU, PO MUNDOOR, THRISSUR DT.	BATHROOM FITTINGS = 1000 Kilogram	Manufacturer	Operating	BATHROOM FITTINGS = 1000 Kilogram
342	TRICHUR POLYMERS,PERAMAN GALAM P.O THRISSUR	WATER TANK = 20 Numbers	Manufacturer	Operating	WATER TANK = 20 Numbers
343	NOVA PLASTICS,16/369 A,OLLUR, THRISSUR	INJECTION MOULDED PRODUCTS = 55 Kilogram	Manufacturer	Operating	INJECTION MOULDED PRODUCTS = 55 Kilogram

344	TJ PLASTICS,IX/114C,MIN I INDUSTRIAL ESTATE VALLIVATTOM P.O PAINGODE THRISSUR	PLASTIC BOTTELS = 2000 Numbers, UMBRELLA HANDELS = 1000 Numbers	Manufacturer	Operating	PLASTIC BOTTELS = 2000 Numbers, UMBRELLA HANDELS = 1000 Numbers
345	POLYTEK INDUSTRIER,ARKKARA KUNNU P.O NADAVARAMB THRISSUR	POLYTHENE BAGS = 2000 Numbers	Manufacturer	Operating	POLYTHENE BAGS = 2000 Numbers
346	SOUTHERN CRATES & CONTAINERS (P) LTD,THAIKKATTUSSERY ROAD , THALORE P.O ,THRISSUR	PLASTIC HOUSE HOLD ARTICLES = 1 Metric Tonnes	Manufacturer	Operating	PLASTIC HOUSE HOLD ARTICLES = 1 Metric Tonnes
347	SOUTHERN INDIA POLY PRODUCTS PVT LTD,THALORE P.O,THRISSUR	PLASTIC HOUSE HOLD ARTICLE = 500 Kilogram	Manufacturer	Operating	PLASTIC HOUSE HOLD ARTICLE = 500 Kilogram
348	SOUTHERN CONSOLIDATED PLASTICS,THAIKKATTUSSERY ROAD THALORE P.O THRISUR	PLASTIC HOUSE HOLD ARTICLE = 300 Kilogram	Manufacturer	Operating	PLASTIC HOUSE HOLD ARTICLE = 300 Kilogram
349	SOUTHERN POLYMERS,THAIKKATTUSSERY ROAD, THALORE P.O,THRISSUR	PLASTIC HOUSE HOLD ARTICLES = 1 Metric Tonnes	Manufacturer	Operating	PLASTIC HOUSE HOLD ARTICLES = 1 Metric Tonnes
350	SOUTHERN PLASTIC INDUSTRIES,THAIKKATTUSSERY ROAD,THALORE P.O	PLASTIC HOUSE HOLD ARTICLES = 1 Metric Tonnes	Manufacturer	Operating	PLASTIC HOUSE HOLD ARTICLES = 1 Metric Tonnes
351	SOUTHERN UNION PLASTIC INDUSTRIES,THALORE P.O, THRISSUR	PLASTIC HOUSE HOLD ARTICLES = 1 Metric Tonnes	Manufacturer	Operating	PLASTIC HOUSE HOLD ARTICLES = 1 Metric Tonnes
352	AVT INDUSTRIES,VELLANI , VELLANI P.O., IRINJALAKKUDUA, THRISSUR DISTRICT – 680701	INJECTION MOULDING (BUCKET) = 50 Numbers, Mattress = 60 Numbers	Manufacturer	Operating	INJECTION MOULDING (BUCKET) = 50 Numbers, Mattress = 60 Numbers

353	G.V & COMPANY,IDP , KANIYAMPAL , KUNNAMKULAM THRISSUR	PLASTIC PRODUCT(KIDS TOYS) = 150 Numbers	Manufacturer	Operating	PLASTIC PRODUCT(KIDS TOYS) = 150 Numbers
354	DURGA INDUSTRIES,VATTAK OTTA ,MALAPALLIPURAM P.O, MALA, THRISSUR	Sample Container = 400 Kilogram, PACKING MATERIAL = 100 Kilogram	Manufacturer	Operating	Sample Container = 400 Kilogram, PACKING MATERIAL = 100 Kilogram
355	LAKSHMI PLASTICS,LAKSHMI PLASTICS , NELLAYI P.O , THRISSUR-680306	PLASTIC CHIPS = 1000 Kilogram	Manufacturer	Operating	PLASTIC CHIPS = 1000 Kilogram
356	SAKTHI POLYMERS,ELANIPE A P.O,KALIKKAL	PLASTIC BOTTLES = 100 Kilogram	Manufacturer	Operating	PLASTIC BOTTLES = 100 Kilogram
357	USHA RUBBERS,29 B INDUSTRIAL DEVELOPMENT PLOT, PERINJANMOOR, THRISSUR-680581	PLASTIC MOULD FOR DESIGNER TILES = 1600 Numbers	Manufacturer	Operating	PLASTIC MOULD FOR DESIGNER TILES = 1600 Numbers
358	M/s. ELECTRO PLASTEYYAL (po) KECHERY VIA THRISSUR	PVC PIPE FITTINGS = 100 Kilogram	Manufacturer	Operating	PVC PIPE FITTINGS = 100 Kilogram
359	GLORY INDUSTRIES,C.K.VALA VUMATHILAKAM,THR ISSUR,KERALA, NH 17 ,NEAR JASS SERVICE STATION	pet preforms for bottles = 2000 Kilogram	Manufacturer	Operating	pet preforms for bottles = 2000 Kilogram
360	G V PLASTICS,KIZHUR P O,KIZHUR KUNNAMKULAM , THRISSUR	PLATIC COATED ARTICLES = 100 Kilogram	Manufacturer	Operating	PLATIC COATED ARTICLES = 100 Kilogram
361	G V POLYMERS,KALLAYIL KUNNU ROAD, P.O CHOWANNUR, KUNNAMKULAM	PLASTIC COATING POWDER = 202 Kilogram	Manufacturer	Operating	PLASTIC COATING POWDER = 202 Kilogram
362	PRIYA HOMEPLAST,SIDCO, OLLUR P.O, THRISSUR	PLASTIC ARTICLE = 1 Metric Tonnes	Manufacturer	Operating	PLASTIC ARTICLE = 1 Metric Tonnes
363	Dynamic Mould,3/104 G	VIRGIN PLASTIC PRODUCTS = 710 Kilogram	Manufacturer	Operating	VIRGIN PLASTIC PRODUCTS = 710 Kilogram

364	JENPLAST INDUSTRIES,P.O MEDUPUZHA, PANAMUKKU, THRISSUR.	PLASTIC CONTAINERS = 1500 Numbers	Manufacture	Operating	PLASTIC CONTAINERS = 1500 Numbers
365	A ONE PLASTICS,PAZHANJI P O THRISSUR DISTRICT	PLASTIC MOP CLIPS = 2000 Numbers	Manufacture	Operating	PLASTIC MOP CLIPS = 2000 Numbers
366	WESTAR,XV/1436-D,MUNDOTHIKODE MINI INDUSTRIAL ESTATE, TALAPPILLY THRISSUR	PIPE FITTINGS = 500 Numbers, P.V.C.FITTINGS = 500 Numbers	Manufacture	Operating	PIPE FITTINGS = 500 Numbers, P.V.C. FITTINGS = 500 Numbers
367	M K PRODUCTS,AYYANKUNNU INDUSTRIAL ESTATE, MUNDUR P.O	PLASTIC MOULDED ITEMS = 50 Kilogram	Manufacture	Operating	PLASTIC MOULDED ITEMS = 50 Kilogram
368	KARTH HOME PRODUCTS PVT LTD,110/19 INDUSTRIAL ESTATE OLLUR THRISSUR - 680306	HOUSE HOLD PLASTIC ITEMS = 230 Kilogram	Manufacture	Operating	HOUSE HOLD PLASTIC ITEMS = 330 Kilogram
369	SIMPLE PLASTIC & METALS,PLOT NO 40,DEVOLOPMENT AREA, AYYANKUNNU, P.O MUNDUR, THRISSUR	PVC MOULD FOR MAKING CEMENT TILES & PAVING BLOCKS = 300 Kilogram	Manufacture	Operating	PVC MOULD FOR MAKING CEMENT TILES & PAVING BLOCKS = 300 Kilogram
370	LAKSHMI INDUSTRIES,M/S.LAKSHMI INDUSTRIES,VELLANCHERA P.O,PORUNNUMKUNNU,THRISSUR DIST,KERALA	PLASTIC GRANUELS = 300 Kilogram	Manufacture	Operating	PLASTIC GRANUELS = 300 Kilogram
371	VICTORY PRODUCTS,VICTORY PRODUCTS MARATHAKKARA P.O, MARATHAKKARA	PLASTIC CAN = 500 Numbers	Manufacture	Operating	PLASTIC CAN = 500 Numbers
372	AATHIRA PLASTIC INDUSTRIES,CHITTISSERY P.O, THRISSUR PIN-680301	PLASTIC WATER TANK = 20 Numbers, PLASTIC SEPTIC TANK = 3 Numbers	Manufacture	Operating	PLASTIC WATER TANK = 20 Numbers, PLASTIC SEPTIC TANK = 3 Numbers

373	MANDUMPAL POLYMERS,VELLARA KKAD,P.O.VELLARAKK KAD	GREEN HOSE = 1200 Sq Mtr	Manufacture	Operating	GREEN HOSE = 1200 Sq Mtr
374	SYLCON PLASTICS,SYLCON PLASTICS VELLANCHIRA P.O THRISSUR - 680 697	BOTTLES = 1500 Numbers, CAPS = 1500 Numbers, JARS/CANS = 1500 Numbers	Manufacture	Operating	BOTTLES = 1500 Numbers, CAPS = 1500 Numbers, JARS/CANS = 1500 Numbers
375	ADHITHYA POLYMER MOULDERS,V R PURAM P O, CHALAKUDY, THRISSUR DIST	PACKING MATERIAL = 80 Kilogram	Manufacturer	Operating	PACKING MATERIAL = 80 Kilogram
376	SPARK INDUSTRIES,VETTIKK ATTIRI P O,MELE VETTIKKATTIRI,THRIS SUR-679531	ENDCAP,HOSE CONNECTOR ,TAP etc = 600 Numbers	Manufacture	Operating	ENDCAP,HOSE CONNECTOR, TAP etc = 600 Numbers
377	NIVIYA PLASTICS,NEAR FATHIMA MATHA CHURCH, P.O. VELLANCHIRA,THRISS UR, PIN-680697	PET BOTTLES = 18000 Numbers	Manufacture	Operating	PET BOTTLES = 18000 Numbers
378	V-THREE ENGINEERING,THOTTI PPAL P O, PALLAM,THRISSUR, 680010	PLASTIC BUSH = 500 Numbers, RUBBER BUSH = 500 Numbers	Manufacture	Operating	PLASTIC BUSH = 500 Numbers, RUBBER BUSH = 500 Numbers
379	VAL Polytec Private Limited,313/VIII, Karuvankad, Kundukad P O, Thrissur - 680631	Plastic Water Storage tanks of total capacity = 25 Kilo Litres	Manufacture	Operating	Plastic Water Storage tanks of total capacity = 25 Kilo Litres
380	EXCEL POLYMERS,KADUKUT TY P O, CHALAKUDY VIA	MULDED PLASTIC = 7 Kilogram	Manufacture	Operating	MULDED PLASTIC = 7 Kilogram
381	CAN TECH PLASTICS,CAN TECH PLASTICS, MARATHAKKARA P.O., MARATHAKKARA	PLASTIC CAN = 500 Numbers	Manufacturer	Operating	PLASTIC CAN = 500 Numbers
382	SIDDHI VINAYAK POLYMERS,VELLUR CHUNGAM, THAYOOR (PO), THRISSUR	P.V.C.FITTING S = 1000 Kilogram	Manufacturer	Operating	P.V.C.FITTINGS = 1000 Kilogram

383	POLYSIGN INDUSTRIES,KATTOOR P O,KATTOOR,THRISSUR 680702	MULTI LAYER HDPE/LDPE BLOWN FILM = 1.4 Metric Tonnes	Manufacturer	Operating	MULTI LAYER HDPE/LDPE BLOWN FILM = 1.4 Metric Tonnes
384	QUICK MACHINE SERVICE,KAIPARAMBU,PONNUR ROAD,KAIPARAMBU P O,THRISSUR-680546	Injection moulded & blow moulded articles = 50 Kilogram, Electrical repairing of moulded machine = 1 Numbers	Manufacturer	Operating	Injection moulded & blow moulded articles = 50 Kilogram, Electrical repairing of moulded machine = 1 Numbers
385	M.K.PLASTICS,P.O.UR AKAM, POOCHINNIPADAM THRISSUR	PACKING SHIM = 2000 Numbers	Manufacturer	Operating	PACKING SHIM = 2000 Numbers
386	MOTHER PLASTICS,MOOLAPAL MARATHAKKARA P.O, THRISSUR, KERALA-680106	PLASTIC BROOM = 100 Numbers, PLASTIC CARPET = 100 Numbers	Manufacturer	Operating	PLASTIC BROOM = 100 Numbers, PLASTIC CARPET = 100 Numbers
387	VINCE POLYMERS,SREYAS NAGAR, ELUKKARA P.O, THRISSUR-680655	POLYTHENE COVER = 100 Kilogram	Manufacturer	Operating	POLYTHENE COVER = 100 Kilogram
388	P.V SUDHAKARAN,PALAKK ADAN HOUSE, ASHTAMICHIRA P.O, MALA	Sample Container = 28500 Numbers	Manufacturer	Operating	Sample Container = 28500 Numbers
389	K.S PLASTICS,K S PLASTICS P.O NEDUPUZHA THRISSUR	FABRICATION FITINGS ITEMS = 150 Kilogram	Manufacturer	Operating	FABRICATED FITINGS ITEMS = 150 Kilogram
390	ATLAS INDUSTRIES,Vappurka, P O Chazhur, Opp. Angadivadi, Thrissur 680573	Spectacle Cases = 500 Numbers	Manufacturer	Operating	Spectacle Cases = 500 Numbers
391	DK INDUSTRIES,KAIPARA MBU P O,PUTHOOR,THRISSUR 680546	PLASTIC PRODUCTS = 14 Kilogram	Manufacturer	Operating	PLASTIC PRODUCTS = 14 Kilogram
392	MAKE FIT INDUSTRIES,KINFRA PARK, KORATTY, KINFRA PARK P.O, THRISSUR-680308	PLASTIC HOUSE HOLD ITEMS = 2000 Numbers	Manufacturer	Operating	PLASTIC HOUSE HOLD ITEMS = 2000 Numbers

395	PLANET POLYMERS,ANJANGA DI,KADAPPURAM, CHAVAKKAD,THRISSUR-680514	PRINTING OF PLASTIC CARRY BAGS = 4000 Numbers	Manufacturer	Operating	PRINTING OF PLASTIC CARRY BAGS = 4000 Numbers
396	THRIVENI POLYMERS,KINFRA P O,KORATTY,THRISSUR-680309	PLASTIC TAP = 6000 Numbers	Manufacturer	Operating	PLASTIC TAP = 6000 Numbers
397	RAPOL SANIPLAST PVT LTD,MELOOR,CHALAKUDY,THRISSUR-680311	PLASTIC TAP = 6000 Numbers	Manufacturer	Operating	PLASTIC TAP = 6000 Numbers
398	P.A TRADERS,AVANUR P.O KARUR THRISSUR	PLASTIC CHIPS = 495 Kilogram	Manufacturer	Operating	PLASTIC CHIPS = 495 Kilogram
399	AVK PLASTICS,P.O PERUMPILAVU, ORUKKALKUNNU, THRISSUR-680319	PET BOTTLE = 800 Numbers	Manufacturer	Operating	PET BOTTLE = 800 Numbers
398	SIVANANDANAM PLASTIC,INDUSTRIAL DEVELOPMENT PLOT ATHANI THRISSUR	FOOD CONTAINER = 2000 Numbers	Manufacturer	Operating	FOOD CONTAINER = 2000 Numbers
399	MARS PLASTICS,22/382, DHINDA, NELLIKKUNNU, THRISSUR DT KERALA STATE	PVC DOOR FITTINGS = 12 Metric Tonnes	Manufacturer	Operating	PVC DOOR FITTINGS = 12 Metric Tonnes
400	SUPREME POLYMERS,P.O THRIKKUR KALLUR THRISSUR	D CUT BAG = 50 Kilogram, PACKING COVER = 200 Kilogram	Manufacturer	Operating	D CUT BAG = 50 Kilogram, PACKING COVER = 200 Kilogram
401	SAKTHI PLASTICS,KIRALOOR P.O THRISSUR	PVC PIPE = 200 Kilogram	Manufacturer	Operating	PVC PIPE = 200 Kilogram
402	N.H.S INDUSTRIES, VYNTHALA VIII/404 PALAYAMPARAMBU P.O THRISSUR	PLASTIC BOTTLES = 2000 Numbers, WATER TANK FITTINGS = 2000 Numbers	Manufacturer	Operating	PLASTIC BOTTLES = 2000 Numbers, WATER TANK FITTINGS = 2000 Numbers
403	SEARA PLASTICS,P.O EYYAL KECHERY VIA THRISSUR	COMB = 4320 Numbers, PLASTIC ITEMS = 30 Kilogram	Manufacturer	Operating	COMB = 4320 Numbers, PLASTIC ITEMS = 30 Kilogram

404	GANGA PLASTIC/CHANDRIKA ,E.K W/O. SATHYAN , ELAKKATTU HOUSE, KANAKAMALA (PO) , VATTEKADU THRISSUR	P.V.C.FITTINGS = 1000 Numbers	Manufacturer	Operating	P.V.C .FITTINGS = 1000 Numbers
405	AYYAPPA PLASTICS,POOCHETTY P.O ERAVIMANGALAM THRISSUR	LATEX COLLECTION CUP = 5000 Numbers	Manufacturer	Operating	LATEX COLLECTION CUP = 5000 Numbers
406	SHINE PLASTICS,KOLAZHI P.O THRISSUR	RECYCLED PLASTIC GRANULES = 400 Kilogram	Recycler	Operating	RECYCLED PLASTIC GRANULES = 400 Kilogram
407	SREELAKSHMI PRODUCTS,MATHILAKAM P.O, THRISSUR	CONCEALED BOX = 1200 Numbers	Recycler	Operating	CONCEALED BOX = 1200 Numbers
408	Royal Plastics,Chooliyury P.O.,Kolingattukara,Thrissur	Plastic Granules = 100 Kilogram	Recycler	Operating	Plastic Granules = 100 Kilogram
409	SIARRA INDUSTRIES,BLDG NO. 11/313 PHC ROAD PORKULAM PORKULAM P.O	Recycled Plastic Granules = 1700 Kilogram	Recycler	Operating	Recycled Plastic Granules = 1700 Kilogram
410	SIVA PLASTICS,MADAKKATHARA P.O MADAKKATHARA THRISSUR	HD&LD PIPES = 275 Kilogram	Recycler	Operating	HD&LD PIPES = 275 Kilogram
411	NOVA PLASTICS,1408/9A OLLUR THRISSUR	PLASTIC GRANULES FROM SCRAP = 590 Kilogram	Recycler	Operating	PLASTIC GRANULES FROM SCRAP = 590 Kilogram
412	KURAISHY PLASTICS,SIDCO INDUSTRIAL PARK ATHANI, P.O PERINGANDOOR THRISSUR	PLASTIC GRANULES FROM SCRAP = 300 Kilogram	Recycler	Operating	PLASTIC GRANULES FROM SCRAP = 300 Kilogram
413	SRI RAJU PLASTICS,PLOT NO 3,SIDCO INDUSTRIAL PARK ,P.O PERINGADOOR, ATHANI,THRISSUR	PLASTIC GRANULES FROM SCRAP = 300 Kilogram	Recycler	Operating	PLASTIC GRANULES FROM SCRAP = 300 Kilogram
414	HYLUK MACHINE,NETTISSERY P.O ,THRISSUR	WIRING PVC PIPE = 450 Kilogram	Recycler	Operating	WIRING PVC PIPE = 450 Kilogram

415	J.R.S.PLASTICS,VALLA CHIRAKKARAN HOUSE ANCHERY KURIACHIRA P O MIDM STREET THRISSUR - 680006	PLASTIC GRANULES = 200 Kilogram, PLASTIC INJECTION MOULDED ITEMS = 100 Kilogram	Recycler	Opening	PLASTIC GRANULES = 200 Kilogram, PLASTIC INJECTION MOULDED ITEMS = 100 Kilogram
416 (KANNUR)	M/S ZUM ZUM POLYMERS	7.95	MLP	OPERATING	7.95
417	KALYX PLASTIPACK	5.5	MLP	OPERATING	5.5
418	S S EXTRUSIONS	0.872	MLP	OPERATING	0.872
419	ARUNODAYA PACKAGING	0.55	MLP	OPERATING	0.55
420	SWATHI PACKAGING	0.385	MLP	OPERATING	0.385
421	EVERGREEN PRODUCTS	0.6	MLP	OPERATING	0.52
422	GEMINI PLASTICS	2.75	MLP	OPERATING	2.75
423	AQUA REGAL PRODUCTS	1.37	MLP	OPERATING	1.37
424	SNEHA POLYMERS	1.1	MLP	OPERATING	1.1
425	ANVIL INDUSTRIES	0.09	MLP	OPERATING	0.09
426	TECHNOWIN	0.16	MLP	OPERATING	0.16
427	JAYPEE INDUPACK INDUSTRIES	0.22	MLP	OPERATING	0.22
428	ARUNA FLEXO PACKS	0.37	MLP	OPERATING	0.37
429	PARASSINI POLYMERS	0.6	MLP	OPERATING	0.56
430	SANSONS INDUSTRIES	0.16	MLP	OPERATING	0.016
431	CENTURY HOUSEHOLD PRODUCTS	3.03	MLP	OPERATING	3.03
432	GOLDEN STAR PACKAGING	0.18	MLP	OPERATING	0.18
433	ALPHA PACKAGING INDUSTRIES	0.7	MLP	OPERATING	0.37
434	POWER PLASTIC INDUSTRY	0.68	MLP	OPERATING	0.68
435	SURYA POLY PRINTS	0.535	MLP	OPERATING	0.35
436	MALABAR METAL	2.2	MLP	OPERATING	2.2
437	EVERSHINE INDUSTRIES	2.31	MLP	OPERATING	2.31
438	KITCHEN MAKER	0.11	MLP	OPERATING	0.11
439	SASCO	0.02	MLP	OPERATING	0.02
440	ROYAL TARPAULIN	0.13	MLP	OPERATING	0.13
441	INTERNATIONAL PET INDUSTRIES	6.06	MLP	OPERATING	6.06

442	ANJAL INDUSTRIES	0.33	MLP	OPERATING	0.33
443	SUPERSHINE INDUSTRIES	2.75	MLP	OPERATING	2.75
444	NATIONAL PIPES	0.22	MLP	OPERATING	0.22
445	FUTURE PLAST	3.52	MLP	OPERATING	3.52
446	EVEROPLAST INDUSTRIES	1.84	MLP	OPERATING	1.84
447	TALASIE PLASTOPACKS	5.63	MLP	OPERATING	5.63
448	INTERNATIONAL TARPAULIN COMPANY	0.11	MLP	OPERATING	0.11
449 (KASARGOD)	NOOR PLASTIC		PLASTIC SHEET & PIPES OF DIFFERENT DIAMETER	Operating	50 Kg
450	ALDAR BLOWING UNIT		PLASTIC BOTTLES	Operating	10000 NUMBERS
451	KAKUNJE PLASTIPACKS PVT LTD		PLASTIC PACKING BAGS &PLASTIC CARRY BAGS	Operating	800 KG and 250 kg
452	RAKSHA POLYMERS		PLASTIC TANK	Temporarily closed	300 numbers
453	THEJASWINI TARPOLINS		DIFFERENT SIZE OF SHEETS	Operating	110 Kg
454	KAIRALI AGRO NETS		HDPE SIDE NETS	Temporarily closed	200Kg
455	SUPREME TRADERS		COVERINGS OF VEHICLES	Operating	99 Kg
456	ALDAR BLOWING UNIT		PLASTIC BOTTLES	Operating	10000 NUMBERS
457	MITHRA ENTERPRISES		BAGS	Temporarily closed	150 kg
458	SKANDA PLASTICS		PLASTIC BOTTLE MANIFACTURING UNIT	Operating	3000numbers
459	VIJAYA PLASTICS		PLASTIC CONTAINERS	Operating	200 numbers
460	KRISHNA KIRAN ENTERPRISES		ICE CREAM FOOD GRADE CONTAINER	Operating	4000/Day
461	MALABAR TRADING		STUFFED PLASTIC	Temporarily closed	600 Kg
462	TEXAS PRO INDUSTRY		PLASTIC FLAKES	Temporarily closed	450 Kilogram /day
463	LORDS POLYTECHS PVT.LTD		POLYTHENE SHEETS & COVERS	Temporarily closed	200 Kg
464	NATIONAL TRADING COMPANY		POLYURETHANE FOOTWEAR	Temporarily closed	300 Numbers
465 (Wayanad)	Milan enterprises	200Kg/Day	Biodegradable carry bags	Operating	100kg/Day
466	Apple cut bags	100 kg/day	Non Woven Carry Bags	Closed	100 kg/day
467	CF Bags	50kg	PP bags	Operating	50kg/day
468	H2O Pet industries	2000nos/day	PET Bottles	Closed	2000nos/day
469	Plastic pack	4000 pieces/day	jewellary box	Operating	4000 pieces/day

470	Mahalaxmi eco friendly unit	100 kg/day	non woven carry bags	Closed	100 kg/day
471	Alakkal shoppers	1000kg/day	non woven carry bags, non woven cloths	Closed	1000kg/day
472	Ahuja	10000no's/day	paper plate, paper mill	Operating	
473	Intech Solutions	21600no/day	Insulation tapes	Closed	21600no/day
474	ADS Green Products	1200kg	Carry bag, Grocery bags, Garbage bags	Operating	1200kg
475 (R/OZEN INDIA E)	PACK ZONE POLY PACK	3000 N/day	Flexible	Operating	3000 N/day
476	United polymers Kadakandi	0.1 TPD	Flexible	Operating	0.1 TPD
477	ABHINAND PLASTICS	500 N/day	Rigid	Operating	500 N/day
478	UNIQUE PET	4000 N/day	Rigid	closed	4000 N/day
479	AISWARYA MOULDS	15 N/day	Rigid	Operating	15 N/day
480	FRIENDS RUBBER INDUSTRIES	100 N/day	Flexible	Operating	100 N/day
481	GEO POLIMERS	125 sqr mtr/day	Rigid	Operating	125 sqr mtr/day
482	USPAN INDUSTRIES	0.4 TPD	Flexible	Operating	0.4 TPD
483	INDU COMPONENTS	1500 N/day	Rigid	Operating	1500 N/day
484	OZONE BIO FABS INTERNATIONAL	0.0005 TPD	Flexible	Operating	0.0005 TPD
485	ARJUN PIPES	0.3 TPD	Rigid	closed	0.3 TPD
486	Smartek footwear Pvt Ltd	6000 N/day	Flexible	closed	6000 N/day
487	LAND MARK TRADERS	50 cube feet	Rigid	Operating	50 cube feet
488	G.M TYRE RETREADINGS MARUTHANKAVIA ROAD KUTTIADI	4 N/day	Flexible	closed	4 N/day
489	LEADER RUBBER PRODUCTS	3650 N/day	Flexible	Operating	3650 N/day
490	Viswa industries	0.06 TPD	Rigid	Operating	0.06 TPD
491	BARALI POLY PACK PVT LTD	6.2 TPD	Flexible	Operating	6.2 TPD
492	Applinova Techno Plast	30000 N/day	Rigid	Operating	30000 N/day
493	SABOO TECH POLYMERS	0.025 TPD	Flexible	Operating	0.025 TPD
494	LEADER RUBBER PRODUCTS	3000 N/day	Flexible	Operating	3000 N/day
495	VKC FOOTWEAR INTERNATIONAL PVT LTD	4667 N/day	Flexible	Operating	4667 N/day
496	FORTUNE ELASTOMERS PVT LTD UNIT II	10000 N/day	Flexible	Operating	10000 N/day
497	ROHARIS ADVANCED POLYMERS	7.8 TPD	Rigid	Operating	7.8 TPD
498	VEERESV POLYMERS PVT LTD.	600 N/day	Flexible	Operating	600 N/day
499	Lido Rubber Products	2000 N/Day	Flexible	Operating	2000 N/Day
500	AMMU PET	2000 N/Day	Rigid	closed	2000 N/Day

501	CHAUL PLASTIC INDUSTRIES	1200 K/Day	Rigid	Operating	1200 K/Day
502	C M Plastics	0.2 TPD	Rigid	Operating	0.2 TPD
503	IRA PACKAGING	100000 K/Day	Rigid	closed	100000 K/Day
504 (DO 1)	M/s. ALFIA PLASTICS	Plastic Waste – 150 Kilogram Photo chips – 850 Kilogram Colour Pigments - 03 Kilogram	Recycler	Operating	
505	M/s. STAR PLASTICS	Plastic Scrap /Day - 500 Kilogram	Recycle	Operating	
506	M/s. FATHIMA PLASTICS	Waste plastics - 530 Kilogram	Recycler	Operating	
507	M/s. F.F. PLASTICS	Waste plastics - 1500 Kilogram	Recycler	Operating	
508	M/s. P.M. PLASTICS	Cleaned Waste plastics - 500 Kg	Recycler		
509	M/s. K.K.M. PLASTICS	Waste Plastics - 1250 Kilogram	Recycler		
510	M/s. EVERSHINE PLASTICS	Plastic Granuables - 1.4 Metric Tonns Waste Plastic - 1.5 Metric Tonnes	Recycler	Operating	
511	M/s. C.K.T. PLASTICS	Waste Plastics -8	Recycle	Operating	
512	M/s. P M PLASTIC REPROCESSING UNIT	Plastic Waste – 830 Kilogram	Recycler		
513	M/s. NEDUNGATTUKUDY PLASTICS	Waste plastic - 30 Metric Tonnes	Recycler	Operating	
514	M/s. INFA PLASTICS	Waste Plastics - 125 Metric Tonnes	Recycler	Operating	
515	M/s. A-ONE BOTTLES & PLASTICS	Waste Plastics - 8.30 Metric Tonnes	Recycler	Operating	
516	M/s. CROWN PLASTICS	Waste plastic - 5	Recycler	Closed	
517	M/s. BISWAN PLASTIC	Waste Plastic - 5	Recycle		
518	M/s. PLASTIC INDUSTRY	Scrap Plastic Buckets & Bottles after use - 1090 Kilogram	Recycler		
519	M/s. EXCEL PLASTICS	Plastic scraps 20	Recycler	Operating	
520	M/s. CREATIVE PLASTIC	Plastic Waste 200	Recycler	Operating	

521	M/s. JAMEELA PLASTICS	Waste Plastics - 5	Recycler	Closed	
522	M/s. HAMARA PLASTICS	Waste Plastic - 1	Recycler	Operating	
523	M/s. SUPERLION PLASTICS	Plastic items -50	Recycler		
524	M/s. THAVAKOOBE PLASTIC	Plastic Chips -40	Recycler	Operating	
525	M/s. SUBAIDA PLASTICS	Plastic Scrap - 60	Recycler	Operating	
526	M/S. AERVADU PLASTICS	Waste Plastic - 2	Recycler		
527	M/s. KALIMATTAM PLASTIC INDUSTRIES	Plastic scrap - 1200 Kilogram Plastic Granuales - 3000 Kilogram	Recycler		
528	M/s. P.K.A PLASTICS	Waste Plastic -20	Recycler	Operating	
529	M/s. THEKKEDUDY PLASTICS	Plastic Scraps - 8	Recycler	Operating	
530	M/s. RIFA PLASTICS	Waste Plastic - 3	Recycler	Operating	
531	K.M. PLASTICS	Plastic Scrap - 80	Recycler	Operating	
532	M/s. MPS PLASTIC WORKS	Waste plastic - 30	Recycler		
533	M/s. M/s. MARIA PLASTICS	Waste Plastic - 10	Recycler		
534	M/s. SARU PLASTICS	Waste plastics - 8	Recycler	Closed	
535	M/s. GREESHMA PLASTICS	PVC door waste and virgin plastics -200 Kilogram	Recycler	Closed	
536	M/s. NATVE PLASTICS	Plastic waste - 1200 Kilogram	Recycler		
537	M/s. RECPO PLASTICS	Waste plastics - 1000 Kilogram	Recycler		
538	M/s. KOTTAKUDEYIL POLYMERS	Waste plastic - 1000 Kilogram	Recycler		
539	M/s. CHERAKATTIL POLYMERS	Waste plastic - 1.50 Metric Tonnes	Recycler		
540	M/S. FRIENDS POLYMERS	Waste Plastics - 500 Kilogram	Recycler		
541	M/s. UNITED POLYMERS	Plastic waste - 0.10 Metric Tonne	Recycler		
542	M/s. CHITTUPARAMBIL POLYMERS	Waste plastic - 20 Metric Tonnes	Recycler	Operating	
543	M/s. GREEN INDUSTRIES	Recycled plastic chips - 2 Metric Tonne	Recycler	Operating	
544	M/s. MEDIROOF POLYMERS	Used Plastic - 600 Kilogram	Recycler	Operating	

545	M/s. RR POLYMERS	Plastic Granuels 420 Kilogram Waste Plastic - 300 Kilogram	Recycler	Operating	
546	M/s. STAR POLYMERS	Waste plastic 15 Metric Tonnes	Recycler		
547	M/s. SUVARNA PP PRODUCTS	Scrap Plastic - 500 Kilogram	Recycler		
548	M/s. UNITED INDUSTRIES	Plastic Chips- 1500 Kilogram	Recycler	Operating	
549	M/s. UNITED MPOLYMERS	Plastic waste - 9.10 Metric Tonne	Recycler	Operating	
550	M/s. VENGOLA POLYMERS	Plastic Waste - 1.75 Metric Tonnes	Recycler		
551	M/s. MALAYATTOOR POLYMERS	HDPE, LDPE (RECYCLED) LLDPE & PPE Granules - 42 Kilogram	Recycler	Operating	
552	M/s. DIAMOND POLYMERS	ASTIC GRANULES- 1.2 Metric Tonnes	Recycler	Operating	
553	M/s. P M PLASTICS	Plastic Chips (Grade -1) - 420 Kilogram Plastic Chips (Grade -2) 70 Kilogram	Recycler	Operating	
554	M/s. HINDO POLYMERS		Recycler		
555	M/S. AGORAS PLASTICS		Recycler		
556	M/s. MALABAR POLYMERS		Recycler		

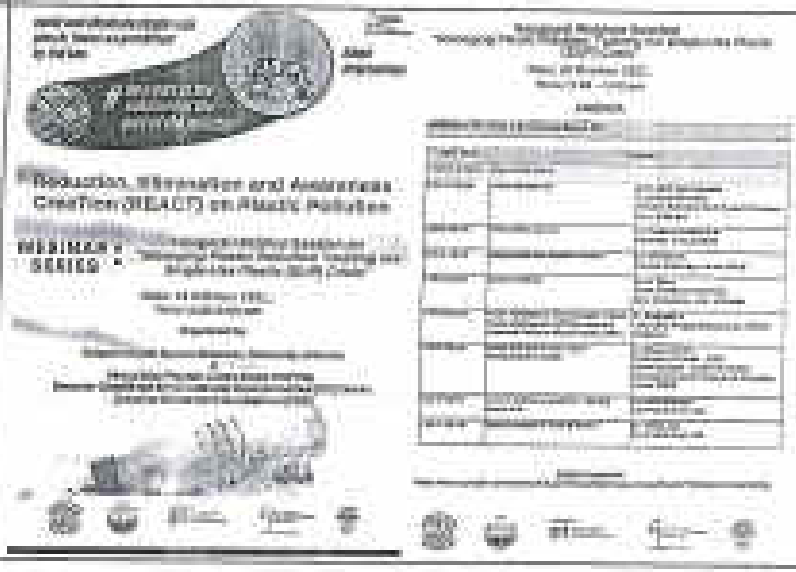
Annexure-VII (Column 9)				
Details of violations & action taken on non-compliance of provisions of PWM Rules, 2016, as amended, 2018				
Rule	**Provisions**	**Violator**	**Nature of Violation**	**Action taken**
4(c)	Carry bag made of virgin or recycled plastic, shall not be less than fifty microns in thickness;	Single use plastic is banned in Kerala		
4(d)	Plastic sheet or like, which is not an integral part of multi-layered packaging and cover made of plastic sheet used for packaging, wrapping the commodity shall not be less than fifty microns in thickness except where the thickness of such plastic sheets impair the functionality of the product	Single use plastic is banned in Kerala		
4(f)	Sachets using plastic material shall not be used for storing, packing or selling gutkha, tobacco and pan masala;	Banned		
4(h)	Carry bags made from compostable plastics shall conform to the Indian Standard: IS 17088:2008 titled as specifications for Compostable Plastics, as amended from time to time. The manufacturers or seller of compostable plastic carrybags shall obtain a certificate from the Central Pollution Control Board before marketing or selling;	Ban of compostable carry bag is subjected to judgement dated 06/02/2021 in WP(C)4291/2020.		
8(1)(f)	Every local body shall be responsible for development and setting up of infrastructure for segregation, collection, storage, transportation, processing and disposal of the plastic waste either on its own or by engaging agencies or producers	1022 Haritha karma senas, 1018 MCFs and 178 RRFs		
8(2)(g)&8(c)	Ensuring that open burning of plastic waste does not take place	Instruction given to localbodies		
8(1)(a)	The waste generator shall take steps to minimize generation of plastic waste and segregate plastic waste at source	1022 Haritha karma senas, 1018 MCFs and 178 RRFs		
8(1)(b)	The waste generator shall not litter the plastic waste	1022 Haritha karma senas, 1018 MCFs and 178 RRFs		
13(2)	Every producer or brand-owner shall, for the purpose of registration or for renewal of registration, make an application in Form-I to i. "The concerned State Pollution Control Board or Pollution Control Committee of the Union	In Kerala since the launch of portal on April 6 th (2 brand owners, 55 producers , 38 importers, 6 PWP) have been given registration as on 3 rd October 2022		

13(3)	Every person recycling or processing waste or proposing to recycle or process plastic waste shall make an application to the State Pollution Control Board or the Pollution Control Committee for grant of registration or renewal of registration for the recycling unit, in Form II.	Number of registered recyclers in the State- 123
13(4)	Every manufacturer engaged in manufacture of plastic to be used as raw material by the producer shall make an application to the State Pollution Control Board or the Pollution committee of the Union territory concerned, for the grant of registration or for the renewal of registration, in Form III.	Number of registered manufacturers/ producers in the State-303
14(1)	Retailers or street vendors shall not sell or provide commodities to customer in carry bags or plastic sheet or multi-layered packaging, which are not manufactured and labelled or marked, as per prescribed under these rules	Single use plastic is banned in Kerala
	Any other (Please specify)	Nil

Annexure-VIII (Column 11)

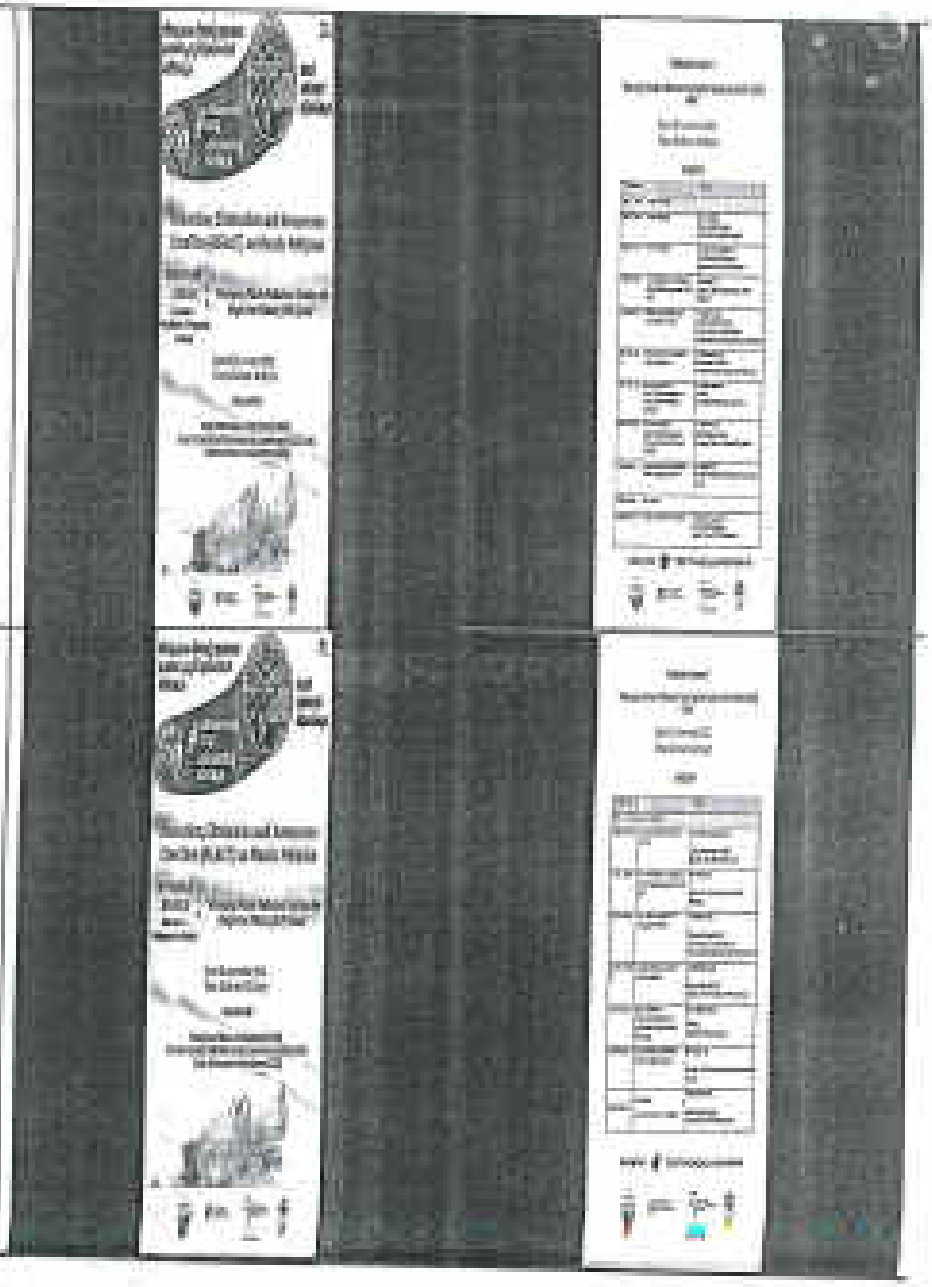
Status of submission of Annual Report by ULBs/VPs to SPCB/PCC [Rule 17(2)]		
Sl. No.	Item	No.
1	Total No. ULBs	93
a	Total NO. of ULBs which have provided complete Annual Report	64
2	Total No. GPs	941
a	Total No. of GPs which have provided complete Annual Report	373
3	Any other local bodies (please specify)	Nil
a	Any other local bodies which have provided complete Annual Report	Nil

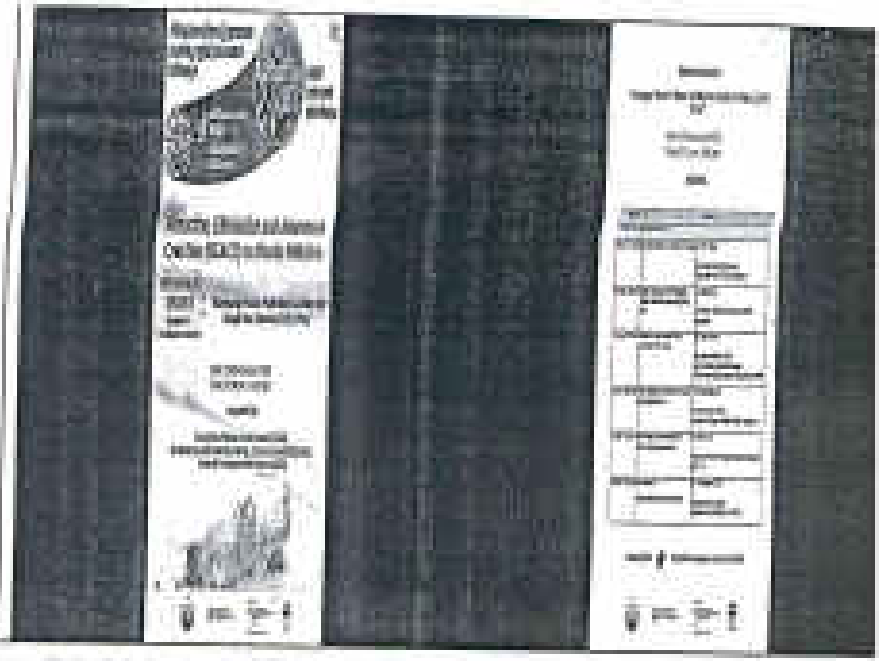
Date	Item	Agenda	Organizer (s)	Session / event
20-08-2021	Brochure	Messages circulated to communicate the idea of preventing plastic pollution.	Kerala SPCB, GIZ, CED	
25-08-2021	All India Radio (AIR) onAwareness on Plastic Waste Management in Kerala	**A session was organized with All India Radio (AIR) on Awareness on Plastic Waste Management in Kerala.–** Expert speakers included: • Er. Pradeep Kumar AB, Chairman, Kerala State Pollution Control Board • Dr. Babu Antlet, Executive Director, CED • Er. Dileep Kumar, Programme Director, CED, Former Director, Suchitwa Mission Former Senior Environmental Engineer, Kerala SPCB The session included discussions on Marine litter and its consequence on health and environment, role of public	Kerala SPCB, GIZ, CED	

		to minimize marine litter and on Plastic Waste Management (PWM) Rules 2016 in Malayalam. The session was moderated by Mr. Vivek J M, Technical Expert, GIZ. It was broadcasted by All India Radio (AIR), Trivandrum on **25.08.2021** at 11.15 am under '*Haritha Vani*' programme. The duration was 12 minutes 59 seconds.		
	Banner	Banners have been designed and printed in cloth material to enhance awareness and enlighten the importance of adoption of plastic alternatives in view of national level ban of SUP as per Plastic Waste Management Rules (Amendment) 2021		
18-10-2021	**Webinar session**	**Awareness session on plastic pollution and single-use plastics-** Focus-University of Kerala	Kerala SPCB, University of Kerala, GIZ, CED	
30-10-2021		**Awareness session on plastic pollution and single-use plastics** District focus-Trivandrum district	Kerala SPCB, GIZ, CED	

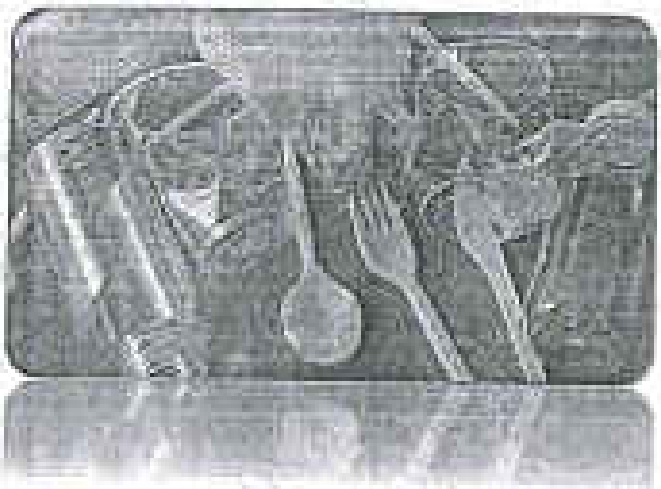
05-11-2021	**Webinar session**	**Awareness session on plastic pollution and single-use plastics** District focus-Kannur and Kasargod districts	Kerala SPCB, GIZ, CED	
08-11-2021	**Webinar session**	**Awareness session on plastic pollution and single-use plastics**	Kerala SPCB, GIZ, CED	

		District focus-Kozhikode & Wayanad districts	
12-11-2021	**Webinar session**	**Awareness session on plastic pollution and single-use plastics** District focus-Malappuram district	Kerala SPCB, GIZ, CED
18-12-2021	**Webinar session**	**Awareness session on plastic pollution and single-use plastics**	Kerala SPCB, GIZ, CED



		[illegible] Ernakulam district		
25-12-2021	**Brochure**	Messages circulated to communicate the idea of preventing plastic pollution as part of Christmas 2021.	Kerala SPCB, GIZ, CBD	

				
31-12-2021	**Awareness on Plastic Waste Management and marine littering in DD channel**	Session on awareness on marine litter in Kerala was organised by project partner CED on 31.12.2021 in DD Chanel (SAMOOHYAPADOM program held in DD Malayalam)	Kerala SPCB, GIZ, CED	 https://youtu.be/vy63xTxvPI8



STATUS REPORT

Assessment of Plastic Products: SUP(Permitted/prohibited), Plastic items(Excluding SUP), SUP alternatives

Submitted to

KERALA

KERALA STATE POLLUTION CONTROL BOARD

Prepared By

SOCIO ECONOMIC UNIT FOUNDATION

(ASSO-23, T.C.28/73, V.T.C.R.A., Vellayambalam, Thiruvananthapuram, Kerala, India-695010)

"ASSESSMENT OF PLASTIC PRODUCTS: SUP (PERMITTED/PROHIBITED), PLASTIC ITEMS (EXCLUDING SUP), SUP ALTERNATIVES"

STATUS REPORT

No	Activity	Status
1	Preparatory discussions	Completed
2	Identification of survey area and sample	Completed
3	Questionnaire finalization	Completed
4	Survey team finalization and training	Completed
5	Inception Report	Completed
6	Primary data collection on SUP	Completed
7	Primary data collection on SUP alternatives	Completed
8	Mobile app preparation	Completed
8	Field study	ONGOING
9	Data entry and draft preparation	ONGOING
10	Presentation of draft	To be completed
11	Final report	To be completed

Objective 1:

To provide list of items in the state with focus on:

1. SUP items (permitted) 2. SUP items (Prohibited) 3. Alternative to SUP

STATUS: list of SUP items (permitted) and alternative to SUP is under preparation

Sl no	SUP permitted	SUP prohibited	SUP alternatives
1	Straws/ Stirrers	Garbage bags (plastic)	paper cups with PLACoatings, certified by CPCB and IS:17088 complaint
2	Non-biodegradables	Non-woven bags, plastic flags, plastic bunting	Cloth bags / paper bags
3	EPS (Thermocol and similar) for decoration	PET/PETE bottles ofdrinking water of capacities less than 500ml.	cloth/paper flags,bunting
4	Small plastic bottles for drinking water (s200ml)	Plastic carry bags irrespective of thickness	Grow bags
5	Small multilayer pouches/sachets (area less than 36 cm2)	Plastic carry bags - compostable	Paper spread
6	Plastic banners (thickness less than 100 microns)	Plastic coated - items like paper cups, plates, bowls, paper bags	Glass, ceramic, steel- cups, plates, paper, and plant-based decorations
7	Wrapping films for e-commerce applications	Plastic/ plastic coated leaves used as plates	Glass, ceramic, steel,wooden cups, plates, dishes,spoons, fork, straw, stirrer
8	Cling films (food and industrial packaging)	Plastic packets (use of plastic packets in retail outlets, including street vendors/ hawkers, for packing fruits and vegetables)	
9	Bakery and grocery packing films	Plastic sapling bags	
10	Multi-layer packaging (an area more than 36cm2)	Plastic sheets (sheet used as table spread)	
11	Brick cartons (Tetra Pak and similar)	Plastic water pouches, non branded plastic juice packets	

12	Blister packaging for pharmaceutical applications	Plates, cups, and decorative materials made of thermocol/Styrofoam	
13	Blister packaging for non-pharma applications	PVC flex materials, plastic coated cloth-likepolyester/ nylon/ Korean cloth	
14	Milk and oil pouches	Single-use plastic utensils like cups, plates, dishes, spoons, forks, straw, stirrers, made of plastic	
15	Retort pouches for ready-to-eat microwavable and boiling water food items	Candy sticks	
16	Shrink film	Earbuds with plastic sticks	
17	Air cushions industrial packaging: Bubble wraps, Foam,Air Pillows	Ice-cream sticks	
18	Disposable industrial packaging (EPS)	Plastic sticks for balloons,	
19	Films for mulch, silage, greenhouse applications	Wrapping or packing films around sweet boxes, invitation cards, and cigarette packets.	
20	Plastic bottles for food and beverages		
21	Plastic bottles for non-food		
22	Non-woven textile for medical and personal care items		
23	IV bottles		
24	IV bags/ Blood bags		
25	Disposable syringes		
26	Catheters		
27	Tea-bags		

Objective 2:

To carry out market survey to check availability of the items in the threee categories (SUP (permitted), SUP items (prohibited), alternative to SUP).

Obj 2.1: (i) **manufacturing capacity:**

STATUS: Data collected from KPCB and sorted district-wise. 549 plastic products suppliers were registered under KPCB. Details attached.

Total number of suppliers of plastic products permitted by PCB		
SL NO	**DISTRICT**	**TOTAL NUMBERS**
1	Thiruvananthapuram	9
2	Kollam	25
3	Pathanamthitta	2
4	Alappuzha	18
5	Kottayam	24
6	Idukki	7
7	Ernakulam-I	47
8	Ernakulam-ii	134
9	ESC Eloor	7
10	Thrissur	157
11	Palakkad	41
12	Malappuram	30
13	Calicut	22
14	Wayanad	2
15	Kannur	20
16	Kasaragode	4
	TOTAL	**549**

Details of SUP manufactures registered under SPCB

Sl no	Name and address of the establishment	Communication	Occupier Details	District	Product
1	M/s VELLAPPALLY PLASTICS, MUTTOM BAZAR, CHERTHALA P O	9847191623, masanim@gmail.com	KISHOR M,PULLAMPALLIL HOUSE,CMC-I,CHERTHALA P O,ALAPPUZHA-688524	Alappuzha	Carry bags
2	BALAJI PLASTICS I D T CMC-19 ,CHERTHALA.	Telephone :091-9946088125 - E-mail:balajiplasticsldt	SURESHKUMAR , MANGALABHAV	Alappuzha	Carry bags

	688524	@gmail.com	AN , CMC-19 , CHERTHALA		
3	M/s SONA PLASTIC INDUSTRIES ,DEVELOPMENT PLOT , MAJOR INDUSTRIAL ESTATE, SOUTH KALAMASSERY - 683109		M.S.GEORGE MALIEKAL VILLA KARIPPAI ROAD KALAMASSERY PIN-683109	Ernakulam	Carry bags
4	BLUE LINE PLASTICS, DOOR NO 202 D, DEVELOPMENT PLOT CHAMPANOOR, ANGAMALY SOUTH	0484-2605954bluelinefmacs@gmail.com	MEETO PAULOSE, PUTHENANGADI HOUSE, NAZARETH ROAD, ALUVA 683101	Ernakulam	PLASTIC BAGS(GARBAGE) , Plastic films
5	Sharon Plastics,Peroor P.O.,Kottayam			Kottayam	Plastic Bags Without Printing . Plastic Sheets With Printing
6	S.S PLASTICS S.S PLASTICS, MYLAPORE, UMAYANALLOOR P.O, KOLLAM 691589	Telephone :91-9447408442 Fax :- E-mail:ssplasticsumayanalloor@gmail.com	R.SHIBU, SHIBU BHAVANAM, NALLILA P.O, PULIYILA, KOLLAM-691515	Kollam	PLASTIC SHEET
7	AISWARYA PLASTICS, VETTIMUKAL P.O., ETTUMANOOR, KOTTAYAM		AISWARYA PLASTICS, VETTIMUKAL P.O., ETTUMANOOR, KOTTAYAM	Kottayam	PLASTIC SHEET
8	NALCO PLASTIC INDUSTRIES MINI INDUSTRIAL ESTATE, NADACKAL P.O., ERATTUPETTA, KOTTAYAM 686121	Telephone :0-9447910935 Fax :- E-mail:perfectlinedesigners@gmail.com	Ashik P Aliyar, 4/505,Puthenpeedikayil, Erattupetta P.O., Kottayam.	Kottayam	PLASTIC SHEET

9	ZION PLASTICS P. O. EMABATE, MUDIKANAM ROAD, PARIYARAM-670503 670503	Telephone :91-9605419322 Fax :- E-mail:zionplastics777@gmail.com	THOMAS.C.U, OWNER CHAKALAKKAL HOUSE, C M NAGAR, P. O. PILATHARA-670504	Kannur	PLASTIC SHEET
10	SUPREEM PLASTIC INDUSTRIES AZHIKKAL ROAD PALLIKANDY CALICUT 673003	Telephone :0495-9446566306 Fax :- E-mail:calicutcity1@gmail.com	T M ABDUL LATHEEF BARSA HOUSE KAPPAD PO NEAR RAILWAY GATE KOZHIKODE	Calicut	PLASTIC SHEET
11	J R PLASTIC KOSE KURICHILAKODE KODANAD P.O 683544	Telephone :91-7510773232 Fax :- E-mail:zsthatech1@gmail.com	JOY P.K. PARAKUNNATH UKKUDY HOUSE KURICHILAKODE KODANAD P.O. PIN - 683544	Ernakulam	Cup

Total number of suppliers of SUP alternatives

A total of 2181 SUP alternatives manufacturers were registered in the state.

Total number of suppliers of palm products registered under DIC

Sl. No	District	Information collection centre	Item	No. of Registered Manufacturers	Production capacity (TPD)
1	Kasargod	DIC	Palm	12	not available
2	Kannur	DIC	Palm	1	not available
3	Wayanad	DIC	Palm	2	not available
4	Kozhikode	DIC	Palm	6	not available
5	Malappuram	DIC	Palm	8	not available
6	Palakkad	DIC	Palm	22	not available

7	Thrissur	DIC	Palm	19	not available
8	Ernakulam	DIC	Palm	4	not available
9	Idukki	DIC	Palm	2	not available
10	Kottayam	DIC	Palm	14	not available
11	Alappuzha	DIC	Palm	2	not available
12	Pathanamthitta	DIC	Palm	4	not available
13	Kollam	DIC	Palm	2	not available
14	Thiruvananthapuram	DIC	Palm	0	not available
	Total			**98**	

Total number of suppliers of paper products registered under DIC

Sl. No	District	Information collection centre	Item	No. of Registered Manufacturers	Production capacity (TPD)
1	Kasargod	DIC	Paper	36	not available
2	Kannur	DIC	Paper	35	not available
3	Wayanad	DIC	Paper	25	not available
4	Kozhikode	DIC	Paper	141	not available
5	Malappuram	DIC	Paper	170	not available
6	Palakkad	DIC	Paper	142	not available
7	Thrissur	DIC	Paper	309	not available
8	Ernakulam	DIC	Paper	274	not available
9	Idukki	DIC	Paper	67	not available
10	Kottayam	DIC	Paper	122	not available
11	Alappuzha	DIC	Paper	79	not

					available
12	Pathanamthitta	DIC	Paper	45	not available
13	Kollam	DIC	Paper	115	not available
14	Thiruvananthapuram	DIC	Paper	140	not available
	Total			**1700**	

Total number of SUP alternative suppliers registered under Kudumbasree

Sl. No	District	Information collection centre	Item	No. of Registered Manufacturers	Production capacity (TPD)
1	Ernakulam	Kudumbasree	Cloth bag unit	192	Not available
2	Thrissur	Kudumbasree	Cloth bag	63	Not available
3	Kozhikode	Kudumbasree	Cloth bag	13	Not available
	Kozhikode	Kudumbasree	Paper bag	4	Not available
	Kozhikode	Kudumbasree	Leather bag	2	Not available
	Kozhikode	Kudumbasree	Pottery Unit	10	Not available
	Kozhikode	Kudumbasree	Paper Pen	3	Not available
4	Kasaragod	Kudumbasree	Paper bag	7	Not available
	Kasaragod	Kudumbasree	Palm plate	8	Not available
	Kasaragod	Kudumbasree	Cloth bag	81	Not available
	Total			**383**	

Obj 2.2: (ii) market assessment along with a Field survey needs to be carried out. Locations were selected for the survey.

The study will be conducted all over Kerala in order to evaluate SUPs and other options.

Selected locations for the study

sl no	District	Corporation	Municipalities	Panchayaths
1	Kasargod	nil	Kasaragod	Manjeshwaram
			Nileshwaram	Madhur
				Madikkai
				Cheruvathur
				Chengala
2	Kannur	Kannur	Thalassery	Kolayad
			Thalipparamb	Mangattidam
				Kadamboor
				Mokeri
				Cherukunnu
3	Wayanad	nil	SulthanBathery	Mullankolly
			Kalpetta	Pulpally
				Poothadi
				Meenagadi
				Vellamunda
4	Kozhikodu	Kozhikodu	Ramanatukara	Peruvayal
			Feroke	Thurayur
				Kunnamangalam
				Mepayur
				Mavur
5	Malappuram	nil	Malappuram	Keezhattur
			Manjeri	Koottilangadi
				Puzhakkattiri
				Alipparamb
				Aanakkayam
6	Palakkad	nil	Palakkad	Wadakanchery
			Shornur	Elevenchery
				Vaniyamkulam
				Agali
7	Thrissur	Thrissur	Guruvayur	Perinjanam
			Irinjalakkuda	Nattika
				Mathilakam
				Adat
				S N puram
8	Ernakulam	Kochi	Thrikkakkara	Edavanakkad
			Muvattupuzha	Nedumbassery
				Kunnukkara
				Ramamangalam
				Marady/Thirumarady

9	Idukki	nil	Thodupuzha	Konnathadi
			Kattappana	Arakkulam
				Vazhathoppu
				Kumaramangalam
				Kumili
10	Kottayam	nil	Erattupetta	Thrikodithanam
			Kottayam	Poonjar
				Paippad
				Chirakkadavu
				Manarkad
11	Alappuzha	nil	Chengannur	Mannar
			Cherthala	Chennithala
				Purakkad
				Chambakkulam
				Kanjikuzhi
12	Pathanamthitta	nil	Adoor	Ranni
			Thiruvalla	Kadambanad
				Koduman
				Pallickal
				Kozhancheri
13	Kollam	Kollam	Punalur	Chavara
			Karunagappilly	Thevalakkara
				Ummannur
				Kadakkal
				Kumnil
14	Thiruvananthapuram	Thiruvananthapuram	Nedumangadu	Vilappil
			Neyyattinkara	Vithura
				Aruvikkara
				Nanniyode
				Karakulam

Mobile app for data collection and survey

Kobo Toolbox is customized for the study. It is a free open-source tool for mobile data collection, available to all. It allows collecting data in the field using mobile devices such as mobile phones or tablets, as well as with paper or computers. It is being continuously improved and optimized particularly for the use of humanitarian actors in emergencies and difficult field environments, in support of needs assessments, monitoring, and other data collection activities.On March 29th, 2022, team members were trained

on how to use the KoBo toolbox app and market survey was conducted on may 2022.

a. Litter hotspot details

slno	District	Corporation	Municipality	GP	Total
1	Kasargod	0	3	16	21
2	Kannur	5	4	17	26
3	Wayanad	0	1	3	4
4	Kozhikode	0	6	17	23
5	Malappuram	0	10	16	26
6	Palakkad	0	5	11	16
7	Thrissur	6	8	18	32
8	Ernakulam	5	14	8	27
9	Idukki	0	5	10	15
10	Kottayam	0	4	15	19
11	Alappuzha	0	7	19	26
12	Pathanamthitta	0	4	14	18
13	Kollam	6	12	20	38
14	Thiruvananthapuram	5	9	13	27
	Total	27	94	197	318

*Target-212

Market survey details

slno	District	Corporation	Municipality	GP	Total
1	Kasargod	0	20	26	46
2	Kannur	11	20	26	57
3	Wayanad	0	19	25	44
4	Kozhikode	12	20	19	51
5	Malappuram	2	18	18	38
6	Palakkad	0	20	21	41
7	Thrissur	14	20	26	60
8	Ernakulam	20	21	26	67
9	Idukki	0	21	26	47
10	Kottayam	0	21	25	46
11	Alappuzha	0	20	25	45
12	Pathanamthitta	0	23	27	50
13	Kollam	3	19	26	48
14	Thiruvananthapuram	10	23	32	65
	Total	72	285	348	705

*Target-690

Market Survey to check the availability of SUP

Availability in Market

Cities covered for the Survey (Number &names)		14 districts				
Period when Survey was conducted		April to May 2022				
Availability in Market	Total No. of Locations Visited	AVAILABILITY				
		No. of locations in which SUP available	SUP Code #	No. of locations in which SUP alternatives available	Type of Alternative	Source of Procurement
a. Stockist	100	78		49	cloth bags, paper bags	local markets, Coimbatore
b. Retailer	344	295		169	cloth bags, paper bags	local markets, Coimbatore
c. Local Shopkeeper	262	227		117	cloth bags, paper bags	local markets

Market Survey to check availability of SUP

Usage at major commercial sections

Cities covered for the Survey [Number &names]		14 districts				
Period when Survey was conducted		April to May 2022				
Usage at major Commercial establishments	Total No. of Locations Visited	AVAILABILITY				
		No. of locations in which SUP available	SUP Code#	No. of locations in which SUP alternatives available	Type of Alternative	Source of Procurement
Restaurants	54	52		24	cloth bags, paper bags, straws	local shops, wholesale shops
Academic institution	9	2		9	cloth bags, paper bags, straws	local shops, wholesale shops
Shopping Complexes	100	86		55	cloth bags, paper bags, straws	
Hotels	38	37		18	cloth bags, paper bags, straws	van delivery, local shops, wholesale shops
Super markets	97	87		38	cloth bags, paper bags, straws	local shops, wholesale shops
Provision store	213	190		96	cloth bags, paper bags, straws	van delivery, local shops, wholesale

						shops
Vegetable/fruit shop	80	70		26	cloth bags, paper bags, straws	van delivery, local shops, wholesale shops
Tourist Locations	6	4		5	cloth bags, paper bags, straws	van delivery, local shops, wholesale shops
Cinema	6	4		4	cloth bags, paper bags, straws	local shops, wholesale shops
Office	15	4		13	cloth bags, paper bags, straws	local shops, wholesale shops
Railway station	4	4		4	cloth bags, paper bags,	local shops, wholesale shops
Bus stand	38	30		18	cloth bags, paper bags,	local shops, wholesale shops
Religious institution	8	3		5	cloth bags, paper bags,	local shops, wholesale shops
Hospital and other medical care facilities	36	27		25	cloth bags, paper bags,	local shops, wholesale shops

Objective 3: To carry out field survey for characterization of plastic waste at different locations covering littering hot spots, solid waste processing and disposal facilities

Littering hotspots

- Survey completed

Category	Number of samples
High income	73
Middle income	146
Low income	52
slum	8
Unauthorized colony	19
Others	36
Total	324

		High income (Number of samples)	Number of pieces	Middle income (Number of samples)	Number of pieces	Low income(Number of samples)	Number of pieces	Slum (Number of samples)	Number of pieces	unauthorised colony (Number of samples)	Number of pieces	Others (Number of samples)	Number of pieces
1	PET bottles	40	251	74	695	34	271	4	47	6	74	22	604
2	HDPE/PE bottles	23	105	30	265	12	37	3	16	4	69	10	117
3	Polystyrene	30	226	27	219	16	197	2	10	1	1	15	193
4	MLP	47	2006	81	2440	33	594	5	143	8	100	18	1144
5	Carry bag	47	1601	103	7504	38	1506	6	76	5	49	34	5895
6	Miscellenious plastic	46	3366	90	3506	30	760	4	292	6	94	26	1456
7	plastic cup	27	550	52	1233	15	296	2	26	1	1	16	2721
8	paper and paper board	40	577	55	619	19	264	2	52	3	19	16	339
9	glass articles	23	243	36	339	13	88	3	54	1	5	10	185
10	Aluminium/tin/steel	9	35	17	159	5	52	2	14	0	3	3	35
11	ceramic/porcelain	7	35	5	48	0	0	0	0	0	0	0	0
12	construction/ demolition waste	8	129	9	4546	4	103	0	0	0	0	5	81
13	biomedical waste	6	266	7	47	0	0	0	0	0	0	1	20
14	E waste	6	65	7	24	1	2	0	0	1	5	2	37
15	batteries	1	2	6	66	0	0	0	0	0	0	2	3
	Total	**360**	**9457**	**599**	**21710**	**220**	**4170**	**32**	**730**	**36**	**420**	**180**	**12830**

Solid waste processing and disposal facilities

- The process was standardised, and team members received pilot training.
- The format for the Kobotoolbox app has been designed, and the app is now being developed.

MCF study completed

DISTRICT	Corporation	municipality	GP	
Kasargod		1	3	
Kannur	1	1	3	
Wayanad		1	3	
Kozhikode	1	1	3	
Malappuram		1	3	
Palakkad		1	3	
Thrissur	1	1	3	
Ernakulam	-	1	3	
Idukki		1	3	
Kottayam		1	3	
Alappuzha		-	-	
Pathanamthitta		-	-	
Kollam	1	1	3	
Thiruvananthapuram	1	1	3	
Total	**5**	**11**	**33**	**49**

- Study on waste characterization in nine LSGDs is in progress. The examination of the dump site will begin in a few days and be finished the following week. After the characterisation study of the dumpsite is finished, a draught report will be submitted.

കേരള സംസ്ഥാന മലിനീകരണ നിയന്ത്രണ ബോർഡ്
KERALA STATE POLLUTION CONTROL BOARD
DISTRICT OFFICE, KOTTAYAM

PCB/KTM/LAB/AC/2013 Date: 23/06/2022

From,

The Environmental Engineer,
Kerala State Pollution Control Board,
District Office, Kottayam.

To,

The Member Secretary
Kerala State Pollution Control Board
Thiruvananthapuram

Sub: Submission of analysis report of Operational CSTP Kumarakom - reg

Ref: Our office letter PCB/KTM/LAB/AC/KVDT-V to/2020 dated 14/06/2022

Sir/Madam,

As per our letter cited, we analysed samples from Kumarakom CSTPs (OCT 20 APR 2022). The analysis report is as...

