

Report on Site Visit conducted by Committee members on 23-2-2023 in connection with orders of Hon'ble National Tribunal in OA 147/2002 on Vembanad lake and Ashtamudi lake

The Committee members visited the Vembanad lake and its surrounding area on 23-2-2023. Member Secretary, Kerala State Pollution Control Board, Director, Directorate of Environment and Climate Change, who is also the Member Secretary of SWAC and Kerala Coastal Regulation Zone; Directorate of Urban local bodies; Directorate of Panchayaths; District officials from Pollution Control Board, Industries department, local bodies were present during site visit. Prior information regarding the site visit was already conveyed to all committee members. All members except representatives from Tourism and Central Pollution Control Board were present. Central Pollution Control Board informed the inability to attend the meeting due to short notice.

1. Pallathuruthy, House boat landing area, Alappuzha Municipality(Fig.1)

The committee visited the houseboat landing area at Pallathuruthy. During visit, it was reported that Muthoot is having nine houseboats of which five are operational and the wastewater is collected in a collection tank and is diverted to sewage treatment plant for treatment. For the other houseboats, no such arrangements are provided at the site. Health official from the Alappuzha Municipality informed that they had already arranged a meeting with Houseboat association and Pollution Control Board on 24-2-2023. It was instructed to have arrangements for treatment of waste water from houseboats and to make arrangements for the collection of segregated solid waste from landing area to authorized collectors namely Haritha Karma Sena.

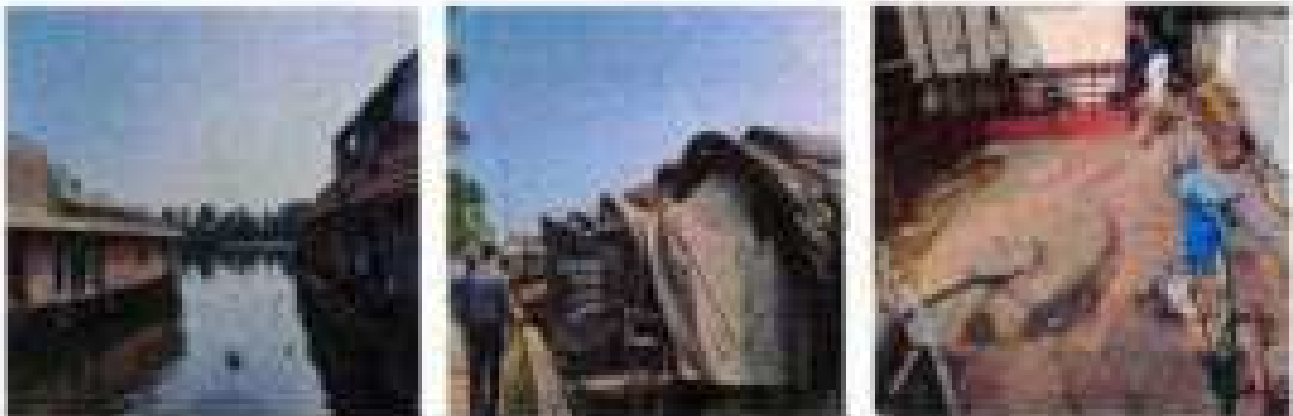


Fig. 1 Houseboat landing area, Pallathuruthy, Alappuzha

2. DEWATS system, Chathanad(Fig.2)

DEWATS system provided at Chathanad was visited. It is a decentralized waste water treatment system provided for a slum area with fifty houses. It consists of Anaerobic Baffle Reactor and constructed wetland and the maintenance cost is very low for such system. This system is operating for more than three years continuously. Health official of Alappuzha Municipality informed that they are providing such system at Alisery slum and Zakariah Bazar.



Fig.2 DEWATS, Chathanad, Alappuzha

3. Punnameda Fleishing point of DTFC

There was no official from DTFC present at the site and hence was not able to discuss with them on the issues. The Officials from Alappuzha municipality were present at the site. Many big houseboats were seen landed in this area. The lake water in this area was seen polluted with waste water and plastic. The information regarding the disposal of waste water from these houseboats could not be collected due to the absence of officials of DTFC. Though a shed for thumboomucht was provided by Municipality in the premises, it was seen not utilized.



Fig.3 Houseboat landing area, Punnameda

4. Alappuzha Cherthala Canal

Alappuzha Cherthala Canal was seen covered with vegetation and there was no flow of water in this canal.



Fig.4 Alappuzha-Cherthala Canal

5. Faecal Sludge treatment plant, Cherthala (Fig.5)

The President, Vice President, Council Member and officials of Cherthala Municipality were present at the site. The construction of FSTP started and it was informed that the plant will be commissioned in eight to ten months. Material collection facility of

Municipality is seen provided near the site and electric auto was also seen provided for the conveyance of plastic waste.



Fig. 3 Chertala Municipality PSTP, MCF, e-auto

6. Mega Food Park, Arora-I MLD CETP(Fig-4)

The committee members visited the Mega Food Park of KSDC at Arora. It is a 2MLD plant consisting of chemical addition, MBR and filter press. Five factories have already been connected to this treatment plant and 100MLD is treated in CETP. The representative informed that action is taken to divert waste water from other factories to CETP. They were asked to report on the utilization of treated effluent.



Fig.6 CCTP Mega food park, Aror

7. Littering on road sides

Littering of solid wastes was observed on the road sides of Bramafloor panchayath, Thykkattassery, and Chandecor and also observed on the road sides of Dachira Municipality and also at Thammaram near HD petrol pump of Kochi Corporation.

8. Sea food factory, Keltton kadava (Fig.7)

The committee members visited the CCTP of sea food factory at Keltton Kadava. It is also working underutilized.



Fig.8 Sea food factory-CCTP, Aror

9. Vembanad lake, Kotttron kadavu(Fig.8)

Kotttron kadavu of Vembanad lake, which is one of the water quality monitoring stations was visited. Some pooling units are situated near the drain in this area. This is an area having tidal influence.



Fig.8 Vembanad lake-Kotttron kadavu

10. Aroor industrial estate

The official from Aroor panchayath informed that there is discharge of waste water from the units in this area. It was instructed to have a joint inspection of Pollution Control Board, DIC and Panchayath in these units and to take action accordingly.

11. Apartment near Edappally thodu (Fig.9)

The Committee members visited an apartment near Edappally thodu, which was constructed before 2006 and having space limitation. The resident of the apartment informed that they have blocked the discharge into the canal. Also they informed that area near the lake has been acquired for the project of Water Metro.



Fig. 9 Apartment near Edappally canal

12. 750MLD GCDA plant, Kallor (Fig.10)

The Committee members visited the GCDA plant at Kallor. It is a 750 MLD plant of which only they are getting 30MLD. As they were taking waste water from hotels, high content of oil, grease created problems to their plant and is being rectified. Kochi Corporation officials and GCDA were asked to take action for the complete utilization of CTP. The Additional Secretary, Kochi Corporation was asked to explore the possibility of full utilization of CTP by bringing waste water from nearby flats and hotels. Additional Secretary, Kochi Corporation informed that bye law for registration of tankers and online tracking will be placed in the Council meeting on 28th February, 2023 and after that action will be taken for registering tankers.



Fig.10 CTP GCDA, Kallor

13. 5MLD plant of Kerala Water Authority at Eranikulam (Fig.11)

5 MLD plant of Kerala Water Authority at Eranikulam was visited. 3MLD waste water is reaching this plant and the plant is seen underutilized with a gap of 2 MLD. The Additional Secretary, Kochi Corporation was asked to explore the possibility of full utilization of CTP by bringing waste water from nearby flats and hotels. KWA official reported that Administrative sanction was obtained for dilution tank and will be commissioned by 31.05.2023 by modifying existing tank. The Additional Secretary Kochi Corporation informed that Council meeting for bye law of online tracking will be held on 28.02.2023 and after that action will be taken for registering unregistered tankers.

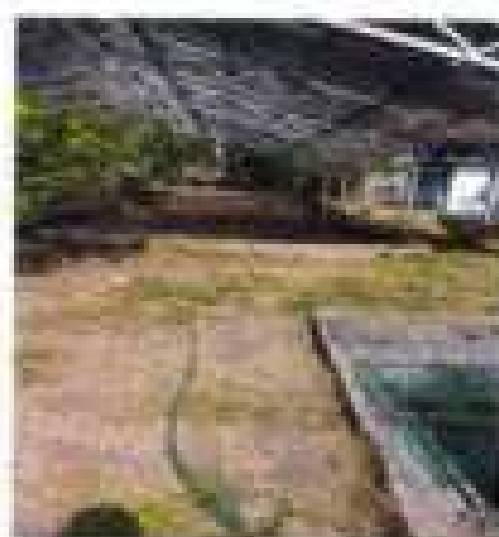


Fig. 11 CSTP of KWA, Elankulam

14. Thanneermukkom barrage (Fig.13)

In the area near Thanneermukkom barrage, a large quantity of plastic wastes were seen littered. There was no bin provided the street vendors in this area. As per the Solid waste management rules, bins are to be provided by street vendors and the collected waste is to be collected by the concerned local body.



Fig.13 Thanneermukkom barrage

15. Common STP at Kumarakom for houseboats

Common STP for houseboats is having a capacity of 125 KLD, But only 25 KLD is treated here. This CSTP is also seen underutilized.



Fig.13 Common STP for houseboats at Kumarakom

Major observations:

1. CSTP of Kerala Water Authority at Elimkulam, CSTP of GCDA at Kaison, CSTP at Kumarakom and CETP of Megafood park and Sea food park are seen underutilised and the same are to be made fully utilized.
2. Action is to be taken for the abatement of pollution from industrial units namely sea food processing units in Alappuzha by the joint efforts of DIC, PCB and local bodies.
3. Urgent action is required in the case of houseboats on the disposal of waste water and solid wastes by DTPC.

27-3-2023


Member Secretary



KERALA STATE POLLUTION CONTROL BOARD
കേരള സംസ്ഥാന മലിനീകരണ നിയന്ത്രണ ബോർഡ്

Palace P.O., Thiruvananthapuram - 695 004
Toll free No. 04962200000 / 0495 222

PCB/HO/EE3/OA No.27/2021NS/1/2023

Date: 31/01/2023

From

The Member Secretary

To

1. The Managing Director
Kerala Water Authority
Jalabhan, Nandanam,
Vellayambalam
Thiruvananthapuram
2. The Secretary,
Kochi Corporation.

Subj- Full utilization of 5MLD CSTP at Elankulam-req.

Ref:- 1.Letter No. PCB/HO/EE3/NGT/WT3/2018/VOL-IX/24/2021 dated
20/10/2022

2. Report of awareness programme on 21/01/2023 in connection with
OA27/2021
3. Minutes of the meeting held on 21/01/2023 in connection with
OA 27/2021
4. Order dated 02/01/2023 in OA 27/2021

Sir,

Attention is invited to the references. In the meeting held on 21/01/2023 it was suggested to fully utilize the underutilized new 5MLD STP at Elankulam by collecting wastewater through tanks or laying of sewerline network for 1.75 MLD is under DPR stage and also there is space limitations in old high rise buildings for providing STP. The list of establishments having no STP is enclosed. The efficiency of existing old sewerline may also be reported. Please take urgent action and report the action plan with timeline urgently.

Yours faithfully,

MEMBER SECRETARY

Copy to: (1) The Chief Environmental Engineer
Regional Office, Ernakulam
(2) The Environmental Engineer
EO-1, Ernakulam

} For follow up



KERALA STATE POLLUTION CONTROL BOARD
കേരള സംസ്ഥാന മലിനീകരണ നിയന്ത്രണ ബോർഡ്

Palace P.O., Thiruvananthapuram - 695 004
എഴുതിപ്പേര്, തിരുവനന്തപുരം - 695 004

PCB/HD-EE/MOLA No.27/2021(SZ)/2021

Date: 31/01/2023

From

The Member Secretary

To

1. The Secretary,
Kochi Corporation.
2. The Secretary,
Greater Cochin Development Authority (GCDA)
Kadavanthra P. O.
Ernakulam District-682008

Subj- Full utilization of 750KLD STP of GCDA at Kaloor medium-veg.

Ref:- 1 Minutes of the meeting of stakeholders departments held on 21/01/2023 in connection with OA 27/2021

2.Report of awareness programme on 21/01/2023 in connection with O A27/2021

3.Order dated 02/01/2023 in OA 27/2021

Sr,

Attention is invited to the references. In the meeting held on 21/01/2023 it was suggested to fully utilize the underutilized 750KLD STP at Kaloor by collecting waste water through tankers and it is reported that actions are already initiated in this regard. You are requested to report the action plan with timeline urgency.

Yours faithfully,

MEMBER SECRETARY

- Copy to : 1) The Chief Environmental Engineer,
Regional Office, Ernakulam
2) The Environmental Engineer
DO-1, Ernakulam

**Minutes of the Meeting with Stakeholder Departments conducted on
21.01.2023 in connection with O. A 27/2021**

A meeting with the officials of various stakeholder departments to discuss about the follow up actions taken with respect to the NGT matter, O. A. no. 27/2021 was conducted on 21/01/2023 by the Chairman, Kerala State Pollution Control Board at the Regional office of the Board at Kuchi. The Member Secretary of the Board also was present. The details of officials attended the meeting is attached as Annexure-I.

Meeting started at 1.00PM. The Chairman welcomed all the officials to the meeting. The Member Secretary gave an introduction about the O.A no.27/2021 and reminded that the next hearing of O.A 27/2021 is posted on 02.02.2023. She informed that on 24.01.2023, a meeting has been scheduled by the Chief Secretary in this regard. The Chairman informed that most of the establishments located along the banks of the canals or the banks of the drain leading to the canals established before 2006 are operating with conventional septic tank and soak pit facilities for sewage and improper sludge treatment facilities which in turn affect the water quality of the canals. Also, from the discussions held with the stakeholders attended for the awareness program conducted on the same day, it is understood that, most of the above establishments are facing land constraints to establish a proper treatment facility. Hence the proper solution for protection of canals/ water bodies is to establish common treatment facilities such as Common sewage/ Septage treatment plant. Chairman asked the departments concerned to explain the details of current Sewage treatment facility, its utilization capacity and possibility of co-treatment. The Member Secretary stressed the need for full utilization of underutilized new STP of 5 MLD of Kerala Water Authority (SMLD) and STP of GCDA (750KLD) by diverting waste water from establishments and flats through tankers. Also stressed the need for the licensing of unregistered tankers and for providing online tracking mechanism.

The Executive Engineer, Kerala Water Authority informed that currently a SMLD treatment plant is operational at Etamkulam. Now the operational capacity is 3.25MLD and waiting for the Administrative Sanction for the networking for balance 1.75MLD and now there is no facility for co-treatment in this SMLD facility. Also, they reported that, another SMLD STP is proposed under AMRUTH Scheme in which the co-treatment is proposed.

The Assistant Executive Engineer, GCDA informed that, GCDA is having 2 STPs, one at Marine Drive and another at Jawahar Lal Nehru Stadium (JLNS). The capacity of the STP at Marine drive is fully utilised. The capacity of the STP at JLNS is 750 KLD but only about 20KLD is reaching the plant daily. For utilising the surplus capacity, GCDA has signed MoU with 2 agencies for treating their sewage in the STP and based on that 30KLD waste water is now reaching the plant daily. The Assistant Executive Engineer, GCDA informed that more agencies are willing to utilise this treatment facility.

The Additional Secretary, Kochi Corporation informed that, Kochi Corporation is having 2 Faecal Sludge Treatment Plants of 100KLD capacity each, one at Brahmapuram

and other at Willington Island. Actions were taken to register the vehicles which transport fecal sludge. The proposal for the same was submitted and health committee has approved the same and waiting for the Council approval. Also, as part of urban agglomeration development, a 2MLD Sewage Treatment Plant at Brahmapuram is proposed. The technical committee of Suchitwa Mission has visited the site and approved only 1MLD plant at Brahmapuram.

The officials from KMRL reported that the DPRs with the approval of IIT Madras for the implementation of four STPs as a part of IUWRTS are put up for the approval for KHEB and Government. He informed that the implementation of the project will take a minimum of 3 years. Regarding the desilting and cleaning of the Canals, KHEB suggestion was that the same will be effective only after the installation of the STP. They also pointed out that the Kozhichira bund is the breeding point of water hyacinth in all the water bodies. The Irrigation department has to take necessary action in this matter.

After the discussion, the Chairman, KSPCB instructed the Kochi Corporation to convene joint committee meeting immediately to discuss about the actions taken so far by each department in O.A 27/2021 and file joint committee report to the tribunal before the next date of hearing. He also insisted all the departments to submit a detailed report including the action taken by them, short term and long-term measure proposed to adopt as a mitigation measure for the safe disposal of sewage and septage in the city.

The meeting concluded by 1.35 pm.


CHAIRMAN

Annexure-1

Attendance sheet of officials attended the Meeting in connection with O.A.no. 27
of 2021 held on 21.01.2023

SL.No.	Name and Designation
1	Sri. Pradeep Kumar A.B, Chairman, Kerala State Pollution Control Board
2	Smt. Sheela A.M., Member Secretary, Kerala State Pollution Control Board
3	Smt.Sharmila.C,Additional Secretary, Environment Department, Government of Kerala
4	Sri.Shibu V.P.,Additional Secretary, Kochi Municipal Corporation
5	Smt.Sreefakshmi, Environmental Engineer, District Office - I, Ernakulam, KSPCB
6	Smt.Rema Devi.S, Executive Engineer, Head Office, Kerala State Electricity Board
7	Smt.ShahanaM.A, Assistan Environmental Engineer, Regional Office, Ernakulam, KSPCB
8	Smt.S.Anitha, Sr.Superintendent, Regional Joint Director of Urban Affairs
9	Dr.M.P.Ramnavas, Director (Projects), Kochi Metro Rail Ltd
10	Sri. AjithA,General Manager (Designs), Kochi Metro Rail Ltd
11	Kumari Sindhu. S., Assistant Executive Engineer, Irrigation Subdivision, Ernakulam.
12	Smt. Remya. R Assistant Executive Engineer, Minor Irrigation Subdivision, Ernakulam
13	Sri. Mathew George, Junior Health Inspector, Kalamassery Municipality
14	Sri. Sujatha A., Executive Engineer, Sewerage circle, Kochi, Kerala Water Authority
15	Smt.Suma D Nair, Assistant Executive Engineer, Sewerage circle, Kochi, KWA
16	Smt.Rejini.S., District Co-ordinator, Nava Keralam Karnapadhati
17	Smt.Usha S.S., Assistant Executive Engineer, GCDA
18	Sri. Pradeep Kumar J, MET, Cochin shipyard
19	Sri. Unnikrishnan Elayath, Assistant Engineer, PPD & Sewerage Circle, Kochi
20	Smt. Anooja P.A., Environmental Engineer, Kochi Municipal Corporation
21	Sri.Sujeer TT, Technical Section, Suchitwa Mission
22	Smt.Jeeenu Mary Victor, Assistant Engineer-1, Regional Office, Ernakulam, KSPCB
23	Kumari, Anagha,Assistant Engineer-2, Regional Office, Ernakulam, KSPCB
24	Smt.Aswothy K.V.,Assistant Engineer-3, Regional Office, Ernakulam, KSPCB

Report of the Awareness Programme held on 21/01/2023 at Kerala State Pollution Control Board, Regional Office, Ernakulam in connection with OA no.27 of 2021 as per the Order of Hon'ble National Green Tribunal dated 02.01.2023

The Awareness programme commenced at 11.00 A.M at the auditorium and training centre, Regional Office, Kerala State Pollution Control Board, Ernakulam. Former Judicial Member, National Green Tribunal (SZ) Justice. K. Ramakrishnan was the chief guest for the programme. The Chairman, Kerala State Pollution Control Board, the Member Secretary, Kerala State Pollution Control Board and the Additional Secretary, Environment Department, Government of Kerala were present. Officials from Kerala State Pollution Control Board, Kerala Water Authority(KWA) Sewerage circle, Irrigation Department, Regional Joint Director Of Urban Affairs, Ernakulam, Harithukeralam Mission, SuchitwaMission, Greater Cochin Development Authority (GCDA), Kochi Municipal Corporation, Kochi Metro Rail Limited (KMRL), Kalamassery Municipality and other officers concerned were present to provide their valuable inputs. The programme was attended by representatives from Kerala Hotel & Restaurant Association (KHRA), Residents Associations Apex Council and representatives of the Establishments/Residential apartments along the bank of the Perandoor & Edappally canal. Attendance sheets of the participants are attached as **Annexure-1.**

Sri. Baburajan P K, Chief Environmental Engineer, KSPCB, Regional Office, Ernakulam welcomed all the participants to the meeting and gave brief introduction about the origin of the Original Application no.27 of 2021. He conveyed that the above original application was taken on its motion "Suomotu" based on a Newspaper report published in the Hindu E-paper Edition dated 28.01.2021 under the caption "Faecal Contamination high in Perandoor, Edappally canals". Hon'ble NGT through its order dated 05.02.2021 constituted a Joint committee towards the effective implementation of different regulatory mechanisms. He also informed that Hon'ble NGT through its latest order dated 02.01.2023 made some comments which are as follows: *"We regret to state that even after almost 23 months, no concrete steps have been taken and the action that are so far taken by the respective authorities are going only at a snail's pace"*

He added that NGT consider this as a serious issue and that NGT may take drastic measures against the violators. Also the Hon'ble NGT has directed to conduct an awareness programme in this matter

and hence this programme was arranged to discuss the measures to be taken to avoid the pollution of Perandoor & Edappally canals.

Sri. Pradeep Kumar A.B., Chairman, Kerala State Pollution Control Board, explained about the importance of conducting the awareness programme. He added that even though the Board has taken several steps to comply with various directions given by the NGT, but not yet reached in a permanent solution. Some of the Establishments near the bank of the Perandoor & Edappally canals are operating without proper treatment facility and discharging waste water directly to the canal. NGT may take strict action against the violators. He informed that this programme is mainly arranged to provide an awareness to those persons about the management of sewage and other waste water in compliance with the environmental laws.

He added the following points:

- Before purchasing a new flat, the buyer should check whether all the clearances are obtained from statutory authorities.
- Coliform level is high in Edappally and Perandoor canal and this will lead to the occurrence of various diseases. To avoid this situation waste generated should be disposed in compliance with the environmental laws.
- Board issued several directions/notice to the Establishments/Residential Apartments operating without proper treatment facility and discharging waste water directly to the Perandoor & Edappally canal. But the response is very poor and Board will be forced to initiate legal actions against the violators.
- Kochi Metro Rail Limited (KMRL) have been entrusted the work of Integrated Urban Regeneration and Water Transport System (IURWTS) in Kochi by the Government of Kerala. The proposed project envisages the rejuvenation of the 5 canals and installation of 4 STPs. The major aim of the project is to regenerate the urban area in and around the canals. But this is a time consuming project. Hence there is need to arrange temporary measures to prevent further contamination of water bodies.
- As a temporary measure, he asked about the possibility of transportation of sewage/waste water through containers to the existing treatment plants that are not operating at full capacity under Kerala Water Authority (KCWA).

He also informed that a meeting will be conducted after the awareness program with the officials to chart out the action plans for O.A. 27/2021

Justice. K. Ramakrishnan, Retired Judicial Member, National Green Tribunal (SZ) gave key note address in which he briefly explained about the importance of waste management system and duties and responsibilities of waste generators. He opined that the person who is generating waste should dispose it in a scientific manner and it is the responsibility of public to protect the environment.

He added the following points:

- The effluent flowing through the outlets of establishments into Edappally & Perambur canal ultimately reaches to the various canals and this will leads to the contamination of water bodies.
- Local bodies should take initiative to collect the waste including biodegradable waste from each and every houses.
- Secretaries of Association of residential apartment must ensure that the apartments are functioning in compliance with the environmental laws, having proper STP and consent to operate of the Board.
- Residence associations have their own responsibility to implement the waste management in an effective manner.
- Local Self Government Department shall conduct the Gramasabha meeting and problems faced by public related to waste management should be discussed in the meeting.
- Importance of protecting environment and importance of rain water harvesting.

As part of protecting the environment, the Board should take actions to close down the Establishments/Units that are operating without complying Environmental laws and without having proper treatment facility.

He also included the following points regarding the effective utilization of waste materials.

- Water hyacinth found in the water bodies can be used to make various products
- Plastic waste can be recycled and reused

- Certain percentage of compost from the biodegradable wastes of households can be use as manure. Local bodies have the responsibility to supervise this.

The Chairman, Kerala State Pollution Control Board requested the participants to share the various problems faced by them for providing proper waste management and complying with the statutes.

- Sri.Rangadasa Prabhu, President, Ernakulam District Residents Associations Apex Council (EDRAAC) informed that, environment should be protected and for this education program is needed and Apex council will initiate actions for the same, and requested support from the Kerala State Pollution Control Board.
- One of the flat representative enquired that, if there are any government consultancy for STP management as they are facing many difficulties while approaching the private agencies.
- Sri.Jeevan, Association president, Dream Flower Heights apartment informed that since they have space limitations and not having enough space for gardening they cannot reuse the treated water.
Justice. K. Ramakrishnan suggested that gardening can be done effectively by using commercially available grow bags, and planting grass around the ground. Effective methods like vertical gardens also can be used.
- Sri.Saju, flat representative, informed that their apartment was built in 1997. Since it is an old complex space limitations are there and it is very difficult to maintain the clearance as per PCB norms. He also suggested that common STP should be constructed at all possible places and increase the capacity of Ernakulam STP and he complained that there are many houses on the bank of Perambur canal discharging waste water directly to the canal, but the PCB taking action against the flats only.
Justice K. Ramakrishnan replied that as the quantity of waste generation from the flats is more compared to houses and hence waste water from flats should be addressed.
- Sri.Kamal, flat representative complained that daily garbage collection is not often done and garbage is collected in weekly only. He opined that the Corporation is responsible for this. Also he suggested that awareness program should be given to the individual houses through the councilors.
- Sri.Ajith Kumar, Secretary, Ernakulam District Residents Associations Apex Council,

(EDRAAC) informed that lack of coordination between various departments will affect the successful implementation of projects. He opined that local bodies should issue licenses to the waste collection vehicles to avoid the dumping of waste near the roadside/public areas etc.

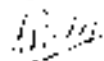
- The Executive Engineer, Kerala Water Authority reported that they are providing assistance to all the Municipalities and Corporations who are cooperating with the Water Authority for the implementation of underground sewage system projects and she informed that a master plan has been prepared for Kochi Corporation and currently a 5MLD treatment plant is operational at Elankulam. DPR for pipe network is prepared. Another 5MLD proposal has been submitted under Amrut Scheme. She informed that DPR preparation of STP projects of KMR, in Elankulam, Perandoor, and Mutat is completed.

After the discussion former Justice K. Ramakrishnan put forward the following suggestions.

- Underground sewage system must be implemented and it should be connected to all the individual houses and sewage charge should be collected from each house.
- Methods like Phytoremediation can be utilized to clean the drain.

Dr. Sheila A.M., Member Secretary, Kerala State Pollution Control Board concluded the programme requesting the cooperation of all the stakeholders for the protection of water bodies. As Kerala Water Authority reported that around 3.5MLD of wastewater collected through pipelines are discharged to the newly installed 5MLD STP at Elankulam and GCDA reported under utilization of 750 MLD plant at Kaloor, action is to be taken by Kochi Corporation, Kerala Water Authority and GCDA for the diversion of waste water from old fats which are having space limitation. The Member Secretary, KSPCB requested the Kerala Water Authority and GCDA officials to report the possibility of treatment of wastewater in the decentralized sewage treatment plants. Kochi Corporation was also requested to implement the licensing of unregistered tankers. Online tracing system from wastewater tankers as done in Thiruvananthapuram has to be provided for proper tracking of registered vehicles, in order to avoid unauthorized discharge of waste water to the water bodies. She thanked all the officials from various stakeholder departments and gathered representatives of various residential apartments/establishments.

The meeting concluded by 1.00pm.



CHAIRMAN



W: Kerala State Pollution Control Board, Thiruvananthapuram, Kerala, India, PIN-695 022
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KERALA STATE POLLUTION CONTROL BOARD

കേരള സംസ്ഥാന മലിനീകരണ നിയന്ത്രണ ബോർഡ്

Palace P.O., Thiruvananthapuram - 695 022
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E-Office File No: KSPCB/772/2022-23-5

Date: 30/09/2022

From

The Member Secretary

To

The Member Secretary
 Central Pollution Control Board
 Park Road, East Arjun Nagar,
 Delhi- 110052
 e-mail: ms@cpwb.nic.in,
 ms@cpwb.gov.in

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

Sr,

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,

MEMBER SECRETARY

Enclosure: As above

Copy to:

The Director,
 Regional Directorate, Central Pollution Control Board
 Naraga Bhawan, Thiruvananth Road,
 2nd Main Road, Shivamogga
 Basaveshwar Nagar, Bengaluru, Karnataka - 560 079
 e-mail: zobangalore_cpwb@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						Authorized Quantity of Hazardous Waste (Metric Tonne)				Quantity of HW Generated during the year (Metric Tonne)				Details on Import and Export of Hazardous Waste					
Sl. No	Name of the District	Total Number of HW Generating Industry	Number of Units Possessing authorisation	Number of Units exempted from obtaining Authorisation	Number of HW Units submitted annual returns	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	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				

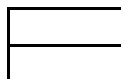
A3 Details on Hazardous Waste Recycled and Utilized											
S.No.	Name of the District	Recycling / Utilization of hazardous waste (generated within the State/ UT)						Recycling/Utilization of hazardous waste (received from other Stae/UT)			
		Quantity Utilized (MT)						Quantity of waste Recycled (listed under Schedule-IV Hazardous Wastes)(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	Co-processing in Cement plant	Non-captive utilization based on CPCBs SOPs
Generated within state	Imported	Generated within state	Imported	Generated within state	Imported	Generated within state	Imported	Quantity of waste Recycled (listed under Schedule-IV Hazardous Wastes)(MT)			
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 year i.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										46	46(i)		46(ii)	47	47(i)	47(ii)	48	49	50	Imported	Domestically generated
																									51	52
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	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	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
NIL	NIL	NIL	NIL

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

Sl.No.	Name of the District	Name and Address of collection 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	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	Kerala Enviro Infrastructure Ltd Common TSDF project, Inside FACT CD Campus, Ambalamedu, Kochi - 682 303, Kerala	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 (Recycler + 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 packing				
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				
	Utilizers (Under Rule 9) of				
B	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				

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

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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

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	Other than
	79	88	89	90	91
I.	Hazardous Wastes				
A	List of Authorized Recyclers of hazardous waste				
1	Petrolive Petroleum(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	14600	0	4815.1314
		Waste Oil	8760	0	720.9252
5	SWARAJ BIO FUEL ENERGY VIII/1256, NIDA, Kanjikode West, Pudukkery central Village, Palakkad,	Used Oil	1000	0	785.3031
		Waste Oil	1000	0	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 L	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	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				



കേരള സംസ്ഥാന മലിനീകരണ നിയന്ത്രണ ബോർഡ്
 KERALA STATE POLLUTION CONTROL BOARD
 കെ.എ.പി.സി.ബി.

Palathur P.O., Thiruvananthapuram - 695 024

ഫോൺ: 0471-2532111, 2532112, 2532113 - 253 254

PCB/HO/PLA/AR/20/2021-22

Date: 13/10/2022

From:

The Member Secretary

To:

The Member Secretary
 Central Pollution Control Board
 Parkesh Bhawan
 East Arjun Nagar
 New Delhi - 110012

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

Sr:

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 Des
3. IT Cell

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

			Report enclosed as Annexure I Report enclosed as Annexure II Report enclosed as Annexure III Report enclosed as Annexure IV	

STATE POLLUTION CONTROL BOARD
 P.O. BOX 100, TRIVANDRUM
 TEL: 2337111, 2337112, 2337113, 2337114, 2337115, 2337116, 2337117, 2337118, 2337119, 2337120, 2337121, 2337122, 2337123, 2337124, 2337125, 2337126, 2337127, 2337128, 2337129, 2337130, 2337131, 2337132, 2337133, 2337134, 2337135, 2337136, 2337137, 2337138, 2337139, 2337140, 2337141, 2337142, 2337143, 2337144, 2337145, 2337146, 2337147, 2337148, 2337149, 2337150, 2337151, 2337152, 2337153, 2337154, 2337155, 2337156, 2337157, 2337158, 2337159, 2337160, 2337161, 2337162, 2337163, 2337164, 2337165, 2337166, 2337167, 2337168, 2337169, 2337170, 2337171, 2337172, 2337173, 2337174, 2337175, 2337176, 2337177, 2337178, 2337179, 2337180, 2337181, 2337182, 2337183, 2337184, 2337185, 2337186, 2337187, 2337188, 2337189, 2337190, 2337191, 2337192, 2337193, 2337194, 2337195, 2337196, 2337197, 2337198, 2337199, 2337200

Annexure I (Column 2)

Details of plastic waste management details		
PW Generated (TPA)	PW Collected (TPA)	PW Processed (TPA)
71000 TPA	67548.79 TPA	<p>Clean Kerala Company has collected 61288 MT of scheduled plastic during the year 2021-22 about 529.8 MT & 6.15 MT of plastic. In addition to this District solar systems were collected 500 TPA were collected by various other authorized collectors has been utilized for road lighting by PWD & BHAL respectively about 79 MT of plastic is recycled to various products by various authorized recyclers.</p> <p>Almost all the brand owners who obtained registration from the Central Pollution Control Board 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 their annual reports received, the Board is not able to verify the genuineness of reports.</p>

Annexure II (Column 2)

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

Items	Status
Implementation Date of initiation of work from 75 microns carry bags program	<p>Plan to single use plastic items in the State is a 100% Carry Bag (C.B.) Ban (G.O.No. 164/2019 dated 20/11/2019). (Plastic carry bags irrespective of thickness are included in the single use plastic ban.) vide G.O no. G.O.No. 76/2020 dated 04/02/2020 and G.O.No. 120/2021 dated 28/01/2021.</p>
Annexure copy kept ready	<p>SEEF Project: MOU was signed between Kerala State Pollution Control Board & State Swachhata Cell Foundation for launching the awareness of plastic product (SPP) & SWP alternatives. The copy of the report submitted by SEEF is enclosed as Annexure IX.</p>
Annexure copy of the work done	<p>Wayanad 1. Awareness session on plastic pollution and single use plastic dated 18.12.2021. From: University of Kerala</p>
Annexure copy of the work done	<p>2. Awareness session on plastic pollution and single use plastic dated 28.12.2021. From: Thiruvananthapuram</p>
Annexure copy of the work done	<p>3. Awareness session on plastic pollution and single use plastic dated 02.11.2021. From: Kannur and Kasargod</p>
Annexure copy of the work done	<p>4. Awareness session on plastic pollution and single use plastic dated 09.11.2021. From: Kollam & Wayanad</p>
Annexure copy of the work done	<p>5. Awareness session on plastic pollution and single use plastic dated 22.11.2021. From: Malappuram</p>
Annexure copy of the work done	<p>6. Awareness session on plastic pollution and single use plastic dated: 18.12.2021 From: Coimbatore</p>
Annexure copy of the work done	<p>7. All India Radio (AIR) on Awareness on Plastic Waste Management in Kerala dated 20/04/2021.</p>
Annexure copy of the work done	<p>8. Awareness on Plastic Waste Management and Market Timing in UD (Jammu) dated 12/05/2021.</p>
Annexure copy of the work done	<p>9. Advertisement in press in Mysore</p>
Annexure copy of the work done	<p>Wayanad 1. Message circulated to communities for idea of preventing plastic pollution as per Christmas 2021.</p>
Annexure copy of the work done	<p>2. Message circulated to communities for idea of preventing plastic pollution dated 24/08/2021. The details of the awareness program conducted by the Kerala State Pollution Control Board is enclosed as Annexure X.</p>

ACTION PLAN FOR PLASTIC WASTE MANAGEMENT					
Sr. No.	Item	Current Status	Desired Status	Gap between current status and desirable level	Timeline
1.	What is the quantity of plastic waste generated Annual Report Item VI (a) (2) (1) (i)	7188 TPA	6238 TPA	950 TPA	6 months (MAY, 2024). (Plastic waste audit will being set up)
2(a)	Number of registered plastic manufacturing units	010			
2(b)	Capacity of registered plastic manufacturing units (TPA)	Being updated			
3(a)	Total No. of LLUs	5117 (Municipality and 6 Corporations)			
3(b)	Percentage of LLUs which have set-up of plastic waste management system as per Rule 5(2)?	88.01	100	12.01	6 months
3(c)	Percentage of LLUs having facilities for collection of segregated waste	79.2	100	20.8	6 months
3(d)	Percentage of LLUs Material Recovery Facility	75.46	100	24.54	6 months
3(e)	Total No. of Factories	343			
3(f)	Percentage of Green Factories which have set-up of plastic waste management system as per Rule 5?	75.75	100	24.25	6 months
3(g)	Percentage of GFs having facilities for collection of segregated waste	83.33	100	16.67	6 months
3(h)	Percentage of GFs having Material Recovery Facility	88.33	100	11.67	6 months
3(i)	Total No. of registered Producers/Manufacturers/Exporters as per	24 units			
3(j)	Percentage of Producers/Manufacturers/Exporters which have set-up with LLUs for PMW				
3(k)	Percentage of LLUs which have set-up system for plastic waste management with consent of producer from the unit?	1.1	100	98.9	6 months
3(l)	Number of registered plastic waste processors	122			
3(m)	Capacity of processor (TPA)	600 TPA			
4.	Steps of Utilization of plastic waste Annual Report Item VI (a) (2) (i) (ii)				
4(a)	Quantity of Plastic waste utilized in construction (TPA)	600 TPA			
4(b)	Quantity of Plastic waste utilized in recycling Road Construction	91.75 TPA			
4(c)	Quantity of waste is processed in plastic waste to cement kilns	1000 TPA			
4(d)	Quantity of waste utilized in production of RDF	00			
4(e)	Quantity of plastic waste used in production of waste fuel	00			
4(f)	Quantity of plastic waste used in other purpose (Please specify)	00			
4(g)	Total Units registered manufacturing manufacturing plants	7 units			

Annexure V (Column 6)

Details of Registered Plastic Manufacturers (Column 6)

S.No	Name of the unit	Capacity	MLP Input/Plastic Recycled/Composting/Compostable/ Others (Please specify)	Status (Operating/Closed)	Prohibition against (TPD)
1	Royal Plastic Products	100 Tpa	Plastic sheet	Operating	1000 kgpd
2	ROYAL INDUSTRIES	NA	NA	Closed	NA
3	ROYAL POLYMERS	10000 Tpa	POLYTHENE BAGS AND LATER COLLECTION CUP	Operating	11700 kgpd
4	Aravali polythene products	60 Tpa	Polythene packing bag	Operating	1000 kgpd
5	MS SURYA PLASTICS	20 Tpa	NA	NA	NA
6	Poly green Industries	10 Tpa	Polythene packing bag	Partially working	4000kgpd
7	DELTA PLASTICS	10 Tpa	NA	Operating	NA
8	El. Anu Polymer Industries	1000 Tpa	NA	Operating	NA
9	HEMISHTAN POLYMER PRODUCTS	42 Tpa	NA	Operating	100 kgpd
10	MS SURYA POLYMER CYCLES	10 Tpa	NA	Operating	NA
11	MS SURYA PLASTIC INDUSTRIES	NA	NA	Closed	NA
12	DELTA INDUSTRIES	NA	Polythene and plastic processed products manufacturing (single stream)	Operating	NA
13	MS SURYA POLYMERS	60 Tpa	Plastic bag and sheet without printing	Operating	6000 kgpd
14	MS SURYA PLASTICS	60 Tpa	Plastic bag and sheet without printing	Operating	6000 kgpd
15	MS SURYA POLYMER INDUSTRIES	20 Tpa	NA	Operating	NA
16	KANHA DEVI DEVA YIL TEXTILES		NA	Closed	NA
17	ADIRWAYA PLASTICS	20 Tpa	Plastic sheet	Operating	1000 kgpd
18	Preraj Plastic Products, Yashu P.L. Changanacherry, Changanacherry.	20 Tpa	NA	Operating	NA
19	DELTA ENTERPRISES	60 Tpa	NA	Operating	NA
20	MS SURYA PLASTICS	60 Tpa	NA	Operating	NA

21	PERFORM STEEL INDUSTRIES	11.00%	NA	Operating	NA
22	THE KRAFT PAPER CO	16.40%	NA	Operating	NA
23	WILLA PLASTICS	0%	NA	Operating	NA
24	Cellulose Products	27.20%	NA	Operating	NA
25	ATLAS INDUSTRIES	7.10%	Plastic packaging & coatings	Operating	2014 Sept
26	COLORBOND INDUSTRIES	4%	NA	Operating	
27	THE ASSOCIATED POLYMER	7%	NA	Operating	2014 Sept
28	General Polymer	NA	NA	Closed	NA
29	THE ASSOCIATED PLASTICS	11.10%	NA	Operating	2014 Sept
30	THE MANUFACTURE POLYMER	10.10%	NA	Operating	
31	SUNLITE POLYMERS	41.10%	NA	Operating	2014 Sept
32	Manufacture Industries	NA	Plastic bags for waste papers	Operating	NA
33	Other bags	21.10%	NA	Operating	NA
34	THE MANUFACTURE POLYMER	10.10%	NA	Operating	NA
35	THE POLYMER FACTS	20.10% (2014) to 22% (2015)	NA	Operating	NA
36	HELP FOR POLYMERS	20.10%	NA	Operating	NA
37	THE POLYMER CLEANING PRODUCTS	11.10%	NA	Operating	NA
38	INDUSTRIAL PLASTICS	NA	NA	Closed	NA
39	NAI Group Plastic Laminates - Chatterbox Bam	11.10%	NA	Operating	NA
40	Alloy rubber and Plastic	NA	Polystyrene coatings	Operating	2014 Sept
41	MODULON POLY PLAST	10.10%		Operating	
42	Telamon Rubber and Plastic	NA	Polystyrene coatings	Operating	2014 Sept
43	THE MANUFACTURE POLYMERS PRIVATE LTD	40.10%	Plastic carry bags and packing materials	Operating	2014 Sept
44	D COMPANY	1.10%	NA	Operating	NA
45	MILCOLINER PAPER	40.10%	Plastic bags	Operating	2014 Sept
46	THE GALLANT PLASTICS	13.10%	NA	Operating	NA
47	THE ASSOCIATED PLASTICS	NA	NA	Operating	2.2 months
48	GENERAL POLYMER PRODUCTS	14.10%	NA	Operating	NA
49	THE MANUFACTURE PLASTICS	40.10%	Polystyrene packing material and Plastic bags	Operating	2014 Sept

NO	DESCRIPTION	QA	PA	QA	PA
09	THIN SHEET POLYESTER	NA	NA	Closed	NA
10	MS SHEET POLYURETHANE	100%	Plastic every layer including sheet and bonded film	Opening	MS 100%
11 (10-21)	MS ALPHA PLASTIC	Peak Temp - 110 Kilogram Peak Slip - 80 Kilogram Cover Paper - 45 Kilogram	Sample	Opening	
14	MS TEAR PLASTIC	Peak Temp - 100 Kilogram	Sample	Opening	
15	MS TIGHT PLASTIC	Water proof - 150 Kilogram	Sample	Opening	
16	MS T.F. PLASTIC	Water proof - 150 Kilogram	Sample	Opening	
17	MS P.M. PLASTIC	Closed Water proof - 100 Kg	Sample		
18	MS L.R.N. PLASTIC	Water Proof - 120 Kilogram	Sample		
19	MS EVERDINE PLASTIC	Peak Temp - 1.4 Moist Temp Water Proof - 1.7 Moist Temp	Sample	Opening	
20	MS C.C.T. PLASTIC	Water Proof - 8.00 Moist Temp	Sample	Opening	
21	MS P.M. PLASTIC REINFORCING UNIT	Peak Temp - 80 Kilogram	Sample		
22	MS HIGH STRENGTH PLASTIC	Water proof - 20 Moist Temp	Sample	Opening	
23	MS HFA PLASTIC	Water Proof - 20 Moist Temp	Sample	Opening	
24	MS L.D.P. BUTYLENE PLASTIC	Water Proof - 8.00 Moist Temp	Sample	Opening	
25	MS CROWN PLASTIC	Water proof - 100 Kilogram	Sample	Closed	

66	MR. SURWAN PLASTIC	Waste Plastic - 5 10000 Tonne	Recycle		
67	MR. PLASTIC INDUSTRY	Waste Plastic Residue & Residue after use 1000 Kilogram	Recycle		
68	MR. ERICD. PLASTICS	Plastic Waste - 20 Metric Tonne	Recycle	Opening	
69	MR. CREATIVE PLASTIC	Plastic Waste 200 Kilogram	Recycle	Opening	
70	MR. JAMBOLA PLASTICS	Waste Plastic - 200 Kilogram	Recycle	Closed	
71	MR. SAMADA PLASTICS	Waste Plastic - 1.5 Metric Tonne	Recycle	Opening	
72	MR. SUPER LUM PLASTICS	Plastic Waste - 200 Kilogram	Recycle		
73	MR. TRAVANCORE PLASTIC	Plastic Waste - 200 Kilogram	Recycle	Opening	
74	MR. SORASHI PLASTICS	Plastic Waste - 200 Kilogram	Recycle	Opening	
75	MR. ARYATI PLASTICS	Waste Plastic - 200 Kilogram	Recycle		
76	MR. KALIMATTAM PLASTIC INDUSTRIES	Plastic Waste - 100 Kilogram Plastic Residue - 200 Kilogram	Recycle		
77	MR. P.K.A PLASTICS	Waste Plastic - 200 Kilogram	Recycle	Opening	
78	MR. THIRUKODIY PLASTICS	Plastic Waste - 200 Kilogram	Recycle	Opening	
79	MR. RFA PLASTICS	Waste Plastic - 5 Metric Tonne	Recycle	Opening	
80	RM PLASTICS	Plastic Waste - 200 Kilogram	Recycle	Opening	
81	MR. MRS PLASTIC WORKS	Waste Plastic - 200 Kilogram	Recycle		

80	MS. MS. BARRA PLASTIC	Wavy Plastic - 100 Kilogram	Sample		
81	MS. BARRA PLASTIC	Wavy plastic - 100 Kilogram	Sample	Class	
82	MS. GREENHA PLASTIC	PVC Blue wavy and High plastic - 100 Kilogram	Sample	Class	
83	MS. NAIVE PLASTIC	Plastic wavy - 100 Kilogram	Sample		
84	MS. BICO PLASTIC	Wavy plastic - 100 Kilogram	Sample		
85	MS. KOTTAJUVIL POLYMER	Stare plastic - 100 Kilogram	Sample		
86	MS. CHIRANATHI POLYMER	Wavy plastic - 100 Kilogram	Sample		
87	MS. PERIN POLYMER	Wavy Plastic - 100 Kilogram	Sample		
88	MS. UNITED POLYMER	Plastic wavy - 100 Kilogram	Sample		
89	MS. CHITLAGANATH POLYMER	Wavy plastic - 100 Kilogram	Sample	Opening	
90	MS. GREEN INDUSTRIES	Support plastic - 200 Kilogram	Sample	Opening	
91	MS. METRO POLYMER	Wavy Plastic - 100 Kilogram	Sample	Opening	
92	MS. SR POLYMER	Plastic Sample 400 Kilogram Wavy Plastic 100 Kilogram	Sample	Opening	
93	MS. STAR POLYMER	Wavy plastic - 100 Kilogram	Sample		
94	MS. SUPARNA PP PRODUCTS	Wavy Plastic - 100 Kilogram	Sample		
95	MS. UNITED INDUSTRIES	Plastic Pipe - 100 Kilogram	Sample	Opening	
96	MS. UNITED MPOLYMER	Plastic wavy - 100 Kilogram	Sample	Opening	

Sl. No.	Name of the Vendor	Product Name - LIT/Mark/Trade	Material	Status	Quantity
180	MS. NULAYATHAN POLYMERS	HDFE, LDPE RECYCLED LLDPE & PP Containers - 45 Kilogram	Recycle	Operating	
181	MS. DEANDEE POLYMERS	ADPC GRANULES - 1.2 Mark/Trade	Recycle	Operating	
182	MS. P M PLASTICS	Plastic Chips (Shed - 1) - 50 Kilogram Plastic Chips (Shed - 2) 75 Kilogram	Recycle	Operating	
183	MS. DIXI POLYMERS		Recycle		
184	MS. ACHIN PLASTICS		Recycle		
185	MS. BALAJAN POLYMERS		Recycle		
186 (PALAKKAD)	SEAN PETS	400 Kilogram	PET PREFORM (GARB WAGON PET BOTTLES) 41000 Numbers	Operating	5.84
187	ARUNA PAPER CUPS	7100 Numbers	PAPER CUPS 67100 Numbers	Operating	7100 Numbers
188	ARUNA PLASTICS	400 Kilogram	PLASTIC GRANULES 400 Kilogram	Operating	5.64
189	SHANTHINI POLYMERS	300 Kilogram	P P FOOD CONTAINERS 300 NUMBERS	Operating	300 NUMBERS
190	CLARITY PLASTICS	1000 Kilogram	POLY PROPYLENE CONTAINERS 1000 NUMBERS PER DAY	Operating	1.000
191	CRYSTAL PET & ALLIED INDUSTRIES	1000 Numbers, 10000 Numbers	PET BOTTLES 10000 Numbers PET 1000 41000 Numbers	Operating	1000 Numbers, 10000 Numbers
192	Shanku Agencies	1000 Kilogram	Composites plastic garbage Bags (Excluding garbage bags for Hospital uses) 1000 Kilogram per day	Operating	1.071
193	KRISH POLYMERS	1000 KG	PET PREFORM & PET BOTTLES 1000 KG	Operating	1.700
194	MARATHI POLYMERS PRIVATE LIMITED	1000 KG, 500 KG, 2000 KG	PET BOTTLE 1000 KG, PET PREFORM 500 Kilogram EXTRUDED PLASTIC 2000 KILLOMETERS LLDPE Kilogram 1000	Operating	5.327
195	MS. KANAKA POLYMERS	500 Kilogram	WEARABLE PLATE 500 Kilogram	Close	0.061
196	NEUTER PLASTICS	10000	PLASTIC CONTAINERS 10000	Operating	0.100
197	Polymers & Allied Products	10000	PP Cover 100 KG	Operating	1.000

118	PLASTIC POLYMERS	2000 TON	LDPE, HDPE AND RUBBERS	Operating	2000 TON
119	Plastic Plastic	100 TONNES	Plastic Plastic 100 TONNES	Operating	100 TONNES
120	Various Poly Bag Industries	40 LAKH	HDPE/POLYPROP. Virgin Plastic/Packing Material (in 40 LAKH)	Operating	5.000
121	SHARON PLAST	20000 MT (L)	Plastic Bags Without Printing 200 LAKH Plastic Bags With Printing 400 LAKH	Operating	5.000
122	Basic Polymer	2000 TON	PET BOTTLE 2000 TON	Operating	2000 TON
123	CRYLAK PLASTICS	1.4 Million Tonne	PET polymer @ 1.4 Million Tonne	Operating	1.4
124	WIDE MOUTH POLYTHENE	10000	FF COVER BAGS	Operating	5.000
125	SHARON PET BOTTLES	2000 TON	PET BOTTLE 2000 TON	Operating	2000 TON
126	STAR PACKAGING	1000 Number/Day	PET BOTTLES 10000 Number/Day	Operating	1000 TON
127	STAR PET PRODUCTS	1000 Number	PET BOTTLES 10000 Number	Operating	1000 Number
128	SHARON POLYMERS	1000 Number	PET BOTTLES 10000 Number	Operating	1000 Number
129	SL Plastics and Rubbers	400 LAKH	Plastic Cover Sheet 400 LAKH	Operating	5.00
130	Basic polymer	2000 TON	PET BOTTLE 2000 TON	Operating	2000 TON
131	Auto plastic	11 LAKH	Plastic Bottle 11 LAKH	Operating	0.011
132	PP polymer	200 LAKH	POLYTHENE BAGS AND COVERS 200 LAKH	Operating	5.200
133	Sharon Industries Pvt. Limited	2000 Number, with 1000	PREPARED BOTTLES 10000 Number CONTAINER BOTTLES 10000 Number HDPE CONTAINER BOTTLES 10000 Number	Operating	1000 Number, 4000 TON
134	Waste engineering	2000 ton	LDPE Number 2000 ton	Operating	1000 ton
135	Micro glass	10000 ton	LDPE Number 10000 ton	Operating	10000 ton
136	GLOBAL PAPER	500kg	Manufacturing of plastic Plastic (producing from plastic, scrap and used powder)	Operating	5.00
137	SHARON PROCESS PLASTIC RECYCLING UNIT	1000 Kilogram	GRANULES AND LUMPS 1000 Kilogram	Operating	1.1
138	Plastiglad Pvt. India	1000 Number	Pet Bottle @ 10000 Number	Operating	1000 Number
139	SHARON POLYMERS	1000 LAKH	POLYPROPYLENE COVERS @ 1000 LAKH	Operating	1.0
140	SHARON POLYMER INDUSTRIES LIMITED - UNIT - 2	1000 MT	FF COVER BAGS & SHARON BAGS @ 1000 MT	Operating	1000 MT
141	SH POLYMER LTD	4 MT	FF COVER BAGS	Operating	4 MT
142	SHYVA BOTTLES	4.5 MT	PLASTIC CHIPS @ 1 Million Tonne	Operating	4.5 MT
143	SHARON POLYMERS	1 MT	PVC CHIPS @ 1 Million Tonne/Day	Operating	1 MT
144	APAO PLASTICS	1 MT	Plastic Chips 1 Million Tonne	Operating	1 MT
145	SALARAN RECYCLING	10000	PLASTIC CHIPS 100 Kilogram	Operating	0.1 MT

186	ALUMINUM PLASTIC	80 KG	PLASTIC CHIPS 100 Kilogram	Opening	0.1 MT
187	A N S INTERNATIONAL	80 KG/Day	WASTED WRAP PLASTIC 200 Kilogram per day	Opening	0.10 MT
188	PLASTIC WARE	90 kg/day	CRUSHED PLASTIC 200 Kilogram	Opening	0.01 MT
189	Devi Plastic Reprocessing	1 MT	Plastic chips 1 MT	Opening	1 MT
190	WE-LINE INDUSTRIES	80 KG/Day	Plastic chips 200 kg	Opening	0.01 MT
191	DISPERSED PLASTICS	1 MT	PLASTIC CHIPS/RESIDUES 200 Kilo Tonne	Opening	1 MT
192	REAL PLASTICS	80 KG/Day	PLASTIC CHIPS 200 Kilogram	Opening	0.01 MT
193	SIGMA POLYMERS	100 Kilogram/Day	BOTTLE CHIPS 200 Kilogram	Opening	0.020 MT
194	POOL AREA POLYMERS	100 KG/Day	RECYCLED PLASTIC GRANULES 200 Kilogram	Opening	0.01 MT
195	AGRI. PLASTICS	100 kg/day	PLASTIC CHIPS 100 Kilogram	Opening	1 MT
196	ALATHIN PLASTICS	100 KG/Day	CRUSHED PLASTIC CHIPS 200 Kilogram	Opening	0.01 MT
197	AL SHAN PLASTIC (CHENNAI) PVT	100 kg/day	PLASTIC CHIPS 100 Kilogram	Opening	0.1 MT
198	ATLAS ENTERPRISES	100 kg/day	GRANULES 200 Kilogram/day	Opening	0.1 MT
199	SHRI PLASTIC CUTTING UNIT COCHIN	100 kg/day	Plastic Chips 200 Kilo Tonne	Opening	0.1 MT
200	POLYMER PLASTIC	100 kg/day	GRANULES AND CHIPS 200 Kilogram	Opening	1 MT
201	KACCARADON PLASTIC CHIPS	100 KG/Day	PLASTIC CHIPS 200 Kilogram per day	Opening	1.0 MT
202	M H PLASTIC KODAKKUNGI UNIT	200 kg/day	PLASTIC GRANULES 200 Kilogram	Opening	0.01 MT
203	PALAKKAD PLASTIC CHIPS	100 kg/day	PLASTIC CHIPS 200 Kilogram	Opening	0.1 MT
204	THE LAKSHMI PLASTICS	1 MT	PLASTIC CHIPS 200 Kilo Tonne per day	Opening	1 MT
205 (PADAAMA NIGAM TRAO)	P.B PLASTIC	200 kg/day	PLASTIC CHIPS (Crushed Plastic) 200 Kilogram RECYCL 200 Kilogram	Opening	0.1 MT
206	Lakshmi Polymer Industries, Chinnai P.O. Alathur	Polythene bags of about 100 kg/day. Polythene printed bags 100 kg/day.	Polythene bags of about 100kg/day. Polythene printed bags	20-02-2019	Polythene bags of about 100 kg/day. Polythene printed bags 100 kg/day.
207	WISAT POLY F PACE, Vakkolathukkara P.O.	Polythene bags about 100 kg/day	Polythene bags about 100 and printed bags	01.11.2017	Polythene bags about 100 kg/day
208	S.S. Polymers, Kottumbal, Alathur	Polythene bags and about 100 kg/day	Polythene bags & about	01.11.2017	Polythene bags and about 100 kg/day

181	St Vincent's Padang, Singapore, Kerala PD	28.10'	PRINTED PLASTIC COVER FOR E-books	Opening	
182	Pravin Kollam, ID P.O., Vadakkal, Alappuza Dist.	28.10'	R.P GRANULES SHEET FOR E-books	Opening	
183	Kanakkal Industries, Kannamal Nam, Kollam Dist., Changanassery, Alappuza	23.10'	PLASTIC SHEETS	Opening	
184	SEENA ENGINEERS INDUSTRIAL (PVT) LTD PALLIPPURAM PD CHERTHALA	13.10'	PLASTIC CAPS & CLOSERS	Opening	
185	Neela Plastech Kannamal, Kerala	04.4.10'	Food-grade Aluminium sheets @ 200 gsm	Opening	
186	MELINDAY PLASTICS NEAR WETLA ROAD POKKAICAL, P CHERTHALA, ALAPPU ZHA	16.10'	Industrial grade aluminium @ 200 gsm	Opening	
187	MRS ANAN PLASTICS BY P.O., VADAKKAL, PINNAPPA, ALAPPUZA DISTRICT	04.10'	Plastic Caps @ 200 Grams Cover	Opening	
188	LABS. PLASTIC INDUSTRIES NEAR PBE STADIUM, KANNAMAL, KOLLA	10.10'	GRANULES CAPS @ 200 Grams	Opening	
189	BALAJI PLASTICS, D T CHINGID, CHERTHALA, KERALA	10.10'	PLASTIC SHEETS	Opening	
190	Neela Plastech Private India Pvt. Ltd. Near Industrial Zone, Changanassery PD, Kerala, Alappuza	24.10'	CIRCULAR RADIUM SHEETS	Opening	
191	LEONINE INDUSTRIES LEONINE INDUSTRIES THIRUPALLY ALAPPUZA DISTRICT	1.10'	PVC SHEET	Opening	
192	Blue Plastech Ayakkalam PD, Alappuza DISTRICT KOVVA PAPER	02.10'	SHEETS FOR ACCESSORIES	closed	
193	PROJECTS, SHYAM ATHIRAMAM, VOLLAKKAL, ALAPPUZA			Closed as Paper not manufacturing unit	

191	AM I	Asst Insp, Kumbakonam T.M. plastic, Polystyrene		Acrylonitrile	Operating	Blow Chute bag 25 mm x 20 cm
192				Acrylonitrile	Operating	Plastic: 25mm x 20mm
193		Master Subsidiary, Pudukottai		Acrylonitrile	Operating	Plastic: 25mm x 20mm
194		Home Plastic Kumbakonam		Acrylonitrile	Operating	PVC Products: 100mm x 20mm
195		PLASTICINDIA		Acrylonitrile	Operating	PVC Bag Plastic: 25mm x 20mm
196		Polymers Kumbakonam		Acrylonitrile	Operating	Extruded plastic granules 25 mm x 20mm
197		Sea plastic		Acrylonitrile	Operating	Plastic granules, 25mm x 20mm
198	MAA APPL NAM	INDIA WOOD EXTRUSION CO	470 mt/day	PVC Base board	Operating	470 mt/day
199		LAMIT POLYMERS	500 mt/day	PVC pipe	Operating	500 mt/day
200		CESTEC SACRET INDIA PRIVATE LIMITED	10000 mt/day	Thermocol expansion	Operating	10000 mt/day
201		ACRYNITRA POLYMERS	100 kg/day	Plastic moulding and pipe making	Operating	100 kg/day
202		FLAMMA POLYMERS	100 kg/day	PVC pipe	Operating	100 kg/day
203		INDIAN LEAD INDUSTRIES AND MANUFACTURING	4.5 mt/day	Plastic sheet, granules, rolling and extrudable plastic	Operating	4.5 mt/day
204		K TEEJ MARKETING	8 mt/day	PVC box	Operating	8 mt/day
205		INDIA PACS INDUSTRIES PVT LTD	200 kg/day	Plastic pipe joint	Operating	200 kg/day
206		INDIA PLASTICS AND POLYMERS	100 mt/day	PVC Conduit	Operating	100 mt/day
207		INDIA FLEXO PAK	100 kg/day	PLASTIC FLEX PRINTS	Operating	100 kg/day
208		INDIA PLASTIC	1.5 mt/day	Plastic floor mat	Operating	1.5 mt/day
209		INDIA POLYMERS	100 mt/day	Polystyrene granules	Operating	100 mt/day
210		INDIA	200 mt/day	Plastic pipe (black)	Operating	200 mt/day

204	EPA POLYMER	600 kg per day	Plastic and PVC pipes	Operating	600 kg per day
205	AMF PLASTER	270 tons per day	Plastic equipment and products	Operating	270 tons per day
206	SAI PLASTICS	600 kg per day	Plastic bag	Operating	600 kg per day
207	NEW JERSEY POLY PACKERS	500 kg per day	LP polyethylene packaging sheet	Operating	500 kg per day
208	VARADORA PLASTICS	500 kg per day	Plastic sheet	Operating	500 kg per day
209	AGADY PLASTINDIA PVT LTD	1700 tons per day	Plastic vessels	Operating	1700 tons per day
210	ACERBEE	700 tons per day	Multilayer polyethylene (PE, PP, PE, PP, PE)	Operating	700 tons per day
211	EXOTIC ASIA PACKAGING AND SOFT TRINGS	600 tons per day	PE bottles and jars	Operating	600 tons per day
212	KALADAR EXTRUDERS	1200 tons per day	PVC pipes	Operating	1200 tons per day
213	PK STEEL PACKAGING INDUSTRIES	NA	plastic cover pipes	Operating	NA
214	FRATELTON PLASTIC PVT LTD	2000 tons per day	Plastic bottles	Operating	2000 tons per day
215	POCYTON PROCOXIMS	50 kg per day	PLASTIC DIRT BAGS	Operating	50 kg per day
216	Plastic Agencies, Kottai P.O Thiruvananthapuram	20 kg/day	Plastic and PVC processed goods	Operating	20 kg/day
217	Aravali Plastics, Palankara Canal P.O Perambalur	100 kg/day	Plastic and PVC processed goods	Operating	100 kg/day
218	Green Plastics, Kanyakulam P.O Thiruvananthapuram	Waste (water-1000 L-4 Nos/day PET L-7000/L @ 500 L-10 Nos/d	Polystyrene and plastic	Operating	Waste (water-1000 L-4 Nos/d PET L-7000/L @ 500 L-10 Nos/d
219	A.B. Industries, Marayathu P.O, Thiruvananthapuram	Plastic and metal 500 kg/d	Plastic pipe	Closed	Plastic and metal 500 kg/d
220	Waste Industries - Kuttuvadu P.O Thiruvananthapuram	Waste from HDPE - 200 kg/d	Polystyrene pipe	Operating	Waste from HDPE - 200 kg/d
221	Plastic Agencies, Marayathu P.O, Thiruvananthapuram - 695001	Paper glass - 20000 Nos/day	Paper glass		Paper glass - 20000 Nos/day
222	Highrange Polymers Pvt Ltd Muzhikalathur Taluk, Perambalur P.O, Thiruvananthapuram - 695001	Waste (water-1) 1000 L, 10 Nos/d 2) 200 L-10 Nos/d 3) 500 L-10 Nos/d	Waste from		Waste (water-1) 1000 L, 10 Nos/d 2) 200 L-10 Nos/d 3) 500 L-10 Nos/d
223	Exotic Poly Film, P.P. Malabar, Thiruvananthapuram	Polystyrene bag- 140 kg/d	Polystyrene bag		Polystyrene bag- 140 kg/d

234	Waste Plastic Waste, Recycled P.D. Madhavaram, 100kg	Polystyrene bag 100kg/bag	Polystyrene bag		Polystyrene bag 100kg/bag
235	Waste Plastic Industry, Thangaputhur P.D. - 601004	Plastic granules 200kg, 200kg and 100kg/bag	Plastic		Plastic granules 200kg, 200kg and 100kg - 100kg/bag
236	Pet Plastic, Building, No. 10/20, Madhavaram P.D., Thangaputhur	Pet bottles in pet jar - 100kg/bag	Pet bottle	Opening	Pet bottles in pet jar - 100kg/bag
237	Waste Plastic Industry, Madhavaram, Thangaputhur - 601004	PVC pipes 100kg/bag	PVC pipe		PVC pipes 100kg/bag
238	Waste Plastic Industry, Thangaputhur P.D., 100kg	Polystyrene jar 100 kg/bag, Water tank 100 kg/bag	Polystyrene jar	Opening	Polystyrene jar 100 kg/bag, Water tank 100 kg/bag
239	Waste Plastic, M/s. Subbaraj Gram, Madhavaram, Thangaputhur, 100kg	Plastic granules 200 kg/bag	Plastic jar		Plastic granules 200 kg/bag
240	Waste Plastic, Chinnaiyur - Thangaputhur	PVC pipes 100kg/bag	Plastic jar	Opening	PVC pipes 100kg/bag
241	Waste Plastic, Madhavaram P.D., Thangaputhur	Pet bottle - 100kg/bag	Pet bottle	Opening	Pet bottle 100kg/bag
242	Waste Plastic, Kumbakonam, Thangaputhur P.D.	PVC pipe 100 kg	PVC pipe	Opening	PVC pipe 100 kg
243	Waste Pet Bottles, Avudai P.D., Thangaputhur	Pet bottle 400kg/bag	Pet bottle	Opening	Pet bottle 400kg/bag
244	Waste Polystyrene, Madhavaram P.D., Kumbakonam	Polystyrene jar P.F. 100kg/bag, Polystyrene jar 100kg/bag, Polystyrene jar 100kg/bag, Polystyrene jar 100kg/bag, Polystyrene jar 100kg/bag	Polystyrene jar	Opening	Polystyrene jar P.F. 100kg/bag, Polystyrene jar 100kg/bag, Polystyrene jar 100kg/bag, Polystyrene jar 100kg/bag
245	Waste Rock Plastic Industry, Kumbakonam P.D., Thangaputhur	Plastic jar 100kg/bag	Plastic jar & jar		Plastic jar 100kg/bag
246	Waste Plastic P.V.C. Madhavaram, Kumbakonam P.D., Thangaputhur	PVC granules 100kg/bag	PVC pipe		PVC granules 100kg/bag

237	C.K. Polymer, Polysulphone P O. Bangalore	Plastic Bottle 1000ml/lot	Plastic Bottle	Closing	Plastic Bottle 1000ml/lot
238	Neel Industries, Binnu Building, Hennurpettai road, Madhavara	Pet Bottle (100 ml & above), Cate Number of 20 ml, Chai Box	Plastic Bottle	Closing	Pet Bottle (100 ml & above), Cate Number of 20 ml, Chai Box
239	Moon Industries, Binnu Building, Hennurpettai road, Madhavara	Pet Bottle (100 ml & above), Cate Number of 20 ml, Chai Box	Plastic Bottle	Closing	Pet Bottle (100 ml & above), Cate Number of 20 ml & Chai Box
240	Aharu Pet, Madhavara P.O. Binnu	110 kg/Day	Polystyrene and plastic processed products manufacturing (rigid plastic) - Plastic filling unit	Closed	110 kg/Day
241	Ushar Polymers, Bellurpettai P.O. Madhavara	110 kg/Day	Polystyrene and plastic processed products manufacturing (rigid plastic) - Cover for bottles	Closing	110 kg/Day
242	Moon Industries, Binnu P.O. Channarayana, Madhavara	110 kg/Day	Polystyrene and plastic processed products manufacturing (rigid plastic) - Polystyrene Cover	Closing	110 kg/Day
243	V.P.P. Plastic, Binnu P.O. Binnu	200 kg/Day	Polythene and plastic processed products manufacturing (rigid plastic) - Binnu Madhavara Binnu	Closing	200 kg/Day
244	P.R. Plast, Madhavara P.O. Channarayana	200 kg/Day	Polystyrene and plastic processed products manufacturing (rigid plastic) - Packing cover for baby products	Closing	200 kg/Day
245 HSD SUP	H.K. PLASTS, FOURKAM MACHINARIUM THROUGH	PACKING MATERIAL- 200 Nos	Manufacture	Closing	PACKING MATERIAL- 200 Nos
246	ADITHYAN POLYMER MANUFACTURE, V.R. PRASAD P.O. CHALABETTY, THROUGH ONE	PACKING MATERIAL-	Manufacture	Closing	PACKING MATERIAL-
247	CELLSOME PRA. VINODCHANDRA PRIVATE LIMITED, HIGH TECH PRODUCT DIVISION, KRISHNA BETA COMPLEX, BELMATHUR, HOVEL, NATTYANCHANDRA, COBLENARA	PVC PETS-200kg	Manufacture	Closing	PVC PETS-200kg
248	AAA POLYMERS, VAIYAPPA KANNO, COBVELASAPPA P.O. BALA THROUGH	MEDICAL TUBES- 10kg, HOSPITAL TUBES-10kg, PLASTIC PRODUCTS- 10	Manufacture	Closing	MEDICAL TUBES- 10kg, HOSPITAL TUBES-10kg, PLASTIC PRODUCTS- 10kg

239	UNITED POLYMER OF KANNIAPPALLY, PUNJALANUR, MADHURAI THIRUUR	PET PREFORMS- 500g Tray	Manufacture	Opening	PET PREFORMS- 500g Tray
240	UNIT POLYMER, THACHAMPALLY ROAD, MADHURAI	MIXED COVER 100 No. TRAY 500g No. FLOR TRAY-100 No.	Manufacture	Opening	MIXED COVER 100 No. TRAY 500g No. FLOR TRAY-100 No.
241	A R TRADER, A R TRADER KANNIAPPALLY P O SIVANUR POST THIRUUR	PLASTIC COVER-500g	Manufacture	Opening	PLASTIC COVER-500g
242	SARAI POLYMER, PODILAM P O THIRUUR DISTRICT	STRETCH FILM polypropylene -100g	Manufacture	Opening	STRETCH FILM polypropylene -100g
243	SARAI SRI RAM CENTER, KATTILAKOVAN P O THIRUUR	STRETCH FILM-100 No.	Manufacture	Opening	STRETCH FILM-100 No.
244	EVERSHINE PLASTIC, PILANAKARA THIRUUR	PLASTIC STRETCH-100 g	Manufacture	Opening	PLASTIC STRETCH-100 g
245	AVULAKKI PLASTIC INDUSTRIAL, MADAKKATANA P O NEEL VELANKARA, THIRUUR	PLASTIC PET-500g	Manufacture	Opening	PLASTIC PET-500g
246	SARAI POLYMER, P O THIRUUR KALLUR THIRUUR	PACKING COVER-500g	Manufacture	Opening	PACKING COVER-500g
247	LABOR GROUP NEAR VELLACODE CANAL, KODLOOR, MANDUR	PLASTIC COVER-500g	Manufacture	Opening	PLASTIC COVER-500g
248	WCP POLYMER INDUSTRIAL PRIVATE LIMITED, Ward No 7, Madurai, Thiruvannamalai Road/One of Pigea Company, Madurai 625 009 (Madurai)	PET-100 No. TRAY-100 No.	Manufacture	Opening	PET-100 No. TRAY-100 No.