Yours faithfully,

ENVIRONMENTAL ENGINEER

കേരള സംസ്ഥാന മലിനീകരണ നിയന്ത്രണ ബോർഡ്
KERALA STATE POLLUTION CONTROL BOARD
DISTRICT OFFICE, KOTTAYAM.
Pollution Control Bhavan, Kottayam-686001
Telephone : 0481 - 2302449 web www.keralapcb.nic.in
E-mail : dpcbktm@yahoo.co.in / dpcbktm@gmail.com / dpcbktm@kerala.gov.in

Analysis Report

Analysis Report No	1550	Date	21/09/2022	Format No: 01
Application No	PCB/KTM/268162/22	Date of collection		14/10/2022
Received from	ASI	Date of Receipt		14/10/2022
No. Of Sample	1	Period of Analysis		14/10/2022-20/10/2022
Source	CETP, KUMARAKAM	Scientist in charge		S.U.M.U
Sample Condition	Fit for analysis	Sample Type		Water
Sample Collected By	ASI	Sample container & material type		2 L Plastic container
Sample Preservation	As per APHA/IS:3025(Part-1)			

Sample ID: CETP, KUMARAKAM

Sl No.	Parameters	Unit	Value	Test Method	Limit
1.	pH	—	6.5	IS Part 11	5.5-9.0
2.	BOD	mg/L	16	APHA 5220 B,5-, & to 5-17	30
3.	SS	mg/L	22	APHA 2540D	100.0
4	Oil and Grease	Mg/L	BDL	APHA 5520B	10.0
5	COD	Mg/	54	As IS:3025(5.3-13 Tab 19	250

Checked by

Authorised by

Assistant Scientist

KERALA STATE POLLUTION CONTROL BOARD
DISTRICT OFFICE (ERNAKULAM – II), PERUMBAVOOR
PMC 30/733,Govt. Hospital, KSRTC Road, Near Kalunkal Auditorium, Perumbavoor-683 542

Telephone: 0484-2583747

E-mail: pcbdo2ekm@gmail.com
Website: www.keralapcb.nic.in

PCB/PBR/LAB/1/2013

Date: 28.09.2022

ANALYSIS REPORT

Source : SEPTAGE TREATMENT PLANT, BRAHMAPURAM

Sample Point : ACF OUTLET

D.O.S : 15.09.2022

D.O. Rd : 16.09.2022

Collected by : NAMP-II

Sample ID : PCB-78

Sl.No.	Parameters	Unit	Value	Test Method	KSPCB Limit
1	pH		6.84	APHA, 4500 H+ B 22 nd Edition 2012.	5.5-9.0
2	BOD	mg/l	18	APHA, 5210 B, 22nd Edition 2012.	30
3	COD	mg/l	64	APHA, 5220 B, 22nd Edition 2012	250
4	OIL &GREASE	mg/l	BDL	APHA, 5520 B, 22nd Edition 2012	10
5	SS	mg/l	6.8	APHA, 2540-D, 22nd Edition 2012	100
6	PHOSPHATES	mg/l	0.391	APHA-4500 P-E 22nd Edition 2012	5
7	NITRATES	mg/l	9.18	APHA 4500-NO3-E, 22nd Edition 2012	10
8	SULPHATES	mg/l	105.16	APHA, 4500-SO4, 22nd Edition 2012	1000
9	SULPHIDES	mg/l	BDL	APHA-4500-S2- D 22nd Edition 2012	2
10	AMMONIACAL NITROGEN	mg/l	BDL	APHA, 4500-NH3-F, 22nd Edition 2012	50
11	PHENOLIC COMPOUNDS	mg/l	BDL	APHA, 5530-C, 22nd Edition 2012	1
12	TOTAL COLIFORM	cfu/100ml	6	APHA 9222B, 22nd Edition 2012	-
13	FAECAL STREPTOCOCCI	cfu/100ml	269	APHA 9230 A, 22nd Edition 2012	-

Kerala State Pollution Control Board
Dist. Office (Ernakulam-II)
28 SEP 2022

SARANYA DAS. K.
Assistant Scientist

KERALA STATE POLLUTION CONTROL BOARD

DISTRICT ENVIRONMENTAL LABORATORY

Phone: [illegible]

Lr No: [illegible]

Date: 15.10.2022

ANALYSIS REPORT

Source : [illegible]

Sample Point : [illegible]

Type : [illegible]

Date of : [illegible]

Collected by : [illegible]

Sample ID : [illegible]

Sl No	Parameter	Unit	Value	Test Method	Results
1	pH		7.1	[illegible]	[illegible]
2	BOD	mg/l	-	[illegible]	[illegible]
3	COD	mg/l	21	[illegible]	[illegible]
4	SS	mg/l	BDL	[illegible]	[illegible]
5	OIL & GREASE	mg/l	BDL	[illegible]	[illegible]
6	CHLORIDES	mg/l	[illegible]	[illegible]	[illegible]
7	CHLORIDES	mg/l	2085	[illegible]	[illegible]
8	SULPHATES	mg/l	[illegible]	[illegible]	[illegible]
9	SULPHIDES	mg/l	BDL	[illegible]	[illegible]
10	AMMONIACAL NITROGEN	mg/l	[illegible]	[illegible]	[illegible]
11	TOTAL MOLE CONCENTRATION	mg/l	[illegible]	[illegible]	[illegible]

[illegible]

[illegible]

KERALA STATE POLLUTION CONTROL BOARD
DISTRICT OFFICE ERNAKULAM - III, PERUMBAVOOR
PWC 30/733 Govt. Hospital- KSRTC Road, Near Kallunkal Auditorium, Perumbavoor-683 542
Telephone: 0484-2583747
E-mail: pcbdo2ekm@gmail.com
Website: www.keralapcb.nic.in

PCB/PBR/LAB/1/2013
Date: 28.09.2022

ANALYSIS REPORT

Source : CETP RUBBER PARK IRAPURAM

Sample Point : FILTER OUTLET

D.O.S : 15.09.2022

D.O. Rd : 16.09.2022

Collected by : NAMP-II

Sample ID : PCB-100

Sl.No.	Parameters	Unit	Value	Test Method	KSPCB Limit
1	pH		7.66	APHA, 4500 H+ B 22nd Edition 2012	6.5-8.5
2	BOD	mg/l	6	APHA, 5210 B, 22nd Edition 2012	30
3	COD	mg/l	48	APHA, 5220 B, 22nd Edition 2012	250
4	OIL &GREASE	mg/l	BDL	APHA, 5520 B, 22nd Edition 2012	10
5	SS	mg/l	62.4	APHA, 2540-D, 22nd Edition 2012	100
6	TDS	mg/l	1254	APHA 2540-C, 22nd Edition 2012	2100
7	AMMONIACAL NITROGEN	mg/l	0.35	APHA 4500-NH3-F, 22nd Edition 2012	50
8	SULPHIDES	mg/l	BDL	APHA,4500-S2- F, 22nd Edition 2012	2
9	FLUORIDES	mg/l	0.6	APHA, 4500-F C, 22nd Edition 2012	2
10	CHLORIDES	mg/l	65.97	APHA, 4500-Cl B, 22nd Edition 2012	1000
11	SULPHATES	mg/l	199.45	APHA, 4500-SO4, 22nd Edition 2012	1000
12	PHENOLIC COMPOUNDS	mg/l	BDL	APHA, 5530 C, 22nd Edition 2012	1

Kerala State Pollution Control Board
Dist. Office (Ernakulam) III
28 SEP 2022

SARANYA DAS. K.
Assistant Scientific

KERALA STATE POLLUTION CONTROL BOARD

ANALYSIS REPORT (WATER / EFFLUENT / GROUND WATER)		Date : 29.06.2022	
Name:	Actionaly Comfort Station	Sample received on	
Date of Sample Collection	20.06.2022		
Ref. No:		Period of Analysis	
Date of Receipt	21.06.2022		
Signature of the Applicant/Consultant		ASSISTANT SCIENTIST	

Sl. No	Parameter	Unit	Value				
			Sample No.				
			W1				
1	pH		7.4				
2	BOD	mg/l	16.0				
3	S.S.	mg/l	5.0				
4	Oil & Grease	mg/l	BDL				
5							
6.							
7							
8.							
9.							
10							
11							
12.							
13							
14.							
15							

Details of sample: W1 - sample collected from STP

Remarks:

Assistant Scientist

email: kspcbpta@gmail.com Phone/ fax: 0468-2223983

കേരള സംസ്ഥാന മലിനീകരണ നിയന്ത്രണ ബോർഡ്

KERALA STATE POLLUTION CONTROL BOARD

ജില്ലാ ഓഫീസ്, OPP ജനറൽആശുപത്രി, KK Nair Road, പത്തനംതിട്ട-689 645

DISTRICT OFFICE, OPP.GENERAL HOSPITAL, KK NAIR ROAD, BEHIND AVG MOTORS, PATHANAMTHITTA689645

web site: www.keralapcb.nic.in – for Online registration, visit-krocmms.nic.in/KSPCB

PCB/PTA/TG/261/2017 11.10.2022

From

Environmental Engineer

To

The Member Secretary
Kerala State Pollution Control Board

Sub:- Submission of report on operational CSTP/CETPs – reg:-

Ref:- That office Letter No. PCB/HO/EE3/NGT/673/2018/VOL VII/11/2020

Madam,

I am forwarding herewith report of operational CSTPs/CETPs including analysis report under our jurisdiction for the month of September 2022 for your kind information and necessary action.

Yours faithfully,

ENVIRONMENTAL ENGINEER

Status of CSTPs/CETPs which are operational

Sl. No.	City/Town	STP / ETP Location	Status	Installed capacity	Utilization	Process
1	Pathanamthitta	Sewage Treatment Plant at Sannidhanam (5MLD) Maintained by Travancore Devaswom Board	Seasonally Operated during festival season (Parameters not complying with standards)	5MLD	3.5MLD	UASB and SBR
2		Sewage Treatment Plant at Pamba (3.5 MLD) maintained by Travancore Devaswom Board	Seasonally Operated during festival season . Sample not collected as bridge across njunangar collapsed	3.5MLD	3.5MLD	Coagulation & Settling
3		Common Effluent Treatment Plant at Kinfra Food Processing Park, Elamannoor, Adoor	Operating (parameters not complying with standards)	225 m3/day	30 m3/day	Coagulation & Settling

email: kspcbpta@gmail.com
Phone/ fax: 0468-2223983

കേരള സംസ്ഥാന മലിനീകരണ നിയന്ത്രണ ബോർഡ്
KERALA STATE POLLUTION CONTROL BOARD

ജില്ലാ ഓഫീസ്, OPP ജനറൽആശുപത്രി, KK Nair Road, കുന്നിക്കോടുജങ്ഷനിൽനിന്ന്, പത്തനംതിട്ട-688 645
DISTRICT OFFICE, OPP.GENERAL HOSPITAL, KK NAIR ROAD, BEHIND AVG MOTORS, PATHANAMTHITTA689645
web site: www.keralapcb.nic.in – for Online registration, visit-krocmms.nic.in or keralapcbonline.com

ഭരണഭാഷ - മാതൃഭാഷ

ജാഗ്രതക്കുറിപ്പ് - 2

DESPATCHED
ON 04/08/2022

PCB/PTA/ICO/2781/2017

02.08.2022

പ്രേഷിത

പരിസ്ഥിതി എഞ്ചിനീയർ

സ്വീകർത്താവ്

സെക്രട്ടറി
ട്രാവൻകൂർ ദേവസ്വം ബോർഡ്
നന്ദൻകോട്, തിരുവനന്തപുരം

വിഷയം: സന്നിധാനം STP മോണിറ്ററിംഗ് - സംബന്ധിച്ച് .

സൂചന: 1) 17.03.2021 തീയതിയിലെ PCB/PTA/ICO/2781/2017 നമ്പർ ഉത്തരവ്
2) 03.02.2022 തീയതിയിലെ ഈ ഓഫീസിലെ ഇതേ നമ്പർ കത്ത്.
3) PCB/HO/EE3/NGT/673/2018 നമ്പർ മെമ്പർ സെക്രട്ടറിയുടെ കത്ത് 13.06.2022 തീയതി ഈ ഓഫീസിൽ ലഭിച്ചത്.

സർ,

മേൽ സൂചനകളിലേക്ക് ശ്രദ്ധ ക്ഷണിക്കുന്നു. സൂചന(1), (2) പ്രകാരം സന്നിധാനം STP മോണിറ്ററിംഗ് സംബന്ധിച്ച് ഈ ഓഫീസിൽ നിന്നും അയച്ച കത്തിന്മേൽ നാളിതുവരെയായി യാതൊരു നടപടിയും സ്വീകരിച്ചതായി കാണുന്നില്ല. സൂചന(3)പ്രകാരം ഇത് സംബന്ധിച്ച് പുരോഗതി റിപ്പോർട്ട് ചെയ്യുന്നതിന് ആവശ്യപ്പെട്ടിട്ടുള്ളതിനാൽ ടി വിഷയത്തിൽ താങ്കളുടെ അടിയന്തര ഇടപെടൽ ഉണ്ടായി സ്വീകരിച്ച നടപടി ഈ ഓഫീസിൽ അറിയിക്കേണ്ടതാണ്.

വിശ്വസ്തതയോടെ,

പരിസ്ഥിതി എഞ്ചിനീയർ

ഉള്ളടക്കം : സൂചന (3)

പകർപ്പ് : എക്സിക്യൂട്ടീവ് എഞ്ചിനീയർ, ട്രാവൻകൂർ ദേവസ്വം ബോർഡ്, ശബരിമല

30/08/2022

STP AT SANNIDHANAM

ANALYSIS REPORT

Date:30.08.2022

Date of sampling: 20.08.2022

Date of sample Received: 20.08.2022

Station	Parameters					
	pH	TSS (mg/l)	BOD (mg/l)	OIL&GREASE (mg/l)	TDS (mg/l)	TC CFU/100ml
OUT LET	5.5	116	40	10	360	510

2242
30/08/2022

AE2

30/8

ASSISTANT SCIENTIST

mail: kspcbpta@gmail.com
Phone/ fax: 0468-2223983

കേരള സംസ്ഥാന മലിനീകരണ നിയന്ത്രണ ബോർഡ്
KERALA STATE POLLUTION CONTROL BOARD

ജില്ലാ ഓഫീസ്, OPP ജനറൽആശുപത്രി, KK Nair Road, പുതിയകൊട്ടാരത്തിനടിയിൽ, പത്തനംതിട്ട-689 645
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web site: www.keralapcb.nic.in – for Online registration, visit-krocmms.nic.in or keralapcbonline.com

ഇരുണ്ടപ്രകാശം - മാതൃപ്രകാശം

PCB/PTA/ICO/4337/2022

23.08.2022

DESPATCHED
ON 24/08/2022

പ്രേഷിത

പരിസ്ഥിതി എഞ്ചിനീയർ

സ്വീകർത്താവ്

The Managing Director
KINFRA House
TC, 3/2321
Sasthamangalam
Thiruvananthapuram

വിഷയം : 'CETP, KINFRA, Adoor' ന്റെ പ്രവർത്തനം - സംബന്ധിച്ച്.

സൂചന :
1) 25.02.2022 തീയതിയിലെ 31.01.2026 വരെ കാലാവധിയുള്ള ICO/PTA/4294/2022 നമ്പർ പ്രവർത്തനാനുമതി.
2) 04.05.2022, 20.06.2022, 23.07.2022 തീയതികളിൽ ബോർഡുദ്യോഗസ്ഥർ CETP ൽ നടത്തിയ പരിശോധനകളും ശുദ്ധീകരിച്ച മലിനജലത്തിന്റെ സാമ്പിൾ ശേഖരണവും.
3) 13.05.2022, 27.06.2022, 02.08.2022 തീയതികളിലെ പരിശോധന ഫലങ്ങൾ.
4) 03.06.2022, 29.06.2022, 14.07.2022 തീയതികളിൽ ഈ ഓഫീസിൽ നൽകിയ നിർദ്ദേശങ്ങൾ
5) 30.07.2022 തീയതിയിലെ Manager, Kinfra, അടൂർ ന്റെ KFPIP-ADR/III/3(XII)/2022-23 നമ്പർ മറുപടി.

സർ,

മേൽ സൂചനകളിലേക്ക് ശ്രദ്ധ ക്ഷണിക്കുന്നു. സൂചന(2) പ്രകാരം അങ്ങയുടെ ഉടമസ്ഥതയിലുള്ള KINFRA യിലെ പൊതു മലിനജല സംസ്കരണ പ്ലാന്റുകളിൽ ബോർഡ് ഉദ്യോഗസ്ഥർ പരിശോധന നടത്തിയിട്ടുള്ളതും, ടി സമയം ശുദ്ധീകരിച്ച മലിന ജല സാമ്പിളുകൾ ശേഖരിക്കുകയും ചെയ്തിട്ടുണ്ട്. സൂചന(3) പ്രകാരമുള്ള പരിശോധന ഫലങ്ങൾ പ്രകാരം പ്രസ്തുത സാമ്പിളുകൾ, സൂചന(1) പ്രകാരമുള്ള അനുമതിയിലെ നിബന്ധന 2.4 പ്രകാരമുള്ള ഗുണനിലവാരം കൈവരിക്കുന്നില്ല. ആയതിൻ മേലുള്ള മതിയായ നിർദ്ദേശങ്ങൾ സൂചന(4) പ്രകാരം ഈ ഓഫീസിൽ നിന്നും നൽകിയിട്ടുണ്ട്.

എന്നാൽ സ്വീകരിച്ചതായി Kinfra, അടൂർ ഓഫീസിൽ നിന്നും അറിയിച്ച നടപടികൾ ഫലവത്തായി കാണുന്നില്ല. പ്ലാന്റിലെ മെഷിനറികളായ Blower, Motor, Aeration തുടങ്ങിയവക്ക് കേടുപാടുകൾ സംഭവിക്കുന്നതായും, പിന്നീട് അറ്റകുറ്റപ്പണികൾ നടത്തുന്നതായും, പ്രസ്തുത ഓഫീസിൽ നിന്നും നൽകിയിട്ടുള്ള മറുപടി കത്തുകളിൽ നിന്നും മനസ്സിലാക്കുന്നു. മേൽപ്പറഞ്ഞവ മെഷിനറികൾ ഓരോ വിഭാഗത്തിനും, ഓരോന്ന് മാത്രമാണ് സ്ഥാപിച്ചിരിക്കുന്നത്. ആയതിനാൽ കേടുപാടുകൾ സംഭവിക്കുമ്പോൾ ശുദ്ധീകരിക്കാത്ത, ബോർഡ് നിഷ്കർഷിക്കുന്ന ഗുണനിലവാരം കൈവരിക്കാത്ത മലിനജലമാണ് നിർമ്മാർജ്ജനം ചെയ്യേണ്ടിവരുന്നത്. ഈ സാഹചര്യത്തിൽ 14.07.2022 തീയതിയിൽ ഈ ഓഫീസിൽ നിന്നും നൽകിയ നിർദ്ദേശാനുസരണം stand by മെഷിനറികൾ സ്ഥാപിക്കുകയാണെങ്കിൽ ടി പ്രശ്നങ്ങൾക്ക് പരിഹാരം കാണാൻ പറ്റും. കൂടാതെ CETP യുടെ സാമ്പിൾ പരിശോധനാഫലം, CPCB server ലേക്ക് എല്ലാ മാസവും upload ചെയ്യേണ്ടതാണ്. ആയതിനാൽ അതിനുള്ള നടപടികളും മേൽപ്പറഞ്ഞ ന്യൂനതകൾ പരിഹരിക്കുന്നതിനുള്ള അടിയന്തിര നടപടികളും സ്വീകരിക്കണമെന്നും, അനുമതിയിലെ നിബന്ധനകൾ പൂർണ്ണമായും നടപ്പിലാക്കണമെന്നും അറിയിക്കുന്നു. സ്വീകരിച്ച നടപടി രേഖാമൂലം അറിയിക്കേണ്ടതാണ്. CETP സംബന്ധിച്ച വിവരങ്ങൾ എല്ലാ മാസവും CPCB – യുടെ വൈബ് സൈറ്റിൽ upload ചെയ്യേണ്ടതിനാൽ, നടപടി സ്വീകരിക്കുന്നതിനുള്ള കാലതാമസം ഒഴിവാക്കേണ്ടതാണ്.

വിശ്വസ്തതയോടെ,

പരിസ്ഥിതി എഞ്ചിനീയർ

പകർപ്പ് : The Manager
CETP, Kinfra, Elamannoor
Pathanamthitta

email: kspcbpta@gmail.com
Phone/ fax: 0468-2223983
കേരള സംസ്ഥാന മലിനീകരണ നിയന്ത്രണ ബോർഡ്
KERALA STATE POLLUTION CONTROL BOARD
ജില്ലാ ആഫീസ് , OPP ജനറൽആശുപത്രി, KK Nair Road, കുന്നിക്കോട്ടമ്പിൽജംഗ്ഷൻ, പത്തനംതിട്ട-689 641
web site: www.keralapcb.nic– for Online registration, visit-krocmms.nic.in/KSPCB
തെണ്ടാഫോൺ -മാത്യുഫോൺ

ANALYSIS REPORT

Source:Kinfra food processing Industrial Park,Elamannoor (Common ETP)

Date: 02.09.2022

Date of sampling: 26.08.2022

Date of sample Received: 27.08.2022

NATURE OF SAMPLE: Effluent

SL NO	Parameters	Unit	PCB 210	Limit
			Outlet	
1	pH		6.8	5.5-9.0
2	BOD	mg/l	30	30
3	COD	mg/l	96	250
4	SS	mg/l	98	100
5	O & G	mg/l	11	10

2276
2/09/2022

AE3

2/9

Remarks: O&G exceeded the limit

ASSISTANT SCIENTIST

KERALA STATE POLLUTION CONTROL BOARD
DISTRICT OFFICE (ERNAKULAM - II) PERUMBAVOOR
PMC 20/733 Govt. Hospital- KSRTC Road, Near Kallunkal Auditorium, Perumbavoor-683 542
Telephone: 0484-2553747
E-mail: pcbde2ekm@gmail.com
Website: www.keralapcb.nic.in

PCB/PBR/LAB/1/2013

Date: 28.09.2022

ANALYSIS REPORT

Source : SEPTAGE TREATMENT PLANT, BRAHMAPURAM

Sample Point : ACF OUTLET

D.O.S : 15.09.2022

D.O. Rd : 16.09.2022

Collected by : NAMP-II

Sample ID : PCB-78

Sl.No.	Parameters	Unit	Value	Test Method	KSPCB Limit
1	pH		6.84	APHA, 4500 H+ B 22nd Edition 2012.	5.5-9.0
2	BOD	mg/l	18	APHA, 5210 B, 22nd Edition 2012.	30
3	COD	mg/l	64	APHA, 5220 B, 22nd Edition 2012	250
4	OIL &GREASE	mg/l	BDL	APHA, 5520 B, 22nd Edition 2012	10
5	SS	mg/l	6.8	APHA, 2540-D, 22nd Edition 2012	100
6	PHOSPHATES	mg/l	0.391	APHA-4500 P-E 22nd Edition 2012	5
7	NITRATES	mg/l	9.18	APHA 4500-NO3-E, 22nd Edition 2012	10
8	SULPHATES	mg/l	105.16	APHA, 4500-SO4, 22nd Edition 2012	1000
9	SULPHIDES	mg/l	BDL	APHA-4500-S2- D 22nd Edition 2012	2
10	AMMONIACAL NITROGEN	mg/l	BDL	APHA, 4500-NH3-F, 22nd Edition 2012	50
11	PHENOLIC COMPOUNDS	mg/l	BDL	APHA, 5530 C, 22nd Edition 2012	1
12	TOTAL COLIFORM	cfu/100ml	6	APHA 9222B, 22nd Edition 2012	-
13	FAECAL STREPTOCOCCI	cfu/100ml	269	APHA 9230 A, 22nd Edition 2012	-

Kerala State Pollution Control Board
Dist. Office (Ernakulam-II)
28 SEP 2022

SARANYA DAS. K
Assistant Scientist

കേരള സംസ്ഥാന മലിനീകരണ നിയന്ത്രണ ബോർഡ്

KERALA STATE POLLUTION CONTROL BOARD

Majestic Square, 2nd Floor, Parasuvaikkal, Pallichal P.O., Thiruvananthapuram-695553

ANALYSIS REPORT
(WATER/EFFLUENT/SEWAGE)

TAS No. 681 Date: 26.09.2022

Name	M/s. Sewage Treatment Plant by KWA, Chakkamkandam.	Sample received from	M/s. TIDISS(I) K
Date of Sample Collected	30/08/2022		
Ref. No.	PCB/TSR/CC/587/07	Period of analysis	30/08/2022-23/09/2022
Date of Receipt	30/08/2022		
Scientist – in – charge	Anil Jose	RESULT	

Sl No	Parameter	Unit	Value KWA (ETP outlet)
1	pH	—	6.56
2	Biological Oxygen Demand	mg/l	4.5
3	Chemical Oxygen Demand	"	8
4	Suspended solids	"	20.52
5	Oil & Grease	"	BDL
6	Faecal Coliform	MPN/100ml	NIL

Remarks:

Scientist Incharge
Kerala State Pollution Control Board

Form – IV A
(See rule 13)
ANNUAL REPORT

Format for submission of the Annual Report information on Bio- Medical Waste Management)
(to be submitted by the State Pollution Control Committees and Director General Armed Forces Medical Services to Central Pollution Control Board on or before 31st July of every year for the period from January to December of the year 2021)

1)	Name of the Organization	:	Kerala State Pollution Control Board
2)	Name of the Nodal Officer with contact telephone number and e-mail	:	Er. Premaletha S., Environmental Engineer, Head Office, TVM ms.kspcb@gov.in pcbhoawareness2@gmail.com 9447975725 0471-2318151
3)	Total no. of Health Care Facilities/ Occupiers	:	17875
i)	Bedded Hospitals and Nursing Homes (bedded)	:	2095
ii)	Clinics, dispensaries	:	9028
iii)	Veterinary institutions	:	648
iv)	Animal houses	:	11
v)	Pathological laboratories	:	1721
vi)	Blood banks	:	34
vii)	Clinical establishment	:	1598
viii)	Research institutions	:	8
ix)	AYUSH	:	1722
4)	Total no. of beds	:	124804
5)	Status of authorization	:	
i)	Total number of Occupiers applied for authorization	:	17108
ii)	Total number of Occupiers granted authorization	:	16792
iii)	Total number of application under consideration	:	2
iv)	Total number of applications rejected	:	201
v)	Total number of Occupiers in operation without applying for authorization	:	920
6)	Quantity of Bio-medical Waste Generation	:	
i)	Bio-medical waste generation by bedded hospitals(in kg/day)	:	53390kg/day
ii)	Bio-medical waste generation by non-bedded hospitals (in kg/day)	:	7533kg/day
iii)	Any other	:	263 kg/day
	Total	:	**61136Kg/day**
7)	Bio-medical waste treatment and disposal	:	
a)	By Captive bio-medical waste treatment and disposal by Health Care Facilities (please enclose details as per Part-3)	:	
i)	Number of Health Care Facilities having captive treatment and Disposal facilities :	:	44

ii)	Total bio-medical waste treated and disposed by captive treatment facilities in kg/day	:	2438 Kg/day
b)	Bio- medical waste treatment and disposal by Common Bio Medical Waste Treatment Facilities (please enclose details as per Part 4)	:	
i)	Number of Common Bio Medical Waste Treatment Facilities in Operation	:	2 (1 CBWTF by KEIL started operation in May2021)
ii)	Number of Common Bio Medical Waste Treatment Facilities under construction	:	
iii)	Total bio-medical waste treated in kg/day	:	5808kg/day
iv)	Total treated bio-medical waste disposed through authorized recyclers (in Kg/day)	:	16802.804kg/day
8)	Total no. of violation by	:	1435
i)	Health Care Facilities (bedded and non-bedded)	:	1435
ii)	Common Bio Medical Waste Treatment Facilities	:	1
iii)	Others (please specify)	:	nil
9)	Show cause notices/directions issued to defaulters	:	1497
i)	Health Care Facilities (bedded and non-bedded)	:	1320
ii)	Common Bio Medical Waste Treatment Facilities	:	3
iii)	Others	:	174
10)	Any other relevant information	:	
i)	Number of workshops / trainings conducted during the year	:	10237 (MAGE 18 KEIL 1 by NGO
ii)	Number of occupiers installed liquid waste treatment facility	:	• Out of 2095 bedded hospitals, 60 have STP/ETP(combined) and 4 STPs under construction, 2 have terminal sewer connection • 2029 bedded hcfs have disinfection system for laboratory liquid waste & sullage and septic tank/soak pit for sewage • 15780 non bedded have provided disinfection system and soak pit/ sewer connection
iii)	Number of captive incinerators complying to the norms	:	15 (temperature and chimney height norms complied, OCEMS not provided in these incinerators) *out of 15, 4 have now obtained affiliation with CBWTF, 1 has stopped working of incinerator in 2022 Actions already taken for remaining 10 to affiliate with CBWTFs.
iv)	Number of occupiers organized trainings	:	76
v)	Number of occupiers constituted Bio-medical Waste Management Committees	:	109
vii	Number of occupiers submitted Annual Report for	:	4016

	the previous calendar year		
vii	Number of occupiers practicing pre-treatment of lab microbiology and Bio technology waste	:	1958
viii	Number of Common Bio Medical Waste Treatment Facilities that have installed Continuous Online Emission Monitoring Systems	:	2

Part 2: District-wise Bio- Medical Waste Generation (for the previous calendar year 2021)

Name of District	Name of State	Total No of HCFs	Bio-medical Waste Generation (captive & CBWTF)(in Kg/day)
Thiruvananthapuram	KERALA	1516	7349
Kollam	KERALA	1768	5565
Alappuzha	KERALA	803	2150
Pathanamthitta	KERALA	1019	4184
Kottayam	KERALA	1356	3990
Idukki	KERALA	533	1470
DOI, Ernakulam	KERALA	1258	7480
DOI,Ernakulam	KERALA	775	3334
Thrissur	KERALA	2207	4569
Palakkad	KERALA	1180	4990
Malappuram	KERALA	1818	5639
Kozhikkodu	KERALA	1219	6091
Wayanad	KERALA	357	956
Kannur	KERALA	1012	3676
Kasargodu	KERALA	488	794
ESC,Hosr,DBM	KERALA	176	916
Total		17875	61136

Part A: Information on Common Bio Medical Waste Treatment and Disposal Facilities (for the previous calendar year 2020)

Sl. No.	Name and Address of the common Bio Medical Waste Treatment Facilities with contact person name and telephone no.	GPS (Lead) and	Area in Km	Name of the state/union covered by common Biomedical Waste Treatment facility	Total number of Health Care Facilities being covered	Total number of beds covered	Total Quantity (in kg) of Bio Medical Waste collected from the Health Care Facility (in kg/day)	Capacity of Treatment equipment installed by Common Bio Medical Waste Treatment Facilities			Total Biomedical Waste treated in Kg/day	Method of Disposal (autoclaving, microwaving, deep burial, incineration)
								Equipment	NOS	Total installed capacity		
1	MANGUDAYI, MANJEKKUZHI, KANJIKODE WEST, PALAKKAD (9962)	Latitude 10° 48' 34 N Longitude 76° 42' 34 E			1415	1160		Autoclave	8	400 kg	317.310	Self
								Plastic granule	800			
								Autoclave	8	25 kg	17.500	
								Hydroclave	Nil			
								Shredder	8	25 kg		
								Steam cooperation system	1		0.3333	
								Deep burial pit	Nil			
								Effluent treatment plant		4.5 kilolitres per day		
								Chemical disinfection	1 tanks		0.3	
								Total			35.43 kg	
2	KDILCBWTF, CHORPE, NEAR INSIDE FACETS CAMPUS, AMBALAMED (L.KOCHI-682 101)	Latitude 9°59' 16N Longitude 76°21' 46E			320	1120		Autoclave	2	125 kg		
								Plasma cooking				
								Autoclave	2	25 kg		
								Hydroclave				
								Shredder	1	500 kg		
								Deep excavation system pit	1			
								Deep burial pit				
								Effluent treatment plant		100 KLD		
								Chemical disinfection				
								TOTAL			3.2385 kg	

a. Total No of transportation of Bio-medical Waste on daily basis by the common Bio-Medical Waste Treatment facilities : 78

b. List of Health Care Facilities not have membership with common biomedical waste treatment facilities and neither having captive treatment facility : 2892 (including AYUSH clinics and remaining small hcfs have already affiliated to CBWTF in the following year and it will be reflected in next year annual report -2022 (AR 2022))

c. No of training organized by CBWTF operator: 10255

d. No of accidents reported by CBWTF : 1

ANNEXURE

Part II: Information on Health Care Facilities having captive treatment facilities for the calendar year 2021

Unit Code No.	Name and address of the Health Care Facilities	Quantity of Bio-medical Waste Generation (in kg/day)					Total Installed Treatment Capacity (in kg/day				Total Bio-medical treated and disposed by Health Care Facilities (in kg/day	Remarks
		Red	Yellow	Blue	White	Total Bio-medical waste generated (in kg/day)	Incinerator	Autoclave	Deep burial	Any other		
1	[illegible]	0.1999	0.17300	0.00000	0	0.3729	NIL	2	2		Deep Burial	Deposition has been issued to health care facilities in affiliation with CBMWTF and necessary actions are being taken by the unit's in affiliation with CBMWTF.
2	[illegible]	0.037	0.0450	0.01500	0	0.116	NIL	NIL	1		Deep Burial	
3	[illegible]	0.00000	0.0460000	0.00750	0	0.112	NIL	NIL	1		Deep Burial	
4	[illegible]	0.01500	0.04000	0.01750	0	0.127	NIL	NIL	1		Deep Burial	
5	[illegible]	0.0400	0.08000	0.000000	0	0.120	NIL		1		Deep Burial	
6	[illegible]	0.0000	0.04000	0.00000	0.00000	0.100	NIL	0.0	0.0			
7	[illegible]	0.00444	0.0041	0.00000	0	0.0033	NIL	0.0	0.0			
8	[illegible]	0.0181	0.0240	0.0210	0	0.0631	NIL	1	1			
9	[illegible]	0.0270	0.0400	0.0044	0	0.0814	NIL	1	1		Deep Burial	

10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
11	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Deep Kumar	[illegible]
12	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
13	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Deep Kumar	[illegible]
14	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
15	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
16	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Deep Kumar	[illegible]
17	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
18	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
19	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
21	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
22	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

17	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
18	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
19	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
21	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
22	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
23	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

30	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
31	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
32	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
33	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

iv	Amrita Institute of Medical Sciences	110 1	126.1 9	81.84	6.31	990.41	960.17					
v)	Little Flower Hospital and Research	126 88	127.1 9	131.55	1.68	271.65	749.11					
vi	Mother Angels Clinic P.O Pulleikkunnu Thrissur	10 86	8.61	7.5	1.45	28.53	10 Kg/hour					
vii	MES Medical College	82 35	93.89	90.03	12.4	150.46	25kg/hour					
viii	Nirmala Medical Centre, Muvattupuzha	30 27	8.58	5.16	0	20.57	180 kg/hr	1.5kg	Provided as per AMW schedule		9806	
ix	Samachar Hospital, Kozhikkuvattukkari	2.2 5	0.83	0.83	0.14	0.23	180Kg/hr	150	Provided as per AMW schedule		1875	
x)	Sanjivani Hospital, Perumbavoor	8.4 1	3.67	2.4	0.56	9.41	90Kg/hr	Provided capacity not given	Provided as per AMW schedule		1050	
xi)	Devamatha Hospital, Kuzhikkattussery	27 27	27.12	21.07	3.33	12.39	90Kg/hr	90Kg	Provided as per AMW schedule		12180	
xii	St Josephs Hospital, Kothamangalam	8	23.89	0.84	4.73	91.38	150Kg/hr	Provided capacity not given	Provided as per AMW schedule		12181	
xi)	Medisys Hospital, Angamaly	80	60	38	6	0.31	60	1.8				
	Medisys Specialities Eye Hospital, Kottayam	80	40	5	20	1.3	All the 4 hospitals the same equipments, many encephalitis and dengue cases are there					
	Medisys Women's Hospital, Kottayam	80	60	15	10	1.71						
	Medisys Diabetes, Heart & Kottayam	80	40	6	5	1.31						
xii	HOLY FAMILY HOSPITAL,DELHI	1.788	2.2139	0.860	0.1205	44	1.4	95	0%			

KERALA STATE POLLUTION CONTROL BOARD
DISTRICT OFFICE ERNAKULAM -II, PERUMBAVOOR
PMC 29/733, Opp: Hyundai- KSRTC Road, Near Kalumal Auditorium, Perumbavoor-683 542
Telephone: 0484-2533747
E-mail: pcbdo2ekm@gmail.com
Website: www.keralapcb.nic.in

PCB/PBII/LAB/1/2013

Date: 25.10.2022

ANALYSIS REPORT

Source : CETP KINFRA SMALL INDUSTRIES NEELAD

Sample Point : ACF OUTLET

D.O.S : 14.10.2022

D.O. Rd : 14.10.2022

Collected by : GEA

Sample ID : PCB-10

Sl.No.	Parameters	Unit	Value	Test Method	KSPCB Limit
1	pH		7.44	APHA 4500 H+ B 22nd Edition 2012.	6.0-9.0
2	BOD	mg/l	2	APHA, 5210 B, 22nd Edition 2012	30
3	COD	mg/l	24	APHA 5220 B, 22nd Edition 2012	250
4	SS	mg/l	BDL	APHA 2540 D, 22nd Edition 2012	100
5	OIL &GREASE	mg/l	BDL	APHA, 5520 B, 22nd Edition 2012	10
6	FLUORIDES	mg/l	0.9	APHA, 4500-F C, 22nd Edition 2012	2
7	CHLORIDES	mg/l	70.97	APHA, 4500-Cl B, 22nd Edition 2012	1000
8	SULPHATES	mg/l	443.67	APHA, 4500-SO4, 22nd Edition 2012	1000
9	SULPHIDES	mg/l	48.4	APHA-4500-S2- D 22nd Edition 2012	2
10	AMMONIACAL NITROGEN	mg/l	0.0135	APHA, 4500-NH3-F, 22nd Edition 2012	50
11	PHENOLIC COMPOUNDS	mg/l	BDL	APHA, 5530 C, 22nd Edition 2012	1

Kerala State Pollution Control Board
Dist. Office (Ernakulam-II)
25 OCT 2022

SARANYA DAS. K.
Assistant Scientist

KERALA STATE POLLUTION CONTROL BOARD
DISTRICT OFFICE (ERNAKULAM – II), PUKUMBAVOOR
PBC 20/733,Govt. Hospital- KSRTC Road, Near Kaunkal Auditorium, Perumbavoor-683 542.

Telephone: 0484-2593747

E-mail: pcbchu2dkm@gmail.com
Website: www.keralapcb.nic.in

PCB/PBR/LAB/1/2013

Date: 25.10.2022

ANALYSIS REPORT

Source : CETP RUBBER PARK IRAPURAM

Sample Point : FILTER OUTLET

D.O.S : 14.10.2022

D.O. Rd : 14.10.2022

Collected by : GEA

Sample ID : PCB-28

Sl.No.	Parameters	Unit	Value	Test Method	KSPCB Limits
1	pH		7.53	APHA 4500 H B 22nd Edition 2012	6.0-9.0
2	BOD	mg/l	2	APHA 5210 B, 22nd Edition 2012	30
3	COD	mg/l	48	APHA 5220 B, 22nd Edition 2012	250
4	OIL&GREASE	mg/l	BDL	APHA 5520 B, 22nd Edition 2012	10
5	SS	mg/l	23.2	APHA 2540-D, 22nd Edition 2012	100
6	TDS	mg/l	1201.2	APHA 2540-C, 22nd Edition 2012	2100
7	AMMONIACAL NITROGEN	mg/l	0.715	APHA 4500-NH3-F, 22nd Edition 2012	50
8	SULPHIDES	mg/l	47.0	APHA 4500-S2- F, 22nd Edition 2012	2
9	FLAORIDES	mg/l	0.8	APHA 4500-F C, 22nd Edition 2012	2
10	CHLORIDES	mg/l	73.97	APHA 4500-Cl B, 22nd Edition 2012	1000
11	SULPHATES	mg/l	161.37	APHA 4500-SO4, 22nd Edition 2012	1000
12	PHENOLIC COMPOUNDS	mg/l	BDL	APHA 5530 C, 22nd Edition 2012	1

Kerala State Pollution Control Board
Dist. Office (Ernakulam - II)
25 OCT 2022

SARANYA DAS. K.
Assistant Scientist

KERALA STATE POLLUTION CONTROL BOARD
DISTRICT OFFICE (ERNAKULAM - II), PERUMBAVOOR
PMC 20/733 Govt. Hospital- KSRTC Road, Near Kalunkal Auditorium, Perumbavoor-683 542
Telephone: 0484-2592747
E-mail: pcbdo2ekm@gmail.com
Website: www.keralapcb.nic.in

PCB/PBR/LAB/1/2013

Date: 25.10.2022

ANALYSIS REPORT

Source : SEPTAGE TREATMENT PLANT, BRAHMAPURAM

Sample Point : FILTERED EFFLUENT TANK

D.O.S : 14.10.2022

D.O. Rd. : 14.10.2022

Collected by : GEA

Sample ID : PCB-1124

Sl.No.	Parameters	Unit	Value	Test Method	KSPCB Limit
1	pH		7.49	APHA, 4500 H+ B 22nd Edition 2012	6.5-8.5
2	BOD	mg/l	11	APHA, 5210 B, 22nd Edition 2012	30
3	COD	mg/l	48	APHA, 5220 B, 22nd Edition 2012	250
4	OIL &GREASE	mg/l	BDL	APHA, 5520 B, 22nd Edition 2012	10
5	SS	mg/l	BDL	APHA, 2540-D, 22nd Edition 2012	100
6	PHOSPHATES	mg/l	0.178	APHA-4500 P-E 22nd Edition 2012	-
7	NITRATES	mg/l	0.759	APHA 4500-NO3-E, 22nd Edition 2012	-
8	SULPHATES	mg/l	60.74	APHA, 4500-SO4, 22nd Edition 2012	1000
9	SULPHIDES	mg/l	48	APHA-4500-S2- D 22nd Edition 2012	2
10	AMMONIACAL NITROGEN	mg/l	0.006	APHA, 4500-NH3-F, 22nd Edition 2012	50
11	PHENOLIC COMPOUNDS	mg/l	BDL	APHA, 5530 C, 22nd Edition 2012	-
12	TOTAL COLIFORM	cfu/100ml	16	APHA 9222B, 22nd Edition 2012	-
13	FAECAL STREPTOCOCCI	cfu/100ml	30	APHA 9230 A, 22nd Edition 2012	-

Kerala State Pollution Control Board
Dist. Office (Ernakulam-II)
25 OCT 2022

SARANYA DAS. K.
Assistant Scientist

email: kspcbpta@gmail.com
Phone/ fax: 0468-2223983

കേരള സംസ്ഥാന മലിനീകരണ നിയന്ത്രണ ബോർഡ്

KERALA STATE POLLUTION CONTROL BOARD

ജില്ലാ ആഫീസ്,OPPജനറൽആശുപത്രി,KKNairRoad,കുന്നിതോട്ടത്തിൽബിൽഡിംഗ്സ്,പത്തനംതിട്ട689645
DISTRICT OFFICE,OPP.GENERALHOSPITAL,KKNairRoad,KUNNITHOTTATHILBldgs,PATHANAMTHITTA689645

web site: www.keralapcb.nic.in – for Online registration, visit-krocmms.nic.in/KSPCB

No. PCB/PTA/TG-3/2001

08.11.2022

From

Environmental Engineer(I/C)

To

The Member Secretary
Kerala State Pollution Control Board
Pattom P. O.,
Thiruvananthapuram

Sub:- Pamba River Monitoring report and the analysis report of Pamba-Njunangar –OCTOBER,2022 reg:-

Madam,

I am forwarding herewith the Pamba River monitoring report and the analysis report of Pamba-Njunangar for the month of OCTOBER ,2022 for your kind information and necessary action.

Yours Faithfully

ENVIRONMENTEL ENGINEER(I/C)

Encl. As above

STATE WATER MONITORING PROGRAMME (SWMP) 2022

ANALYSIS REPORT FOR THE MONTH OF OCTOBER

Name of River		PAMBA				
Date & Time of sampling collection		20.10.2022				
Method of analysis		APHA				
Sl.No	parameters	PULINKKUNNU	THAKAZHY	EDATHUA	CHENGANNOOR	KOHENCHERRY
1	Weather	Clear	Clear	Clear	Clear	Clear
2	Colour	clear	clear	clear	clear	clear
3	Temperature ,ºC	28	28	28	27	27
4	DO, mg/L	6.0	6.2	5.3	6.2	6.8
5	pH	6.3	6.5	6.1	6.6	6.4
6	Electrical Conductivity ,µ/cm	51.19	62.03	59.31	49.18	51.93
7	BOD, mg/L	0.7	0.7	1.1	0.7	0.5
8	Nitrate , mg/L	0.146	0.195	0.179	0.293	0.137
9	FC, CFU/100mL	90	80	90	100	90
10	TC , CFU/100mL	290	230	270	300	280

11	FS , CFU/100mL	Nil	Nil	Nil	Nil	Nil
12	Turbidity ,NTU	2.1	2.5	1.9	1.7	0.9
13	Phenolphthalene Alkalinity, mg/L	Nil	Nil	Nil	Nil	Nil
14	Total Alkalinity, mg/L	10	12	10	10	11
15	Chloride mg/L,	8	12	8	10	10
16	COD	3.2	3.2	6.4	3.2	3.2
17	TKN	0.15	0.25	0.2	0.13	0.18
18	NH_3N, mg/L	0.146	BDL	0.135	BDL	0.114
19	Total Hardness, mg/L	22	26	22	22	20
20	Calcium , mg/L	12	16	12	12	12
21	Magnesium, mg/L	10	10	10	10	8
22	Sulphate, mg/L	1.5	2.5	1.9	2.4	1.8
23	Sodium, mg/L	4.3	6.4	4.5	5.3	5.3
24	Pottassium , mg/L	0.298	0.718	0.514	0.275	0.325

25	Total Dissolved Solids, mg/L	32	42	34	34	36
26	TFS, mg/L	27	37	29	29	30
27	TSS, mg/L	22	32	25	23	25
28	Phosphate , mg/L	BDL	BDL	BDL	BDL	BDL
29	Boron , mg/L	BDL	BDL	BDL	BDL	BDL
30	Fluoride	0.15	0.25	0.2	0.13	0.2
31	% of Sodium	11.567	14.508	11.9999	13.889	15.405
32	SAR	0.398593	0.545714	0.417132	0.491289	0.515268

ASSISTANT SCIENTIST

STATE WATER MONITORING PROGRAMME (SWMP) 2022

ANALYSIS REPORT FOR THE MONTH OF OCTOBER

Name of River		PAMBA							
Date & Time of sampling collection		20.10.2022							
Method of analysis		APHA							
Si.no		RANNI	ATHIKAYAM	VADASSERIKKARA	PAMBA (D/S)	THRIVENI (U/S)	KAKKIYAR	KOCHUPAMBA	NJUNAGAR
1	Weather	Rainy	Rainy	Rainy	Rainy	Rainy	Clear	Clear	Clear
2	Colour	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear
3	Temperature ,ºC	26	26	26	27	26	27	27	27
4	DO, mg/L	7.2	6.8	6.9	6.8	7.1	6.8	7.2	6.1
5	pH	6.6	7.1	6.8	6.6	6.5	7.3	7.4	5.5
6	Electrical Conductivity ,µ/cm	50.43	52.97	49.13	55	44	52.54	58.39	75.16
7	BOD, mg/L	0.3	0.5	0.4	0.6	0.4	0.4	0.3	1.2
8	Nitrate , mg/L	BDL	BDL	BDL	0.238	0.135	0.198	BDL	0.835
9	FC, CFU/100mL	60	70	100	190	110	220	120	330

10	TC , CFU/100mL	190	220	300	590	330	360	380	990
11	FS , CFU/100mL	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
12	Turbidity ,NTU	1.3	1.4	1.2	1.5	1.2	1.1	0.6	3.1
13	Phenolphthalene Alkalinity, mg/L	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
14	Total Alkalinity, mg/L	10	10	11	10	10	10	11	12
15	Chioride mg/L,	8	8	10	10	8	10	10	16
16	COD	3.2	3.2	3.2	3.2	3.2	3.2	3.2	6.4
17	TKN	0.15	0.2	0.15	0.2	0.15	0.18	0.2	0.25
18	NH_3N, mg/L	BDL	BDL	0.119	BDL	BDL	0.185	0.197	0.739
19	Total Hardness, mg/L	22	22	24	22	20	22	22	28
20	Calcium , mg/L	12	12	16	12	12	12	12	16
21	Magnesium, mg/L	10	10	8	10	8	10	10	12
22	Sulphate, mg/L	1.3	1.9	1.5	2.2	1.8	1.5	1.4	2.9
23	Sodium, mg/L	4.4	4.3	5.3	5.4	4.3	5.4	5.3	8.4
24	Pottassium , mg/L	0.218	0.319	0.225	0.193	0.179	0.281	0.214	0.413

25	Total Dissolved Solids, mg/L	32	32	34	36	30	36	36	50
26	TFS, mg/L	27	26	29	31	25	31	30	44
27	TSS, mg/L	21	21	24	26	20	26	25	39
28	Phosphate , mg/L	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
29	Boron , mg/L	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
30	Fluoride	0.15	0.25	0.2	0.25	0.2	0.16	0.25	0.35
31	% of Sodium	11.819	11.563	13.612	14.13183	12.9059	14.112	13.902	16.895
32	SAR	0.407862	0.398593	0.470373	0.50055	0.41804	0.500558	0.491289	0.690196

ASSISTANT SCIENTIST

കേരള സംസ്ഥാന മലിനീകരണ നിയന്ത്രണ ബോർഡ്

KERALA STATE POLLUTION CONTROL BOARD

Malayalis Square, 3rd Floor, Thrissur, Ollukkara P.O., Thrissur-680655

TAS No: 638 Date: 10.10.2022

ANALYSIS REPORT (WATER/EFFLUENT/SOLID WASTE)

Source	M/s. Snoop Ice Cream Pvt Ltd., Nadathara.	Sample received from	EE, THRISSUR
Date of Sample Collection	15/09/2022	Period of analysis	15/09/2022-10/10/2022
Ref. No.	PCB/TSR/69176/05		
Date of Receipt	15/09/2022		
Scientist – in-charge of analysis		RESTMI R.	

Sl.No	Parameter	Unit	Value
			SC (ETP outlet)
1	pH	--	7.12
2	Biological Oxygen Demand	mg/l	7.11
3	Suspended solids	"	14.56
4	Oil & Grease	"	2.5

Remarks:

Assistant Scientist
Kerala State Pollution Control Board

കേരള സംസ്ഥാന മലിനീകരണ നിയന്ത്രണ ബോർഡ്

KERALA STATE POLLUTION CONTROL BOARD

Majestic Square, 2nd Floor, Parasuvaikkal, Pallichal P.O., Thiruvananthapuram-695553

ANALYSIS REPORT
(WATER/EFFLUENT/SEWAGE)

TAS No. 681 Date: 26.09.2022

Name	M/s. Sewage Treatment Plant by KWA, Chakkamkandam.	Sample received from	M/s. TIDISS(I) K
Date of Sample Collected	30/08/2022		
Ref. No.	PCB/TSR/CC/587/07	Period of analysis	30/08/2022-23/09/2022
Date of Receipt	30/08/2022		
Scientist – in – charge	Anil Jose	RESULT	

Sl No	Parameter	Unit	Value KWA (ETP outlet)
1	pH	—	6.56
2	Biological Oxygen Demand	mg/l	4.5
3	Chemical Oxygen Demand	"	8
4	Suspended solids	"	20.52
5	Oil & Grease	"	BDL
6	Faecal Coliform	MPN/100ml	NIL

Remarks:

Scientist Incharge
Kerala State Pollution Control Board

Assessment Report on Ambient Air Quality, Noise Levels and Mine Pit Wastewater Quality carried out during 12-12-2022 to 15-12-2022

Name and Address of the Stone Quarry Site	M/s. Aducadu Granites Private Limited, Pathanamthitta, Konni, Pathanamthitta District, Kerala			
Geo-coordinates	Latitude	09°15'05.7"N	Longitude	76°52'08.0"E

1.0. Stone Quarry Site Description

1.1 General information

M/s. Aducadu Granites Private Limited, Pathanamthitta which is attached with captive crusher unit. It is owned by Shri. Martin Varghese. As per the information provided by the stone quarry, the present quarrying lease commenced on 12.11.2019 and the validity of lease is for 5 years. This quarry has obtained Environmental Clearance dated 16.12.2017 and is valid upto15.12.2023. It also has Consent to Operate dated 12.09.2022 with validity upto12.10.2024

Area of mining is 4.3804 Ha. Nearest residential area is 62 metres from the boundary of the approved mining area. There are no forests or wildlife sanctuaries located nearby. There are no rivers or such other water bodies nearby. The approach roads to the quarry are wide and well maintained, with a length of about 500 meters to nearest major road.

This quarry cannot sell granite boulders outside other than into their captive crusher unit itself. The surrounding ground is plain, with vegetation, rubber plantation and habitations in various direction around the quarry.

1.2 Topography & Geology

Stone quarry site had the lithology of Charnockite. As per the information provided by the Unit, Charnockite group is the dominant formation of the area within which occur concordant, linear and lenosidal bodies of calc granulite and quartzitre of Khondalite Group. The Charnockite Group comprises Charnockite (hypersthenses granite), pyroxene-granulite and cordierite gneiss. The rock is generally dark grey and crudely foliated. The highest elevation in this area is 140 m above MSL and lowest elevation is 97.6 m above MSL.

1.3 Details of quarrying/ mining activities

The method of mining is semi-mechanized open cast mining. The mining operations are carried out using jack hammers, compressors, drills, excavators, hand shovels etc. followed by controlled blasting (NONEL TECHNOLOGY) using class 2explosives. The rock braking is

done using pneumatic rock breaker and transported to the crusher site using trucks/ tippers of 15T for various products. Every day, blasting is carried out in 2 or 3 prefixed timings.

2.0 Location attributes			
2.1 Altitude (m)	60	2.2 Area (Ha)	4.3804
2.3 Terrain	Undulating	2.4 Lithology	Charnockite
2.5 Soil type	Laterite	2.6 Total Mineable reserve	1745583 MT
2.6 (a) Remaining Mineable reserve	1514167.50MT	2.6 (b) Approximate mined quantity per annum	58621MT
2.7 Slope	Moderate	2.8 Fault	---
2.9 Distance from nearest forest (Km)	03	2.10 Wildlife movement (Yes/ No)	Yes

3.0 Schedule of the Study/ Assessment		
Day	Date	Activities
1	12-12-2022	Site reconnaissance, fixing of monitoring points within 50m, 100m, 200m and 500m from the blast point. Setting up a field office, arranging power supply for operating monitoring instruments/ equipment. Checking of instruments, deployment and conducting test runs.
2	13-12-2022	Background monitoring of ambient air quality and noise without any activities in the quarry. (06.00 to 18.00 Hrs.)
3	14-12-2022	Air quality and noise monitoring during the operation of quarry including drilling, blasting and all other quarry activities (06.00 to 18.00 Hrs.)
4	15-12-2022	Maintenance check of instruments used, safe packing for transportation and transporting monitoring gear to the next station.

4.0 Sampling/ Monitoring Plan and locations
The quarry area has a deep excavation which has more length in the east west direction than in the North South direction. From the surrounding ground level, it is 30m-50m deep. The present blasting zone is towards west of the quarry area. Hence the 50m, 100m and 200m stations towards West, South East and North East are inside the excavated area or the surrounding un-mined area.

The other points are in the higher benches outside the present blasting area. Further stations like 300m and 500m were all outside the quarry premises, in private properties. In total, 11 coordinates were fixed with the actual blasting zone as centre in North-East line, West line and South-East line each at an angle of approximately 120° to each other.

Nine locations were inside the quarry premises and 2 locations were outside the quarry premises. In the West line, beyond 200m, the land was sloping, had thicker vegetation, hence, monitoring station could not be fixed. Since, it is in the predominant upwind direction, it was of less significance, hence 500m point in the West direction could not be installed. Also, in the upwind direction SE, the farthest residence was 300m from the blasting zone as there were no structure/houses/other salient features within 500m this point and hence, this point was made the farthest point and marked as SE 500.Photographs taken during the site assessment at M/s. Aducadu Granites Private Limited, Pathanamthitta, Konni, Pathanamthitta District, Kerala is given as Annexure-1.

4.1 Map showing sampling locations (Map)

4.2 Geo-coordinates of sampling locations

S. No.	*Station Points*	*Latitude*	*Longitude*
1	W50	9.2534368	76.8700689
2	W100	9.2539305	76.8700779
3	W200	9.2545877	76.8701648
4	NE50	9.2521376	76.8699002
5	NE100	9.2517865	76.869629
6	NE200	9.251175	76.8699177
7	NE500	9.249406	76.8710646
8	SE50	9.2525761	76.8692588
9	SE100	9.2522558	76.8692548
10	SE200	9.2517687	76.8691811
11	SE500	9.2515539	76.8682329

5.0 Monitoring activities

5.1 Background monitoring (13-12-2022)

The ambient air and sound monitoring started at 6:00am in all 11 stations in the quarry. The quarry activities were kept completely idle on 13th December 2022 to do ambient monitoring and all stations were ensured working properly. At each station, one Assistant Engineer / Instrument operator was stationed for the continuous monitoring. The Noise data, Air flow rates and Total volume of sucked air were recorded every one hour. The ambient air monitoring had maximum outage of 4.5 hrs at one station. The weather data were recorded from a station inside the quarry at NE200 and wind velocity, humidity and temperature were monitored every hour using Weather Tracker. The direction of the wind was mostly from west to east.

The locations for drill holes for explosives were located by the CIMFR blasting team. It was decided to conduct 10 blasts which consist of 91 holes, each hole having 32mm diameter and 5ft - 6ft depth. The explosive used was Ammonium Nitrate– 375gm per drill hole. The CIMFR team also identified 8 locations for the seismic analysis. 4 locations were inside the quarry (NE 200, W 200, SE 200, SE 50 and quarry office) and 4 locations were outside the quarry (NE 500,2 residences, and SE 500). CIMFR Team also conducted a social survey on the response of the public about quarrying activities, through a questionnaire.

5.2 Monitoring during Stone Quarry Operation (on 14-12-2022)

The air and noise monitoring was started at 06 AM. The monitoring was continued without any interruption from beginning to end. Before blasting, drilling of blast holes using jack hammers was started from 6.am onwards and 91 no. of blast holes were drilled. The drilling of holes (5ft to 6ft depth) and filling of explosives into each hole were completed at 11.45am. Connections were also established for the blasting, under the overall supervision of CIMFR Team. The crusher was kept idle on quarrying monitoring day in view of the blasting activity. All the 10 blasts as planned were conducted. Immediately after the blasting was completed, regular activity such as vehicular movement, breaking of boulders using pneumatic rock breakers and hauling of the quarry product using haulers were carried out. These quarrying activities as well as monitoring of ambient air, noise levels were continued full-fledged until the end of the day at 5 pm; 11 hours in total. It was forced to be stopped due to rain.

6.0 Monitoring Results-Ambient Air Quality and Noise Levels

6.1 Weather

Weather: Non-quarrying day (13-12-2022)				
S.No.	***Time (Hrs)***	***Temperature (◦C)***	***Humidity (%)***	***Wind (m/s) & Direction***
1	09:00	26	79	6, E
2	10:00	28	66	6, SW
3	11:00	29	66	5, S
4	12:00	29	64	5, S
5	13:00	29	62	9, SW
6	14:00	28	61	10, SW
7	15:00	30	60	10, W
8	16:00	27	82	3, W
9	17:00	28	82	3, W
10	18:00	28	83	3, W

Weather: Quarrying day (14-12-2022)

S.No.	*Time (Hrs)*	*Temperature (°C)*	*Humidity (%)*	*Wind (m/s) & Direction*
1	06:00	21	93	2, E
2	07:00	23	93	2, E
3	08:00	24	80	2, E
4	09:00	26	80	2, SE
5	10:00	27	63	1, SE
6	11:00	29	63	1, S
7	12:00	27	70	1, S
8	13:00	26	84	1, S
9	14:00	26	84	1, S
10	15:00	25	84	1, S
11	16:00	25	84	1, S
12	17:00	24	97	1, S

6.2 Particulate matters/dust

- On blasting day, at 6 out of 11 monitored locations, PM10 values observed higher than those of ambient day (Non-Quarrying day), which shows the influence of quarrying activity increasing the concentration of particulate matter (PM 10). Considerably high increase in PM 10 concentration on quarrying day over nonquarrying day was found in two stations NE50 and SE100 compared to the other stations.

- At 500m stations, increase of PM10 concentration on ambient day than blasting day can be attributed to local source of pollution like road dust. Influence of quarrying cannot be seen at all in these stations.

- In a few stations other than those at 500m, ambient day concentration is more than blasting day concentration of PM10. The reason is inferred as follows. Efficient dust suppression using water spray and sprinkling was carried out on blasting day whereas dust suppression was nil on ambient day. This made the ambient day concentrations of PM10 higher which also points to an inference that the influence of dust generation in blasting is negligible in PM10 compared to general ground dust from overall quarry area including roads.

- The result in Sl.no (iii)has another explanation too. The average wind-speed on ambient day was almost twice compared to blasting day which resulted in more emanation of ground dust.

- The average humidity of quarrying day is found more than that of ambient day which also contribute to the specified result.

- The results of PM2.5 shows that ambient day values are generally more than blasting day values. In NE50 where PM10 concentration had increased very much, PM2.5 concentration has also increased considerably. The explanations based on dust suppression, wind-speed, humidity and local influence at far-off stations given for PM10 hold here also.

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Table: PM10 & PM2.5 values in non-quarrying and quarrying day

Station Points	*Distance from blasting zone (metre)*	*PM 10 (microgram/m^3)*		PM 2.5 (microgram/m^3)	
		Non-quarrying day	Quarrying day	Non-quarrying day	Quarrying day
W50	50 m	28.16666667	55.09615385	59.70739423	36.17153309
W100	100 m	32.33525734	45.72649573	58.14187827	64.02561024
W200	200 m	20.76446281	61.86684362	83.48699037	64.45180358
W500	500 m	72.62820513	53.17307692	47.50593824	51.8408453
NE50	50 m	29.29383603	46.13095238	64.09501374	55.88044185
NE100	100 m	21.11631538	34.68992248	52.7013073	49.06225831
NE200	200 m	32.14814815	40.98883573	49.27536232	55.92366817
NE500	500 m	40.46153846	39.02777778	82.14801072	90.69943549
SE50	50 m	39.94535519	47.69283747	82.09109731	62.10966989
SE100	100 m	31.8359375	33.49236641	60.02868265	68.25735992
SE200	200 m	39.40104167	46.7769296	53.0257033	52.05205205
SE500	500 m	27.8314746	36.0479798	33.33333333	34.71220138

Fig.1: PM-10 values of Quarrying and Non-quarrying days

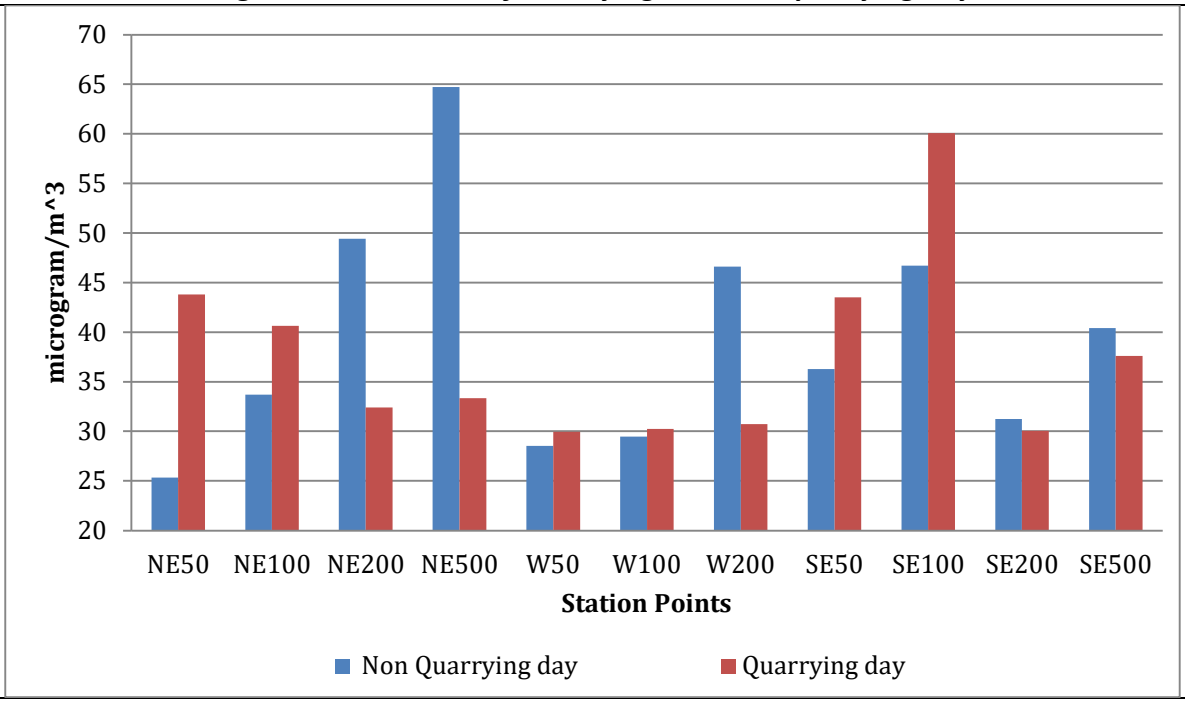
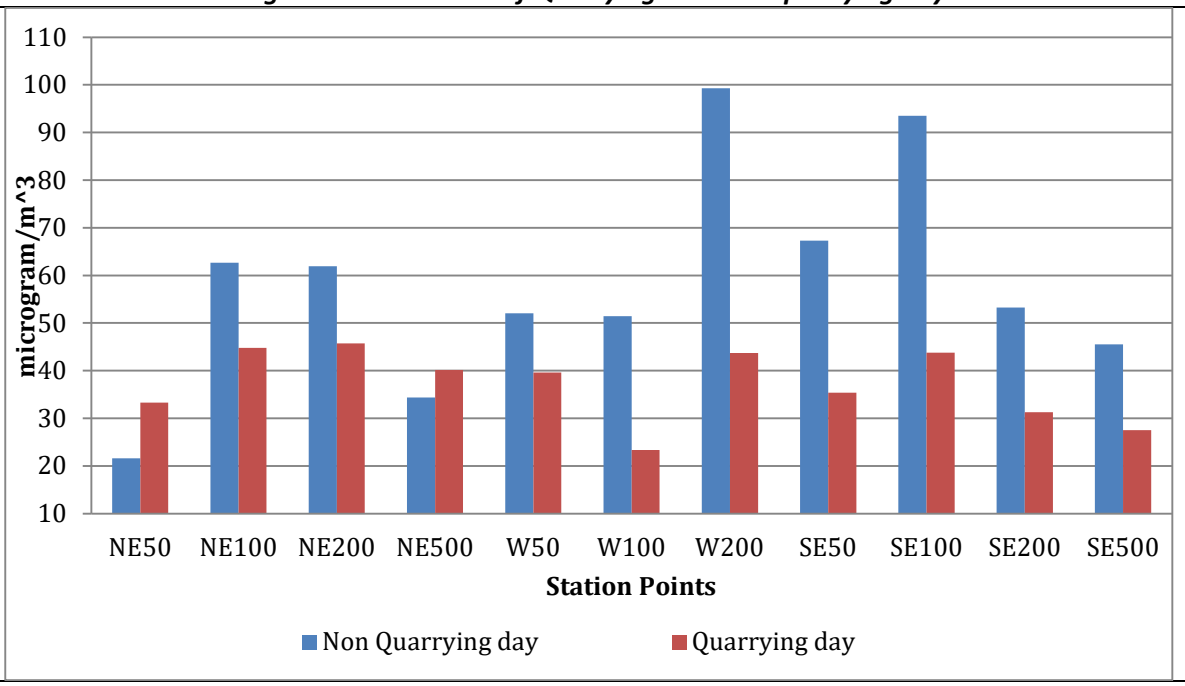


Fig.2: PM-2.5 values of Quarrying and Non-quarrying days



6.3 Noise level

Observed Noise Levels in terms of Equivalent Noise (L_{eq}) on non-quarrying and quarrying day are given in the table below:

Leq= Equivalent noise level

dB(A)= Decibel in 'A' weighted frequency scale (unit of sound pressure level)

Observations:

- The equivalent noise level observed has higher values on blasting day than ambient day at all monitored stations.
- The noise levels on blasting day decreases with increase in distance from blasting zones in all directions.
- More than 10 dB(A) increase in Leq was observed in all the stations except at 2 stations 500 m distant and one station 200 metre distant
- The local influences at far-off stations where influence of quarrying is very megre, resulted in minor changes in trend.
- Peak of hourly equivalent value was observed in the sixth hour which corresponds to the blasting time.

Table: Observed Noise in terms of Equivalent Noise (L_{eq}) & L max on non-quarrying and quarrying day.

Station Points	Non-quarrying Day Noise Levels		Quarrying Day Noise Levels	
	L_{eq}	L_{max}	L_{eq}	L_{max}
NE 50	58.00399168	86.1	70.0604796	101.3
NE 100	52.9016632	85.6	69.9250334	104.8
NE 200	51.62918095	95.5	64.11607654	93.8
NE 500	46.61649065	78.1	49.42693878	86.1
W 50	52.78042956	90.3	69.99946052	104.2
W 100	56.08438161	87.4	70.42709207	102.5
W 200	57.13451115	92.3	56.0399376	94.8
SE 50	57.02515492	90.3	70.74838594	102.3
SE 100	60.44035033	97.8	70.82640779	106.5
SE 200	49.72105197	89.8	64.24094265	104.2
SE 500	59.57408368	86.7	58.75245192	84.4

Fig.3: Equivalent values (Leq)and maximum (Lmax)of quarrying and non-quarrying day in West direction 50m

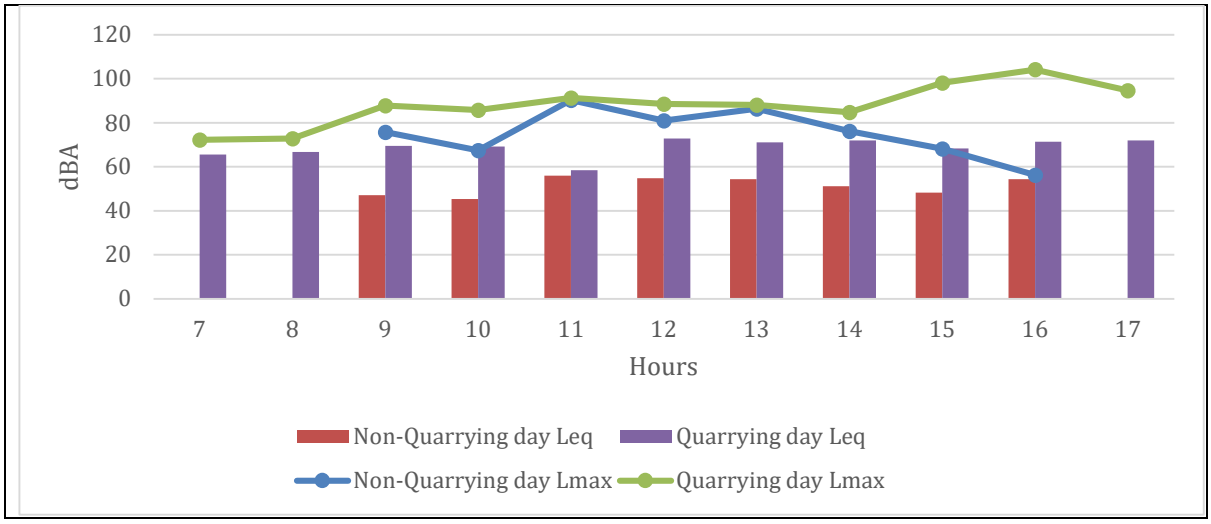


Fig.4: Equivalent values (Leq)and maximum (Lmax)of quarrying and non-quarrying day in West direction 100m

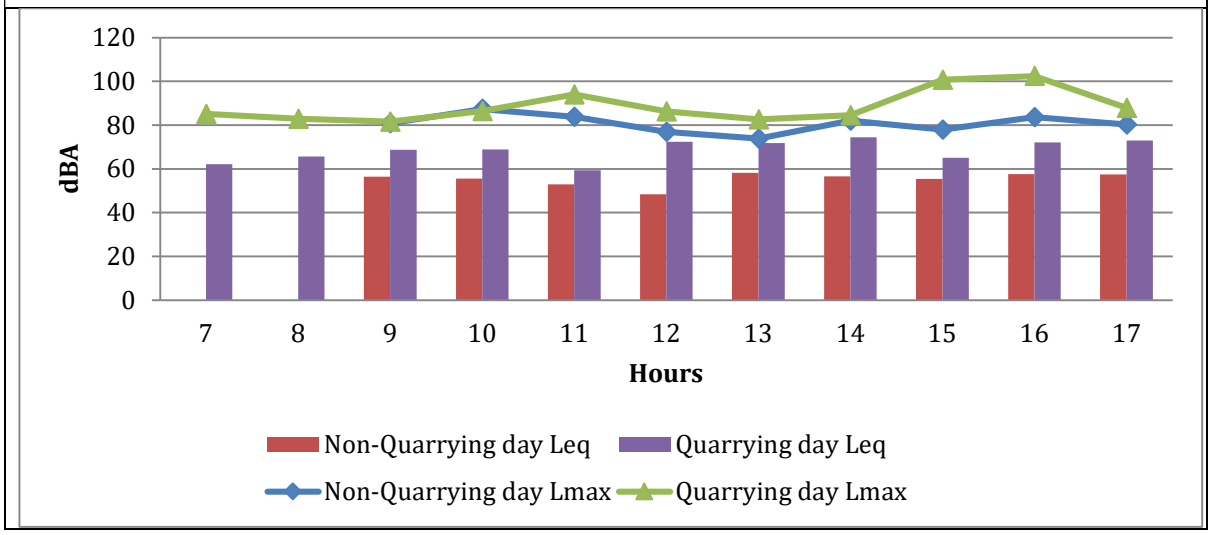


Fig.5: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in West direction 200m

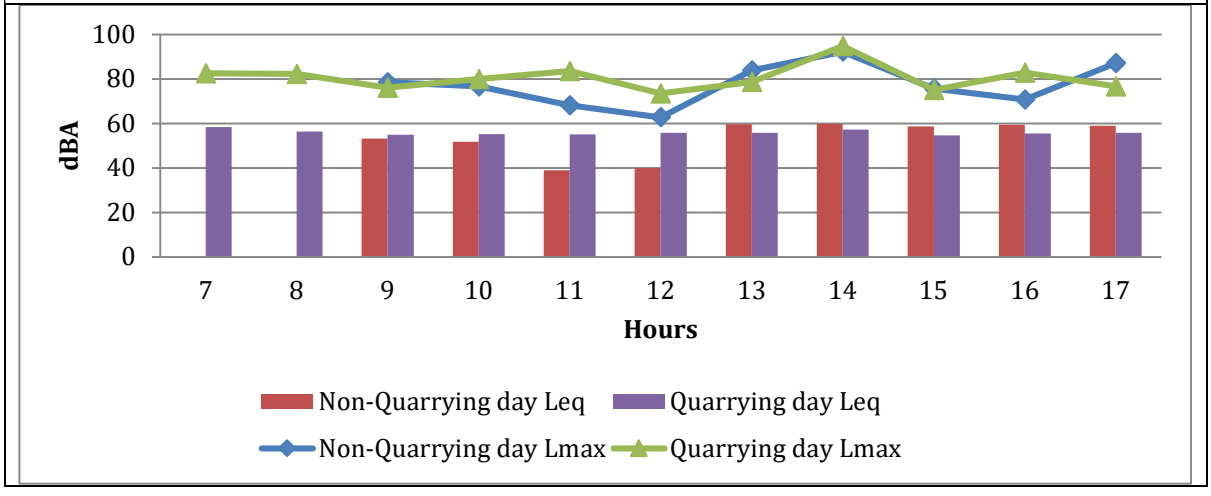


Fig.6: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in North-East direction 50m

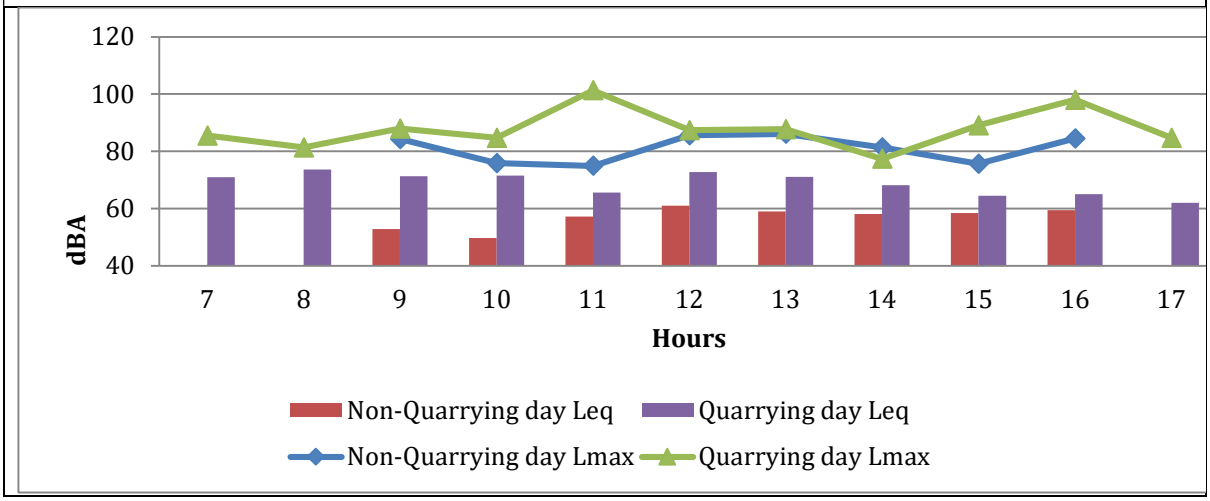


Fig.7: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in North-East direction 100m

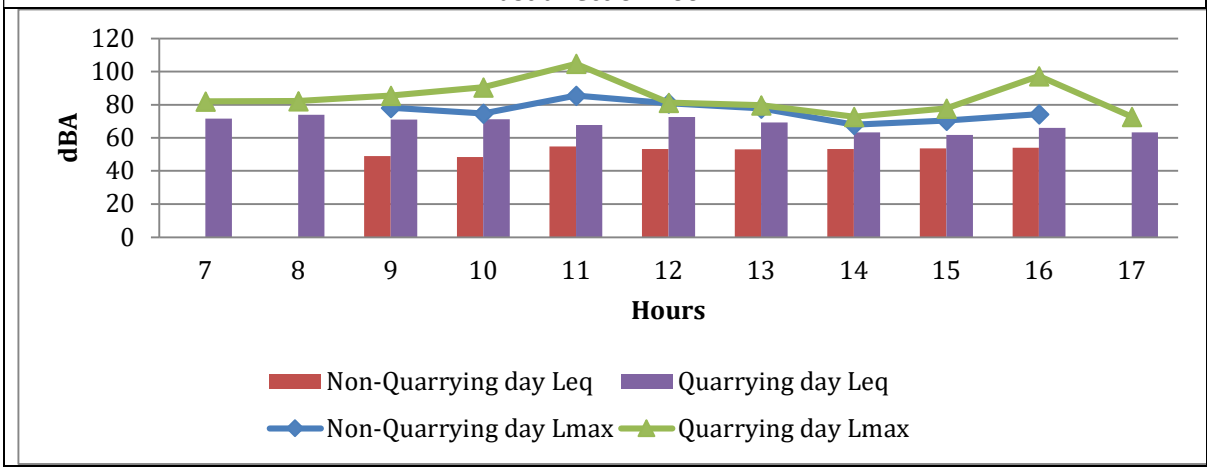


Fig.8: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in North-East direction 200m

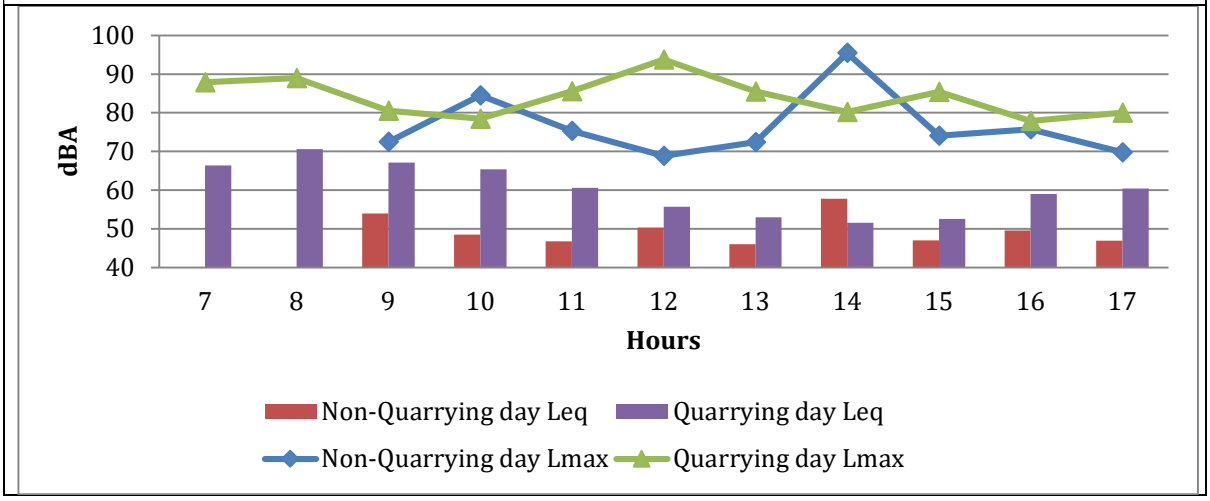


Fig.9: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in North-East direction 500m

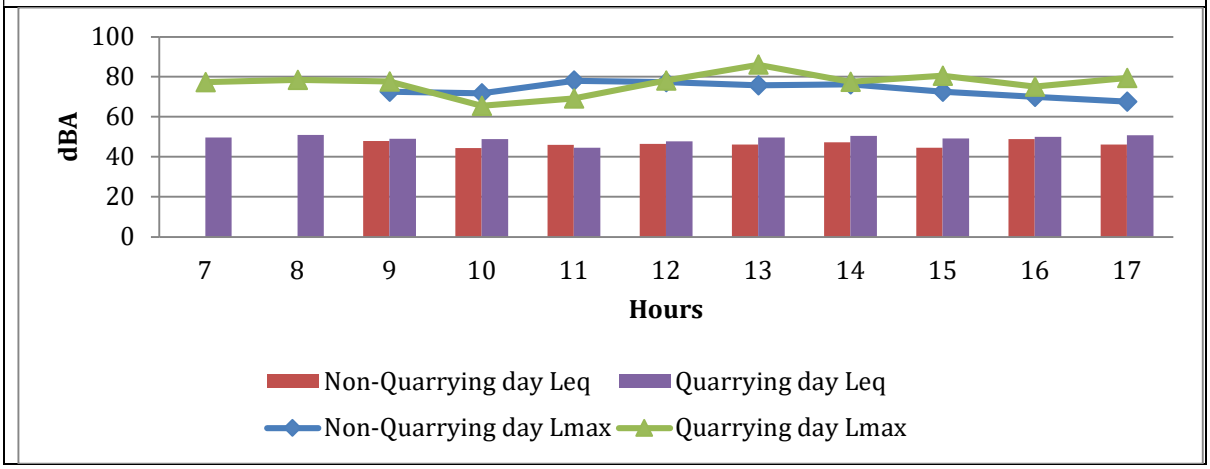


Fig.10: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in South-East direction 50m

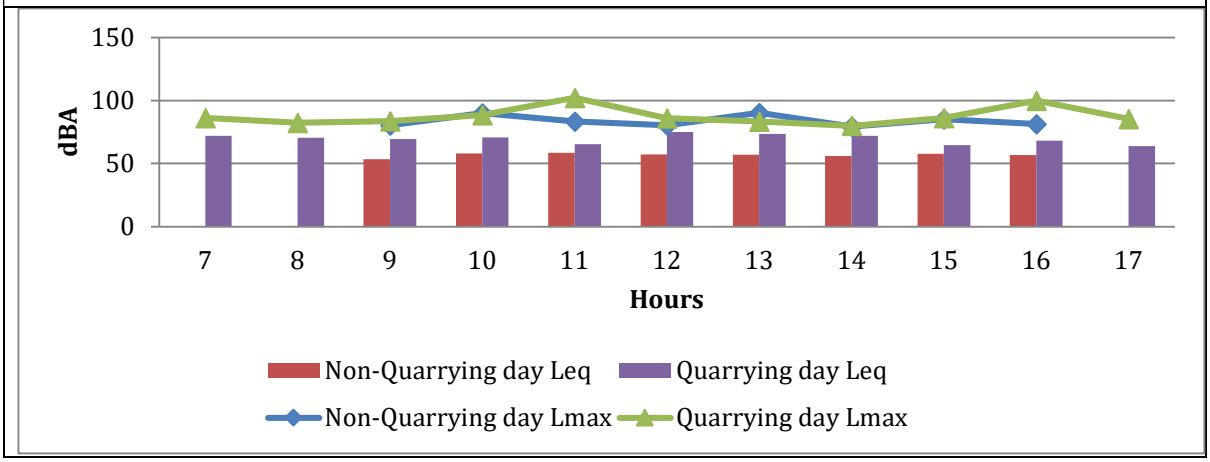


Fig.11: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in South-East direction 100m

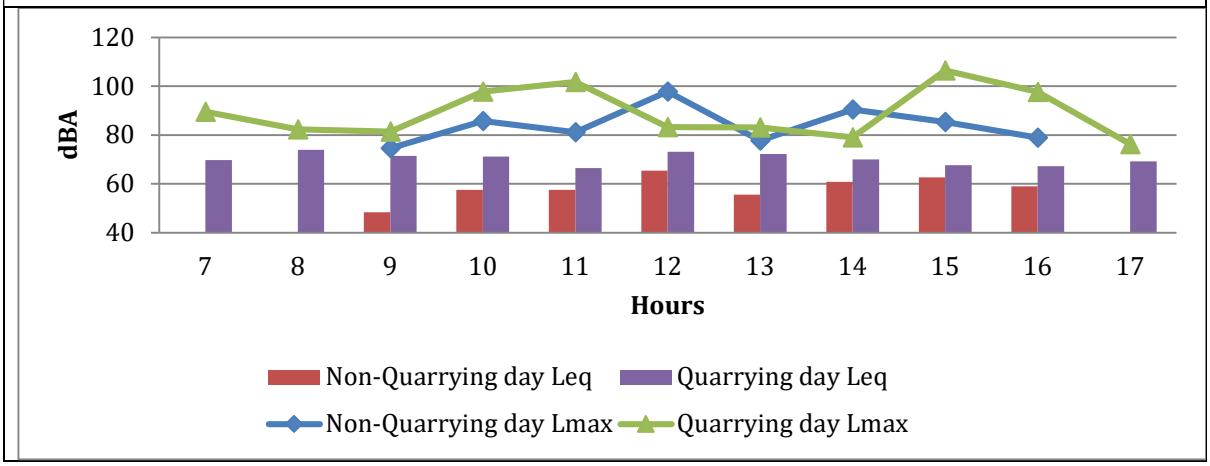


Fig.12: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in South-East direction 200m

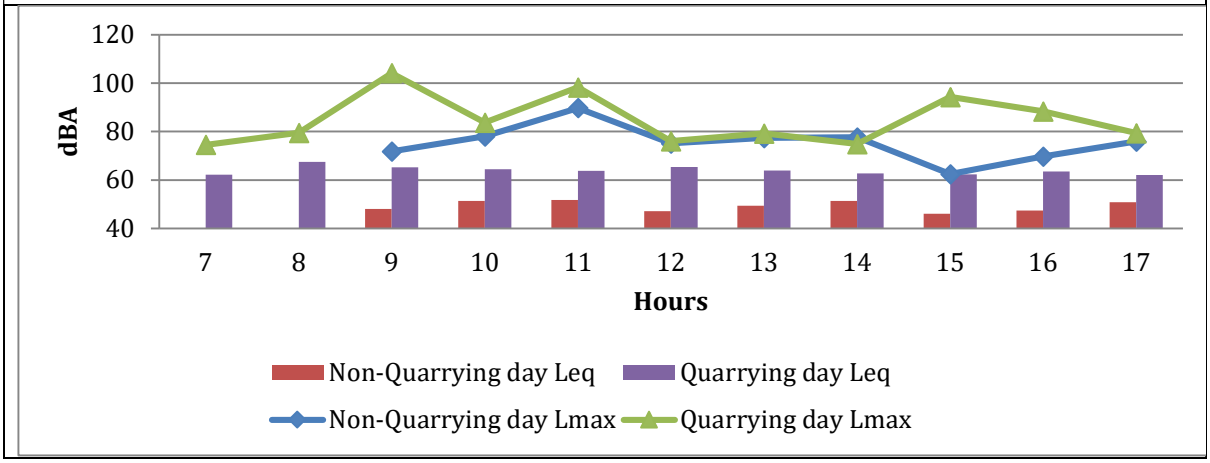


Fig.13: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in South-East direction 500m

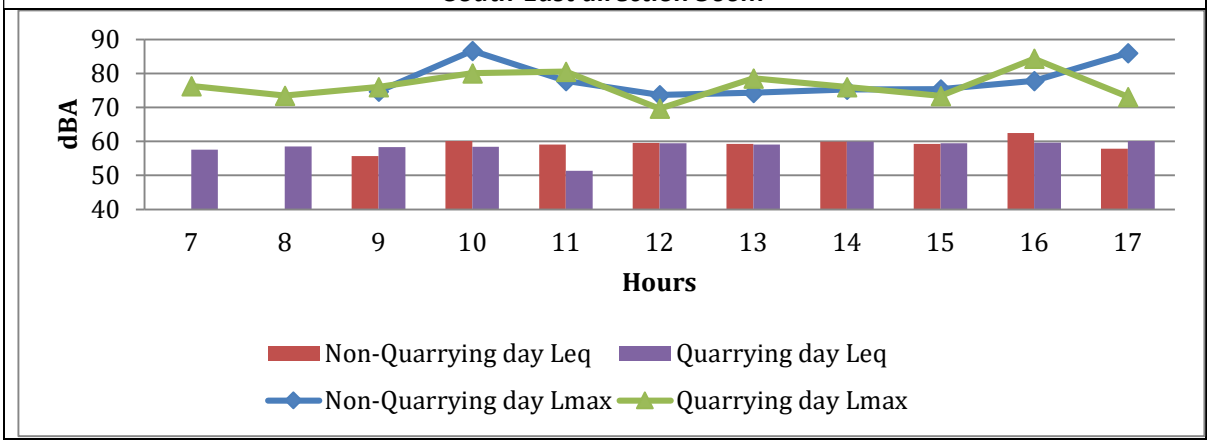
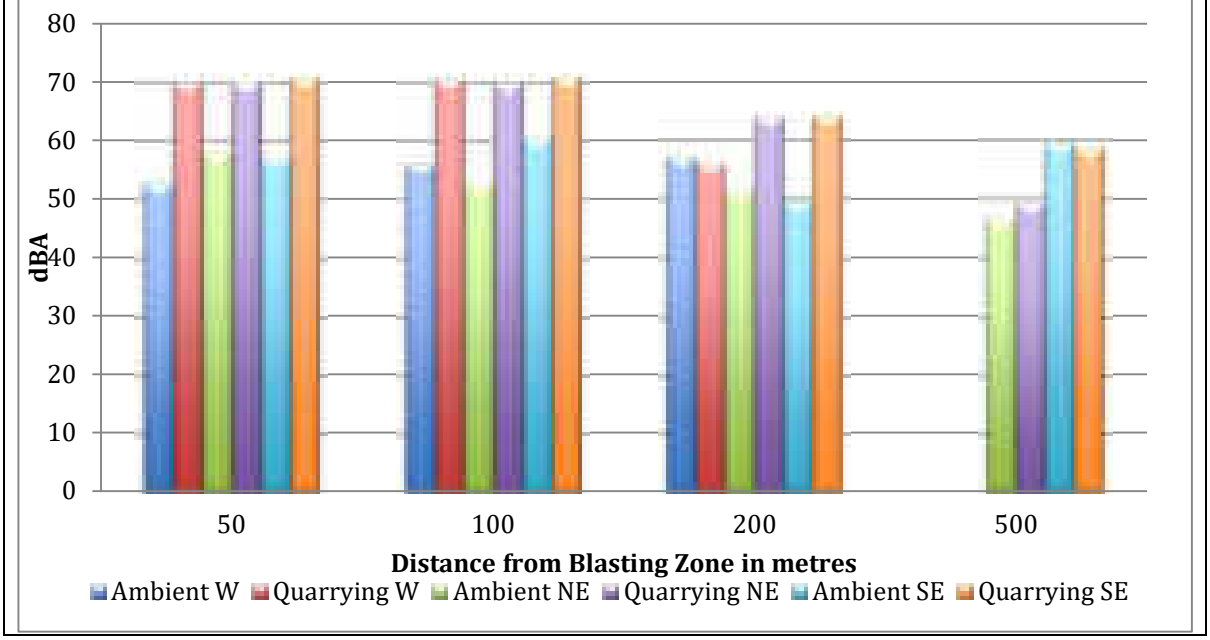


Fig.14: Equivalent values (Leq) of non-quarrying and quarrying day



6.4 Water Quality			
Sample Point: Quarry Pond			
Date of Sample: 14/12/2022			
Sl. No.	**Parameters**	**Unit**	**Value**
1	pH		6.9
2	BOD	mg/l	0.6
3	COD	mg/l	3.2
4	SS	mg/l	124
5	D.O	mg/l	4.1
6	SODIUM	mg/l	19.3
7	POTASSIUM	mg/l	8.9
8	CALCIUM	mg/l	24.8
9	MAGNESIUM	mg/l	4.86

7.0 Site specific observations made during the Visit

The quarry has a deep excavated area. High rock faces are there all around the excavation. Dust suppression is done by using dedicated tanker vehicles. A requisite personal protection equipment are given to all workers. Good shaped benches are formed and maintained. Boundary pillars are maintained intact with latitude and longitude painted on them. There is natural vegetation all around and green belt has not been developed artificially. The approach roads outside quarry premises are tarred. Settling facility is provided to remove pollutants from surface runoff during rainy season, when water from quarry excavated area is pumped out. The land surrounding the quarry premises are thickly vegetated and residences.

Photographs taken during the site assessment

Monitoring team

Quarry site

Particulate matter monitoring

Assessment Report on Ambient Air Quality, Noise Levels and Mine Pit Wastewater Quality carried out during 17-12-2022 to 20-12-2022

Name and Address of the Stone Quarry Site	**Quarry of Mr. Muhammed Roshan, Cherukulam, P.O Philgiri, Kottukkal Village Kollam, Kerala 691306**			
Geo-coordinates	Latitude	08°52'54.00"N	Longitude	76°55'6.44"E

1.0. Stone Quarry Site Description

1.1 General information

Quarry of Mr. Muhammed Roshan, Cherukulam, Kottukkal Village, Kollam had the lithology of Charnockite. The present quarrying lease issued by Department of Mining and Geology, Government of Kerala, commenced on 18.06.2020 and is valid up to 23.07.2025. The quarry has obtained Environmental Clearance from State Environmental Impact Assessment Authority, Kerala on 31.10.2019 and valid up to 30.10.2024.

It also holds valid Consent to Operate of Kerala State Pollution Control Board. Area of mining is 1.21426 Ha, nearest residence is 54 metres from the quarry. The quarry is not attached to any in-house crusher. There were complaints against the operation of the quarry on matters like damages to buildings, dust pollution and noise pollution as well as damages to public roads due to vehicular movement of quarry.

The public road to the quarry from the nearest tarred road is not tarred or concreted. The approach road in the proponent's property is also not tarred, but kept well moist by water sprinkling. There are no major water bodies like rivers or forests nearby.

1.2 Topography & Geology

Stone quarry site had the lithology of Charnockite. As per the information provided by the Unit, Charnockite group is the dominant formation of the area within which occur concordant, linear and lenosidal bodies of calc granulite and quartzitre of Khondalite Group. The Charnockite Group comprises Charnockite (hypersthenses granite), pyroxene-granulite and cordierite gneiss. The highest elevation of the mine area is 140 m above MSL and the lowest is 97.6 m above MSL.

1.3 Details of quarrying/ mining activities

The method of mining is semi-mechanized open cast mining. The mining operations are carried out using jack hammers, compressors, drills, excavators, hand shovels etc. followed by controlled blasting (NONEL TECHNOLOGY) using class 2explosives. The rock braking is done using pneumatic rock breaker and transported to the crusher site using

trucks/ tippers of 15T for various products. Everyday, blasting is carried out in 2 or 3 prefixed timings.

2.0 Location attributes			
2.1 Altitude (m)	80	2.2 Area (Ha)	1.21426
2.3 Terrain	Undulating	2.4 Lithology	Charnockite
2.5 Soil type	Laterite	2.6 Total Mineable reserve	232620 MT
2.6 (a) Remaining Mineable reserve	309865 MT	2.6 (b) Approximate mined quantity per annum	46524 MT
2.7 Slope	Sloping	2.8 Fault	---
2.9 Distance from nearest forest (Km)	25	2.10 Wildlife movement (Yes/ No)	No

3.0 Schedule of the Study/ Assessment		
Day	Date	Activities
1	17-12-2022	Site reconnaissance, fixing of monitoring points within 50m, 100m, 200m and 500m from the blast point. Setting up a field office, arranging power supply for operating monitoring instruments/ equipment. Checking of instruments, deployment and conducting test runs.
2	18-12-2022	Background monitoring of ambient air quality and noise without any activities in the quarry. (06.00 to 18.00 Hrs.)
3	19-12-2022	Air quality and noise monitoring during the operation of quarry including drilling, blasting and all other quarry activities (06.00 to 18.00 Hrs.)
4	20-12-2022	Maintenance check of instruments used, safe packing for transportation and transporting monitoring gear to the next station.

4.0 Sampling/ Monitoring Plan and locations
The quarry area has slightly deep excavation. From the surrounding ground level, it is

20m-30m deep. The present blasting zone is towards east of the quarry area which has more length in the east west direction than in the North South direction. Towards the North East side, the quarry is open to an extent of about 100m from the blast area. Hence the 50m, 100m stations towards West, South East and North East are inside the open quarry land itself.

The other points are in the higher benches outside the present blasting area. Further stations like 200m and 500m were all outside the quarry premises, in private properties. Hence in total, 12 coordinates were fixed with the actual blasting point as centre in North-East line, West line and South-East line each at an angle of approximately 120° to each other.

Six locations were inside the quarry and 6locations were outside the quarry premises. Photographs taken during the site assessment at Quarry of Mr. Muhammed Roshan, Cherukulam, Kollam District, Kerala is given as Annexure-1..

4.1 Map showing sampling locations (Map)

4.2 Geo-coordinates of sampling locations

S.No.	*Station Points*	*Latitude*	*Longitude*
1	W50	8.881297	76.9182856
2	W100	8.8812516	76.9185924
3	W200	8.881301	76.9195794
4	W500	8.8838507	76.9208122
5	NE50	8.8806862	76.9174363
6	NE100	8.8804791	76.9167725
7	NE200	8.880205	76.9155471
8	NE500	8.8800982	76.9133000
9	SE50	8.8812911	76.9172013
10	SE100	8.8815349	76.9169603
11	SE200	8.8824491	76.9167655
12	SE500	8.8848153	76.9154981

5.0 Monitoring activities

5.1 Background monitoring (18-12-2022)

The monitoring personnel and supervisors were ready to start ambient air and noise monitoring at 6 am. But there were problems with power supply in all the stations. These problems were resolved in about two hours. Thus, ambient air and noise monitoring could be started at 8:00am only. The quarry activities were kept completely idle on 18thdecember to do ambient monitoring. The Noise data, Air flow rates and Total volume of sucked air were recorded every one hour. The weather data were recorded from a station inside the quarry and wind velocity, humidity and temperature were monitored every hour using Weather Tracker. The direction of the wind was mostly from west to east. Monitoring continued up to 17.00.

The locations for drill holes for explosives were located by the CIMFR blasting team. It was decided to conduct 10 blasts which consist of 106 holes, each hole having 32mm diameter and 5ft - 6ft depth. The explosive used was Ammonium Nitrate - 375gm per drill hole. The CIMFR team identified 8 locations for the seismic analysis. 2 locations were inside the quarry (W 50,SE 50) and 6 locations were outside the quarry (W200, NE200, NE500,SE200,residence,church). They also conducted a social survey on the response of the public about quarrying activities, through a questionnaire. The location identification and survey were completed by 6.00pm.

5.2 Monitoring during Stone Quarry Operation (on 19-12-2022)

The air and sound monitoring started at 06 AM at all 12 stations. The monitoring was continued without any interruption from beginning to end. Before blasting, drilling of blast holes using jack hammers was started from 6.am onwards and approximately 56 no. s of blast holes were drilled. The drilling of holes (5ft to 6ft depth) and filling of explosives into each hole were completed at 10am. Connections were also established for the blasting. The CIMFR team checked all the drilled holes of blast points. The team also installed Seismograph at 8 locations by 10:20am and 1st set of blasting was completed by 10:45am. Another 50 no.s of holes for 2nd blasting were drilled by 01pm and CIMFR team checked all the drilled holes of blast points. The team also installed Seismograph at 8 locations by 01.20pm and blasting was completed by 02pm.About 10 experimental blasts were conducted. Immediately after the blasting was completed, vehicular movement, breaking of boulders using pneumatic rock breakers and hauling of the quarry product using haulers were carried out. These quarrying activities continued full-fledged until 5 pm. From 5 pm, there started a slight rain which forced quarrying activities as well as air quality and noise level monitoring to be stopped.

6.0 Monitoring Results-Ambient Air Quality and Noise Levels

6.1 Weather

Weather: Non-quarrying day (18-12-2022)				
S.No.	***Time(Hrs)***	***Temperature (◦C)***	***Humidity (%)***	***Wind (m/s) & Direction***
1	10:00	29.6	63.9	2.3SE
2	11:00	29.6	53.8	2.7S
3	12:00	30	60.4	2.1W
4	13:00	30.9	55.8	3SE
5	14:00	33.4	51	2SE
6	15:00	32.4	54.1	1W
7	16:00	31.3	54	1.4W
8	17:00	30.9	54.5	1.2S
9	18:00	29.9	56.8	2W
10	12:00	30	60.4	2.1W

Weather: Quarrying day (19-12-2022)				
S.No.	***Time (Hrs)***	***Temperature (◦C)***	***Humidity (%)***	***Wind (m/s) & Direction***
1	06:00	25.5	65.2	0.9S
2	07:00	25.1	67.4	0.6SE
3	08:00	27.5	65.8	0
4	09:00	29.2	62	0.9W
5	10:00	28	63.1	0.9SE
6	11:00	29.7	53	0.6SE
7	12:00	29.4	52.8	2.8SE
8	13:00	29.3	48.2	2.1E

9	14:00	29	48.6	0.5S
10	15:00	28.5	49.7	0.8SE
11	16:00	27.9	58	0.3W
12	17:00	29.2	62	0.9W

6.2 Particulate matters/dust

- Generally, PM10 values of blasting day in stations inside the quarry can be seen to be higher than those of ambient day. This shows the influence of quarrying in increasing the concentration of particulate matter.

- In 500m stations, increase of PM10 concentration on ambient day than blasting day can be attributed to local source of pollution like road dust. Influence of quarrying cannot be seen at all in these stations.

- In a few stations other than those at 500m, ambient day concentration is more than blasting day concentration of PM10. The reason is inferred as follows. Efficient dust suppression using water spray and sprinkling was carried out on blasting day whereas dust suppression was nil on ambient day. This made the ambient day concentrations of PM10 higher which also points to an inference that the influence of dust generation in blasting is negligible in PM10 compared to general ground dust from overall quarry area including roads.

- The result in Sl.no (iii) has another explanation too. The average windspeed on ambient day was almost twice compared to blasting day which resulted in more emanation of ground dust. The average humidity of quarrying day is found more than that of ambient day which also contribute to the specified result. The high relative humidity finally ended up in a slight rain from 5 pm onwards.

- The results of PM2.5 shows that ambient day values are generally more than blasting day values. The explanations based on dust suppression, windspeed, humidity and local influence at far-off stations given for PM10 hold here also.

Table: PM10 & PM2.5 values in non-quarrying and quarrying day					
Station Points	*Distance from blasting zone (metre)*	*PM 10 (microgram/m³)*		PM 2.5 (microgram/m³)	
		Non-quarrying day	Quarrying day	Non-quarrying day	Quarrying day
W50	50 m	78.92416226	82.0337765	140.9440983	69.46127556
W100	100 m	71.27739985	45.81190849	97.78827853	56.15453729
W200	200 m	91.75022418	70.59610706	58.38078842	55.45670225
W500	500 m	90.42790906	64.51247166	80.31575566	66.08839323
NE50	50 m	78.54300582	80.97222222	73.0077904	55.44839321
NE100	100 m	50.98002844	54.16584381	45.96481923	24.35323599
NE200	200 m	79.2022792	71.34272916	74.87391411	87.39450949
NE500	500 m	84.42901235	67.96653797	56.54945507	111.1455108
SE50	50 m	116.7755991	139.2885563	160.710418	60.79963397
SE100	100 m	122.3674655	89.50496343	119.5182913	47.56860399
SE200	200 m	67.6727909	62.42307692	136.6478639	50.87927287
SE500	500 m	81.23931624	65.60606061	67.16561121	53.34306366

Fig.1: PM-10 values of Quarrying and Non-quarrying days

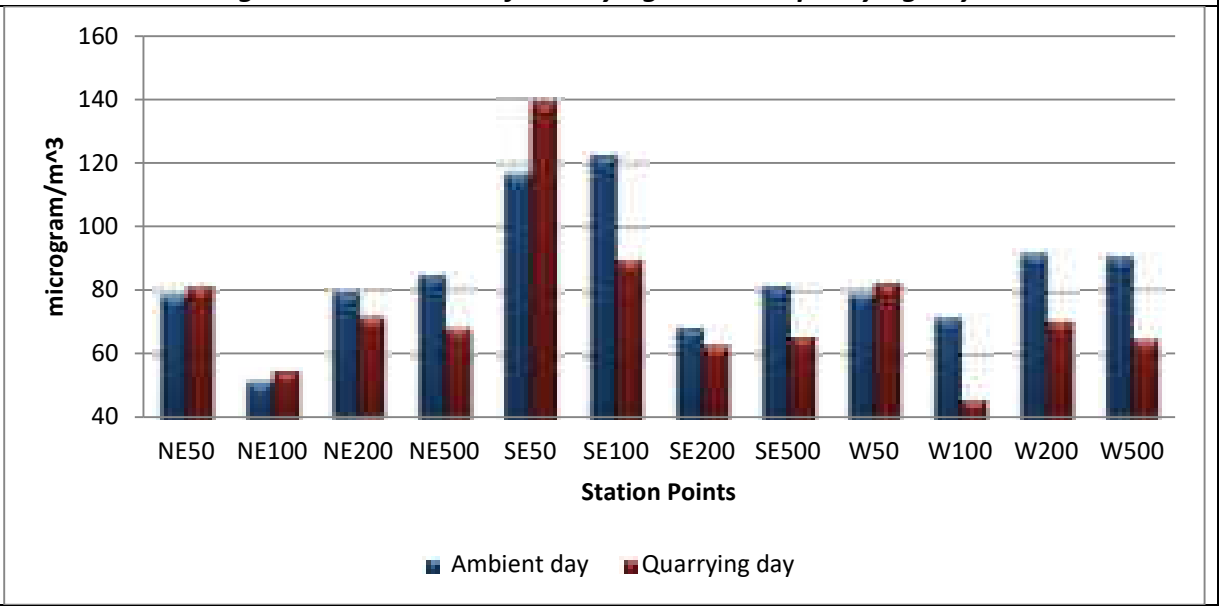
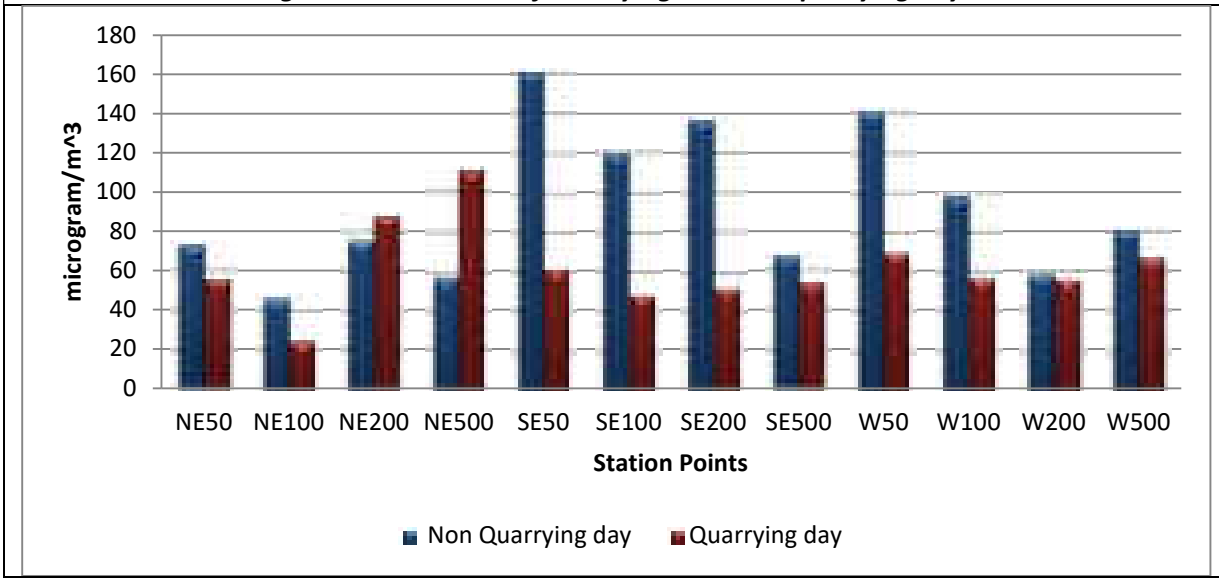


Fig.2: PM-2.5 values of Quarrying and Non-quarrying days



6.3 Noise level

Observed Noise Levels in terms of Equivalent Noise (L_{eq}) on non-quarrying and quarrying day are given in the table below:

Leq= Equivalent noise level

dB(A)= Decibel in 'A' weighted frequency scale (unit of sound pressure level)

Observations:

- The equivalent noise level of the total day is higher on blasting day than ambient day at all stations generally.
- The noise levels on blasting day decreases with increase in distance from blasting zones in all directions.
- The local influences at far-off stations where influence of quarrying is very megre, resulted in minor changes in trend.
- Peaks of hourly equivalent value can be seen during the first blasting time between 10 and 11 am; as well as during the second blasting between 1 pm and 2 pm.
- The slight rain on the quarrying day forced monitoring to be stopped at 5 pm on quarrying day.

Table: Observed Noise in terms of Equivalent Noise (L_{eq}) & L max on non-quarrying and quarrying day.				
Station Points	**Non-quarrying Day Noise Levels**		**Quarrying Day Noise Levels**	
	L_{eq}	**L_{max}**	**L_{eq}**	**L_{max}**
W 50	54.29344707	87.7	61.88412714	97.1
W 100	55.5466646	76.6	75.0587176	102.3
W 200	53.38335616	76.7	54.13946653	88.1
W 500	58.99250481	94.6	53.18761785	87
NE 50	54.056252	98.3	62.98739564	105.1
NE 100	53.77288815	87.4	55.08860101	89.2
NE 200	56.16364337	87.3	57.32232136	88.5
NE 500	52.07046942	75.9	52.72569194	82.7
SE 50	60.22093328	87.9	69.14438369	108.8
SE 100	57.62129315	89.7	62.97071852	96.4
SE 200	52.36995282	82.3	50.52911622	75.9
SE 500	54.26444264	92.6	53.90914749	90.8

Fig.3: Equivalent values (Leq)and maximum (Lmax)of quarrying and non-quarrying day in West direction 50m

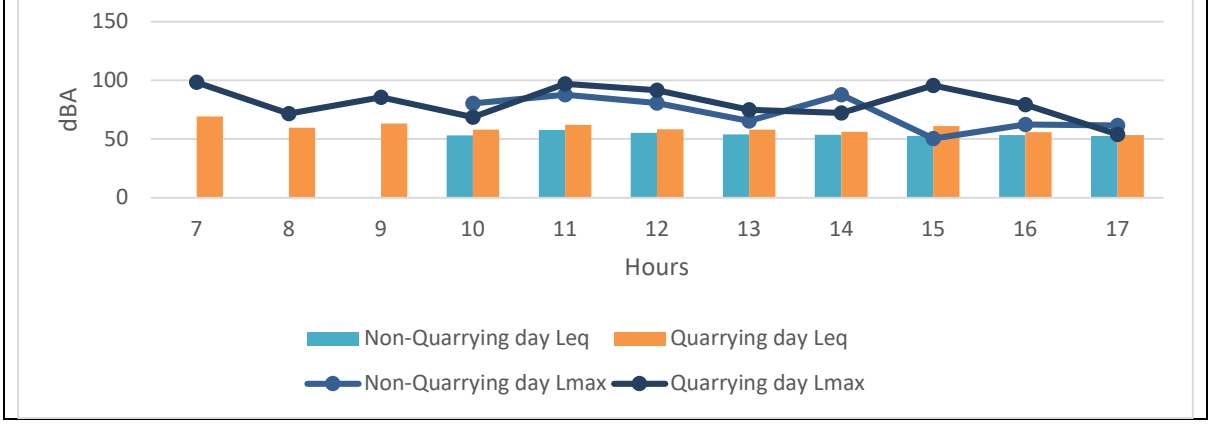


Fig.4: Equivalent values (Leq)and maximum (Lmax)of quarrying and non-quarrying day in West direction 100m

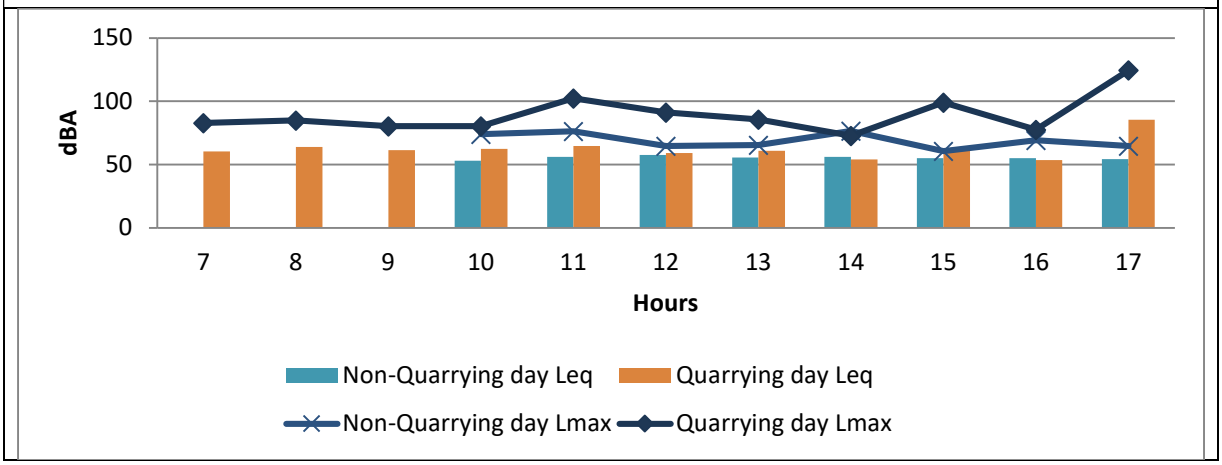


Fig.5: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in West direction 200m

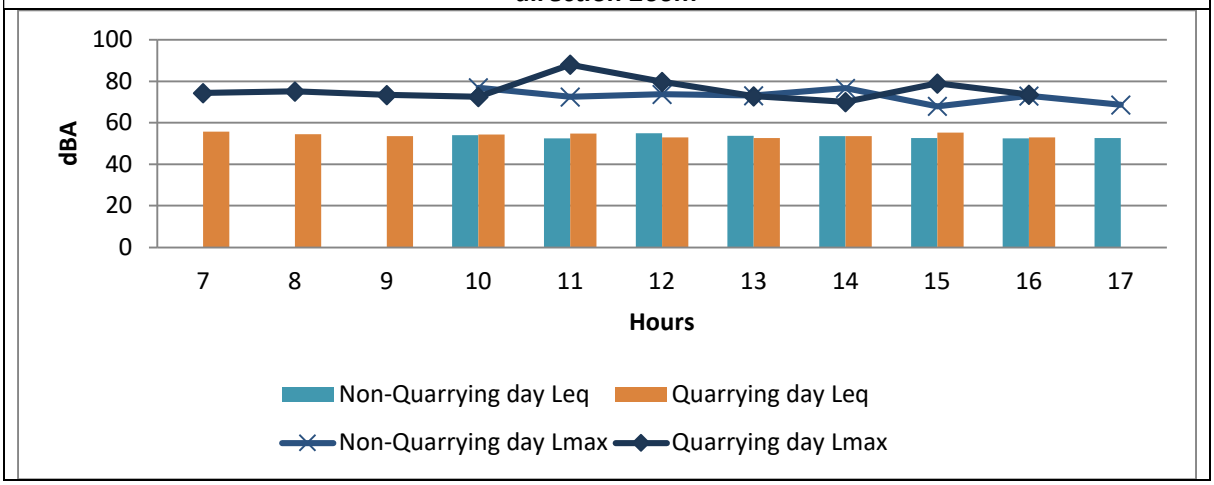


Fig.6: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in West direction 500m

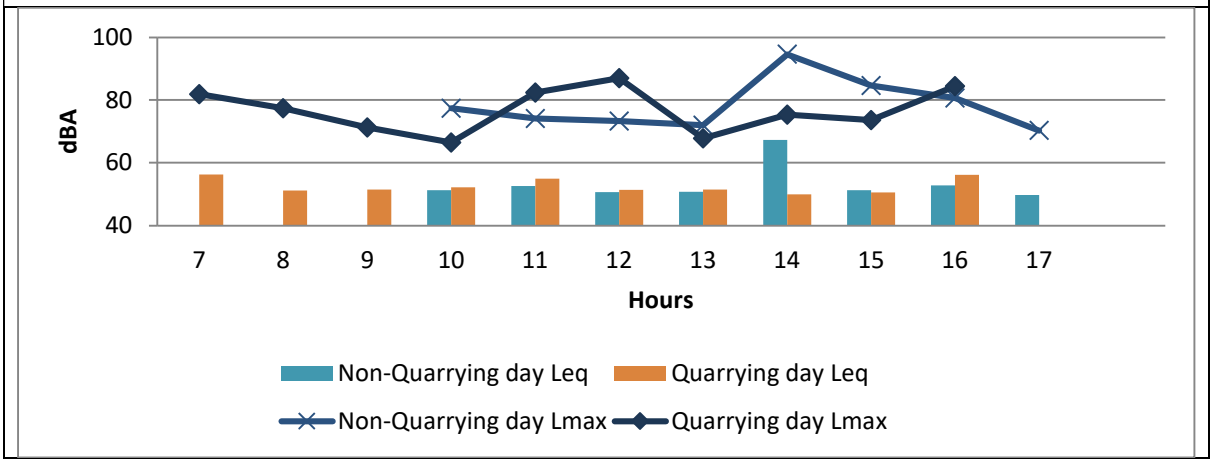


Fig.7: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in North-East direction 50m

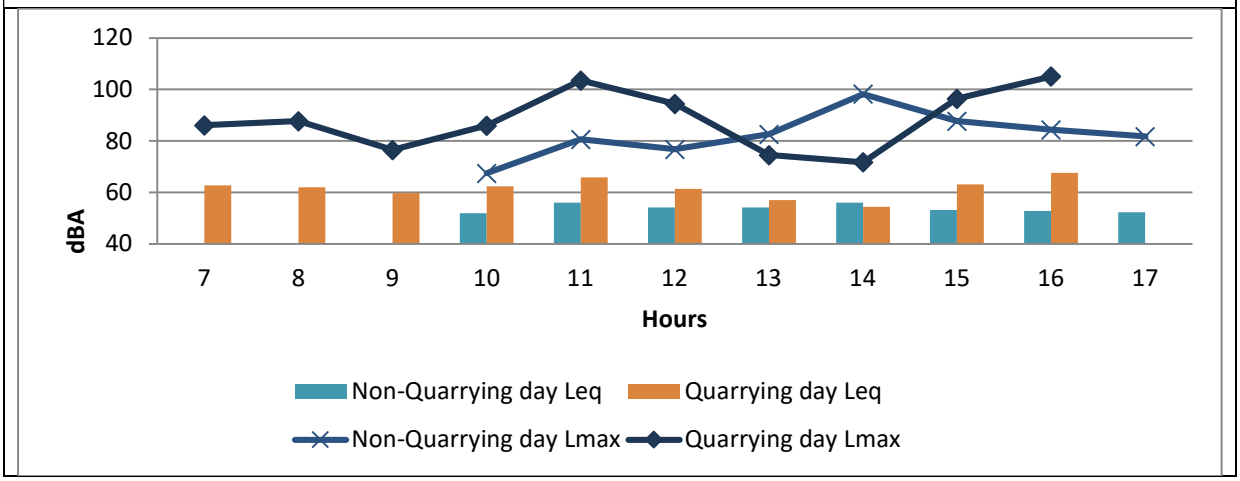


Fig.8: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in North-East direction 100m

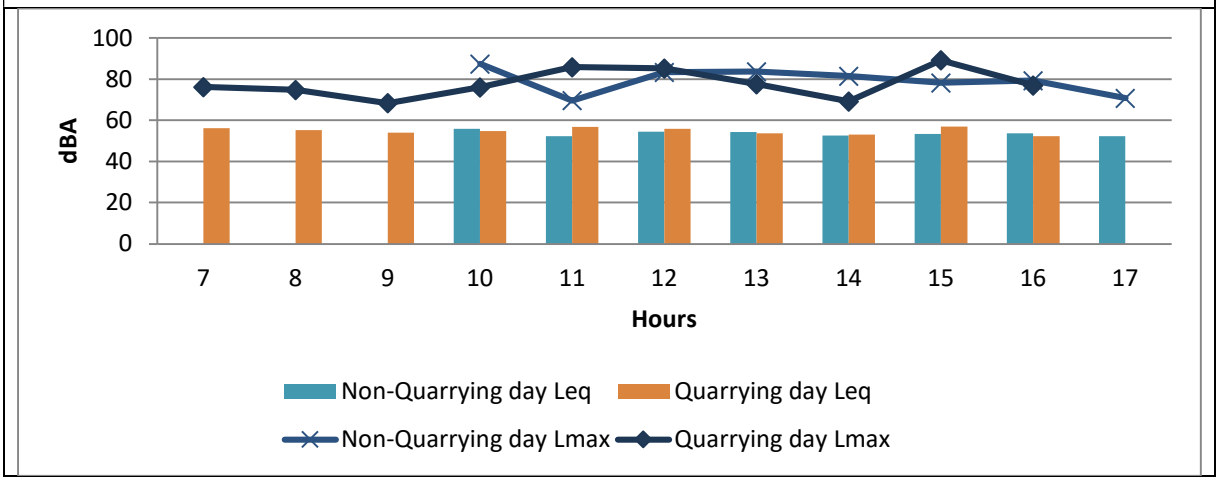


Fig.9: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in North-East direction 200m

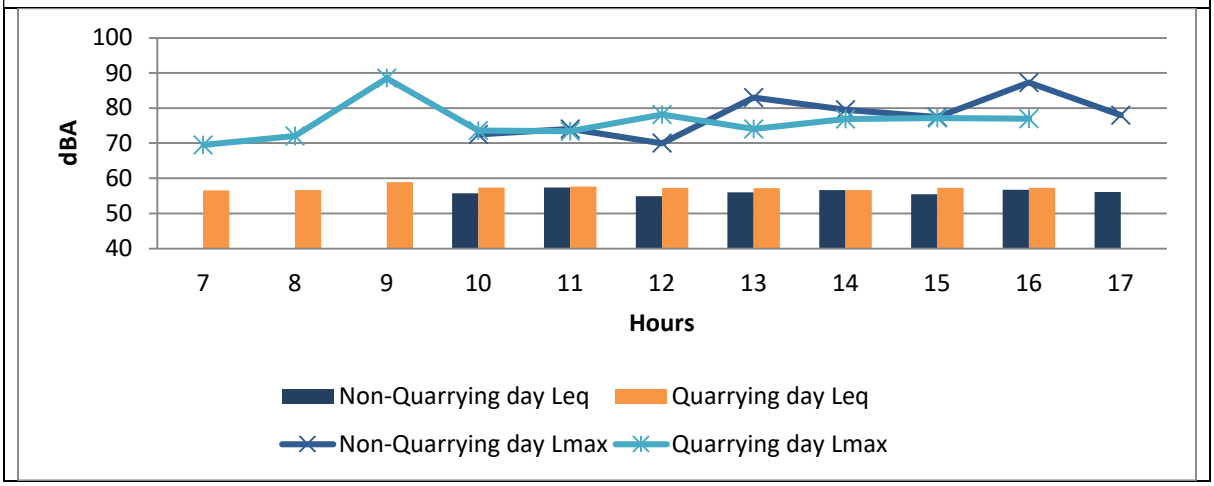


Fig.10: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in North-East direction 500m

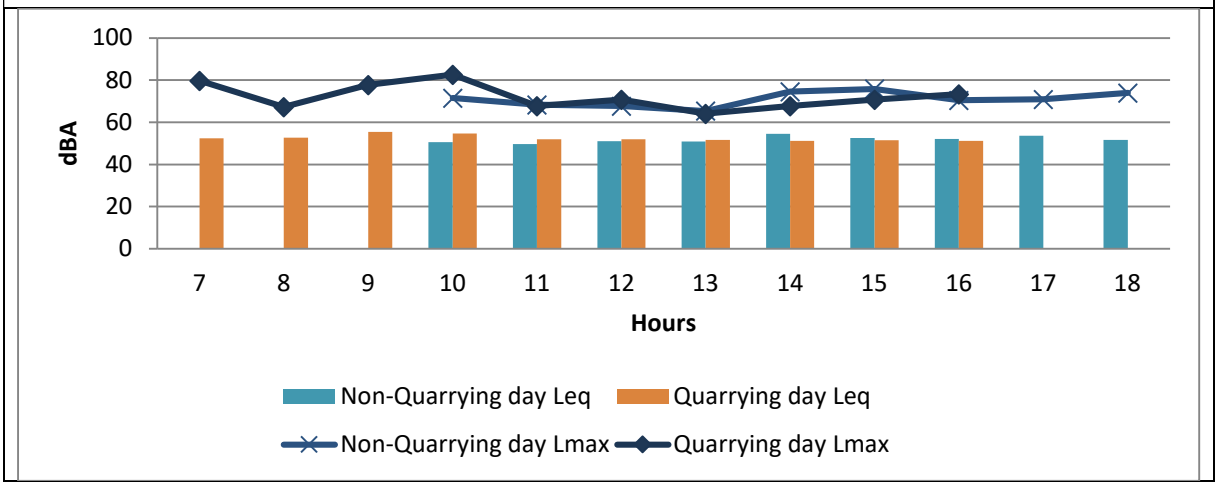


Fig.11: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in South-East direction 50m

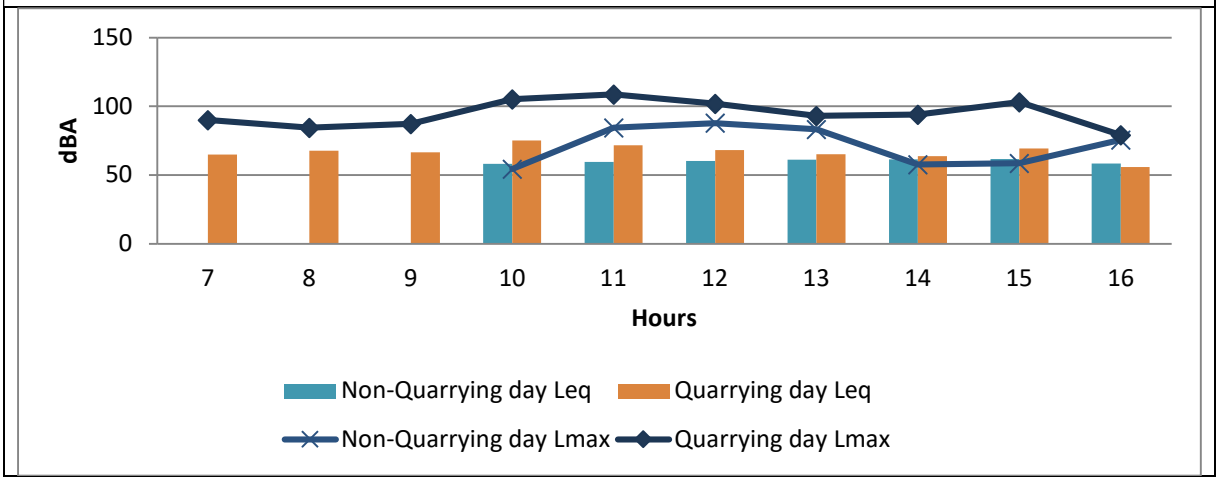


Fig.12: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in South-East direction 100m

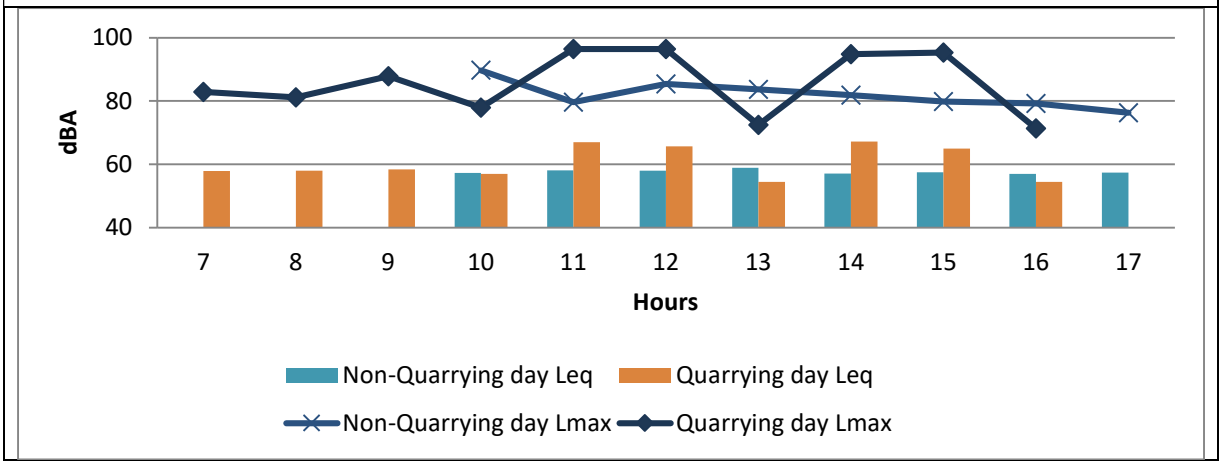


Fig.13: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in South-East direction 200m

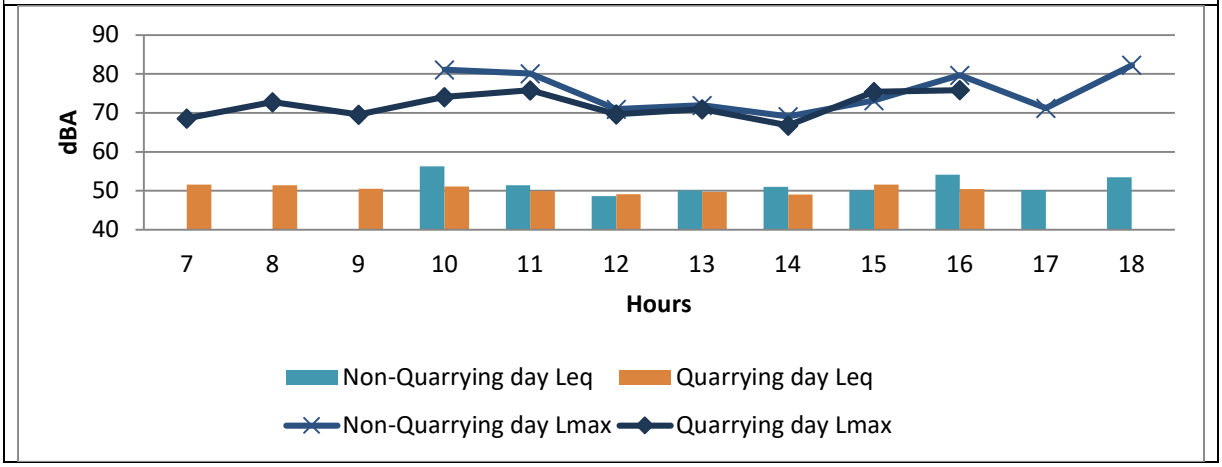


Fig.14: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in South-East direction 500m

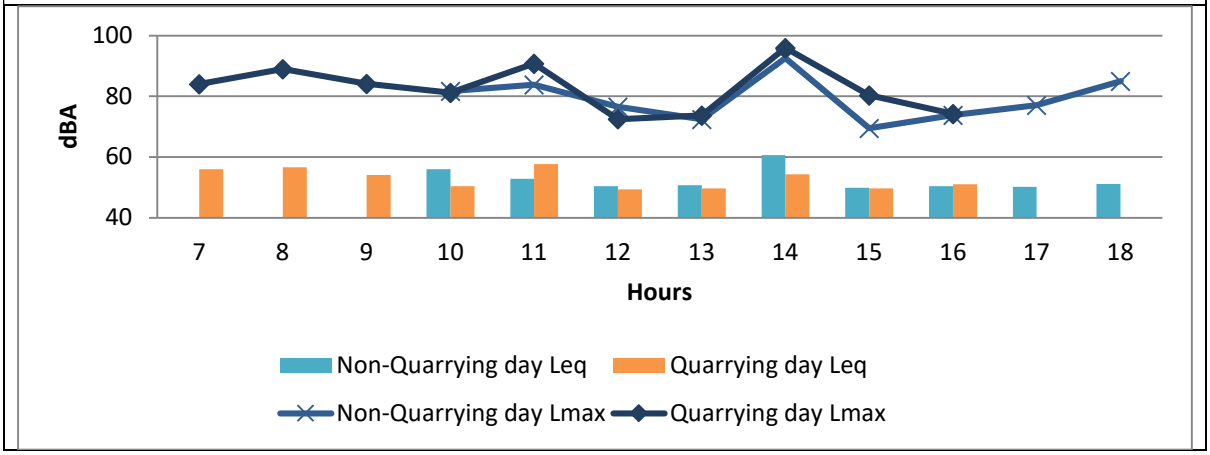
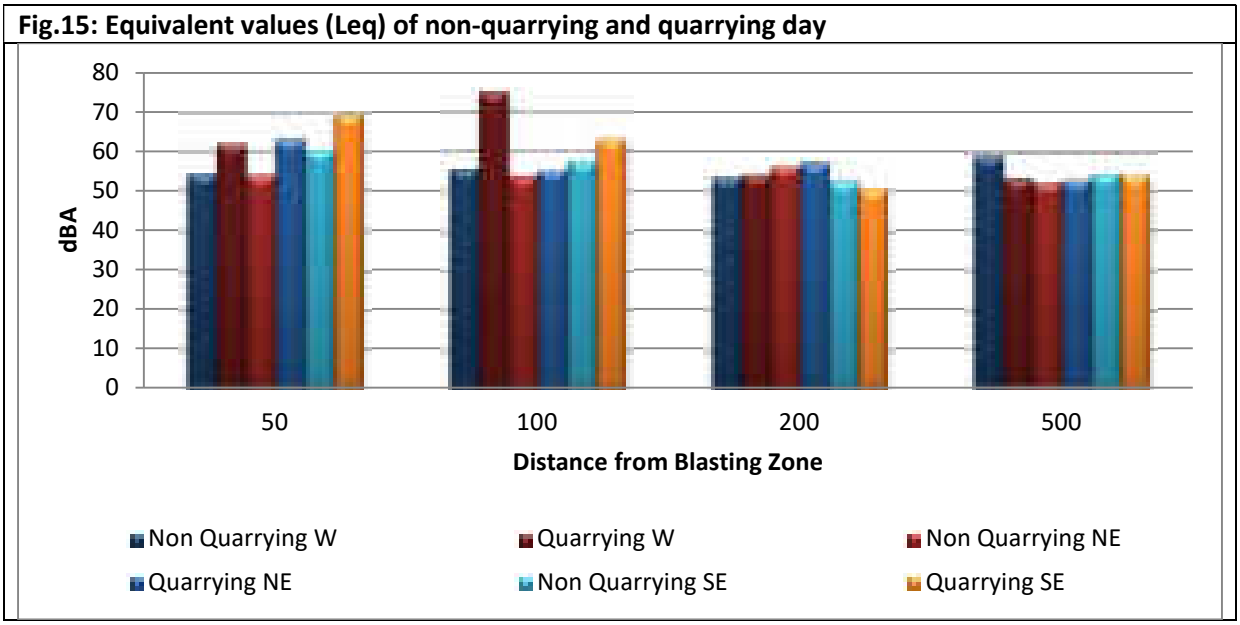


Fig.15: Equivalent values (Leq) of non-quarrying and quarrying day



6.4 Water Quality			
Sample Point: New Quarry Pond			
Date of Sample: 19/01/2023			
Sl. No.	**Parameters**	**Unit**	**Value**
1	pH	-	7.4
2	SS	mg/l	192.4
3	TDS	mg/l	345.7
4	CONDUCTIVITY	µS/cm	948.9
5	D.O	mg/l	8.1
6	SODIUM	mg/l	199.5
7	POTASSIUM	mg/l	160.32
8	CALCIUM	mg/l	63
9	MAGNESIUM	mg/l	34

7.0 Site specific observations made during the Visit

Good benching is provided, the surrounding ground is plain, with vegetation and habitations in various direction around the quarry. Buffer zones with 7.5 metres are maintained correctly. For dust suppression, a dedicated tanker vehicle is provided for water sprinkling Fencing is provided, boundary pillars are marked and fixed, sign boards are provided, PPEs like safety boots and helmets are provided as well as blasting shelter. There are no wildlife movements reported. CSR activities as mandated in the Environmental Clearance like helps for local schools and for medical camps are done by the proponent.

Photographs taken during the site assessment

Monitoring team

Quarry site

Quarry site

Particulate matter monitoring

Assessment Report on Ambient Air Quality, Noise Levels and Mine Pit Wastewater Quality carried out during 21-12-2022 to 24-12-2022

Name of the study site/ location	**M/s. Poabs Granites Pvt. Ltd. Kuthirakalam, Thiruvananthapuram**			
Address	**Kuthirakalam P.O, Vellanadu, Thiruvananthapuram, Kerala - 695543**			
District/ State	**Thirivananthapuram/ Kerala**			
Geo-coordinates	Latitude	08°52'54.00"N	Longitude	76°55'6.44"E

1.0 Study site description

1.1 General information

M/s. Poabs Granites Pvt. Ltd (PGBL), Kuthirakalam, Thiruvananthapuram owned by Shri. Aby Mathew is having the lithology of Garnet- Biotite Gneiss with Migmatite. As per the information provided by the stone quarry operator, the present stone quarrying lease commenced on 15.03.2018 and having validity of lease from 19-10-2022 to 18-10-2034. The Environmental Clearance issued by State Environmental Impact Assessment Authority (SEIAA) is having validity from 15-3-2018 to 14-3-2024. The stone quarry operator obtained Consent to Operate from Kerala State Pollution Control Board vide dated 11-10-2019 is having validity up to 31-10-2024. Area of mining is 5.9747 Ha, nearest residential area is 55 metres from the quarry. The proponent has a stone crusher which is located at 8 km distance from the stone quarry site. River Karamana is at 60 metres away from the boundary of the total area owned by the proponent. There are no forests within 10 km from the existing stone quarry.

1.2 Topography & Geology

As per the information provided by the stone quarry operator, the highest elevation of the mine area is 120 m above MSL and the lowest elevation is 35 m above MSL. The Archaean crystalline rocks comprise Khondalite group, Charnockite group and Migmatite group. Khondalite group is composed of garnetiferous biotite- sillimatite gneiss, with occasional bands of calc-granulite and quartzite, and constitutes the major rock type. Charnockites are acidic to intermediate in composition. Migmatites are evenly distributed in the central part of the district as narrow zones withingarnetiferous sillimanite gneiss. The surrounding ground is plain, with vegetationand habitations in various direction around the quarry. As per the lithological map, the rock type is Charnockite.

1.3 Details of quarrying/ mining activities

The method of mining is semi-mechanized open cast mining. The mining operations are carried out using jack hammers, compressors, drills, excavators, hand shovels etc. followed by controlled blasting (NONEL TECHNOLOGY) using catridge slurry explosives. The rock breaking is done using pneumatic rock breaker and transported to the crusher site using trucks/ tippers of 15T. The quarry is developing by forming proper benches. Every day, blasting is carried out in 2 or 3 prefixed timings. Dust suppression activity is carried out in the mining area by means of water sprinkling using dedicated sprinkler tanker vehicles.

2.0 Location attributes			
2.1 Altitude (m)	35	2.2 Area (Ha)	5.9747
2.3 Terrain	Undulating	2.4 Lithology	Charnockite
2.5 Soil type	Laterite	2.6 Mineable reserve	19,12,631.25 MT
2.6 (a) Remaining Mineable reserve	31,95,815 MT	2.6 (b) Approximate mined quantity per annum	2,50,000 MT
2.7 Slope	Moderate	2.8 Fault	--
2.9 Distance from nearest forest (Km)	None near by	2.10 Wildlife movement (Yes/ No)	No

3.0 Schedule of the Study/ Assessment		
Day	Date	Activities
1	21-12-2022	Site reconnaissance, fixing of monitoring points within 50m, 100m, 200m and 500m from the blast point. Setting up a field office, arranging power supply for operating monitoring instruments/ equipment. Checking of instruments, deployment and conducting test runs.
2	22-12-2022	Air quality and noise monitoring carried out during the operation of quarry including drilling and blasting (06.00 to 18.00 Hrs.) as well as sampling of pond water for assessment of water quality
3	23-12-2022	Background monitoring of ambient air quality and noise levels without any activities in the quarry (06.00 to 18.00 Hrs.)
4	24-12-2022	Maintenance check of instruments used, safe packing for transportation and transporting monitoring gear to the next station.

4.0 Sampling/ Monitoring plan and locations

The quarry area has slightly deep excavation. From the surrounding ground level, it is 05-08m deep. The present blasting zone is towards south of the quarry area which has more length in North South direction. Hence the 50m, 100m, 200m stations towards West, South West and North East are inside the open quarry land itself. Further stations like 500m were all outside the quarry premises, in private properties. Hence in total, 12 coordinates were fixed with the actual blasting point as centre in North-East line, West line and South-West line each at an angle of approximately 120° to each other. 9 locations were inside the quarry and 3 locations were outside the quarry premises. The locations for drill holes for explosives were located by the CIMFR blasting team. It was decided to conduct 11 blasts which consist of 319 holes, each hole having 32mm diameter and 5 ft – 8 ft depth. The explosive used was Ammonium Nitrate in the range of 375 to 550 gm per drill hole. The CIMFR team identified 8 locations for the seismic analysis which includes 4 locations inside the quarry and 4 locations outside the quarry. CIMFR team also conducted a social survey on the response of the public about quarrying activities, through a questionnaire. Photographs taken during the site assessment of M/s. Poabs Granites Pvt. Ltd. Thiruvananthapuram is given as **Annexure-PGPL1.**

4.1 Map showing sampling locations (Map)

4.2 Geo-coordinates of sampling locations

Co-ordinate details of the selected monitoring locations is given in **Table 1** below:

Table 1. Geo-coordinates of selected sampling locations at M/s. Poabs Granites Pvt. Ltd. Kuthirakalam, Thiruvananthapuram

S.NO	Station Points	Latitude	Longitude
1	W50	8.5430970	77.0076580
2	W100	8.5431300	77.0071370
3	W200	8.5442220	77.0061050
4	W500	8.5445900	77.0050310
4	NE50	8.5387080	77.0058430
5	NE100	8.5412830	77.0077010
6	NE200	8.5409658	77.0076176
7	NE500	8.5387080	77.0077010
8	SW50	8.5432800	77.0083460
9	SW100	8.5435960	77.0085660
10	SW200	8.5444150	77.0087714
11	SW500	8.5457730	77.0098600

5.0 Monitoring Activities

5.1 Monitoring during quarry operation (22-12-2022)

The ambient air and noise monitoring started at 06 AM. The monitoring was continued without any interruption from beginning to end. Before blasting, drilling of blast holes using jack hammers was started from 6 am onwards and approximately 319 no. s of blast holes were drilled ranging from 5ft to 8 ft depth and while drilling necessary precautions such as covering the drilling hole with the wet gunny bag and sprinkling of water as dust suppression measure during drilling operation. Thereafter, filling of explosives into each hole were completed at 11am. Connections were also established for the blasting. The CIMFR team checked all the drilled holes of blast points. The team also installed Seismograph at 8 locations by 10:20am and 1st set of blasting was completed by 11:25am and blasting were conducted by 12 noon. Immediately after the blasting activities were completed which includes vehicular movement, breaking of boulders using pneumatic rock breakers and hauling of the quarry product using haulers. These quarrying activities continued full-fledged until the end of the day. The monitoring was completed at all 12 stations by 6 PM. Entire blasting activity were carried out under over all supervision of the CIMFR experts

5.2 Background monitoring (23-12-2022)

The ambient air and noise level monitoring started at 6:00am at all 12 monitoring stations. The quarry activities were kept completely idle during ambient air quality and noise monitoring. All the 12 monitoring stations ensured working properly. At each station, one AE / NAMP operator were deployed for the monitoring. The Noise data, air flow rates and total volume of sucked air were recorded every one hour. The weather data were recorded from a station inside the quarry and wind velocity, humidity and temperature were monitored every hour using Weather Tracker. The direction of the wind was mostly from west to east. The monitoring was completed iat all 12 stations by 6 PM. Ambient air quality and Noise level monitoring were carried out during quarrying and non-quarrying day under overall supervision of Kerala State Pollution Control Board.

6.0 Results

6.1 Weather

The weather data were monitored every hour using Weather Tracker inside the quarry with respect to wind velocity, humidity and temperature and the details are given in **Table 2 & Table 3** below.

Table 2. Weather Details Observed during Quarrying Day (22-12-2022)

Sl. No.	Time (Hrs)	Temperature (Degree Celsius)	Humidity (Percentage)	Wind Speed & Direction (m/s)
1	06:00	24.7	86.3	0.3W
2	07:00	24.8	90	0.8SE
3	08:00	26.9	86.3	1W
4	09:00	29.9	76	1.5W
5	10:00	31.1	71.3	1.1SE
6	11:00	36.1	60.1	0.8SE

7	12:00	38.1	68	0.6S
8	13:00	33.7	61.4	0.3SE
9	14:00	31.6	73.3	0.4SE
10	15:00	30	68.9	0.6W
11	16:00	29.	66.9	0.9S
12	17:00	29.9	76.4	0.4NE
13	18:00	28.3	78.4	0.4NE

Table 3. Weather Details Observed during Non-quarrying day (23-12-2022)

Sl. No.	Time (Hrs)	Temperature (Degree Celsius)	Humidity (Percentage)	Wind Speed & Direction (m/s)
1	07:00	25	83.2	0.3E
2	08:00	26	75.9	0.8SE
3	09:00	30.2	71.3	1SE
4	10:00	31.1	69.5	1.5W
5	11:00	32.6	62	1.1SE
6	12:00	32.5	55.7	0.8NE
7	13:00	32.4	53.8	0.6W
8	14:00	33.9	56.6	0.3W
9	15:00	33	60.4	0.4SE
10	16:00	30.4	60	0.6SE

6.2 Particulate matters/ dust in terms of PM10 and PM2.5 values observed during Non-Quarrying day (23.12.2022) & Quarrying Day (22.12.20222)

Particulate matters/ dust in terms of PM10 and PM2.5 values observed during quarrying day (22.12.20222) and non-quarrying day (23.12.2022) are given in **Table 4 and Fig 1 to Fig 2** in subsequent paras

Table 4: PM10 and PM2.5 values observed during non-quarrying day (23.12.2022) & quarrying day (22.12.20222)

Station Points	Distance from blasting zone (metre)	PM 10 (microgram/m³)		PM 2.5 (microgram/m³)	
		Ambient day	Quarrying day	Ambient day	Quarrying day
W50	50 m	63.94871795	55.56612549	103.5820896	58.12459859
W100	100 m	48.55177408	65.06011609	52.39768592	65.99702235
W200	200 m	67.77184959	56.23400791	53.64455364	53.00713558
W500	500 m	35.21582734	54.48877289	33.70786517	36.09777244
NE50	50 m	229.7703071	108.9419137	81.60867826	57.45974477
NE100	100 m	62.68011527	73.27694236	49.26744705	58.247674999
NE200	200 m	44.29104478	46.46825397	49.5915986	51.41325536
NE500	500 m	91.54301817	98.6013986	87.21935504	93.93939394
SW50	50 m	66.24681934	64.7941981	59.49566588	39.48306595
SW100	100 m	59.52836201	64.88247863	56.23781676	62.05158038
SW200	200 m	84.4840386	62.47863248	155.0102249	61.50186884
SW500	500 m	64.2912471	68.87248554	48.92966361	53.59276327

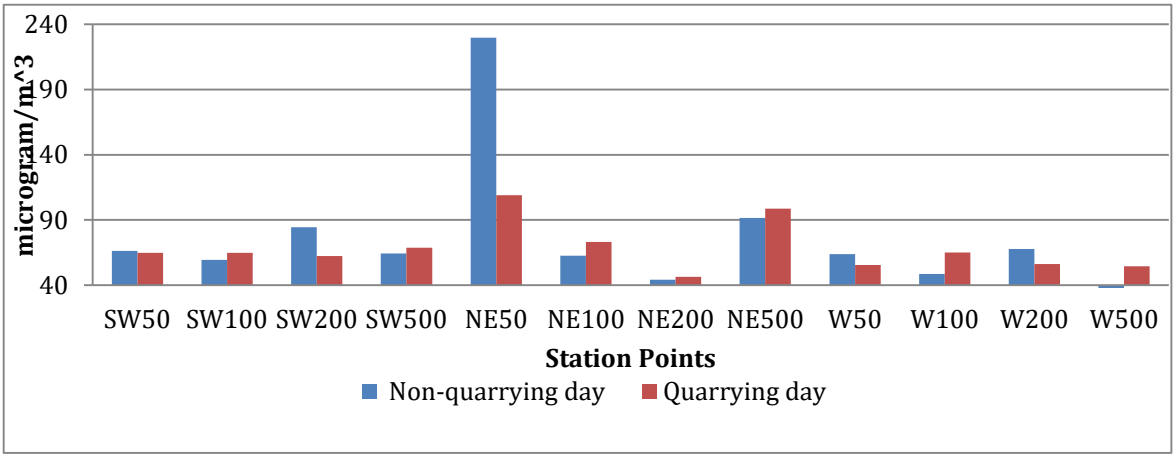


Fig.1: PM-10 values observed during Quarrying and Non-quarrying day

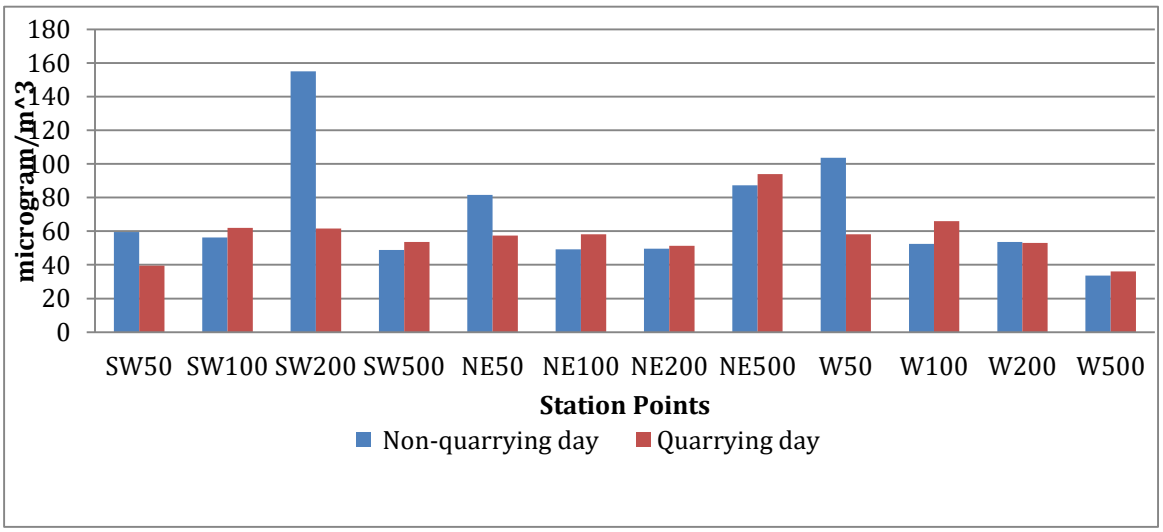


Fig.2: PM-2.5 values during Quarrying and Non-quarrying day

The analysis results of ambient air quality monitoring carried out during non-quarrying day (23.12.2022) & quarrying day (22.12.20222) reveal that

(i) PM10 and PM2.5 values of blasting day can be seen to be higher than those of ambient day. This can be seen in stations W100, W500, NE100, NE200, NE500, SW100 and SW500. This shows the influence of quarrying in increasing the concentration of particulate matter.