274	AGRA PLAST ANGGARAN ANTANORONG P.O. TIRUPUR - 692011	ALL SIZE BOTTLE PLAST - 100kg	Manufacture	Exporting	ALL SIZE BOTTLE PLAST - 100 kg
275	ELURU TECHNOLOGICAL AYANOR P.O. TIRUPUR	FABRICATION CORNER-400 4 Nos	Manufacture	Exporting	FABRICATION CORNER-400 40 Nos
276	QUALITY POLY PACKAGING VALLE P.O TIRUPUR	PLASTIC BOTTLE & JARS - 1 Meter Tonne	Manufacture	Exporting	PLASTIC BOTTLE & JARS - 1 Meter Tonne
277	SULTAN PILLAYARHARI SP P.O MULLATHUR, KORLA-692012	PVC PIPES - 100 Kilogram, FITTINGS - 100 Kilogram	Manufacture	Exporting	PVC PIPES - 100 Kilogram, FITTINGS - 100 Kilogram
278	COMPOSITE POLYMER PROJECTS P.O MULAMINATHUR, AYI TIRUPUR	PLASTIC BOTTLES & JARS - 1 Meter Tonne	Manufacture	Exporting	PLASTIC BOTTLES & JARS - 1 Meter Tonne
279	AGRA INDUSTRIAL AGRA P.O. PUDUMALAM, TIRUPUR	FIBRE FLOATS - 100 Kilogram	Manufacture	Exporting	FIBRE FLOATS - 100 Kilogram
280	KALDI POLYMER THANGA COR P.O TIRUPUR - 692011	VALVE - 100 Nos, BOX - 100 Nos	Manufacture	Exporting	VALVE - 100 Nos, BOX - 100 Nos
281	UDAM PLASTIC MINDOR P.O. TIRUPUR - 692011	DICTION MOLDING - 40 Kilogram	Manufacture	Exporting	DICTION MOLDING - 40 Kilogram
282	MARIGAL PLASTIC INDUSTRIAL POLY P.O, MARIAMANGAL, TIRUPUR	GATHERING FITTING - 100 Nos	Manufacture	Exporting	GATHERING FITTING - 100 Nos
283	PERUM ENTERPRISE Agarwal, Yagoda- Cheluvu, P.O Cheluvu, Taluk 692011	Plastic Profiles - 100 Nos, Special Cases - 100 Nos	Manufacture	Exporting	Plastic Profiles - 100 Nos, Special Cases - 100 Nos
284	REPLANT INDUSTRIAL M.P.O. CHELUVU	PLASTIC MOLDING ITEMS - 100 Kilogram	Manufacture	Exporting	PLASTIC MOLDING ITEMS - 100 Kilogram

285	DTI INDUSTRIES/INDIA MILLY ROAD, COIMBATORE	LETTER COVER - 400 Nos/boxes TOILET SEAT - 70 Nos/boxes FLUOR TUBE - 70 Nos/boxes	Manufacture	Opening	LETTER COVER - 400 Nos/boxes TOILET SEAT - 70 Nos/boxes FLUOR TUBE - 70 Nos/boxes
286	Dr. P. Jayaram, Sankar P. O, Thiruvananthapuram - 695008	PLASTIC CONTAINERS - 400 Nos/boxes	Manufacture	Opening	PLASTIC CONTAINERS - 400 Nos/boxes
287	VALU BOTTLES/SHARADA M, THIRUVANANTHAPURAM, THIRUVANANTHAPURAM	PLASTIC BOTTLES - 1000 Nos/boxes	Manufacture	Opening	PLASTIC BOTTLES - 1000 Nos/boxes
288	ST. JOSEPH ENGINEERING WORKS/O RUTHERFORD, MEGGAYALAM, THIRUVANANTHAPURAM	ENGINEERING WORK (JOB WORK) - 100 Nos/boxes, JOB BUILT - 20 Nos/boxes, TRUSS WORK (JOB WORK) - 120 Nos/boxes, PLASTIC POTS - 100 Nos/boxes	Manufacture	Opening	ENGINEERING WORK (JOB WORK) - 100 Nos/boxes, JOB BUILT - 20 Nos/boxes, TRUSS WORK (JOB WORK) - 120 Nos/boxes, PLASTIC POTS - 100 Nos/boxes
289	SRM POLY BAGS UNIT 1200M No.10 NALANDU/PUJ KODAVY THIRUVANANTHAPURAM	WIRE WOVEN BAGS - 200 Nos/boxes, SUPPLY BAGS - 400 Nos/boxes	Manufacture	Opening	WIRE WOVEN BAGS - 200 Nos/boxes, SUPPLY BAGS - 400 Nos/boxes
290	EMERGENCY PACKS LLP/21 M Poly Park/LLP V R Power P.O. Chakkalakkudi	PACKING MATERIAL - 100 Nos/boxes	Manufacture	Opening	PACKING MATERIAL - 100 Nos/boxes
291	NAVAMUNITHI TRUST (INDIAPOLYMER) AMBIP.O., THIRUVANANTHAPURAM	PLASTIC BEADS - 300 Nos/boxes	Manufacture	Opening	PLASTIC BEADS - 300 Nos/boxes
292	AYYAPPA PLASTIC INDUSTRIES/MADHAVA ADHARA P.O, WEST YELLANAKKALA, THIRUVANANTHAPURAM	PLASTIC POTS - 500 Nos/boxes	Manufacture	Opening	PLASTIC POTS - 500 Nos/boxes

26	ARAB MANUFACTURERS TIPUNAWA, MELAKKARA, THIRUVA - 60011	PLASTIC FUNCTION MOLDING - 100 Number	Manufacture	Opening	PLASTIC FUNCTION MOLDING - 100 Number
27	WATER PLASTIC INDUSTRIES PLASTIC INDUSTRIES PILANUR, THIRUVA	CARPET STAND - 100 Number, PILANUR - 100 Number	Manufacture	Opening	CARPET STAND - 100 Number, PILANUR - 100 Number
28	MARIN PLASTIC P OLLAR	PLASTIC BOTTLES & CAP - 200 Number	Manufacture	Opening	PLASTIC BOTTLES & CAP - 200 Number
29	SHRI POLYMER UNIT SUDHY NER INDUSTRIAL ESTATE PONDICHERRY KALLA THIRUVA	PET BOTTLE - 1000 Number	Manufacture	Opening	PET BOTTLE - 1000 Number
30	SHRI POLYMER NO LEKKA INDUSTRIAL ESTATE P KOLLYVASSERY THIRUVA	PET BOTTLE - 1000 Number	Manufacture	Opening	PET BOTTLE - 1000 Number
31	ARUN PLASTICARY MAMU PLASTIC VINDHAR KADAVALLUR PACCHAYATI P KORATTIYALUR THIRUVA - 60011	PLASTIC CAP BOTTLE ETC. - 40 Kilogram	Manufacture	Opening	PLASTIC CAP BOTTLE ETC. - 40 Kilogram
32	PRVA POLYMER P VERY THIRUVA	PLASTIC COVERS - 100 Number, PLASTIC BAGS - 100 Number	Manufacture	Opening	PLASTIC COVERS - 100 Number, PLASTIC BAGS - 100 Number
33	DYNAMIC POLY PACKERS, KORANGATTURALL KUTTIYUR - VANADYAM BANGA THIRUVA	CROWN BAG - 100 Kilogram	Manufacture	Opening	CROWN BAG - 100 Kilogram
34	A STAR POLYMER LTD THIRUVA - 60011 VENKATARAMAN THIRUVA	PVC COMPONENT MOLD - 1 MATH Tonne	Manufacture	Opening	PVC COMPONENT MOLD - 1 MATH Tonne

383	PDA PLASTIC APPARATUS U P O PATIPARAN THIRUVALLUR DISTRICT	PLASTIC INDUSTRIAL - MS Chapter	Manufacture	Opening	PLA 500 - 2000 - 2000 - MS Chapter
384	RECTORIA PLASTICWARE PVC LTD DHAIRATTUR AV MOVA, THIRUVAI P.O., THIRUVAI	PLASTIC HOUSEHOLD ARTICLES AND PACKING MATERIALS - PVC Items Items	Manufacture	Opening	PLASTIC HOUSEHOLD ARTICLES AND PACKING MATERIALS - PVC Items Items
385	Cherai Polymers Technology Private Limited P.O. No. 25, LLP Appachan, Madhav P.O. Thiruvananthapuram	Resin Base - MS Chapter	Manufacture	Opening	Resin Base - MS Chapter
386	SHREYAS SOLUTIONS LLP MOVA VILAYATH ANNAKAVAYALUR	BAILED PLASTICS - MS Chapter	Manufacture	Opening	BAILED PLASTICS - MS Chapter
387	SMART PLASTIC SHEET MILLS, MSB INDUSTRIES, ESTATE, PUTTANMADHURAM, EL MOVA P.O., THIRUVAI	PVC BALL VALVES - MSB Number, PVC MOTOR COVERS - MSB Number, PVC FLOAT BALL - MSB Number	Manufacture	Opening	PVC BALL VALVES - MSB Number, PVC MOTOR COVERS - MSB Number, PVC FLOAT BALL - MSB Number
388	VELAZHAI SUNRISE AND RECLAMER PRIVATE LIMITED VILAYATH INDUSTRIAL DEVELOPMENT PLOT, MADHURAM P.O., THIRUVAI - 600041	Plastic Furniture & House Hold Items - 2 MSB Items	Manufacture	Opening	Plastic Furniture & House Hold Items - 2 MSB Items
389	AKK Plastic Private Limited, Vilethi Industrial Development Plot, Madhav P.O., Thiruvai - 600141	Injection Moulded Items - MS Chapter	Manufacture	Opening	Injection Moulded Items - MS Chapter
390	ET PLASTIC CHEMICALS MAYILADUTHURAI P.O ANNAPURAM, THIRUVAI - 600071	PVC PPE - MS Chapter	Manufacture	Opening	PVC PPE - MS Chapter

100	SELENGE POLYMER FROM BRYNDE LIMITED KELANTAN DISTRICT AMAL	PVC PIPE - 100 Kilogram	Manufacture	Exporting	PVC PIPE - 100 Kilogram
101	MELINDA MELINDA BINTONG, KABUPATEN KAMPUNG BANGS	MOLDING PLASTIC - 7 Kilogram	Manufacture	Exporting	MOLDING PLASTIC - 7 Kilogram
102	PLASTIK BANGUN PLASTIK YUNARANI NAGAL AMITABER	plastik moulding sheet - 40 Kilogram	Manufacture	Exporting	plastik moulding sheet - 40 Kilogram
103	NEW ERA PLASTIC PRODUCTS/INDUSTRI LADANGTALA PAU TIRISUR DISTRICT	JEWELLERY PACKING BOX - 200 Pesetas	Manufacture	Exporting	JEWELLERY PACKING BOX - 200 Pesetas
104	A. J. THIRUKA S THANES KARUKAYANDE PAU AYANDE PAU THIRUKA	PLASTIC ITEMS - 400 Kilogram	Manufacture	Exporting	PLASTIC ITEMS - 400 Kilogram
105	PUNJATHAN PLASTIKS THIRAKO TIRUKA, KECERU VIA, THIRUKA	PVC GARDEN PIPE - 170 Kilogram, RECYCLING PLASTIC - 100 Kilogram	Manufacture	Exporting	PVC GARDEN PIPE - 170 Kilogram, RECYCLING PLASTIC - 100 Kilogram
106	SELEK INDUSTRIES/AGUNAM PUTA, YAMBARA PAU THIRUKA	PVC PIPE - 80 Kilogram	Manufacture	Exporting	PVC PIPE - 80 Kilogram
107	VALLONKA PLASTIKS/THAMPURA TIRUKA VETTERAKKUP PULLEN CHIRAN	NEW MOLDING PLASTIC ITEMS - 20 Kilogram	Manufacture	Exporting	NEW MOLDING PLASTIC ITEMS - 20 Kilogram
108	PVC PLASTIKS/AGUSTHAN KENT PAU THIRUKA KIRAN	PVC FITTING - 100 Pesetas	Manufacture	Exporting	PVC FITTING - 100 Pesetas
109	UB PLASTIK/PERIYAN KENT PAU TIRUKA	PLASTIC CAN - 40 Kilogram	Manufacture	Exporting	PLASTIC CAN - 40 Kilogram
110	MARVA PLASTIK/VADAMA P TIRUKA VAL THIRUKA	MOLDING EXPLORER ITEM - 10 Kilogram	Manufacture	Exporting	MOLDING EXPLORER ITEM - 10 Kilogram

121	ELWA PULP/MOL/CYTOX, 127, ATTANINGAL, MADRAS PD.	PLASTIC WATER TANK, BARRE LIT - 400 Nos/lot BLW MOUNTED DRINKY AND WATER TANKS - 2 Nos/lot	Manufacture	Opening	PLA. TNC WATER TANK, BARRE LIT - 400 Nos/lot, BLW MOUNTED DRINKY AND WATER TANKS - 2 Nos/lot
122	ELWA PACKAGING JINDRA, MADRAS ROAD, ARAKATTURARA, DIST. SLEB - 09002	GLASS BOTTLES - 1000 Nos/lot, LIPS BOTTLES - 2000 Nos/lot	Manufacture	Opening	GLASS BOTTLES - 1000 Nos/lot, LIPS BOTTLES - 2000 Nos/lot
123	ET. KOSPA INDUSTRIAL/RENTAL LA, SOUTH THERAV, POOCHAR PULTRONCHI - 09001	PLASTIC PARTS OF PRESSURE COOLER AND ICE COOLER - 1000 Nos/lot	Manufacture	Opening	PLASTIC PARTS OF PRESSURE COOLER AND ICE COOLER - 1000 Nos/lot
124	ELWA PLASTIC/MEKATHI KARA P.O. NETTISSEY, TIRUCHI	PVC PIPES - 171 Nos/lot Tanks	Manufacture	Opening	PVC PIPES - 171 Nos/lot Tanks
125	ELWA PVC PIPE/NETTISSEY P O, MEKATTURKALA, TIRUCHI	PVC PIPES - 149 Nos/lot Tanks	Manufacture	Opening	PVC PIPES - 149 Nos/lot Tanks
126	ELWA PLASTIC/PREMIER PLASTIC PLOT NO-112 SEED INDUSTRIAL ESTATE/ILLUR TIRUCHI	PLASTIC CAP A/LIT - 20 Kilogram, PLASTIC WHEELS IN STEMS - 20 Kilogram	Manufacture	Opening	PLASTIC CAP A/LIT - 20 Kilogram, PLASTIC WHEEL IN STEMS - 20 Kilogram
127	ANNA PLASTIC & METALS INDUSTRIES/SEKKA S, ATTANINGAL PD MADRAS, TIRUCHI DIST.	PVC COOL FITTINGS - 1 Nos/lot	Manufacture	Opening	PVC COOL FITTINGS - 1 Nos/lot

328	PAKAI PLASTIK POKI MELAKS, APTI ANDU BIKIN PAMAYOR, TIRING B. OT.	PVC DOOR FITTING - 17 Kilogram	Manufacture	Opening	PVC DOOR FITTING - 17 Kilogram
329	IRAMA, PET PENGALAPAN KAYALY THROGON	PET BOTTLE - 2000 Number	Manufacture	Opening	PET BOTTLE - 2000 Number
330	POLYURE BENTUNG PLAT MELAKS D. OF YULABODOL, M. NOKOR, M. TIRING B. OT.	PVC BOARDING TIRING - 1000 Number	Manufacture	Opening	PVC BOARDING TIRING - 1000 Number
331	TREKOR PLASTIC INDUSTRIAL - 8 GALON, PERMUTAM, ESTATE GELIN, PD	PLASTIC PRODUCTS - 175 Kilogram	Manufacture	Opening	PLASTIC PRODUCTS - 175 Kilogram
332	PEYLA PERYBERGONVONT BONG CINTYANAM P. O. TIRING B.	PLASTIC CAP AND LID - 10 Kilogram, CONTAINERS - 20 Kilogram, BUCKET - 100 Kilogram, OTHER PLASTIC WELDED ITEMS - 10 Kilogram	Manufacture	Opening	PLASTIC CAP AND LID - 10 Kilogram, CONTAINERS - 20 Kilogram, BUCKET - 100 Kilogram, OTHER PLASTIC WELDED ITEMS - 10 Kilogram
333	PEYLA PLASTIC GONVONT BONG CINTYANAM P. O. TIRING B.	BUCKET - 10 Kilogram, PLASTIC CAP - 10 Kilogram, BUCKET - 10 Kilogram, DIRECTION MOLDING ITEMS - 10 Kilogram	Manufacture	Opening	BUCKET - 10 Kilogram, PLASTIC CAP - 10 Kilogram, BUCKET - 10 Kilogram, DIRECTION MOLDING ITEMS - 10 Kilogram
334	PEYLA PLASTIK POKI KURTIKAKARA PERPONDOKAN MAGALAYANARA TIRING B.	PLASTIC CAP - 10 Kilogram, CONTAINERS - 100 Kilogram, LID, OTHER PLASTIC WELDED ITEMS - 10 Kilogram	Manufacture	Opening	PLASTIC CAP - 10 Kilogram, CONTAINERS - 100 Kilogram, LID, OTHER PLASTIC WELDED ITEMS - 10 Kilogram

325	PES POLYMER KILASAN KAWA YAMAPULAN P-0 TIRISAN	TRAY TRAY MOLDING ITEMS - 100 Kilogram PLASTIC CAP - 50 Kilogram CONTAINERS - 50 Kilogram MOC - 50 Kilogram	Manufacturer	Opening	EXHAUSTION MOC - 100 Kilogram TRAY - 100 Kilogram PLASTIC CAP - 50 Kilogram CONTAINERS - 50 Kilogram MOC - 50 Kilogram
326	NOVA PLASTIC & POLYMER PARAFFIN KAWA P-0, TIRISAN, KORAL & BUBBE	PLUMBING FITTINGS - 100 Number TOILET SEAT & COVER - 50 Number	Manufacturer	Opening	PLUMBING FITTINGS - 100 Number TOILET SEAT & COVER - 50 Number
327	MS- 10 POLYESTER INDUSTRIAL DEVELOPMENT PLOT, ALPOMALLAN TIRISAN	PLASTIC PRODUCT - 50 Number	Manufacturer	Opening	PLASTIC PRODUCT - 50 Number
328	AGRI PRODUCTS ARABAN & KANDAWANAGANG U-0 TIRISAN	PVC PIPELINES - 20 Kilogram	Manufacturer	Opening	PVC PIPELINES - 20 Kilogram
329	AMRAY PLASTIC, HAWKAY LIGHT P-0 & CUBAN TIRISAN	PLASTIC CONTAINERS - 200 Number	Manufacturer	Opening	PLASTIC CONTAINERS - 200 Number
330	TRICAL DOOR AND MOE, STEEL & INDUSTRIAL METAL, PERUNGAROOD P-0	PLASTIC MOC - 40 Kilogram	Manufacturer	Opening	PLASTIC MOC - 40 Kilogram
331	PERFECT DINA & TERRA PACT NOVA, ATTARUNOOL P-0 BIRIKAN, TIRISAN 01	BATHROOM FITTINGS - 100 Kilogram	Manufacturer	Opening	BATHROOM FITTINGS - 100 Kilogram
332	TRICAL POLYESTER PERAMAN GALAN P-0 TIRISAN	WATER TANK - 20 Number	Manufacturer	Opening	WATER TANK - 20 Number
333	NOVA PLASTIC, HAWKAY & CUBAN, TIRISAN	DIFFERENT MOLDING PRODUCTS - 10 Kilogram	Manufacturer	Opening	EXHAUSTION MOC - 100 Kilogram

344	TJ PLASTIC IN THE NEW INDUSTRIAL ESTATE VALLATHOMPA PANGASER THURUR	PLASTIC BOTTLES - 200 Number, CHERRA BOTTLES - 100 Number	Manufacture	Opening	PLASTIC BOTTLES - 200 Number, CHERRA BOTTLES - 100 Number
345	POLYER INDUSTRIAL AREA DUMPA P.O PANGASER THURUR	POLYTHENE BAGS - 200 Number	Manufacture	Opening	POLYTHENE BAGS - 200 Number
346	SOUTHERN PLASTIC CONTAINERS (P) LITTEHARLATTUR BY ROAD, THALASSER P.O. THURUR	PLASTIC HOUSE HOLD ARTICLES - 1 Metric Tonne	Manufacture	Opening	PLASTIC HOUSE HOLD ARTICLES - 1 Metric Tonne
347	SOUTHERN POLY PLASTIC PRODUCTS PVT LTD THALASSER P.O. THURUR	PLASTIC HOUSE HOLD ARTICLE - 500 Kilogram	Manufacture	Opening	PLASTIC HOUSE HOLD ARTICLE - 500 Kilogram
348	SOUTHERN CONDENSING PLASTIC THALASSER INDUSTRIAL ROAD THALASSER P.O THURUR	PLASTIC HOUSE HOLD ARTICLE - 500 Kilogram	Manufacture	Opening	PLASTIC HOUSE HOLD ARTICLE - 500 Kilogram
349	SOUTHERN POLYTHENE THALASSER TURKEY ROAD, THALASSER P.O. THURUR	PLASTIC HOUSE HOLD ARTICLES - 1 Metric Tonne	Manufacture	Opening	PLASTIC HOUSE HOLD ARTICLES - 1 Metric Tonne
350	SOUTHERN PLASTIC INDUSTRIES THALASSER TURKEY ROAD THALASSER P.O	PLASTIC HOUSE HOLD ARTICLES - 1 Metric Tonne	Manufacture	Opening	PLASTIC HOUSE HOLD ARTICLES - 1 Metric Tonne
351	SOUTHERN COCHIN PLASTIC INDUSTRIES THALASSER P.O. THURUR	PLASTIC HOUSE HOLD ARTICLES - 1 Metric Tonne	Manufacture	Opening	PLASTIC HOUSE HOLD ARTICLES - 1 Metric Tonne
352	JNT INDUSTRIES VILLAGE VILLAGE P.O. BENNAKUNDA, CHERANJUR DISTRICT - MADURAI	SOUTHERN INDUSTRIES BAGGETS - 10 Number, MADURAI - 10 Number	Manufacture	Opening	SOUTHERN INDUSTRIES BAGGETS - 10 Number, MADURAI - 10 Number

270	Q Y K COMPANY SDP KEMAMILLAM THIRUVER	PLASTIC PRODUCTS RSD 1000 - 100 Kiloqram	Manufacture	Exporting	PLA. SEC PRODUCTS RSD 1000 - 100 Kiloqram
271	INDIA INDUSTRIES VAYALAM PETA MALAYALIPURAM P.O. MALA, THIRUVER	Sample Container - 400 Kilogram PACKING MATERIAL - 100 Kilogram	Manufacture	Exporting	Sample Container - 400 Kilogram PACKING MATERIAL - 100 Kilogram
272	LAHINE PLASTIC LAHINE PLASTIC, HILLARY P.O. THIRUVER ARAM	PLASTIC CUPS - 500 Kilogram	Manufacture	Exporting	PLASTIC CUPS - 500 Kilogram
273	SACCHI POLYMER LAKSHMI & PILLAIKAL	PLASTIC BOTTLES - 100 Kilogram	Manufacture	Exporting	PLASTIC BOTTLES - 100 Kilogram
274	INDIA RUBBER, I.D INDUSTRIAL DEVELOPMENT PVT. PERINJANM, THIRUVER ARAM	PLASTIC MOLDS FOR INDUSTRIAL FIELD - 1000 Number	Manufacture	Exporting	PLASTIC MOLDS FOR INDUSTRIAL FIELD - 1000 Number
275	M/S. ELECTRO PLASTIC PVT. LTD KUCHIERY VIA THIRUVER	PVC PIPE FITTINGS - 100 Kilogram	Manufacture	Exporting	PVC PIPE FITTINGS - 100 Kilogram
276	GLORY INDUSTRIAL KALA KUMARILAKSHTH INDUKKALA, NH 17 JERAMBAI SEVIL STATION	not profiled for number - 2000 Kilogram	Manufacture	Exporting	not profiled for number - 2000 Kilogram
277	Q Y PLASTIC LAHINE P CLASSER KEMAMILLAM, THIRUVER	PLASTIC COATED ARTICLES - 100 Kilogram	Manufacture	Exporting	PLASTIC COATED ARTICLES - 100 Kilogram
278	Q Y POLYMER KALLAYIL KUMAR ROAD P.O CHENNAI KEMAMILLAM	PLASTIC COATING POWDER - 200 Kilogram	Manufacture	Exporting	PLASTIC COATING POWDER - 200 Kilogram
279	PETA HINDI PLASTIC KALLI P.O. THIRUVER	PLASTIC ARTICLE - 1 Metric Tonne	Manufacture	Exporting	PLASTIC ARTICLE - 1 Metric Tonne
280	Thyagaraj Manufacturing	VIRGIN PLASTIC PRODUCTS - 100 Kilogram	Manufacture	Exporting	VIRGIN PLASTIC PRODUCTS - 100 Kilogram

264	KARLAI DEKHTHOLP KORPUSA, PANNARU, THIRUVA	PLASTIC CONTAINERS = 100 Numbers	Medicine	Opening	PLASTIC CONTAINERS = 100 Numbers
265	A ONE PLASTIC, PANNARU P U THIRUVA DISTRICT	PLASTIC BOTTLE CLIPS = 200 Numbers	Medicine	Opening	PLASTIC BOTTLE CLIPS = 200 Numbers
266	VENTALAYYIN KANNAYANCOOR NANI INDUSTRIAL ESTATE, TALAPALLY THIRUVA	PVC FITTINGS = 200 Numbers, P.V.C. FITTINGS 2 = 200 Numbers	Medicine	Opening	PVC FITTINGS = 200 Numbers, P.V.C. FITTING 20 = 200 Numbers
267	M K PROJECTS, VAYANELL PATTI INDUSTRIAL ESTATE, MADHURAI PATTI	PLASTIC BOTTLED ITEMS = 50 Kilograms	Medicine	Opening	PLASTIC BOTTLED ITEMS = 50 Kilograms
268	KARTIYAN PROJECTS, PVT LTD, IRRP INDUSTRIAL ESTATE KELUR THIRUVA, 680004	HOUSE HOLD PLASTIC ITEMS = 200 Kilograms	Medicine	Opening	HOUSE HOLD PLASTIC ITEMS = 200 Kilograms
269	SAPLE PLASTIC & METAL, PLOT NO 40/2/1/1, CHANNI ARLA, ATTANANGUL P. U, THIRUVA, THIRUVA	PVC BOTTLES FOR MEDICAL CONENT TUBES & PASTIC BOTTLES = 200 Kilograms	Medicine	Opening	PVC BOTTLES FOR MEDICAL CONENT TUBES & PASTIC BOTTLES = 200 Kilograms
270	LAKSHMI INDUSTRIES, HILLAR 100, KORUMBU, VILLAGE 100A, P. U, PANNARU, THIRUVA, TAMILNADU, INDIA	PLASTIC BOTTLES = 200 Kilograms	Medicine	Opening	PLASTIC BOTTLES = 200 Kilograms
271	VICTORY PROJECTS, VICTORY PROJECTS, MADRAS, AREA P. U, MADRAS	PLASTIC CAN = 200 Numbers	Medicine	Opening	PLASTIC CAN = 200 Numbers
272	KANNIA PLASTIC INDUSTRIES, PLOT NO P. U, THIRUVA, 680004	PLASTIC WATER TANK = 20 Numbers, PLASTIC SEPTIC TANK = 1 Number	Medicine	Opening	PLASTIC WATER TANK = 20 Numbers, PLASTIC SEPTIC TANK = 1 Number

275	MADEIRA POLYMER, VELLARA ROAD, P. O. VELLARA KAD	GREEN TONE + 1000 kg/bale	Manufacturer	Opening	GREEN TONE + 1000 kg/bale
276	SYLOR PLASTIC, PLOOR PLASTIC VELLANTARA P.O. THIRUVAR - 686 607	BOTTLES - 1000 Numbers, CAPS - 1000 Numbers, BUBBLING - 1000 Numbers	Manufacturer	Opening	BOTTLES - 1000 Numbers, CAPS - 1000 Numbers, BUBBLING - 1000 Numbers
277	ARITHYA POLYMER MADURAI & PULAM P.O., CHIDAMBUR, TAMILNADU	PACKING MATERIAL - 80 Kilogram	Manufacturer	Opening	PACKING MATERIAL - 80 Kilogram
278	SPARK ENGINEERING, VETTER, ATTU P O, NELLE VETTER, VETTER, KOLATHUR	DISCONNECT & CONNECTOR CAP. No. - 600 Numbers	Manufacturer	Opening	DISCONNECT & CONNECTOR CAP. No. - 600 Numbers
279	INDIA'S PLASTIC, NEAR SATHANGA MATTA, CHERU, P.O. VELLANTARA, THIRU V. VARADAR	PET BOTTLES - 1000 Numbers	Manufacturer	Opening	PET BOTTLES - 1000 Numbers
280	V-TECH ENGINEERING, KATTI PUL, P.O. PALLATHUR, CHEN NAIUR	PLASTIC BOTTLE - 500 Numbers, BUBBLING BOTTLE - 500 Numbers	Manufacturer	Opening	PLASTIC BOTTLE - 500 Numbers, BUBBLING BOTTLE - 500 Numbers
281	VEL Polymer Private Limited, 213/202, Kavayana, Kumbhari P O, Thiruv - 686021	Plastic Water Storage tanks of various capacity P O Kiln-Lines	Manufacturer	Opening	Plastic Water Storage tanks of various capacity P O Kiln-Lines
282	EXCEL POLYMER, KADURU TYP O, CHIDAMBUR VIA	MELTED PLASTIC - 1 Kilogram	Manufacturer	Opening	MELTED PLASTIC - 1 Kilogram
283	CAN TECH PLASTIC CAN TECH PLASTIC, MADRAS, P.O. MADRAS, KANN	PLASTIC CAN - 500 Numbers	Manufacturer	Opening	PLASTIC CAN - 500 Numbers
284	SENTHINAYAR POLYMER, VELLAR CHIRUKAM, THAYYAR, P.O., THIRUVAR	PVC FITTING S - 100 Kilogram	Manufacturer	Opening	PVC FITTING S - 100 Kilogram

383	POLYMER MEMBRANES P CLAYTON, THIRUVAR UR	MULTI LAYER POLYPROPYLENE FILM - 1.5 Meters Tons	Manufacture	Exporting	MULTI LAYER POLYPROPYLENE FILM - 1.5 Meters Tons
384	DECK MACHINE SERVICE PARTS L PUMPS, WHEELS, SPINDLES, P L, THROTTLE VALVES	Injection moulded & steel moulded articles - 10 Kilograms, Electrical wiring of mould machines - 1 Tonnes	Manufacture	Exporting	Injection moulded & steel moulded articles - 10 Kilograms, Electrical wiring of mould machines - 1 Tonnes
385	MR. PLAYS, P.O. CO ARAKKAL, PONDICHERRY DISTRICT	PACKING GENI - 3000 Tonnes	Manufacture	Exporting	PACKING GENI - 3000 Tonnes
386	MITRA PLASTIC MACHINERY, MADRAS, KERALA ROAD	PLASTIC GENI - 100 Tonnes, PLASTIC CARPET - 20 Tonnes	Manufacture	Exporting	PLASTIC GENI - 100 Tonnes, PLASTIC CARPET - 20 Tonnes
387	YINCE POLYMER BRUSH MADRAS, CHENNAI P.O. DISTRICT ROAD	POLYMER COVER - 100 Kilograms	Manufacture	Exporting	POLYMER COVER - 100 Kilograms
388	P V SUNLAMP PALAM ADARTHAI, ARANTHUR P.O. MADRAS	Single Cover - 2000 Tonnes	Manufacture	Exporting	Single Cover - 2000 Tonnes
389	S. S. PLASTIC S PLASTIC P MADRAS, MADRAS	FABRICATED ITEMS - 20 Kilograms	Manufacture	Exporting	FABRICATED ITEMS - 20 Kilograms
390	ATLAS INDUSTRIES, Vengaloor, P.O. Changan, Topp Angamoodi, Thiruv UR	Specialty Cases - 200 Tonnes	Manufacture	Exporting	Specialty Cases - 200 Tonnes
391	DR INDUSTRIAL PARTS MADRAS CLAYTON, THIRUVAR UR	PLASTIC PRODUCTS - 10 Kilograms	Manufacture	Exporting	PLASTIC PRODUCTS - 10 Kilograms
392	MADE BY DISTRIBUTION MADRAS, KERALA ROAD, MADRAS P.O., THIRUVAR	PLASTIC MATERIAL ITEMS - 2000 Tonnes	Manufacture	Exporting	PLASTIC MATERIAL ITEMS - 2000 Tonnes

404	GARDA PLASTIC CHAMBERLAIN S.R. W/O. SATHYAN, ELAKKATTI MOOR, KARAKAMALA (P.O.), VATTARAHI THIRUVA.	P.V. CUTTING 5 - 100 Kilogram	Manufacturer	Opening	E.V.C. JETTY 05 - 100 Kilogram
405	KYARA PLASTIC SMOCKETS P.O. TRAYVANDHANAM THIRUVA.	LATER COLLECTION CUP - 400 Kilogram	Manufacturer	Opening	LATER COLLECTION CUP - 400 Kilogram
406	SEI PLASTIC BAGLASH P.O. THIRUVA.	RECYCLED PLASTIC GRANULES - 400 Kilogram	Recycler	Opening	RECYCLED PLASTIC GRANULES - 400 Kilogram
407	DELLAACHRI PRAKRTI MADHURAN J.M.P. O. THIRUVA.	CONDENSED MILK - 100 Kilogram	Recycler	Opening	CONDENSED MILK - 100 Kilogram
408	Aravali Plastic Company P.O. Kottayam, Thiruv va.	Plastic Granules - 100 Kilogram	Recycler	Opening	Plastic Granules - 100 Kilogram
409	SEI INDUSTRIAL ALUMINA CLUST. PFC. ROAD KORUKKALAM P.O. (K.A.P.O.)	Recycled Plastic Granules - 100 Kilogram	Recycler	Opening	Recycled Plastic Granules - 100 Kilogram
410	SEI PLASTIC MADHURAN SARAYO MADHURAYAR THIRUVA.	RECYCLED PFC - 200 Kilogram	Recycler	Opening	RECYCLED PFC - 200 Kilogram
411	NOVA PLASTIC RUBBER KILN THIRUVA.	PLASTIC GRANULES FROM SCRAP - 100 Kilogram	Recycler	Opening	PLASTIC GRANULES FROM SCRAP - 100 Kilogram
412	ELFABBY PLASTIC SURCH BENTRAL PARK ATHAN, P.O. PERUNGAVUR THIRUVA.	PLASTIC GRANULES FROM SCRAP - 100 Kilogram	Recycler	Opening	PLASTIC GRANULES FROM SCRAP - 100 Kilogram
413	SH KAPU PLASTIC SURCH BENTRAL PARK ATHAN, P.O. PERUNGAVUR, ATHAN THIRUVA.	PLASTIC GRANULES FROM SCRAP - 100 Kilogram	Recycler	Opening	PLASTIC GRANULES FROM SCRAP - 100 Kilogram
414	HYLAN MACHINERY THIRUVA Y.P.O. THIRUVA.	WREATH PFC PFC - 400 Kilogram	Recycler	Opening	WREATH PFC PFC - 400 Kilogram

	PLA PLASTIC WILLA CITRABHARAN KORRI ANCHERY KUNJATHANA P J A ROAD STREET THIRUVARUR 60006	PLASTIC GRANULES - 20 Kilograms PLASTIC INDUSTRIES MADURAI TIRUAI - 600 Kilograms	Supply	Quantity	PLASTIC GRANULES - 20 Kilograms PLASTIC INDUSTRIES MADURAI TIRUAI - 100 Kilograms
415					
416 G.M. M.L.C.	M/S DUM DUM POLYMERS	1.00	MLP	OPERATING	1.00
417	KALYS PLASTPACK	1.1	MLP	OPERATING	1.1
418	S S CONSUMERS	4.72	MLP	OPERATING	4.72
419	KATHIRAYY PACKAGING	0.25	MLP	OPERATING	0.25
420	SWATHI PACKAGING	0.280	MLP	OPERATING	0.28
421	EVERGREEN PRODUCTS	0.6	MLP	OPERATING	0.60
422	GEMINI PLASTICS	1.25	MLP	OPERATING	1.25
423	ACIS BICAL PRODUCTS	1.37	MLP	OPERATING	1.37
424	SHIVA POLYMERS	1.1	MLP	OPERATING	1.1
425	ANVI INDUSTRIES	0.80	MLP	OPERATING	0.80
426	TECHNOMAN	0.16	MLP	OPERATING	0.16
427	DEVINI POLYMER INDUSTRIES	0.22	MLP	OPERATING	0.22
428	ARUNA BLEND PACER	0.27	MLP	OPERATING	0.27
429	PAALANI POLYMERS	0.4	MLP	OPERATING	0.40
430	SARANGI INDUSTRIES	0.28	MLP	OPERATING	0.28
431	CONTOY INDUSTRIAL PRODUCTS	1.00	MLP	OPERATING	1.00
432	DEEPA STAR PACKAGING	0.18	MLP	OPERATING	0.18
433	ALPHA PACKAGING INDUSTRIES	0.1	MLP	OPERATING	0.10
434	THIRU PLASTIC INDUSTRY	0.68	MLP	OPERATING	0.68
435	SURYA FINE PRINTS	0.205	MLP	OPERATING	0.20
436	MALABAR METAL INDUSTRIES	1.1	MLP	OPERATING	1.1
437	INDUSTRIES	1.10	MLP	OPERATING	1.10
438	REYESH MAKER	0.11	MLP	OPERATING	0.11
439	SANCO	0.03	MLP	OPERATING	0.03
440	ROYAL TARPALAN INTERNATIONAL PVT	0.15	MLP	OPERATING	0.15
441	INDUSTRIES	0.26	MLP	OPERATING	0.26

442	ARIAL INDUSTRIES	8.22	MLP	OPERATING	9.11
443	EVERGREEN INDUSTRIES	1.78	MLP	OPERATING	2.11
444	NATIONAL PAPER	9.22	MLP	OPERATING	9.22
445	FUTURE PLAST	1.22	MLP	OPERATING	1.22
446	EVERGREEN INDUSTRIES	1.04	MLP	OPERATING	1.04
447	FLAVORINGS INTERNATIONAL	1.03	MLP	OPERATING	1.03
448	INTERNATIONAL TARPAN COMPANY	6.11	MLP	OPERATING	6.11
449 KAMA BDO PL	MOOR PLASTIC		PLASTIC SHEET & PILES OF DIFFERENT DIAMETER	Opening	55 Kg
450	ALPHA BLOWING UNIT		PLASTIC BOTTLES	Opening	12000 numbers per
451	KAPURJI PLASTPACKS PVT LTD		PLASTIC PACKING BAGS & PLASTIC CARRY BAGS	Opening	600 Kg wet 200 Kg
452	RAVISHA POLYMERS		PLASTIC TANK	Temporarily closed	300 numbers
453	TRILAKSHI TARPOLING		DIFFERENT SIZE OF SHEETS	Opening	110 Kg
454	KAPURJI AGRO NETS		POPE SIDE NETS	Temporarily closed	200Kg
455	SUPREME TRACTORS		COVERINGS OF VEHICLES	Opening	50 Kg
456	ALPHA BLOWING UNIT		PLASTIC BOTTLES	Opening	10000 numbers per
457	MTSRA ENTERPRISES		BAGS	Temporarily closed	150 Kg
458	SHANDA PLASTICS		PLASTIC BOTTLE MANUFACTURING UNIT	Opening	5000 numbers
459	SHARDA PLASTICS		PLASTIC CONTAINERS	Opening	200 numbers
460	WINDHAM KASHI ENTERPRISES		ICE CREAM FOOD GRACKS CONTAINERS	Opening	4000/day
461	MALABAR TRADING		STUFFED PLASTIC	Temporarily closed	300 Kg
462	TEXAS PWD INDUSTRY		PLASTIC FLAKES	Temporarily closed	400 Kilogram 1day
463	LODGE POLYTECHS PVT LTD		POLYTHENE SHEETS & COVERS	Temporarily closed	200 Kg
464	NATIONAL TRADING COMPANY		POLYURETHANE FOOTWEAR	Temporarily closed	300 Numbers
465 Waste and I	Waste description	200kg/day	Biodegradable carry bags	Opening	200kg/day
466	Apple tree bags	100 kg/day	Non Biodegradable carry bags	Closed	100 kg/day
467	CF Bags	5kg	PP bags	Opening	5kg/day
468	MSO Pw collection	200numbers	PET BOTTLES	Closed	200kg/day
469	Plastic pack	4000 pieces/day	polyester bag	Opening	4000 pieces/day

476	Melaleuca and Eucalyptus seed	100 kg/box	seed cones, empty bags	Closed	100 kg/box
477	Animal Slippers	100 kg/box	seed cones, empty bags, seed cones, seeds	Closed	100 kg/box
478	Alum	200 kg/box	paper tubes, paper roll	Opening	
479	Iron Oxide Red	200 kg/box	oxidized iron	Closed	200 kg/box
480	Anti Oxidant Products	100 kg	Empty bag, Heavy bags, Garbage bag	Opening	100 kg
481	FACE DOME ROOF PANEL	2000 kg/box	Flexible	Opening	2000 kg/box
482	United polymer Resin	0.2 TPD	Flexible	Opening	0.2 TPD
483	MINERAL PLASTIC	100 kg/box	Rigid	Opening	100 kg/box
484	UNION PET	2000 kg/box	Rigid	Closed	2000 kg/box
485	INDUSTRIAL GRADE	10 kg/box	Rigid	Opening	10 kg/box
486	INDUSTRIAL GRADE PRODUCTS	100 kg/box	Flexible	Opening	100 kg/box
487	SDS FORMER	120 kg/box	Rigid	Opening	120 kg/box
488	UPAN INDUSTRIAL	0.4 TPD	Flexible	Opening	0.4 TPD
489	SDS COMPONENTS	1000 kg/box	Rigid	Opening	1000 kg/box
490	COOLING BAG FABRIC POLYPROPYLENE	10000 TPD	Flexible	Opening	10000 TPD
491	GRAIN PAPER	0.2 TPD	Rigid	Closed	0.2 TPD
492	Industrial Resin for PET	1000 kg/box	Flexible	Closed	1000 kg/box
493	LAND MARK INDICATORS	100 kg/box	Rigid	Opening	100 kg/box
494	0.2 TPD INDUSTRIAL MATERIALS AND KUTTING	4 kg/box	Flexible	Closed	4 kg/box
495	CLAY IN RUBBER PRODUCTS	2000 kg/box	Flexible	Opening	2000 kg/box
496	Stone indicators	0.20 TPD	Rigid	Opening	0.20 TPD
497	KARALI POLY PET LTD	0.2 TPD	Flexible	Opening	0.2 TPD
498	Industrial Tissue Paper	2000 kg/box	Rigid	Opening	2000 kg/box
499	SAFETY TIE UP MATERIALS	0.200 TPD	Flexible	Opening	0.200 TPD
500	INDUSTRIAL RUBBER PRODUCTS	2000 kg/box	Flexible	Opening	2000 kg/box
501	INDUSTRIAL RUBBER INTERNATIONAL PVT LTD	2000 kg/box	Flexible	Opening	2000 kg/box
502	INDUSTRIAL ELASTOMERS PVT LTD UNIT 2	10000 kg/box	Flexible	Opening	10000 kg/box
503	INDUSTRIAL RUBBER POLYMER	1.8 TPD	Rigid	Opening	1.8 TPD
504	INDUSTRIAL RUBBER LTD	200 kg/box	Flexible	Opening	200 kg/box
505	INDUSTRIAL RUBBER PRODUCTS	2000 kg/box	Flexible	Opening	2000 kg/box
506	KARALI PET	2000 kg/box	Rigid	Closed	2000 kg/box

80	INDIC PLASTIC INDUSTRIES	1000 K/Dag	Open	Opening	1000 K/Dag
81	CH PLASTIC	100 TON	Open	Opening	100 TON
82	IND PLASTIC	10000 K/Dag	Open	closed	10000 K/Dag
83	MIL ALFA PLASTICS	Plastic Waste - 100 Kilogram Plastic Waste - 100 Kilogram Cotton Fibre - 10 Kilogram	Recycle	Opening	
84	MIL STAR PLASTIC	Plastic Waste 100 - 100 Kilogram	Recycle	Opening	
85	MIL FORTIMA PLASTICS	Waste plastic - 100 Kilogram	Recycle	Opening	
86	MIL P.E. PLASTIC	Waste plastic - 100 Kilogram	Recycle	Opening	
87	MIL P.H. PLASTIC	Plastic Waste 100 Kg	Recycle		
88	MIL E.K.M. PLASTICS	Waste Plastic - 100 Kilogram	Recycle		
89	MIL EVERSHINE PLASTICS	Plastic Waste - 10 Kilogram Waste Plastic - 10 Kilogram Tissue	Recycle	Opening	
90	MIL C.A.T. PLASTIC	Waste Plastic - 4	Recycle	Opening	
91	MIL P.H. PLASTIC SUPPLIERS/IND	Plastic Waste - 100 Kilogram	Recycle		
92	MIL MONTWATTAH PLASTICS	Waste plastic - 10 Kilogram Tissue	Recycle	Opening	
93	MIL IFA PLASTIC	Waste Plastic - 10 Kilogram Tissue	Recycle	Opening	
94	MIL A.CHE BOTTLES & PLASTIC	Waste Plastic - 10 Kilogram Tissue	Recycle	Opening	
95	MIL CROSS PLASTIC	Waste plastic -	Recycle	closed	
96	MIL BIRWAN PLASTIC	Waste Plastic -	Recycle		
97	MIL PLASTIC INDUSTRIES	Waste Plastic Plastic & Cotton after use 100 Kilogram	Recycle		
98	MIL S.M.P. PLASTIC INDUSTRY	Plastic Waste 20	Recycle	Opening	
99	PLASTIC	Plastic Waste 20	Recycle	Opening	

301	MS. TAMILA PLASTIC	Waste Plastic - 1 Sample	Sample	Chemical	
302	MS. YAMBA PLASTIC	Waste Plastic - 1 Sample	Sample	Chemical	
303	MS. SUPREEM PLASTIC	Plastic bag - 1 Sample	Sample		
304	MS. YAYORONG PLASTIC	Plastic Cup - 1 Sample	Sample	Chemical	
305	MS. SIBIRIA PLASTIC	Plastic bag - 1 Sample	Sample	Chemical	
306	MS. ADYARD PLASTIC	Waste Plastic - 1 Sample			
307	MS. KALIMATTAM PLASTIC BOTTLES	Plastic cup - 100 Kilogram Plastic Furniture - 500 Kilogram	Sample		
308	MS. PELA PLASTIC	Waste Plastic - 1 Sample	Sample	Chemical	
309	MS. HICKORY PLASTIC	Plastic bag - 1 Sample	Sample	Chemical	
310	MS. BIFA PLASTIC	Waste Plastic - 1 Sample	Sample	Chemical	
311	MS. PLASTIC	Plastic bag - 1 Sample	Sample	Chemical	
312	MS. NY PLASTIC WIPER	Waste plastic - 1 Sample	Sample		
313	MS. NY MEDIA PLASTIC	Waste Plastic - 1 Sample	Sample		
314	MS. GARD PLASTIC	Waste plastic - 1 Sample	Sample	Chemical	
315	MS. DEBRIMA PLASTIC	PVC film with seal virgin plastic - 200 Kilogram	Sample	Chemical	
316	MS. NAYE PLASTIC	Plastic cup - 100 Kilogram	Sample		
317	MS. BEPO PLASTIC	Waste plastic - 100 Kilogram	Sample		
318	MS. KITTALUWYU POLYMER	Waste plastic - 100 Kilogram	Sample		
319	MS. CHEBALATTA POLYMER	Waste plastic - 100 Kilogram Tissue	Sample		
320	MS. PITHAN POLYMER	Waste Plastic - 100 Kilogram	Sample		
321	MS. LAYED POLYMER	Plastic with 4 Kilogram Tissue	Sample		
322	MS. CANTILASAMBI POLYMER	Waste plastic - 10 Kilogram Tissue	Sample	Chemical	
323	MS. GARD POLYMER	Plastic with 10 Kilogram Tissue	Sample	Chemical	
324	MS. SIBIRIA POLYMER	Waste Plastic - 100 Kilogram	Sample	Chemical	

345	MIL-BN FILMINGS	Plastic Coatings 400 Kilogram Poly-Propy- lene 500 Kilogram	Recycle		Germany	
346	MIL-DEER POLYMERS	Plastic waste: 11 Bags Toner	Recycle			
347	MIL-DEWAROCK PP PRODUCTS	Group Paper - 200 Kilogram	Recycle			
348	MIL-UNITED HOLDINGS	Plastic Bags 1000 Kilogram	Recycle		Germany	
349	MIL-UNITED POLYMERS	Plastic waste: 5-10 More Toner	Recycle		Germany	
350	MIL-VEKOLA POLYMERS	Plastic Waste: 1-10 More Toner	Recycle			
351	MIL-MALAYATIRU POLYMERS	WPE, LRP RECYCLED LUMP & PP Concrete - 40 Kilogram	Recycle		Germany	
352	MIL-DIAMOND POLYMERS	RTIC RECYCLED 1-2 More Toner	Recycle		Germany	
353	MIL-P M PLASTIC	Plastic Bags Sheds - 1 - 400 Kilogram Plastic Bags Sheds - 12 70 Kilogram	Recycle		Germany	
354	MIL-DADI POLYMERS		Recycle			
355	MIL-ADIRAN PLASTIC		Recycle			
356	MIL-MALABAR POLYMERS		Recycle			

Annexure-VII (Column 3)

Details of violations & action taken on non-compliance of provisions of PWM Rules, 2016, as amended, 2018








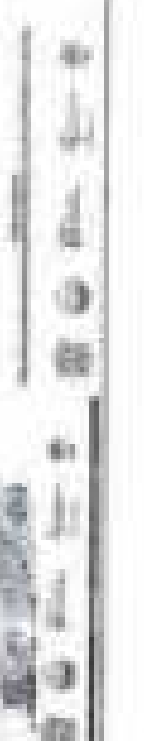

S.No.	Provision	Violation	Nature of Violation	Action taken
433)	Every bag made of virgin or recycled plastic, shall not be less than 0.15 mm in thickness.		Single use plastic is banned in Kerala	
434)	Plastic sheet or film, which is not an integral part of multi-layered packaging and cover made of plastic sheet used for packaging, wrapping or covering shall not be less than 0.15 mm in thickness except where the thickness of such plastic sheets impact the functionality of the product.		Single use plastic is banned in Kerala	
435)	Trucks using plastic material shall not be used for storing, packing or selling garbage, refuse and junk waste.		Banned	
436)	Every bag made from compostable plastics shall conform to the Indian Standard IS 17828 that lists as requirements 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.		Use of compostable carry bag is subjected to judgement dated 06/02/2021 in WWC/2428/2020.	
437-7)	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.		100% Manduhara town, 100% MCFs and 178 RCFs	
438-10)	Covering the open burning of plastic waste shall not take place.		Instruction given to localbodies.	
439-11)	The waste generator shall take steps to minimize generation of plastic waste and segregate plastic waste at source.		100% Manduhara town, 100% MCFs and 178 RCFs	
439-12)	The waste generator shall not litter the plastic waste.		100% Manduhara town, 100% MCFs and 178 RCFs	
442)	Every producer or brand owner shall, for the purpose of registration or the renewal of registration, make an application in Form-I as I. The concerned State Pollution Control Board or Pollution Control Committee of the Centre.		In Kerala state the launch of portal on April 06 17 brand owners, 23 producers, 28 registrars, 4 PWF) have done plastic registration as on 3 rd October 2022.	

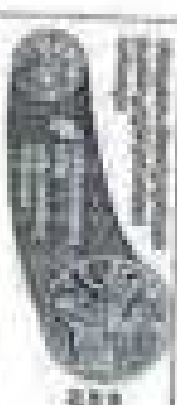


1320	Every person recycling or processing waste or preparing to recycle or process plastic waste shall make an application to the State Pollution Control Board or the Pollution Control Commission for grant of registration or renewal of registration for the recycling unit, in Form II.	Number of registered recyclers in the State- (2)
1331	Every manufacturer engaged in manufacture of plastic to be used as container 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- (6)
14411	Wholesale or retail vendors shall not sell or provide commodities or consumer in carry bags or plastic sheet or multi-layered packaging, which are not manufactured and labelled as material, as per prescribed under these rules.	Single use plastic is banned in Kerala
	Any other (Please specify)	Nil


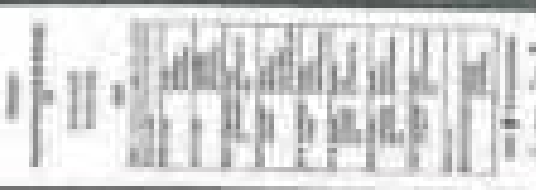


Annexure-VIII (Column 11)

Status of submission of Annual Report by ULBs/VPs to SPCB/PCC [Rule 17(2)]		
Sl. No.	Item	No.
1	Total No. ULBs	98
a	Total No. of ULBs which have provided complete Annual Report	84
2	Total No. GPs	543
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

2014-2015	Revenue	<p>Managers provided a comprehensive list of pending plans:</p> <p>pending:</p>	<p>Revenue: \$72K COG: \$20K</p>	 <p>GABBITO 100% Natural Dog Treats Made with Real Chicken & Turkey No Artificial Flavors or Colors</p> <p>Happy Dream Say NO to Sleepless Nights Say YES to a Happy Dream The only dog treat that helps with sleeping</p>
2016-2017	<p>All Sales Sales (A/R) Accounts on Hand Sales Management in Korea</p>	<p>A review was conducted with all Sales, Sales (A/R) and Accounts on Hand. Sales Management in Korea.</p> <p>Key personnel include:</p> <ul style="list-style-type: none"> Dr. Young Kwon, All Customers, Korea, Sales Professor Chang Hwan Dr. Bodo Anshul, Business Division, CEO Dr. Dong Kwon, Professor Division, CEO, Korea Division, Business Division James Anshul, International Division, Korea (A/R) 	<p>Key personnel include:</p> <ul style="list-style-type: none"> Dr. Young Kwon, All Customers, Korea, Sales Professor Chang Hwan Dr. Bodo Anshul, Business Division, CEO Dr. Dong Kwon, Professor Division, CEO, Korea Division, Business Division James Anshul, International Division, Korea (A/R) 	<p>The system included a summary on Sales, A/R, and Accounts on Hand. All employees in Korea and International, etc. of Korea.</p>

		<p>In previous sessions later and on Plastic Waste Management (PWSM) was held in Malappuram. The session was moderated by Mr. Naveed M. Technical Support, CSE, I-are moderated by All India Waste (AIWA) Travancore on 25.08.2021 at 11.11 am under 'Aardra Park' programme. The session was 12 minutes 30 seconds.</p>	
<p>Event</p>	<p>Session have been designed and printed in child-friendly to enhance awareness and enlighten the importance of adoption of plastic alternatives to view of national level level at WSP as per Plastic Waste Management Plan (Formulation) 2021</p>		<p>Event and awareness rally on Plastic Waste at Malappuram</p>  <p>WSP</p>  <p>WSP</p>  <p>WSP</p>  <p>WSP</p> 
<p>16-05-2021</p> <p>Webinar session</p>	<p>A awareness session on plastic pollution and single-use plastics from-University of Kerala</p>	<p>Kerala SPCC, University of Kerala, CSE, CSD</p>	<p>WSP</p>  <p>WSP</p>  <p>WSP</p> 
<p>26-10-2021</p>	<p>A awareness session on plastic pollution and single-use plastics from- Green-Initiatives Kerala</p>	<p>Kerala SPCC, CSE, CSD</p>	<p>WSP</p>  <p>WSP</p>

				 <p>Chloroplast</p> <p>Location: Prokaryotes and eukaryotes Oval-shaped (bacteria) or bean-shaped (eukaryotes)</p> <p>Structure: 2 membranes - Outer membrane - Inner membrane (thylakoid membrane)</p> <p>Function: Photosynthesis</p> <table border="1" data-bbox="1021 1792 1404 2195"> <thead> <tr> <th>Structure</th> <th>Function</th> </tr> </thead> <tbody> <tr> <td>Thylakoid</td> <td>Site of light-dependent reactions</td> </tr> <tr> <td>Stroma</td> <td>Site of Calvin cycle</td> </tr> <tr> <td>Granum</td> <td>Stack of thylakoids</td> </tr> <tr> <td>Stroma lamellae</td> <td>Connects thylakoids</td> </tr> </tbody> </table>	Structure	Function	Thylakoid	Site of light-dependent reactions	Stroma	Site of Calvin cycle	Granum	Stack of thylakoids	Stroma lamellae	Connects thylakoids
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<p>Goal 1: 2001</p>	<p>Mykolas number</p>	<p>Microscopic position of plants prokaryotes and single-celled plants Eukaryotes: brown, diatoms and kinetoplast plants</p>	<p>Krebs 2001 002 003</p>	 <p>Chloroplast</p> <p>Structure: 2 membranes - Outer membrane - Inner membrane (thylakoid membrane)</p> <p>Function: Photosynthesis</p> <table border="1" data-bbox="430 1792 782 2195"> <thead> <tr> <th>Structure</th> <th>Function</th> </tr> </thead> <tbody> <tr> <td>Thylakoid</td> <td>Site of light-dependent reactions</td> </tr> <tr> <td>Stroma</td> <td>Site of Calvin cycle</td> </tr> <tr> <td>Granum</td> <td>Stack of thylakoids</td> </tr> <tr> <td>Stroma lamellae</td> <td>Connects thylakoids</td> </tr> </tbody> </table>	Structure	Function	Thylakoid	Site of light-dependent reactions	Stroma	Site of Calvin cycle	Granum	Stack of thylakoids	Stroma lamellae	Connects thylakoids
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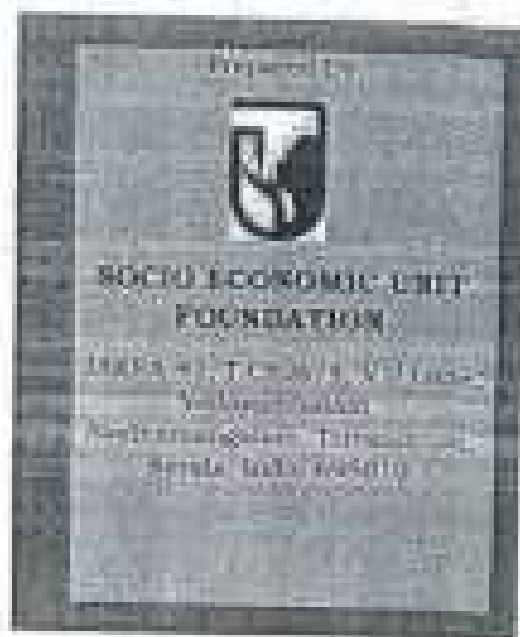
		<p>Diagrams from <i>Microbiology & Immunology</i> (2014)</p>				
18-1-2011	<p>Wright arrhythmia</p>	<p>Atrial mass visible on pletho pulser and right-ear pletho</p> <p>Normal sinus rhythm</p>	<p>Normal ECG</p> <p>OSL CED</p>			
18-1-2011	<p>Wright arrhythmia</p>	<p>Atrial mass visible on pletho pulser and right-ear pletho</p>	<p>Normal ECG</p> <p>OSL CED</p>			

<p>11-12-2011</p>	<p>Addressed on Plastic Waste Management and waste handling in IDO (house)</p>	<p>Session on awareness on plastic waste in Kerala was organized by project partner CED on 11.12.2011 in IDO Chennai (SALMOCITY APALUM) program held in IDO (Mangalore)</p>	<p>Kerala State, IDO, CED</p>	



STATUS REPORT

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



**"ASSESSMENT OF PLASTIC PRODUCTS- SUP
(PERMITTED, PROHIBITED), PLASTIC ITEMS (EXCLUDING SUP), ESUP
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	Inspection 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 PLACoating, certified by CPCB and BIFORESS complaint
2	Non-biodegradables	Non-woven bags, plastic bags, plastic bunting	Cloth bags / paper bags
3	EPS (Thermocol and similar) for decoration	PET/PETE bottles of drinking water of capacities less than 500ml	cloth/paper bags, hunting bag
4	Small plastic bottles for drinking water (<200ml)	Plastic carry bags irrespective of thickness	Grow bags
5	Small multi-layer pouches/sachets (area less than 36 cm ²)	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 plastic-based structures
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 pockets (use of plastic pockets 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 36cm ²)	Plastic sheets (sheet used as table spread)	
11	Flexic 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 thermocool/Styrofoam	
13	Blister packaging for non-pharma applications	PVC box materials, plastic coated cloth, biopolyester / nylon / Korean cloth	
14	Milk and oil practices	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	Barbuds 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 packs.	
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	Ten-bags		

Objective 2:

To carry out market survey to check availability of the items in the three 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	23
3	Pathanamthitta	2
4	Alappuzha	18
5	Kottayam	24
6	Idukki	7
7	Ernakulam-I	47
8	Ernakulam-II	134
9	ESSE Block	7
10	Thirissur	157
11	Palakkad	41
12	Malappuram	30
13	Coimbat	22
14	Wayanad	2
15	Kannur	20
16	Kasaragode	4
	TOTAL	549

Details of SUP manufactures registered under KPCB

Sl no	Name and address of the establishment	Communication	Occupier Details	District	Product
1	M/s VELLAPPALLY PLASTICS, NUTTON BAZAR, CHERTHALA P O	9847191631, mvsellappally@gmail.com	RISHOR N.PILLAMPALL IL HOUSE, CMC-LOCHERTHALA P O, ALAPPITTA-688534	Alappuzha	Carry bags
2	BALAJI PLASTICS L D/T CMC-19 CHERTHALA	Telephone: 071-9946088125 - E-mail: balajiplastics@h	SURESHRIMAR MANGALASTAY	Alappuzha	Carry bags

	688524	@gmail.com	AN, CHC-19, CHERTHALA		
3	M/A SONA PLASTIC INDUSTRIES DEVELOPMENT PLOT, MAJOR INDUSTRIAL ESTATE, SOUTH KALAMASSETT - 683109		M/S GEORGE MALIBAL VILLA KARIPPAI ROAD KALAMASSETT PIN-683109	Ernakula m	Carry bags
4	BLUE LINE PLASTICS, DOOR NO 302 B, DEVELOPMENT PLOT CHAMPANOR, ANGAMALY SOUTH	9494- 260795@blueineline s@gmail.com	M/S TO PAULINE, PUTHENANGAD I HOUSE, KAZARETH ROAD, ALIYA 683101	Ernakula m	PLASTI C BAGS (G ARBAG E), Plastic film
5	Staron Plastics, Perur P.O, Kottayam			Kottayam	Plastic Bags Withou t Printing , Plastic Sheets With Printing
6	S3 PLASTICS S3 PLASTICS, MYLAPOR, UNAYANALLOOR P.O, KOLLAM 691509	Telephone :91- 9447408442 Fax :- E- mail: s3plasticsunayan a11ee@gmail.com	RSIBHU SHIBU SHAYANAM, NALLILA P.O, PULIVILA, KOLLAM- 691515	Kollam	PLASTI C SHEET
7	AJWARYA PLASTICS, VETTINKAL P.O, ETTUMANDOR, KOTTAYAM		AJWARYA PLASTICS, VETTINKAL P.O, ETTUMANDOR, KOTTAYAM	Kottayam	PLASTI C SHEET
8	NALCO PLASTIC INDUSTRIES MINI INDUSTRIAL ESTATE, NADACKAL P.O, ERATTUPETTA, KOTTAYAM 686121	Telephone :0- 9447910935 Fax :- E- mail: perfectplasticdesig ns@gmail.com	Asik P Aliyar, 4/505, Pathraup eddayil, Erattupetta P.O, Kottayam.	Kottayam	PLASTI C SHEET

9	IGN PLASTICS P. O. BHARATE MUDKANAM ROAD, PARIYARAM- 670503 670503	Telephone :- 9605419322 Fax :- E- mailto:ignplastics777 @gmail.com	TEOMASCI, OWNER CHAKALAKAL HOUSE, C M NAGAR, P. O. PILATHARA- 670504	Kannur	PLASTIC SHEET
10	SUPREEM PLASTIC INDUSTRIES AZHIKKAL ROAD PALLICANDY CALICUT 673603	Telephone :-0485- 9446366306 Fax :- E- mailto:calicutcity1@gn aill.com	T M ABDUL LATHEEF BARSA HOUSE KAPPAD PO NEAR RAILWAY GATE KIZHODE	Calicut	PLASTIC SHEET
11	J R PLASTIC ROSE KURICHILARODE KODANAD P.O 683544	Telephone :-01- 7516772232 Fax :- E- mailto:curtech1@gn aill.com	KY P.A. PARAKUNNATHI URUKUTY HOUSE KURICHILARODE E 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 Manufacturer	Production capacity (TPD)
1	Kasaragod	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	Thiruvananthapuram	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	Palakkad	DIC	Palm	4	not available
13	Kollam	DIC	Palm	2	not available
14	Thiruvananthapuram	DIC	Palm	0	not available
Total				96	

Total number of suppliers of paper products registered under DIC

Sl. No	District	Information & collection centres	Item	No. of Registered Manufacturers	Production capacity (TRD)
1	Kannur	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	Thiruvananthapuram	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	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	Kannur	Kudumbasree	Paper bag	7	Not available
	Kannur	Kudumbasree	Palm plate	8	Not available
	Kannur	Kudumbasree	Cloth bag	81	Not available
	Total			383	

Obj 2.2: (B) 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	Kasaragod	nil	Kasaragod Nileshwarum	Manjeshwarum
				Malhar
				Madikkal
				Cheruvathur
2	Kannur	Kannur	Thalassery Thalapparamb	Chengala
				Kolayad
				Mangattalam
				Kadamboor
3	Wayanad	nil	Sulthanbathery Kalpetta	Modari
				Cherukunna
				Mullankolly
				Padpally
4	Kozhikode	Kozhikode	Ramanankuzha Perak	Peruvayal
				Vellamunda
				Thiruvay
				Kannamangalam
5	Malappuram	nil	Malappuram Muzeri	Meppayur
				Mivar
				Keezhathar
				Kozhikangadi
6	Palakkad	nil	Palakkad Shornur	Padakkattal
				Alpparamb
				Aranikkayam
				Wadakkanchery
7	Thrissur	Thrissur	Chuvayur Irungalakode	Elevanchery
				Vaityanikalam
				Agali
				Perinjannam
8	Ernakulam	Kochi	Thirikkakara Muvattupuzha	Nattica
				Mathalsham
				Adat
				S N parom
				Edavanakkal
				Nedumbassery
				Kurinjikara
				Samamangalam
				Maready/Thiruvaready

9	Idukki	nil	Thodupuzha	Konnathudi
			Kottappara	Arakkulam
				Vadachappuzha
				Kumarangudi
				Kumili
10	Kottayam	nil	Kattappetta	Thekkodithan
			Kottayam	Poojar
				Pappad
				Chirakkadavu
				Manarkad
11	Alappuzha	nil	Changanassari	Mannar
			Cherthala	Cheruthala
				Parakkad
				Chambakkulam
				Kanjirath
12	Pathanamthitta	nil	Adoor	Ranni
			Thiruvalla	Kadambanad
				Koduman
				Pallickal
				Kochancherry
13	Kollam	Kollam	Pondur	Chavara
			Karunagappally	Theruvakkara
				Ummannur
				Kadakkal
				Kumail
14	Thiruvananthapuram	Thiruvananthapuram	Naduvangudi	Vilappil
			Neyyattinkara	Vithara
				Arayickara
				Naranyode
				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 in May 2021.

a. Litter hotspot details

sno	District	Corporation	Municipality	GP	Total
1	Kannur	0	5	16	21
2	Kannur	5	4	17	26
3	Wayanad	0	1	3	4
4	Kozhikode	0	5	17	22
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

sno	District	Corporation	Municipality	GP	Total
1	Kannur	0	20	25	45
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	20	61
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	33	66
	Total	73	285	348	706

*Target-600

Market Survey to check the availability of SUP

Availability in Market

Cities covered for the Survey (Number Assamese)		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 alternative available	Type of Alternative	Source of Procurement
a. Wholesaler	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 of Areas)		14 districts				
Period when Survey was conducted		April to May 2003				
Usage at major Commercial establishments	Total No. of Locat ions Visi ted	AVAILABILITY				
		No. of locat ions in whic h SUP avail able	SUP P Co des	No. of locatio ns in which SUP altern atives availa ble	Type of Alternative	So-Lines of Procure ment
Restaurants	54	52		24	cloth bags, paper bags, straws	local shops, wholes ale shops
Academic Institution	9	2		5	cloth bags, paper bags, straws	local shops, wholes ale shops
Shopping Complexes	100	86		55	cloth bags, paper bags, straws	
Hotels	38	37		18	cloth bags, paper bags, straws	van delive r, local shops, wholes ale shops
Super markets	97	87		38	cloth bags, paper bags, straws	local shops, wholes ale shops
Provision store	213	190		96	cloth bags, paper bags, straws	van delive r, local shops, wholes ale

						sh-cps
Vegetable, fruit shop	80	70		26	cloth bags, paper bags, straws	near the River y. Local shops, wholes ale shops
Tourist Locations	6	4		5	cloth bags, paper bags, straws	near the River y. Local shops, wholes ale shops
Cinema	6	4		4	cloth bags, paper bags, straws	local shops, wholes ale shops
Office	18	4		13	cloth bags, paper bags, straws	local shops, wholes ale shops
Railway station	4	4		4	cloth bags, paper bags,	local shops, wholes ale shops
Bus stand	38	30		18	cloth bags, paper bags,	local shops, wholes ale shops
Religious institution	8	3		5	cloth bags, paper bags,	local shops, wholes ale shops
Hospital and other medical care facilities	36	27		25	cloth bags, paper bags,	local shops, wholes ale 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
shom	8
Unauthorized colony	19
Others	36
Total	324

	High inches v. (from top of sample etc)	Number of pieces	Middle inches (from top of sample etc)	Number of pieces	Live face width or of sample etc	Number of pieces	Stam Num ber of samp lot	Num ber of pieces	Amount of colony Number of samples	Number of pieces	Other re marks or etc	Number of pieces
1	PAT bottles	40	251	74	34	371	4	47	6	14	23	804
2	HTORE/PE bottles	33	105	30	12	37	3	16	4	60	10	117
3	Polyethylene	10	326	37	16	197	3	10	1	1	18	183
4	MLP	47	2006	81	33	334	3	143	8	105	18	1144
5	Curry bag	47	1601	103	38	1500	3	76	3	49	34	5805
6	Mandelbulb plastic	46	3354	90	30	760	4	202	6	84	26	1456
7	Plastic cap	31	530	53	13	386	3	26	1	1	16	2751
8	paper strip paper board	40	377	53	19	284	3	82	3	19	16	309
9	glass articles	23	243	36	13	56	3	54	1	0	10	183
1	Aluminum/Al	9	33	17	3	32	3	14	0	3	3	38
2	Al/wood	7	35	3	0	0	0	0	0	0	0	0
1	ceramic/poured ink	8	129	9	4	103	0	0	0	0	3	81
2	construction/ detergents	6	366	7	0	0	0	0	0	0	1	30
1	biomedical waste	6	48	7	1	3	0	0	1	3	3	37
2	Substance	1	3	6	0	0	0	0	0	0	2	1
Total		360	9437	600	21710	4170	33	730	36	430	180	12850

Solid waste processing and disposal facilities

- The process was standardized, 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	
Kasaragod		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 LSIDs is in progress. The examination of the dump site will begin in a few days and be finished the following week. After the characterization 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.
 പ്രിൻസിപ്പൽ ഓഫീസ്, കോട്ടയം-പുഴ

www.kspcbkottayam@gmail.com www.kspcbkottayam.org www.kspcbkottayam.gov.in

Analysis Report

Analysis Report No.	1G39	Date	21/09/2022	Format No:	nil
Application No	PCB/KTV/2631/08	Date of collection			14/10/2022
Received From	AE1	Date of Receipt			14/10/2022
No. Of Sample	1	Period of Analysis			14/10/2022 20/10/2022
Source	CSTP ,KUMARAKAM	Scientist in charge			SJK.M.B
Sample Condition	Fit for analysis	Sample Type			Water
Sample Collected By	AEZ	Sample volume & container type			2 L Plastic container
Sample Preservation	AS per APHA (5-3025) Part-1				

Sample ID: CSTP ,KUMARAKAM

Sl No	Parameters	Unit	Value	Test Method	Limit
1.	pH		6.5	IS Part 44	5.5-9.0
2.	BOD	mg/L	19	APHA,522D 8,5-18 to 5-19	30
3.	SS	mg/L	12	APHA 2540D	100.0
4.	Oil and Grease	Mg/L	BDL	APHA 5520B	10.0
5.	COD	Mg/L	64	APHA,5220 8,5-18 Tab-19	250

Checked by

Authorised by

Assistant Scientist



KERALA STATE POLLUTION CONTROL BOARD

DISTRICT OFFICE (ERNAKULAM) - TL, PERUMBAVOOR

PMC 20123-Dist. Hospital #583C Road, Near National Auditorium, Perumbavoor-688 002

Telephone : 0484-2882547

E-mail : ppcb@kerala.gov.in

Website : www.keralapcb.in

Date : 28.09.2022

PCR/PRL/ABT/2012

ANALYSIS REPORT

Source : SEPTAGE TREATMENT PLANT, BRAHMAMPURAM

Sample Point : ACT OUTLET

D.O.S : 13.09.2022

D.O. RI : 16.09.2022

Collected by : NAMP-D

Sample ID : PCB-78

S.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 22 nd Edition 2012	30
3	COD	mg/l	64	APHA, 5220 B 22 nd Edition 2012	250
4	OIL & GREASE	mg/l	NDC	APHA, 5320 B 22 nd Edition 2012	10
5	SS	mg/l	6.8	APHA, 2540-D 22 nd Edition 2012	300
6	PHOSPHATES	mg/l	0.341	APHA-4910 P-2 22 nd Edition 2012	5
7	NITRATES	mg/l	0.38	APHA-4500-NO ₃ -E 22 nd Edition 2012	10
8	SULPHATES	mg/l	105.16	APHA, 4500-SO ₄ 22 nd Edition 2012	1000
9	SULPHIDES	mg/l	NDC	APHA-4500-S ²⁻ -O 22 nd Edition 2012	2
10	AMMONIACAL NITROGEN	mg/l	NDC	APHA, 4500-NH ₃ -E 22 nd Edition 2012	30
11	PHENOLIC COMPOUNDS	mg/l	NDC	APHA, 5330-C 22 nd Edition 2012	1
12	TOTAL COLIFORM	cfu/100ml	n	APHA 9222B 22 nd Edition 2012	-
13	FACAL STREPTOCOCCI	cfu/100ml	209	APHA 9230 A 22 nd Edition 2012	-

Analysed & Issued Report By
Dist. Office Ernakulam-DI

28 SEP 2022

SARANYA DAS, E.
Assistant Scientist



KERALA STATE POLLUTION CONTROL BOARD

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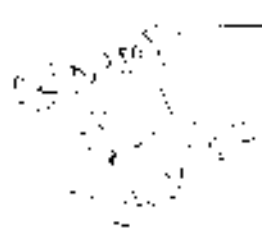
Date: 25.10.2022

PCB-PBR/AS-1/2013

ANALYSIS REPORT

Source : CHEP KINFRA SMALL INDUSTRIES NEELAD
 Sample Point : ACE OUTLET
 D.O.S : 11.10.2022
 D.O. Rd : 14.10.2022
 Collected by : GFA
 Sample ID : PCB-19

Sl No.	Parameters	Unit	Value	Test Method	KSPCB Limit
1	pH		7.41	APHA 2590 C.13 22 nd Edition 2012	6.0-9.0
2	BOD	mg/l	2	APHA 5210 B. 22 nd Edition 2012	30
3	COD	mg/l	72	APHA 5220 B. 22 nd Edition 2012	250
4	SS	mg/l	301	APHA 2540 D. 22 nd Edition 2012	100
5	OIL & GREASE	mg/l	BDL	APHA 8220 B. 22 nd Edition 2012	10
6	FLUORIDES	mg/l	0.9	APHA 3500 F.C. 22 nd Edition 2012	2
7	CHLORIDES	mg/l	70.97	APHA 2500 C.13 22 nd Edition 2012	1000
8	SULPHATES	mg/l	443.63	APHA 4500 SO4. 22 nd Edition 2012	1000
9	SULPHIDES	mg/l	18.4	APHA 4500 S ²⁻ .D 22 nd Edition 2012	5
10	AMMONIACAL NITROGEN	mg/l	0.9135	APHA 2500 N.1.4. 22 nd Edition 2012	50
11	PHENOLIC COMPOUNDS	mg/l	BDL	APHA 5530 C. 22 nd Edition 2012	



SARADY V. JAYAKRISHNAN
ANALYST



KERALA STATE POLLUTION CONTROL BOARD

DISTRICT OFFICE, CHENNAI - III, PERUMBAVOOR

PH: 207211 (ext. 4444) - 4445; KSTPC Head Office: New Kalamassery, Perumbavoor-680 342

Telephone: 2084-280242

E-mail: stpc@kerala.gov.in

Website: www.keralapstpc.org

PCB/PER/LAB/100/13

Date: 28.09.2012

ANALYSIS REPORT

Source: CUTR RUBBER PARK (IRAPURAM)

Sample Point: FILTER OUTLET

D.O.S: 13.09.2012

D.O. Rd: 16.09.2012

Collected by: NAMP-11

Sample ID: PCB-100

S.No.	Parameters	Unit	Value	Test Method	KSPCB Limit
1	pH		7.66	APHA, 4500-H ⁺ B 22 nd Edition 2012	6.5-8.5
2	BOD	mg/l	6	APHA, 5210-B 22 nd Edition 2012	30
3	COD	mg/l	48	APHA, 5210-B 22 nd Edition 2012	250
4	Oil & Grease	mg/l	NDL	APHA, 5520-B 22 nd Edition 2012	10
5	SS	mg/l	62.4	APHA, 2540-A 22 nd Edition 2012	100
6	TDS	mg/l	1254	APHA, 2540-C 22 nd Edition 2012	2100
7	AMMONIACAL NITROGEN	mg/l	0.25	APHA 4500-NH ₃ -E 22 nd Edition 2012	50
8	SULPHIDES	mg/l	NDL	APHA, 4500-S ²⁻ 22 nd Edition 2012	2
9	FLUORIDES	mg/l	6.6	APHA, 4500-F ⁻ 22 nd Edition 2012	2
10	CHLORIDES	mg/l	65.97	APHA, 4500-Cl ⁻ B 22 nd Edition 2012	1000
11	SULPHATES	mg/l	199.43	APHA, 4500-SO ₄ 22 nd Edition 2012	1000
12	PHENOLIC COMPOUNDS	mg/l	NDL	APHA, 5510-C 22 nd Edition 2012	1

ANALYSIS REPORT

Kerala State Pollution Control Board
Dist. Office Chennai - III

28 SEP 2012

SARANYA DAS K.
Assistant Scientist



KERALA STATE POLLUTION CONTROL BOARD

കേരളസംസ്ഥാന മലിനീകരണ നിയന്ത്രണ ബോർഡ്

ANALYSIS REPORT (WATER / EFFLUENT / SOLID WATER)

Date : **29.06.2022**

Source	Adimaly Comfort Station	Sample received from	
Date of sample Collection	20.06.2022		
Ref. No.		Period of analysis	
Date of Receipt	21.06.2022		
Scientist-in charge of analysis		ASSISTANT SCIENTIST	

S. 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 samples : **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

കിട്ടു മെട്രി, OPP ജനറൽ ആശുപത്രി, KK Nair Road, പുതിയമുഖം/കോളിംഗ്, പാതാമത്ത്-689645
DISTRICT OFFICE, OPP GENERAL HOSPITAL, KK NAIR ROAD, BEHIND AVG MOTORS, PATHANAMTHITTA-689645

web site: www.keralapcb.nic.in - for Online registration, visit krcmms.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 m ³ /day	30 m ³ /day	Coagulation & Settling



email: kspcbpta@gmail.com

Phone/ fax: 0468-2223883

കേരള സംസ്ഥാന മലിനീകരണ നിയന്ത്രണ ബോർഡ് KERALA STATE POLLUTION CONTROL BOARD

മണ്ണുരുത്തി ഓഫീസ്, OPP ജനറൽ ആശുപത്രി, കെ നായർ റോഡ്, കുമ്പളങ്ങൽ, പാലക്കാട് ജില്ല, പാലക്കാട്-686 001
DISTRICT OFFICE, OPP.GENERAL HOSPITAL, KK NAIR ROAD, BEHIND AVG MOTORS, PATHANAMTHITTA6889645

web site: www.keralapcb.nic.in - for Online registration, visit-krocmms.nic.in or keralapcbonline.com

ഭരണഭാഷ - മാതൃഭാഷ

മാർഗ്ഗക്കുറിപ്പ് - 2
DESPATCHED
ON 04/08/2022 02.08.2022

PCB/PTA/ICO/2781/2017

പ്രേക്ഷിത

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 സൂചനകളിലെക്ക് 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



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

AE:

30/8

ASSISTANT SCIENTIST



mail: kapcbpta@gmail.com

Phone/ fax: 0468-2223883

കേരള സംസ്ഥാന മലിനീകരണ നിയന്ത്രണ ബോർഡ്

KERALA STATE POLLUTION CONTROL BOARD

മിറ്റാ ഓഫീസ്, OPP ജനറൽ ആശുപത്രി, KK Nair Road, കുന്നത്തുപുഴ, പാലക്കാട്-686 545
DISTRICT OFFICE, OPP.GENERAL HOSPITAL, KK NAIR ROAD, BEHIND AVS MOTORS, PATHANAMTHITTA686545

web site: www.keralapcb.nic.in - for Online registration, visit-krocmms.nic.in or keralapcbonline.com

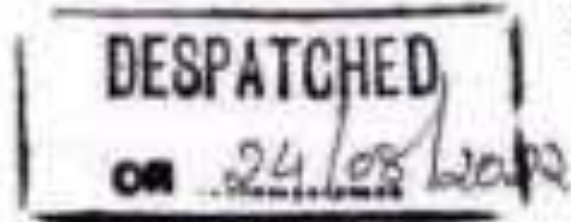
ഭരണഭാഷ - മതൃഭാഷ

PCB/PTA/ICO/4337/2022

23.08.2022

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 സഭയം ശുദ്ധീകരിച്ച മലിനജല സാമ്പിളുകൾ ശേഖരിക്കുകയും ചെയ്തിട്ടുണ്ട്. സൂചന(3) പ്രകാരമുള്ള പരിശോധന ഫലങ്ങൾ പ്രകാരം പ്രസ്തുത സാമ്പിളുകൾ, സൂചന(1) പ്രകാരമുള്ള അനുമതിയിലെ നിബന്ധന 2.4 പ്രകാരമുള്ള ഗുണനിലവാരം കൈവരിക്കുന്നില്ല. ആയതിന് മേലുള്ള മതിയായ നിർദ്ദേശങ്ങൾ സൂചന(4) പ്രകാരം ഈ ഓഫീസിൽ നിന്നും നൽകിയിട്ടുണ്ട്.