(II) In W50, W200, NE50, SW50, SW200 ambient day concentration is more than blasting day concentration of PM10 and PM2.5. The reason is inferred as follows. Efficient dust suppression using water spray and sprinkling was carried out on blasting day whereas dust suppression was nil on ambient day. This made the ambient day concentrations of PM10 and PM2.5 higher which also points to an inference that the influence of dust generation in blasting is negligible compared to general ground dust from overall quarry area including roads.

6.3 Noise levels

Observed Equivalent Noise (L_{eq}) and Maximum Noise Levels (L_{max}) during Non-quarrying day (23.12.2022) & Quarrying day (22.12.20222) are given in the **Table 5 and Fig.3 to Fig.15** below:

Table 5: Equivalent Noise (L_{eq}) and Maximum Noise Levels (L_{max}) observed during Non-quarrying Day (23.12.2022) and Quarrying Day (22.12.2022)

Station Points	Non-quarrying Day Noise Levels		Quarrying Day Noise Levels	
	L_{eq}	L_{max}	L_{eq}	L_{max}
W 50	58.10103272	88	60.35579001	85.7
W 100	60.23934074	113.1	60.35579001	113.3
W 200	51.92853845	82.1	52.49189013	85.3
W 500	64.55989243	86	66.25880987	92.8
NE 50	58.3871514	81	62.22410406	99.2
NE 100	56.40258189	75	56.30615294	93.2
NE 200	56.70712467	83.3	61.90459753	96.7
NE 500	44.86672029	87.5	56.64365701	116.1
SW 50	66.29737349	89.3	63.7793145	97.3
SW 100	56.10543712	76.9	65.35265828	89.9
SW 200	56.09726463	77.2	62.19810515	87.1
SW 500	54.37083537	79.2	69.8202551	82.6

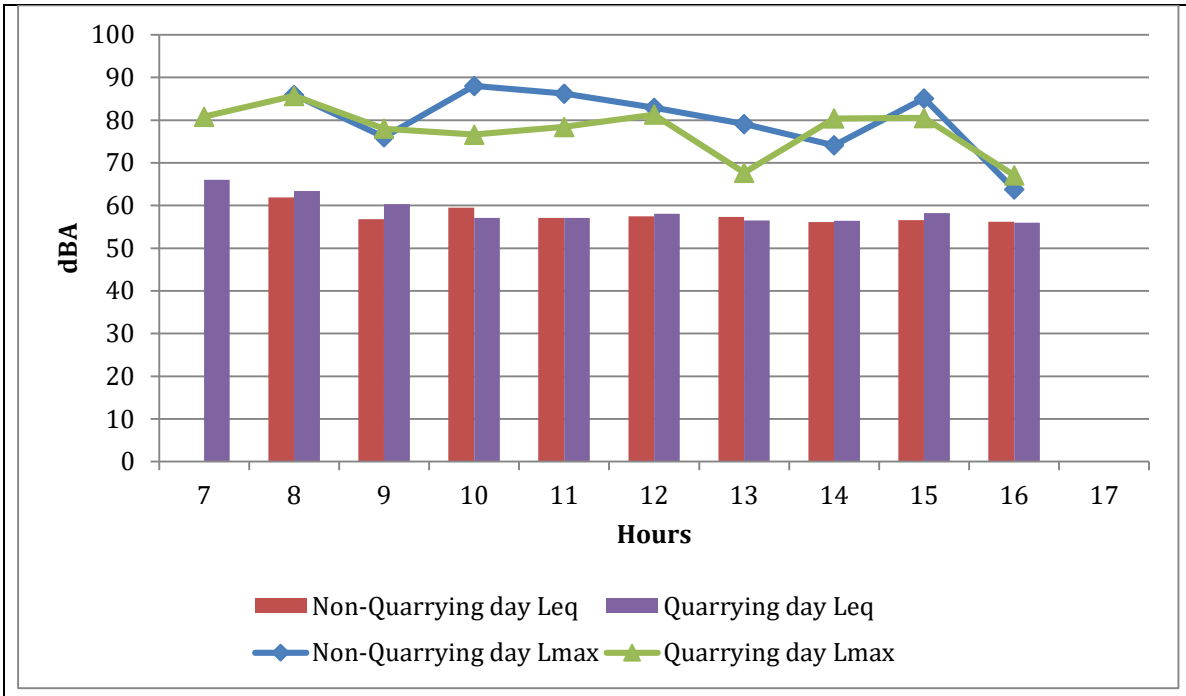


Fig.3: Equivalent values (Leq) and maximum (Lmax)of quarrying and non-quarrying day in West direction 50m

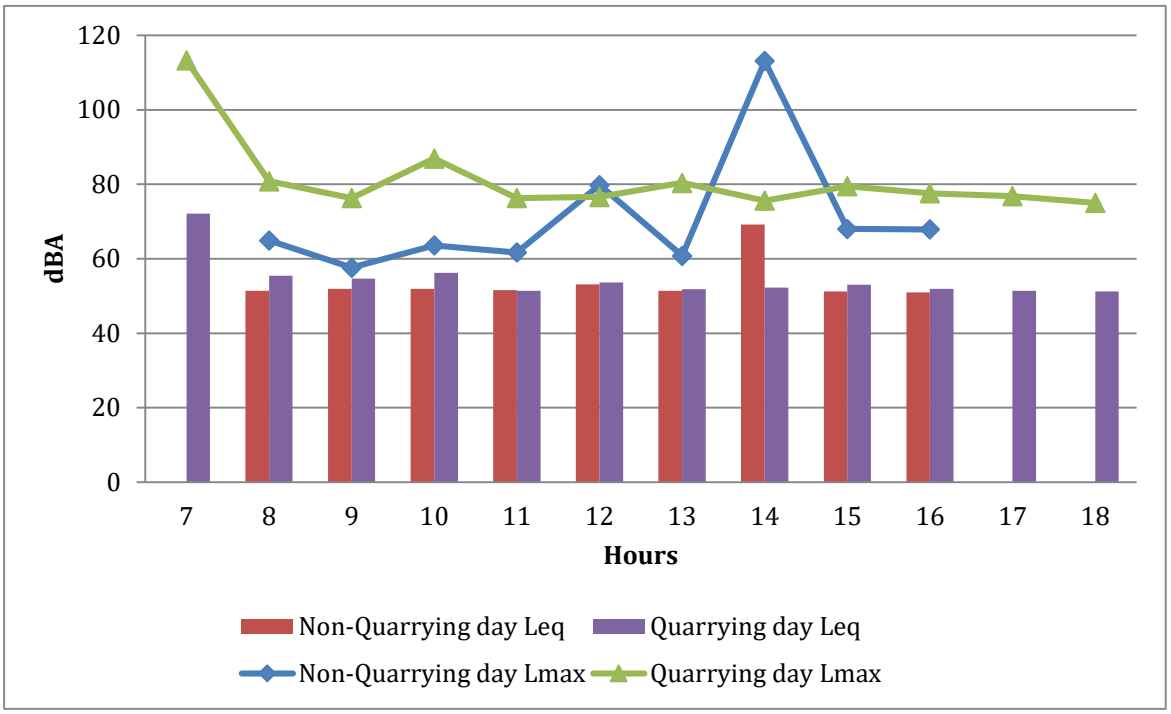


Fig.4: Equivalent values (Leq)and maximum (Lmax)of quarrying and non-quarrying day in West direction 100m

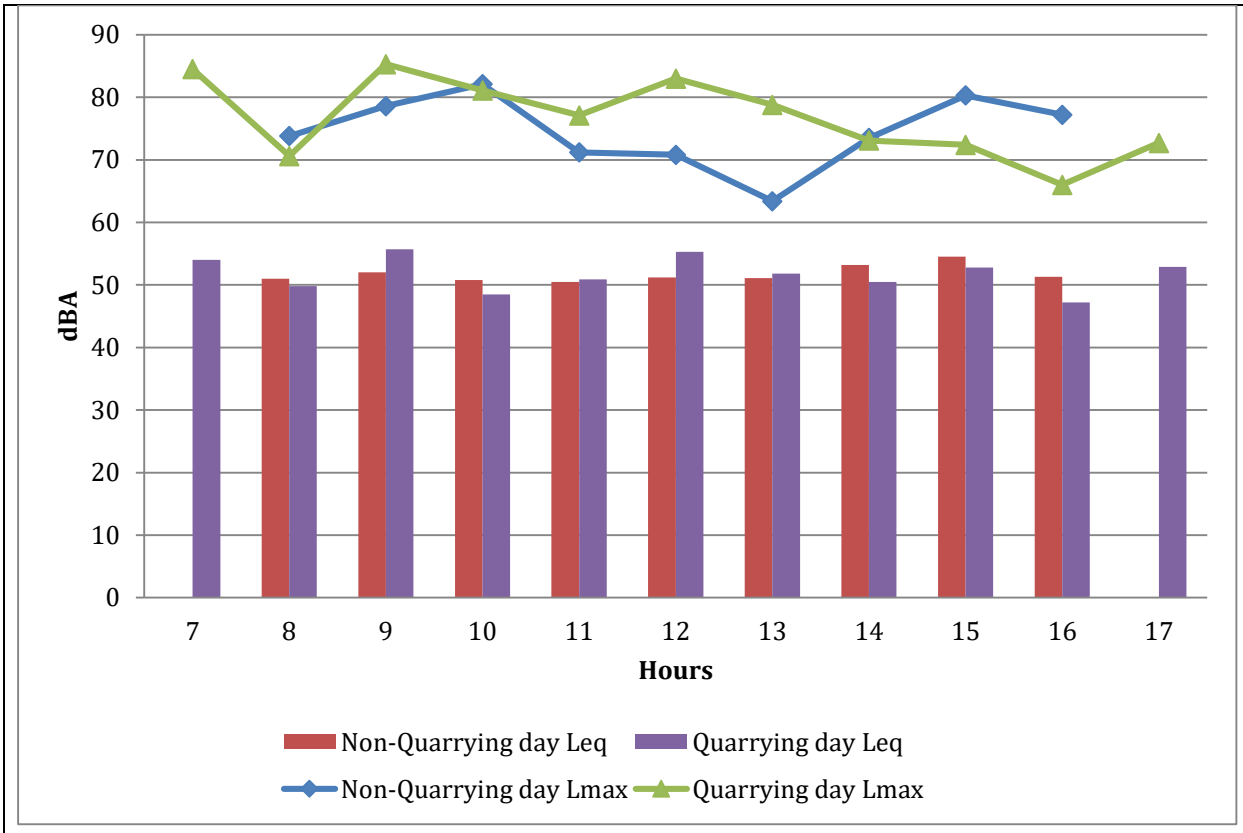


Fig.5: Equivalent values (Leq)and maximum (Lmax)of quarrying and non-quarrying day in West direction 200m

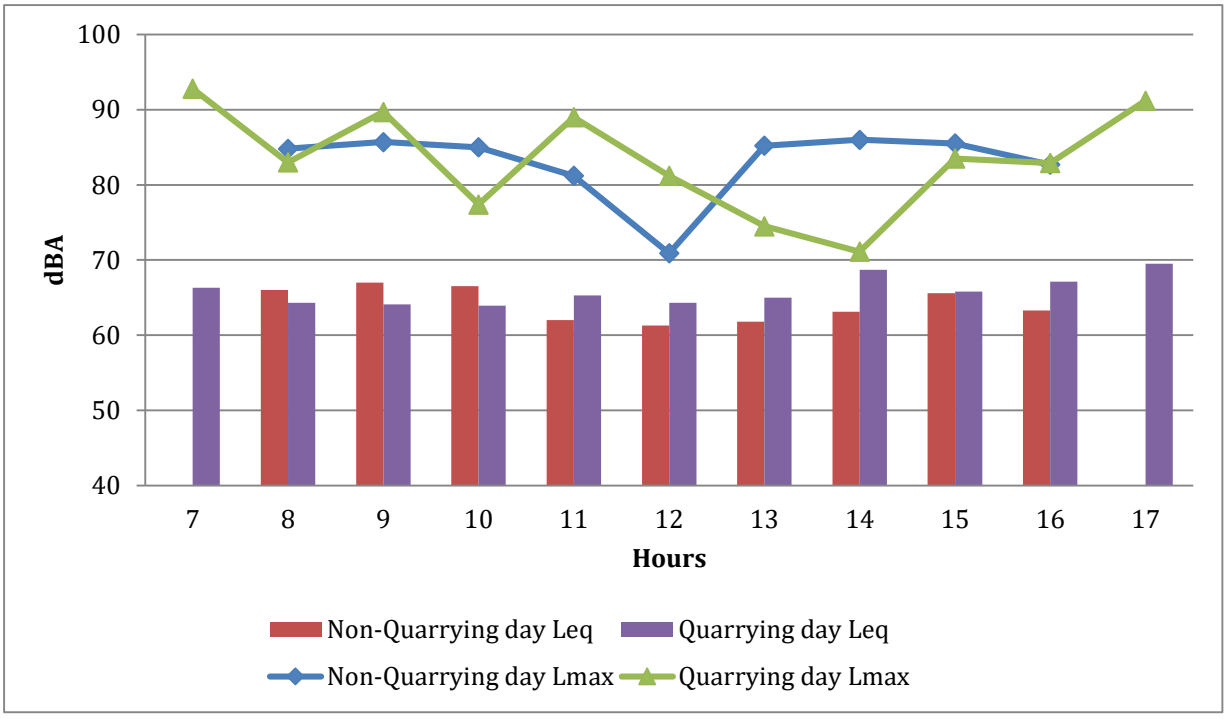


Fig.6: Equivalent values (Leq)and maximum (Lmax)of quarrying and non-quarrying day in West direction 500m

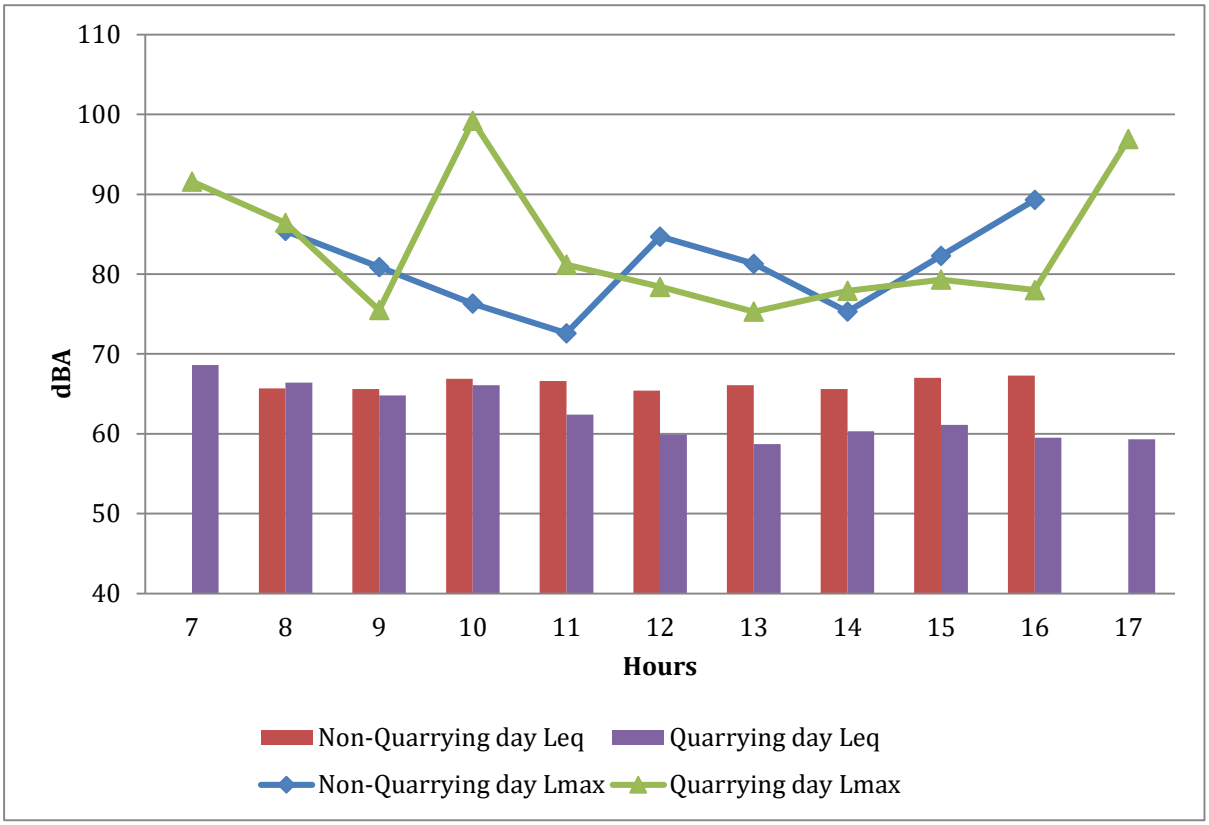


Fig.7: Equivalent values (Leq)and maximum (Lmax)of quarrying and non-quarrying day in North East direction 50m

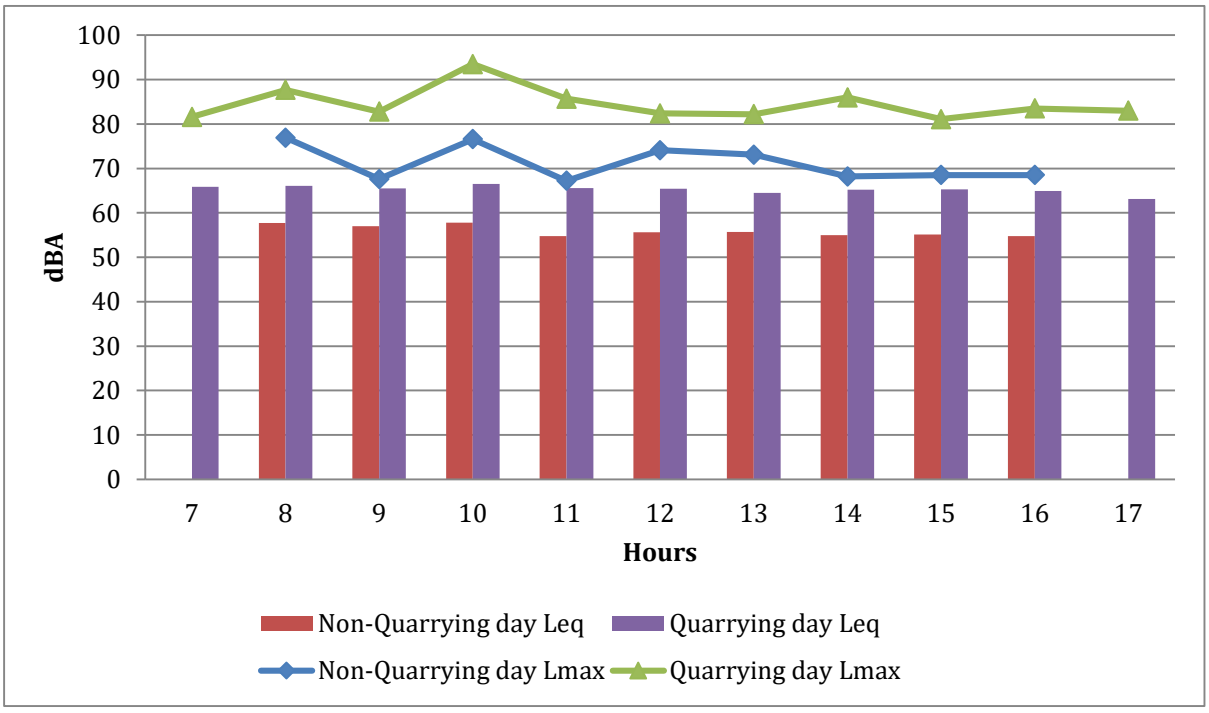


Fig.8: Equivalent values (Leq)and maximum (Lmax)of quarrying and non-quarrying day in North East direction 100m

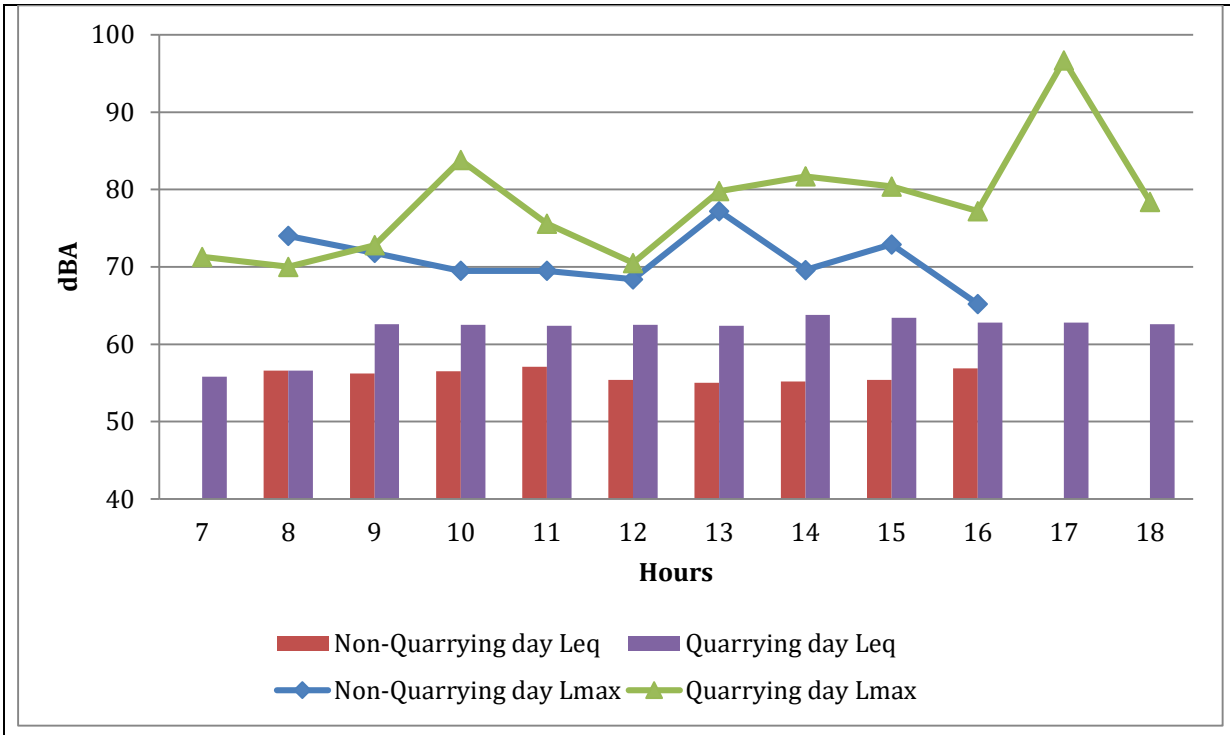


Fig.9: Equivalent values (Leq)and maximum (Lmax)of quarrying and non-quarrying day in North East direction 200m

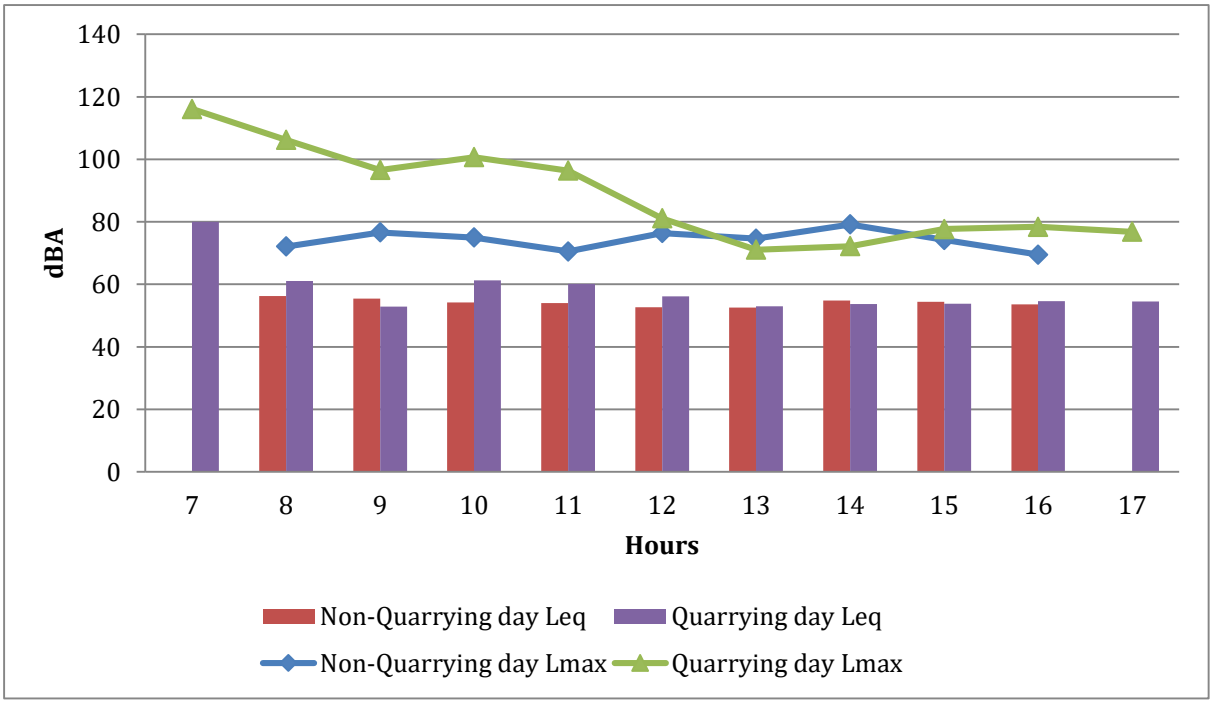


Fig.10: Equivalent values (Leq)and maximum (Lmax)of quarrying and non-quarrying day in North East direction 500m

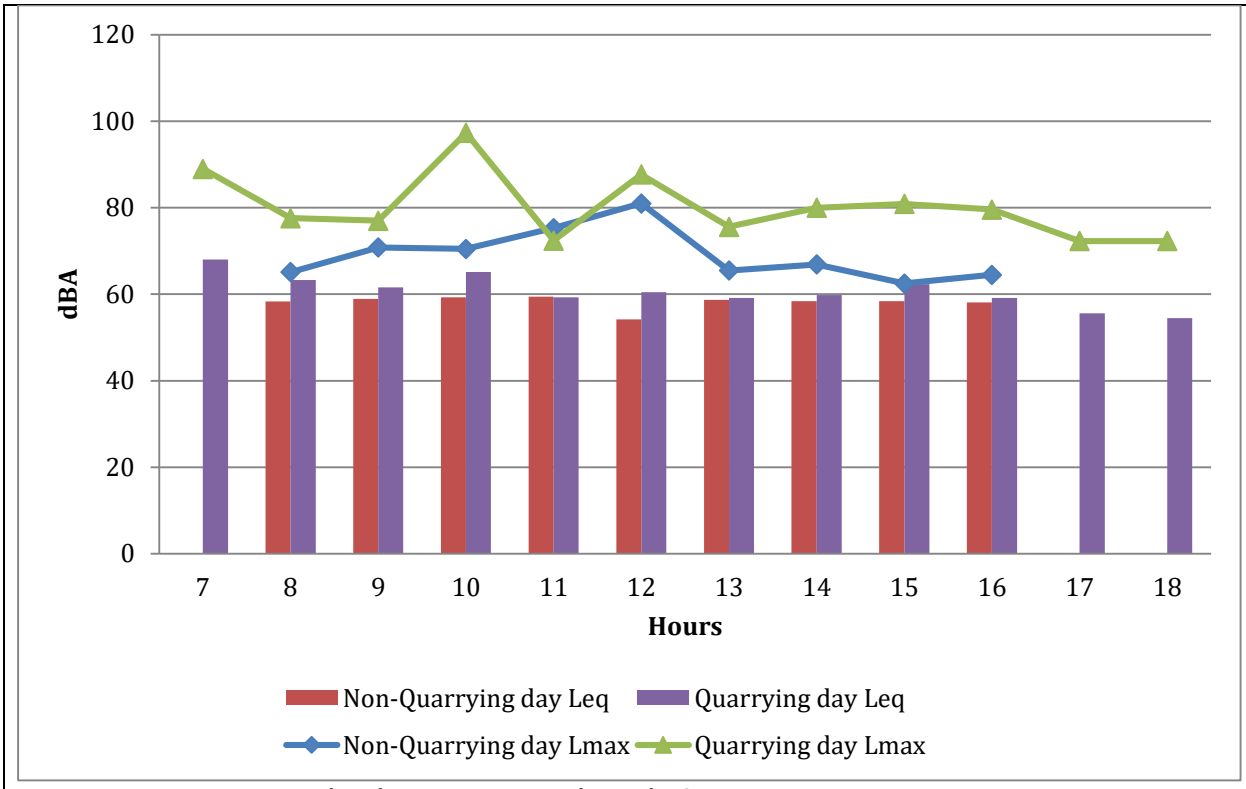


Fig.11: Equivalent values (Leq) and maximum (Lmax) of quarrying and non-quarrying day in South West direction 50m

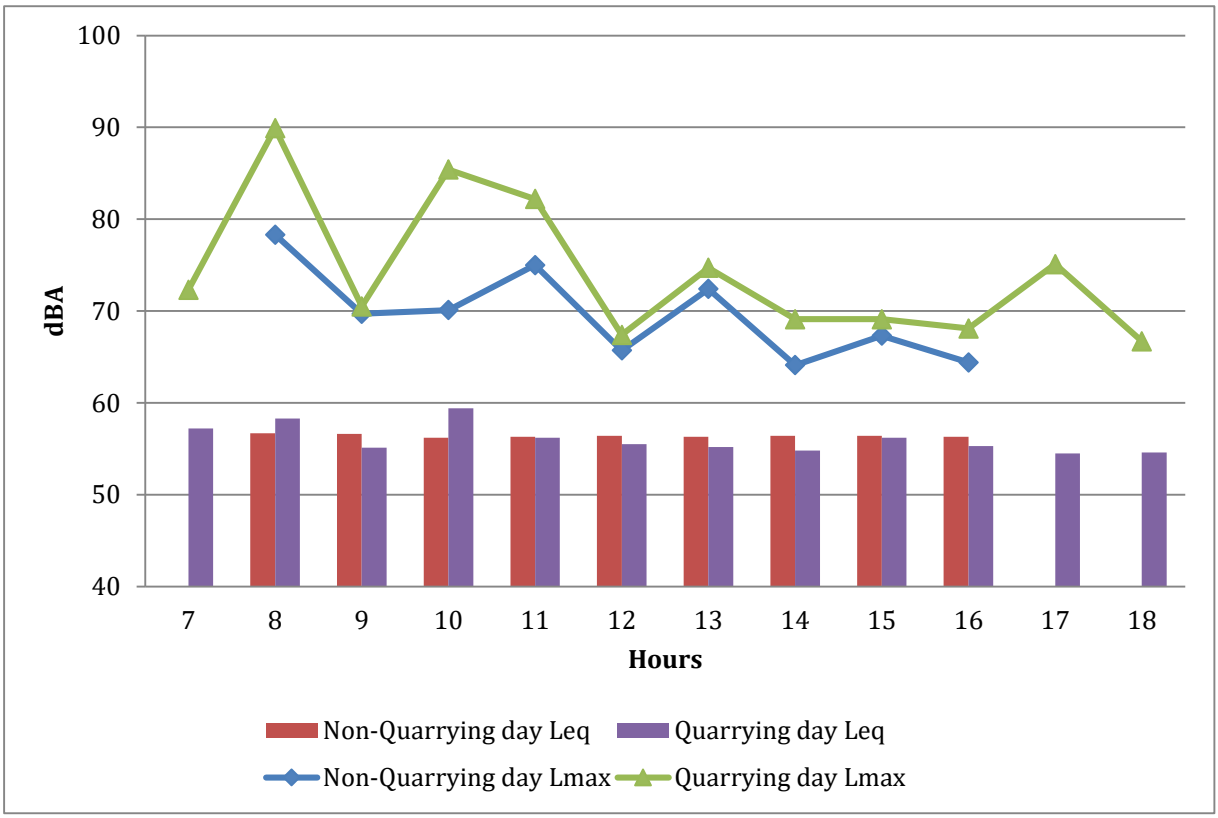


Fig.12: Equivalent values (Leq) and maximum (Lmax) of quarrying and non-quarrying day in South West direction 100m

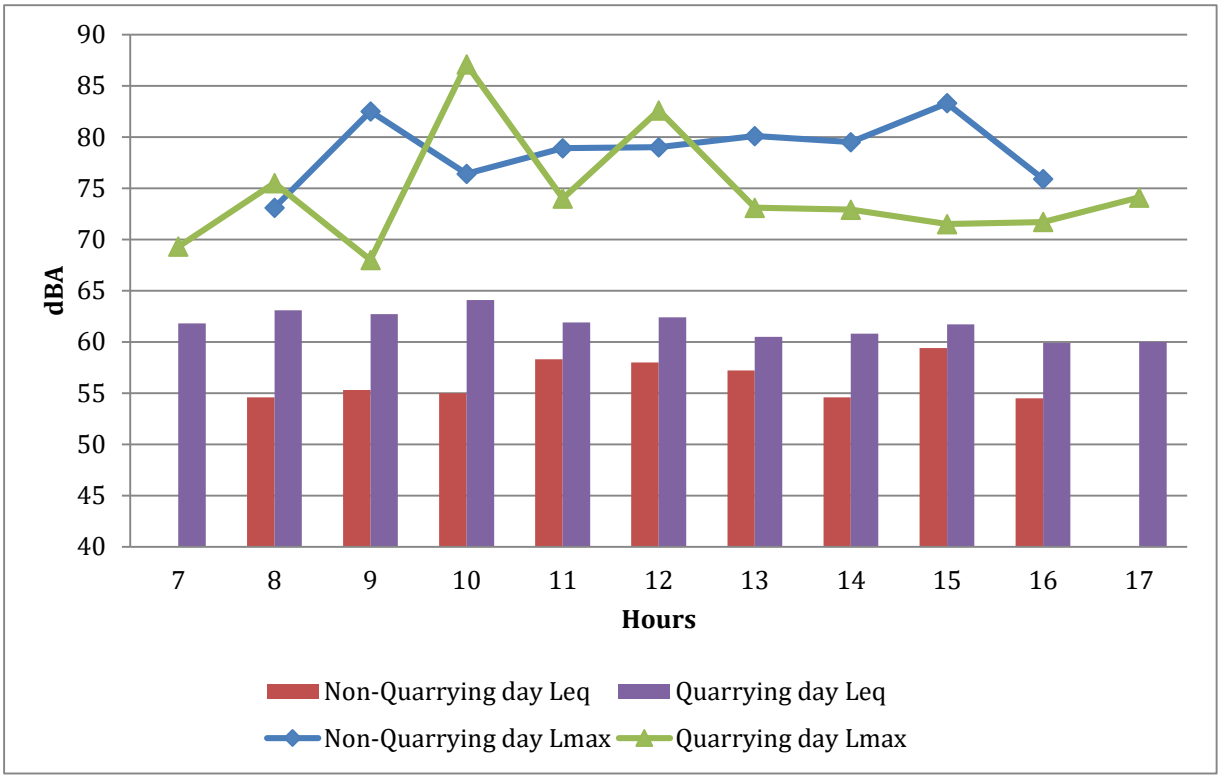


Fig.13: Equivalent values (Leq) and maximum (Lmax) of quarrying and non-quarrying day in South West direction 200m

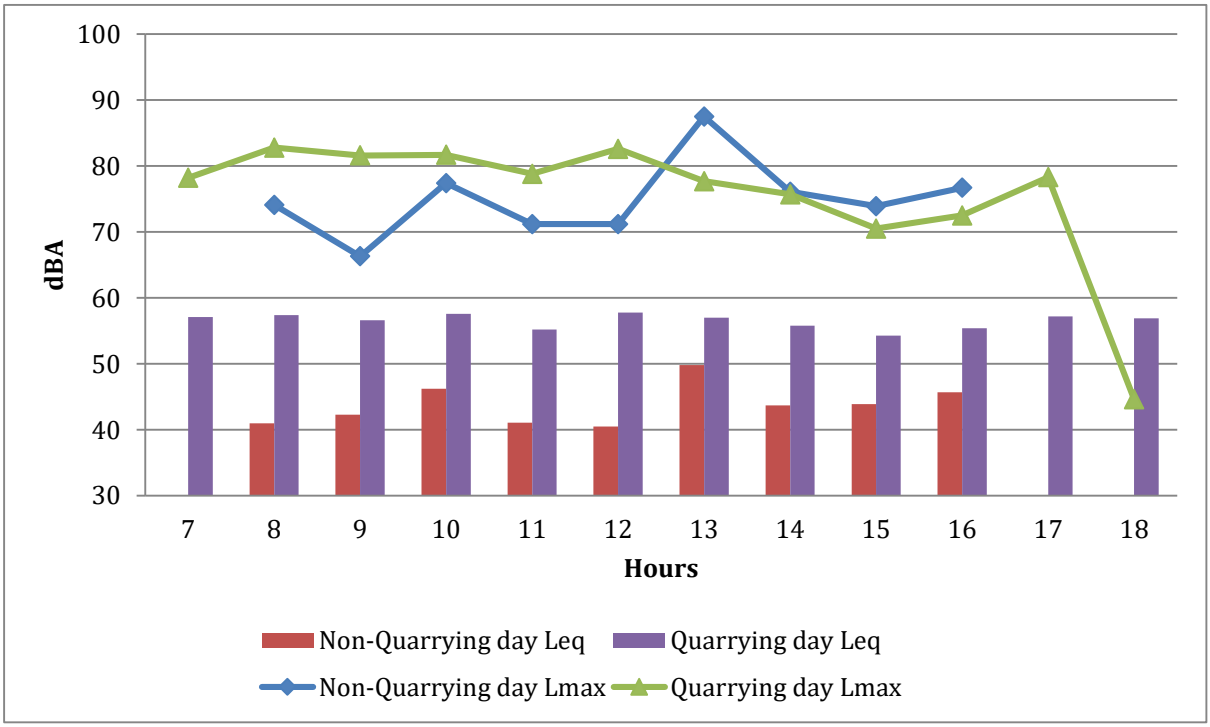


Fig.14: Equivalent values (Leq) and maximum (Lmax) of quarrying and non-quarrying day in South West direction 500m

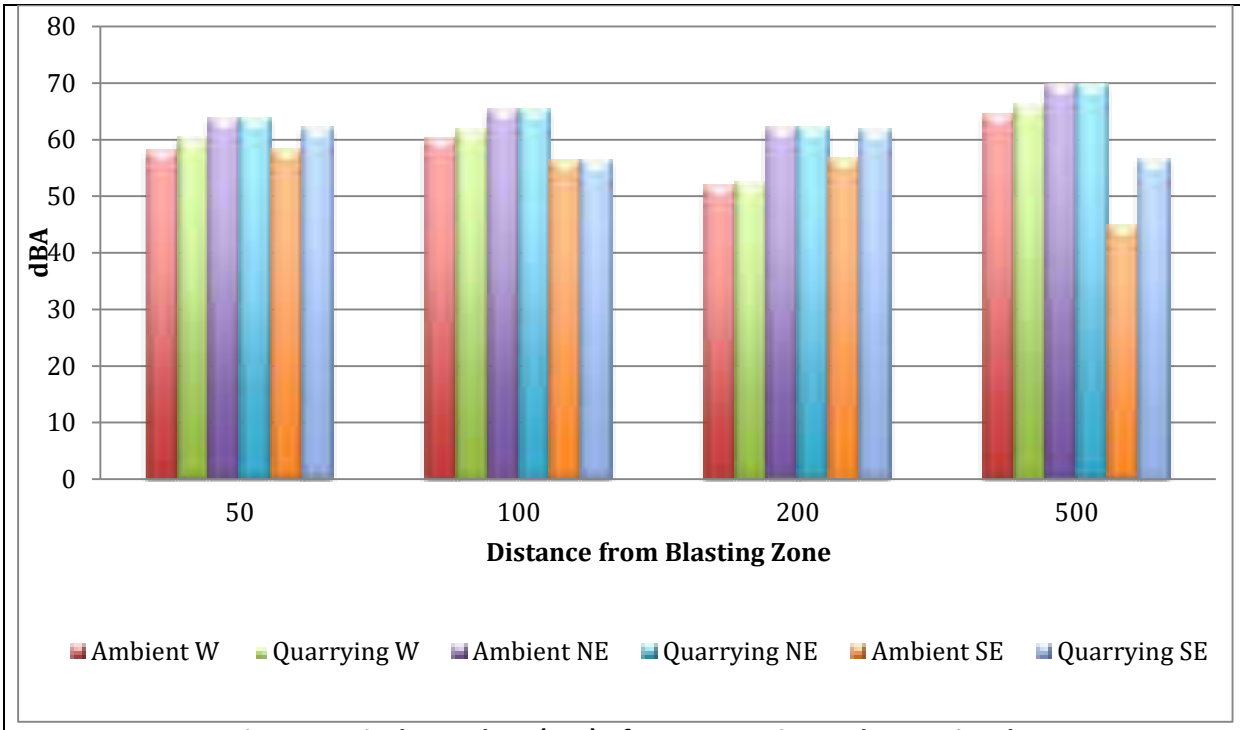


Fig.15: Equivalent values (Leq) of Non-quarrying and quarrying day

Leq= Equivalent noise level (12 hours) dB(A)= Decibel in 'A' scale (unit of sound pressure level)

Analysis results of the Equivalent Noise (L_{eq}) and Maximum Noise Levels (L_{max}) levels observed during quarrying day (22.12.20222) & non-quarrying day (23.12.2022) reveal that

(i) The equivalent noise level of the total day is higher on blasting day than ambient day at all stations and observed difference is less than 10 dB(A) at most of the stations.

(ii) The noise levels on blasting day decreased with increase in distance from blasting zones at all directions except NE200, SW100 and W500. For NE200 and SW100, echoing and reverberation effects of nearby reflecting surfaces caused increase in noise compared to 50m stations in the same line.

(iii) The local influences at W500, where influence of quarrying is megre resulted in minor changes in trend.

(iv) Peak of hourly equivalent value can be seen at 12 th hour which corresponds to the blasting time.

6.4 Stone Quarry Pond Water Quality

Analysis results of the stone quarry pond water quality is given in the Table below:

Sample Point: Quarry Pond

Date of Sample: 23/01/2023

Sl. No.	Parameters	Unit	Value
1	pH	-	8.8
2	COD	mg/l	5
3	SS	mg/l	17
4	TDS	mg/l	192
5	Conductivity	µS/cm	314

6	D.O	mg/l	7.8
7	Sodium as Na	mg/l	9.4
8	Potassium as K	mg/l	2.6
9	Calcium as Ca	mg/l	24
10	Magnesium as Mg	mg/l	4.8

7.0 Site Specific Observations

Site specific observations made during the study area are as follows :-

- The quarry is having an extent of 5.9747 hectares and the roads inside the quarry are tarred.
- Approach road to the quarry from the tarred public road, which is about 200 metres long, is not tarred or concreted.
- Outside the quarry area, there is a human habitation within 200 metres of quarry site.
- Rubber plantation and other natural vegetation is available all around the quarry, however, green belt not been specifically planted by the quarry proponent.
- Proper benching at the quarry site is maintained or practised.
- The quarry practises dust suppression measures such as wet gunny bag covering and sprinkling of water while drilling a hole, sprinkler mounted tanker vehicle through a dedicated vehicle (specially designed with a canon like attachment mounted on a tanker).
- Quarry operator ensuing no moisture exists in the blast holes, before filling of blasting materials.
- PPEs provided to all the categories of workers at the time of drilling, blasting and quarrying.
- Blasting shelter made of iron sheet is provided at suitable distances to prevent any damage to the workers at the time of blasting or for hiding during any unexpected eventualities.
- Quarry site operator have provided a provision of collection-cum-settling tank provision with a floating matter trap before discharge of wastewater generated from the quarry site.
- The people residing around the quarry have very few complaints- regarding damages to houses as a result of blasting and vibration, instances of fly rock damages, damaged approach roads making people's vehicular movement and pedestrian traffic very difficult, etc.
- No fly rocks observed during the study period.

Annexure PGPL I

Photographs taken during the site assessment carried out during 21 to 24.12.2022 at M/s. Poabs Granites Pvt. Ltd. Kuthirakalam, Thiruvananthapuram District, Kerala

Assessment Report on Ambient Air Quality, Noise Levels and Mine Pit Wastewater Quality carried out during 26-12-2022 to 29-12-2022

Name and Address of the Stone Quarry Site	**M/s. Paracal Granite Kerala, Private Limited, Enanalloor Post, Kalamboor Muvattupuzha, Ernakulam**			
Geo-coordinates	Latitude	10°00'46.98"N	Longitude	76°38'40.27"E

1.0. Stone Quarry Site Description

1.1 General information

M/s. Paracal Granite Kerala, Kalamboor, Muvattupuzha, Ernakulam had the lithology of Hornblende Gneiss, was of large size and has no public complaints. The present quarrying lease issued by Department of Mining and Geology, Government of Kerala, commenced on 12-02-2019and is valid up to 14-02-2029.

The quarry has obtained Environmental Clearance from State Environmental Impact Assessment Authority, Kerala on 27-02-2018 and valid up to 26-02-2023. It also holds valid Consent to Operate of Kerala State Pollution Control Board. It is owned by Shri. P. K. Prasad. Area of mining is 7.6606 Ha, nearest residential area is 54 metres from the quarry.

The quarry is attached to in-house crusher. The public road to the quarry from the nearest town is well tarred and wide enough for two heavy vehicles. The approach road in the proponent's property is also tarred, but kept well moist by water sprinkling. There are no major water bodies like rivers and no forests or sanctuaries nearby.

1.2 Topography & Geology

The highest elevation of the mine area is 90 m above MSL in the South-West (SW) central part and 45 m above MSL in the North direction. Geologically two distinct litho units are discernible in this area, the eastern part is occupied by hard rocks representing Precambrian metamorphosed rocks while the coastal tract in the west is covered by soft rock. Major part of the district is occupied by charnockite and migmatite groups of rocks of Precambrian age.

1.3 Details of quarrying/ mining activities

The method of mining is semi-mechanized open cast mining. The mining operations are carried out using jack hammers, compressors, drills, excavators, etc. followed by controlled blasting (NONEL) using class 2 and class 6 explosives.

The rock breaking is done using pneumatic breakers and transported to the crusher site using trucks/ tippers of 15 Tonnes carrying capacity for various products. Every day, blasting is carried out in 2 prefixed timings with maximum 60 no. of holes/blast.

2.0 Location attributes			
2.1 Altitude (m)	44	2.2 Area (Ha)	7.6606
2.3 Terrain	Undulating	2.4 Lithology	Hornblende Gneiss
2.5 Soil type	Laterite	2.6 Total Mineable reserve	3175218 MT
2.6 (a) Remaining Mineable reserve	2098385.375 MT	2.6 (b) Approximate mined quantity per annum	320000MT
2.7 Slope	Moderate	2.8 Fault	---
2.9 Distance from nearest forest (Km)	19	2.10 Wildlife movement (Yes/ No)	No

3.0 Schedule of the Study/ Assessment		
Day	Date	Activities
1	26-12-2022	Site reconnaissance, fixing of monitoring points within 50m, 100m, 200m and 500m from the blast point. Setting up a field office, arranging power supply for operating monitoring instruments/ equipment. Checking of instruments, deployment and conducting test runs.
2	27-12-2022	Background monitoring of ambient air quality and noise without any activities in the quarry. (06.00 to 18.00 Hrs.)
3	28-12-2022	Air quality and noise monitoring during the operation of quarry including drilling, blasting and all other quarry activities (06.00 to 18.00 Hrs.)
4	29-12-2022	Maintenance check of instruments used, safe packing for transportation and transporting monitoring gear to the next station.

4.0 Sampling/ Monitoring Plan and locations

The quarry area is not very deep; the present excavation area is only 05-10 metre below the surrounding ground level. The present blasting zone is towards east of the quarry area which has more length in the east west direction than in the North South direction. Hence towards the West side the quarry is open to an extent of about 200m from the blast area. Hence the 50m, 100m and 200m stations towards West are inside the open quarry land itself.

The 50m stations in North East and South East directions are also within the quarry area. The other points are in the higher benches outside the present blasting area. Further stations like 200m and 500m were all outside the quarry premises, in private properties. Hence in total, 12 coordinates were fixed with the actual blasting point as centre in North-East line, West line and South-East line each at an angle of approximately 120° to each other.

Seven locations were inside the quarry and 5 locations were outside the quarry premises. In the West line, beyond 350m, there were no structures/ houses/ other salient features. Also, since it is the upwind direction, this point was made the farthest point and marked as W 500. Photographs taken during the site assessment at M/s. Parackal Granite Kerala, Private Limited, Muvattupuzha, Ernakulam District, Kerala is given as Annexure-1.

4.1 Map showing sampling locations (Map)

4.2 Geo-coordinates of sampling locations			
S. No.	***Station Points***	***Latitude***	***Longitude***
1	W50	10.0137230	76.6430511
2	W100	10.0136744	76.6427000
3	W200	10.0135945	76.6419359
4	W500	10.013645	76.640641
5	NE50	10.0138497	76.6439365
6	NE100	10.0141301	76.644190
7	NE200	10.0154464	76.6446946
8	NE500	10.0178682	76.6454382
9	SE50	10.0132746	76.6440985
10	SE100	10.0130326	76.6443181
11	SE200	10.0123280	76.6450909
12	SE500	10.0085399	76.6455593

5.0 Monitoring activities

5.1 Background monitoring (27-12-2022)

The monitoring started at 6.00am at each 12 locations. The quarry activities were kept completely idle on 27th December to do ambient monitoring. The crusher was kept idle on both the ambient monitoring day and quarrying day. The Environmental Engineers in-charge ensured whether all stations are working properly. At each station, one AE / equipment operator was there for the monitoring. The Noise data, Air flow rates and Total volume of sucked air were recorded every one hour. Weather data were also recorded at two station points (SE 50 and SE 100) inside the quarry. The monitoring was interrupted at stations W 50 (for 15 minutes from 12.00pm) and W 200 (from 12.00pm to 2.00pm) due to the power failure. The wind velocity, humidity and temperature were monitored every hour using Weather Tracker. The direction of the wind was mostly from west to east.

The locations for drill holes for explosives were located by the CIMFR blasting team. It was decided to conduct 10 blasts which consist of 269 holes, each hole having 32mm diameter and 5ft - 6ft depth. The explosive used is ammonium nitrate of 375 gm per hole.

The CIMFR team identified 8 locations for the seismic analysis. 5 locations were inside the quarry (NE 50, NE 100, N 130, N 200 and quarry office) and 3 locations were outside the quarry (NE 200, NE 500, and SE 200). They also conducted a social survey on the response of the public about quarrying activities, through a questionnaire. The location identification and survey were completed by 4.00pm. The monitoring was completed at all the 12 stations by 06PM. But some of the stations could get only 11 hour or 10 hour readings due various technical hitches during the monitoring.

5.2 Monitoring during Stone Quarry Operation (on 28-12-2022)

The monitoring started at 6.00am. At the stations NE 200 and NE 500, air monitoring was interrupted for 15 minutes to 1 hour due to the power failure. Also, at the station SE 50 and SE 100, the sound level meter had some problem and the noise monitoring was interrupted from 20 minutes to 1 hour. The weather data were recorded from the same two stations inside the quarry.

Before blasting, drilling of blast holes using jack hammers was started from 6.am onwards and approximately 300 no. s of blast holes were drilled. The drilling of holes (5ft to 6ft depth) and filling of explosives into each hole were completed at 11.45am. Connections were also established for the blasting. The CIMFR team checked all the drilled holes of blast points. The team also installed Seismograph at 8 locations which had slight changes from the previously decided locations, due to site-specific practical reasons. That is, inside the quarry there were 4 locations except at the Office site. Outside the quarry, one additional point was identified at NE 200.

There is another operational quarry about 500m distant from the boundary of the quarry under study. Noise of blasting from that quarry was audible at the site but it was ensured that the blasting of either of the two quarries takes place at different timing so that effect of blasting of the quarry under study could be detected separately.

The crusher was kept idle on both the ambient monitoring day as well as the quarrying monitoring day since operating the crusher would have contributed to dust as well as vibration and noise. That would affect the measured values in which the effect of quarrying alone is to be found out. About 10 experimental blasts were conducted.

Immediately after the blasting was completed, vehicular movement, breaking of boulders using breakers and hauling of the quarry product using haulers were carried out. These quarrying activities continued full-fledged until the end of the day. The monitoring was completed at all the 12 stations by 06PM.

6.0 Monitoring Results-Ambient Air Quality and Noise Levels

6.1 Weather

Weather: Non-quarrying day (27-12-2022)				
S.No.	***Time (Hrs)***	***Temperature (◦C)***	***Humidity (%)***	***Wind (m/s) & Direction***
1	09:00	26	79	6, E
2	10:00	28	66	6, SW
3	11:00	29	66	5, S
4	12:00	29	64	5, S
5	13:00	29	62	9, SW

6	14:00	28	61	10, SW
7	15:00	30	60	10, W
8	16:00	27	82	3, W
9	17:00	28	82	3, W
10	18:00	28	83	3, W

Weather: Quarrying day (28-12-2022)				
S.No.	***Time (Hrs)***	***Temperature (°C)***	***Humidity (%)***	***Wind (m/s) & Direction***
1	06:00	21	93	2, E
2	07:00	23	93	2, E
3	08:00	24	80	2, E
4	09:00	26	80	2, SE
5	10:00	27	63	1, SE
6	11:00	29	63	1, S
7	12:00	27	70	1, S
8	13:00	26	84	1, S
9	14:00	26	84	1, S
10	15:00	25	84	1, S
11	16:00	25	84	1, S
12	17:00	24	97	1, S

6.2 Particulate matters/dust

- Generally, PM10 values of blasting day in stations inside the quarry can be seen to be higher than those of ambient day. This shows the influence of quarrying in increasing the concentration of particulate matter.
- In a few stations other than those at 200m, 500m, ambient day concentration is more than blasting day concentration of PM10. The reason is inferred as follows. Efficient dust suppression using water spray and sprinkling was carried out on blasting day whereas dust suppression was nil on ambient day. This made the ambient day

concentrations of PM10 higher which also points to an inference that the influence of dust generation in blasting is negligible in PM10 compared to general ground dust from overall quarry area including roads.

- The results of PM2.5 shows that ambient day values are generally more than blasting day values. The explanations based on dust suppression and local influence at far-off stations given for PM10 hold here also.

Table: PM10 & PM2.5 values in non-quarrying and quarrying day

Station Points	*Distance from blasting zone (metre)*	*PM 10 (microgram/m³)*		PM 2.5 (microgram/m³)	
		Non-quarrying day	Quarrying day	Non-quarrying day	Quarrying day
W50	50 m	28.16666667	55.09615385	59.70739423	36.17153309
W100	100 m	32.33525734	45.72649573	58.14187827	64.02561024
W200	200 m	20.76446281	61.86684362	83.48699037	64.45180358
W500	500 m	72.62820513	53.17307692	47.50593824	51.8408453
NE50	50 m	29.29383603	46.13095238	64.09501374	55.88044185
NE100	100 m	21.11631538	34.68992248	52.7013073	49.06225831
NE200	200 m	32.14814815	40.98883573	49.27536232	55.92366817
NE500	500 m	40.46153846	39.02777778	82.14801072	90.69943549
SE50	50 m	39.94535519	47.69283747	82.09109731	62.10966989
SE100	100 m	31.8359375	33.49236641	60.02868265	68.25735992
SE200	200 m	39.40104167	46.7769296	53.0257033	52.05205205
SE500	500 m	27.8314746	36.0479798	33.33333333	34.71220138

Fig.1: PM-10 values of Quarrying and Non-quarrying days

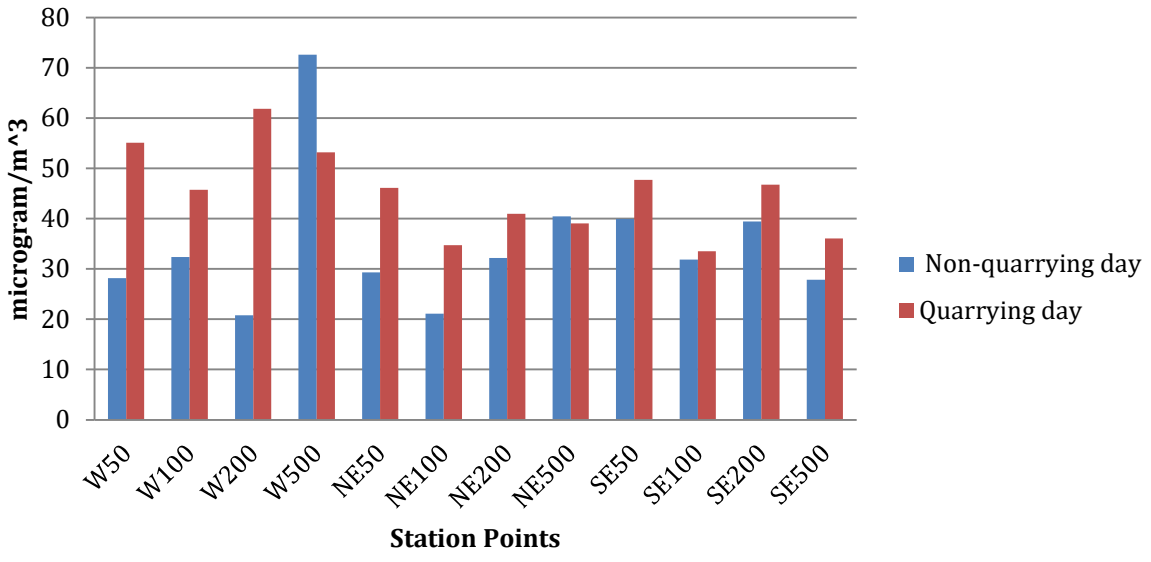
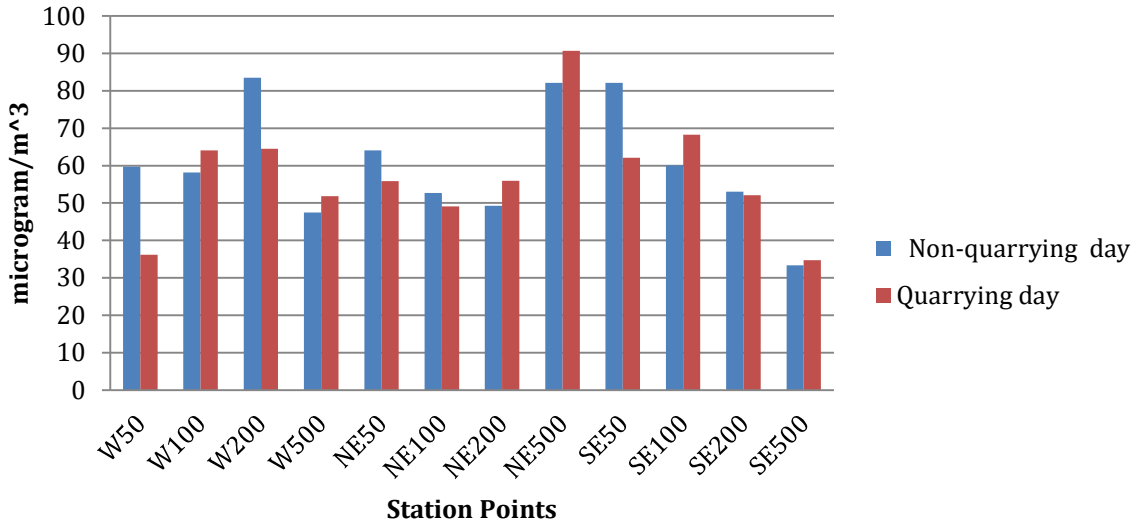


Fig.2: PM-2.5 values of Quarrying and Non-quarrying days



6.3 Noise level

Observed Noise Levels in terms of Equivalent Noise (L_{eq}) on non-quarrying and quarrying day are given in the table below:

Leq= Equivalent noise level

dB(A)= Decibel in 'A' weighted frequency scale (unit of sound pressure level)

Observations:

- The equivalent noise level and Lmax of the total day are higher on blasting day than ambient day at all stations generally. Only at 500 metre stations, where quarrying seems to have no influence at all, the pattern is changed.
- The blasting time was 11.30 am. Blasting had not completed at 12 pm. Due to safety-related reasons, the hourly value of noise at 12 pm could not be taken. The next reading after 11 am was taken at 1 pm only. This caused gap of one reading on the quarrying day, as can be seen in the graphs. But it can be seen that the equivalent values as well as maximum values in each station are showing a peak between 11 am and 1 pm as a result of blasting.
- Except at one station W100, equivalent noise of the quarrying day is not increasing more than 10 dB(A) above corresponding non-quarrying day's value. The equivalent noise of the day of quarrying is not significantly more than that of non-quarrying.

Table: Observed Noise in terms of Equivalent Noise (L_{eq}) & L max on non-quarrying and quarrying day.