എന്നാൽ സ്വീകരിച്ചതായി Kinfra, അടൂർ ഓഫീസിൽ നിന്നും അറിയിച്ച നടപടികൾ ഫലവ
 അന്ധി കണ്ടുനില്ക്കുന്നു. പ്ലാന്റിൽ ചെങ്കിനറികളായ Blower, Motor, Aeration തുടങ്ങിയവയ്ക്ക്
 കേടുപാടുകൾ സംഭവിക്കുന്നതായും, പിന്നീട് അറ്റകുറ്റപ്പണികൾ നടത്തുന്നതായും,
 പ്രസ്തുത ഓഫീസിൽ നിന്നും നൽകിയിട്ടുള്ള മറുപടി കത്തുകളിൽ നിന്നും മനസ്സിലാ
 ക്കുന്നു. മേൽപ്പറഞ്ഞവ ചെങ്കിനറികൾ ഓരോ വിഭാഗത്തിനും, ഓരോന്ന് മാത്രമാണ്
 സ്ഥാപിച്ചിരിക്കുന്നത്. ആയതിനാൽ കേടുപാടുകൾ സംഭവിക്കുമ്പോൾ ശുദ്ധീകരിക്കാൻ,
 ബോർഡ് നിഷ്കർഷിക്കുന്ന ഗുണനിലവാരം കൈവരിക്കാൻ മലിനജലമാണ്
 നിർമ്മാർജ്ജനം ചെയ്യേണ്ടിവരുന്നത്. ഈ സംഹാര്യത്തിൽ 14.07.2022 തീയതിയിൽ ഈ
 ഓഫീസിൽ നിന്നും നൽകിയ നിർദ്ദേശാനുസരണം stand by ചെങ്കിനറികൾ സ്ഥാപിക്കുക
 യാണെങ്കിൽ 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, അനുരതിയിലെ നിബന്ധനകൾ പൂർണ്ണ
 മായും നടപ്പിലാക്കണമെന്നും അറിയിക്കുന്നു. സ്വീകരിച്ച നടപടി രേഖാമൂലം അറിയിക്കേ
 ണ്ടതാണ്. CETP സംബന്ധിച്ച വിവരങ്ങൾ എല്ലാ മാസവും CPCB - യുടെ വെബ്
 സൈറ്റിൽ upload ചെയ്യേണ്ടതിനാൽ, നടപടി സ്വീകരിക്കുന്നതിനുള്ള കാലതാമസം ഒഴിവാ
 കേണ്ടതാണ്.

വിശ്വസ്തതയോടെ,



പരിസ്ഥിതി എഞ്ചിനീയർ

പകർപ്പ് : The Manager
 CETP, Kinfra, Elamannoor
 Pathanamthitta



email: Kspcbpc@gmail.com

Phone/fax: 0465-2221983

കേരള സംസ്ഥാന മലിനീകരണ നിയന്ത്രണ ബോർഡ്

KERALA STATE POLLUTION CONTROL BOARD

ബിറ്റാ ബുഡിംഗ് . OPP അനന്തപുരംപുരം, KK Nair Road, കുന്നിങ്ങമുക്ക്മുഖം, പാലക്കാട്-688 641

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

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
2/9/2022
AE₃
2/9

Remarks: O&G exceeded the limit

ASSISTANT SCIENTIST



KERALA STATE POLLUTION CONTROL BOARD

DISTRICT OFFICE-ERNAKULAM-JIL PERUMBAVOOR

PO BOX 20733 Govt. Hospital, KSTCC Road, Near National Auditorium, Perumbavoor-681542

Telephone : 0484-2332747

E-mail : ppcb@kerala.gov.in

Website : www.keralapcb.in

Date: 18/09/2022

PCB/PH/LAB/1/2017

ANALYSIS REPORT

Source : SEPTAGE TREATMENT PLANT, BEATHMAPURAM.

Sample Point : ACF OUTLET

D.O.S : 15/09/2022

D.O. Rd : 16/09/2022

Collected by : NAMPPI

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 22 nd Edition 2012	10
3	COD	mg/l	64	APHA, 5220 B 22 nd Edition 2012	250
4	OIL & GREASE	mg/l	NDL	APHA, 5530 B 22 nd Edition 2012	10
5	SS	mg/l	6.2	APHA, 2540 D 22 nd Edition 2012	100
6	PHOSPHATES	mg/l	0.291	APHA-4500 P-1 22 nd Edition 2012	1
7	NITRATES	mg/l	5.18	APHA-4500 NO ₃ -E 22 nd Edition 2012	10
8	SULPHATES	mg/l	105.16	APHA-4500 SO ₄ 22 nd Edition 2012	1000
9	SULPHIDES	mg/l	NDL	APHA-4500 S ²⁻ G 22 nd Edition 2012	2
10	AMMONIACAL NITROGEN	mg/l	NDL	APHA, 4500 NH ₃ -E 22 nd Edition 2012	50
11	PHENOLIC COMPOUNDS	mg/l	NDL	APHA, 5510 C 22 nd Edition 2012	1
12	TOTAL COLIFORM	cfu/100ml	6	APHA 9222B 22 nd Edition 2012	-
13	FACCAL STREPTOCOCCI	cfu/100ml	266	APHA 9230 A 22 nd Edition 2012	1

Sample Date & Location Correctly Verified
Date: 08/09/2022

28 SEP 2022

SARANYA DAS K.
Assistant Scientist

Form - IV A
(See rule 5B)
ANNUAL REPORT

Format for tabulation of the Annual Report Information on Bio-Medical Waste Management to be submitted by the State Pollution Control Commission 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 2023.

1]	Name of the Organization	Uttarakhand State Pollution Control Board
2]	Name of the Nodal Officer with contact telephone number and e-mail	Dr. Anamathula S. Environmental Engineer Head Office, TWM and Hospital, Govt. Public Health Centre, P.O. 247017/223, 0473-2718191
3]	Total no. of Health Care Facilities/ Occupies	17875
4]	Number hospitals and Nursing Homes (Detailed)	2085
5]	Clinics, Dispensaries	9028
6a]	Veterinary Institutions	888
6b]	Dental Clinics	31
6c]	Pathological Laboratories	1121
6d]	Blood Banks	28
6e]	Clinical establishments	1008
6f]	Research Institutes	8
7a]	Wards	1022
7b]	Total no. of beds	128808
8]	Status of authorization	
9]	Total number of Occupies applied for authorization	17186
10]	Total number of Occupies granted authorization	16792
11]	Total number of applications under consideration	3
12]	Total number of applications rejected	201
13]	Total number of Occupies in operation without applying for authorization	970
14]	Quantity of Bio-medical Waste Generation	
15]	Bio-medical waste generation by tertiary hospitals (in kg/day)	50040kg/day
16]	Bio-medical waste generation by non-tertiary hospitals (in kg/day)	7000kg/day
17]	Any other	200 kg/day
	Total	61740kg/day
18]	Bio-medical waste treatment and disposal	
19]	By Capture Bio-medical waste treatment and disposal by Health Care Facilities (please provide details as per Part 3)	
20]	Number of Health Care Facilities having capture treatment and disposal facilities	44

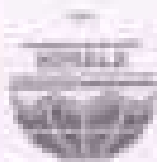
iii)	Total Bio-medical waste treated and shipped by captive treatment facilities in kg/day	2400 kg/day
iv)	Bio-medical waste treatment and disposal by Common Bio Medical Waste Treatment facilities. (Please include details as per Part 4)	
i)	Number of Common Bio Medical Waste Treatment facilities in Operation	1 (1 CBWTF by AIL started operation in Nov/2011)
ii)	Number of Common Bio Medical Waste Treatment facilities under construction	
iii)	Total bio-medical waste treated in kg/day	5800kg/day
iv)	Total treated bio-medical waste shipped through authorized recyclers (in kg/day)	16000 kg/day
ii)	Total no. of violation by	1475
i)	Health Care facilities (bedded and non-bedded)	1475
ii)	Common Bio Medical Waste Treatment facilities	1
iii)	Others (please specify)	nil
ii)	Show cause notices/directives issued to defaulters	1087
i)	Health Care facilities (bedded and non-bedded)	1120
ii)	Common Bio Medical Waste Treatment facilities	1
iii)	Others	176
iii)	Any other relevant information	
i)	Number of workshops / trainings conducted during the year	111/17 /NA/11 18 /11/ 1 by HCU
ii)	Number of occupiers installed liquid waste treatment facility	<ul style="list-style-type: none"> • Out of 2075 bedded hospitals, 81 have STP/ETP (under/nil) and 4196 under construction. 7 have terminal sewer connection • 2075 bedded hcs have disinfection system for laboratory liquid waste & sewage and spirit tank/boiler oil for storage • 15782 non bedded have provided disinfection system and sink/plu sewer connection
iii)	Number of liquid incubators complying to the norms	15 (temperature and chimney height norms complied. CCMS not provided in these incubators) out of 15, 4 have now obtained affiliation with CBWTF. 1 has stopped working of incubator in 2011. Action already taken for remaining 1018 affairs with CBWTFs
iv)	Number of occupiers urgent trainings	76
v)	Number of occupiers constituted Bio-medical Waste Management Committee	109
vi)	Number of occupiers submitted Annual Report for	8118

	The previous calendar year	
(vi)	Number of occupiers practicing pre-treatment of All microbiology and Bio-microbiology waste	100%
(vii)	Number of Government Medical Waste Treatment Facilities that have installed Continuous Online Leachate Monitoring Systems	2

Ann 2: District-wise Bio-Medical Waste Generation for the previous calendar year (2011)

Name of District	Name of State	Total No. of mCfs	Bio-medical Waste Generation (kg/day & CDWTT(m ³ /day))
Thiruvananthapuram	KERALA	1516	1389
Kollam	KERALA	1768	1569
Kannur	KERALA	811	714
Kasaragod	KERALA	1019	898
Kottayam	KERALA	1356	1201
Kozhikode	KERALA	933	829
DCI, Thrissur	KERALA	1794	1601
DCI, Thrissur	KERALA	774	688
Trichur	KERALA	2207	1965
Palakkad	KERALA	1381	1231
Malappuram	KERALA	1818	1625
Kuprad	KERALA	1238	1091
Wayanad	KERALA	157	140
Kannur	KERALA	1011	898
Kannur	KERALA	481	421
TOTAL	KERALA	17875	15826

- a. Total No. of transportation of bio-medical waste per day from the various Ho-Medical Waste Treatment facilities : 78
- b. List of Health Care Facilities not being compliant with current biomedical waste treatment facilities and further having option treatment facility : 2092 (including AYUSHY clinics and numerous small labs have already affiliated to CMWTF in the following year and it will be reflected in next year annual report -2022 (AR 2022))
- c. No. of training organized by CMWTF operator: 10218
- d. No. of incidents reported by CMWTF : 1



KERALA STATE POLLUTION CONTROL BOARD

DISTRICT OFFICE, TRINAKULAM - III, PERUMBRAYOOR

PO BOX 203725, Cross, Highway KSPCB Road, Near National Automobile, Perumbrayoor-688 142

Telephone: 0494-2331747

E-mail: spcb@kspcb.org

Website: www.keralapollution.org

Date: 24.10.2022

ICR/PH/LS/01/2013

ANALYSIS REPORT

Source: CITT KSHIRA SMALL INDUSTRIES NELLAI

Sample Point: ACE OUTPUT

Date: 14.10.2022

DD: 14.10.2022

Collected by: GEA

Sample ID: PUB-10

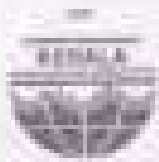
S.No	Parameters	Unit	Value	Test Method	KSPCB Limit
1	pH		7.44	APHA, 4500 H ₊ B, 22 nd Edition 2012	6.0-9.0
2	BOD	mg/l	2	APHA, 5200 B, 22 nd Edition 2012	30
3	COD	mg/l	24	APHA, 5200 B, 22 nd Edition 2012	250
4	SS	mg/l	NEL	APHA, 2540 B, 22 nd Edition 2012	100
5	OIL & GREASE	mg/l	NEL	APHA, 8520 B, 22 nd Edition 2012	10
6	FLUORIDES	mg/l	0.6	APHA, 4500 F, 22 nd Edition 2012	2
7	CHLORIDES	mg/l	78.47	APHA, 4500-Cl B, 22 nd Edition 2012	1000
8	SULPHATES	mg/l	443.95	APHA, 4500-SO ₄ , 22 nd Edition 2012	1000
9	SULPHIDES	mg/l	48.4	APHA, 4500 S ₂ B, 22 nd Edition 2012	2
10	AMMONIACAL NITROGEN	mg/l	0.0135	APHA, 4500-NH ₃ B, 22 nd Edition 2012	10
11	PHENOLIC COMPOUNDS	mg/l	NEL	APHA, 8500 C, 22 nd Edition 2012	1

ANALYST
G. S. S. S. S.
24/10/2022

Kerala State Pollution Control Board
Dist. Office, Trivandrum - III
25 OCT 2022



SARANYA DAS, E.
Assistant Scientist



KERALA STATE POLLUTION CONTROL BOARD

DISTRICT OFFICE THIRUVANANTHAPURAM - III, PERUMBARAANCHAL

WMC 20123 Govt. Institute, KSPCB Head, New National Aquarium, Perumbambam-695 042

Telephone : 2842581747

E-mail : pubc@kspcb.org.in

Website : www.kspcb.org.in

Date: 25.10.2022

PUBLICATION NO.:

ANALYSIS REPORT

Source : CETP RUBBER PARK TRAPURAM

Sample Point : FILTER OUTLET

D.O.S : 14.10.2022

D.C. No : 14.10.2022

Collected by : GUA

Sample ID : PCB-28

Sl.No.	Parameters	Unit	Value	Test Method	KSPCB Limit
1	pH		7.53	APHA, 4500 H ⁺ B, 22 nd Edition 2012	6.0-9.0
2	BOD	mg/l	2	APHA, 5210 B, 22 nd Edition 2012	30
3	COD	mg/l	48	APHA, 5210 B, 22 nd Edition 2012	250
4	OIL & GREASE	mg/l	NDL	APHA, 5520 B, 22 nd Edition 2012	10
5	SS	mg/l	23.2	APHA, 2540 D, 22 nd Edition 2012	100
6	TDS	mg/l	1201.2	APHA, 2540 C, 22 nd Edition 2012	2100
7	AMMONIACAL NITROGEN	mg/l	0.765	APHA, 4500 NH ₃ -F, 22 nd Edition 2012	50
8	SULPHIDES	mg/l	47.6	APHA, 4500 S-F, 22 nd Edition 2012	2
9	FLUORIDES	mg/l	0.8	APHA, 4500 F-C, 22 nd Edition 2012	2
10	CHLORIDES	mg/l	73.97	APHA, 4500 Cl ⁻ B, 22 nd Edition 2012	1000
11	SULPHATES	mg/l	161.37	APHA, 4500 SO ₄ , 22 nd Edition 2012	1000
12	PHENOLIC COMPOUNDS	mg/l	NDL	APHA, 5510 C, 22 nd Edition 2012	1



Kerala State Pollution Control Board
Dist. Office (Perumbambam-III)

25 OCT 2022

SARANYA DAS R.
Assistant Scientist



KERALA STATE POLLUTION CONTROL BOARD

DISTRICT OFFICE, TRAKULAM - II, PERUMBILAVOOR

PO: POOJILAI, Dist: Thiruvananthapuram, KERTC Road, Near National Aquarium, Perumbilavoor-695 342

Telephone: 9447358747

E-mail: pollution@kspcb.kerala.gov.in

Website: www.kspcbkerala.in

Date: 25.10.2022

PCB/PERULAM/1/2012

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		7.48	APHA, 4500 H+ B 22 nd Edition 2012	6.5-8.5
2	BOD	mg/l	11	APHA, 5210 B, 22 nd Edition 2012	30
3	COD	mg/l	48	APHA, 5220 B, 22 nd Edition 2012	250
4	OIL & GREASE	mg/l	NDC	APHA, 5520 B, 22 nd Edition 2012	10
5	SS	mg/l	NDC	APHA, 2540-D, 22 nd Edition 2012	100
6	PHOSPHATES	mg/l	0.178	APHA-4500 P-C 22 nd Edition 2012	-
7	NITRATES	mg/l	0.259	APHA-4500-N-1-L 22 nd Edition 2012	-
8	SULPHATES	mg/l	60.74	APHA, 4500-SO4, 22 nd Edition 2012	1000
9	SULPHIDES	mg/l	48	APHA-4500-S ²⁻ -D 22 nd Edition 2012	2
10	AMMONIACAL NITROGEN	mg/l	0.006	APHA, 4500-NH ₃ -E, 22 nd Edition 2012	20
11	PHENOLIC COMPOUNDS	mg/l	NDC	APHA, 5520-L, 22 nd Edition 2012	-
12	TOTAL COLIFORM	cfu/100ml	14	APHA 9223B, 22 nd Edition 2012	-
13	FACCAL STREPTOCOCCI	cfu/100ml	70	APHA 9230 A, 22 nd Edition 2012	-

ANALYST
G. S. S. S. S.

Kerala State Pollution Control Board
Dist. Office Thiruvananthapuram

25 OCT 2022

SARANYA DAS K.
Assistant Scientist



email: kspcbpsw@gmail.com

Phone/fax: 0463-2229883

കേരള സംസ്ഥാന മലിനീകരണ നിയന്ത്രണ ബോർഡ്
KERALA STATE POLLUTION CONTROL BOARD

കേരള സംസ്ഥാന ഓപ്പറേഷൻ ജനറൽ ഹോസ്പിറ്റൽ, കെ.എൻ.എ. റോഡ്, കുന്തിയോട്ടം, തൃശ്ശൂർ ജില്ല, പത്തനംതിട്ട 689045
DISTRICT OFFICE, OPP. GENERAL HOSPITAL, KKNair Road, KUNNITHOTTATHIL Bldgs, PATHANAMTHITTA 689045

web site: www.keralapcb.nic.in - for Online registration, visit krocmwms.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

ENVIRONMENTAL 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, °C	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 ₃ N, 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							
Sl.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, °C	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	Chloride 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 ₃ N, 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 കലിനീകരണ നിയന്ത്രണ ബോർഡ്
 KERALA STATE POLLUTION CONTROL BOARD

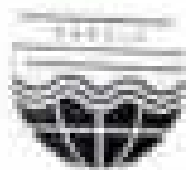
Regulated activities, surface water, atmosphere, effluents of M. Nagarajapuram
 Major Road, 2nd Floor, Panchakkal, Mithakara P.O., Thrissur - 680002

ANALYSIS REPORT (WATER/INDUSTRIAL WASTE)		LAS No. 078		Date: 10.10.2022
Source	M/s. Sanyas for Cream. Pvt. Ltd., Nambikkara.	Sample received from	EIL, THIRUVAR	
Date of Sample Collection	13/09/2022	Period of analysis	13/09/2022 - 16/09/2022	
Ref. No.	PCB/TSD/TCU/18808		SC	
Date of Receipt	13/09/2022	Scientist - in-charge of analysis		

Sl No	Parameter	Unit	Value
			SC (ETP outlet)
1	pH	-	8.17
2	Biological Oxygen Demand	mg/l	2.11
3	Suspended solids	"	14.36
4	Oil & Grease	"	2.3
Remarks:			

[Signature]
 Assistant Scientist
 Kerala State Pollution Control Board

[Signature]



മലയാളം

English

കേരള സംസ്ഥാന മലിനീകരണ നിയന്ത്രണ ബോർഡ്

മലയാളം മന്ദിരം, മുൻപ് കെ. പി. അമ്പലം, എസ്. എം. റോഡ്, തൃശ്ശൂർ

KERALA STATE POLLUTION CONTROL BOARD

Mayyazhi Square, 1st Floor, Parasramam, Chakkara P.O., Thiruvananthapuram

ANALYSIS REPORT (WATER/SOLID/SOLID WASTE)		TAN No. 031	Date: 20/09/2022
Source	M/s. Sewage Treatment Plant by KWA, Chakkankandam.	Sample received Date	17/09/2022
Date of Sample Collection	16/08/2022	Period of analysis	16/08/2022-20/09/2022
Ref. No.	PCB/TS&TC/AN/007		
Date of Receipt	16/08/2022	Scientist - in-charge of analysis	
		RESINUR R	

Sl No	Parameter	Unit	Value
			KWA (ETP outlet)
1	pH	—	8.58
2	Biological Oxygen Demand	mg/l	4.5
3	Chemical Oxygen Demand	"	8
4	Suspended solids	"	10.52
5	Oil & Grease	"	NDL
6	Fungal Coliforms	MPN/100ml	NDL
Remarks:			

[Signature]
 Director General
 Kerala State Pollution Control Board

[Signature]
 20/9/2022

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 upto 15.12.2023. It also has Consent to Operate dated 12.09.2022 with validity upto 12.10.2024

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 lensoidal bodies of calc granulite and quartzite 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 2 explosives. 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)

<i>S.No.</i>	<i>Time (Hrs)</i>	<i>Temperature (°C)</i>	<i>Humidity (%)</i>	<i>Wind (m/s) & Direction</i>
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

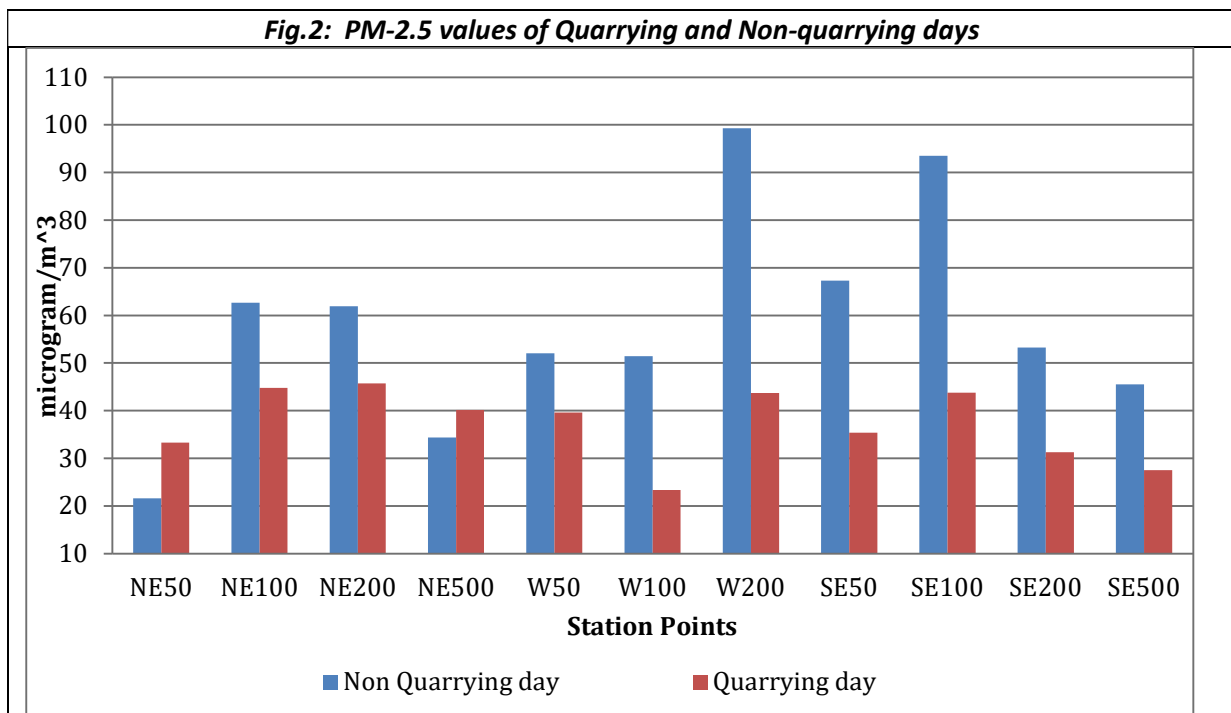
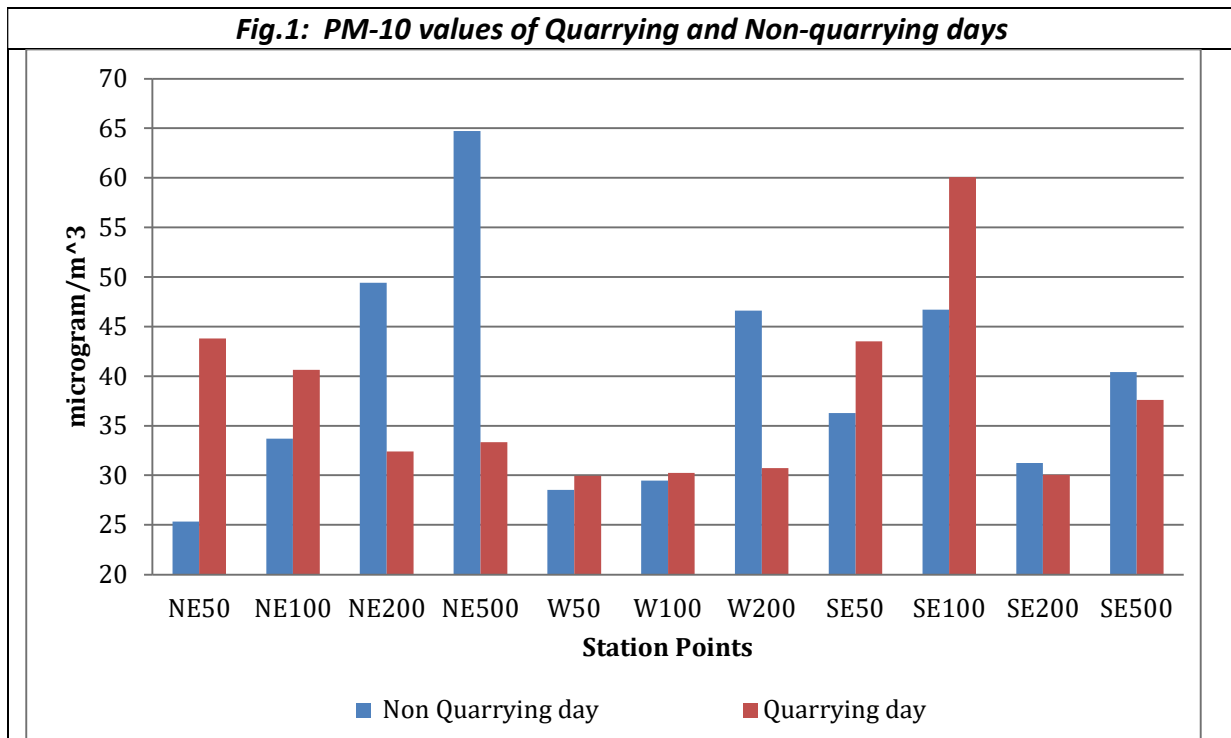
6.2 Particulate matters/dust

- 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.
-

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



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 meagre, 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 (L_{eq}) and maximum (L_{max}) of quarrying and non-quarrying day in West direction 50m

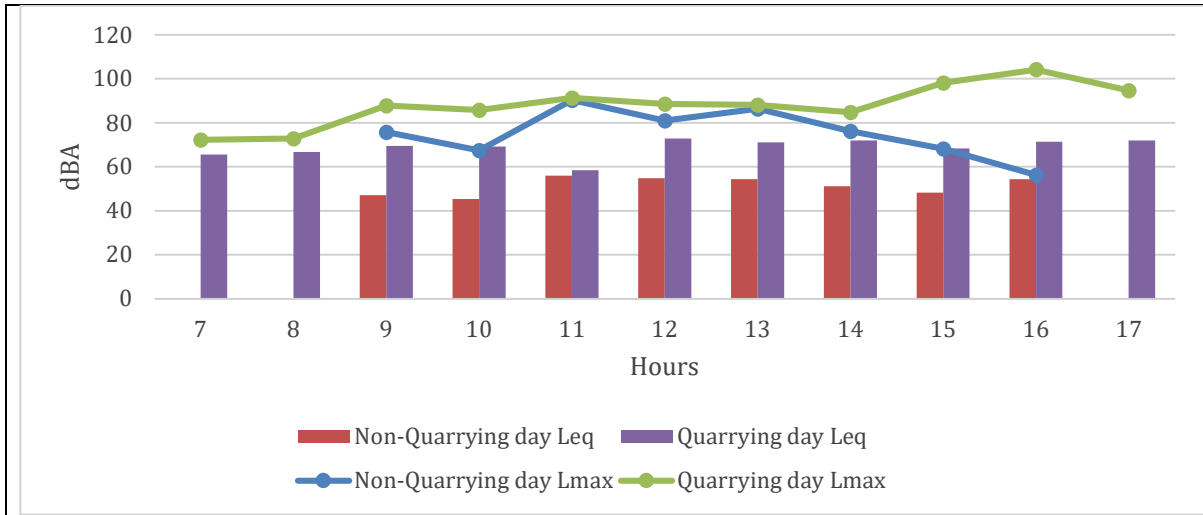


Fig.4: Equivalent values (Leq) and maximum (Lmax) of quarrying and non-quarrying day in West direction 100m

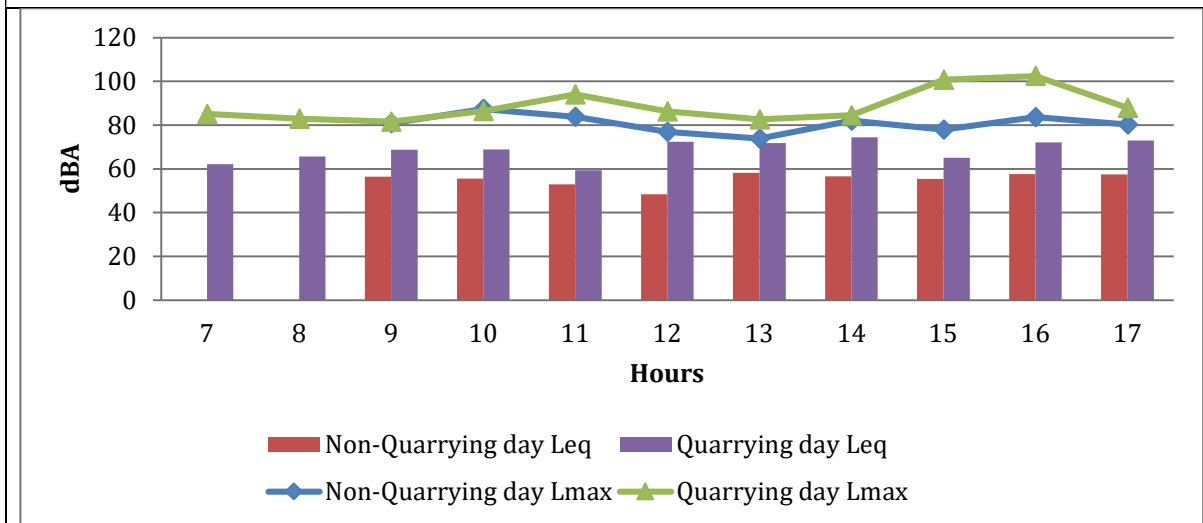


Fig.5: Equivalent values (Leq) and maximum (Lmax) of quarrying day and non-quarrying in West direction 200m

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

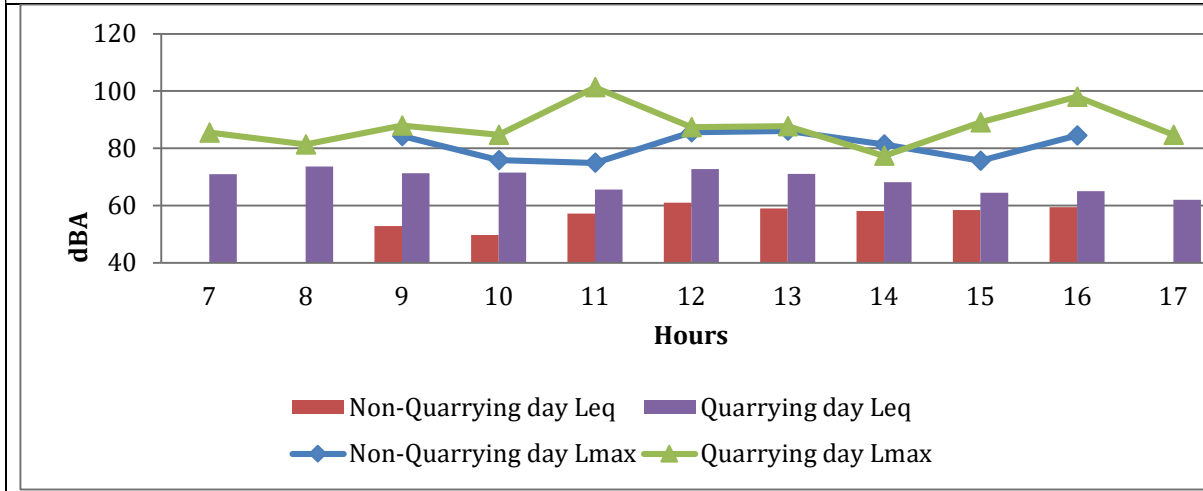


Fig.7: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in North-East direction 100m

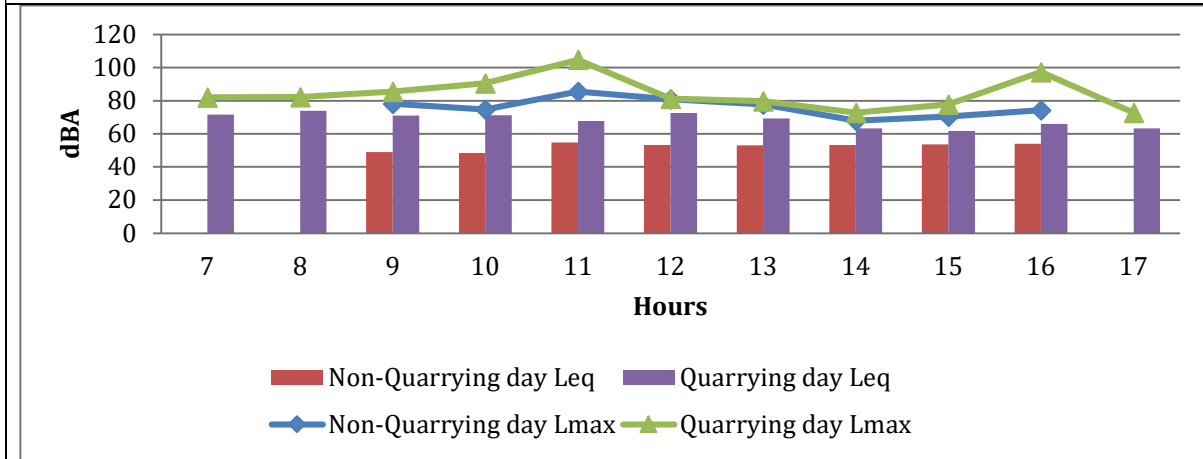


Fig.8: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in North-East direction 200m

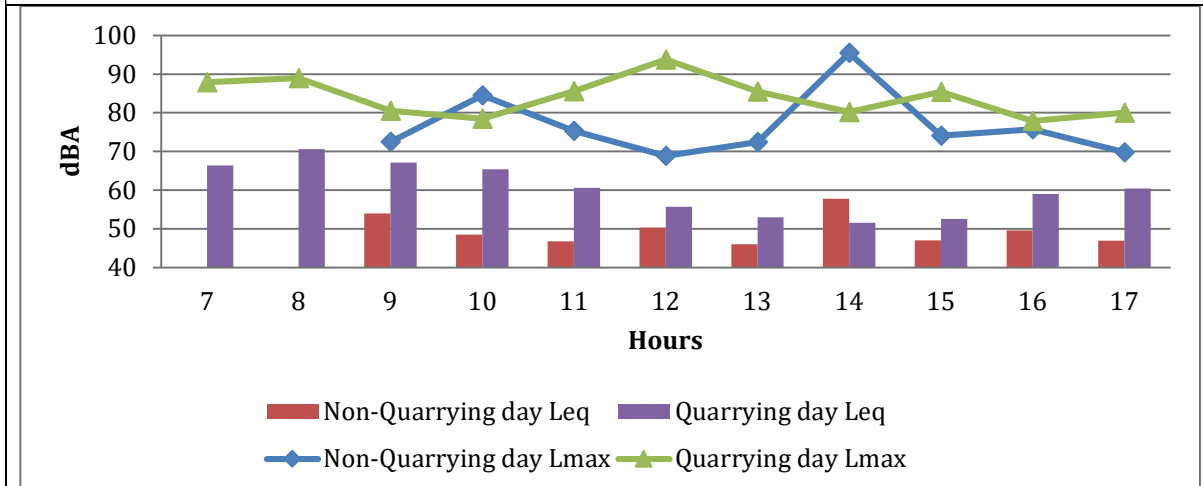


Fig.9: Equivalent values (Leq) and maximum (Lmax) of quarrying day and non-quarrying in North-East direction 500m

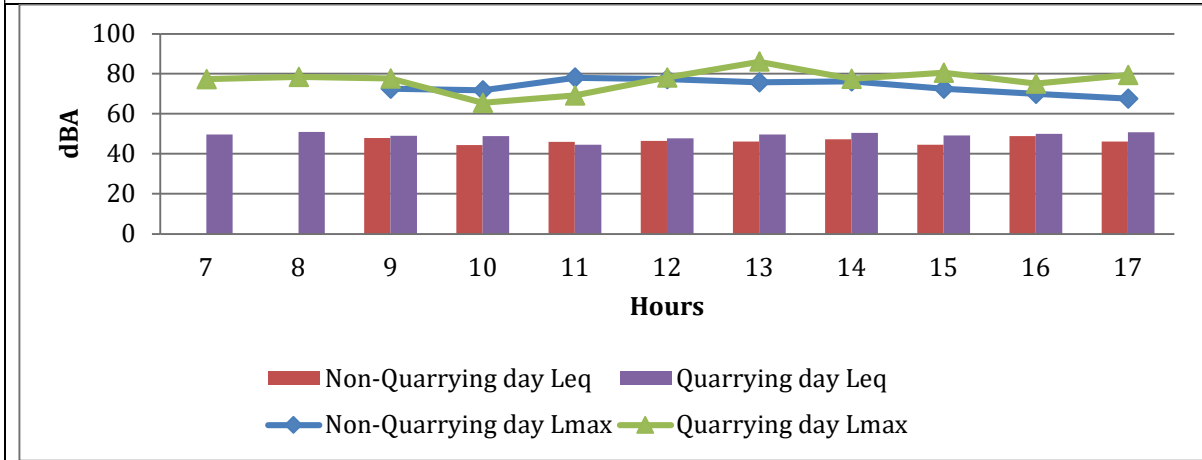


Fig.10: Equivalent values (Leq) and maximum (Lmax) of quarrying day and non-quarrying in South-East direction 50m

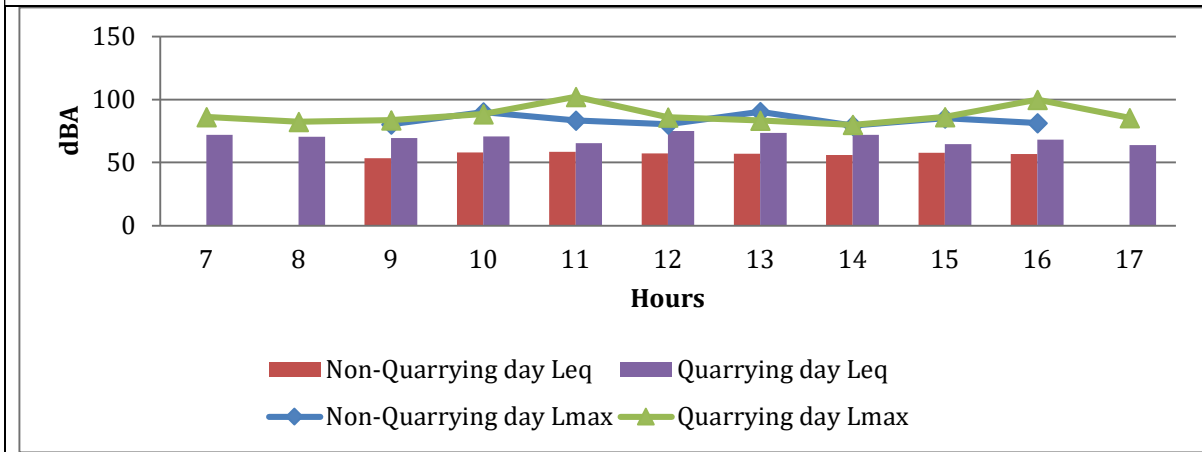


Fig.11: Equivalent values (Leq) and maximum (Lmax) of quarrying day and non-quarrying in South-East direction 100m

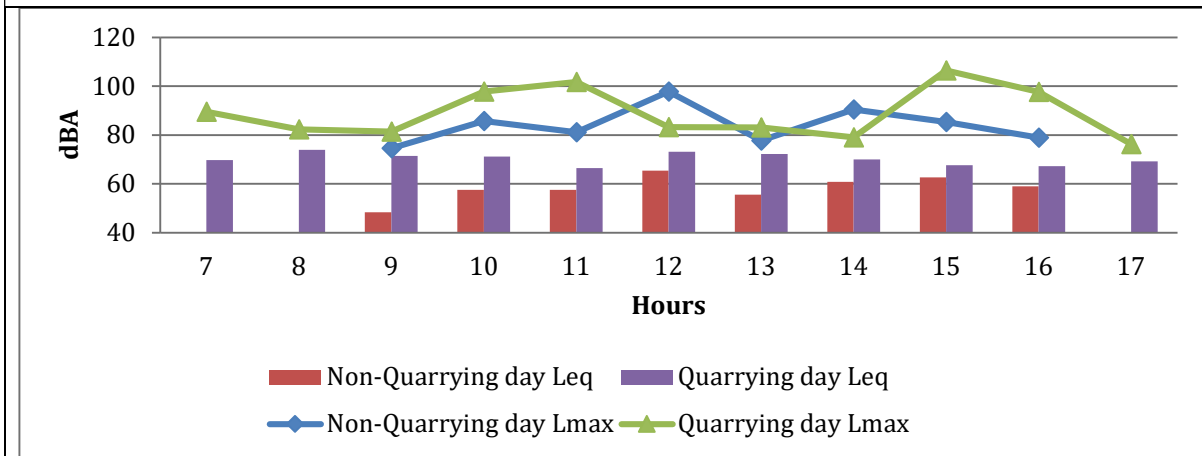


Fig.12: Equivalent values (Leq) and maximum (Lmax) of quarrying day and non-quarrying in South-East direction 200m

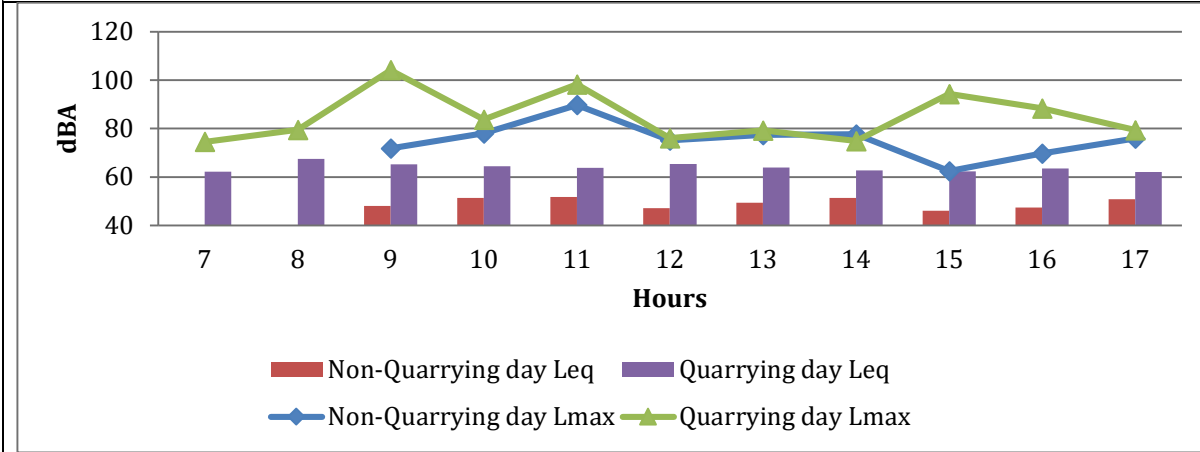


Fig.13: Equivalent values (Leq) and maximum (Lmax) of quarrying day and non-quarrying in South-East direction 500m

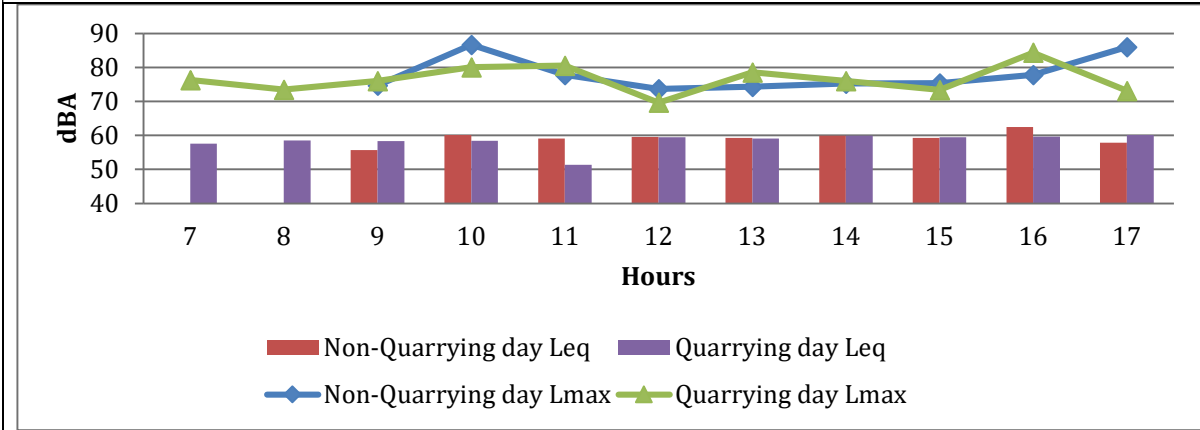
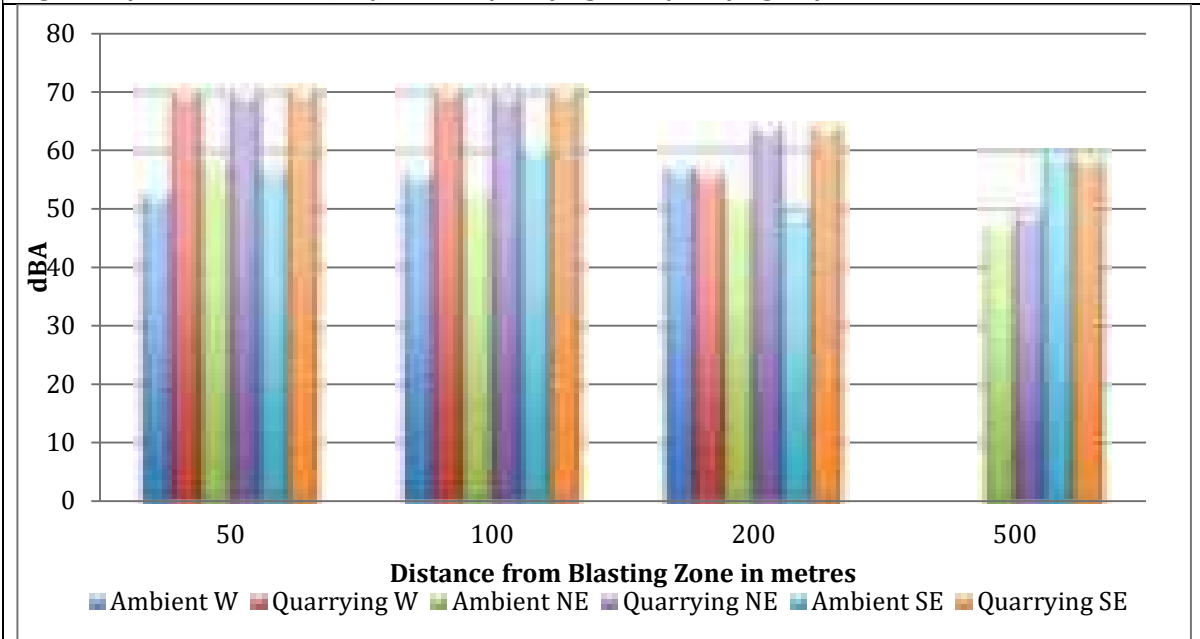


Fig.14: Equivalent values (Leq) of non-quarrying and quarrying day



6.4 Water Quality			
<i>Sample Point: Quarry Pond</i>			
<i>Date of Sample: 14/12/2022</i>			
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

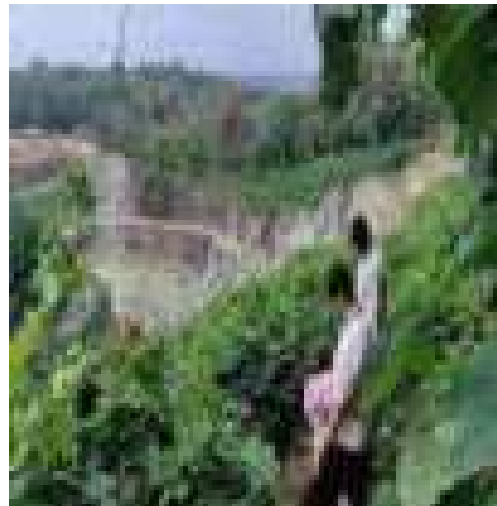
7.0 Site specific observations made during the Visit

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 lensoidal bodies of calc granulite and quartzite 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 2 explosives. 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 6 locations 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 18th december 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

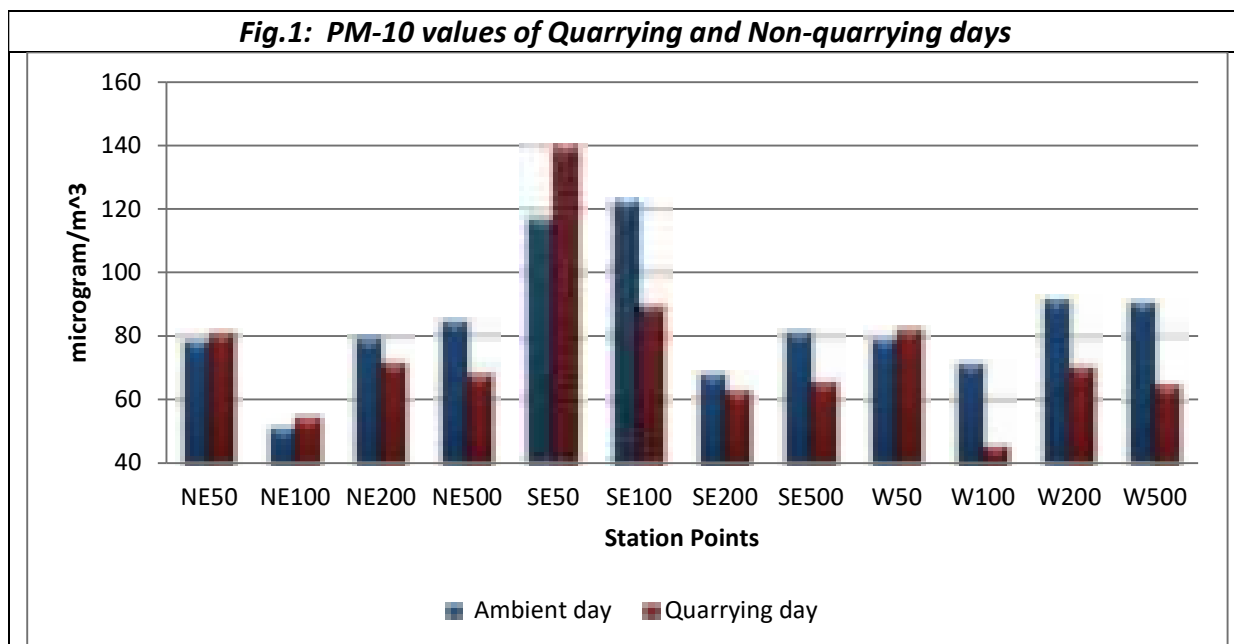
9	14:00	29	48.6	0.5S
10	15:00	28.5	49.7	0.8SE
11	16:00	27.9	58	0.3W
12	17:00	29.2	62	0.9W

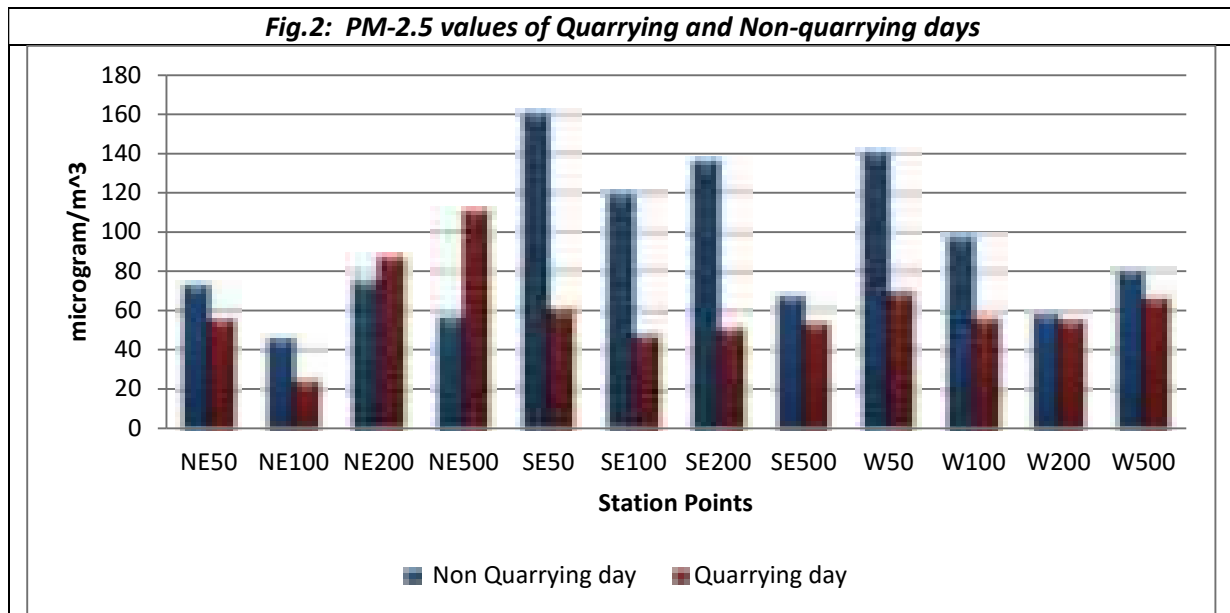
6.2 Particulate matters/dust

- 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/m ³)		PM 2.5 (microgram/m ³)	
		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





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:

L_{eq} = 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 meagre, 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 (L_{eq}) and maximum (L_{max}) of quarrying and non-quarrying day in West direction 50m

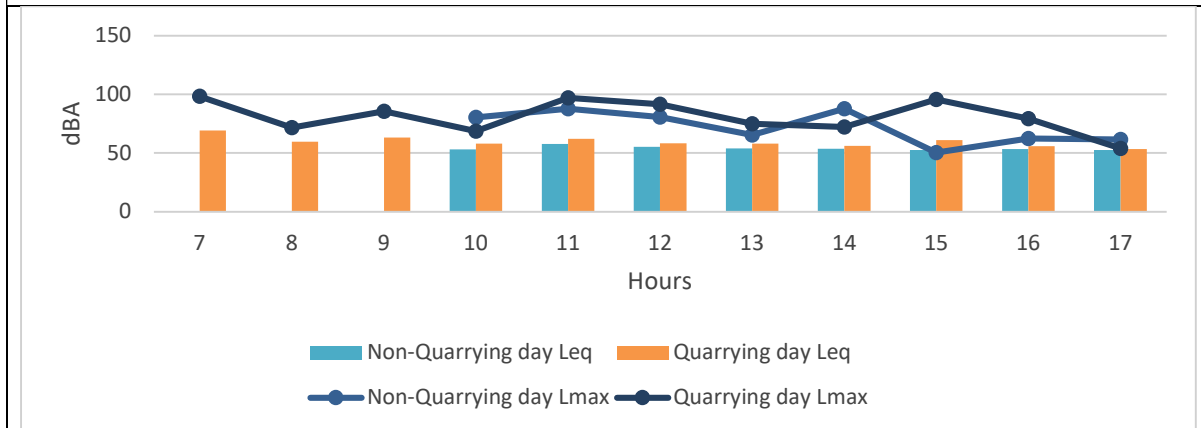


Fig.4: Equivalent values (Leq)and maximum (Lmax)of quarrying and non-quarrying day in West direction 100m

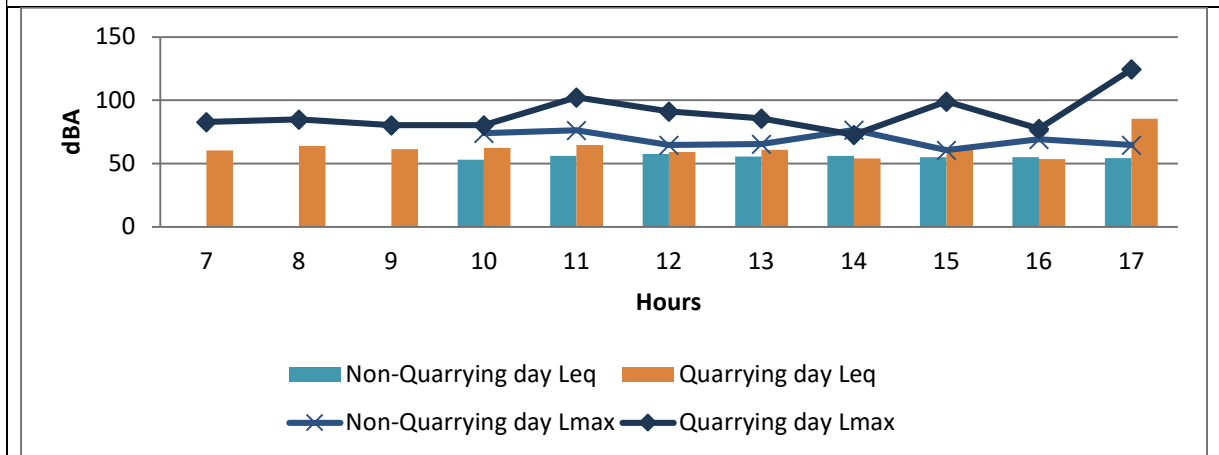


Fig.5: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in West direction 200m

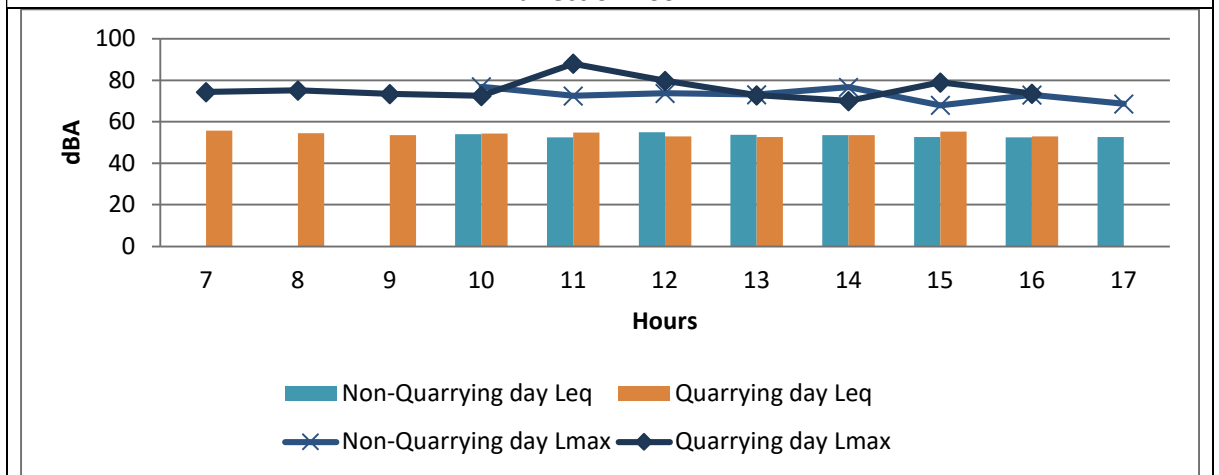


Fig.6: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in West direction 500m

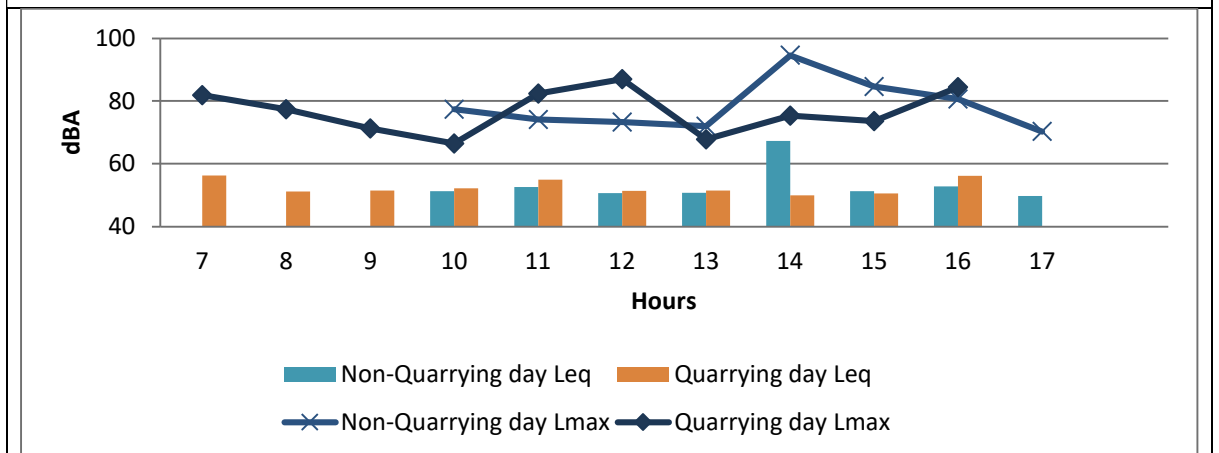


Fig.7: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in North-East direction 50m

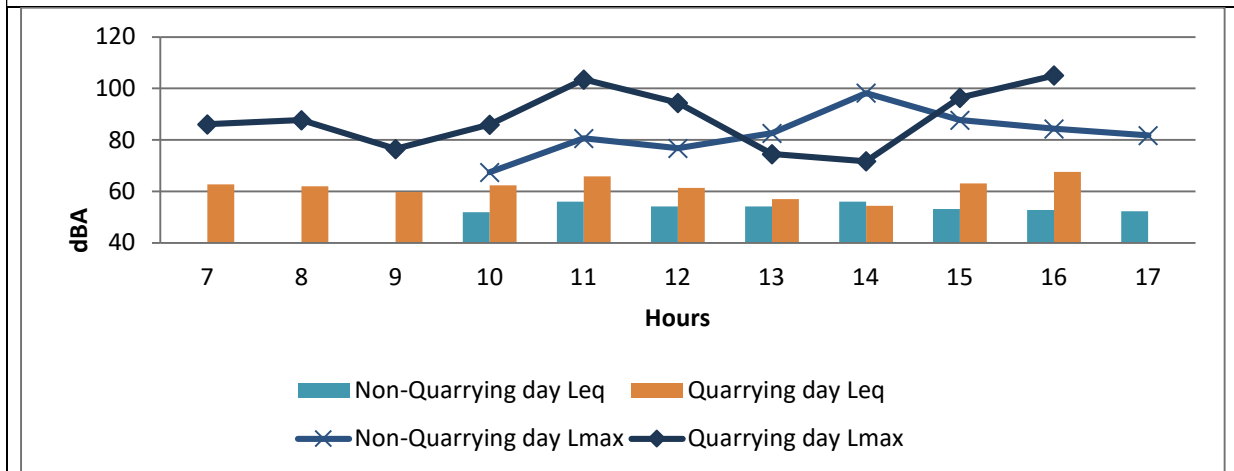


Fig.8: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in North-East direction 100m

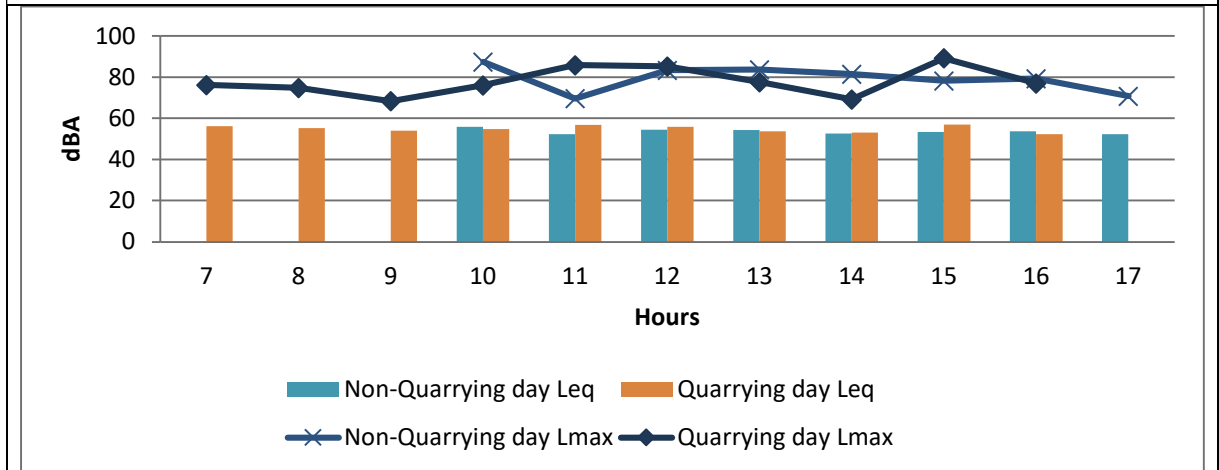


Fig.9: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in North-East direction 200m

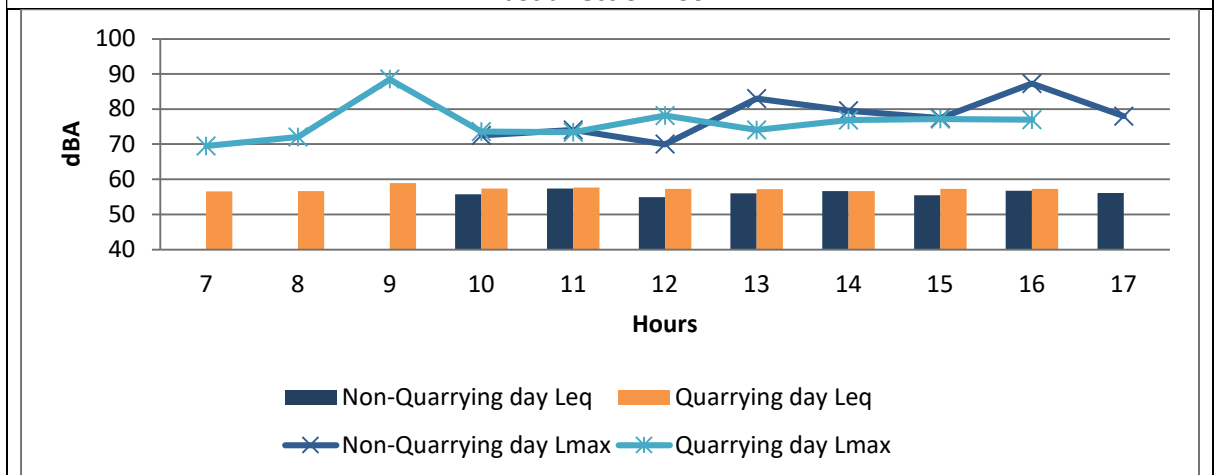


Fig.10: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in North-East direction 500m

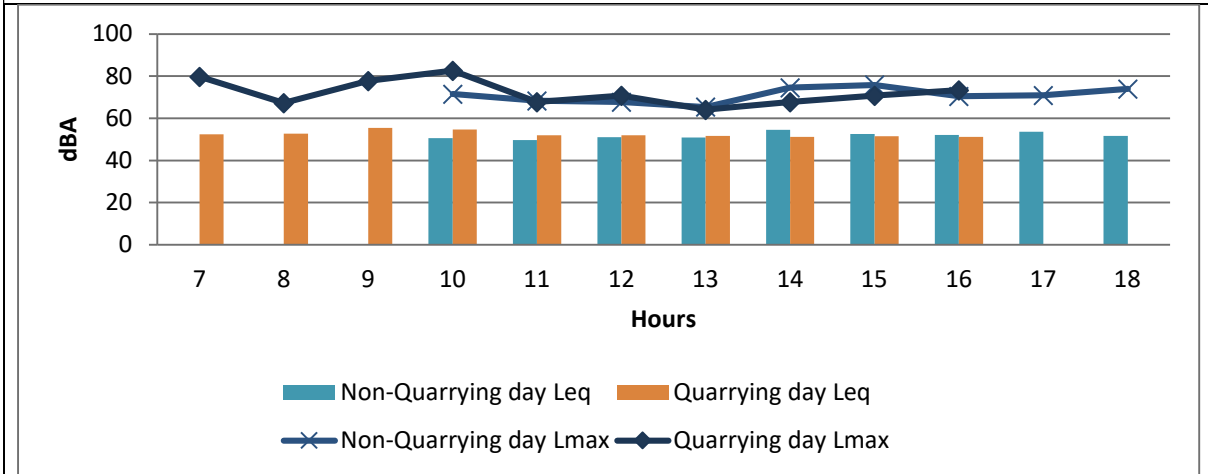


Fig.11: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in South-East direction 50m

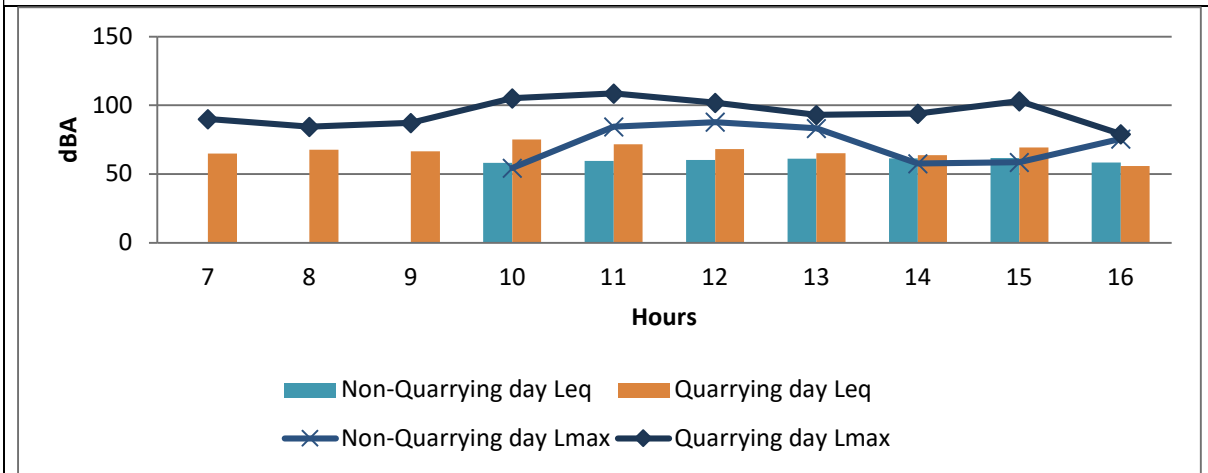


Fig.12: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in South-East direction 100m

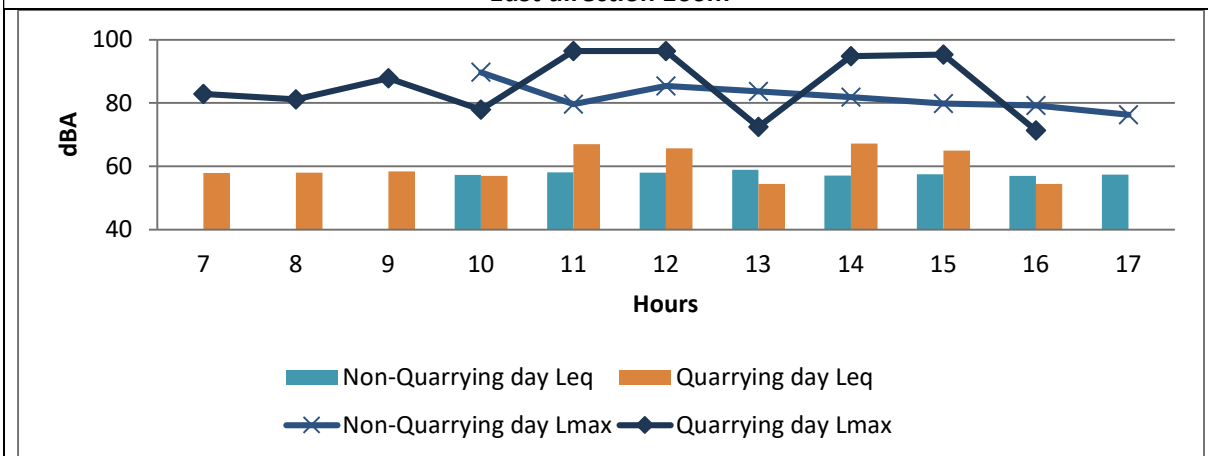


Fig.13: Equivalent values (Leq) and maximum (Lmax) of quarrying day and non-quarrying in South-East direction 200m