Station Points	Non-quarrying Day Noise Levels		Quarrying Day Noise Levels	
	L_{eq}	L_{max}	L_{eq}	L_{max}
W 50	55.34133461	84.3	72.53712802	105.5
W 100	54.17711216	89.7	72.50287422	105.6
W 200	51.66358862	87.1	64.03603659	97.1
W 500	53.15292522	93.1	52.79026687	90.7

NE 50	53.86262289	79.7	64.46133569	94.7
NE 100	57.29962459	100.8	59.21900502	106.4
NE 200	57.23670039	80.9	58.60705616	82.4
NE 500	52.74386752	92.6	54.44627708	96.9
SE 50	49.1557154	83.2	65.96985642	104.2
SE 100	57.65018025	84.1	56.60367953	83.2
SE 200	58.43733462	90.3	59.21066189	83.1
SE 500	52.71788464	88.9	54.08484729	92.9

Fig.3: Equivalent values (Leq)and maximum (Lmax)of quarrying and non-quarrying day in West direction 50m

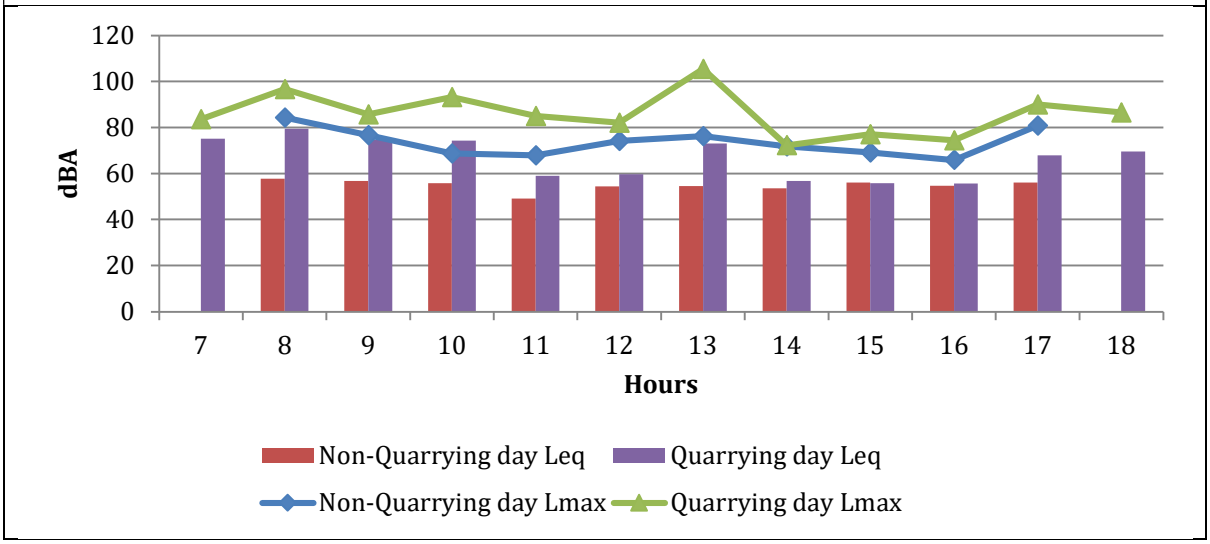


Fig.4: Equivalent values (Leq)and maximum (Lmax)of quarrying and non-quarrying day in West direction 100m

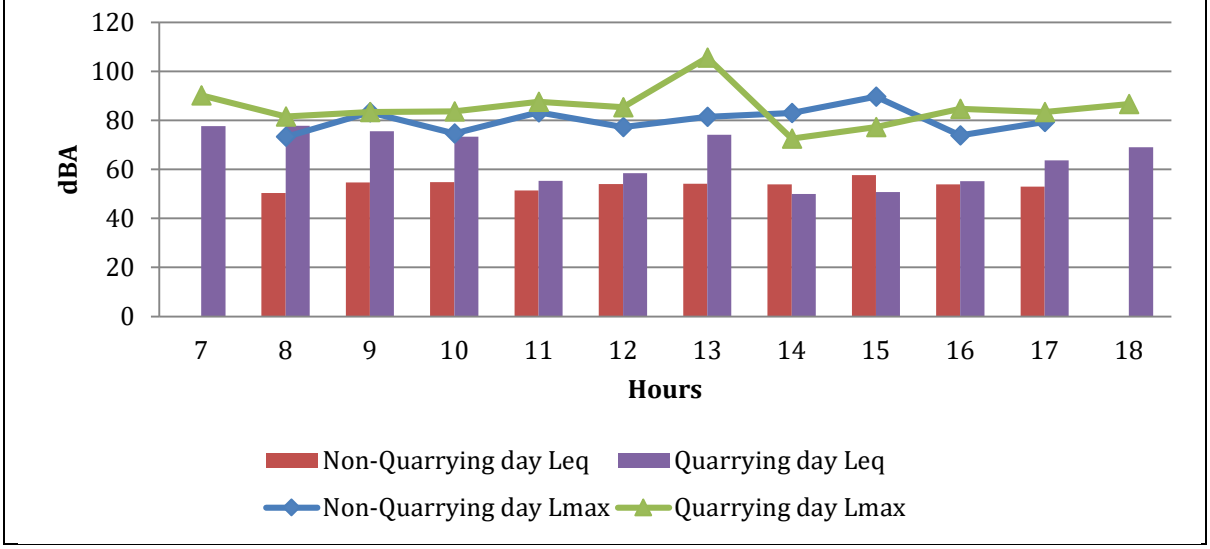


Fig.5: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in West direction 200m

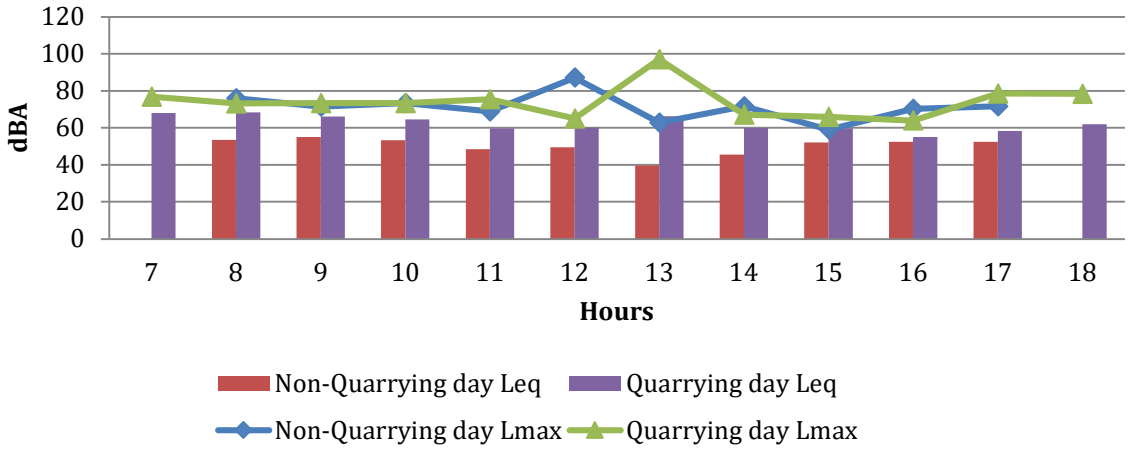


Fig.6: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in West direction 500m

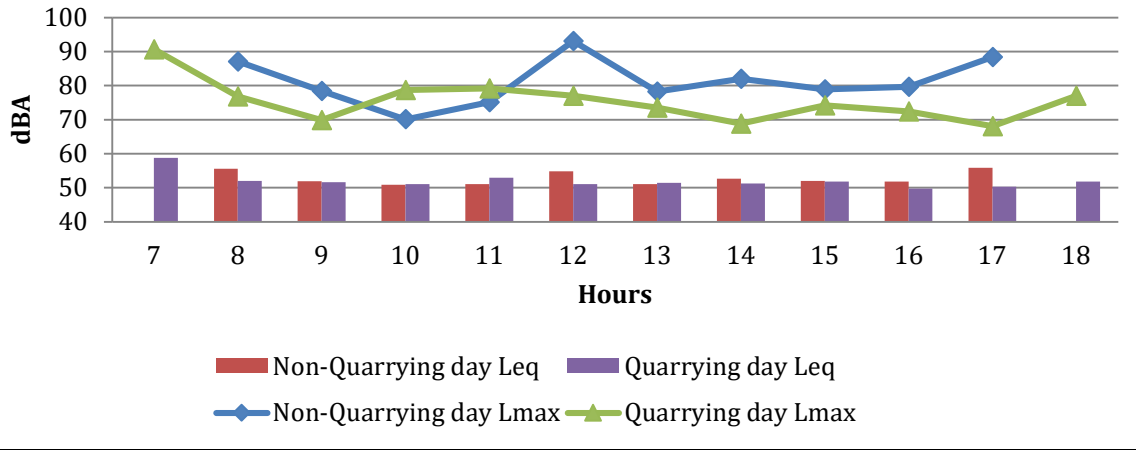


Fig.7: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in North-East direction 50m

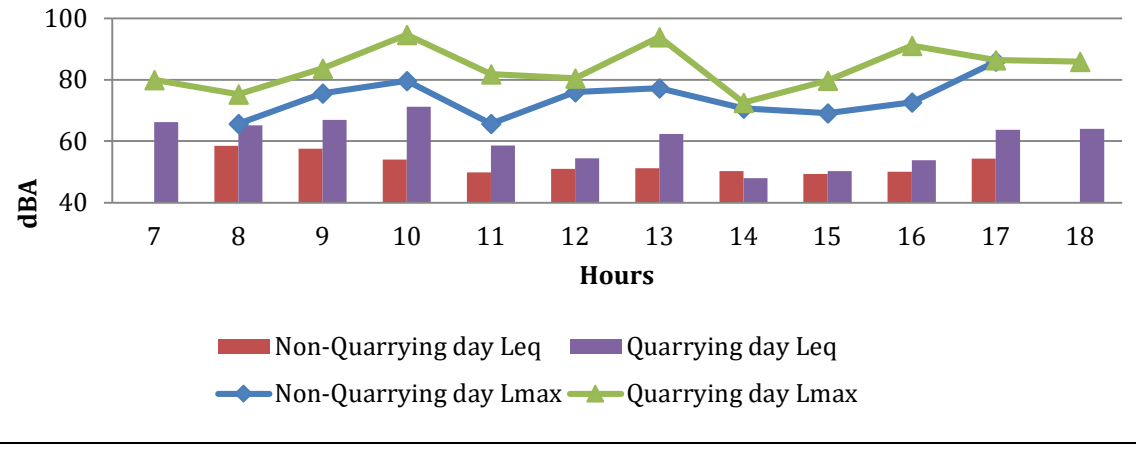


Fig.8: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in North-East direction 100m

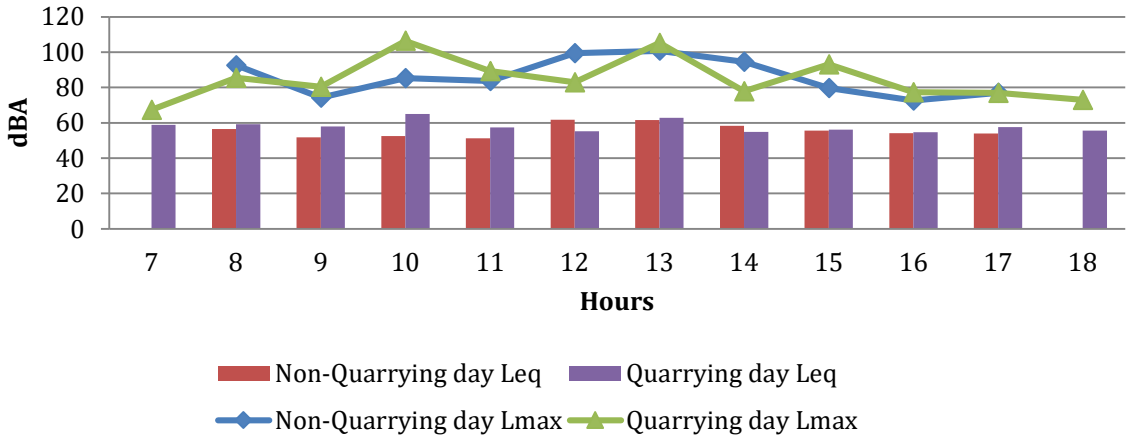


Fig.9: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in North-East direction 200m

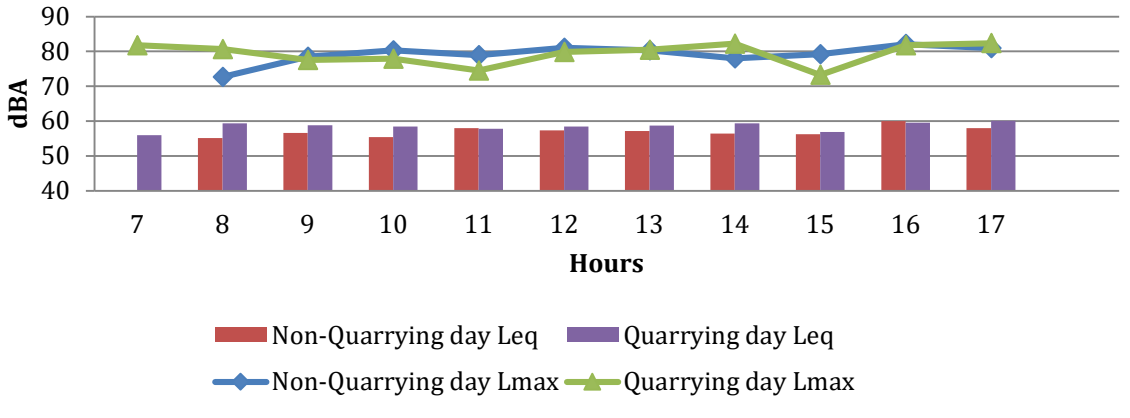


Fig.10: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in North-East direction 500m

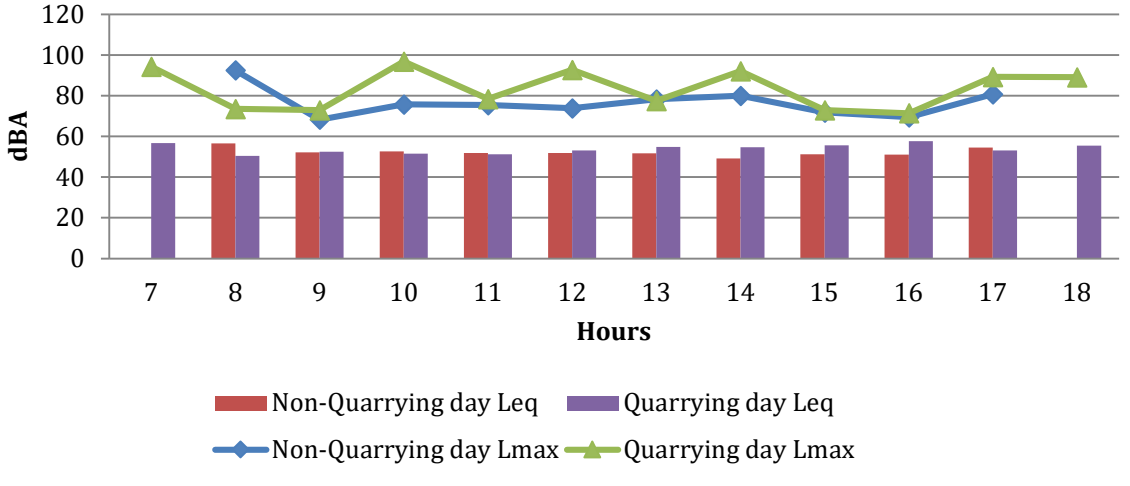


Fig.11: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in South-East direction 50m

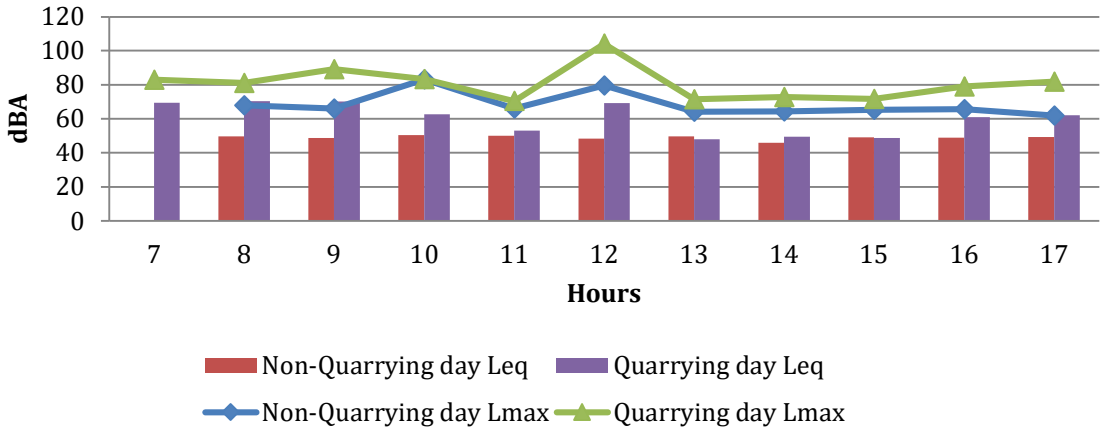


Fig.12: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in South-East direction 100m

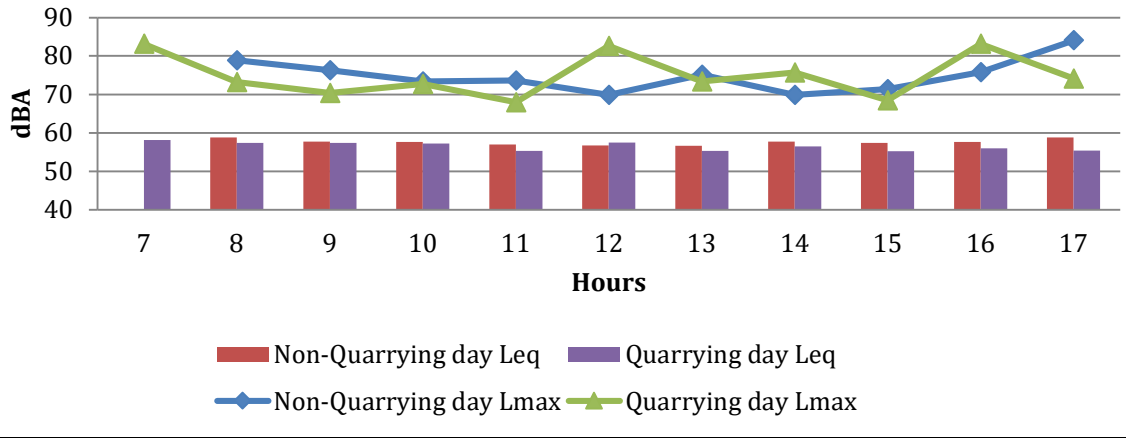


Fig.13: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in South-East direction 200m

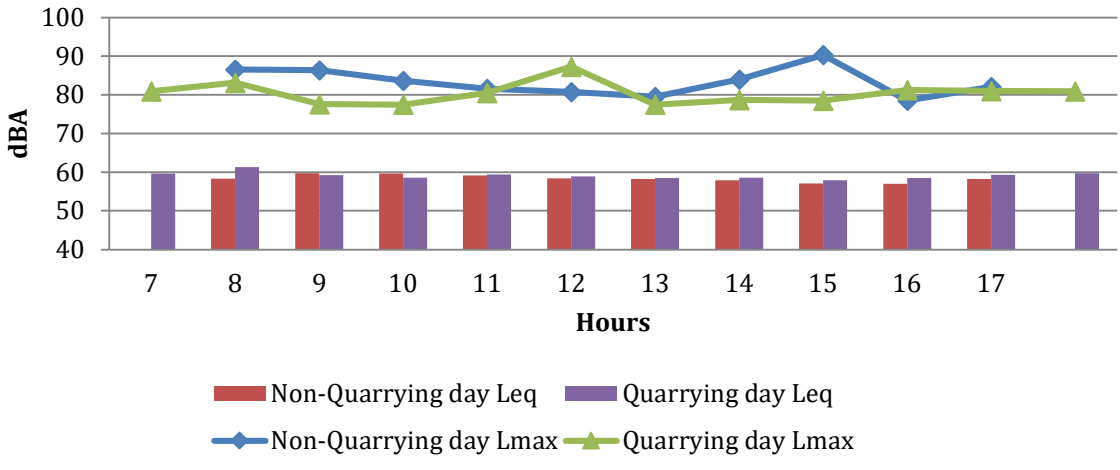


Fig.14: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in South-East direction 500m

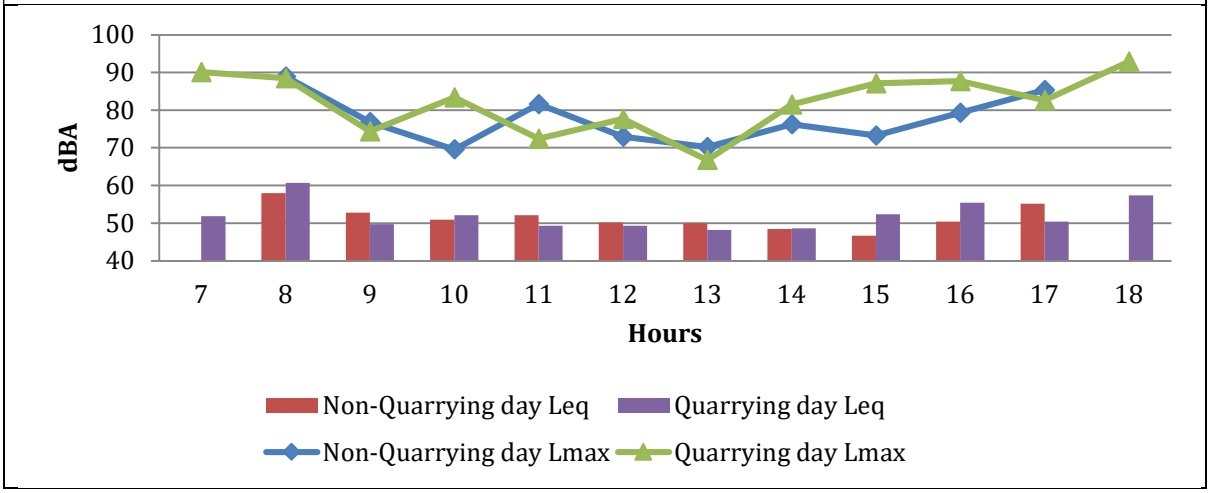
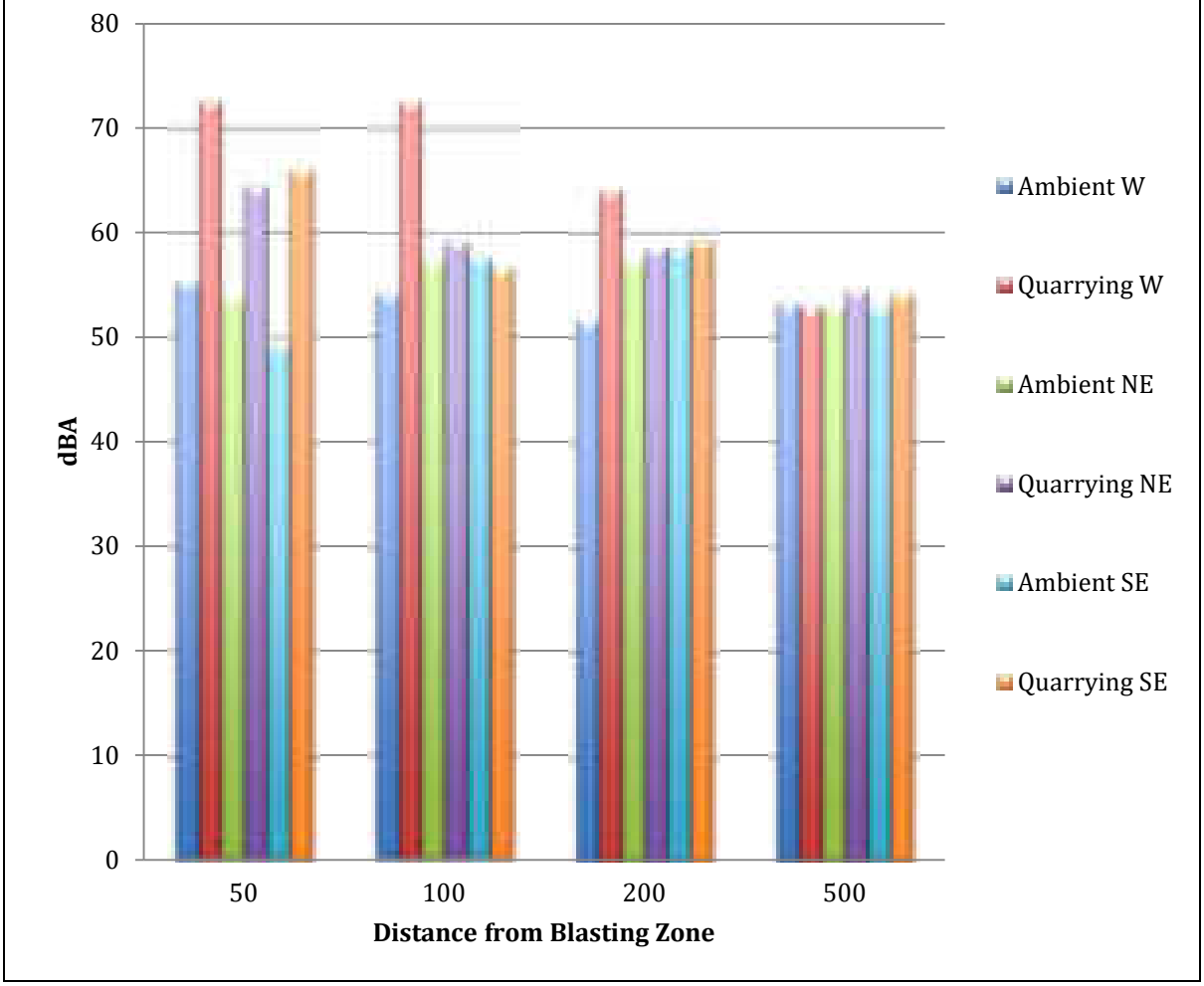


Fig.15: Equivalent values (Leq) of non-quarrying and quarrying day



6.4 Water Quality			
Sample Point: Old Quarry Pond			
Date of Sample: 28/12/2022			
Sl. No.	**Parameters**	**Unit**	**Value**
1	pH	-	7.55
2	COD	mg/l	16
3	BOD	mg/l	4.1
4	SS	mg/l	BDL
5	TDS	mg/l	114.4
6	CONDUCTIVITY	µS/cm	70.84
7	D.O	mg/l	8.6
8	SODIUM	mg/l	3.26
9	POTASSIUM	mg/l	2.9
10	CALCIUM	mg/l	31
11	MAGNESIUM	mg/l	20

7.0 Site specific observations made during the Visit

The quarry has a deep excavated area. High rock faces are there all around the excavation. Dust suppression is done by using dedicated tanker vehicles. A requisite personal protection equipment is given to all workers. Good shaped benches are formed and maintained. Boundary pillars are maintained intact with latitude and longitude inscribed on them. There is natural vegetation all around and green belt has not been developed artificially. The approach roads outside quarry premises are paved. Settling facility is provided to remove pollutants from surface runoff during rainy season, when water from quarry excavated area is pumped out. The land surrounding the quarry premises are thickly vegetated and many residences are in the proximity.

Photographs taken during the site assessment

Monitoring team

Quarry site

Particulate matter monitoring

Quarry pit

Assessment Report on Ambient Air Quality, Noise Levels and Mine Pit Wastewater Quality carried out during 01-01-2023 to 04-01-2023

Name and Address of the Stone Quarry Site	**M/s. United Granites and Metals Limited or George Kochuparambil or Kochuparambil Granites located at Manakkad Village, Vazhithala, Thodupuzha, Idukki 685583**			
Geo-coordinates	Latitude	09°53'48.01"N	Longitude	76°38'21.51"E

1.0. Stone Quarry Site Description

1.1 General information

M/s. United Granites and Metals Limited or George Kochuparambil or Kochuparambil Granites located at Manakkad Village, Vazhithala, Thodupuzha, Idukki 685583 is attached with captive crusher unit. As per the information provided by the quarry operator, the present quarrying lease commenced on 17.03.2018 and permission is granted by Department of Mining and Geology, Government of Kerala which is valid for 5 years. The quarry operator has obtained Environmental Clearance dated 17.03.2018 from State Environmental Impact Assessment Authority (SEIAA) and is valid up to 16.03.2023. The quarry has obtained Consent to Operate dated 16.07.2018 with validity up to 15.07.2023 from Kerala State Pollution Control Board. Area of mining is 12.2987 Ha. Nearest residential area is more than 150 metres away from the boundary of the approved mining area. There are no forests or wildlife sanctuaries located nearby. There are no rivers or such other water bodies nearby. The approach roads to the quarry are well maintained, with a length of about 300 meters to nearest major road. This quarry cannot sell granite boulders outside crushing units except its captive crusher unit. The surrounding ground is plain, with vegetation, rubber plantation and habitations around the stone quarry.

1.2 Topography & Geology

As per the information provided by the quarry operator, the stone quarry site had the lithology of Hornblende Gneiss. Geologically, the district can be divided into three major belts in a north-south direction- (i) Peninsular Gneiss Complex in the north and (ii) Charnockite group of rocks in the south and (iii) Migmatitic complex in between. The oldest rock of the area belongs to Peninsular Gneissic Complex represented by granite gneiss. The charnockite group comprises of pyroxene granulite, magnetite quartzite and charnockite among which the charnockite is dominant and widespread. Central, northeast and southeast parts of the district are dominated by rocks of migmatitic complex composing of biotite gneiss and hornblende-biotitegneiss. The highest elevation of the mine area is 145 m above MSL and 35 m above MSL.

1.3 Details of quarrying/ mining activities

The method of mining is semi-mechanized open cast mining. The mining operations are carried out using jack hammers, compressors, drills, excavators, hand shovels etc. followed by controlled blasting (NONEL TECHNOLOGY) using class 2 and class 6 explosives. The rock

braking is done using pneumatic rock breaker and transported to the captive crusher site using trucks/ tippers of 15T. Every day, blasting is carried out in 2 prefixed timings with maximum 40 no. of holes/blast.

2.0 Location attributes

2.1 Altitude (m)	44	2.2 Area (Ha)	12.2987
2.3 Terrain	Undulating	2.4 Lithology	Hornblende Gneiss
2.5 Soil type	Laterite	2.6 Total Mineable reserve	5980285 MT
2.6 (a) Remaining Mineable reserve	4472814 MT	2.6 (b) Approximate mined quantity per annum	400000 MT
2.7 Slope	Moderate	2.8 Fault	---
2.9 Distance from nearest forest (Km)	None within study area	2.10 Wildlife movement (Yes/ No)	No

3.0 Schedule of the Study/ Assessment

Day	Date	Activities
1	01-01-2023	Site reconnaissance, fixing of monitoring points within 50m, 100m, 200m and 500m from the blast point depending on the prevailing wind direction. Setting up a field office, arranging power supply for operating monitoring instruments/ equipment. Checking of instruments, deployment and conducting test runs.
2	02-01-2023	Background monitoring of ambient air quality and noise without any activities in the quarry. (06.00 to 18.00 Hrs.)
3	03-01-2023	Air quality and noise monitoring during the operation of quarry including drilling, blasting and all other quarry activities and water sample collection (06.00 to 18.00 Hrs.)
4	04-01-2023	Maintenance check of instruments used, safe packing for transportation and transporting monitoring gear to the next stone quarry site selected for assessment

4.0 Sampling/ Monitoring Plan and locations

The quarry area has a very deep excavation which has more length in the east west direction than in the North South direction. From the surrounding ground level, it is 40m-50m deep. The present blasting zone is towards west of the quarry area. 50m, 100m and 200m stations towards West, South East and North East are inside the excavated area or the surrounding un-mined area. Further stations like 500m were all outside the quarry premises, in private properties. In total, 12 co-ordinates were fixed with the actual blasting zone as centre in North-East line, West line and South-East line each at an angle of approximately 120° to each other. 9 locations were inside the quarry premises and 3 locations were outside the quarry premises. Photographs taken during the site assessment at Quarry of Mr. George Kochuparambil, Thodupuzha, Idukki District Kerala is given as **Annexure-UGML 1.**

4.1 Map showing sampling locations (Map)

4.2 Geo-coordinates of sampling locations

Co-ordinates of selected monitoring locations at the stone quarry site during the study is given in **Table 1** below

Table 1. Co-ordinates of selected monitoring locations at the stone quarry site

S.NO	Station Points	Latitude	Longitude
1	W50	9.8954959	76.6397201
2	W100	9.8954708	76.6392551
3	W200	9.8949294	76.6383807
4	W500	9.8941311	76.6368055
5	NE50	9.895914	76.641372
6	NE100	9.896201	76.641952
7	NE200	9.896585	76.642648
8	NE500	9.898985	76.644112
9	SE50	9.8949146	76.6407229
10	SE100	9.8945608	76.6410156
11	SE200	9.8939277	76.6412945
12	SE500	9.8904414	76.6413452

5.0 Monitoring activities

5.1 Background monitoring (02-01-2023)

The ambient air and noise monitoring started at 6:00am at all 12 selected stations in the quarry area. The quarry activities were kept completely idle on 2nd January 2023 to do ambient air quality and noise monitoring and all the 12 selected monitoring stations were ensured working properly. At each station, one Assistant Engineer / Instrument operator was stationed for the continuous monitoring. The Noise data, Air flow rates and Total volume of sucked air were recorded every one hour. The weather data were recorded from a station inside the quarry at NE200 and wind velocity, humidity and temperature were monitored every hour using Weather Tracker. The direction of the wind was mostly from west to east. Ambient Air Quality and Noise Monitoring were carried out under the overall supervision of Kerala State Pollution Control Board and waste water from the stone quarry pond was collected for further analysis for relevant parameters at Central Laboratory, Kerala State Pollution Control Board, Kochi.

The locations for drill holes for explosives were located by the CIMFR team. It was decided to conduct 10 blasts which consist of 281 holes, each hole having 32mm diameter and 6ft - 8ft depth. The explosive used is ammonium nitrate and maximum charge was in the order of 375 to 850 gm per hole. The CIMFR team identified 8 locations for the seismic analysis. 5 locations were inside the quarry and 3 locations were outside the quarry. They also conducted a social survey on the response of the public about quarrying activities, through a questionnaire. The location identification and survey were completed by 6.00pm. For study purpose, no. of holes to be drilled for each blast, filling of explosives and blasting activity were carried out under the overall supervision of CIMFR Expert Team.

5.2 Monitoring during Stone Quarry Operation (on 03-01-2023)

The air and noise monitoring was started at 06 AM. The monitoring was continued without any interruption from beginning to end. Before blasting, drilling of blast holes using jack hammers was started from 6.am onwards and 281 no. of blast holes were drilled. The drilling of holes (5ft to 6ft depth) and filling of explosives into each hole were completed at 12.30pm. Connections were also established for the blasting, under the overall supervision of CIMFR Team. The crusher was kept idle on quarrying monitoring day in view of the blasting activity. All the 10 blasts as planned were conducted. Immediately after the blasting was completed, regular activity such as vehicular movement, breaking of boulders using pneumatic rock breakers and hauling of the quarry product using haulers were carried out. These quarrying activities as well as ambient air, noise levels were continued full-fledged until the end of the day. The blasting activity carried out by the stone quarry operator under the overall guidance and supervision of CIMFR Experts.

6.0 Monitoring Results-Ambient Air Quality and Noise Levels

6.1 Weather

The weather data were monitored every hour using Weather Tracker inside the quarry with respect to wind velocity, humidity and temperature and the weather details observed during Non-quarrying (02.01.2023) and Quarrying Day (03.01.2023) are given in **Table 2 & Table 3** below.

Table 2. Weather details observed during non-quarrying (02.01.2023)

Sl. No	Time (Hrs)	Temperature (◦ C)	Humidity (%)	Wind Speed & Direction (m/s)
1	07:00	24.3	85	0
2	08:00	26.6	67.8	0.6 SE
3	09:00	29	50.5	1.4 S
4	10:00	29.8	50	1 SW
5	11:00	30	47.3	1 SE
6	12:00	30.6	44.1	1.3 S
7	13:00	31.2	40.7	1.6 S
8	14:00	31.2	36.3	1.3SE
9	15:00	33.3	41	0.4 E
10	16:00	32.6	44.3	0.8 S
11	17:00	30.2	61.5	0

Table 3. Observed Weather Details on the Quarrying Day at the Quarry Site (03.01.2023)

Sl. No	Time (Hrs)	Temperature (◦ C)	Humidity (%)	Wind Speed & Direction (m/s)
1	06:00	21.7	83.8	0
2	07:00	22.2	84.4	0
3	08:00	24.7	78.5	0.5 S
4	09:00	26.9	67.5	0.5 S
5	10:00	27.8	59.5	1.9 SE
6	11:00	29.9	56	0.7 SW
7	12:00	31.8	48.5	1.2 S
8	13:00	32	45.1	1 S
9	14:00	32.7	47	0
10	15:00	33.2	48.5	1 SE
11	16:00	32.4	48.9	0
12	17:00	31.3	49	0.8 S
13	18:00	31.1	60.9	0

6.2 Particulate matter/dust in terms of PM10 and PM2.5 values observed during Non-Quarrying day (02.01.2023) & Quarrying Day (03.01.2023)

Particulate matters/ dust in terms of PM10 and PM2.5 values observed during Non-quarrying day (02.01.2023) and Quarrying day (03.01.2023) are given in **Table 4 and Fig 1 to Fig 2** below:

Table 4: PM10 & PM2.5 values observed during Non-quarrying and Quarrying day

Station Points	Distance from blasting zone (metre)	PM 10 (microgram/m^3)		PM 2.5 (microgram/m^3)	
		Non-quarrying day	Quarrying day	Non-quarrying day	Quarrying day
W50	50 m	53.0952381	53.69585687	34.82124406	26.98788836
W100	100 m	112.519685	76.97944007	20.96998609	20.03125208
W200	200 m	46.91647151	49.35980903	21.31211943	18.43434343
W500	500m	33.79928315	38.27380952	7.174713981	6.660168941
NE50	50 m	38.22834646	74.17534722	22.56410256	41.20148857
NE100	100 m	47.88527624	47.9561879	39.29292929	10.15853983
NE200	200 m	58.21333333	51.34372177	43.30312185	26.68644704
NE500	500 m	51.80769231	62.37179487	2.81124498	22.71664328
SE50	50 m	35.91397849	56.22222222	18.36327345	15.82067679
SE100	100 m	59.06976744	59.00537634	22.37470167	8.785140562
SE200	200 m	38.42307692	48.56804479	15.72516026	44.58059374
SE500	500 m	33.75	39.81128075	6.021637069	4.08496732

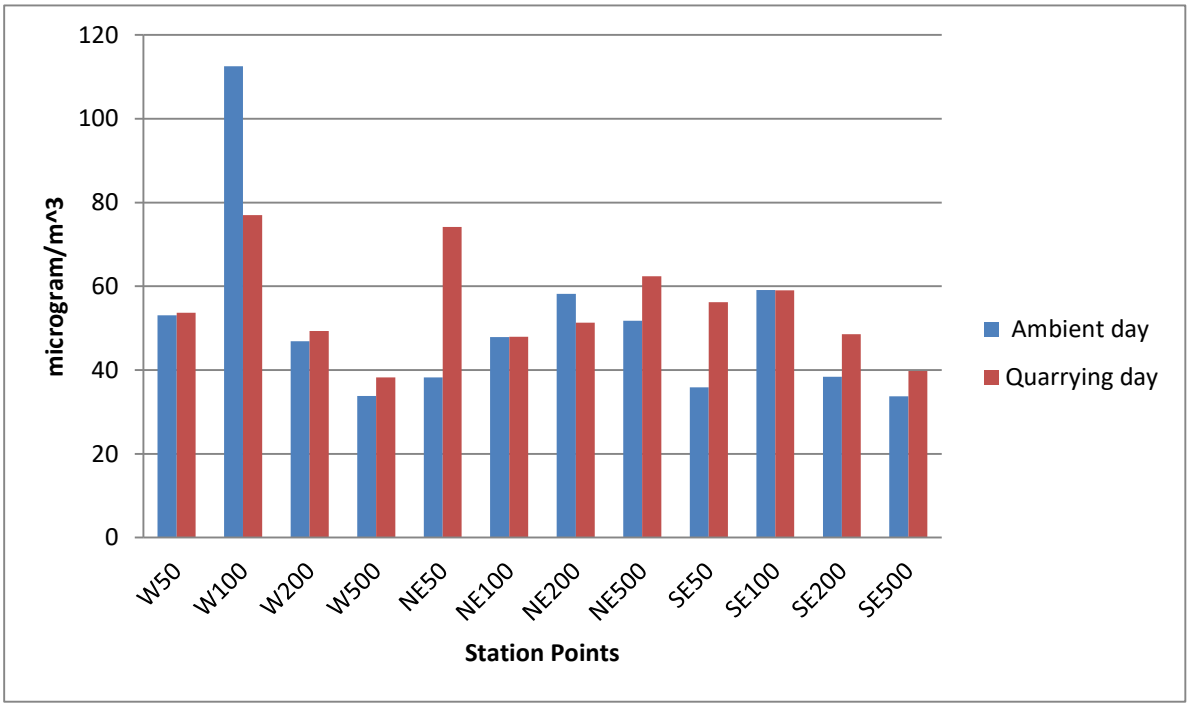


Fig.1: PM10 values observed during quarrying and non-quarrying day

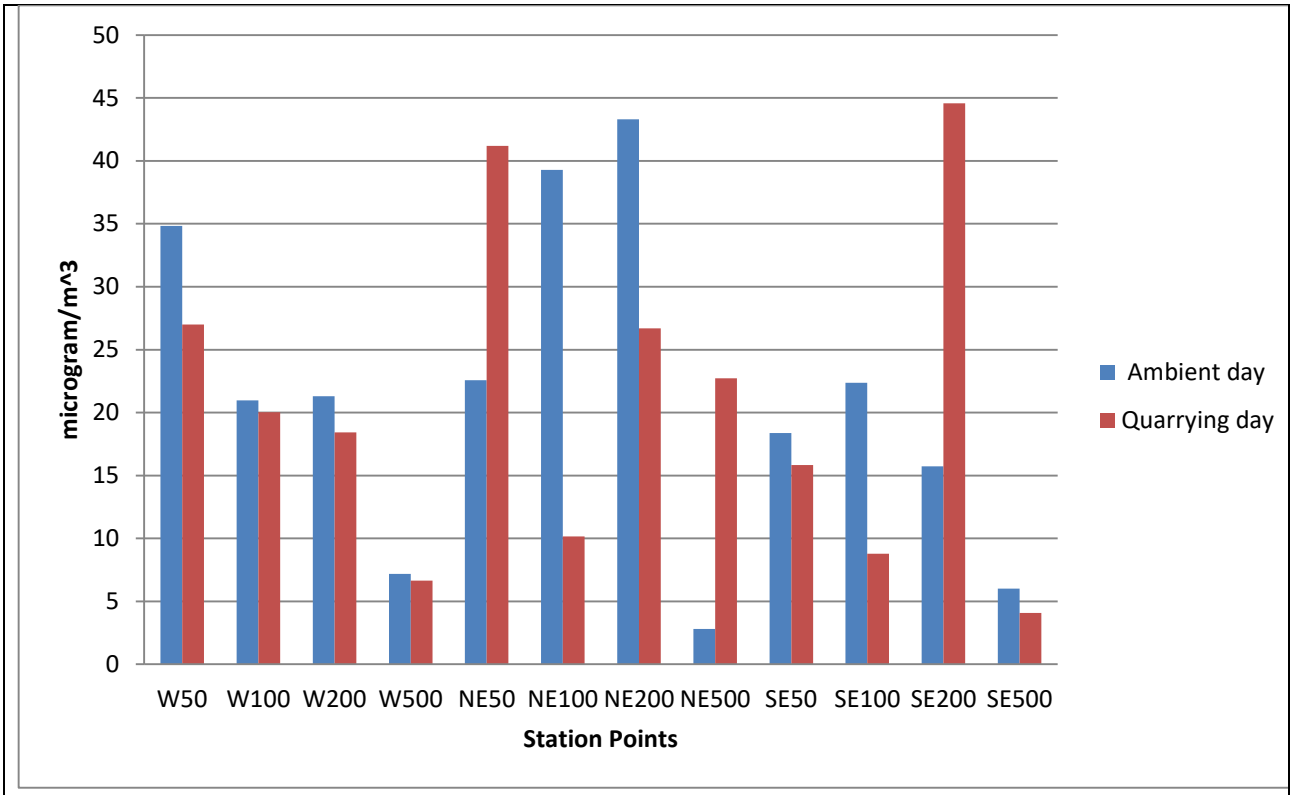


Fig.2: PM2.5 values observed during Quarrying and Non-quarrying day

The analysis results of ambient air quality during non-quarrying day (Ambient day) and quarrying day reveal that

(i) PM10 values of blasting day in stations inside the quarry can be seen to be higher than those of ambient day. This shows the influence of quarrying in increasing the concentration of particulate matter PM 10.

(ii) In West 100m station, increase of PM10 concentration on non-quarrying day than quarrying day can be attributed to the presence of a product storage area nearby, which might have emanated dust during non-quarrying day due to wind. Influence of quarrying is seen minimal in stations 200 m and 500 m, so the results are not like 50 m stations.

(iii) The results of PM2.5 shows that ambient day values are generally more than blasting day values. The reason is inferred as follows. Efficient dust suppression using water spray and sprinkling was carried out on blasting day whereas dust suppression was nil on ambient day. This made the ambient day concentrations higher.

6.3 Noise Monitoring

Observed Noise Levels in terms of Equivalent Noise (L_{eq}) and Maximum Noise Levels (L_{max}) on non-quarrying and quarrying day are given in the **Table 5 and Fig 3 to Fig 15** in subsequent paras:

Table 5: Observed Noise Levels in terms of Equivalent Noise (L_{eq}) and Maximum Noise Levels (L_{max}) on Ambient Day and Quarrying Day.

Station Points	Non-quarrying Day Noise Levels		Quarrying Day Noise Levels	
	L_{eq}	L_{max}	L_{eq}	L_{max}
W50	60.18807653	66.1	64.2089918	109.5
W100	56.98689576	58.2	61.66202326	90.1
W200	57.06441643	97.2	57.20732863	83.9
W500	52.57283161	87.7	52.74585978	82.7
NE50	55.46514863	88.1	63.89980187	107.1
NE100	49.05278828	80.1	52.45398751	88.7
NE200	47.84672128	87.2	52.53416507	87.5
NE500	53.75160023	75.9	52.02780663	75.7
SE50	52.21035288	91.3	65.09020189	108.9
SE100	51.8989128	95.2	58.41955785	104.5
SE200	58.9643484	97.8	58.20870395	100.3
SE500	52.04640674	92.2	48.8404357	73.4

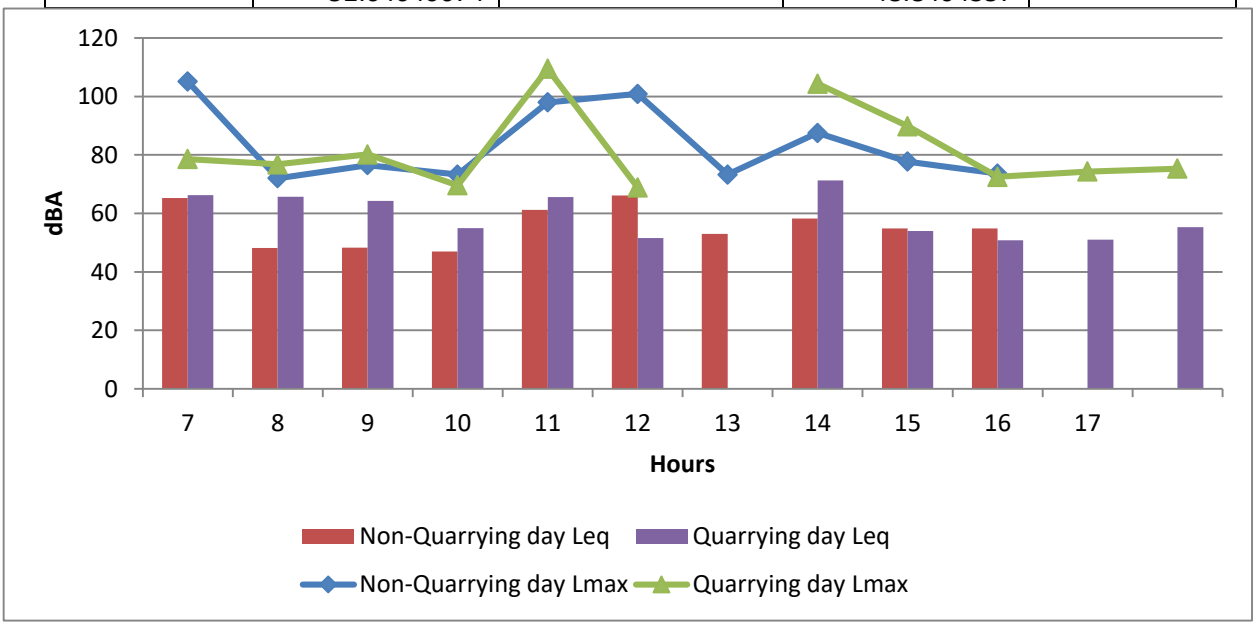


Fig.3: Noise Levels- Equivalent Values (Leq) and Maximum Values (L_{max}) observed on Quarrying and Non Quarrying Day at West Direction 50 m

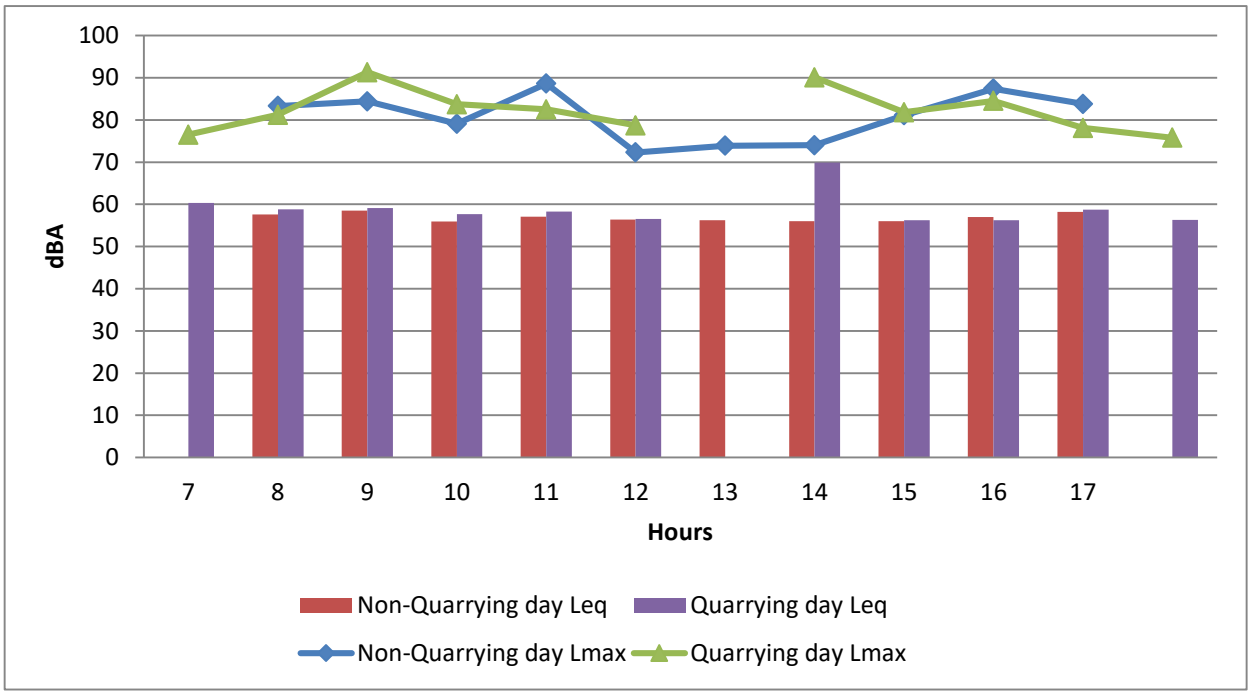


Fig.4: Noise Levels- Equivalent Values (Leq) and Maximum Values (L_{max}) observed on Quarrying and Non Quarrying Day at West Direction 100 m

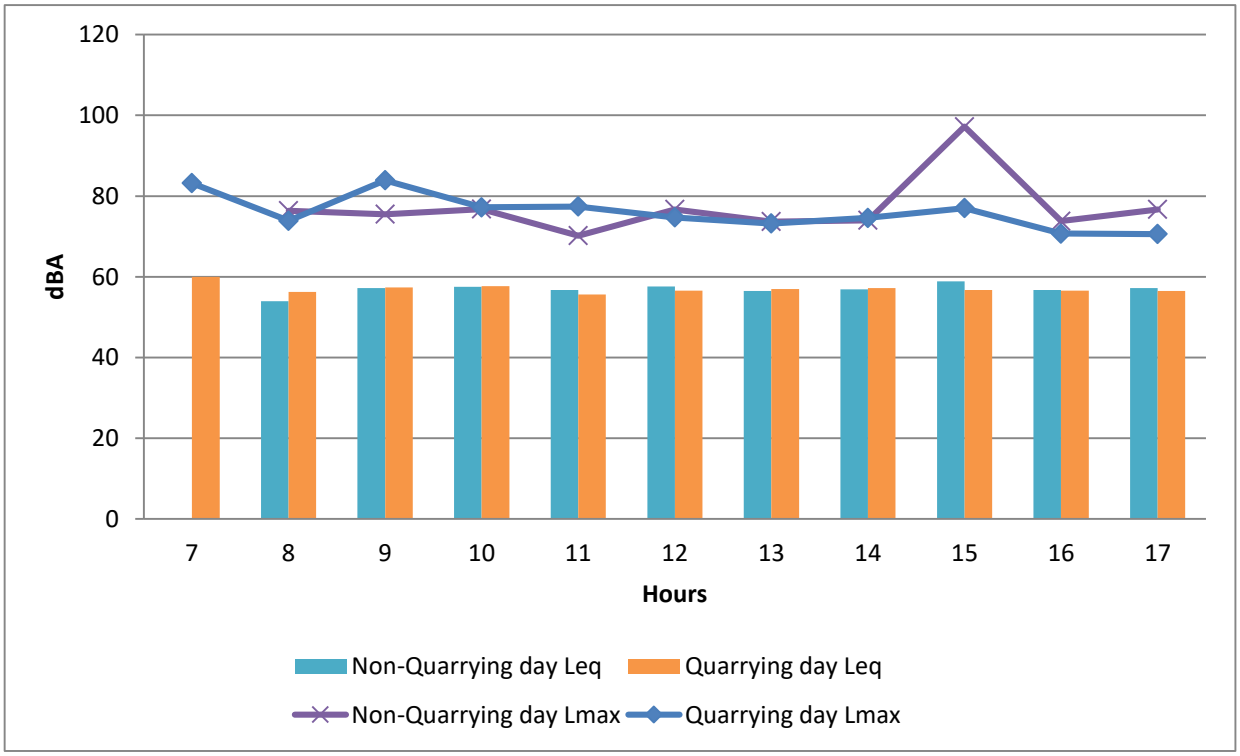


Fig.5: Noise Levels- Equivalent Values (Leq) and Maximum Values (L_{max}) observed on Quarrying and Non Quarrying Day at West Direction 200 m

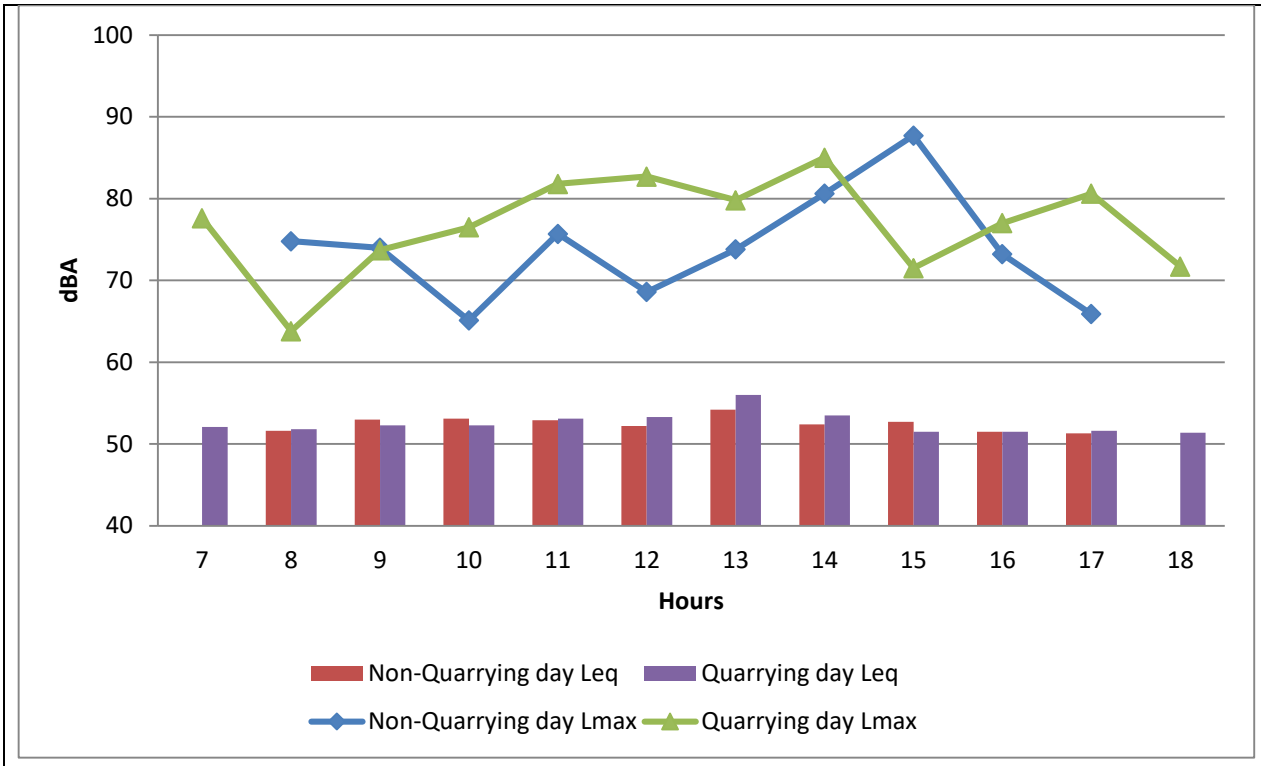


Fig.6: Noise Levels- Equivalent Values (Leq) and Maximum Values (L_{max}) observed on Quarrying and Non Quarrying Day at West Direction 200 m

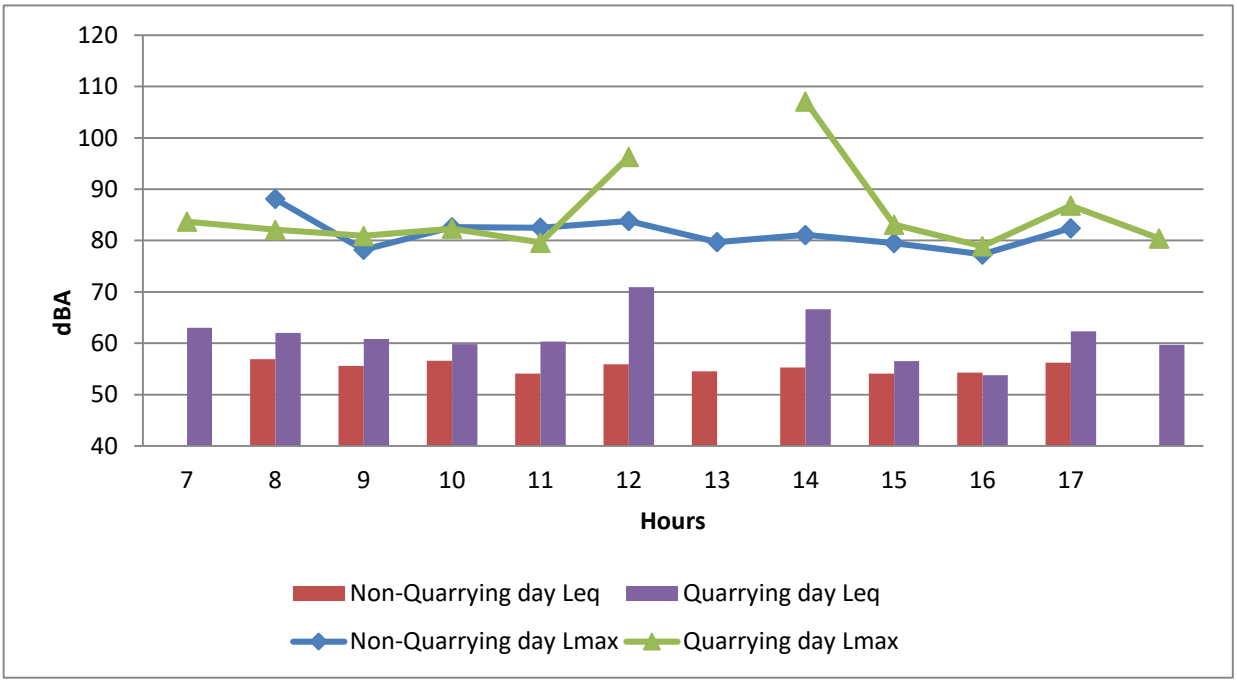


Fig.7: Noise Levels- Equivalent Values (Leq) and Maximum Values (L_{max}) observed on Quarrying and Non Quarrying Day at North East Direction 50 m

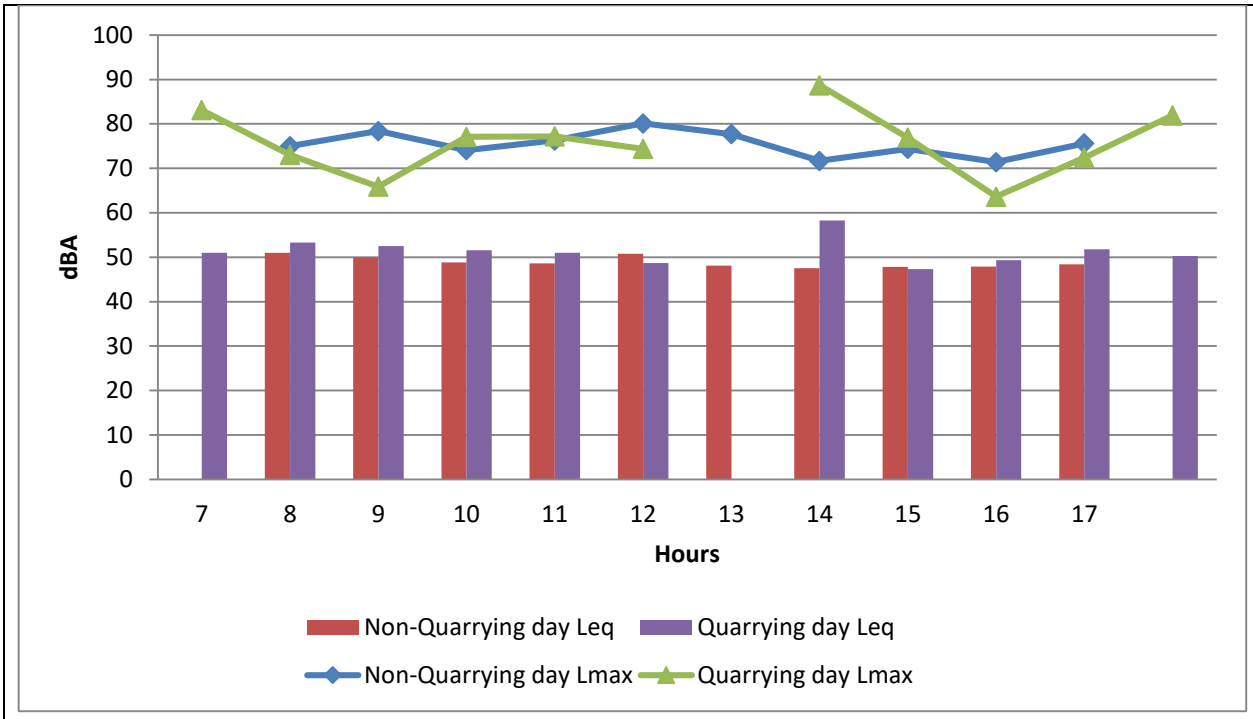


Fig.8: Noise Levels- Equivalent Values (Leq) and Maximum Values (L_{max}) observed on Quarrying and Non Quarrying Day at North East Direction 100 m

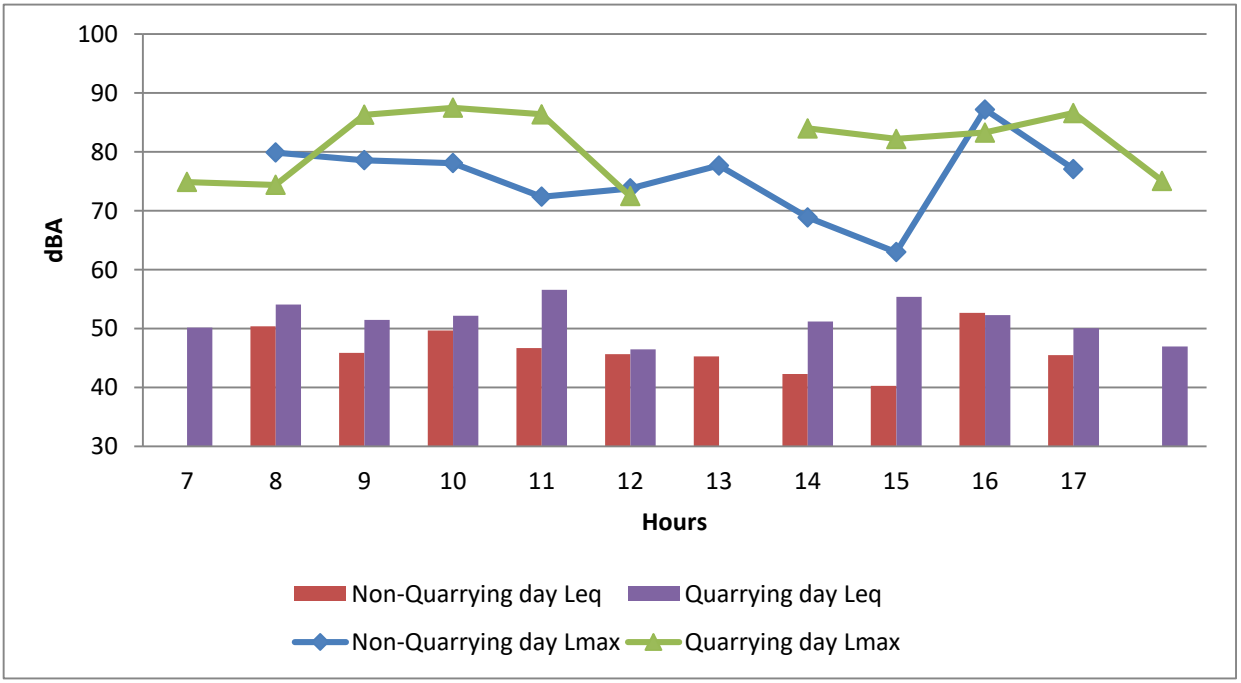


Fig.9: Noise Levels- Equivalent Values (Leq) and Maximum Values (L_{max}) observed on Quarrying and Non Quarrying Day at North East Direction 200 m

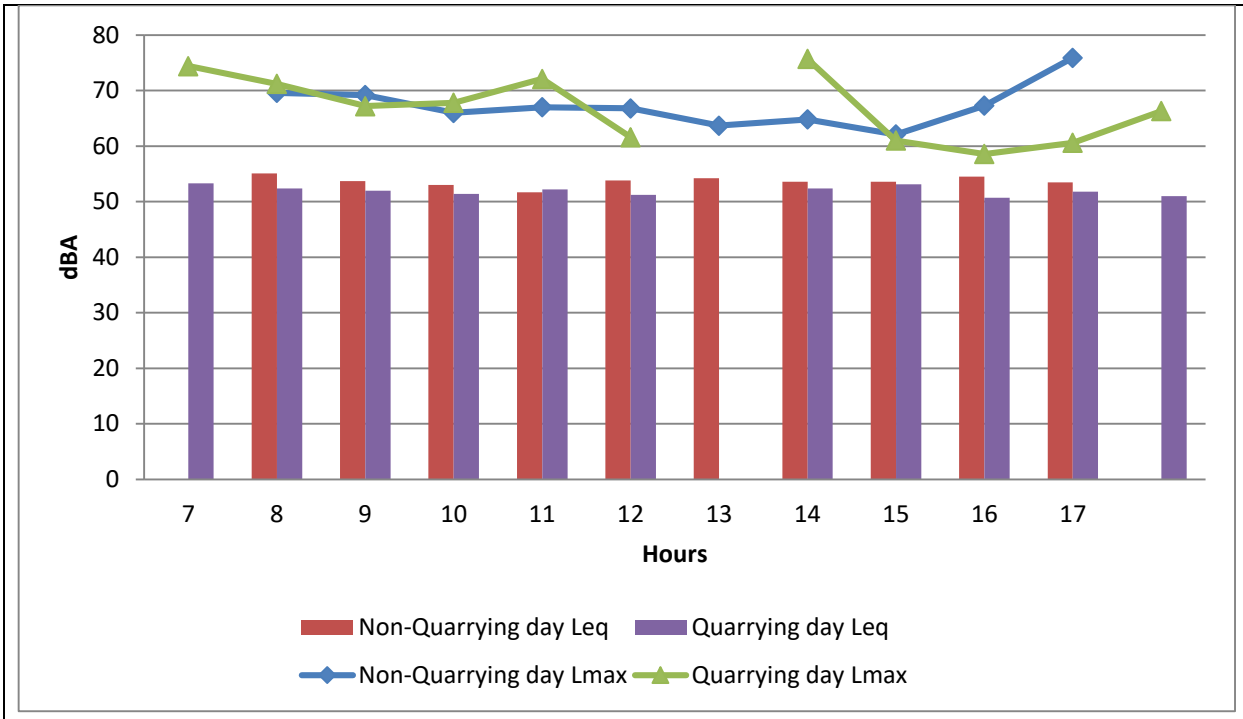


Fig.10: Noise Levels- Equivalent Values (Leq) and Maximum Values (L_{max}) observed on Quarrying and Non Quarrying Day at North East Direction 500 m

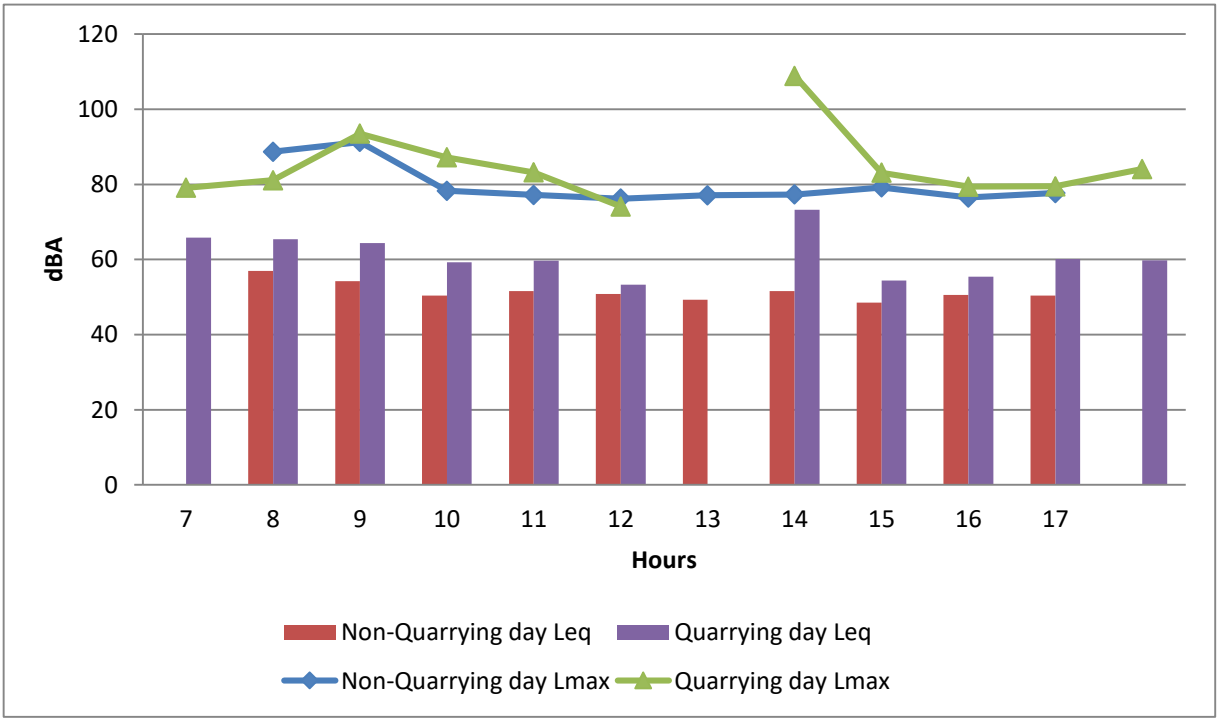


Fig.11: Noise Levels- Equivalent Values (Leq) and Maximum Values (L_{max}) observed on Quarrying and Non Quarrying Day at South East Direction 50 m

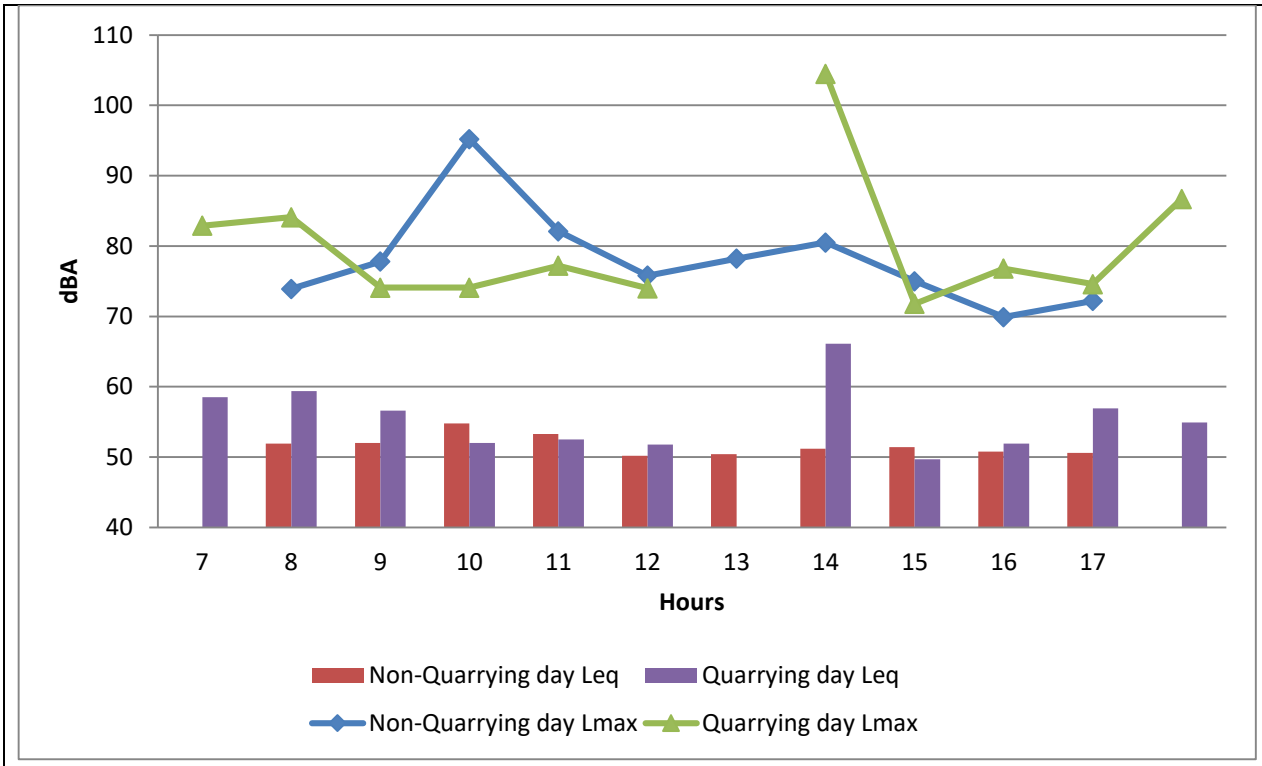


Fig.12: Noise Levels- Equivalent Values (Leq) and Maximum Values (L_{max}) observed on Quarrying and Non Quarrying Day at South East Direction 100 m

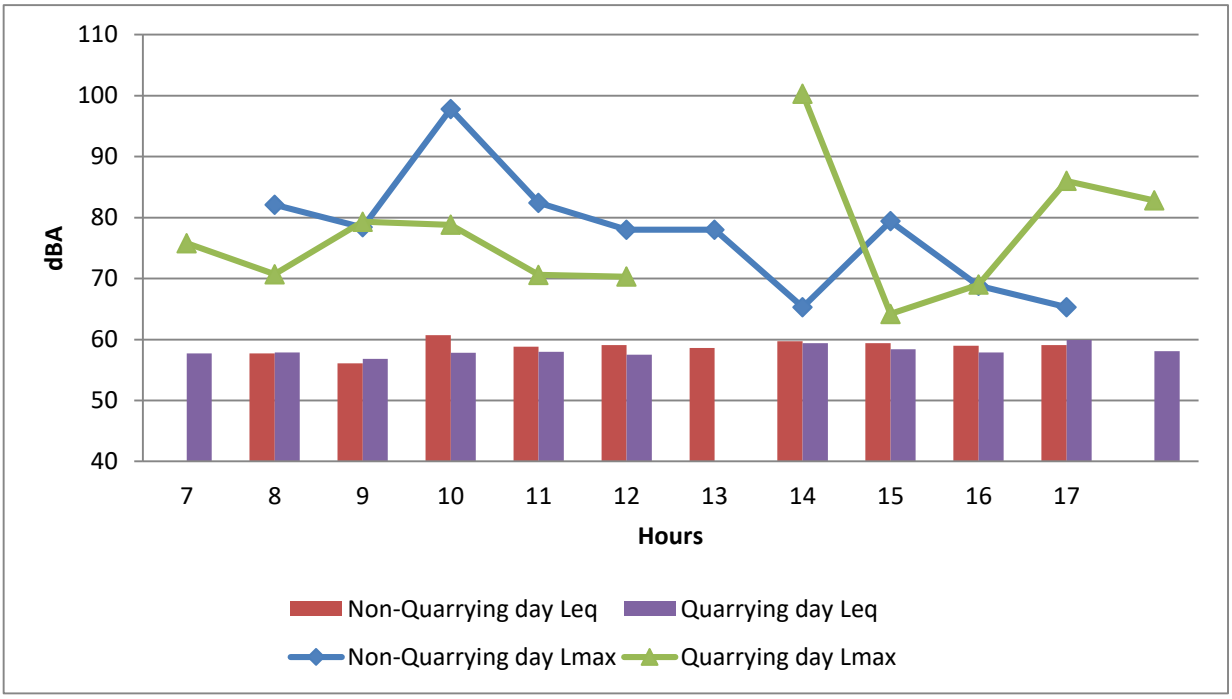


Fig.13: Noise Levels- Equivalent Values (Leq) and Maximum Values (L_{max}) observed on Quarrying and Non Quarrying Day at South East Direction 200 m

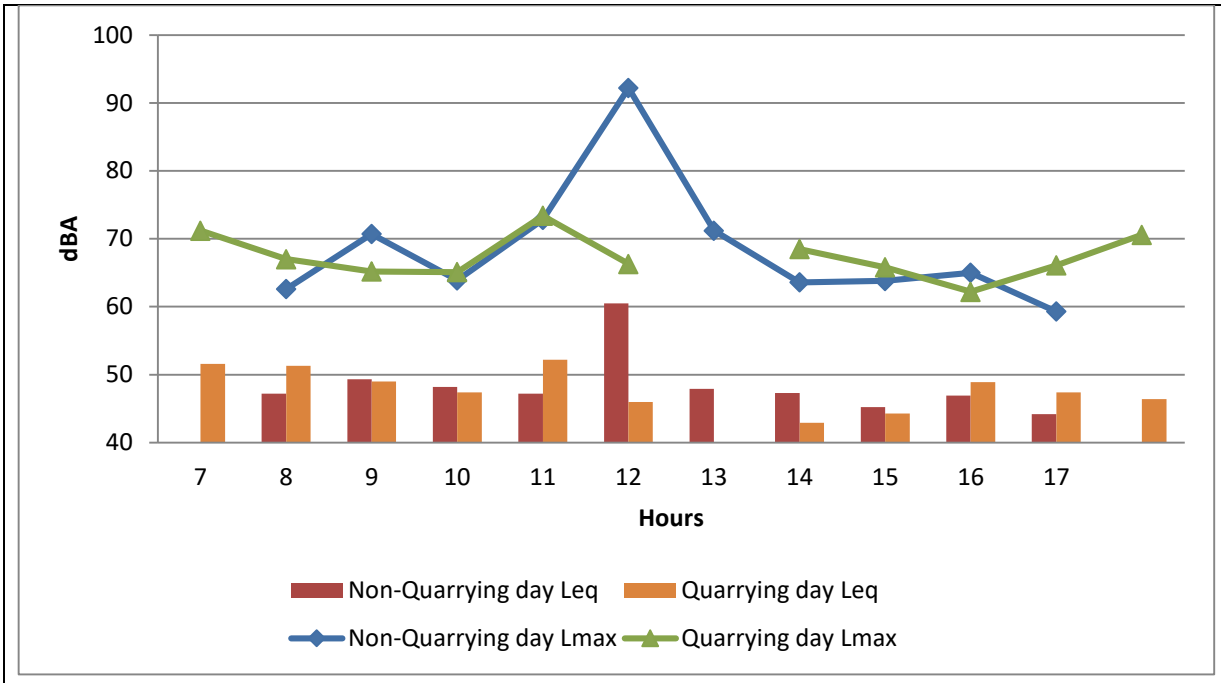


Fig.14: Noise Levels- Equivalent Values (Leq) and Maximum Values (L_{max}) observed on Quarrying and Non Quarrying Day at South East Direction 500 m

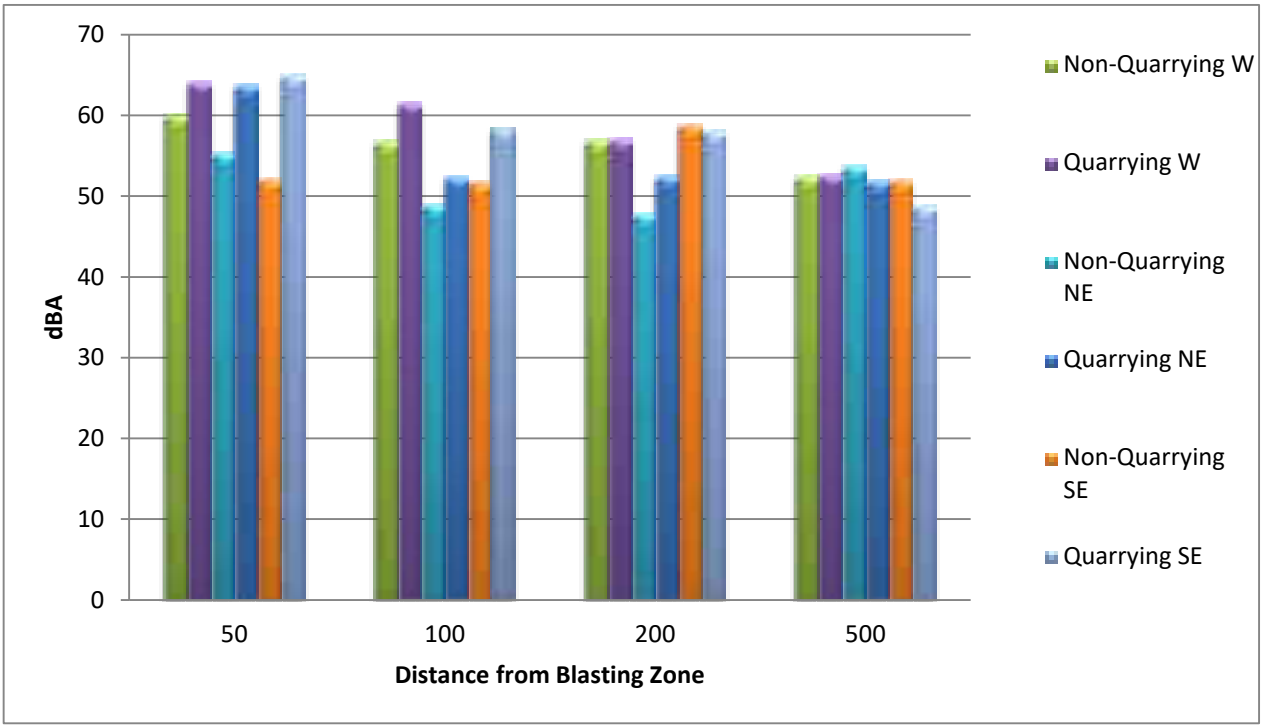


Fig.15: Equivalent values (Leq) of non quarrying and quarrying day

Leq= Equivalent noise level (12 hours)

dB(A)= Decibel in 'a' scale (unit of sound pressure level)

The Noise monitoring analysis results monitored at 11 monitoring stations reveal that

(i) The equivalent noise level are high on quarrying day than ambient day at all monitored stations except at SE200, SE500 and NE500, which can be attributed to local sources, than quarrying effects.
(ii) The noise levels on blasting day decreases with increase in distance from blasting zones in all directions.
(iii) More than 10 dB(A) increase in Leq was observed in SE50
(iv) Peak of hourly equivalent value was observed between 12 hours and 14 hours, which corresponds to the blasting time.