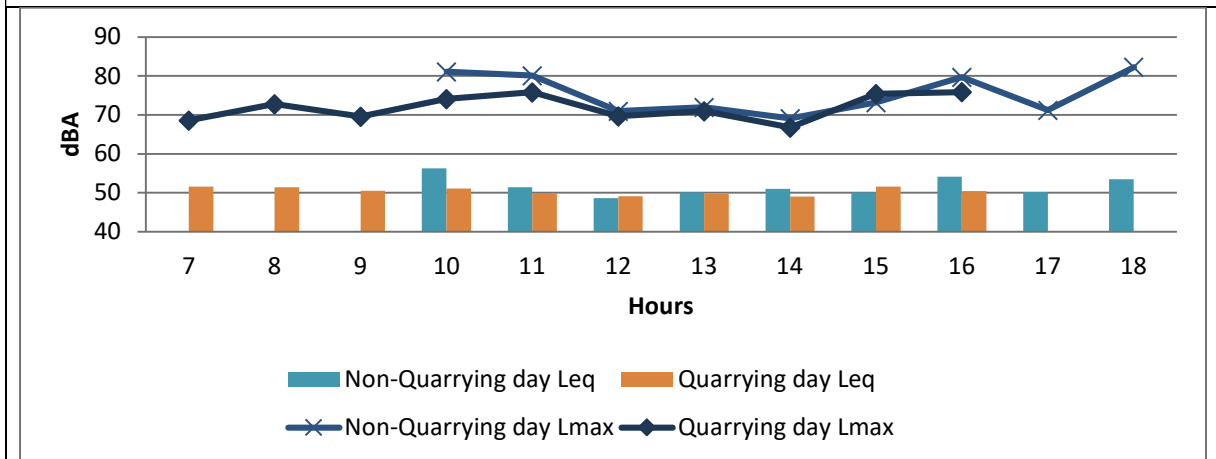


Fig.14: Equivalent values (Leq) and maximum (Lmax) of quarrying day and non-quarrying in South-East direction 500m

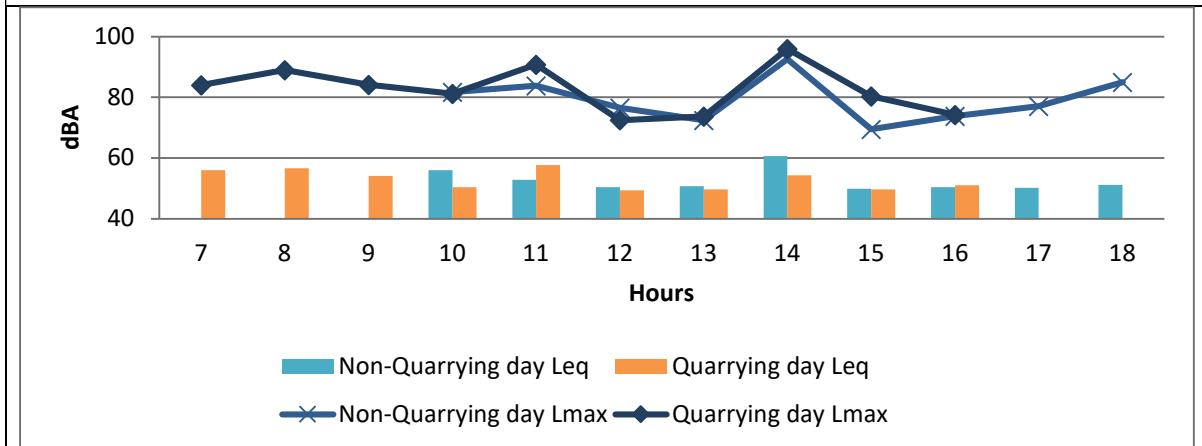
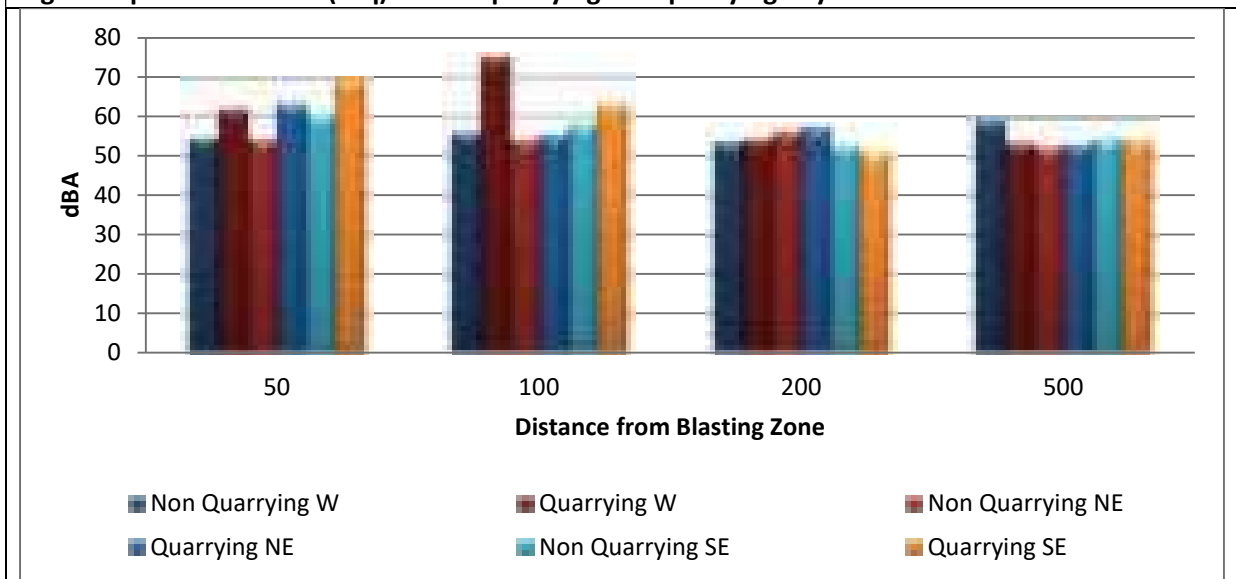


Fig.15: Equivalent values (Leq) of non-quarrying and quarrying day



6.4 Water Quality			
<i>Sample Point: New Quarry Pond</i>			
<i>Date of Sample: 19/01/2023</i>			
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	Thiruvananthapuram/ Kerala			
Geo-coordinates	Latitude	08°52'54.00"N	Longitude	76°55'6.44"E
1.0 Study site description				
1.1 General information				
<p>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.</p>				
1.2 Topography & Geology				
<p>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- sillimanite 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.</p>				
1.3 Details of quarrying/ mining activities				
<p>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 cartridge 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.</p>				

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
<p>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.</p>

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)				
<p>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</p>				
5.2 Background monitoring (23-12-2022)				
<p>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 at 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.</p>				
6.0 Results				
6.1 Weather				
<p>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.</p>				
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 (22.12.2022)

Particulate matters/ dust in terms of PM10 and PM2.5 values observed during quarrying day (22.12.2022) 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 (22.12.2022)

Station Points	Distance blasting (metre)	from zone	PM 10 (microgram/m ³)		PM 2.5 (microgram/m ³)	
			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

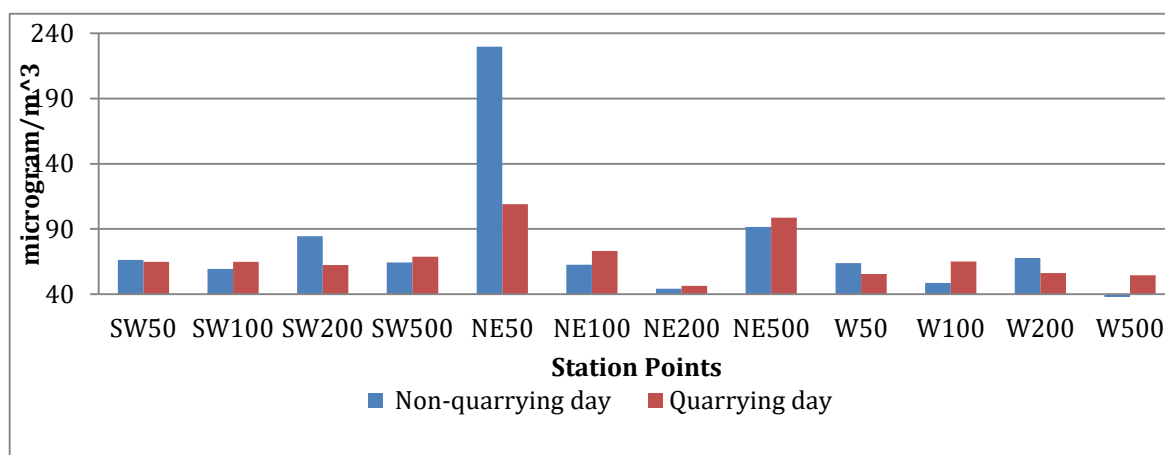


Fig.1: PM-10 values observed during Quarrying and Non-quarrying day

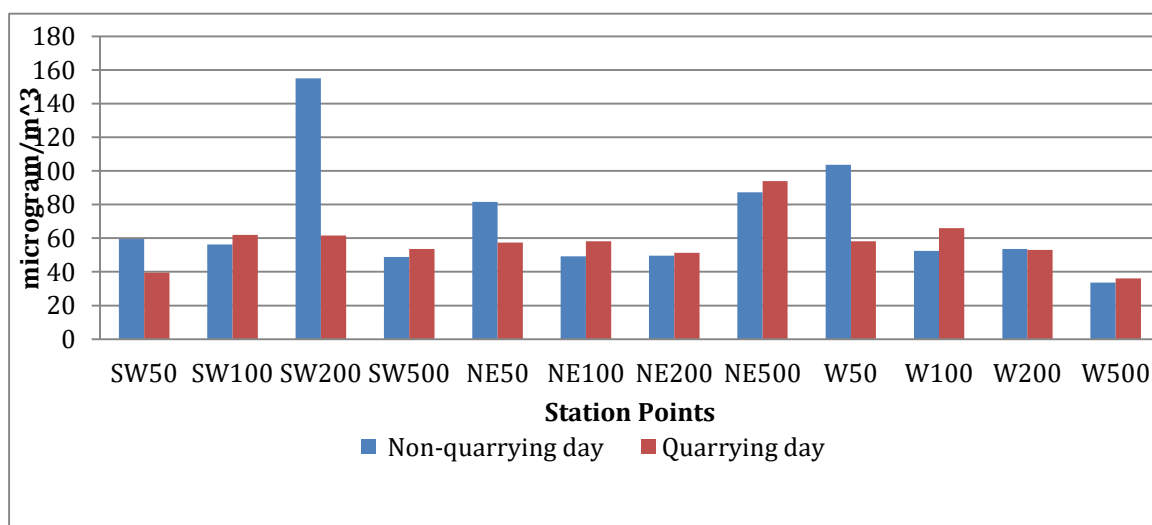


Fig.2: PM-2.5 values during Quarrying and Non-quarrying day

The analysis results of ambient air quality monitoring carried out during non-quarrying day (23.12.2022) & quarrying day (22.12.2022) 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 (22.12.2022) 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

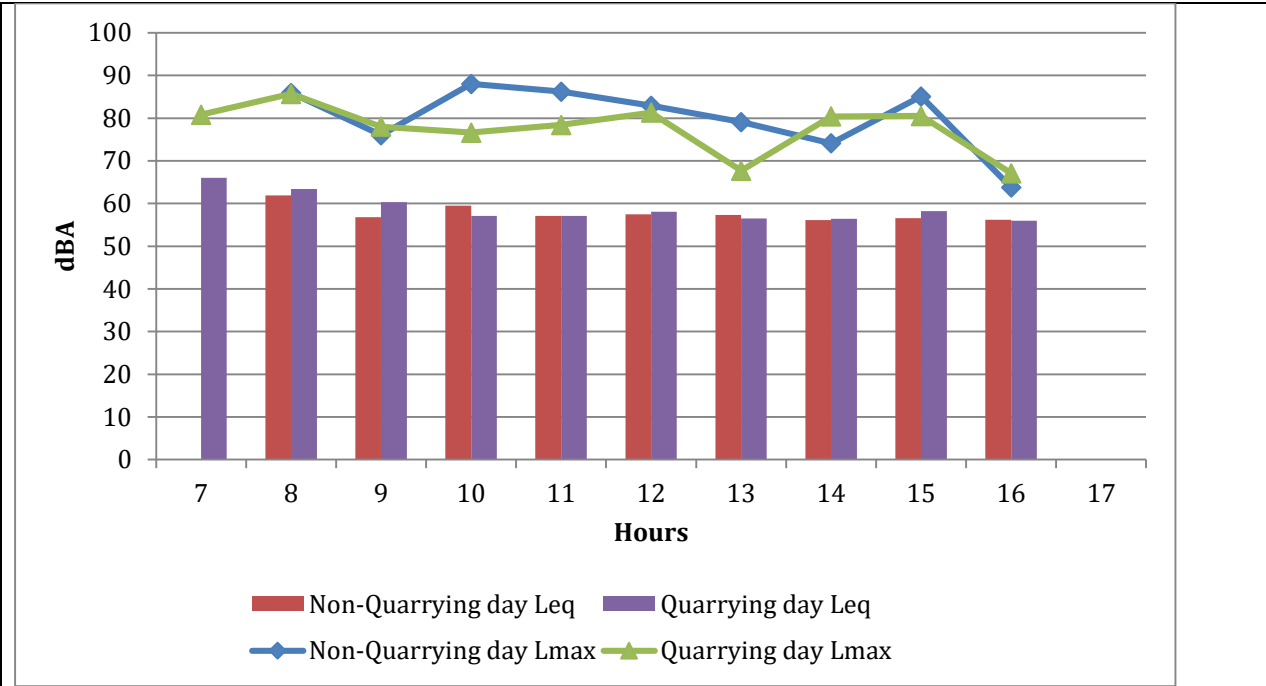


Fig.3: Equivalent values (Leq) and maximum (Lmax) of quarrying and non-quarrying day in West direction 50m

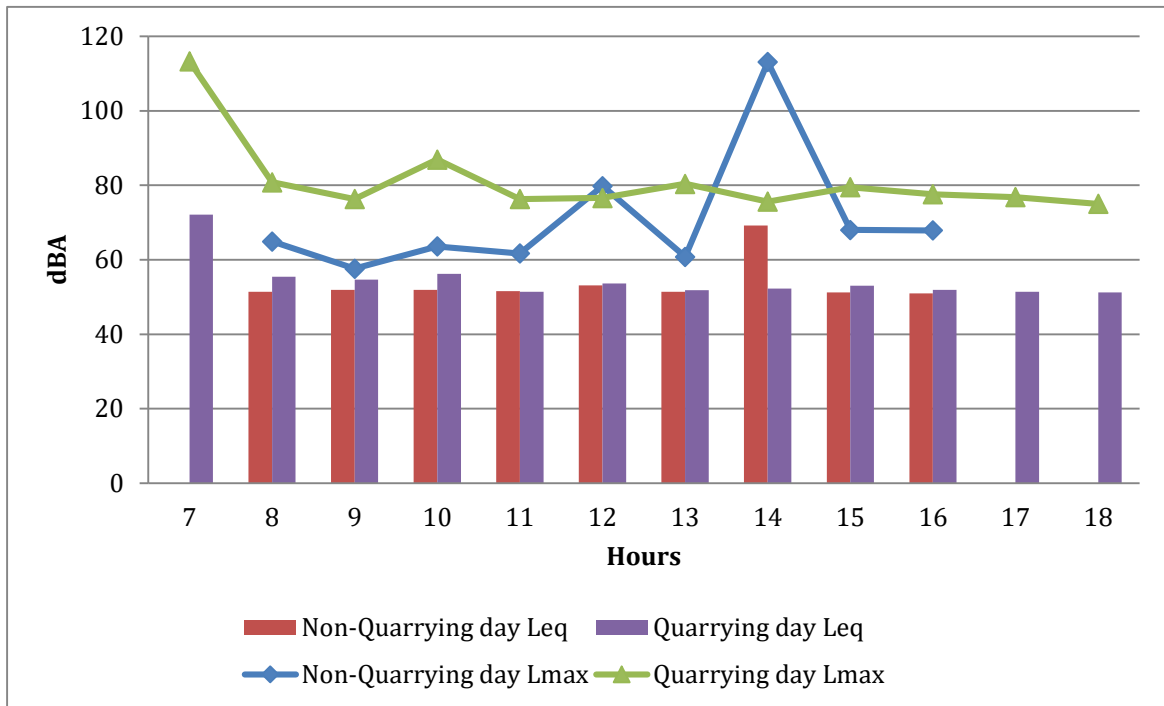


Fig.4: Equivalent values (Leq) and maximum (Lmax) of quarrying and non-quarrying day in West direction 100m



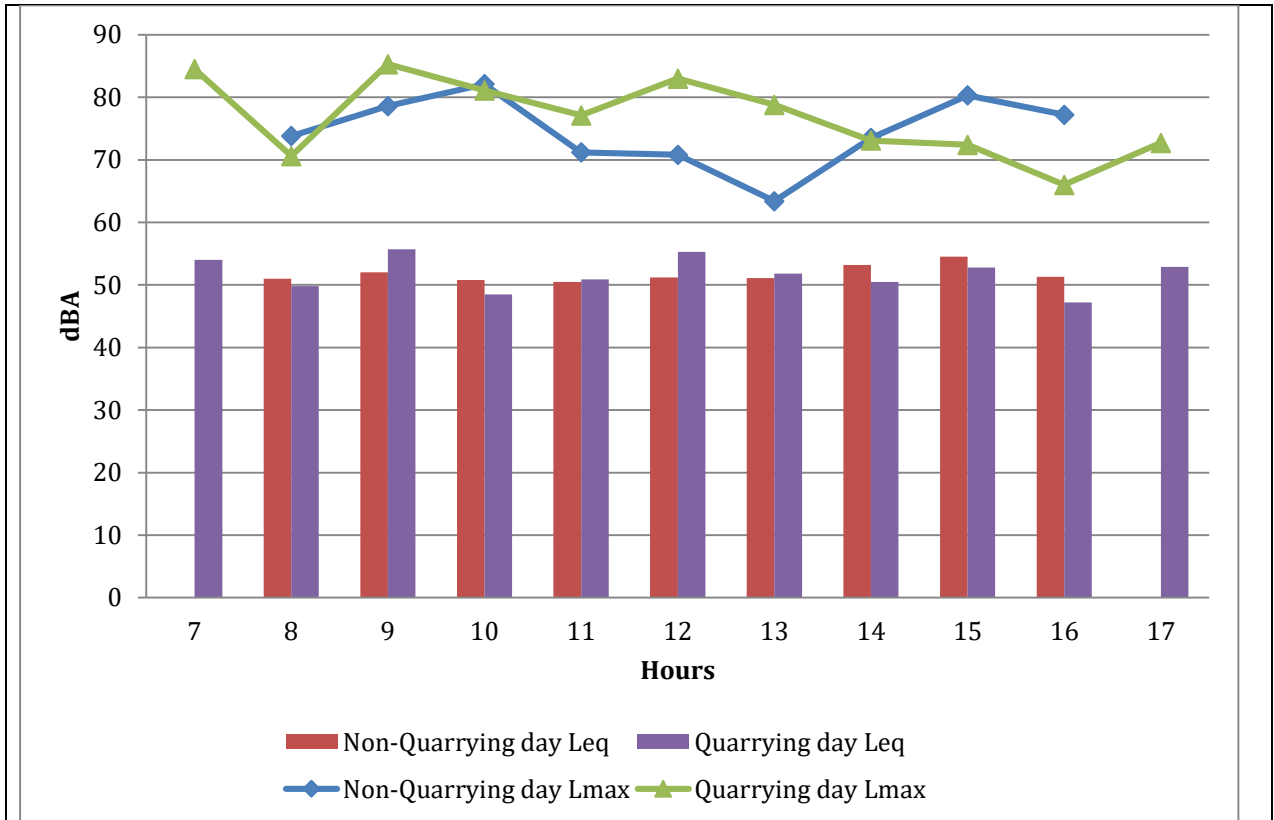


Fig.5: Equivalent values (Leq) and maximum (Lmax) of quarrying and non-quarrying day in West direction 200m

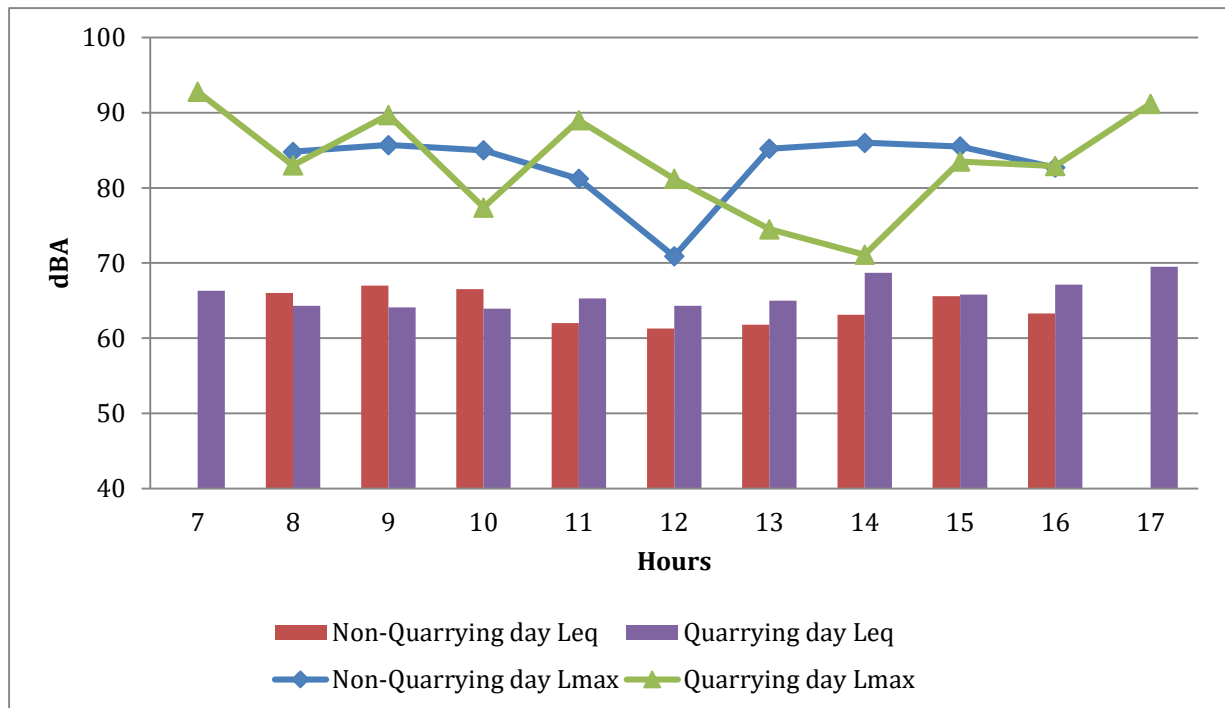


Fig.6: Equivalent values (Leq) and maximum (Lmax) of quarrying and non-quarrying day in West direction 500m



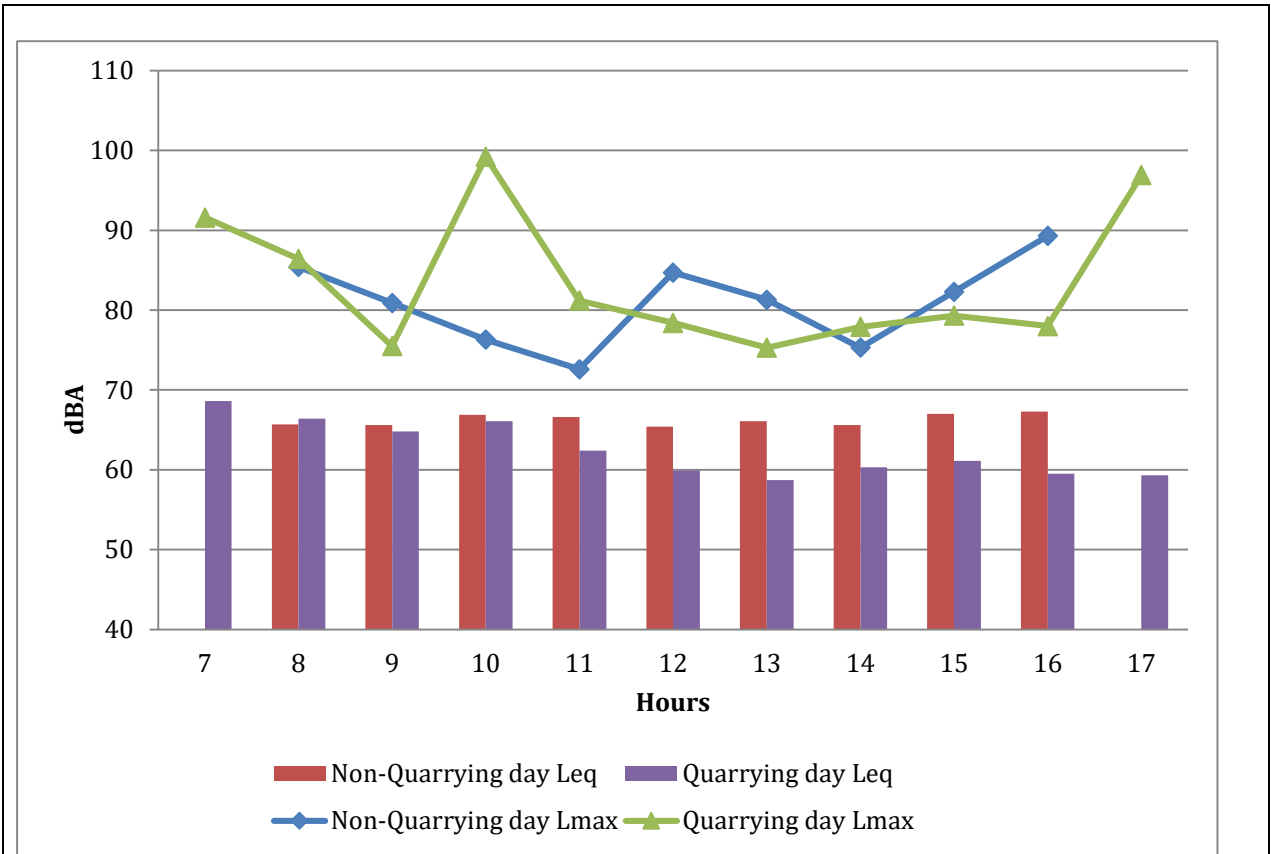


Fig.7: Equivalent values (Leq) and maximum (Lmax) of quarrying and non-quarrying day in North East direction 50m

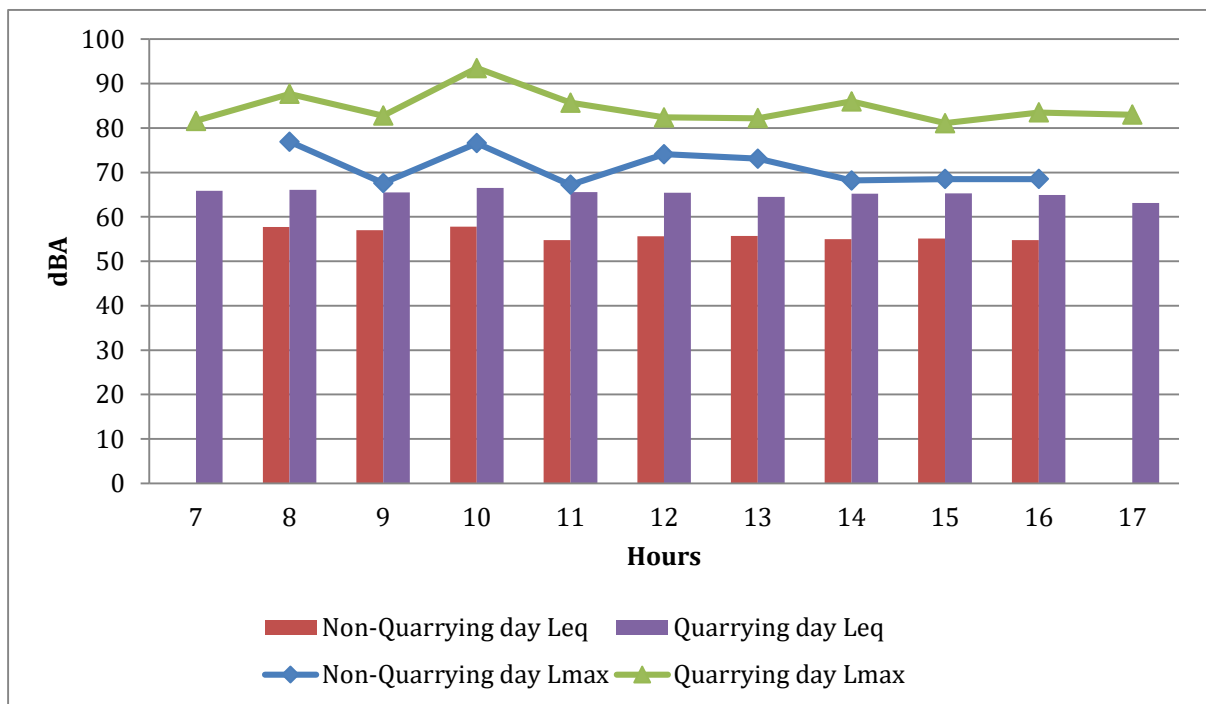


Fig.8: Equivalent values (Leq) and maximum (Lmax) of quarrying and non-quarrying day in North East direction 100m



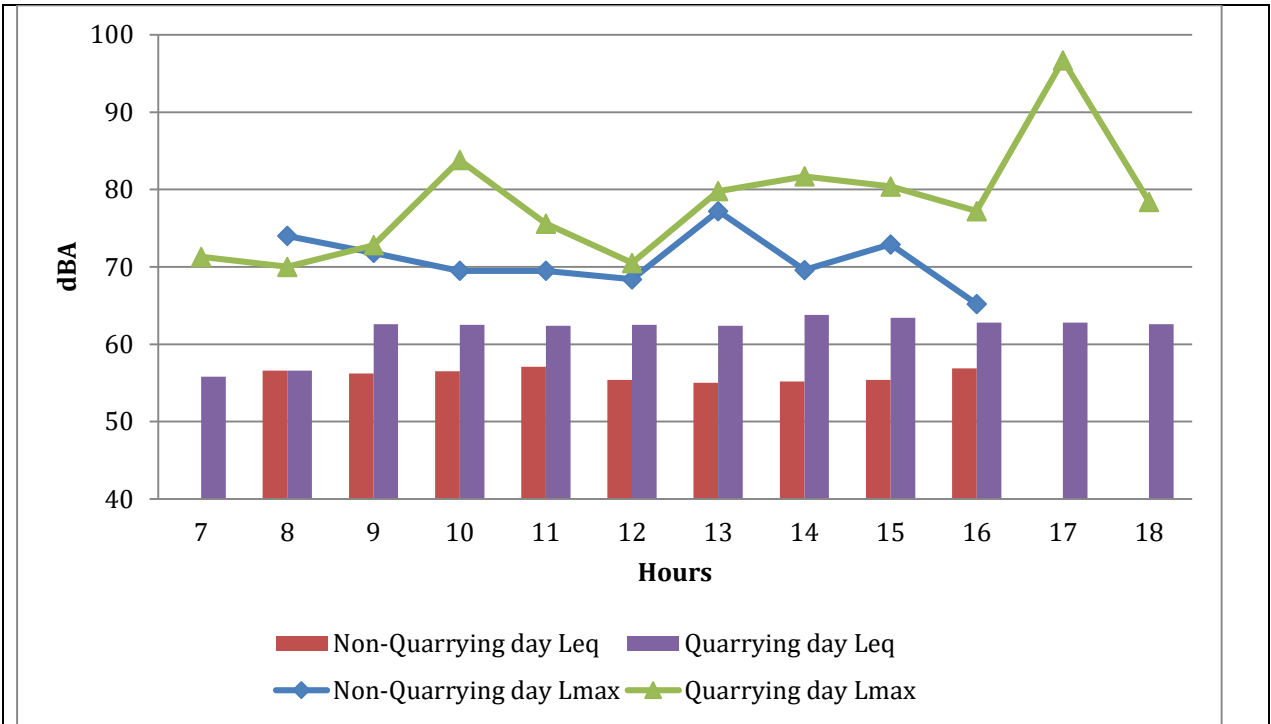


Fig.9: Equivalent values (Leq)and maximum (Lmax)of quarrying and non-quarrying day in North East direction 200m

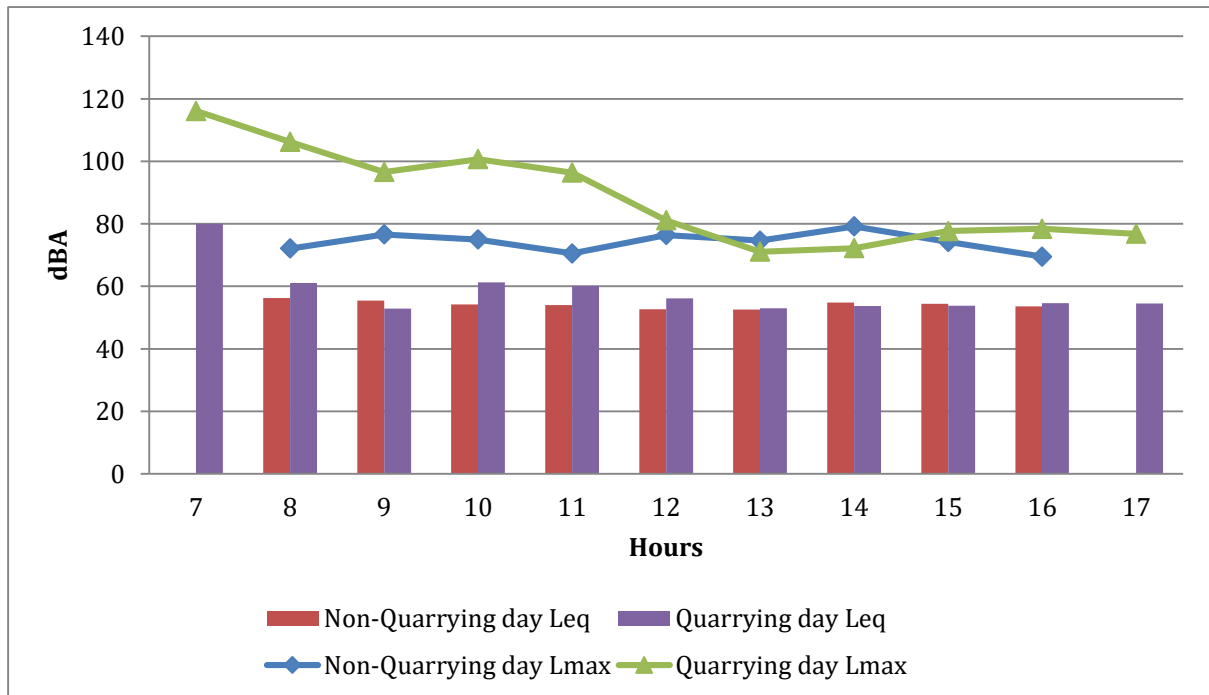


Fig.10: Equivalent values (Leq)and maximum (Lmax)of quarrying and non-quarrying day in North East direction 500m



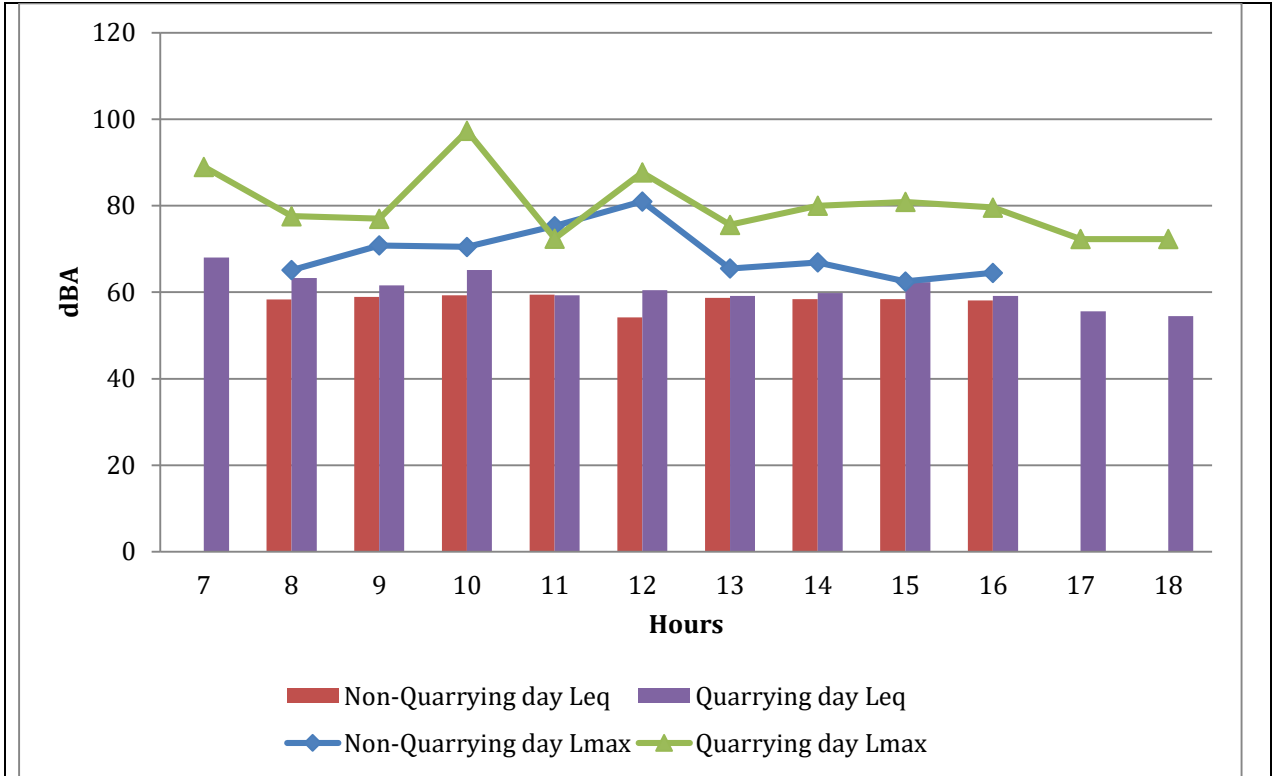


Fig.11: Equivalent values (Leq) and maximum (Lmax) of quarrying and non-quarrying day in South West direction 50m