6.4 Water Quality

Analysis results of the stone quarry pond water quality is given in the Table below:

Sample Point: Quarry Pond located within the quarry site

Date of Sample: 03/01/2023

Sl. No.	Parameters	Unit	Value
1	pH		7.2
2	BOD	mg/l	12
3	COD	mg/l	36
4	SS	mg/l	46.5
5	D.O	mg/l	5.2
6	SODIUM	mg/l	8.29
7	POTASSIUM	mg/l	4.06
8	CALCIUM	mg/l	17.2
9	MAGNESIUM	mg/l	4.13

Note:- No effluent discharge standards prescribed by Kerala SPCB to the Stone Quarry Operator under the Consent to Operate issued under The Water (Prevention and Control of Pollution) Act, 1974.

7.0 Site specific observations made during the Visit

- The quarry has a deep excavated area.
- The land surrounding the quarry premises are thickly vegetated and residences observed. High rock faces observed all around the excavation.
- Dust suppression is practiced by using dedicated tanker spray vehicle and cannons
- All requisite personal protection equipment is provided to all the workers.
- Good shaped benches are practiced and maintained.
- Boundary pillars are maintained intact with latitude and longitude painted
- There is a natural vegetation all around and green belt has been developed artificially.
- The Approach roads outside quarry premises are tarred and well maintained.
- Mist sprinkling all around the stone quarry and smog gun arrangements are made by the unit for control of dust from stone quarry site.
- Blasting shelter made of iron sheet is provided at suitable points to prevent any damage to the workers at the time of blasting or for hiding during any unexpected eventualities.
- Surface runoff during rainy season, water from quarry site is pumped out and discharged into the forest area, without imparting any treatment.
- No fly rocks observed during the study period.

Annexure UGML I

Photographs taken during the site assessment carried out during 01 to 04.01.2023 at Quarry of Mr. George Kochuparambil, Vazhithala, Idukki District, Kerala

LOCATION: IDUKKI

Assessment Report on Ambient Air Quality, Noise Levels and Mine Pit Wastewater Quality carried out during 05-01-2023 to 08-01-2023

Name and Address of the Stone Quarry Site	**Cochin Blue Metal Industries Pvt Ltd., Choozhikkara, Methiri (PO), Ramapuram, Kottayam- 686576**			
Geo-coordinates	Latitude	09°50'43.25"N	Longitude	76°38'00.95"E

1.0. Stone Quarry Site Description

1.1 General information

M/s. Parackal Granite Kerala, Kalamboor, Muvattupuzha, Ernakulam had the lithology of Hornblende Gneiss, was of large size and has no public complaints. The present quarrying lease issued by Department of Mining and Geology, Government of Kerala, commenced on 12-02-2019and is valid up to 14-02-2029.

The quarry has obtained Environmental Clearance from State Environmental Impact Assessment Authority, Kerala on 27-02-2018 and valid up to 26-02-2023. It also holds valid Consent to Operate of Kerala State Pollution Control Board. It is owned by Shri. P. K. Prasad. Area of mining is 7.6606 Ha, nearest residential area is 54 metres from the quarry.

The quarry is attached to in-house crusher. The public road to the quarry from the nearest town is well tarred and wide enough for two heavy vehicles. The approach road in the proponent's property is also tarred, but kept well moist by water sprinkling. There are no major water bodies like rivers and no forests or sanctuaries nearby.

1.2 Topography & Geology

The highest elevation of the mine area is 195 m MSL in the NW and the lowest is 130 m MSL in the SE direction. This area shows a very interesting correspondence between the major rock classes and their physiographic expression. The east comprises Precambrian metamorphic rocks and forms hilly ground. The central part is a low plateau, where tertiary sediments containing lignite ore. The charnockite group dominates in areal distribution with charnockite, charnockite gneiss and diopside gneiss occupying the major part.

1.3 Details of quarrying/ mining activities

The method of mining is semi-mechanized open cast mining. The mining operations are carried out using jack hammers, compressors, drills, excavators, etc. followed by controlled blasting (NONEL) using class 2 and class 6 explosives.

The rock breaking is done using pneumatic breakers and transported to the crusher site using trucks/ tippers of 15 Tonnes carrying capacity for various products. Every day, blasting is carried out in 2 prefixed timings with maximum 60 no. of holes/blast.

2.0 Location attributes			
2.1 Altitude (m)	85	2.2 Area (Ha)	4.8910
2.3 Terrain	Undulating	2.4 Lithology	Charnockite
2.5 Soil type	Laterite	2.6 Total Mineable reserve	5980285 MT
2.6 (a) Remaining Mineable reserve	4472814 MT	2.6 (b) Approximate mined quantity per annum	400000 MT
2.7 Slope	Moderate	2.8 Fault	---
2.9 Distance from nearest forest (Km)	None within 10 km	2.10 Wildlife movement (Yes/ No)	No

3.0 Schedule of the Study/ Assessment		
Day	Date	Activities
1	05-01-2023	Site reconnaissance, fixing of monitoring points within 50m, 100m, 200m and 500m from the blast point. Setting up a field office, arranging power supply for operating monitoring instruments/ equipment. Checking of instruments, deployment and conducting test runs.
2	06-01-2023	Air quality and noise monitoring during the operation of quarry including drilling, blasting and all other quarry activities (06.00 to 18.00 Hrs.)
3	07-01-2023	Background monitoring of ambient air quality and noise without any activities in the quarry. (06.00 to 18.00 Hrs.)
4	08-01-2023	Maintenance check of instruments used, safe packing for transportation and transporting monitoring gear to the next station.

4.0 Sampling/ Monitoring Plan and locations

The quarry area has deep excavation. From the surrounding ground level, it is 30m- 40m deep. The present blasting zone is towards east of the quarry area which has more length in the east west direction than in the North South direction. Hence the 50m, 100m and stations towards West, North East and South East line are inside the open quarry land itself. Station Point SE200 is also inside the quarry premises. Further stations of 500m and NE200, W200 were all outside the quarry premises, in private properties. Hence in total, 12 coordinates were fixed with the actual blasting point as centre in North-East line, West line and South-East line each at an angle of approximately 120° to each other. 7 locations were inside the quarry and 5 locations were outside the quarry premises.

The locations for drill holes for explosives were located by the CIMFR blasting team. It was decided to conduct 10 blasts which consist of 211 holes, each hole having 32mm diameter and 5ft - 6ft depth. The explosive used is ammonium nitrate of 250 gm per hole.

The CIMFR team identified 8 locations for the seismic analysis. 4 locations were inside the quarry and 4 locations were outside the quarry. They also conducted a social survey on the response of the public about quarrying activities, through a questionnaire. The location

identification and survey were completed by 5pm. Photographs taken during the site assessment at Cochin Blue Metal Industries Pvt. Ltd., Ramapuram, Kottayam District Kerala is given as Annexure-1.

4.1 Map showing sampling locations (Map)

4.2 Geo-coordinates of sampling locations			
S. No.	***Station Points***	***Latitude***	***Longitude***
1	W50	9.8438463	76.6336519
2	W100	9.8439302	76.6332097
3	W200	9.8438817	76.6319826
4	W500	9.8436567	76.6298522
5	NE50	9.8443963	76.6346162
6	NE100	9.8446438	76.6349464
7	NE200	9.8458003	76.6364116
8	NE500	9.8467288	76.6382519
9	SE50	9.8435768	76.6344549
10	SE100	9.8430082	76.6344264
11	SE200	9.842008	76.6356358
12	SE500	9.840519	76.6362

5.0 Monitoring activities

5.1 Background monitoring (on 07-01-2023)

The monitoring started at 6.00am at all 12 stations. The air monitoring was interrupted at 7 stations inside the quarry (from 6AM to 7AM) due to voltage fluctuation and other electrical malfunctions. The quarry activities were kept completely idle to do ambient monitoring. The direction of the wind was mostly from west to east. The monitoring was completed at all 12 stations by 06PM. The crusher was in operation on this ambient monitoring day also, since it was operational on quarrying day.

5.2 Monitoring during Stone Quarry Operation (on 06-01-2023)

The monitoring started at 6.00am. At the stations NE 200 and NE 500, air monitoring was interrupted for 15 minutes to 1 hour due to the power failure. Also, at the station SE 50 and SE 100, the sound level meter had some problem and the noise monitoring was interrupted from 20 minutes to 1 hour. The weather data were recorded from the same two stations inside the quarry.

Before blasting, drilling of blast holes using jack hammers was started from 6.am onwards and approximately 300 no. s of blast holes were drilled. The drilling of holes (5ft to 6ft depth) and filling of explosives into each hole were completed at 11.45am. Connections were also established for the blasting. The CIMFR team checked all the drilled holes of blast points. The team also installed Seismograph at 8 locations which had slight changes from the previously decided locations, due to site-specific practical reasons. That is, inside the quarry there were

4 locations except at the Office site. Outside the quarry, one additional point was identified at NE 200.

There is another operational quarry about 500m distant from the boundary of the quarry under study. Noise of blasting from that quarry was audible at the site but it was ensured that the blasting of either of the two quarries takes place at different timing so that effect of blasting of the quarry under study could be detected separately.

The crusher was kept idle on both the ambient monitoring day as well as the quarrying monitoring day since operating the crusher would have contributed to dust as well as vibration and noise. That would affect the measured values in which the effect of quarrying alone is to be found out. About 10 experimental blasts were conducted.
Immediately after the blasting was completed, vehicular movement, breaking of boulders using breakers and hauling of the quarry product using haulers were carried out. These quarrying activities continued full-fledged until the end of the day. The monitoring was completed at all the 12 stations by 06PM.

6.0 Monitoring Results-Ambient Air Quality and Noise Levels

6.1 Weather

Weather: Non-quarrying day (07-01-2023)				
S.No.	***Time (Hrs)***	***Temperature (◦C)***	***Humidity (%)***	***Wind (m/s) & Direction***
1	06:00	-	-	-
2	07:00	-	-	-
3	08:00	24.1	69.1	1.2, SE
4	09:00	25.8	64.6	1.1, S
5	10:00	27.5	60.8	1.5, W
6	11:00	29.1	55.7	0.7, SW
7	12:00	30.2	50.4	0
8	13:00	31.8	50.9	0
9	14:00	31	49.1	2.1, S

10	15:00	32.3	48.8	1.1, SE
11	16:00	32.1	54.7	1.2, NE
12	17:00	30.9	61.3	1.5, S
13	18:00	-	-	-

Weather: Quarrying day (06-01-2023)				
S.No.	***Time (Hrs)***	***Temperature (°C)***	***Humidity (%)***	***Wind (m/s) & Direction***
1	06:00	22.6	70.2	0.6, SE
2	07:00	24	65.1	0.8, S
3	08:00	25.4	61.3	1.2, W
4	09:00	26.4	63.8	1.5, SE
5	10:00	28.2	54.6	0.7, SE
6	11:00	29.9	52.6	2, SW
7	12:00	30.7	50	0
8	13:00	32.6	53.4	0
9	14:00	31.6	50.6	1.2, S
10	15:00	31.5	48.4	2.8, S
11	16:00	31.8	54.8	1.1, SE
12	17:00	30.9	62.4	1.8, NE
13	18:00	30	65.6	1.5, SE

6.2 Particulate matters/dust

- The adjoining crusher had operated on both non-quarrying day and quarrying day.

- Generally, PM10 and PM2.5 values of blasting day in stations inside the quarry can be seen to be higher than those of ambient day. This shows the influence of quarrying in increasing the concentration of particulate matter. The variation in PM10 and PM2.5 on quarrying day than non-quarrying day are high compared to other quarry sites. This may be due to the dust-containment effect of the deep excavated area bound on all sides by high rock wall.

- In SE 500m station, increase of PM10 concentration on ambient day than blasting day can be attributed to local source of pollution like road dust. In SE50, SE100 and SE200 also PM 10 and 2.5 are more on non-quarrying day than quarrying day. These stations are within quarry premises but outside excavation. On non-quarrying day, other vehicular movement in the crusher premises was there even though there were no activities inside the excavation. The crusher plant's premises has dust-depositions which also contributed to ambient day's PM values.

Table: PM10 & PM2.5 values in non-quarrying and quarrying day

Station Points	*Distance from blasting zone (metre)*	*PM 10 (microgram/m^3)*		PM 2.5 (microgram/m^3)	
		Non-quarrying day	Quarrying day	Non-quarrying day	Quarrying day
W50	50 m	81.05555556	117.76028	18.06526807	71.90228621
W100	100 m	43.77333333	71.69312169	16.06425703	12.96854083
W200	200 m	49.0990991	60.15029725	18.07598039	65.3745973
W500	500 m	51.58615717	69.80251736	1.691542289	39.8953781
NE50	50 m	156.9260486	313.359682	33.84146341	45.65522777
NE100	100 m	59.08268734	126.5277778	29.986053	38.00272665
NE200	200 m	62.3715415	106.9899818	12.41987179	36.55859507
NE500	500 m	42.62254902	50.93573446	46.11451943	29.37797473
SE50	50 m	212.0576132	202.0921986	89.6969697	22.81144781
SE100	100 m	104.8907104	66.85897436	41.295306	6.923837784
SE200	200 m	87.92328042	56.77083333	23.00218124	19.39513478
SE500	500 m	61.41333333	54.3	20.68273092	1.00040016

Fig.1: PM-10 values of Quarrying and Non-quarrying days

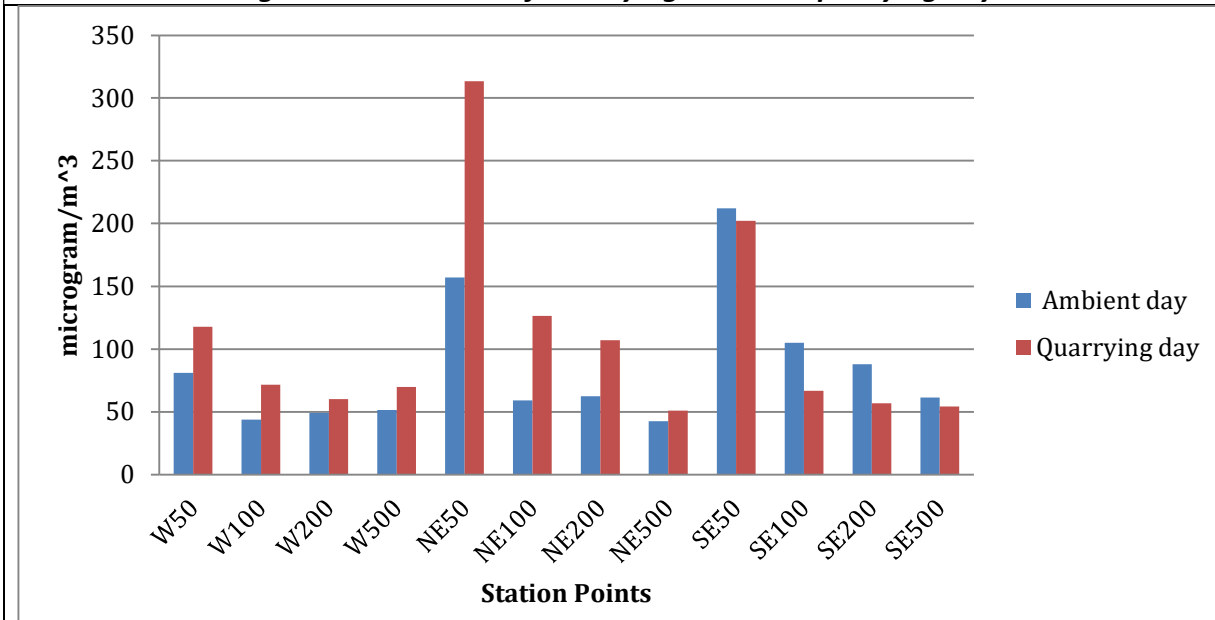
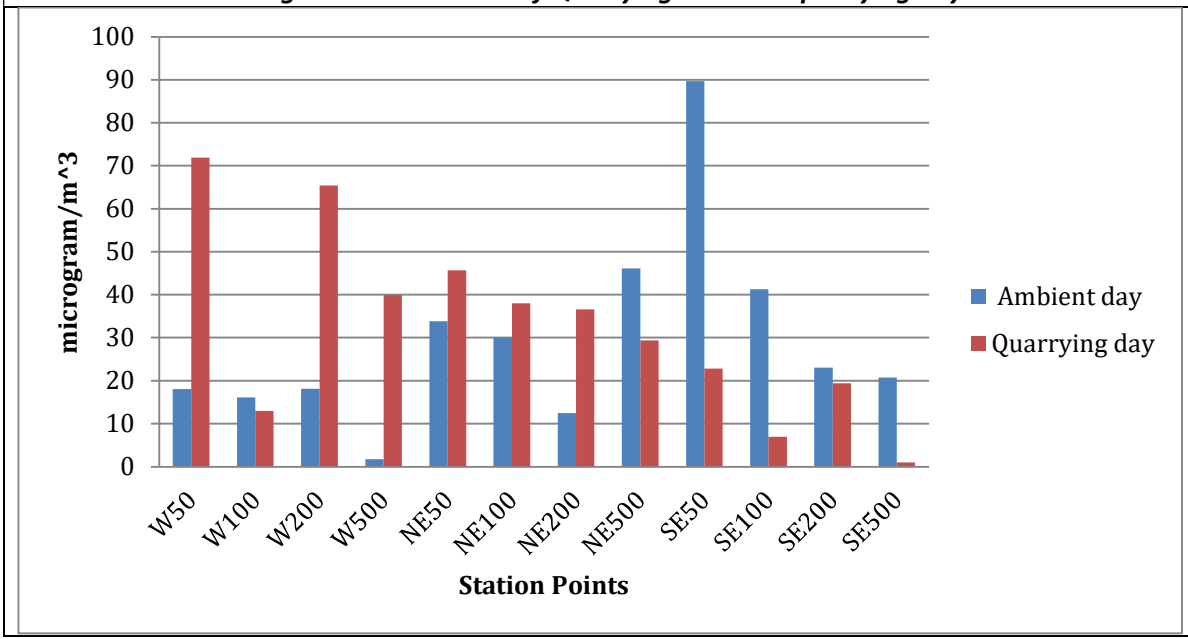


Fig.2: PM-2.5 values of Quarrying and Non-quarrying days



6.3 Noise level

Observed Noise Levels in terms of Equivalent Noise (L_{eq}) on non-quarrying and quarrying day are given in the table below:

Leq= Equivalent noise level

dB(A)= Decibel in 'A' weighted frequency scale (unit of sound pressure level)

Observations:

- The adjoining crusher had operated on both ambient and quarrying monitoring days. This had affected the noise values of both days, especially SE direction where the crusher is located.
- The equivalent noise level of the total day is higher on blasting day than ambient day at all stations generally.
- The noise levels on blasting day decreases with increase in distance from blasting zones in all directions.
- The local influences at far-off stations where influence of quarrying is very megre, resulted in minor changes in trend. Particularly in NE200 station, there was a dog farm nearby. Their barking caused higher Lmax and higher Leq on non-quarrying day compared to quarrying day.
- Peak of hourly equivalent value can be seen in the reading of 5 pm. It corresponds to blasting. Due to safety concerns, noise reading at 5 pm was not taken in stations very near to blast zone. In such stations, the peak of Lmax is seen at 6 pm.

Table: Observed Noise in terms of Equivalent Noise (L_{eq}) & L max on non-quarrying and quarrying day.

Station Points	Non-quarrying Day Noise Levels		Quarrying Day Noise Levels	
	L_{eq}	L_{max}	L_{eq}	L_{max}
W 50	59.83952382	84.8	73.03866144	108.4
W 100	61.10748547	82.7	73.64087091	109.2
W 200	52.82427625	89.3	54.41208491	78.4
W 500	53.21203148	81.6	55.2814085	80.5
NE 50	65.03638879	84.4	67.56481128	103.4
NE 100	51.79030231	81.8	62.35934479	95.2
NE 200	53.44560396	86.1	49.93040149	73.8
NE 500	58.59939681	88.5	58.18463251	80
SE 50	70.20475244	81.3	72.92318102	101.5
SE 100	61.75307673	76.5	63.09596562	92.9
SE 200	61.40498275	85.2	63.0524531	90.6
SE 500	59.15523672	89.8	59.20886213	84

Fig.3: Equivalent values (Leq)and maximum (Lmax)of quarrying and non-quarrying day in West direction 50m

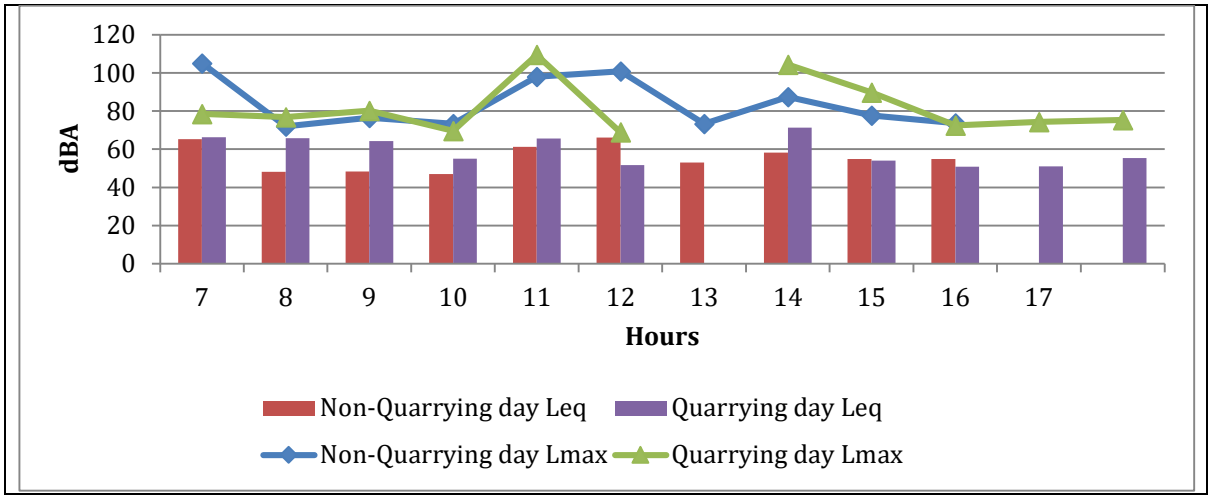


Fig.4: Equivalent values (Leq)and maximum (Lmax)of quarrying and non-quarrying day in West direction 100m

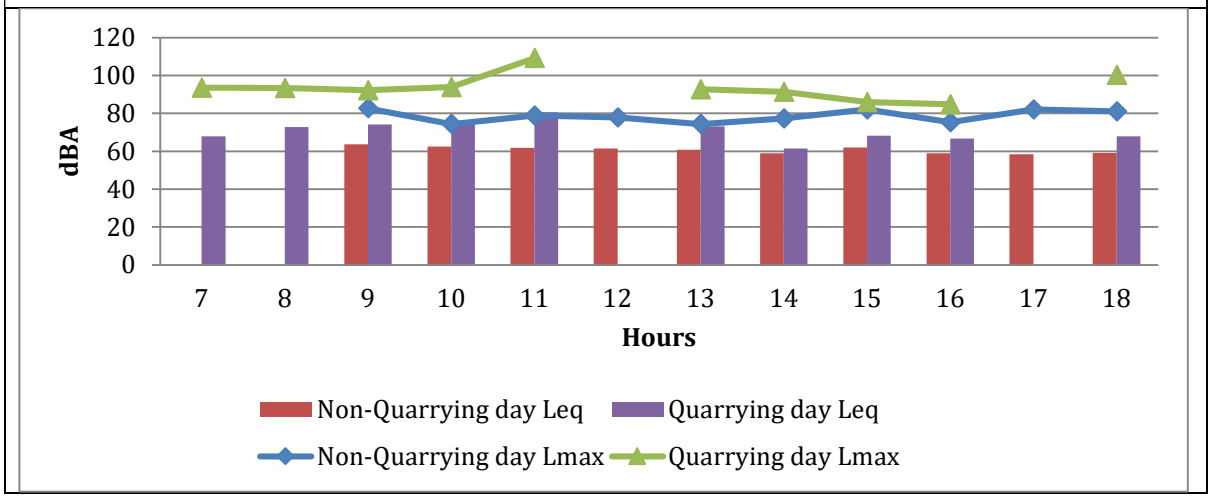


Fig.5: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in West direction 200m

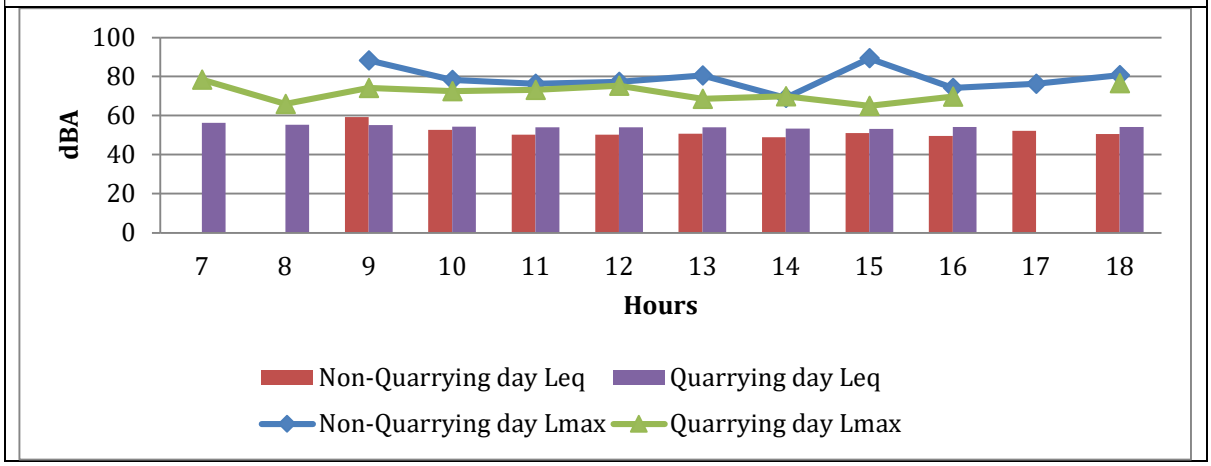


Fig.6: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in West direction 500m

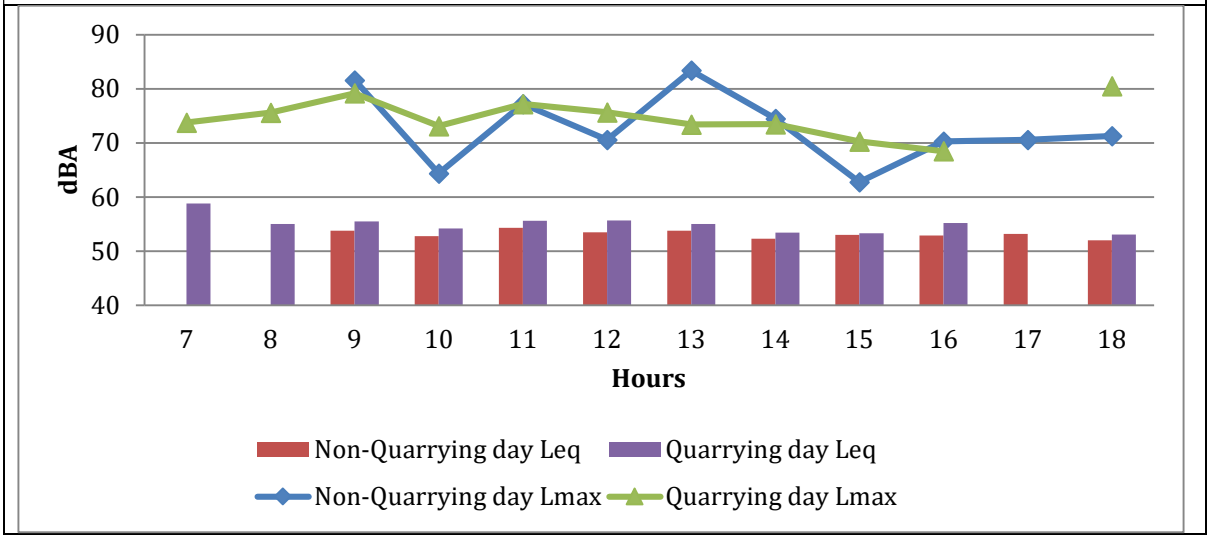


Fig.7: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in North-East direction 50m

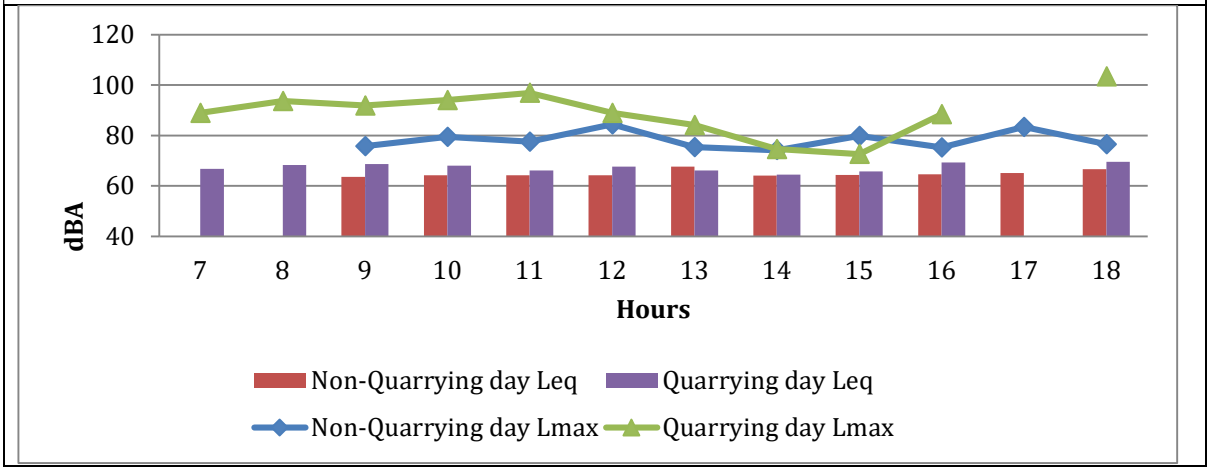


Fig.8: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in North-East direction 100m

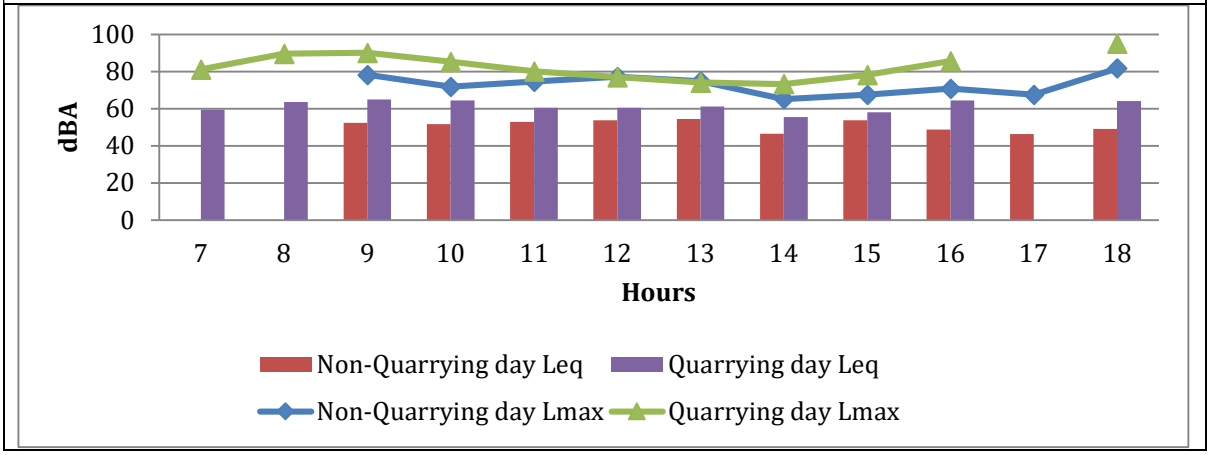


Fig.9: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in North-East direction 200m

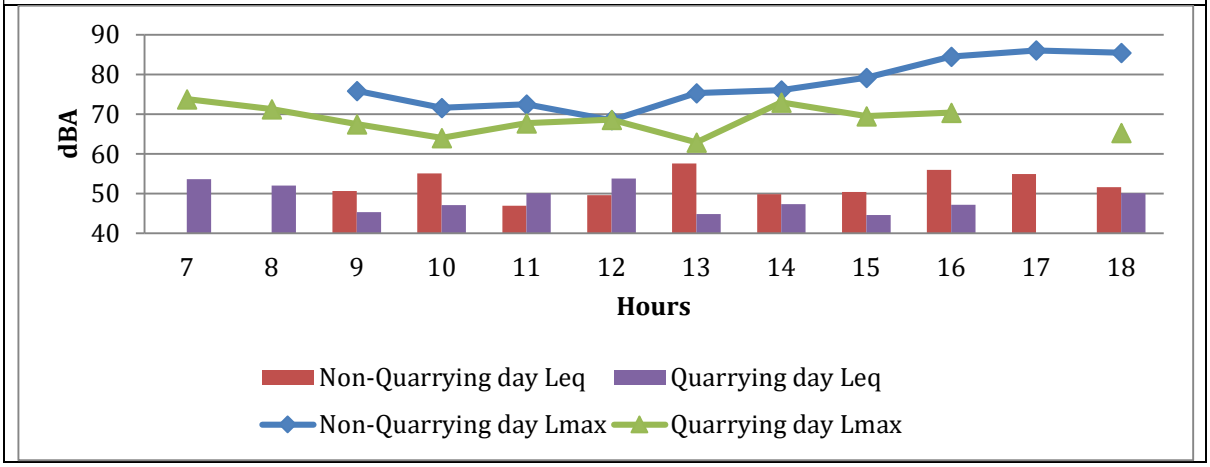


Fig.10: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in North-East direction 500m

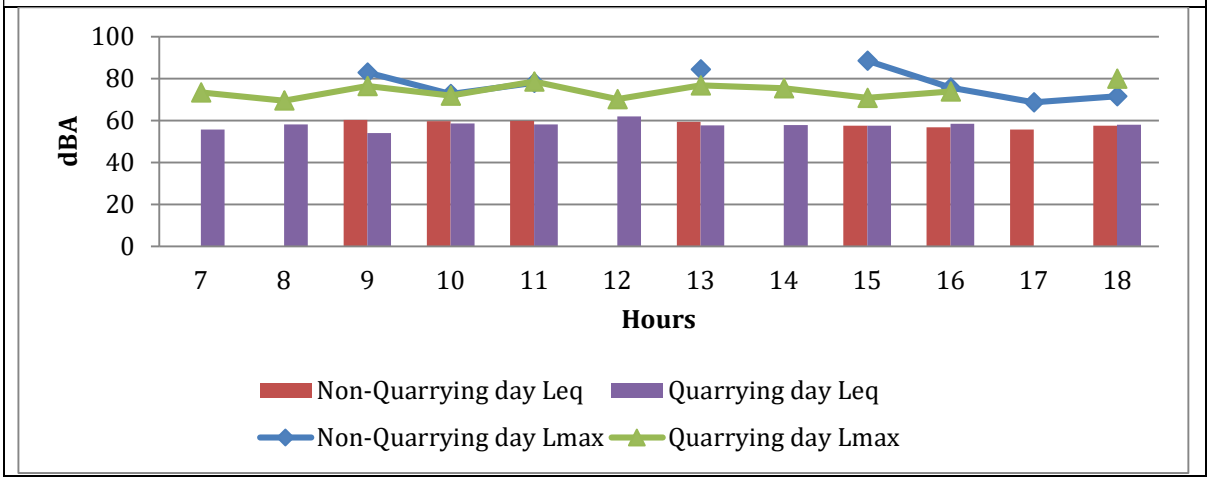


Fig.11: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in South-East direction 50m

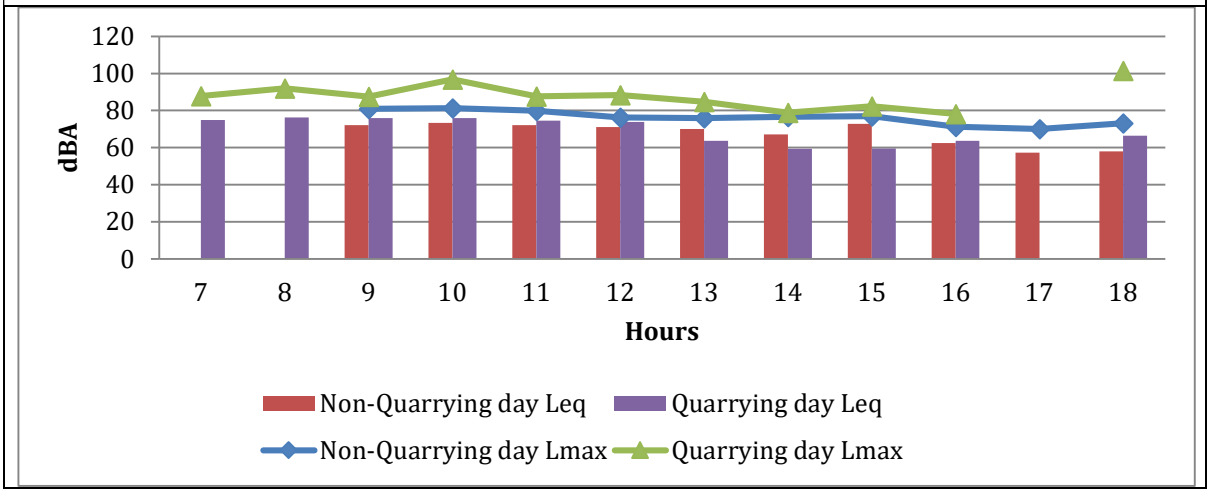


Fig.12: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in South-East direction 100m

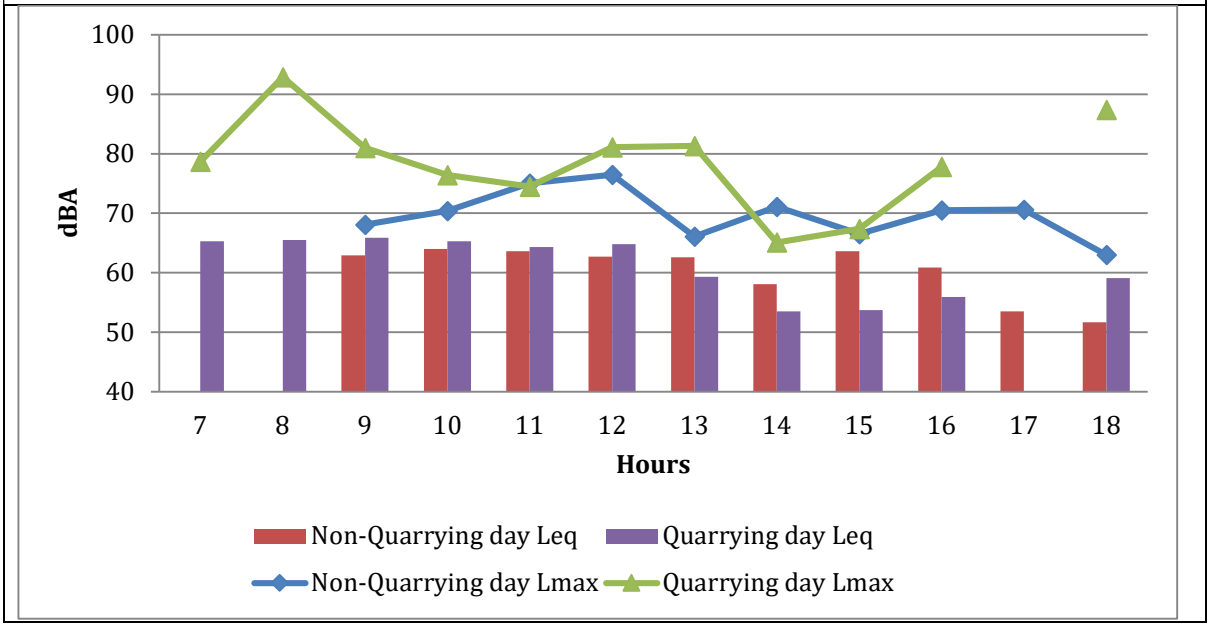


Fig.13: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in South-East direction 200m

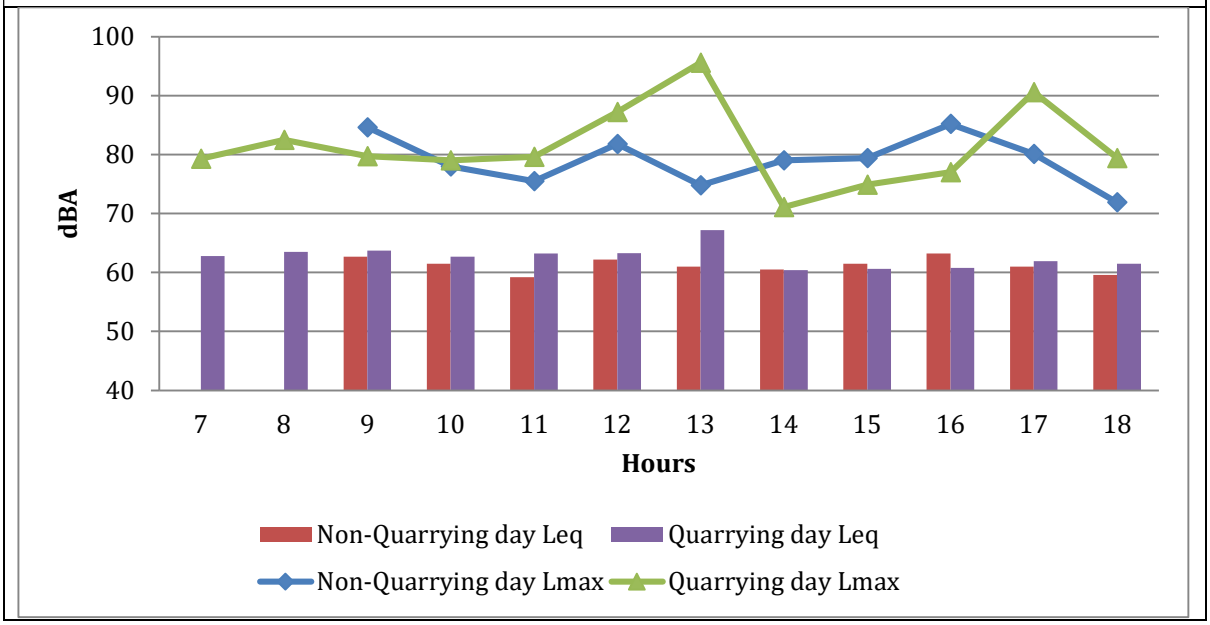


Fig.14: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in South-East direction 500m

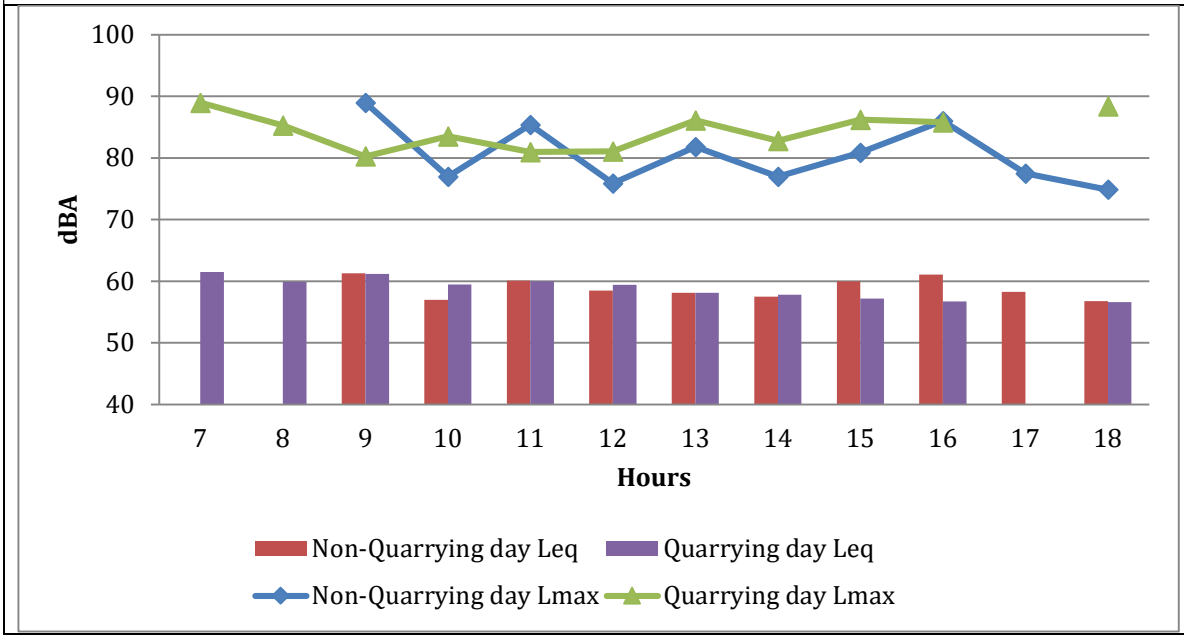
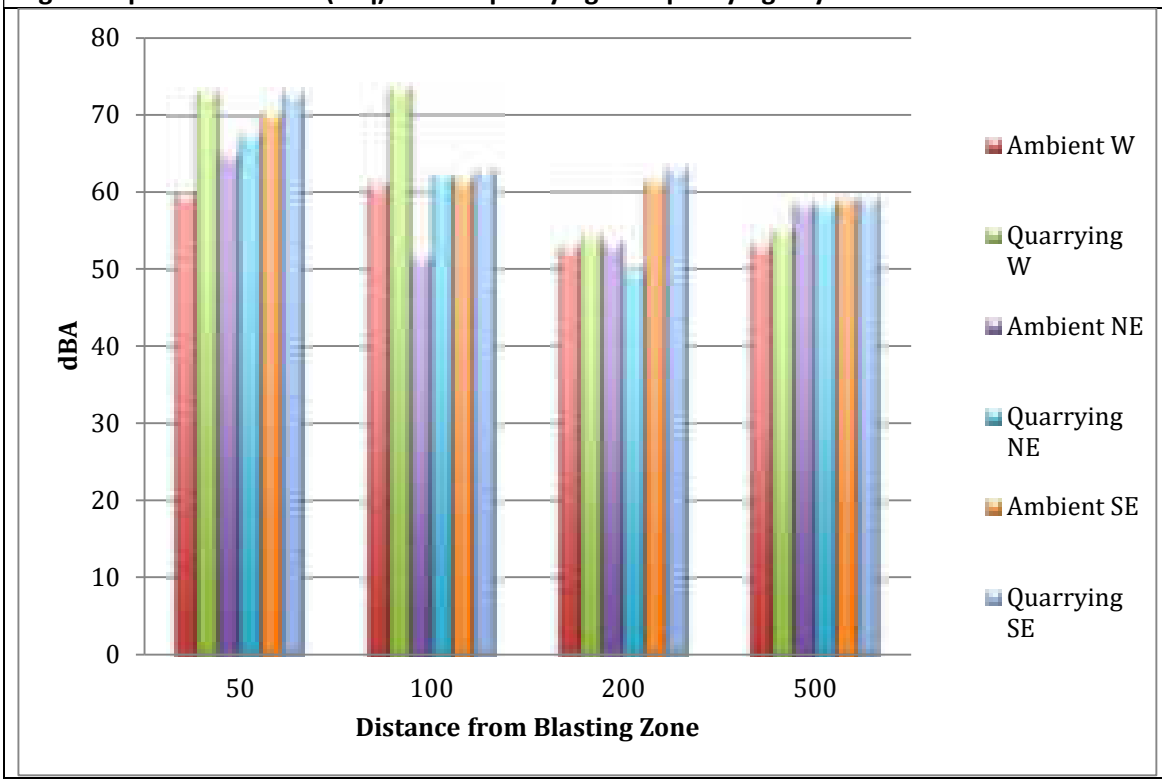


Fig.15: Equivalent values (Leq) of non-quarrying and quarrying day



6.4 Water Quality			
Sample Point: Old Quarry Pond			
Date of Sample: 28/12/2022			
Sl. No.	**Parameters**	**Unit**	**Value**
1	pH	-	7.8
2	COD	mg/l	4
3	BOD	mg/l	1
4	SS	mg/l	75
5	TDS	mg/l	220
6	CONDUCTIVITY	µS/cm	300
7	D.O	mg/l	7.1
8	SODIUM	mg/l	3.2
9	POTASSIUM	mg/l	6.4
10	CALCIUM	mg/l	4.6
11	MAGNESIUM	mg/l	2.2

7.0 Site specific observations made during the Visit

The quarry practises dust suppression using sprinkler-mounted tanker vehicle. The roads inside the quarry are tarred. Approach road to the quarry from the tarred public road, which is about 250 metres long, is also tarred. Good benching is practised. The depth of the present quarrying area with very high rock wall made the observed values different from other quarry sites. There are no recorded complaints about the quarry.

Photographs taken during the site assessment

Monitoring team

Quarry site

Particulate matter monitoring

Noise monitoring

Assessment Report on Ambient Air Quality, Noise Levels and Mine Pit Wastewater Quality carried out during 09-01-2023 to 12-01-2023

Name and Address of the Stone Quarry Site	**M/s. Penta Granites, Elavampadam PO, Neethipuram, Palakkad 678706**			
Geo-coordinates	Latitude	10°31'18.66"N	Longitude	76°30'11.30"E

1.0. Stone Quarry Site Description
1.1 General information
M/s. Penta Granites, Elavampadam PO, Neethipuram, Palakkad had the lithology of Charnockite. It is attached with captive crusher unit. It is owned by Shri. Joshy PJ. As per the information provided by the stone quarry, the present quarrying lease commenced on 12.01.2017 and the validity of lease is up to 30.11.2029. The quarry has obtained Environmental Clearance dated 10.07.2017 and is valid upto15.12.2023. It also has Consent to Operate dated 12.09.2022 with validity up to 30.11.2027. Area of mining is 4.1371 Ha. Nearest residential area is 135 metres from the boundary of the approved mining area. The quarry is attached to in-house crusher. The public road to the quarry from the nearest town is well tarred and wide enough for two heavy vehicles. The approach road in the proponent's property is also tarred, but kept well moist by water sprinkling. There are no major water bodies like rivers and no forests or sanctuaries nearby.
1.2 Topography & Geology
The highest elevation of the lease area is 180 m above MSL in the SW and the lowest is 120 m above MSL. The topography of the surrounding lease area is an elevated terrain with quarry land covered with native trees, shrubs, herbs, grass, climbers, bushes and habitations in various direction around the quarry.
1.3 Details of quarrying/ mining activities
The method of mining is semi-mechanized open cast mining. The mining operations are carried out using jack hammers, compressors, drills, excavators, etc. followed by controlled blasting (NONEL) using class 2 and class 6 explosives. The rock breaking is done using pneumatic breakers and transported to the crusher site using trucks/ tippers of 15 Tonnes carrying capacity for various products. Every day, blasting is carried out in 2 prefixed timings with maximum 40 no. of holes/blast.

2.0 Location attributes			
2.1 Altitude (m)	110	2.2 Area (Ha)	4.1371
2.3 Terrain	Undulating	2.4 Lithology	Charnockite

2.5 Soil type	Laterite	2.6 Total Mineable reserve	2064248 MT
2.6 (a) Remaining Mineable reserve	1404843 MT	2.6 (b) Approximate mined quantity per annum	150000 MT
2.7 Slope	Moderate	2.8 Fault	---
2.9 Distance from nearest forest (Km)	3.37	2.10 Wildlife movement (Yes/ No)	No

3.0 Schedule of the Study/ Assessment		
Day	Date	Activities
1	09-01-2023	Site reconnaissance, fixing of monitoring points within 50m, 100m, 200m and 500m from the blast point. Setting up a field office, arranging power supply for operating monitoring instruments/ equipment. Checking of instruments, deployment and conducting test runs.
2	10-01-2023	Background monitoring of ambient air quality and noise without any activities in the quarry. (06.00 to 18.00 Hrs.)
3	11-01-2023	Air quality and noise monitoring during the operation of quarry including drilling, blasting and all other quarry activities (06.00 to 18.00 Hrs.)
4	12-01-2023	Maintenance check of instruments used, safe packing for transportation and transporting monitoring gear to the next station.

4.0 Sampling/ Monitoring Plan and locations

The quarry area is deep, the present excavation area is only 30-40 metre below the surrounding ground level. The present blasting zone is towards east of the quarry area which has more length in the North South direction than in east west direction.

The 50m, 100m and 200m stations towards West and South East directions are inside the quarry land itself. The 200m stations in North East direction, further stations like 500m in all directions were all outside the quarry premises, in private properties. Hence in total, 12 coordinates were fixed with the actual blasting point as centre in North-East line, West line and South-East line each at an angle of approximately 120° to each other. 8 locations were inside the quarry and 4 locations were outside the quarry premises. The photographs taken during the assessment at M/s. Penta Granites, Neethipuram, Palakkad District is attached as Annexure-I.

4.1 Map showing sampling locations (Map)

4.2 Geo-coordinates of sampling locations			
S. No.	***Station Points***	***Latitude***	***Longitude***
1	W50	10.5207641	76.504119
2	W100	10.5205941	76.5037985
3	W200	10.5211063	76.5027145
4	W500	10.5225982	76.5011776
5	NE50	10.521876	76.5044848
6	NE100	10.522452	76.5044694
7	NE200	10.521619	76.505147
8	NE500	10.52288	76.5078074
9	SE50	10.5203392	76.5050973
10	SE100	10.520179	76.5053065
11	SE200	10.5198019	76.5051604
12	SE500	10.5188805	76.5063171

5.0 Monitoring activities

5.1 Background monitoring (on 10-01-2023)

The monitoring started at 6.00am at each 12 locations. But at some stations, due to delay in supplying stabilised power supply, monitoring started at 8 am only. The quarry activities were kept completely idle to do ambient monitoring. The crusher was kept idle on both the ambient monitoring day and quarrying day. The Noise data, Air flow rates and Total volume of sucked air were recorded every one hour. Weather data were also recorded at station points (NE 100) inside the quarry. The monitoring was interrupted at stations NE50 (for 1hour from 7 AM to 8AM) and W 200 (for 1 hour from 10AM to 11 pm) due to the voltage fluctuation issue. The wind velocity, humidity and temperature were monitored every hour using Weather Tracker. The direction of the wind was mostly from west to east.

The locations for drill holes for explosives were located by the CIMFR blasting team. It was decided to conduct 10 blasts which consist of 123 holes, each hole having 32mm diameter and 5ft - 6ft depth. The explosive used is ammonium nitrate of 250 gm per hole.

The CIMFR team identified 8 locations for the seismic analysis. 4 locations were inside the quarry and 4 locations were outside the quarry. They also conducted a social survey on the response of the public about quarrying activities, through a questionnaire. The location identification and survey were completed by 05.30pm. The monitoring was completed at all the 12 stations by 06PM.

5.2 Monitoring during Stone Quarry Operation (on 11-01-2023)

The monitoring started at 6.00am. At the station W200, the sound level meter had some problem and the noise monitoring was interrupted from 20 minutes to 1 hour. The weather data were recorded from the same stations inside the quarry.

Before blasting, drilling of blast holes using jack hammers was started from 6.am onwards. The drilling of holes (5ft to 6ft depth) and filling of explosives into each hole were completed at 02PM. Connections were also established for the blasting. The CIMFR team checked all the drilled holes of blast points and installed the seismographs by 02:30 PM. The blasting was conducted by 03 PM. But the total blasting operation of 10 blasts took almost 45 minutes. It was not safe to be near monitoring stations at 3 pm as the blasting operation was going on, this forced 3 pm readings to be omitted in the noise level meters.

The crusher was kept idle on both the ambient monitoring day as well as the quarrying monitoring day since operating the crusher would have contributed to dust as well as vibration and noise. That would affect the measured values in which the effect of quarrying alone is to be found out. Immediately after the blasting was completed, vehicular movement, breaking of boulders using breakers and hauling of the quarry product using haulers were carried out. These quarrying activities continued full-fledged until the end of the day. The monitoring was completed at all the 12 stations by 06PM.

6.0 Monitoring Results-Ambient Air Quality and Noise Levels

6.1 Weather

Weather: Non-quarrying day (10-01-2023)				
S.No.	***Time (Hrs)***	***Temperature (◦C)***	***Humidity (%)***	***Wind (m/s) & Direction***
1	06:00	-	-	-
2	07:00	21.4	79.1	0
3	08:00	21.6	77.8	0
4	09:00	24.8	64.0	0.7, S
5	10:00	27.2	60.1	0.3, SE
6	11:00	29.0	55.6	1.2, W
7	12:00	29.5	56.5	1.3, SE

8	13:00	30.5	47.9	1, NE
9	14:00	30.3	43.9	2.1, SE
10	15:00	30.4	44.0	0.7, S
11	16:00	29.7	44.5	0.9, S
12	17:00	-	-	-

Weather: Quarrying day (11-01-2023)				
S.No.	***Time (Hrs)***	***Temperature (°C)***	***Humidity (%)***	***Wind (m/s) & Direction***
1	06:00	20.1	75.9	0
2	07:00	20.4	69.9	0
3	08:00	21.1	75.3	0
4	09:00	21.9	72.0	0
5	10:00	27.5	61.0	0
6	11:00	27.9	53.9	2.3, SE
7	12:00	28.9	50.3	2.4, E
8	13:00	30.6	42.8	1.5, W
9	14:00	33.2	43.5	0
10	15:00	33.0	43.9	0.5, SE
11	16:00	32.7	43.6	1.1, S
12	17:00	30.1	43.8	0.4, NE

13	18:00	30.0	45.1	1.5, S

6.2 Particulate matters/dust

- Generally, PM10 values of blasting day in stations inside the quarry can be seen to be higher than those of ambient day. This shows the influence of quarrying in increasing the concentration of particulate matter. At SE 500, the PM10 values are very high even compared to 50 metre and 100 metre oints directly in quarrying zone. This is attributed to local reasons. There was thick vegetation in that station. Pollen from plants may e the reason for high PM10 values.

- In a few stations within active quarrying area itself, ambient day concentration is more than blasting day concentration of PM10. The reason is inferred as follows. Efficient dust suppression using water spray and sprinkling was carried out on blasting day whereas dust suppression was nil on ambient day. This made the ambient day concentrations of PM10 higher. W200 was near a stock of quarry products inside the quarry premises. Wind effects on this stock on the ambient day led to higher PM0 values on ambient day.
- The results of PM2.5 shows that ambient day values are generally more than blasting day values. The explanations based on dust suppression and local influence at far-off stations given for PM10 hold here also.

Table: PM10 & PM2.5 values in non-quarrying and quarrying day

Station Points	*Distance from blasting zone (metre)*	*PM 10 (microgram/m^3)*		PM 2.5 (microgram/m^3)	
		Non-quarrying day	Quarrying day	Non-quarrying day	Quarrying day
W50	50 m	28.16666667	55.09615385	59.70739423	36.17153309
W100	100 m	32.33525734	45.72649573	58.14187827	64.02561024
W200	200 m	20.76446281	61.86684362	83.48699037	64.45180358
W500	500 m	72.62820513	53.17307692	47.50593824	51.8408453
NE50	50 m	29.29383603	46.13095238	64.09501374	55.88044185
NE100	100 m	21.11631538	34.68992248	52.7013073	49.06225831
NE200	200 m	32.14814815	40.98883573	49.27536232	55.92366817
NE500	500 m	40.46153846	39.02777778	82.14801072	90.69943549
SE50	50 m	39.94535519	47.69283747	82.09109731	62.10966989
SE100	100 m	31.8359375	33.49236641	60.02868265	68.25735992
SE200	200 m	39.40104167	46.7769296	53.0257033	52.05205205
SE500	500 m	27.8314746	36.0479798	33.33333333	34.71220138

Fig.1: PM-10 values of Quarrying and Non-quarrying days

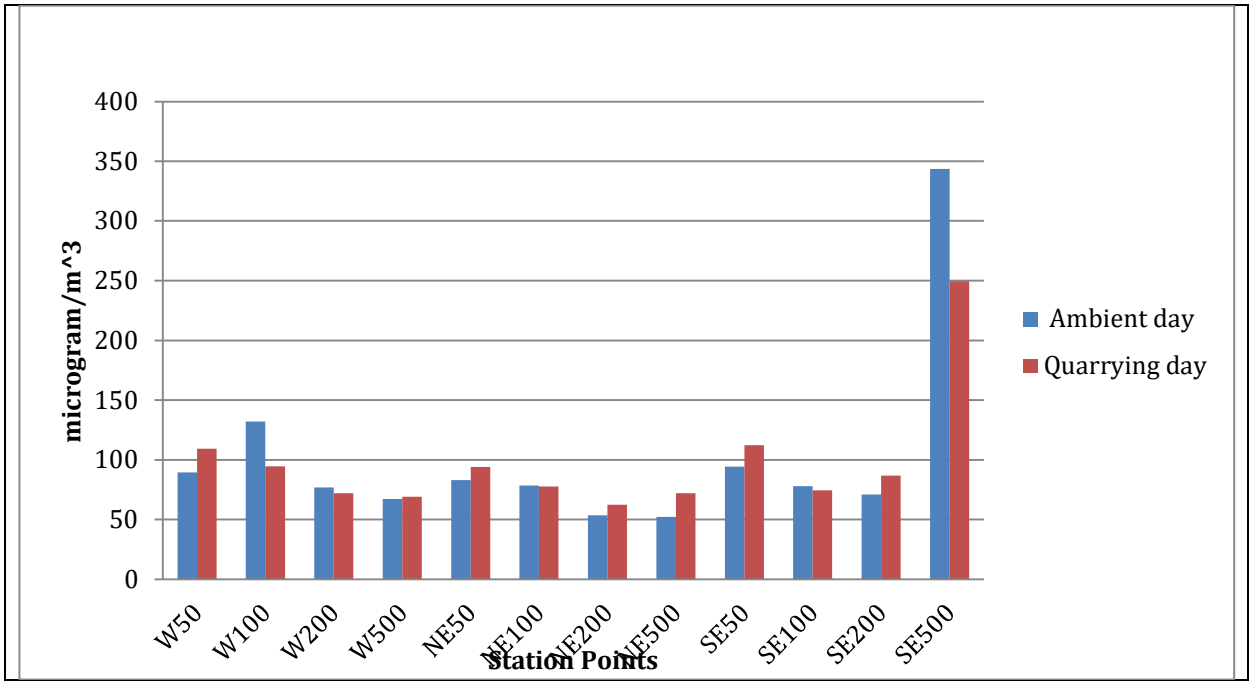
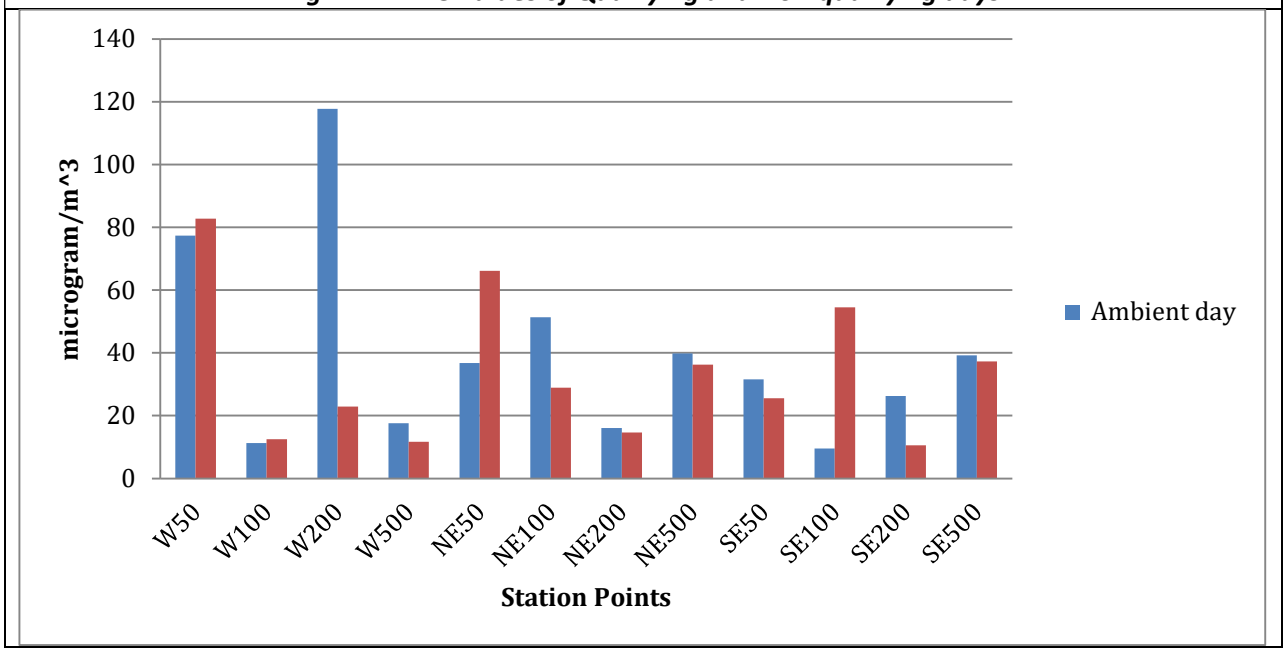


Fig.2: PM-2.5 values of Quarrying and Non-quarrying days



6.3 Noise level
Observed Noise Levels in terms of Equivalent Noise (L_{eq}) on non-quarrying and quarrying day are given in the table below: Leq= Equivalent noise level dB(A)= Decibel in 'A' weighted frequency scale (unit of sound pressure level) Observations:

- The equivalent noise level of the total day is higher on blasting day than ambient day at all stations generally. In the 50 metre and 100 mere stations, the result is more prominent.
- The noise levels on blasting day decreases with increase in distance from blasting zones in all directions.
- The noise equivalent of 15.00 hours (3 pm) could not be taken due to safety reasons, as the instruments were likely to be in the unsafe zone of blasting. Peak of L_{max} can be seen at 4 pm which corresponds to the blasting time which stretched for almost 45 minutes between 2 pm and 4 pm.

Table: Observed Noise in terms of Equivalent Noise (L_{eq}) & L max on non-quarrying and quarrying day.

Station Points	Non-quarrying Day Noise Levels		Quarrying Day Noise Levels	
	L_{eq}	L_{max}	L_{eq}	L_{max}
W 50	58.08852877	87.9	74.49483131	110.7
W 100	52.75621481	81.3	71.25385117	90.8
W 200	50.77581035	77.7	60.92907478	101.2
W 500	53.14811263	84.5	53.17366443	80.3
NE 50	57.72518356	87.4	59.31911819	99.2
NE 100	52.79655956	78.7	67.36291335	109.9
NE 200	53.7215629	97.2	62.1635095	115.2
NE 500	57.24232125	83.1	53.36310698	84.4
SE 50	61.96108464	99.6	61.98692278	97.2
SE 100	59.43381425	94.2	59.6188626	95.9
SE 200	66.71537901	112.2	63.16613311	102
SE 500	66.71537901	92.5	59.98448765	94.2

Fig.3: Equivalent values (Leq)and maximum (Lmax)of quarrying and non-quarrying day in West direction 50m

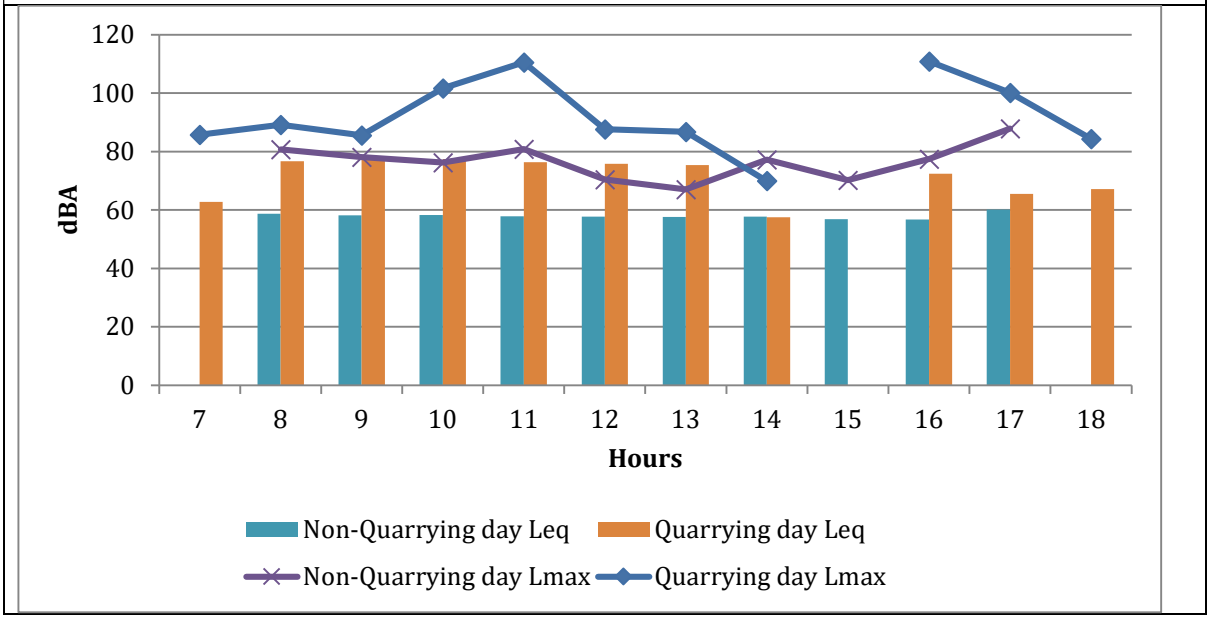


Fig.4: Equivalent values (Leq)and maximum (Lmax)of quarrying and non-quarrying day in West direction 100m

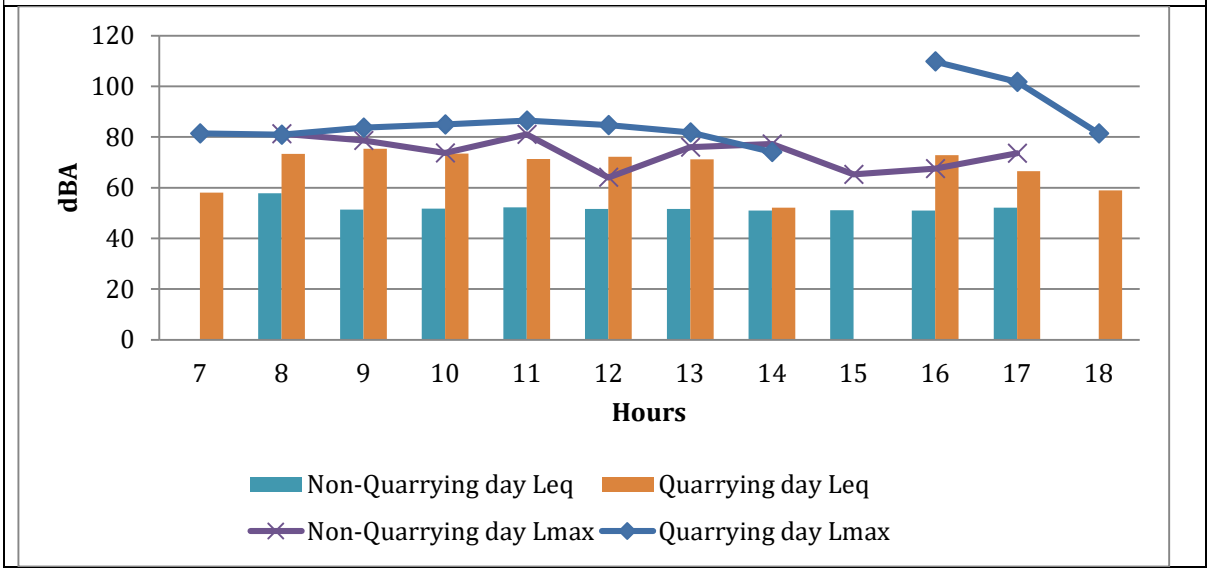


Fig.5: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in West direction 200m

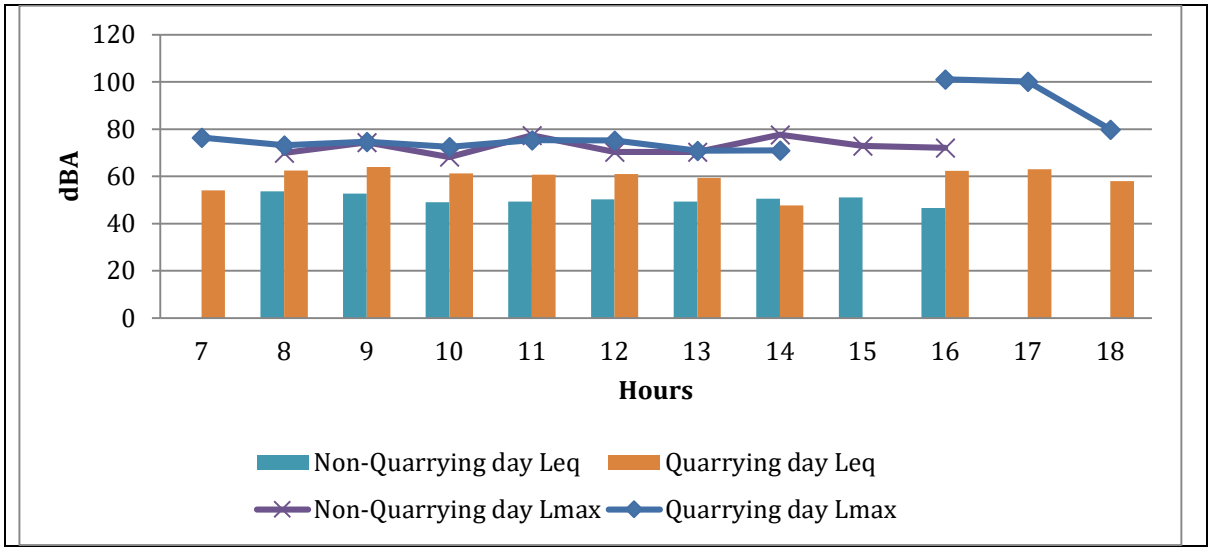


Fig.6: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in West direction 500m

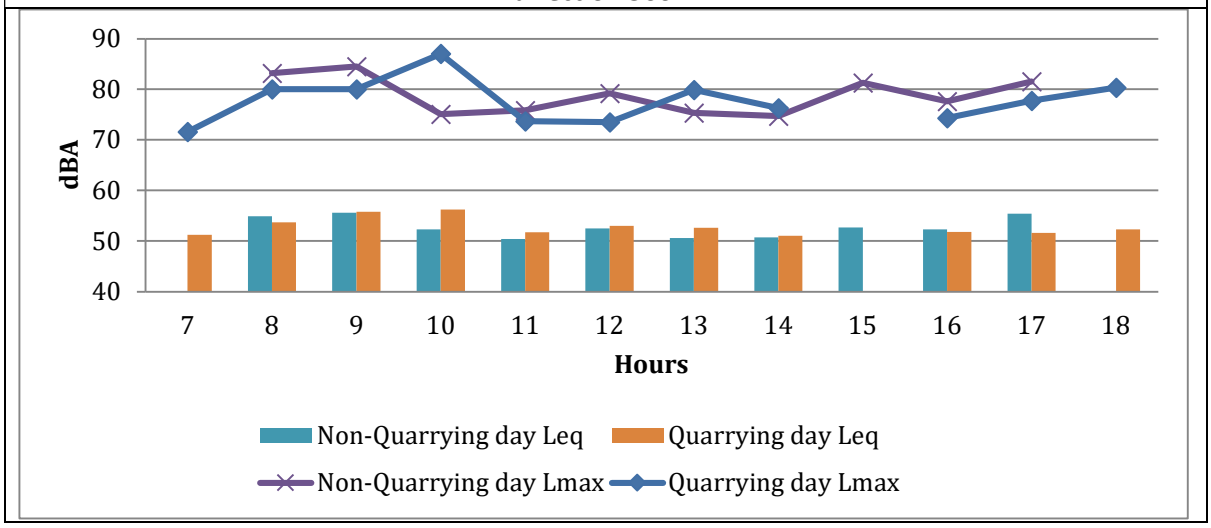


Fig.7: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in North-East direction 50m

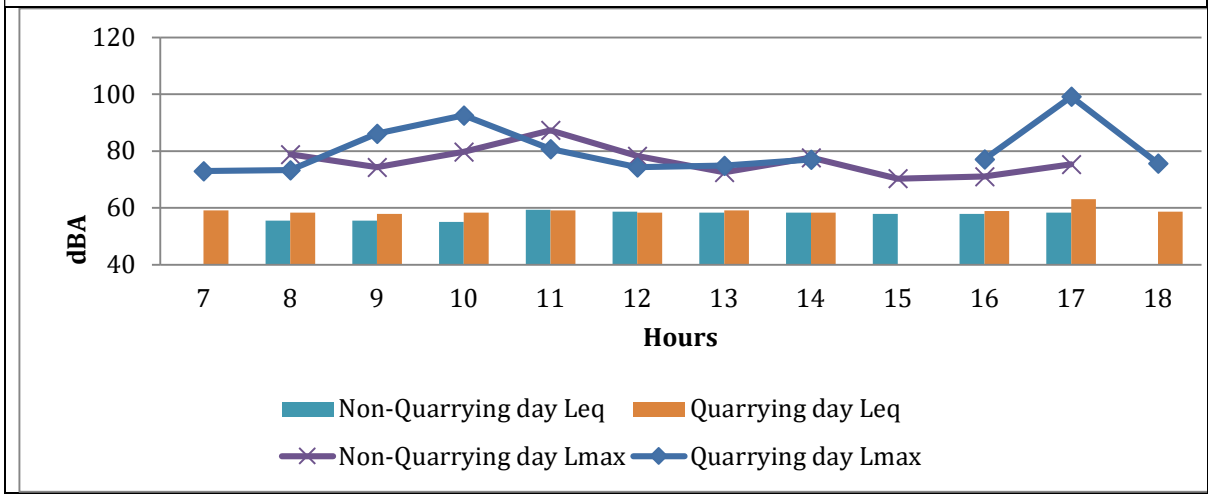


Fig.8: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in North-East direction 100m

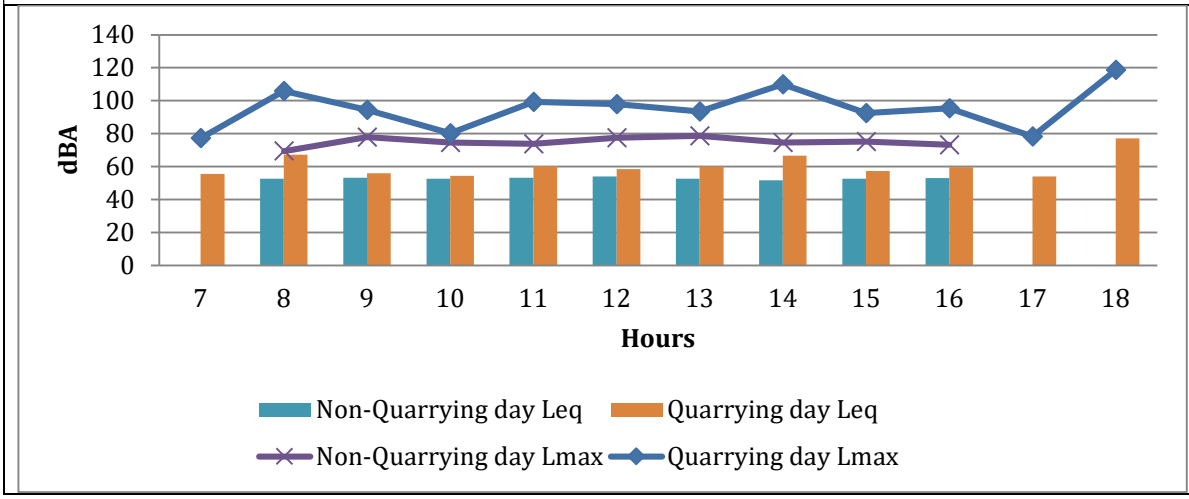


Fig.9: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in North-East direction 200m

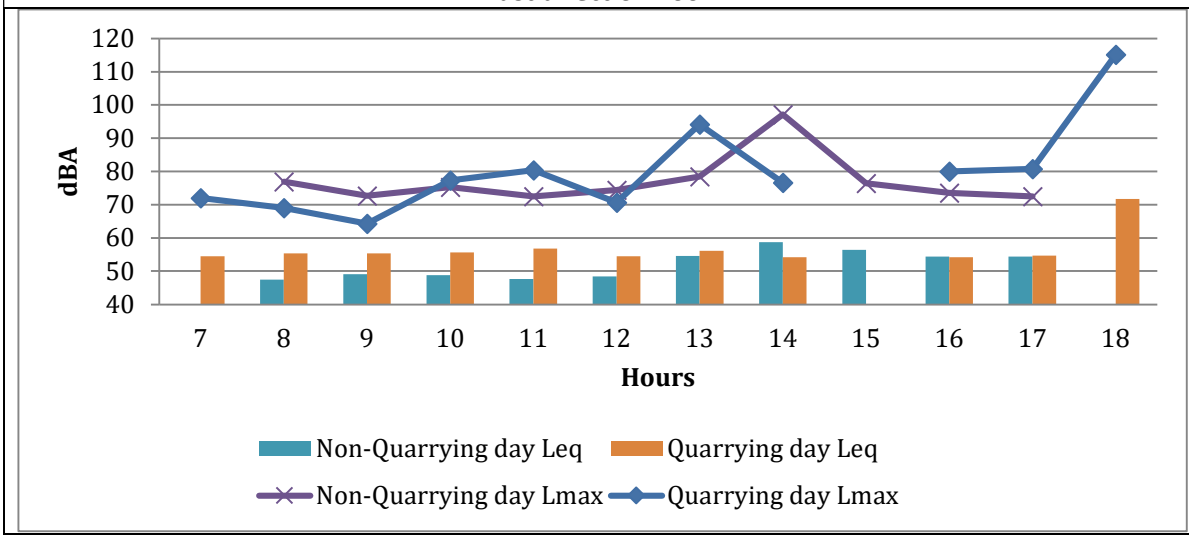


Fig.10: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in North-East direction 500m

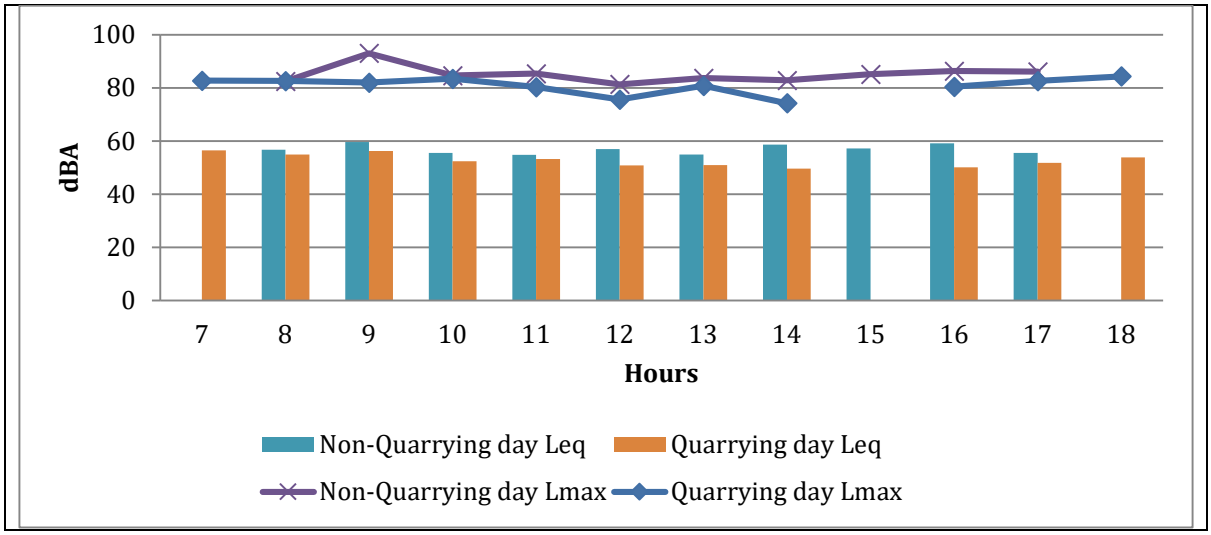


Fig.11: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in South-East direction 50m

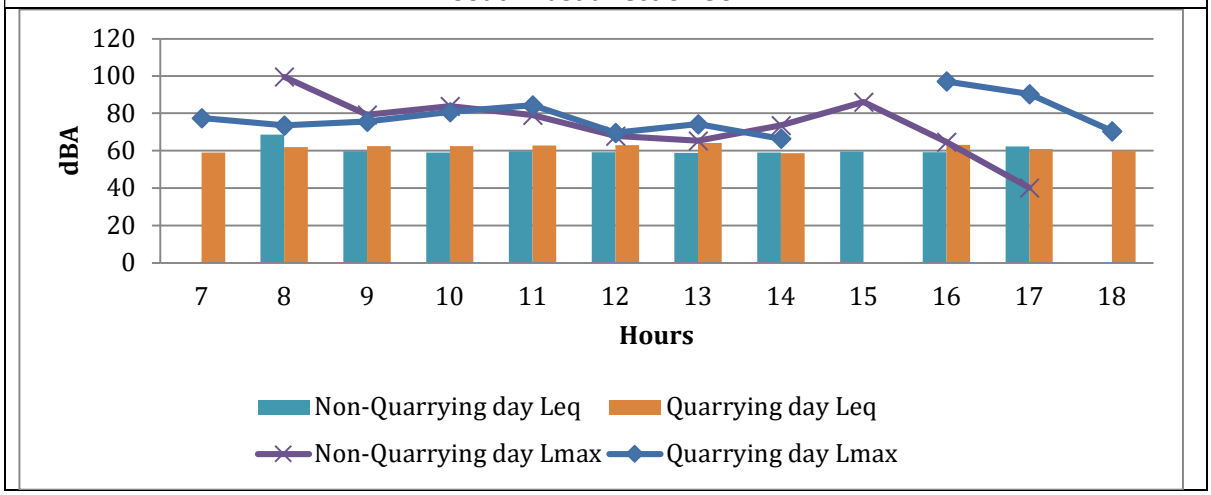


Fig.12: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in South-East direction 100m

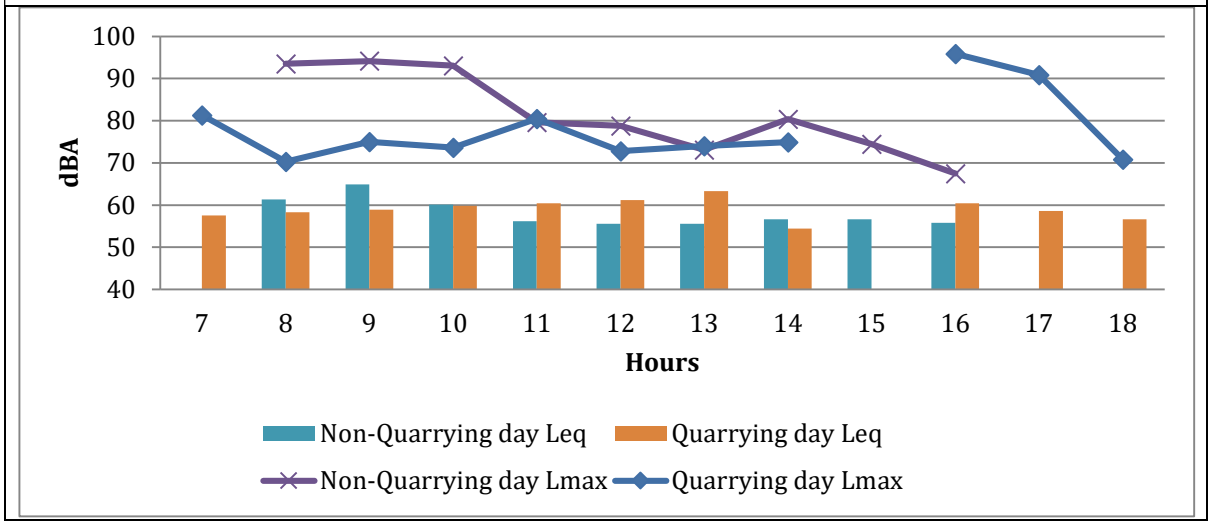


Fig.13: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in South-East direction 200m

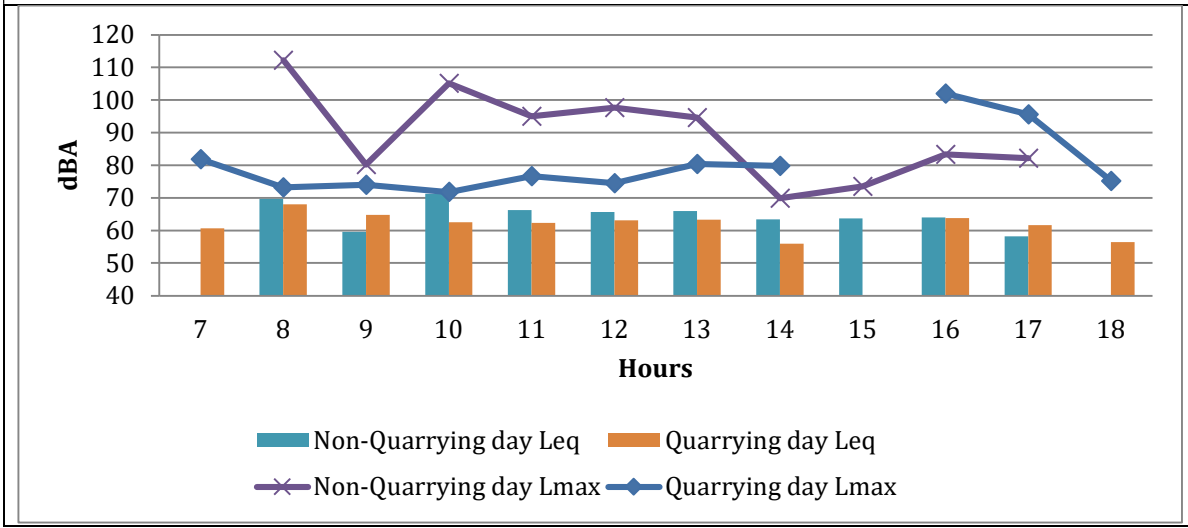


Fig.14: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in South-East direction 500m

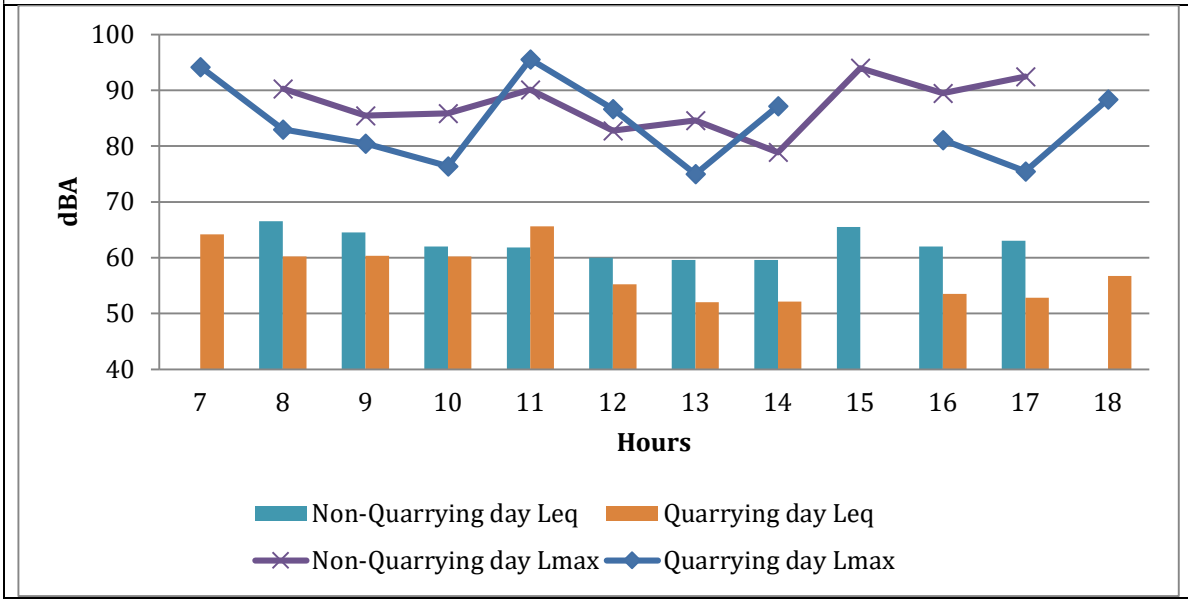
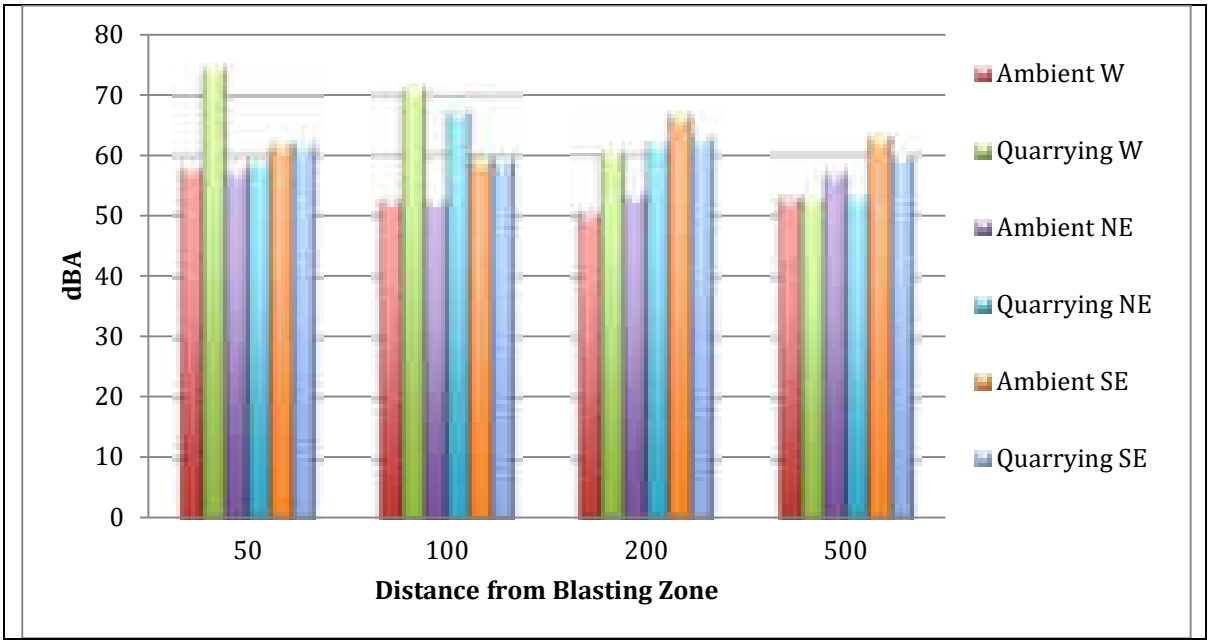


Fig.15: Equivalent values (Leq) of non-quarrying and quarrying day



6.4 Water Quality			
Sample Point: Old Quarry Pond			
Date of Sample: 28/12/2022			
Sl. No.	**Parameters**	**Unit**	**Value**
1	pH	-	7.76
2	COD	mg/l	12
3	BOD	mg/l	7.2
4	SS	mg/l	BDL
5	TDS	mg/l	248.9
6	CONDUCTIVITY	µS/cm	383
7	D.O	mg/l	7.2
8	SODIUM	mg/l	39.4
9	POTASSIUM	mg/l	10.5
10	CALCIUM	mg/l	78
11	MAGNESIUM	mg/l	48

7.0 Site specific observations made during the Visit

The quarry has a deep excavated area. High rock faces are there all around the excavation. Dust suppression is done by using dedicated tanker vehicles. All requisite personal protection equipments are given to workers. Good shaped benches are formed and maintained. Boundary pillars are maintained intact with latitude and longitude painted on them. There is natural vegetation all around; green belt has not been developed artificially. The approach roads outside quarry premises are tarred. The interior roads which serve for the crusher also are tarred too. A large quarry pond is kept in the quarry excavated area, which is filled with water. This water is used for dust suppression. At higher altitude than the quarry, on the east side, there are rubber plantations. There are complaints that these plantations are affected adversely by the quarrying, which depleted ground water, as well as caused air pollution, alleges the complainant. The land surrounding the quarry premises, up to 500 metres, is thickly vegetated, residences and other buildings are situated in-between vegetation

Photographs taken during the site assessment

Monitoring team

Quarry site

Particulate matter monitoring

Quarry pit

Assessment Report on Ambient Air Quality, Noise Levels and Mine Pit Wastewater Quality carried out during 13-01-2023 to 16-01-2023

Name and Address of the Stone Quarry Site	**Quarry owned by Sudheesh AT, Vengappally village, Vythiri Taluk, Wayanad 67121**			
Geo-coordinates	Latitude	11°37'37.81"N	Longitude	76°02'38.36"E

1.0. Stone Quarry Site Description
1.1 General information
Quarry owned by Sudheesh AT, Vengappally village, Wayanad which had the lithology of Hornblende Gneiss. As per the information provided by the stone quarry, the present quarrying lease commenced on 15.02.2022. The lease is granted by Department of Mining and Geology, Government of Kerala which is valid upto14.02.2032. The quarry has obtained Environmental Clearance dated 01.01.2020 from State Environmental Impact Assessment Authority (SEIAA) and is valid up to 31.12.2025. It also has Consent to Operate dated 16.07.2018 with validity up to 15.07.2023 from Kerala State Pollution Control Board. Area of mining is 2.7513 Ha. Nearest residential area is 52.7 metres away from the boundary of the approved mining area The quarry is not attached to in-house crusher. The public road to the quarry from the nearest town is tarred and wide enough for two heavy vehicles. The approach road in the proponent's property is not tarred, but kept well moist by water sprinkling. There are no major water bodies like rivers and no forests or sanctuaries nearby.
1.2 Topography & Geology
The highest elevation of the mine area is 780 m above MSL part and the lowest is750 m above MSL. This area can be broadly divided into four geological domains viz, the Peninsula Gneissie Complex in the north and central part, the migmatite complex in the southcentral part, the Charnockite group in the south and the Wayanad group in the North..
1.3 Details of quarrying/ mining activities
The method of mining is semi-mechanized open cast mining. The mining operations are carried out using jack hammers, compressors, drills, excavators, etc. followed by controlled blasting (NONEL) using class 2 and class 6 explosives. The rock breaking is done using pneumatic breakers and transported to the crusher site using trucks/ tippers of 15 Tonnes carrying capacity for various products. Every day, blasting is carried out in 2 prefixed timings with maximum 30 no. of holes/blast.

2.0 Location attributes			
2.1 Altitude (m)	780	2.2 Area (Ha)	2.7513

2.3 Terrain	Undulating	2.4 Lithology	Hornblende Gneiss
2.5 Soil type	Laterite	2.6 Total Mineable reserve	1201181 MT
2.6 (a) Remaining Mineable reserve	4472814 MT	2.6 (b) Approximate mined quantity per annum	120118.1 MT
2.7 Slope	Moderate	2.8 Fault	---
2.9 Distance from nearest forest (Km)	None within 10km	2.10 Wildlife movement (Yes/ No)	No

3.0 Schedule of the Study/ Assessment		
Day	Date	Activities
1	13-01-2023	Site reconnaissance, fixing of monitoring points within 50m, 100m, 200m and 500m from the blast point. Setting up a field office, arranging power supply for operating monitoring instruments/ equipment. Checking of instruments, deployment and conducting test runs.
2	14-01-2023	Air quality and noise monitoring during the operation of quarry including drilling, blasting and all other quarry activities (06.00 to 18.00 Hrs.)
3	15-01-2023	Background monitoring of ambient air quality and noise without any activities in the quarry. (06.00 to 18.00 Hrs.)
4	16-01-2023	Maintenance check of instruments used, safe packing for transportation and transporting monitoring gear to the next station.

4.0 Sampling/ Monitoring Plan and locations

The quarry area is not very deep, the present excavation area is only 05-10 metre below the surrounding ground level. The present blasting zone is towards North-East of the quarry area which has more length in the east west direction than in the North South direction.

The 50m stations in West, North East and South East directions are inside the open quarry land itself. The 50m stations in West, North East and South East directions are within the quarry area. Stations like W100, W200, SE100 are also within the quarry premises. Further stations like W500, SE200, SE500, NE100, NE200, NE500 were all outside the quarry premises, in private properties. Hence in total, 12 coordinates were fixed with the actual blasting point as centre in North-East line, West line and South-East line each at an angle of approximately 120° to each other. 6 locations were inside the quarry and 6 locations were outside the quarry premises.

The locations for drill holes for explosives were located by the CIMFR blasting team. It was decided to conduct 10 blasts which consist of 114 holes, each hole having 32mm diameter and 5ft - 6ft depth. The explosive used is ammonium nitrate of 250 gm per hole.

The CIMFR team identified 7 locations for the seismic analysis. 2 locations were inside the quarry and 5 locations were outside the quarry. They also conducted a social survey on the

response of the public about quarrying activities, through a questionnaire. The location identification and survey were completed by 6.00pm. The monitoring was completed at all the 12 stations by 06PM. Photographs taken during the site assessment at Quarry of Sudheesh AT, Vengappally, Wayanad District Kerala is given as Annexure-1.

4.1 Map showing sampling locations (Map)

4.2 Geo-coordinates of sampling locations			
S. No.	***Station Points***	***Latitude***	***Longitude***
1	W50	11.6282364	76.0447367
2	W100	11.6287746	76.0442717
3	W200	11.628428	76.042895
4	W500	11.6271313	76.0402822
5	NE50	11.6282731	76.0458006
6	NE100	11.628125	76.0403347
7	NE200	11.6300218	76.045013
8	NE500	11.6322116	76.0472228
9	SE50	11.6273921	76.0455491
10	SE100	11.6270387	76.0457131
11	SE200	11.6259238	76.0463286
12	SE500	11.6240818	76.0460745

5.0 Monitoring activities

5.1 Background monitoring (on 15-01-2023)

The monitoring started at 6.00am at each 12 locations. The quarry activities were kept completely idle to do ambient monitoring. The Environmental Engineers in-charge ensured whether all stations are working properly. At each station, one AE / equipment operator was there for the monitoring. The Noise data, Air flow rates and Total volume of sucked air were recorded every one hour. Weather data were also recorded at station point SE50 inside the quarry. The monitoring was interrupted at station SE200(for 1 hour from 07 AM to 08 AM) due to the power failure. The wind velocity, humidity and temperature were monitored every hour using Weather Tracker. The direction of the wind was mostly from west to east. The monitoring was completed at all 12 stations by 06PM.

5.2 Monitoring during Stone Quarry Operation (on 14-01-2023)

The monitoring started at 6.00am and continued without any interruption. The weather data were recorded from the same station inside the quarry.

Before blasting, drilling of blast holes using jack hammers was started from 6.am onwards and approximately 300 no. s of blast holes were drilled. The drilling of holes (5ft to 6ft depth) and filling of explosives into each hole were completed at 0115PM. Connections were also established for the blasting. The CIMFR team checked all the drilled holes of blast points. The team also installed Seismograph at 7 locations by 01.45 PM. Blasting was conducted by 02PM.

Immediately after the blasting was completed, vehicular movement, breaking of boulders using breakers and hauling of the quarry product using haulers were carried out. These

quarrying activities continued full-fledged until the end of the day. The monitoring was completed at all the 12 stations by 06PM.

6.0 Monitoring Results-Ambient Air Quality and Noise Levels

6.1 Weather

Weather: Non-quarrying day (15-01-2023)				
S.No.	***Time (Hrs)***	***Temperature (◦C)***	***Humidity (%)***	***Wind (m/s) & Direction***
1	06:00	17	90.2	0.5SE
2	07:00	17	90.6	0.7SE
3	08:00	16.4	94.7	0
4	09:00	17	96.6	0
5	10:00	17.7	95.7	0
6	11:00	18.5	92.1	0.7SE
7	12:00	25.1	65.4	0.8S
8	13:00	25.8	50.6	0.5SW
9	14:00	26.7	40.4	0.8S
10	15:00	27	40.4	0.7S
11	16:00	28.1	37.7	1.8SE
12	17:00	25.7	58.7	0

Weather: Quarrying day (14-01-2023)				
S.No.	***Time (Hrs)***	***Temperature (◦C)***	***Humidity (%)***	***Wind (m/s) & Direction***

1	06:00	18.7	84	0
2	07:00	19.9	83.1	0
3	08:00	15.6	85.8	0.6 SW
4	09:00	17.1	95.2	0
5	10:00	19	91.3	2 SE
6	11:00	23	82.1	0.7 SE
7	12:00	25.3	57.1	3.1 SE
8	13:00	27.4	43.7	0
9	14:00	26.8	41.4	1.2 S
10	15:00	28.3	37.1	1.9 SE
11	16:00	27.5	60.2	0.4SE
12	17:00	26.2	69.3	0
13	18:00	22.7	78.6	0

6.2 Particulate matters/dust

- Generally, PM10 values of blasting day in stations inside the quarry can be seen to be higher than those of ambient day. This shows the influence of quarrying in increasing the concentration of particulate matter. The very high value of PM10 at W500 compared to closer stations is attributed to local influence.

- In a few stations other than those at 200m, 500m, ambient day concentration is more than blasting day concentration of PM10. The reason is inferred as follows. Efficient dust suppression using water spray and sprinkling was carried out on blasting day whereas dust suppression was nil on ambient day. This made the ambient day concentrations of PM10 higher.

- The results of PM2.5 shows that ambient day values are generally more than blasting day values. The explanations based on dust suppression and local influence at far-off stations given for PM10 hold here also. Similar to PM10, an unusual peak is found in PM 2.5 values at W500 also, which can be attributed to local reasons.

Table: PM10 & PM2.5 values in non-quarrying and quarrying day

Station Points	*Distance from blasting zone (metre)*	*PM 10 (microgram/m^3)*		PM 2.5 (microgram/m^3)	
		Non-quarrying day	Quarrying day	Non-quarrying day	Quarrying day
W50	50 m	64.52380952	73.48790323	51.06863954	49.95693368
W100	100 m	53.91025641	67.95634921	50	52.22430425
W200	200 m	57.63565891	55.13204761	36.13199666	50.52083333
W500	500 m	43.55889724	63.63247863	55.89307412	98.83130081
NE50	50 m	38.62820513	41.70940171	39.98368013	32.54664439
NE100	100 m	36.73611111	44.08861341	38.72157345	44.33891612
NE200	200 m	47.35142119	51.17361657	49.89775051	44.62156823
NE500	500 m	142.7380952	221.7628205	53.30804888	54.46792349
SE50	50 m	56.82414698	79.2166267	48.76807168	68.62030675
SE100	100 m	41.37741047	42.51302083	32.9566855	28.20121951
SE200	200 m	64.58333333	51.79673721	23.47266881	23.65591398
SE500	500 m	58.39646465	56.55982906	43.76292212	54.93576741

Fig.1: PM-10 values of Quarrying and Non-quarrying days

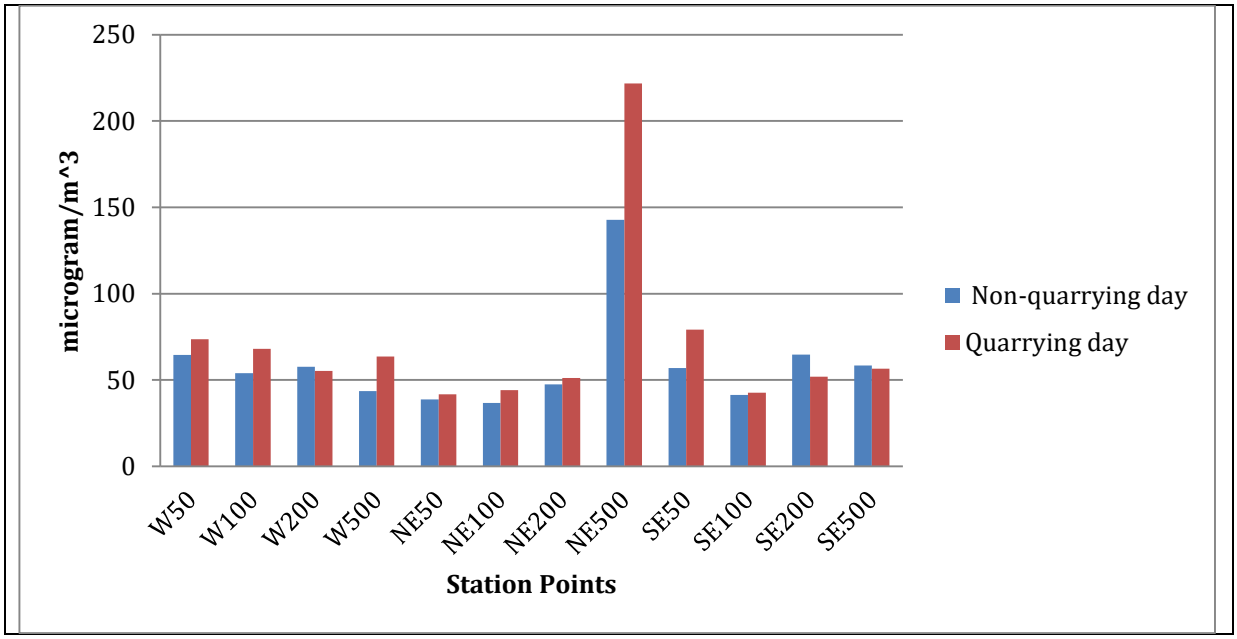
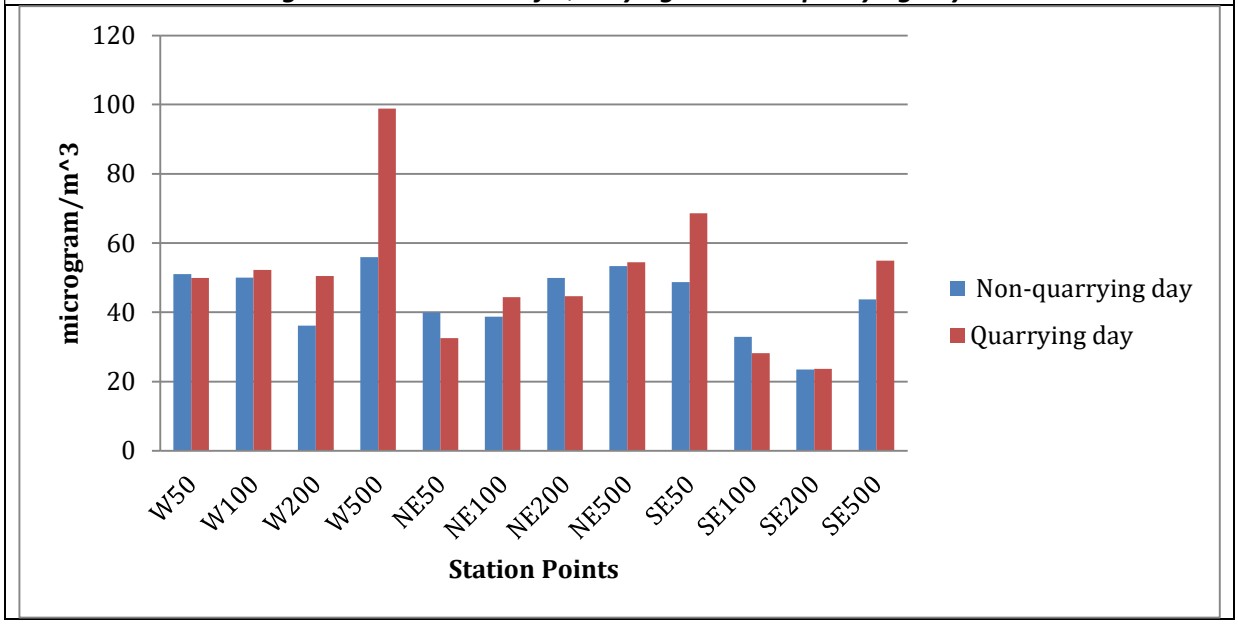


Fig.2: PM-2.5 values of Quarrying and Non-quarrying days



6.3 Noise level

Observed Noise Levels in terms of Equivalent Noise (L_{eq}) on non-quarrying and quarrying day are given in the table below:

Leq= Equivalent noise level

dB(A)= Decibel in 'A' weighted frequency scale (unit of sound pressure level)

Observations:

- The equivalent noise level of the total day is higher on blasting day than ambient day at all stations generally.
- The noise levels on blasting day decreases with increase in distance from blasting zones in all directions.

- Peak of hourly equivalent value can be seen at 3 pm, since the blasting happened between 1 pm and 3 pm. At 2 pm, the noise level readings could not be taken due to safety reasons as blasting was taking place.

Table: Observed Noise in terms of Equivalent Noise (L_{eq}) & L max on non-quarrying and quarrying day.

Station Points	Non-quarrying Day Noise Levels		Quarrying Day Noise Levels	
	L_{eq}	L_{max}	L_{eq}	L_{max}
W 50	56.1567279	105.4	61.558765	106
W 100	56.45239434	80.3	58.63269261	88.4
W 200	53.72660965	85.8	53.62162385	93.4
W 500	53.49196625	89.1	53.85003256	75
NE 50	53.70787212	76.4	52.18554586	82.8
NE 100	56.30936964	83.9	52.96608579	58.2
NE 200	52.65150438	80.7	52.90434738	88.6
NE 500	66.95570307	82.9	58.60783462	74.3
SE 50	59.35061871	88.2	60.31628072	96.5
SE 100	51.30079949	88.3	53.27375626	92.2
SE 200	54.89175644	90	56.57691252	85.6
SE 500	54.47894954	89.8	54.48843931	81.5

Fig.3: Equivalent values (Leq)and maximum (Lmax)of quarrying and non-quarrying day in West direction 50m

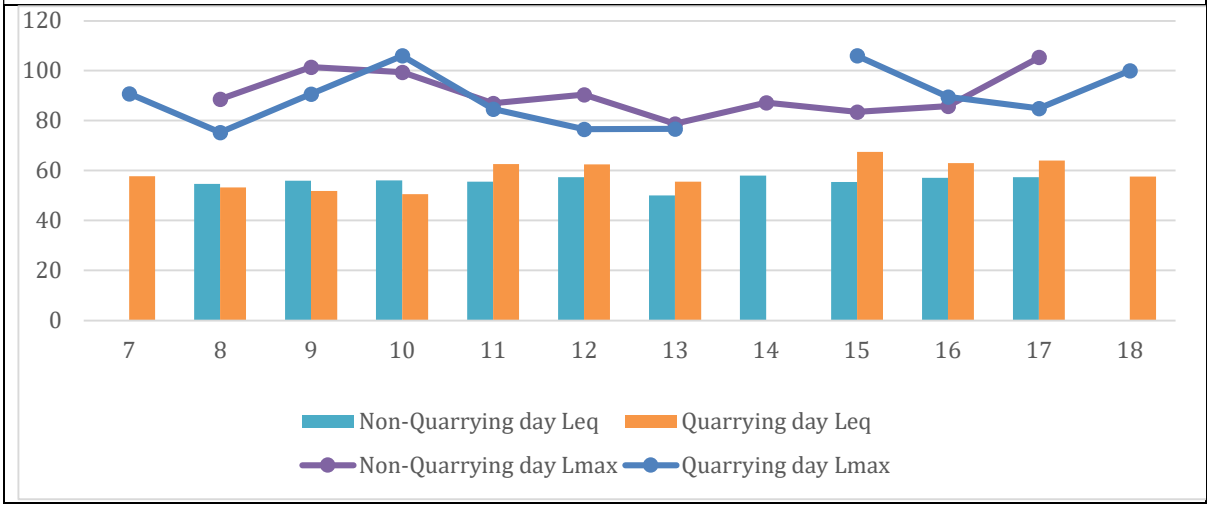


Fig.4: Equivalent values (Leq)and maximum (Lmax)of quarrying and non-quarrying day in West direction 100m

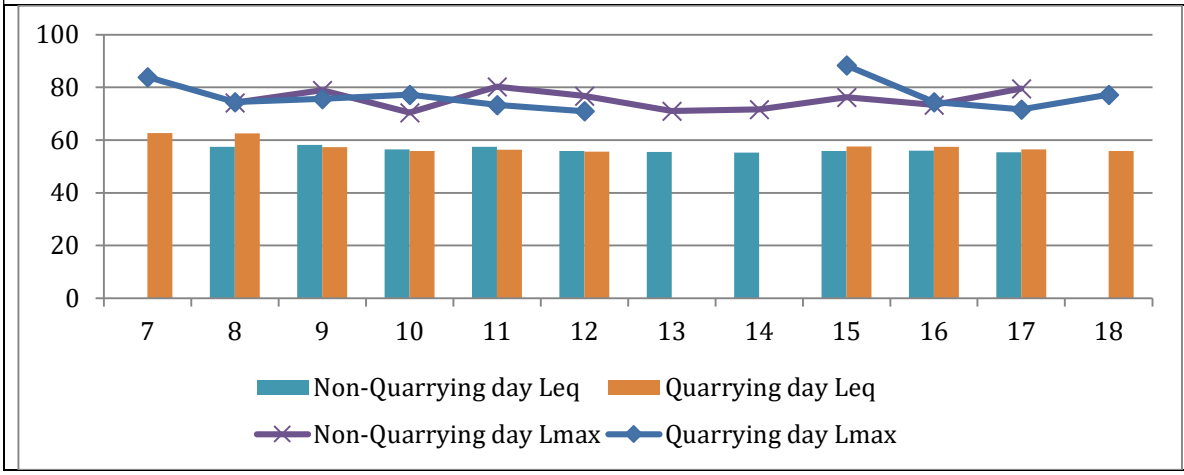


Fig.5: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in West direction 200m

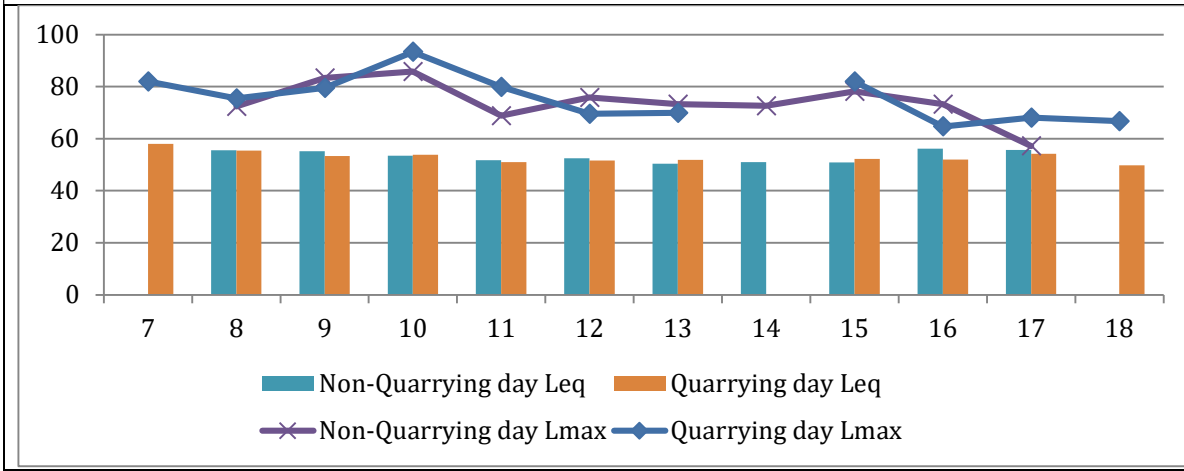


Fig.6: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in West direction 500m

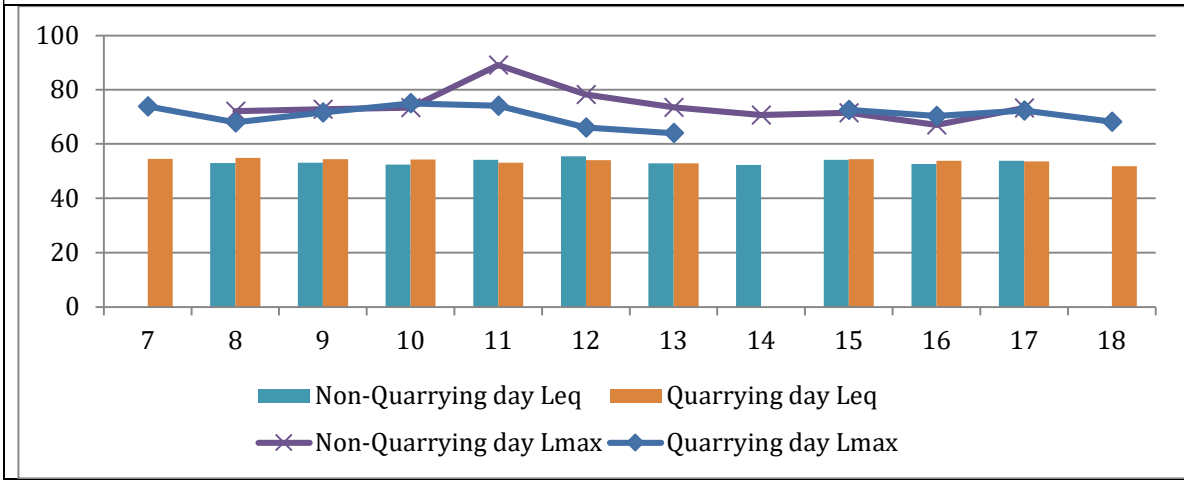


Fig.7: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in North-East direction 50m

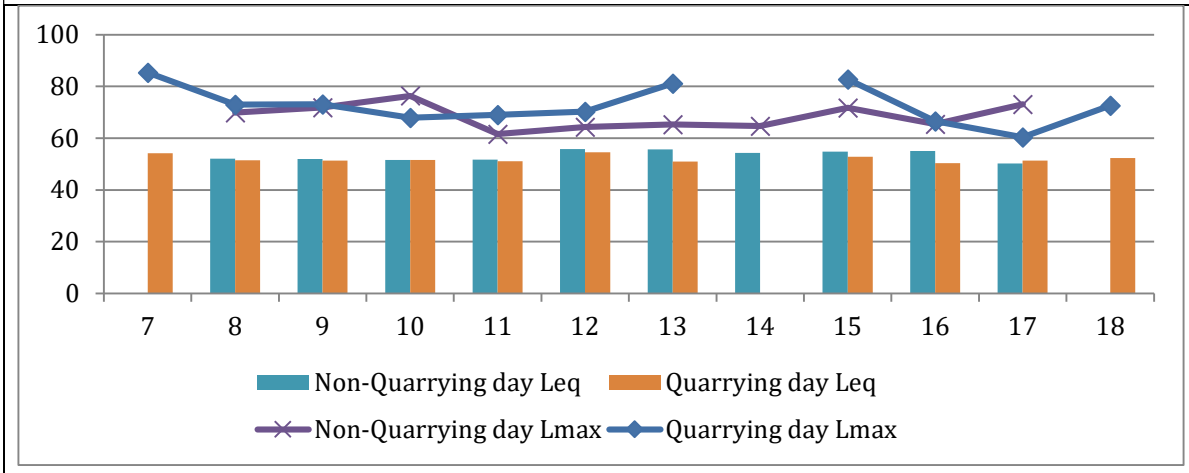


Fig.8: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in North-East direction 100m

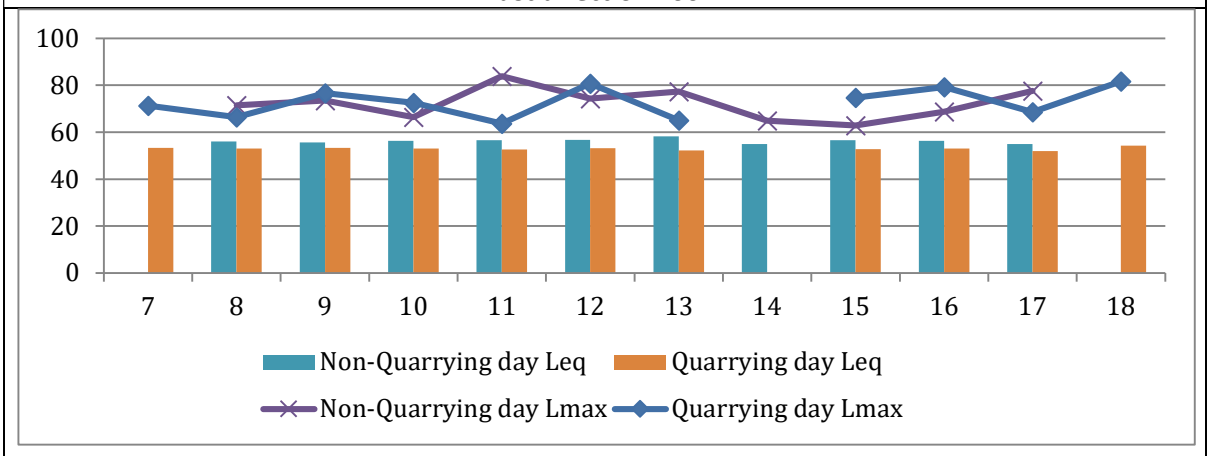


Fig.9: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in North-East direction 200m

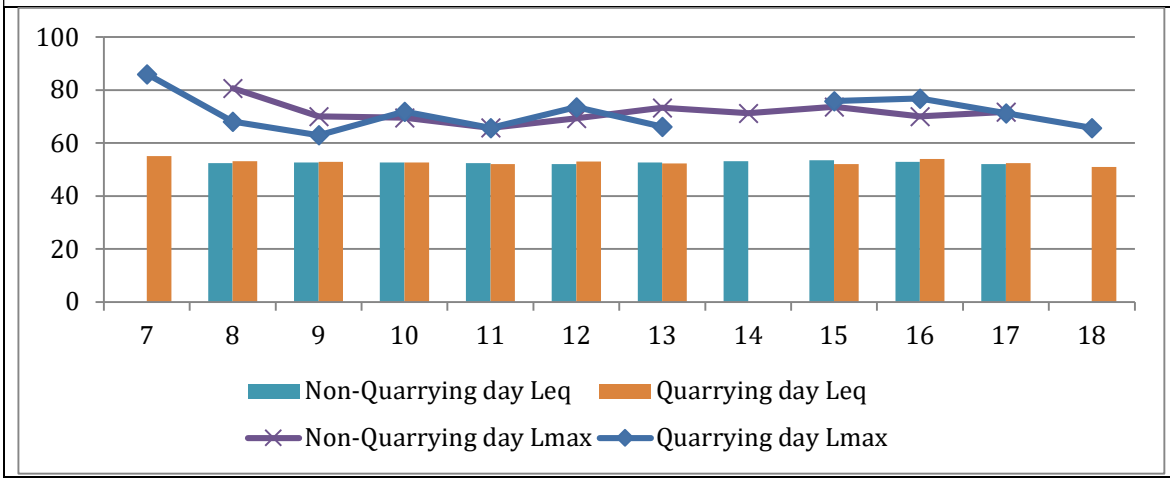


Fig.10: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in North-East direction 500m

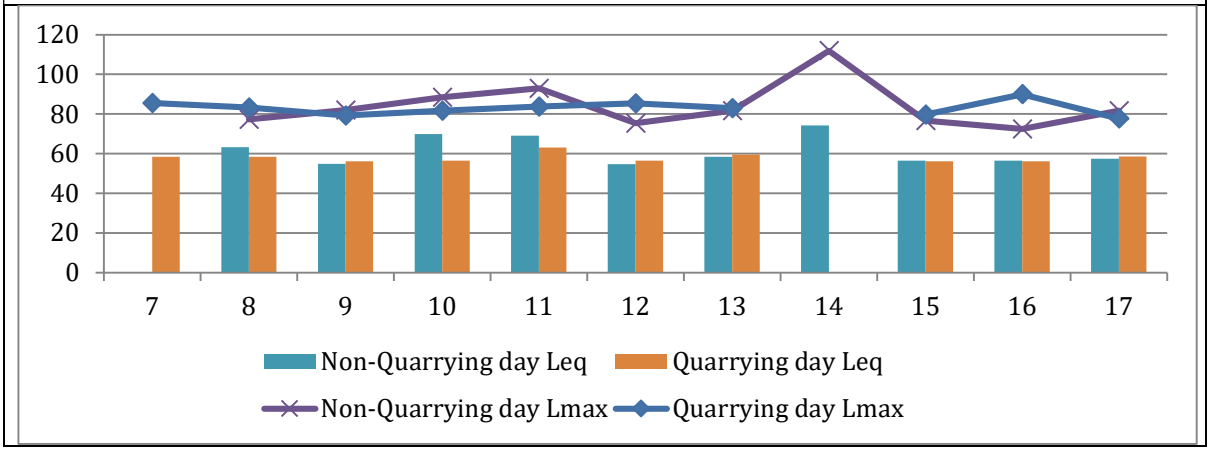


Fig.11: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in South-East direction 50m

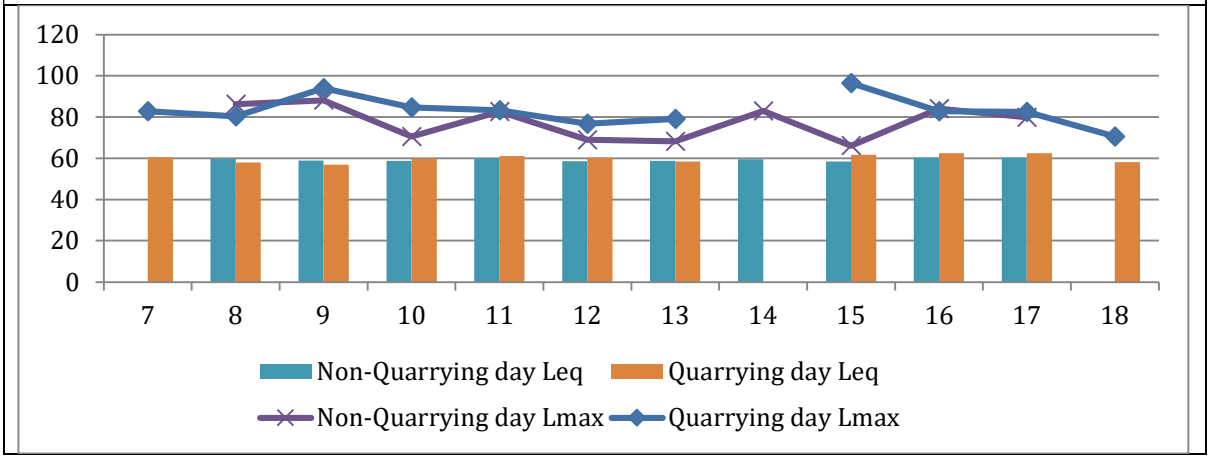


Fig.12: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in South-East direction 100m

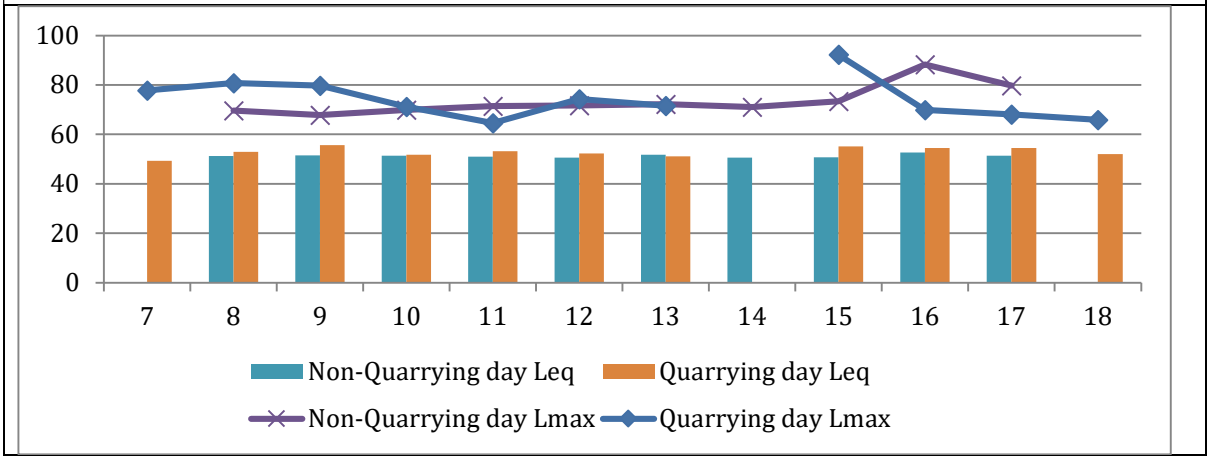


Fig.13: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in South-East direction 200m

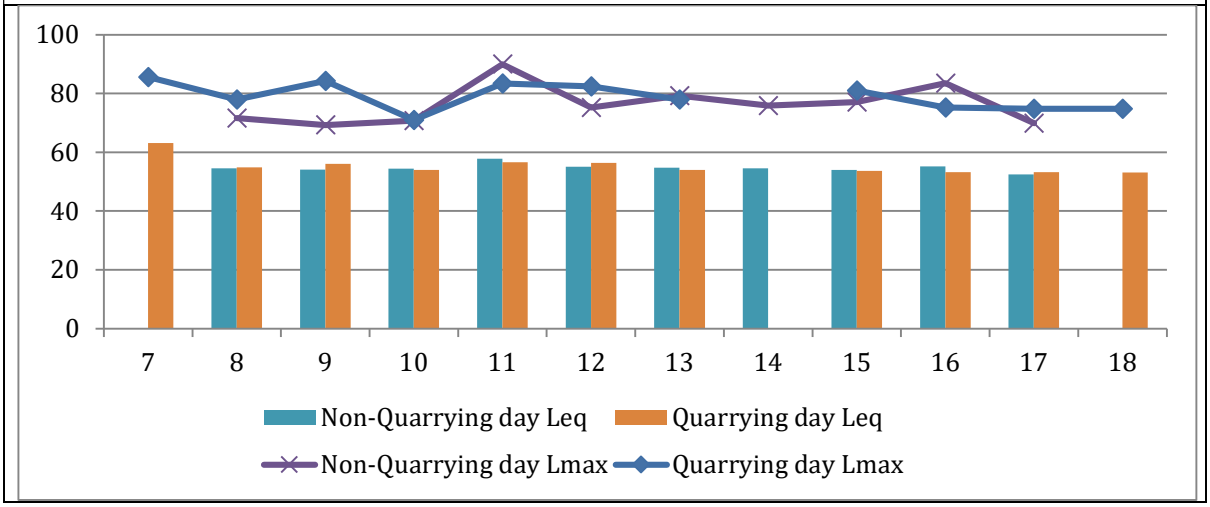


Fig.14: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in South-East direction 500m

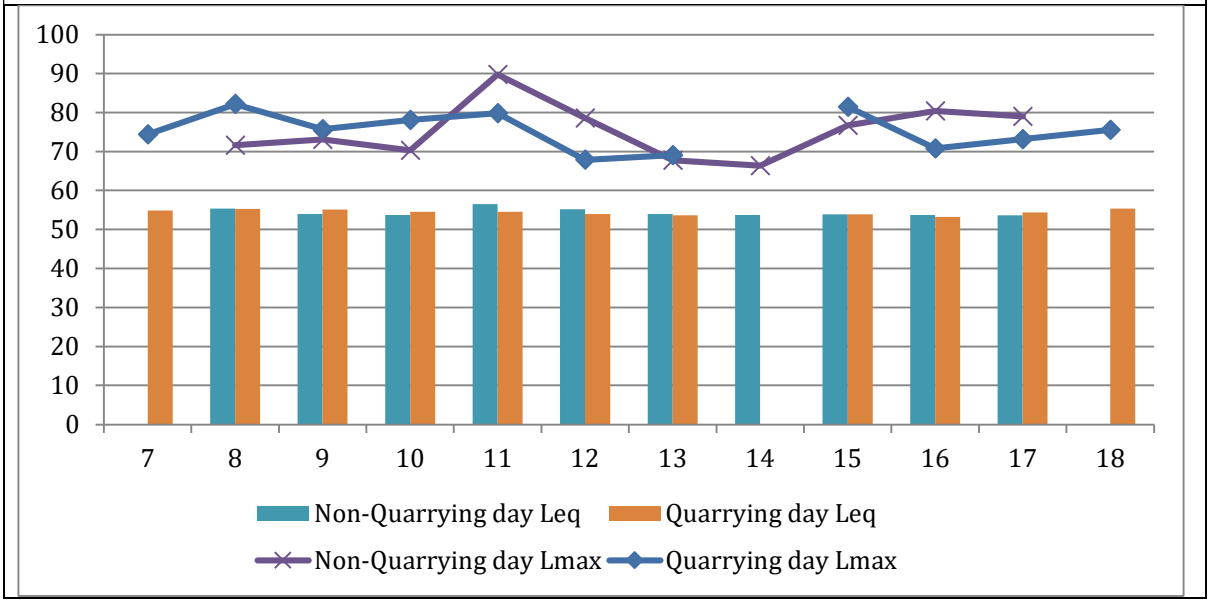
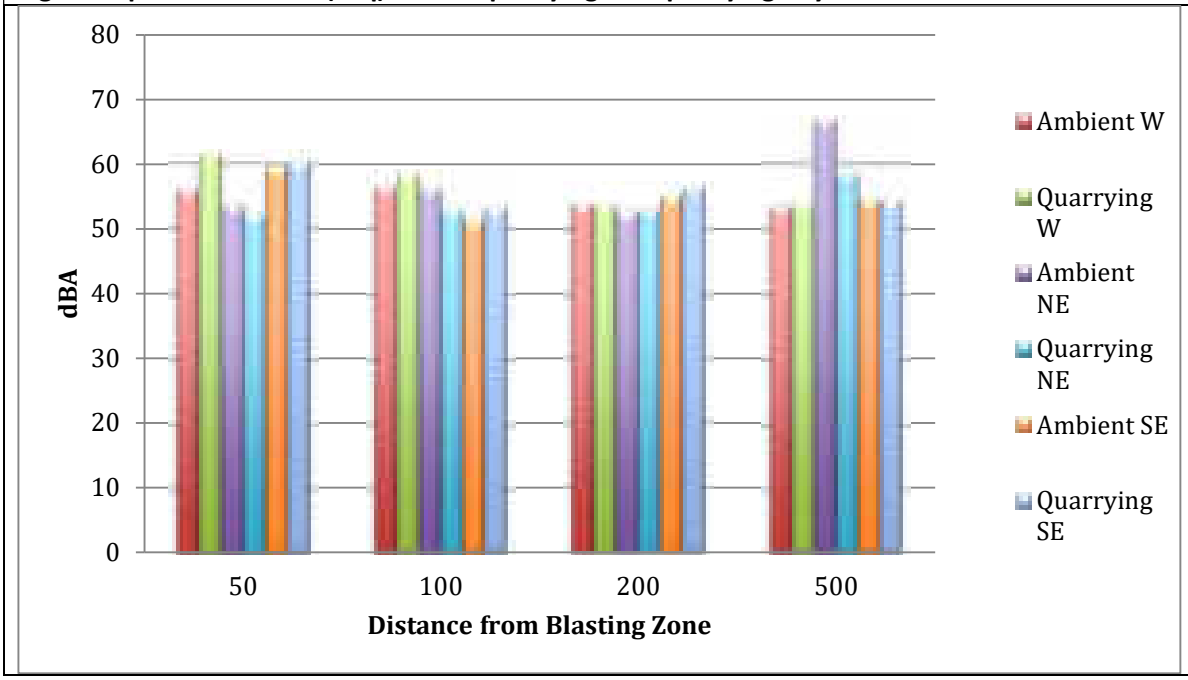


Fig.15: Equivalent values (Leq) of non-quarrying and quarrying day



6.4 Water Quality

Sample Point: Old Quarry Pond

Date of Sample: 28/12/2022

Sl. No.	Parameters	Unit	Value
1	pH	-	7.5
2	COD	mg/l	16
3	BOD	mg/l	1
4	SS	mg/l	120
5	TDS	mg/l	210
6	CONDUCTIVITY	µS/cm	300
7	D.O	mg/l	7.1
8	SODIUM	mg/l	40
9	POTASSIUM	mg/l	13
10	CALCIUM	mg/l	80
11	MAGNESIUM	mg/l	55

7.0 Site specific observations made during the Visit
The surrounding ground is plain, with vegetation and habitations in various direction around the quarry. For dust suppression, a dedicated tanker vehicle is provided for water sprinkling. Fencing is provided, boundary pillars are marked and fixed, sign boards are provided, PPEs like safety boots, helmets are provided, there are no wildlife movements reported. CSR activities like infrastructure development, social welfare was provided by the quarry. There was considerable loosened overburden at the quarry site.

Photographs taken during the site assessment

Monitoring team

Quarry site

Particulate matter monitoring

Noise monitoring

Assessment Report on Ambient Air Quality, Noise Levels and Mine Pit Wastewater Quality carried out during 17-01-2023 to 20-01-2023

Name and Address of the Stone Quarry Site	**M/s. National Granite Stone Quarry owned by Sh. P. M. Abdul Rahiman located at Thayannur Village, Vellarikundu Taluk, Kasaragod, Kerala 671319**			
Geo-coordinates	Latitude	12°22'03.71"N	Longitude	75°12'18.61"E

1.0 Study site description

1.1 General information

The lithology of M/s. National Granite Stone Quarry owned by Sh.P. M. Abdul Rahiman located at Thayannur Village, Vellarikundu Taluk, Kasaragod, Kerala 671319 is Garnet-Sillimanite Kyanite Gneiss.As per the information provided by the stone quarry operator, the present quarrying lease issued by Department of Mining and Geology, Government of Kerala, commenced on 16.10.2018 and is valid up to 15.10.2030. The quarry has obtained Environmental Clearance from State Environmental Impact Assessment Authority, Kerala. It also holds valid Consent to Operate issued by Kerala State Pollution Control Board. Area of mining is 3.2420 Ha, nearest residential area is 52.7 metres from the quarry. The quarry is not attached to any captive stone crusher unit. The public road to the quarry from the nearest town is well tarred and wide enough for two heavy vehicles. The approach road in the proponent's property is not tarred, but kept well moist by water sprinkling. There are no major water bodies like rivers and no forests or sanctuaries nearby.

1.2 Topography & Geology

As per the information provided by the stone quarry operator, the highest elevation of the mine area is 380 m above MSL part and the lowest is315 m above MSL. The district of Kasargode can be broadly divided into five geological belts viz. the southern charnockitic rocks which extends further south, northern gneiss, a syenite pluton in central part, isolated cappings of sedimentary rocks confined to the coastal tract and quartenary sediments of coastal plain. As per the lithological map, the rock type in the quarry is Garnet-Sillimanite Kyanite Gneiss. Loose top soil was present in the entire quarry area where rocks have not been exposed.

1.3 Details of quarrying/ mining activities

The method of mining is semi-mechanized open cast mining. The mining operations are carried out using jack hammers, compressors, drills, excavators, etc. followed by controlled blasting (NONEL) using class 2 and class 6 explosives. The rock breaking is done using pneumatic breakers and transported to the crusher site using trucks/ tippers of 15Tonnescarrying capacity for various products.

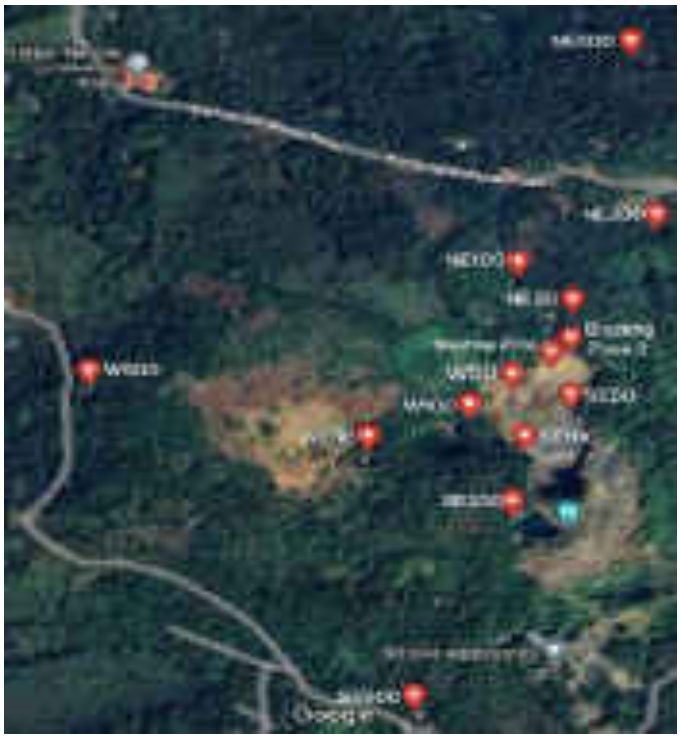
2.0 Location attributes			
2.1 Altitude (m)	315	2.2 Area (Ha)	3.2420
2.3 Terrain	Undulating	2.4 Lithology	Garnet-Sillimanite Kyanite Gneiss
2.5 Soil type	Laterite	2.6 Mineable reserve	923170 MT
2.6 (a) Remaining Mineable reserve	185685 MT	2.6 (b) Approximate mined quantity per annum	218375 MT
2.7 Slope	Sloping	2.8 Fault	--
2.9 Distance from nearest forest (Km)	None within 1 km	2.10 Wildlife movement (Yes/ No)	No

Source: Mining Plan

3.0 Schedule of the Study/ Assessment		
Day	Date	Activities
1	17-01-2023	Site reconnaissance, fixing of monitoring points within 50m, 100m, 200m and 500m from the blast point. Setting up a field office, arranging power supply for operating monitoring instruments/ equipment. Checking of instruments, deployment and conducting test runs.
2	18-01-2023	Background monitoring of ambient air quality and noise without any activities in the quarry. (06.00 to 18.00 Hrs.)
3	19-01-2023	Air quality and noise monitoring during the operation of quarry including drilling and blasting and sampling of quarry-pond water (06.00 to 18.00 Hrs.)
4	20-01-2023	Maintenance check of instruments used, safe packing for transportation and transporting monitoring gear to the next station.