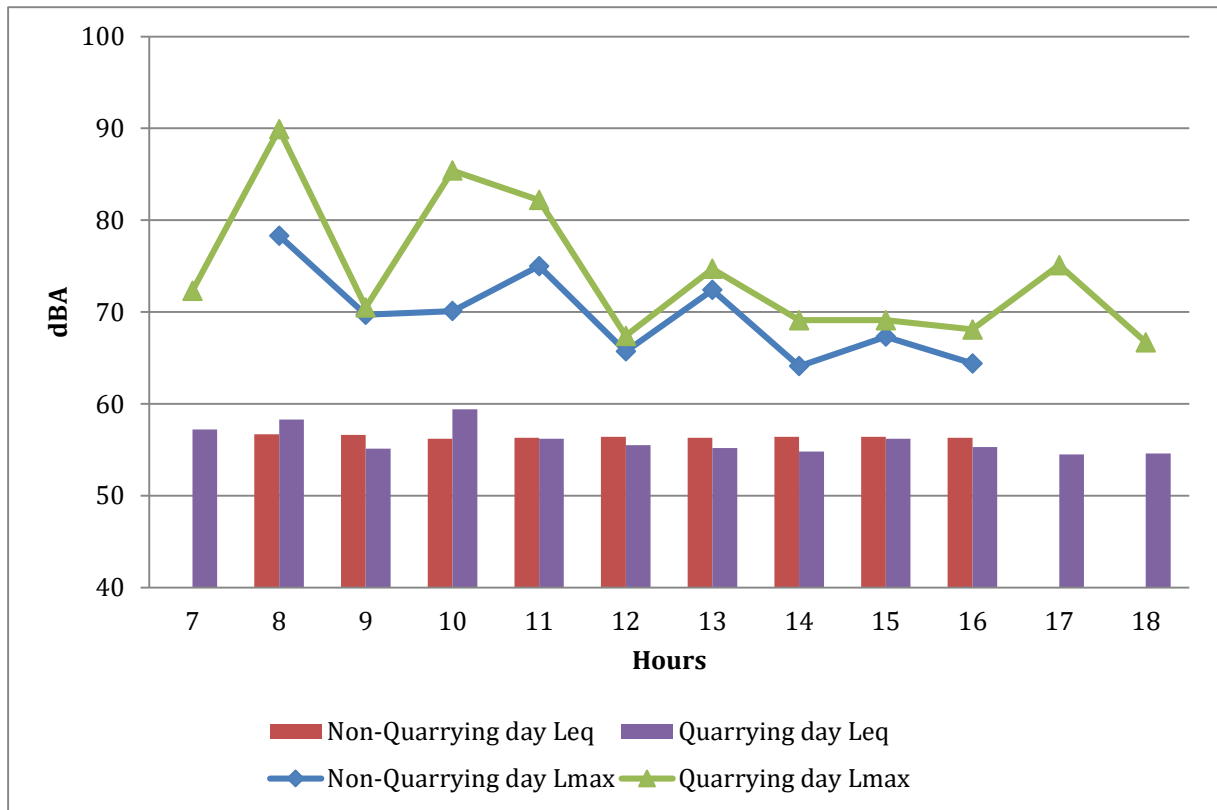


Fig.12: Equivalent values (Leq) and maximum (Lmax) of quarrying and non-quarrying day in South West direction 100m



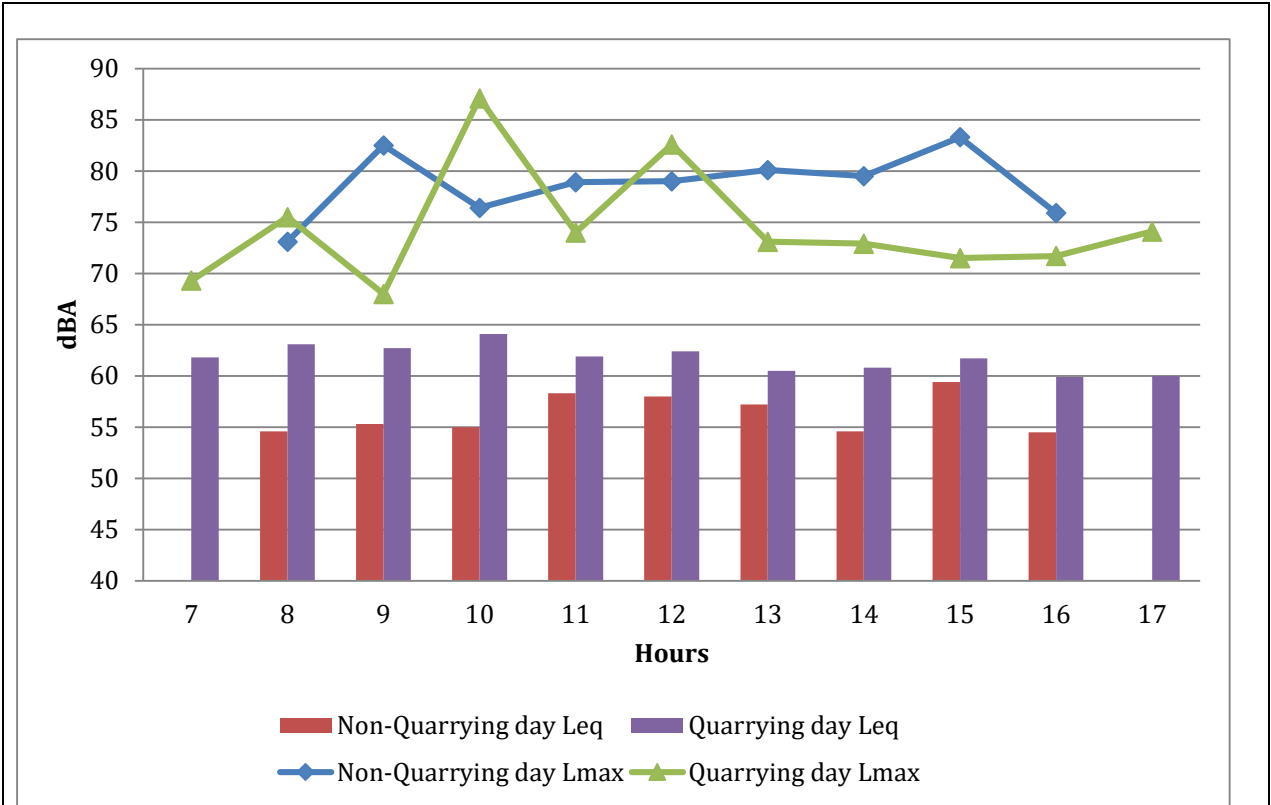


Fig.13: Equivalent values (Leq) and maximum (Lmax) of quarrying and non-quarrying day in South West direction 200m

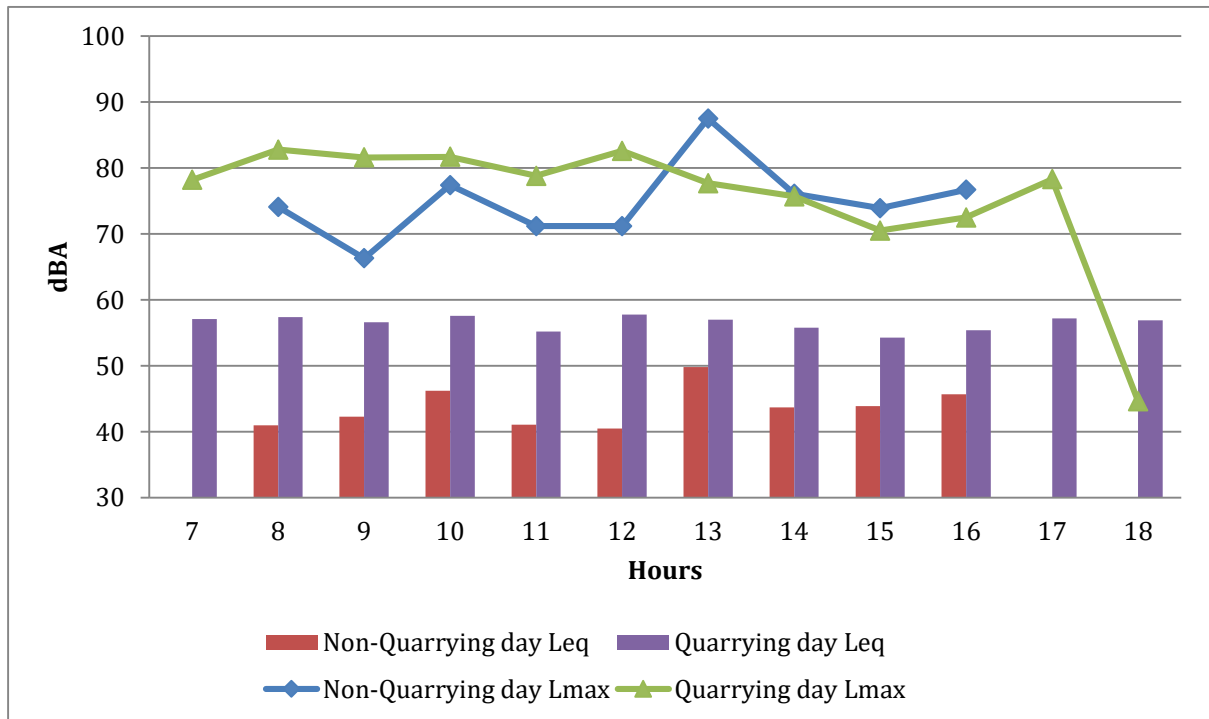


Fig.14: Equivalent values (Leq) and maximum (Lmax) of quarrying and non-quarrying day in South West direction 500m



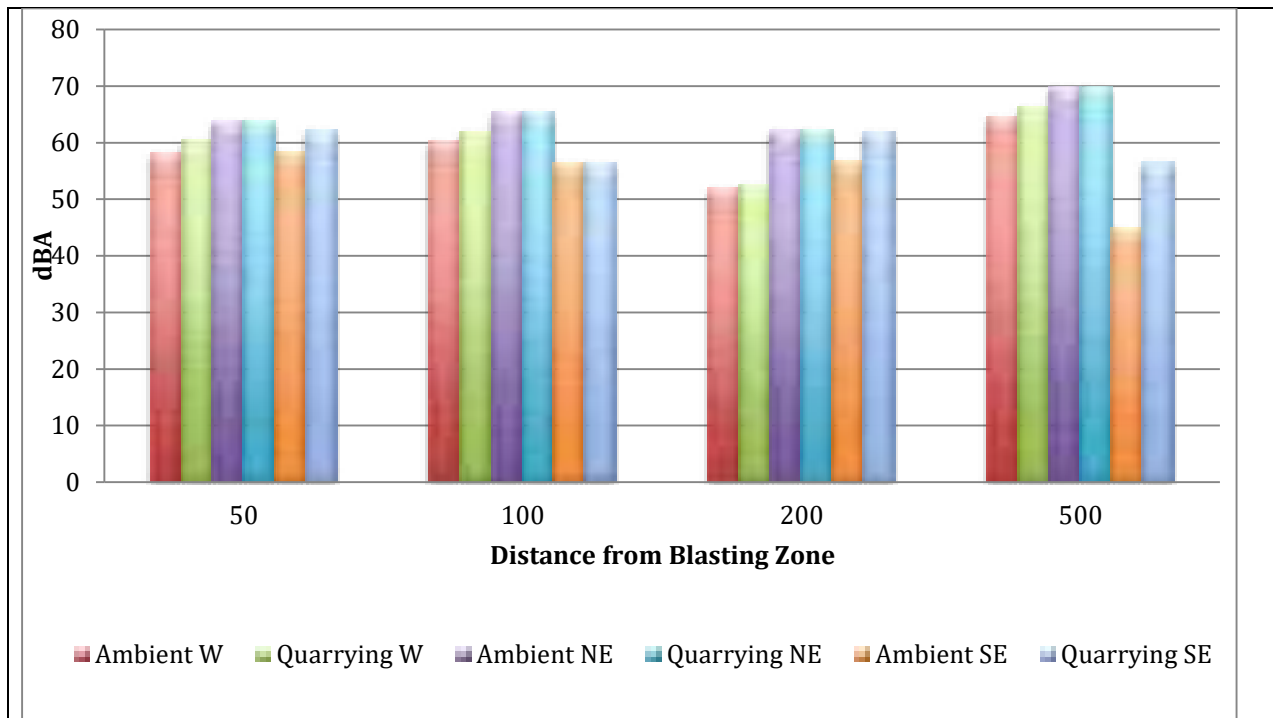


Fig.15: Equivalent values (Leq) of Non-quarrying and quarrying day

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 (22.12.2022) & 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	μ S/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 ensuring 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. Parackal 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. 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 12-02-2019 and 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
<p>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.</p> <p>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.</p> <p>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.</p>

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

<i>Weather: Non-quarrying day (27-12-2022)</i>				
<i>S.No.</i>	<i>Time (Hrs)</i>	<i>Temperature (°C)</i>	<i>Humidity (%)</i>	<i>Wind (m/s) & Direction</i>
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

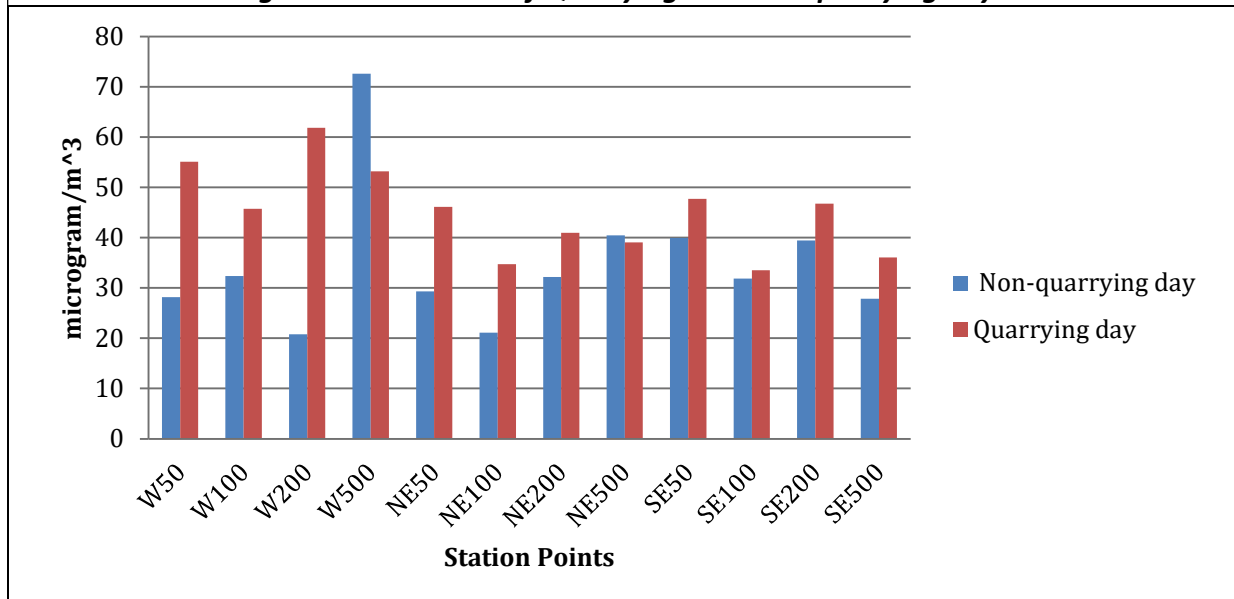
concentrations of PM10 higher which also points to an inference that the influence of dust generation in blasting is negligible in PM10 compared to general ground dust from overall quarry area including roads.

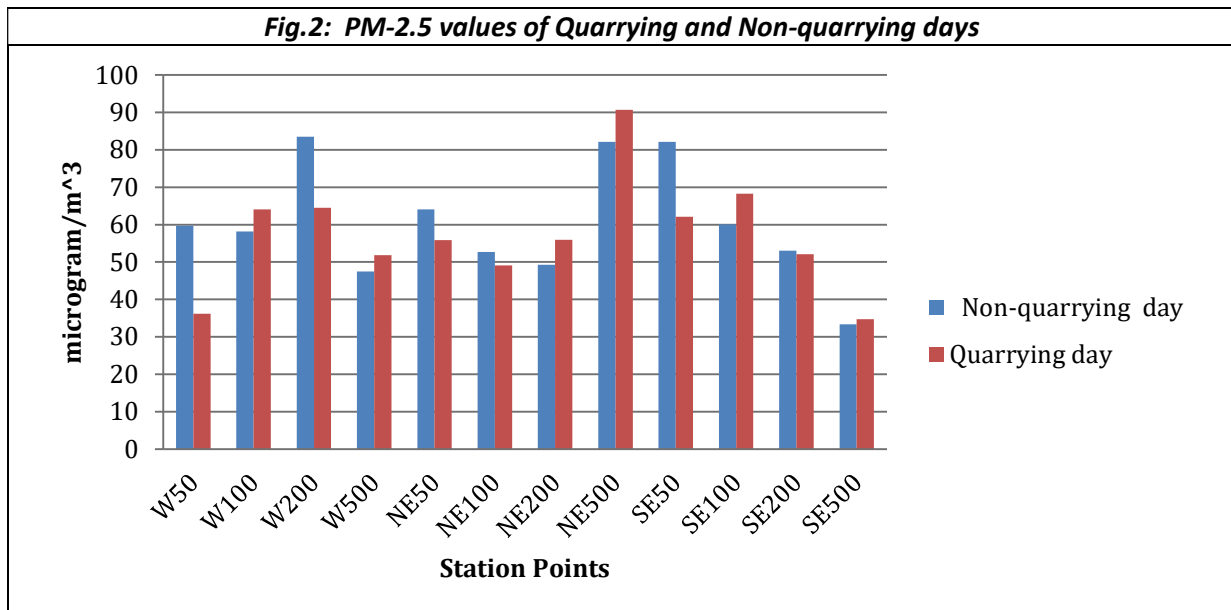
- The results of PM2.5 shows that ambient day values are generally more than blasting day values. The explanations based on dust suppression and local influence at far-off stations given for PM10 hold here also.

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

Station Points	Distance from blasting zone (metre)	PM 10 (microgram/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





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:

L_{eq} = Equivalent noise level

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

Observations:

- The equivalent noise level and L_{max} 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

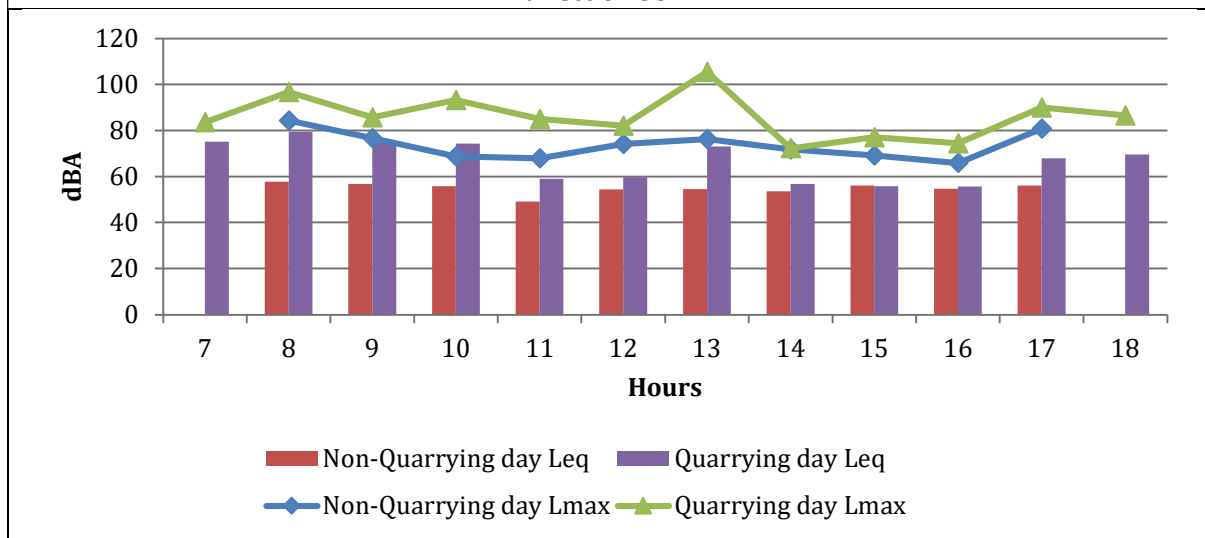


Fig.4: Equivalent values (Leq) and maximum (Lmax) of quarrying and non-quarrying day in West direction 100m

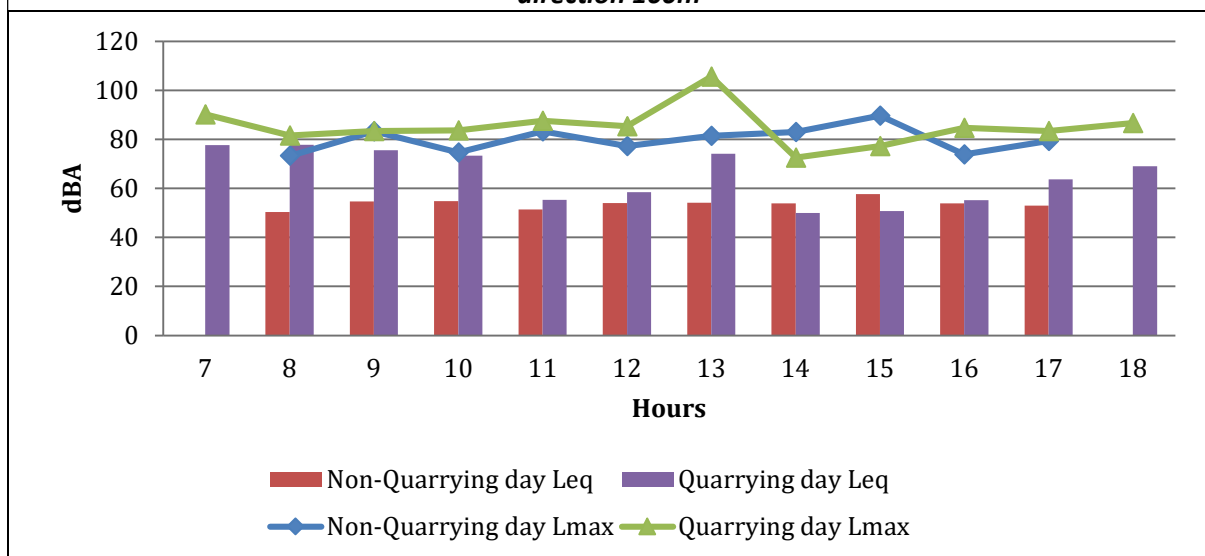


Fig.5: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in West direction 200m

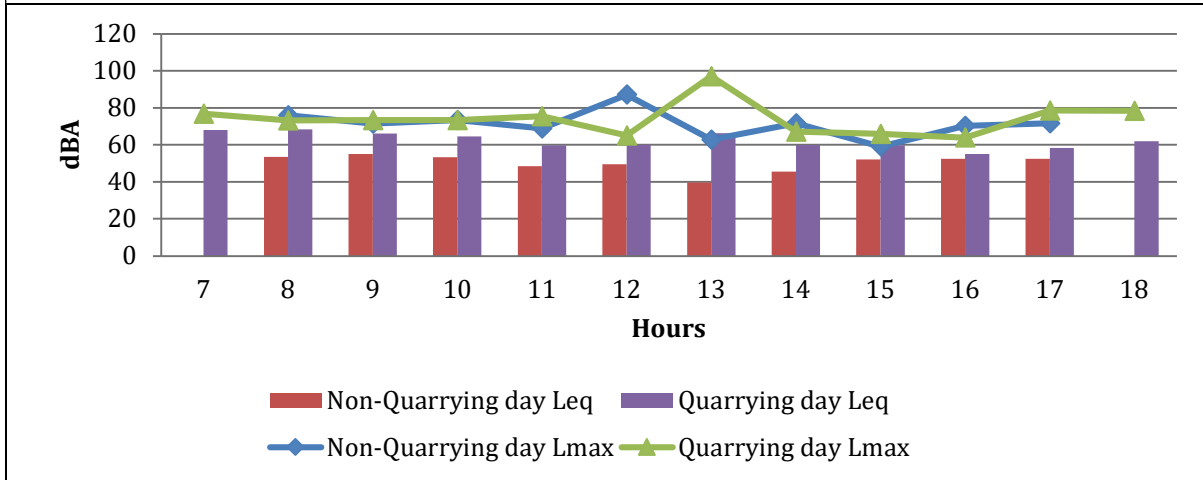


Fig.6: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in West direction 500m

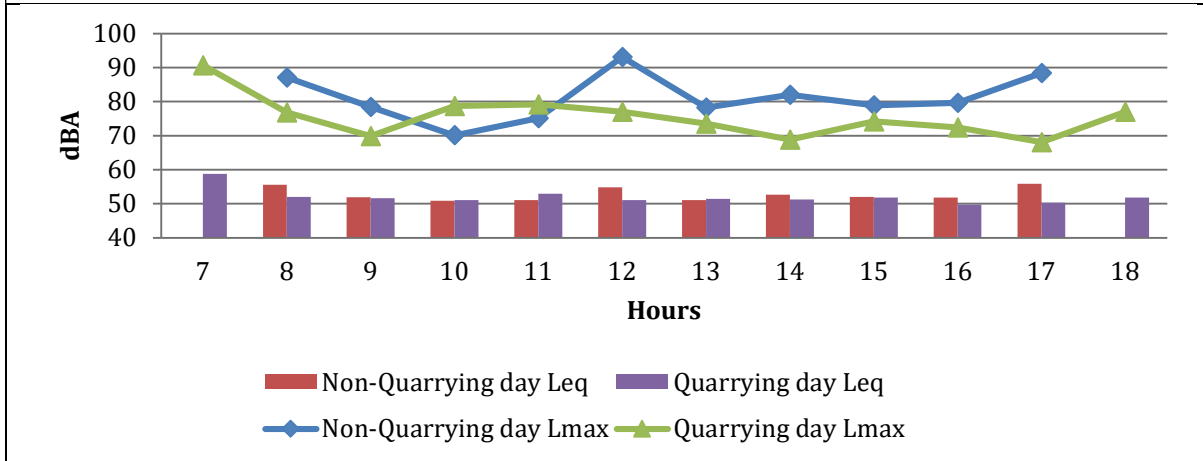


Fig.7: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in North-East direction 50m

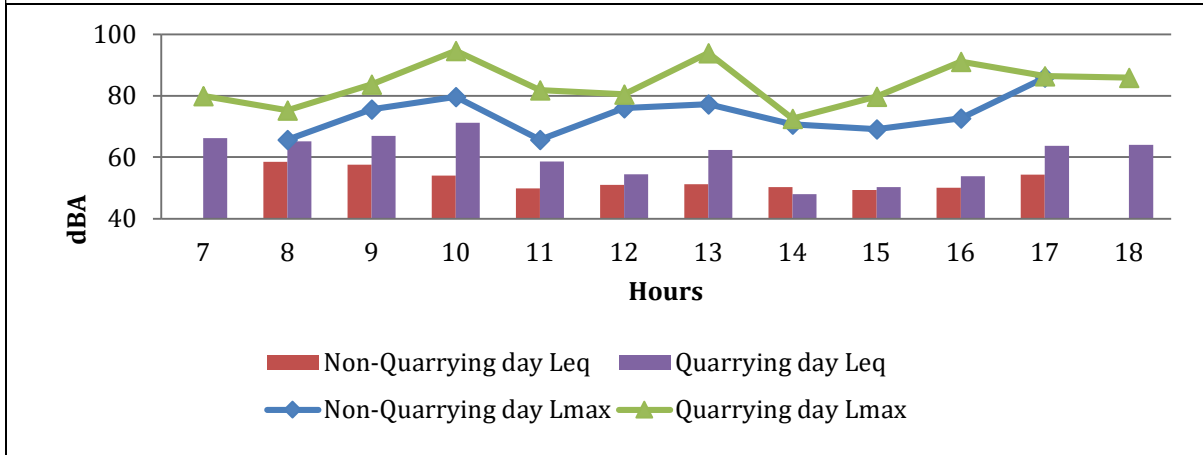


Fig.8: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in North-East direction 100m

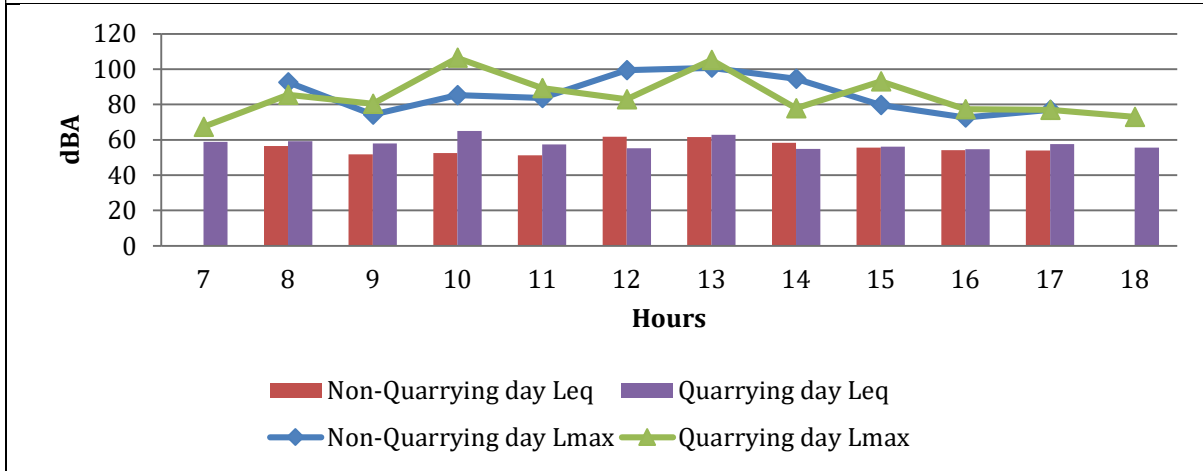


Fig.9: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in North-East direction 200m

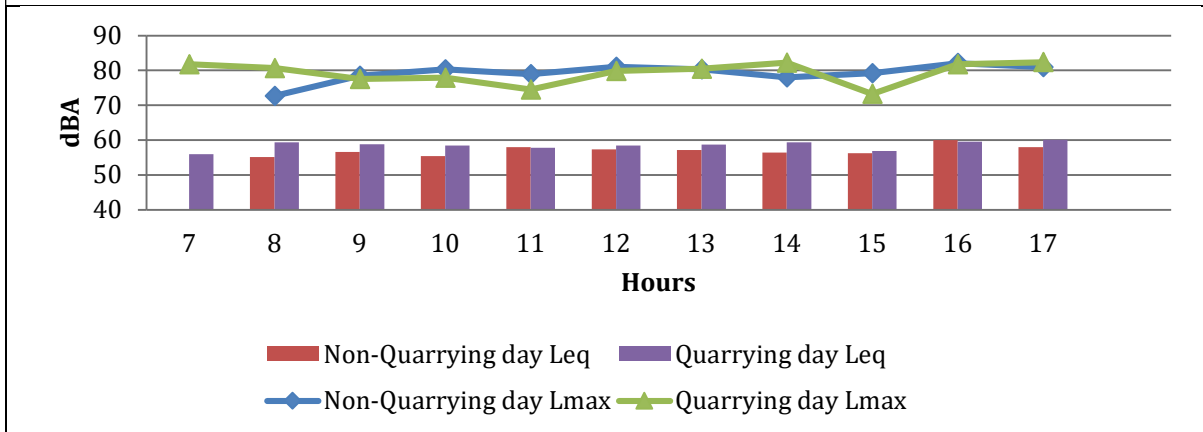


Fig.10: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in North-East direction 500m

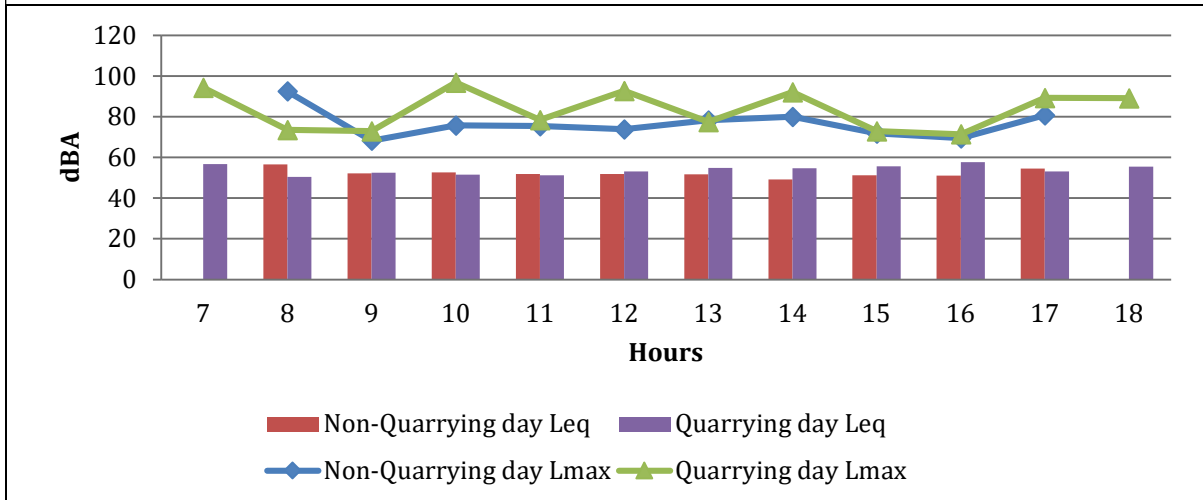


Fig.11: Equivalent values (Leq) and maximum (Lmax) of quarrying day and non-quarrying in South-East direction 50m

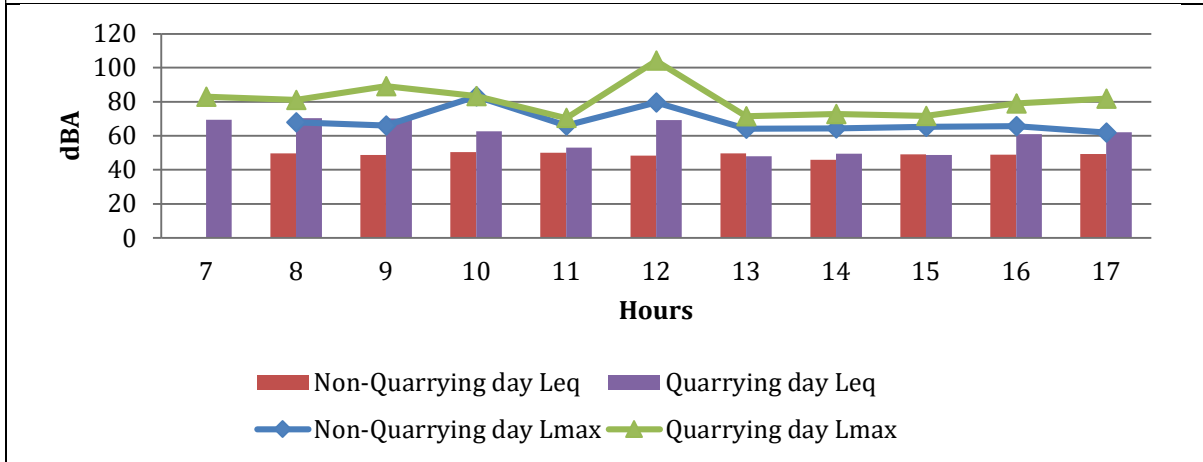


Fig.12: Equivalent values (Leq) and maximum (Lmax) of quarrying day and non-quarrying in South-East direction 100m

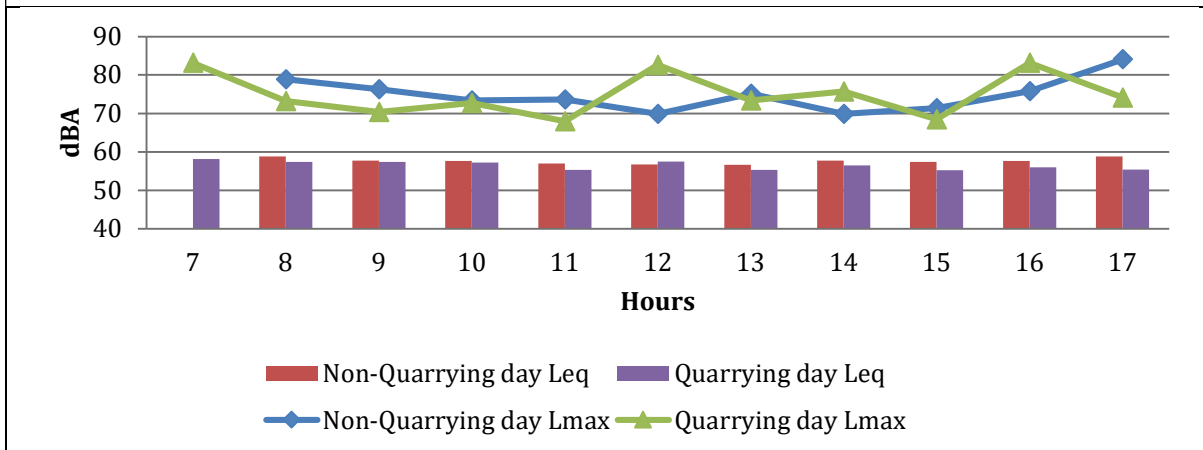
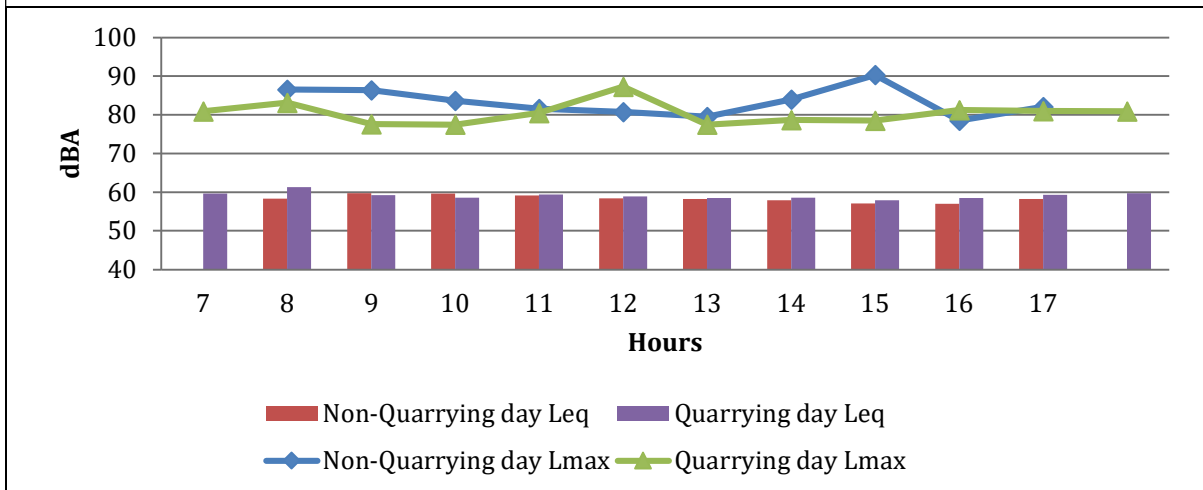