4.0 Sampling/ Monitoring plan and locations
The quarry area is slightly deep, the present excavation area is only 10-20 metre below the surrounding ground level. The present blasting zone is towards North-East of the quarry area which has more length in the east west direction than in the North South direction. The station points were fixed based on the wind direction data. The 50m, 100m stations in West, North East and South East directions are inside the open quarry land itself. Stations like W200, SE200 are also within the quarry premises. Further stations like W500, SE500, NE200, NE500 were all outside the quarry premises, in private properties. Hence in total, 12 coordinates were fixed with the actual blasting point as centre in North-East line, West line and South-East line each at an angle of approximately 120° to each other. 8 locations were inside the quarry and 4 locations were outside the quarry premises. The photographs of monitoring activities is attached as **Annexure 1.**

4.1 Map showing sampling locations (Map)



4.2 Geo-coordinates of sampling locations

Co-ordinate details of selected monitoring locations at the stone quarry site is given in the **Table 1** below:

Table 1. Co-ordinate details of selected monitoring locations at the stoner quarry site

Sl.No.	Station Points	Latitude	Longitude
1	W 50	12.3694317	75.2058873
2	W 100	12.3690702	75.2054658
3	W 200	12.3686926	75.2044503
4	W 500	12.3694697	75.2016645
5	NE 50	12.3703326	75.2064934
6	NE 100	12.3707820	75.2059563
7	NE 200	12.3713502	75.2073346
8	NE 500	12.3734261	75.2070735
9	SE 50	12.3691979	75.2064740
10	SE 100	12.3686906	75.2060090
11	SE 200	12.3679197	75.2058950
12	SE 500	12.3655869	75.2049062

5.0 Monitoring activities

5.1 Background monitoring (18-01-2023)

The monitoring started at 6.00am at each 12 locations. In some stations, delay in setting stable power supply, as it was the first day, made monitoring to start by 8 am only. The quarry activities were kept completely idle to do ambient monitoring. The air monitoring was interrupted at station W200 for 4 hours (from 6AM to 10AM) due to voltage fluctuation issue and started back by 10AM. The Environmental Engineers in-charge ensured whether all stations are working properly. At each station, one AE / equipment operator was there for the monitoring. The Noise data, Air flow rates and Total volume of sucked air were recorded every one hour. Weather data were also recorded at station point SE100 inside the quarry. The wind velocity, humidity and temperature were monitored every hour using Weather Tracker. The direction of the wind was mostly from west to east.

The locations for drill holes for explosives were located by the CIMFR blasting team. It was decided to conduct 10 blasts which consist of 137 holes, each hole having 32mm diameter and 5ft - 6ft depth. The explosive used is ammonium nitrate and in the range of 250 gm to 375 gm per hole.

The CIMFR team identified 7 locations for the seismic analysis. 4 locations were inside the quarry and 3 locations were outside the quarry. They also conducted a social survey on the response of the public about quarrying activities, through a questionnaire. The location identification and survey were completed by 6.00pm. The monitoring was completed at all the 12 stations by 06PM. Ambient air quality and noise level monitoring were carried out at the stone quarry site under overall supervision of Kerala State Pollution Control Board and water sample collected from stone quarry pond analysed at Central Laboratory of Kerala State Pollution Control Board at Kochi.

5.2 Monitoring during quarrying operation (19-01-2023)

The monitoring started at 6.00am and continued without any interruption. The weather data were recorded from the same station inside the quarry. Before blasting, drilling of blast holes using jack hammers was started from 6.am onwards and approximately 128 no. s of blast holes were drilled. The drilling of holes (5ft to 6ft depth) and filling of explosives into each hole were completed at 11AM. Connections were also established for the blasting. The CIMFR team checked all the drilled holes of blast points. The team also installed Seismograph at 7 locations by 11.20 AM. Blasting was conducted by 11.30 AM. 10 experimental blasts were conducted. Immediately after the blasting was completed, vehicular movement, breaking of boulders using breakers and hauling of the quarry product using haulers were carried out. These quarrying activities continued full-fledged until the end of the day. The monitoring was completed at all the 12 stations by 06PM. During the assessment, no. of holes to be drilled per hole, quantity of explosives to be charged per hole, blasting activity were carried out under over all supervision of the CIMFR Expert Team

6.0 Results

6.1 Weather records

The weather data were monitored every hour using Weather Tracker inside the quarry with respect to wind velocity, humidity and temperature and the weather details observed during Non-quarrying (18.01.2023) and Quarrying Day (19.01.2023) are given in **Table 2 & Table 3** below.

Table 2. Weather details observed during non-quarrying day (18.01.2023)

SL. NO.	Time (Hrs)	Temperature ◦C	Humidity (%)	Wind Speed & Direction (m/s)
1	06:00	23.5	82.1	1.2 S
2	07:00	23.7	81.8	1.0SE
3	08:00	24.1	78.7	3.0SE
4	09:00	25.6	76.2	0.6SE
5	10:00	27.6	69.7	0.7SE
6	11:00	26.9	70.4	3.1SE
7	12:00	29.9	57.2	0.7SE
8	13:00	30.1	51.8	2.4SE
9	14:00	32.3	49.1	0.6SE
10	15:00	30.1	65.0	1.2E
11	16:00	29.6	68.0	0.0
12	17:00	27.9	67.8	0.0

Table 3. Weather details observed during Quarrying day (19.01.2023)

SL. NO.	Time (Hrs)	Temperature ◦C	Humidity (%)	Wind Speed & Direction (m/s)
1	06:00	23.8	61.5	1.5 SE
2	07:00	22.1	69.1	0.8 SE
3	08:00	26.4	71.9	0.0
4	09:00	28.1	59.9	0.7 SE
5	10:00	29.3	57.3	0.0
6	11:00	29.8	53.7	0.5 SE
7	12:00	30.4	50.9	0
8	13:00	31.7	47.1	0.6 W
9	14:00	32.4	45.2	0
10	15:00	30.4	49.6	0
11	16:00	30.4	49.3	0
12	17:00	26.9	60.1	0
13	18:00	32.4	45.2	0

6.2 Particulate matters/ dust in terms of PM10 and PM2.5 values observed during Non-Quarrying day (18.01.2023) & Quarrying Day (19.01.2023)

Particulate matters/ dust in terms of PM10 and PM2.5 values observed during Non-quarrying day (18.01.2023) and Quarrying day (19.01.2023) are given in **Table 4 and Fig 1 to Fig 2** below:

Table 4: PM10 and PM2.5 values observed during Non-quarrying and quarrying day

Station Points	Distance from blasting zone (metre)	PM 10 (microgram/m^3)		PM 2.5 (microgram/m^3)	
		Non-quarrying day	Quarrying day	Non-quarrying day	Quarrying day
W50	50 m	161.1881457	144.4791667	69.23387912	42.62138571
W100	100 m	94.26923077	104.8254083	67.2965058	44.31564691
W200	200 m	59.76190476	51.39708292	117.9446219	53.37069282
W500	500 m	55.33769063	75.2037752	82.62724596	56.15755074
NE50	50 m	76.13693153	72.55934075	64.94828569	64.28248806
NE100	100 m	92.77398127	76.57846424	104.1919806	68.67717201
NE200	200 m	60.86038533	46.05769231	56.97120365	55.07804782
NE500	500 m	103.7617955	110.8226496	86.11774065	63.15303262
SE50	50 m	76.6802168	95.11418533	64.92313346	48.780959
SE100	100 m	60.19230769	63.09151204	84.39073515	61.44445747
SE200	200 m	63.55078229	82.26246106	87.5055833	58.83341738
SE500	500 m	109.4761905	64.39489376	100.998004	67.55128735

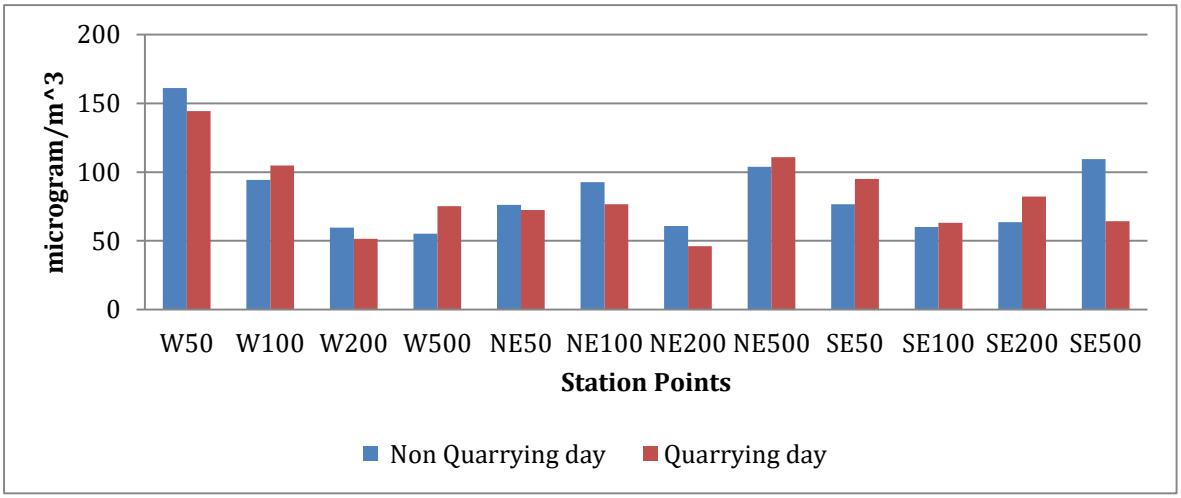


Fig.1: PM-10 values of Quarrying and Non-quarrying days

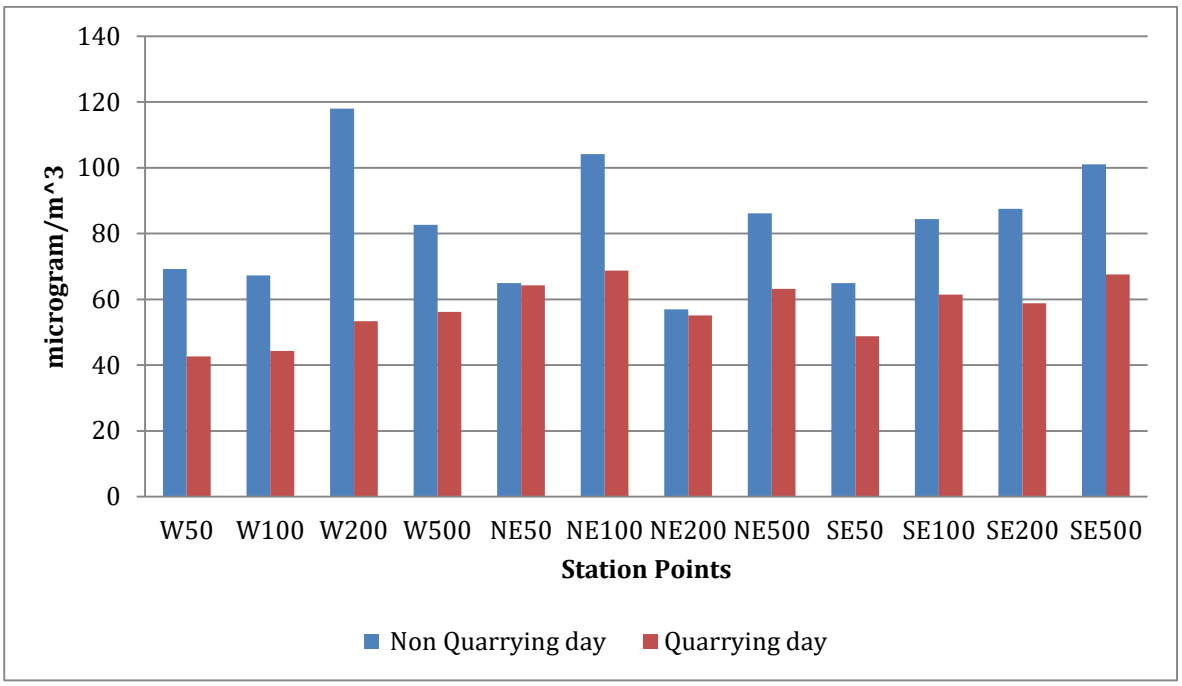


Fig.2: PM-2.5 values of Quarrying and Non-quarrying days

The analysis results of ambient air quality during non-quarrying day (Ambient day) and quarrying day reveal that

(i) The PM10 and PM2.5 values are varying erratically between non-quarrying and quarrying days. At some stations, PM10 values have increased, but corresponding PM2.5 values shows decrease and viceversa. The reason is the loose top soil quarry area other than exposed rocks. The soil was getting airborne in the non-quarrying day. The wind velocity was also comparatively higher on non-quarrying day than quarrying day. There was no dust suppression on non-quarrying day but good dust suppression was there on quarrying day. This caused higher ground dust at all the stations within quarry premises on the non-quarrying day.

(ii) In stations, NE200 and NE500; W200 and W500; and, SE200 and SE500, which were all away from quarrying area, local influences, not that of quarrying, caused the pattern of particulate mater values.

6.3 Noise levels

Observed Noise Levels in terms of Equivalent Noise (L_{eq}) and Maximum Noise Level (L_{max}) on non-quarrying and quarrying days are given in the **Table 5 and Fig 3 to Fig 15** in subsequent paras:

Table 5: Observed Noise Levels in terms of Equivalent Noise (L_{eq}) and Maximum Noise Levels (L_{max}) on Ambient Day and Quarrying Day.

Station Points	Non-quarrying		Quarrying	
	L_{eq}	L_{max}	L_{eq}	L_{max}
W 50	54.53776776	89	71.09626081	101.3
W 100	50.70924363	84.6	67.23217658	104.2
W 200	50.38809037	85.6	51.53325512	8.7
W 500	52.02469306	78.5	51.28390147	88
NE 50	56.53269591	77.6	64.12151425	118.9
NE 100	57.75010755	98.1	64.00207669	92.6
NE 200	57.9938271	77.4	57.93862208	87.4
NE 500	54.31729554	85.9	54.00017463	89.9
SE 50	48.35042325	78.4	65.84128917	104.9
SE 100	52.40926456	79.9	69.29160249	106.9
SE 200	45.8554891	74.4	55.78058959	96.9
SE 500	62.09271181	86.3	60.8456985	85.6

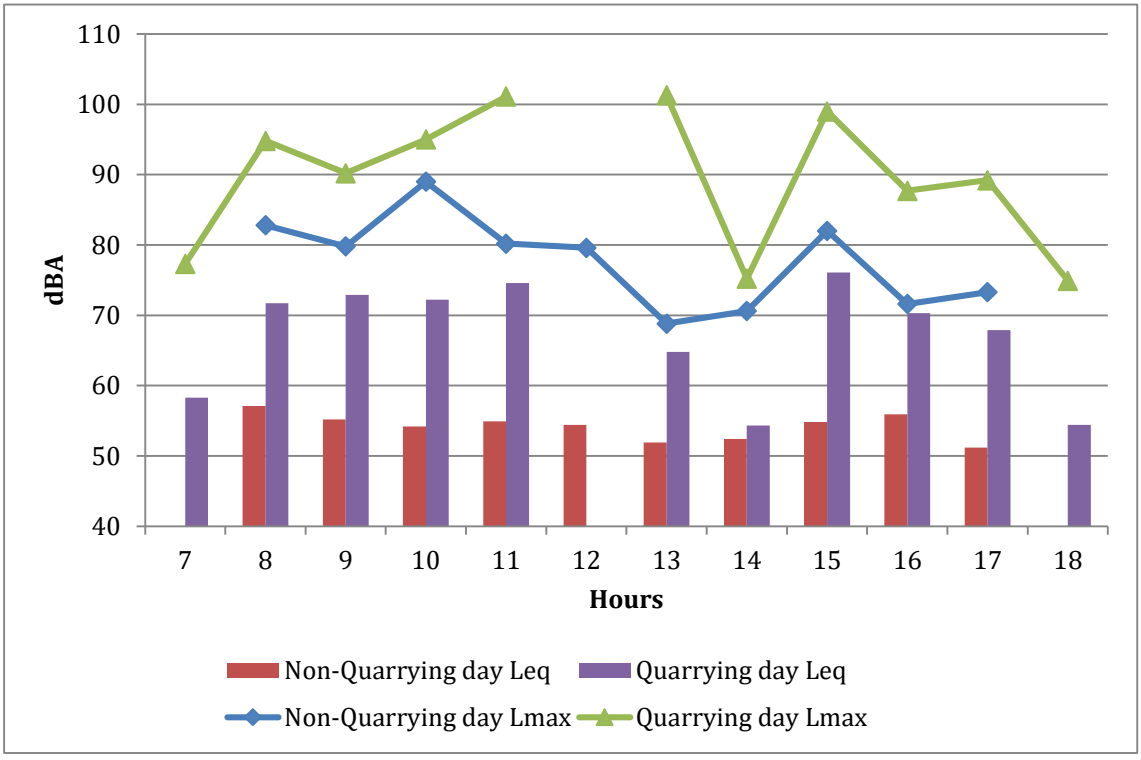


Fig.3: Equivalent values (Leq)and maximum (Lmax) Noise levels observed on quarrying and non-quarrying day in West direction 50m

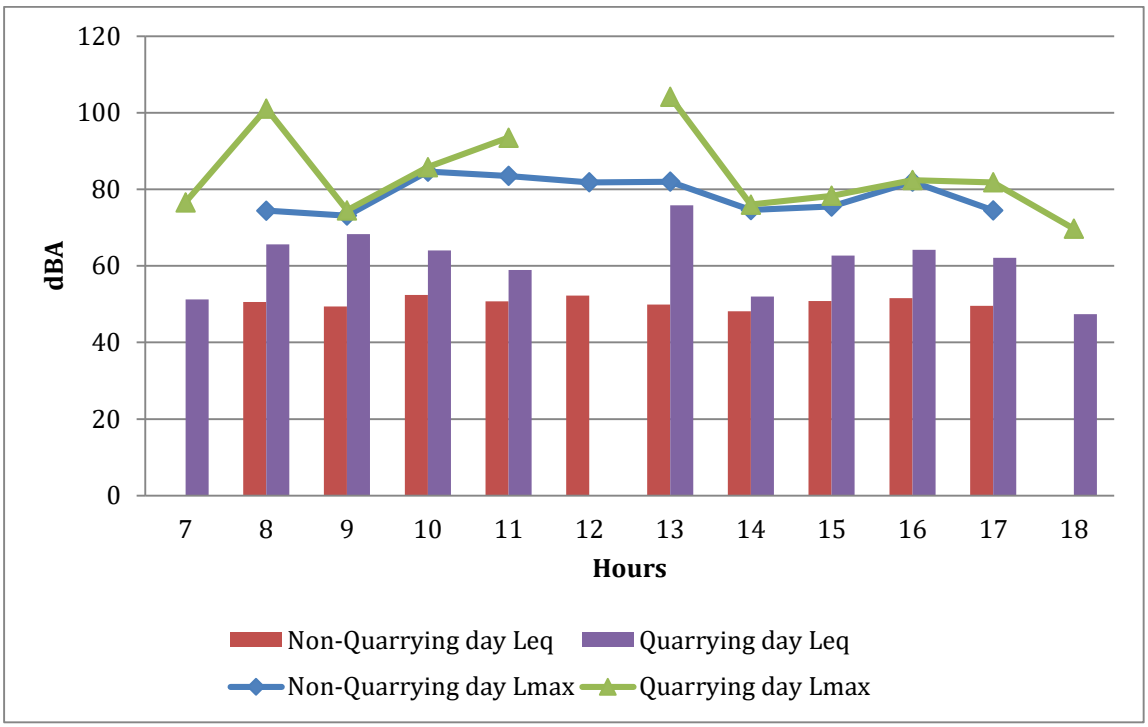


Fig.4: Equivalent values (Leq)and maximum (Lmax) observed on quarrying and non-quarrying day in West direction 100m

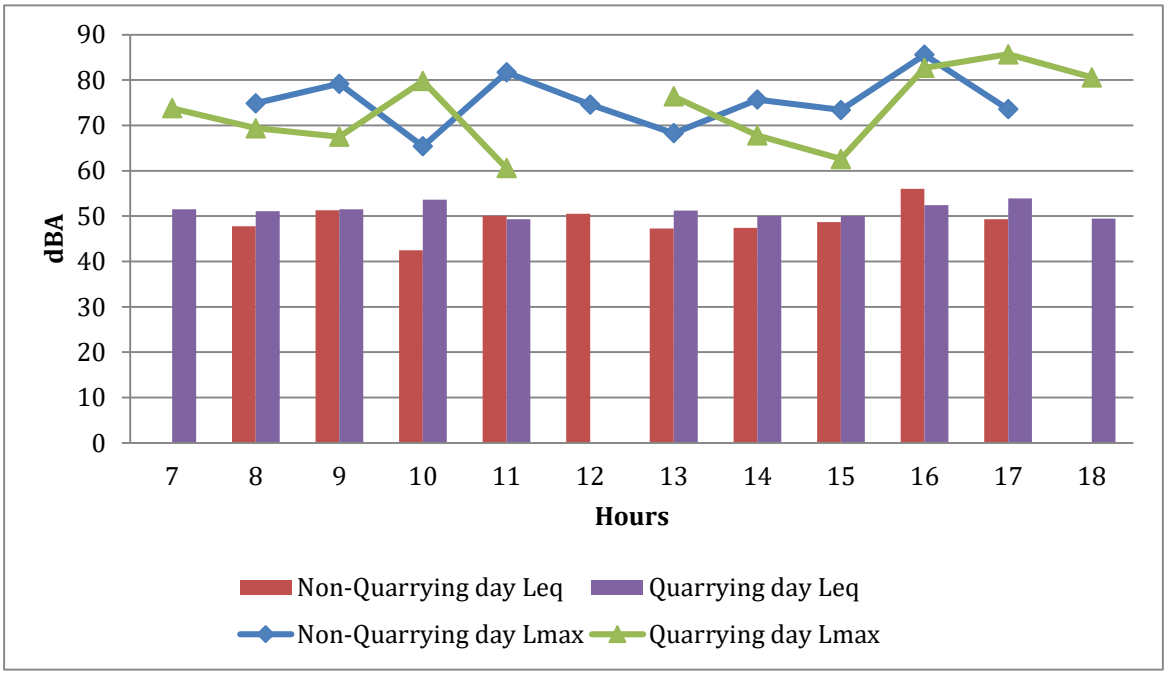


Fig.5: Equivalent values (Leq)and maximum (Lmax) observed on quarrying day and non-quarrying in West direction 200m

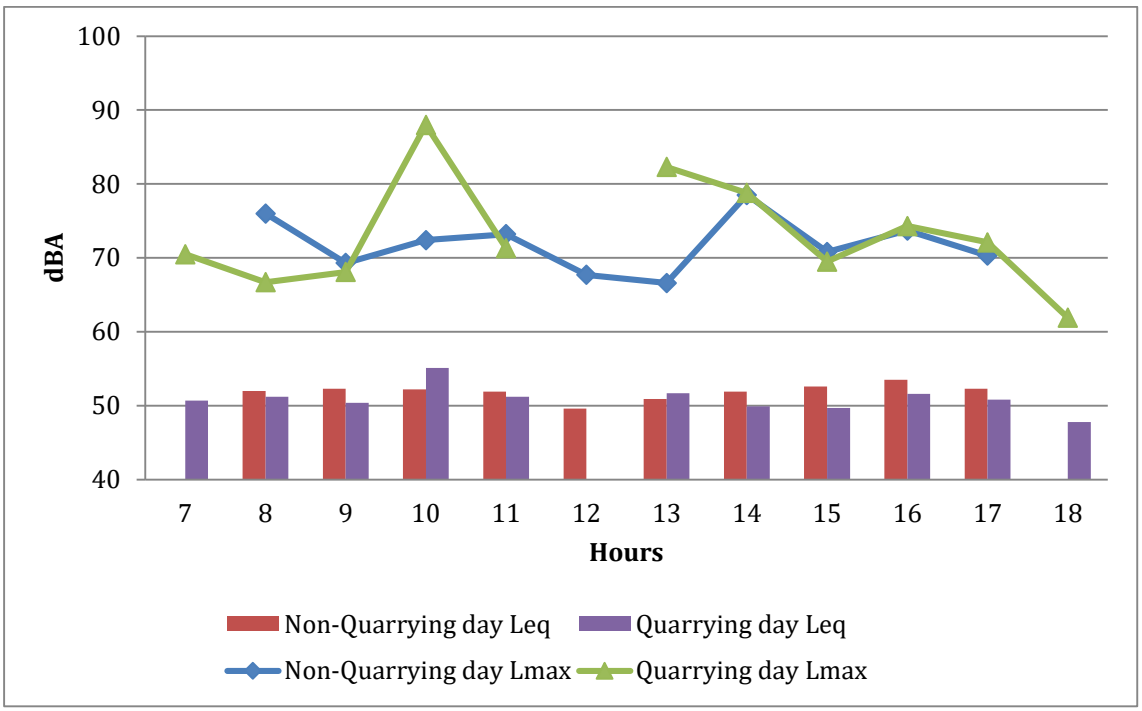


Fig.6: Equivalent values (Leq)and maximum (Lmax) observed on quarrying day and non-quarrying in West direction 500m

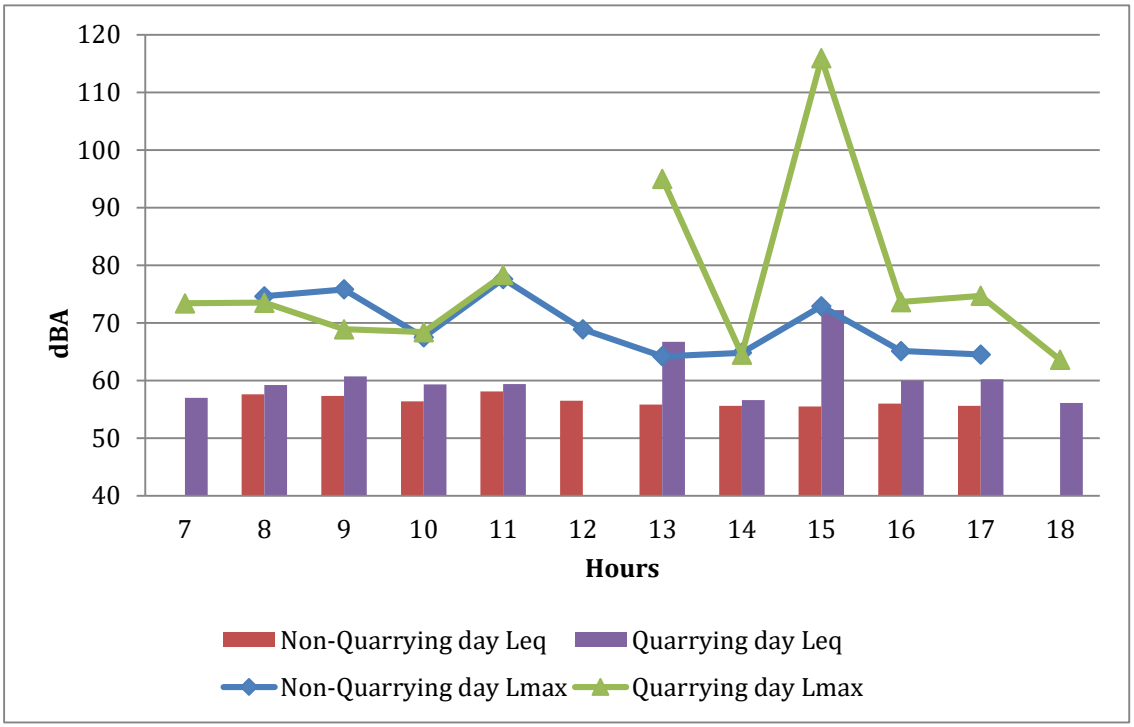


Fig.7: Equivalent values (Leq)and maximum (Lmax) observed on quarrying day and non-quarrying in North-East direction 50m

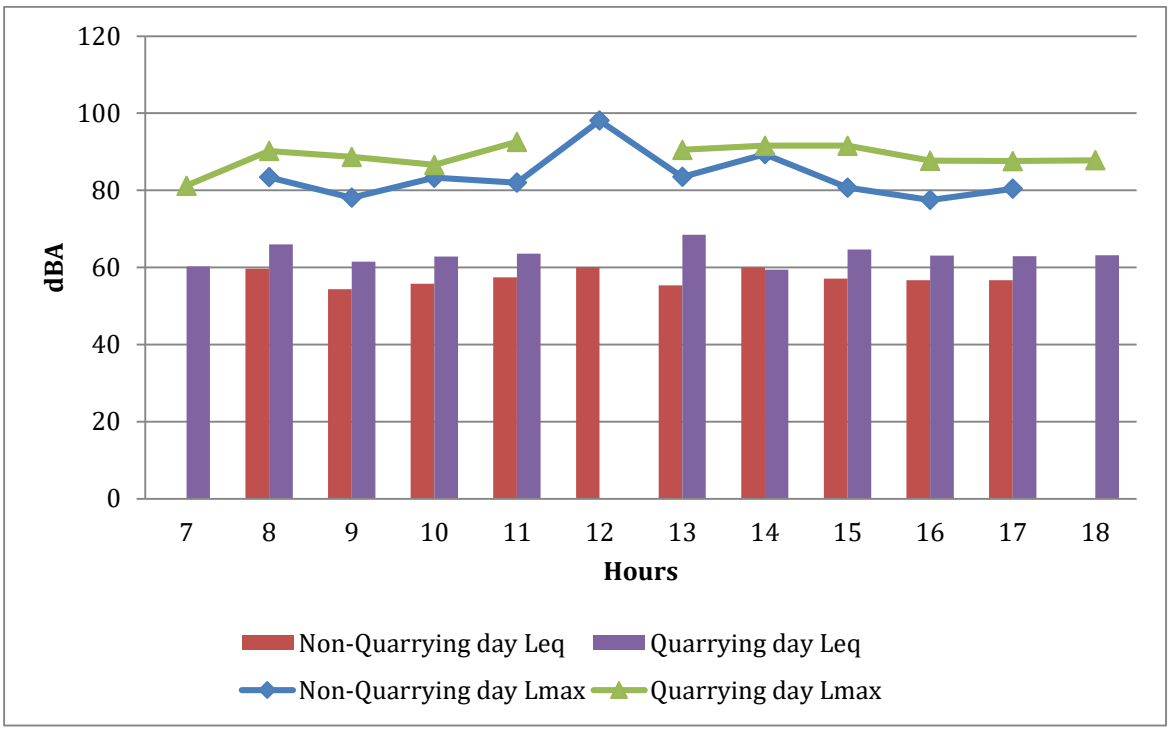


Fig.8: Equivalent values (Leq)and maximum (Lmax) observed on quarrying day and non-quarrying in North-East direction 100m

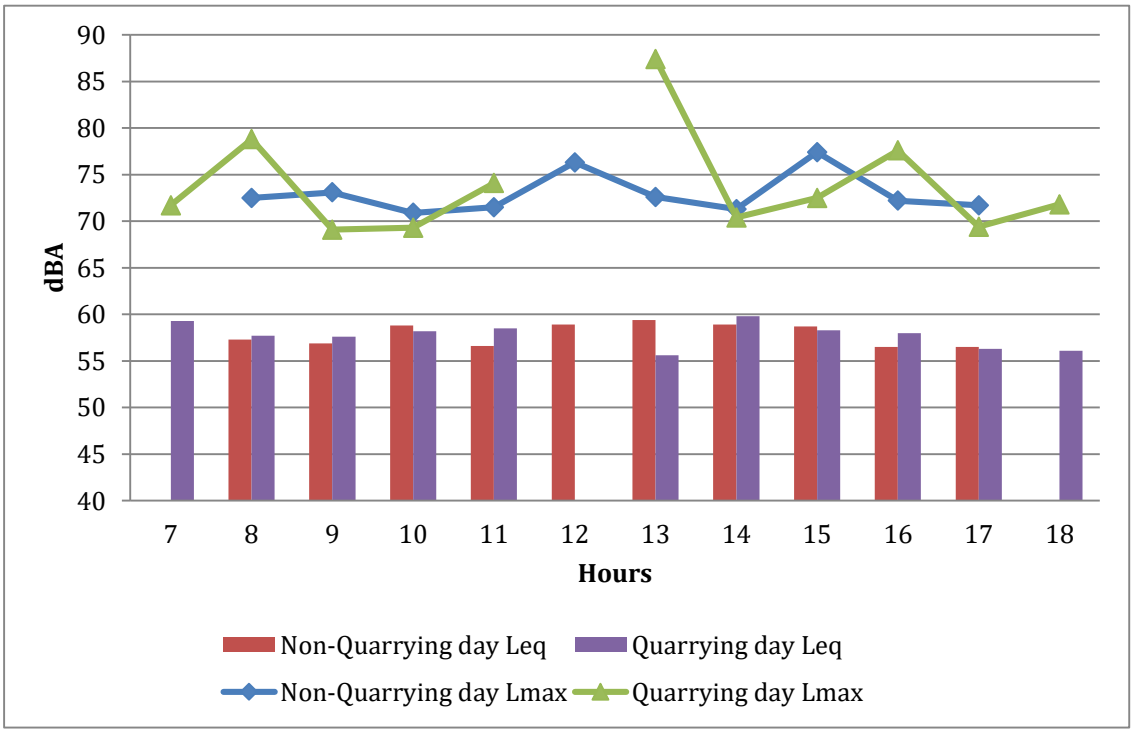


Fig.9: Equivalent values (Leq)and maximum (Lmax) observed on quarrying day and non-quarrying in North-East direction 200m

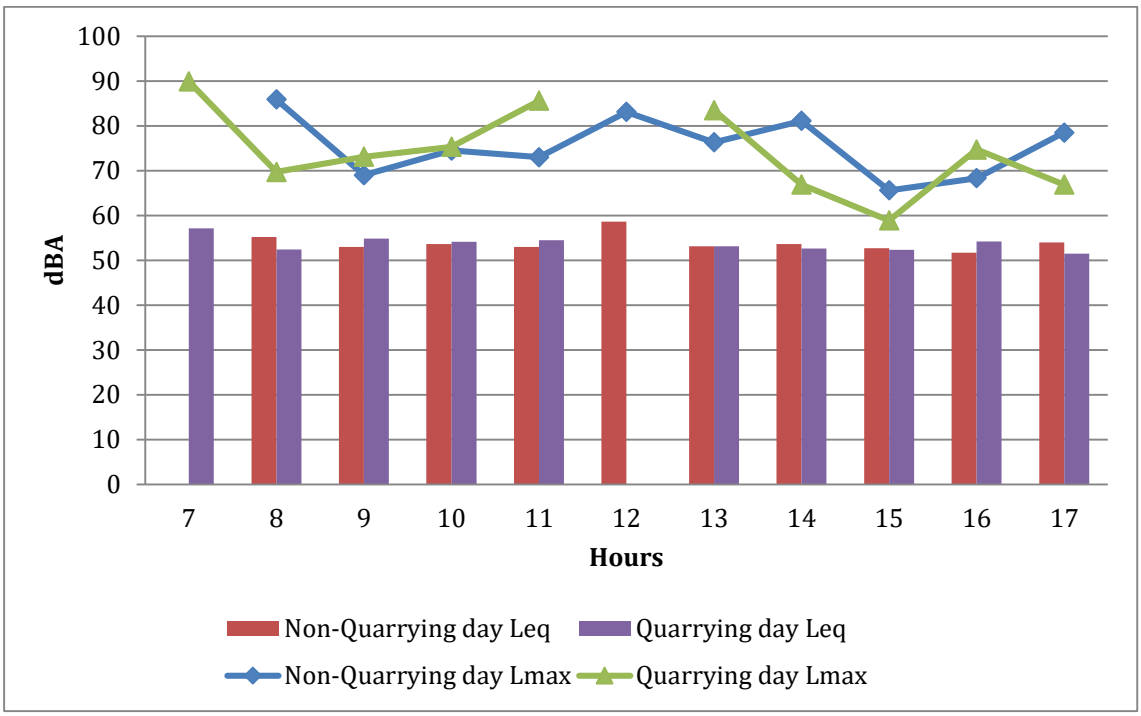


Fig.10: Equivalent values (Leq)and maximum (Lmax) observed on quarrying day and non-quarrying in North-East direction 500m

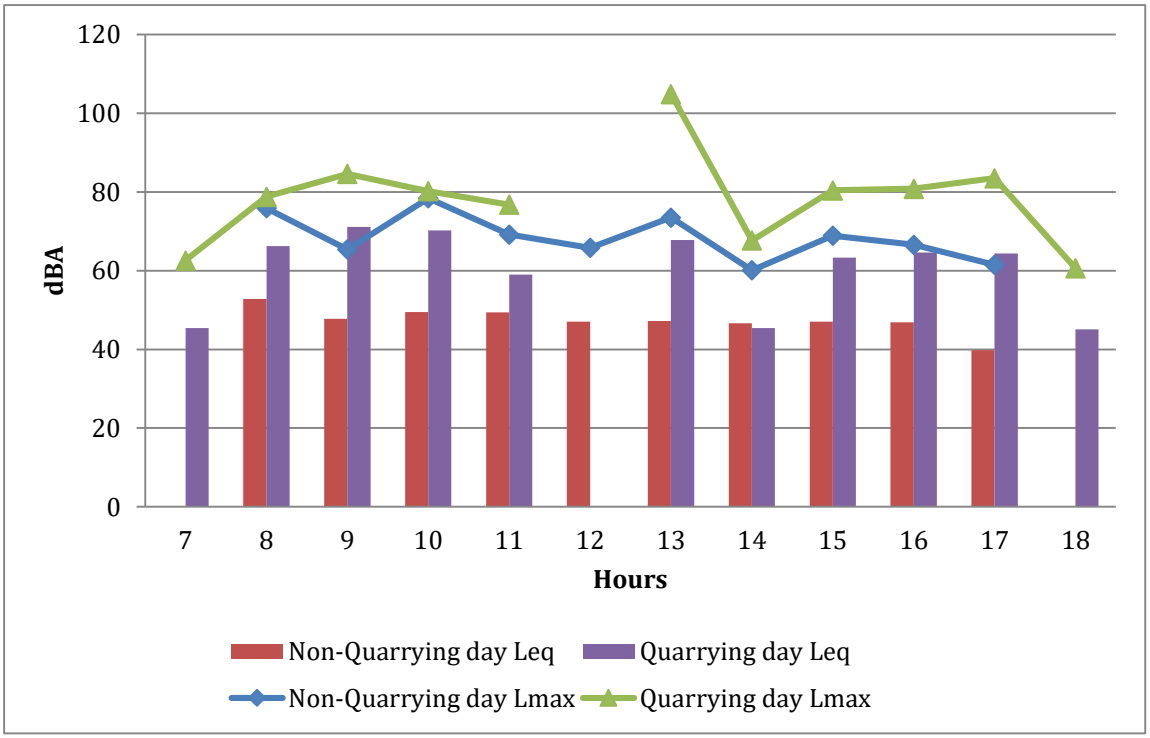


Fig.11: Equivalent values (Leq)and maximum (Lmax) observed on quarrying day and non-quarrying in South-East direction 50m

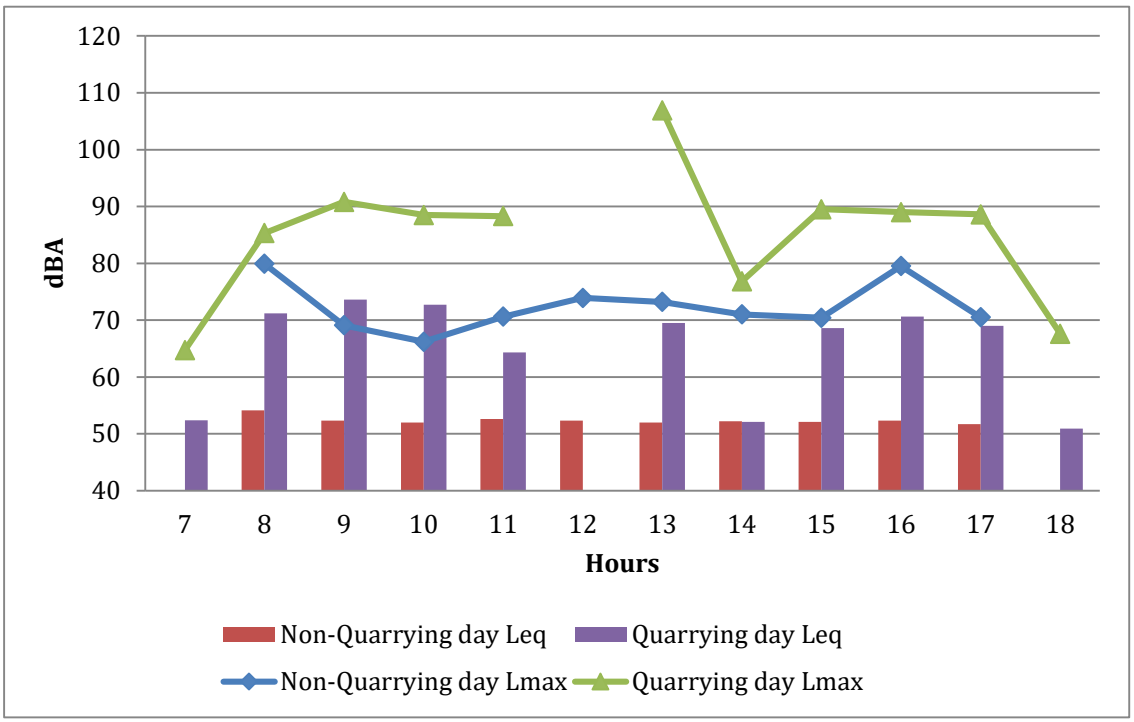


Fig.12: Equivalent values (Leq)and maximum (Lmax) observed on quarrying day and non-quarrying in South-East direction 100m

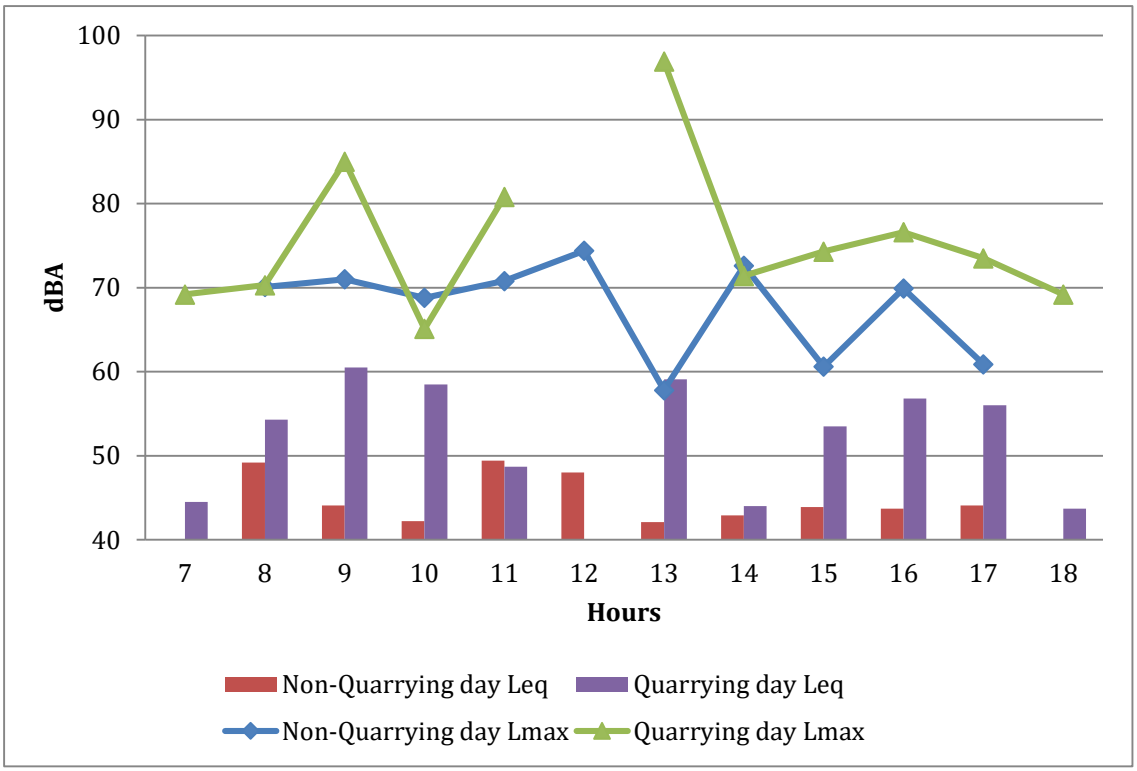


Fig.13: Equivalent values (Leq)and maximum (Lmax) observed on quarrying day and non-quarrying in South-East direction 200m

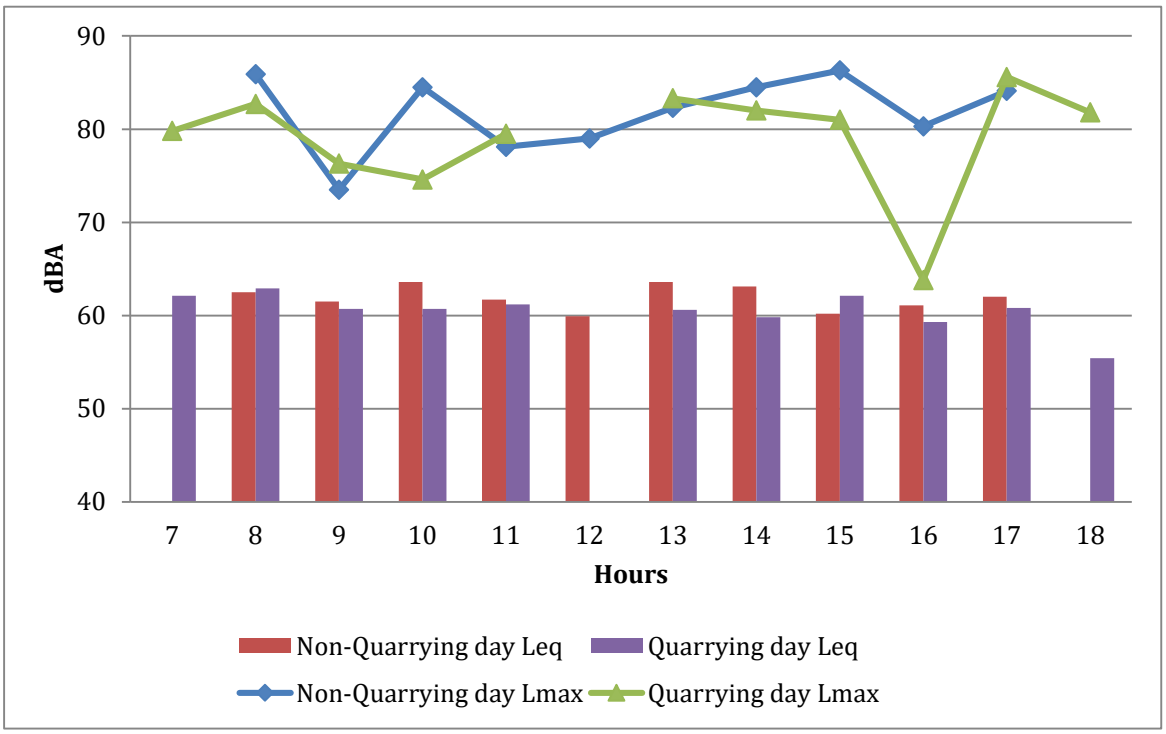


Fig.14: Equivalent values (Leq)and maximum (Lmax) observed on quarrying day and non-quarrying in South-East direction 500m

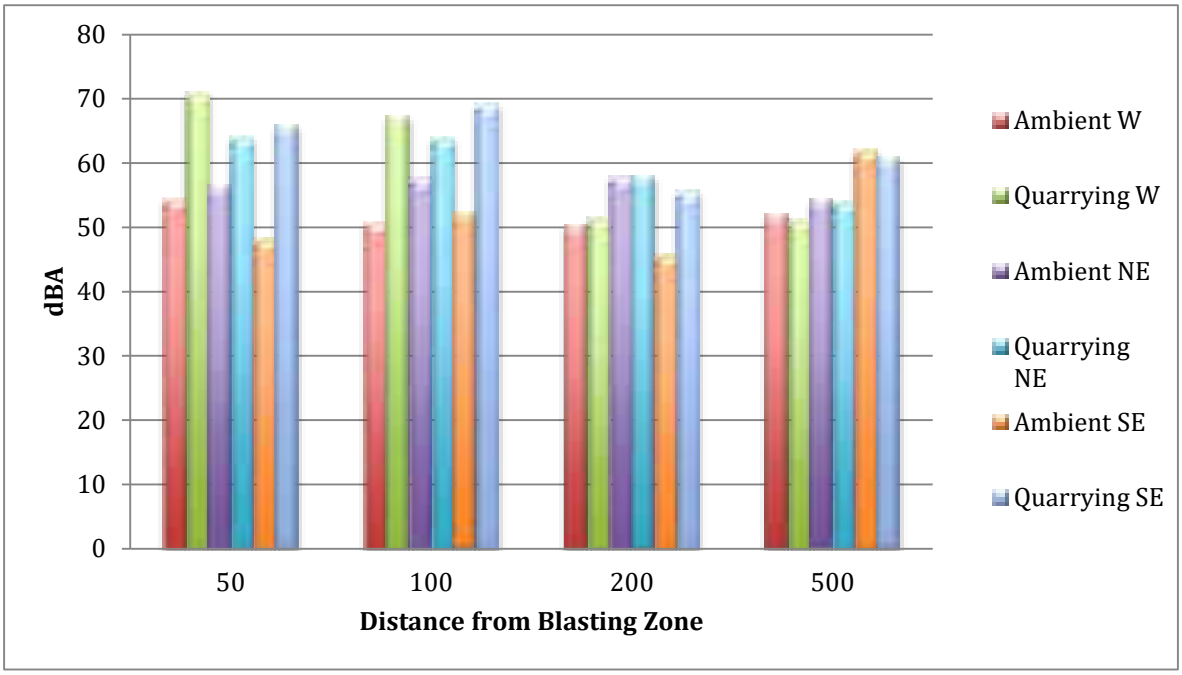


Fig.15: Equivalent values (Leq) observed on non-quarrying and quarrying day

Leq= Equivalent noise level (12 hours)
dB(A)= Decibel in 'a' scale (unit of sound pressure level)

The Noise monitoring analysis results monitored at monitoring stations reveal that

- The equivalent noise level and Lmax of the total day are higher on blasting day than ambient day at all stations generally. Only at 500 metre stations, where quarrying seems to have no influence at all, the pattern is changed.
- The blasting time time was 11.30 am. Blasting had not completed at 12 pm. Due to safety-related reasons, the hourly value of noise at 12 pm could not be taken. The next reading after 11 am was taken at 1 pm only. This caused gap of one reading on the quarrying day, as can be seen in the graphs. But it can be seen that the equivalent values as well as maximum values in each station are showing a peak between 11 am and 1 pm as a result of blasting.
- Except at one station W100, equivalent noise of the quarrying day is not increasing more than 10 dB(A) above corresponding non-quarrying day's value. The equivalent noise of the day of quarrying is not significantly more than that of non-quarrying.

6.4 Water Quality

Analysis results of the stone quarry pond water quality is given in the Table below:

Sample Point: Old Quarry Pond			
Date of Sample: 19/01/2023			
Sl. No.	**Parameters**	**Unit**	**Observed Value**
1	pH	-	6.72
2	COD	mg/l	1.6
3	SS	mg/l	1.6
4	TDS	mg/l	15
5	Conductivity	µS/cm	24.06
6	D.O	mg/l	7.9
7	Sodium as Na	mg/l	3.66
8	Potassium as K	mg/l	0.21
9	Calcium as Ca	mg/l	4
10	Magnesium as Mg	mg/l	0.486

Note:- No effluent discharge standards prescribed by Kerala SPCB to the Stone Quarry Operator under the Consent to Operate issued under The Water (Prevention and Control of Pollution) Act, 1974.

7.0 Site specific observations

- The surrounding ground is sloping, with vegetation and habitations in various direction around the quarry.
- Fencing is provided, boundary pillars are marked and fixed, sign boards are provided
- For dust suppression, a dedicated tanker vehicle is provided for water sprinkling. However, while drilling, filling of explosives scientific method is not followed
- PPEs like safety boots, helmets are provided to the workers
- There are no wildlife movements reported in the stone quarry area
- CSR activities like infrastructure development, social welfare were provided by the quarry.
- Outside the excavated area of the quarry heavy vegetation, naturally developed.
- The 200 m and 500 m monitoring stations, which were in private properties, residences, were in clearings surrounded all around by vegetation.
- The public roads around the quarry are well maintained and have enough 2-lane width.
- The people had complaints about effects on their buildings due to blasting, not about air or noise pollution.
- Surface runoff during rainy season, water from quarry site is pumped out and discharged into the surrounding areas without imparting any treatment.
- Fly rocks observed during the study at the stone quarry site

Annexure I

Photographs taken during the site assessment carried out during 17 to 20.01.2023 at Quarry owned by P. M. Abdul Rahiman, Thayannur village, Kasaragod District, Kerala.

Annexure III i

Details of establishments / units for which notice issued as per Minutes of Meeting held on 25/02/2023 on the matter of OA 147/2022

Sl No	Date	Company	Type of unit(Apartment/ Commercial building/Hotel/ Resort/Industry/ others)	DIstrict	PCB office	LSGI	Findings	Notice
1	01.03.2023	M/s Century terrace Yuvajana Samajam road,kadavatra 682020	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
2		M/s ABM Tower behind GCDA, Kadavantra 682020	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
3		M/s Penta queen apartment B2 Padivattom, Edapally - 682024	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
4		M/s Penta queen apartment B3 Padivattom, Edapally - 682024	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
5		M/s Penta queen apartment A Padivattom, Edapally - 682024	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
6		M/s Penta queen apartment C Padivattom, Edapally - 682024	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
7		Galaxy Arcade Peediakkal road SRM Road - 682018	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
8		M/s West Rock One Apartment P J Anony Road Pachalam - 682012	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
9		M/s Watermelon Apartment Kathrikadavu, Kaloor 682017	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
10		Vigyana sagar hostel Marine engineering training institute Giri nagar, Shipyard Ltd.	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
11		Vanshika Apartments Vidhta nagar road Panampilly nagar- 682020	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
12		The tapioca restaurant mylady chambers, pottakuzhi rd, kaloor- 682017	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
13		Star homes south star Kathrikadavu, Kaloor 682017	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued

14		Skyline Zircon Apartment panampilly link road,Kadavantra 682020	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
15		Skyline Marble Arch Apartment owners, Kattakar road west, Kathrikadavu 682017	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
16		Galaxy Wintage Apartment Aryapadam Lane, Mamangalam Elamakkara, 682017	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
17		J K Royal House Kathrikadavu, Kaloor 682017	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
18		J M Manor Link avenue road, Kaloor 682017	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
19		Little Soi. Aditya tower Panampilly nagar 682020	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
20		NB Spring Terrace Apartment Tagore lane, Elamakkara 682026	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
21		PMJ Towers Vidhya nagar, Kadavantra 682020	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
22		Presidency Homes Journalist Colony, Kathrikadavu 682017	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
23		Skyline Belair Apartment Shihab Thangal Road Panampilly nagar, 682036	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
24		Dadd's Extended stay Canal road, Gandhinagar	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
25		D D Rose Gate Kadavantra, Ernakulam 682020	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
26		Vinayaka Boys hostel Banerji road, Kaloor 682017	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
27		The wood Ford Yuvajana samajam road. Kadavantra 682020	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, STP not working	Issued
28		Namasita Apartment, Vidhya nagar road, Panampilly nagar, 682020	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued

29		Skyline Primrose, Pachalam, Pottakuzhi road, Mamangalam- 682018	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, STP not working	Issued
30		Kalpaka Rajmahal Apartments, BTS Roadd, Edapally 682024	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
31		Amar Samrat Apartments, Kathrikadavu- 682017	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, STP not working	Issued
32		ACE Homes, Kaloor, Kochi- 682017	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, STP not working	Issued
33		Jewel Oak Field, SRM Road, Kaloor, Kochi, 682012	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, STP not working	Issued
34		Mandalay Point Flat, Edappally, NH 66 Service road, 682024	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
35		Dreamflower Bonita Owners Association (DBOA), Green Ripple Road, Swamipadi, Elamakkara, Ernakulam - 682026	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, STP not working	Issued
36		Malabar Gate Apartments, Marottichodu Road, Edapally – 682 026	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
37		Galxy Homes Galaxy Dane Vidya Nagar Panampilly nagar, 682036	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, STP not working	Issued
38		Galaxy Marvel Apartment, Edapally Raghavan pilla road 682026	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
39		Rds Avenue One, Shihab Thangal Road Near Passport Office Panampilly Nagar, 682036	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
40		The Salt Restaurant, 16/1444, Thoppumpady, Kochi, Ernakulam – 682 005	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
41		Galaxy Hamilton, Galaxy Kingston, Galaxy Winston, Chilavannoor Road, Chilavannoor, Kadavanthra, Kochi – 682 020	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
42	15.03.2023	BLUE LAGOON APARTMENT, VMRRA - 110, MARKET ROAD VADUTHALA 682023	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
43		HORIZON DAFFODILS,PADAM ROAD, VADUTHALA, ERNAKULAM, 682023	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
44		J.M HABITAT,SHASTRI ROAD, VADUTHALA ERNAKULAM, 682023	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
45		J.M TOWERS ,VADUTHALA ERNAKULAM, 682023	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
46		J.M GARDEN,VADUTHALA, ERNAKULAM, 682012	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued

47		ORIENT PARK,POPULAR ROAD, VADUTHALA KOCHI, 682012	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
48		LORDS COTTAGE,KARSHAKA ROAD, VADUTHALA ERNAKULAM, 682012	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
49		GALAXY METRO EDAPPALLY RAGHAVAN PILLAI RD, ELAMAKKARA, ERNAKULAM, KERALA - 682026	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
50		SPARKLE SCAPES APARTMENTS, TAGORE LANE, ELAMAKKARA, ERNAKULAM, 682026	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
51		MON AMOUR APARTMENTS, ELAMAKKARA, KOCHI, 682026	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
52		MON COEUR, VIVEKANANDA NAGAR ROAD, ELAMAKKARA,ERNAKULAM - 682026	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
53		LOTUS ENCLAVE Puthukkalavattom Rd, Elamakkara, Kochi, 682026	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
54		ANASWARA SOUPARNIKA Puthukkalavattom Rd, Elamakkara, Kochi, Kerala 682026	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
55		RDS FLAIR, EDAPPALLY RAGHAVAN PILLAI RD, ELAMAKKARA, ERNAKULAM - 682026	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
56		CVC CALISTA EDAPPALLY RAGHAVAN PILLAI RD, ELAMAKKARA, ERNAKULAM - 682026	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
57		DREAM FLOWER SONATA Mercy Lane 2, Elamakkara, Ernakulam, Kerala 682026	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
58		DREAM FLOWER ZETA Punnakkal Mercy Lane, Punnakkal, Elamakkara, Kochi, Kerala 682026	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
59		GOOD EARTH HEAVEN, Perandoor Rd, Mamangalam, Elamakkara, Ernakulam, Kerala 682026	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
60		VB ROYAL, opp. Gayathri Kalayanamadapam, Edappally, Ernakulam, Kerala 682024	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
61		KALPAKA CASTLE, Subhash Nagar Elamakkara, Subhash Nagar Road, Ponekkara, Edappally, Kochi, Kerala 682024	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
62		ABAD OLYMPUS APARTMENT,Near Madom Junction, Edappally Ragavanpillai Road, Edappally P. O., Kochi, Kochi, Kerala 682024	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
63		ORION APARTMENT, OPP. AL AMEEN PUBLIC SCHOO;, CHERANALLOOR, EDAPPALLY	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
64		NATIONAL AVENUE, National Avenue, Manimala Cross Road, Ponekkara, Edappally, Ernakulam, Kerala 682024,	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
65		NATIONAL NANDANAM, Edapally Palace Rd, Ponekkara, Edappally, Ernakulam, Kerala 682024	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued

66		ANASWARA SOUPARNIKA APARTMENT Puthukkalavattom Rd, Elamakkara, Kochi, Kerala 68202A	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
67		SI flat,Kurishupally Rd, Ravipuram, Perumanoor, Ernakulam, Kerala 682036	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
68		KB plaza flat, K B PLAZA OWNERS ASSOCIATION ELAMMAKARA ROAD EDAPPALLY, Kerala is 682024	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
69		Pooja flat, Thamburatti Parambu Rd, Mamangalam, Elamakkara, Ernakulam, Kerala 682565	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
70		Galaxy cherry wood, Kaloor, Kochi, Kerala 682017	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
71		OLIVE GARDENS, NH BYPASS, NEAR OBERON MALL, PADIVATOM, EDAPALLY, ERNAKULAM, 682024	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
72		REGAL APARTMENTS, STADIUM ROUND, JAWAHARLAL NEHRU INTERNATIONAL STADIUM, KALOOR, KOCHI, 682017	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
73		REGAL PALMS, ERAMATH W RD, CHEMBUMUKKU, EDAPALLY, ERNAKULAM, 682037	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
74		JM Crescent Apartments, P.J. Antony Road, Sonia Nagar, Mamangalam, Edapally, Ernakulam - 682024	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
75		Infra Splendor Apartments, Edappally, Ernakulam - 682565	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
76		Sky park residency, Janatha Rd, Mamangalam, Elamakkara, Kochi - 682025	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
77		Mayura Apartments, 3rd Cross Rd, Girinagar Housing olony, Giri Nagar, Kadavanthra - 682020	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
78		Galaxy vesta 2845+R39, Punathil Padam Rd, Sonia Nagar, Padivattom, Palarivattom, Kochi, Kerala 682024	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
79		Garden court 277W+XJC, Elamakkara, Kochi, Kerala 682026	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
80		Sapphire heights Vennala, Ernakulam, Kerala 682028	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued

81		Kent illam Vennala, Ernakulam, Kerala 682028	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
82		National empress Garden apartments 33/442D, Vennala High School Rd, Arakkakadavu, Vennala, Kakkanad, Kerala 682028	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
83		Yeshoram tejus apartments 283C+FP5, Vennala High School Rd, Vennala, Ernakulam, Kerala 682028	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
84		Panjos apartments 2869+8MV, Civil Line Rd, Chembumukku, Edappally, Ernakulam, Kerala 682021	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
85		Halton heights 2848+4JV, Alinchuvadu Road, Vennala, Kochi, Kerala 682028	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
86		Kanchenjunga Apartments 2836+H7V, Civil Line Rd, Kesaveeyam, Palarivattom, Ernakulam, Kerala 682025	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
87		Moon Stone Residency Nethaji Rd, Nethaji Nagar, Kadavanthra, Ernakulam, Kerala 682020	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
88		Asset home Panampilly Nagar, Ernakulam, Kerala 682036	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
89		Yashoram abode, Draupathy road X8M4+9CX, Thammanam - Pullepady Rd, Draupathi Lane, Thammanam, Ernakulam, Kerala 682032	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
90		Unitac avonlea X8JF+4GP, Dhanya S Rd, Chalikkavattom, Vennala, Ernakulam, Kerala 682028	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
91		Highway gardens, 1914, Mambra Rd, Ponnurunni, Vyttila, Kochi, Kerala 682019	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
92		Plum flower, Nursery school road X8JC+449, Ponnurunni, Vyttila, Ernakulam, Kerala 682019	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued

93		Royal park, Service Rd, Ponnurunni East, Ponnurunni, Vyttila, Ernakulam, Kerala 682028	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
94		Mather Serene Orchard X832+GJ9, Vidya Nagar Rd, Vidya Nagar, Kadavanthra, Kochi, Kerala 682020	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
95		Jewel planet, Vaikom road, Vyttila SH15, Vyttila, Ernakulam, Kerala 682019	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
96		Santhi river dail, Vaikom road, Vyttila	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
97		Vrindavan apartment, Vyttila junction	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
98		Aiswarya Apartment, Chambakkara - Kannadikadu Road	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
99		Lotus A/C city, Bhuvaneswari Temple Rd, near Chambakkara, Chambakkara, Upasana Nagar, Maradu, Ernakulam, Kerala 682304	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
100		TocH Retreat flat, Janatha road, Vyttila	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
101		Choice garden, TocH road end, Vyttila	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
102		Jewel homes, Vyttila Janatha road, near manamel temple	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
103		DLF riverside, near manamel temple, Vyttila Janatha road	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
104		Paradise tower, south Chittoor, Chittoor 682027	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
105		Galaxy high field, Vidya nagar, Panampilly nagar 682036	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
106		Metro paradise apartment, Chittoor Cheranalloor road, Amrita nagar, Edapally, Ernakulam 682024	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
107		Sparcle scape apartment, Tagore lane, Elamakkara 682026	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
108		Zaatar Restaurant, HP 17,Main Avenue, Panampilly Nagar, Ernakulam, 682036	Restaurant	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
109		Fruitbae, Panampilly, 5th Cross Rd, K.V. Nagar, Panampilly Nagar, 682036	Restaurant	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
110		Starbucks,G-258, Main Avenue, MIG Housing Society, Panampilly Nagar, Kochi - 682036	Restaurant	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued

111		Coldstone, Door No. 56/299, Panampilly Nagar, Main Avenue, Opp. Hotel Aryas, 682036	Restaurant	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
112		Kunafa World, HIG,36 , Panampilly Nagar, Main Avenue, Kochi - 682036	Restaurant	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
113		Ali Baba and 41 Dishes, 27/701, Panampilly Main Rd, Opp. South Indian Bank, MIG Housing Soceity, 682036	Restaurant	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
114		Happy Cup Cafe, Main Avenue, MIG Housing Soceity, Panampilly nagar, kochi - 682036	Restaurant	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
115		Juicy, Panampilly Nagar, Service Rd, Main Avenue, 682036	Restaurant	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
116		Gokul Oottupura, Vegetarian Restaurant, Ground floor, Ittys Building, Main Avenue, MIG Housing Soceity, Panampilly Nagar, 682036	Restaurant	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
117		Bab Arabia, 56/2568, Opp. YES Bank, SBT Ave, Panampilly Nagar, 682036	Restaurant	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
118		Heatz - Healthy Eating Zone, Ambalathingal House, Kizhavana Road, Panampilly Nagar, 682036	Restaurant	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
119		Burger Junction, Kizhavana Rd, Above Union Bank, Panampilly Nagar, 682015	Restaurant	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
120		ABCG Midtown Pavamana Heights, Shihab Thangal Road, Panampilly Nagar, Ernakulam, Kerala 682015	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
121		Mansion kharisma X73X+HGM, Shihab Thangal Road, Panampilly Nagar, Ernakulam, Kerala 682015	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
122		Ac Pacific rose apartments X74X+3C7, Panampilly Nagar, Ernakulam, Kerala 682015	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
123		Aurum Residences, SBT Ave, Panampilly Nagar, Kochi, Kerala 682036	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
124		Skyline Royale X75X+33H, Panampilly Nagar Link Rd, LIG Housing Society, Panampilly Nagar, Ernakulam, Kerala 682036	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
125		SS Enclave G278, Panampilly Nagar Ave, MIG Housing Society, Panampilly Nagar, Ernakulam, Kerala 682036	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued

126		Kairali Apartments X74W+4PF, Panampilly Nagar Ave, Panampilly Nagar, Kochi, Kerala 682036	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
127		Royal Stadium Mansion Market Road, Market, near Kadavanthra, Gandhi Nagar, Kadavanthra, Ernakulam, Kerala 682020	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
128		Jewel homes Canal, Mamangalam, Elamakkara, Ernakulam, Kerala 682026	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
129		Holiday Grandeur X7HV+VW9, P.O, Chemmath Rd, Gandhi Nagar, Kaloor, Ernakulam, Kerala 682020	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
130		Marvel Mansions X7JX+W3Q, Thammanam - Pullepady Rd, Kathrikad Kaloor, Ernakulam, Kerala 682017	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
131		Pulickal Avenue, St Francis Xavier Church Rd, Kathrikadavu, Kaloor, Ernakulam, Kerala 682017	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
132		DD nest Pipeline Rd, Kathrikadavu, Thammanam, Ernakulam, Kerala 682017	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
133		IMA House Behind Jawaharlal Nehru International Stadium, Kathrikadavu, Palarivattom, Kochi, Kerala 682025	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
134		jewel pearl X8Q2+99C, Vattaparambu West Lane, Kathrikadavu Kaloor, Ernakulam, Kerala 682017	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
135		Kent hail garden X8R2+7HM, Kathrikadavu, Kaloor, Ernakulam, Kerala 682017	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
136		Vismaya Apartments Kaloor, Kochi, Kerala 682017	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
137		Seiken Eastend Ponoth Rd, Kaloor, Ernakulam, Kerala 682017	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued

138		Vanchinad Residency Apartment Kaloor, Ernakulam, Kerala 682017	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
139		Green city Orchid 275W+F8P, Pottakuzhi - Mamangalam Rd, Mamangalam, Elamakkara, Ernakulam, Kerala 682026	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
140		Dream Flower Celesta Vivekananda Nagar Rd Extention, Elamakkara, Ernakulam, Kerala 682026	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
141		Orient Park Vaduthala 276J+V8X, Popular Road, Vaduthala, Kochi, Kerala 682012	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
142		Kayaloram Apartments Thevara Ferry Road, Thevara, Ernakulam, Kerala 682013	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
143		Seiken Sailwind W7PW+CW9, Pandit Karuppan Rd, Thevara, Ernakulam, Kerala 682013	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
144		Chakolas Waterford Pandit Karuppan Rd, Thevara, Ernakulam, Kerala 682013	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
145		Avern Pass W7PX+MV4, Thevara, Kochi, Kerala 682013	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
146		Galaxy clifford Neptune Country, Chilavannoor, Ernakulam, Kerala 682020	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
147		Sylvan Heights X835+8C4, Chilavannur Rd, Vinoba Nagar, Chilavannoor, Ernakulam, Kerala 682020	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
148		Heera Waters, X836+CQQ, Bund Rd, Chilavannoor, Ernakulam, Kerala 682020	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
149		Perals Gardens View , Amalabhavan Rd, near Kochu Kadavanthra, Vinoba Nagar, Chilavannoor, Kochi, Kerala 682020	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued

150		Yasoram Pancharatna Apartments X877+96J, Toc-H Rd, Near Janatha Road, Janatha, Vyttila, Ernakulam, Kerala 682019	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
151		Yasoram Valluvassery Enclave X875+793, Water Land Rd, Chilavannoor, Kochi, Kerala 682020	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
152		Jomer Residency Apts Ravindran Rd, Chilavannoor, Ernakulam, Kerala 682020	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
153		Fern Icon Panchavati Colony, Vyttila, Ernakulam, Kerala 682019	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
154		Panchavadi Apartment X8C5+FMV, Panchavati Colony, Vyttila, Kochi, Kerala 682019	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
155		Pittappillyi Enclave X8C5+F9R, Panchavati Colony Rd, Panchavati Colony, Kadavanthra, Kochi, Kerala 682019	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
156		Orchid Court Apartment X8C5+FCX, Panchavati Colony Rd, Panchavati Colony, Vyttila, Ernakulam, Kerala 682019	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
157		Blue moon pearl apartment X8F5+2P7, Vyttila, Kochi, Kerala 682019	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
158		Abad Harmoney Paradise Rd, Vyttila, Kochi, Kerala 682019	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
159		Paradise Apartment PRRA-18, Vyttila, Kochi, Kerala 682019	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
160		Betron Towers Elamkulam, Ernakulam, Kerala 682020	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
161		Jerusalem Residency Blossom Road, Elamkulam, Ernakulam, Kerala 682020	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued

162		Golden Heights Apartments X79X+7RQ, Excel Rd, Elamkulam, Kochi, Kerala 682020	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
163		Nakshatra Malika Apartment Kunjanbava Rd, Ponnurunni, Vyttila, Ernakulam, Kerala 682020	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
164		Bluemoon Apartments Emerald and Ruby Ponnurunni, Vyttila, Ernakulam, Kerala 682020	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
165		Skyline rosemount Kunjanbava Rd, Ponnurunni, Vyttila, Kochi, Kerala 682019	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
166		Abad Silver Crest Subhash Chandra Bose Rd, Kadavanthara, Jawahar Nagar, Elamkulam, Ernakulam, Kerala 682020	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
167		Skyline City Park X8F2+R89, Jawahar Nagar Ave, Jawahar Nagar, Kadavanthra, Ernakulam, Kerala 682020	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued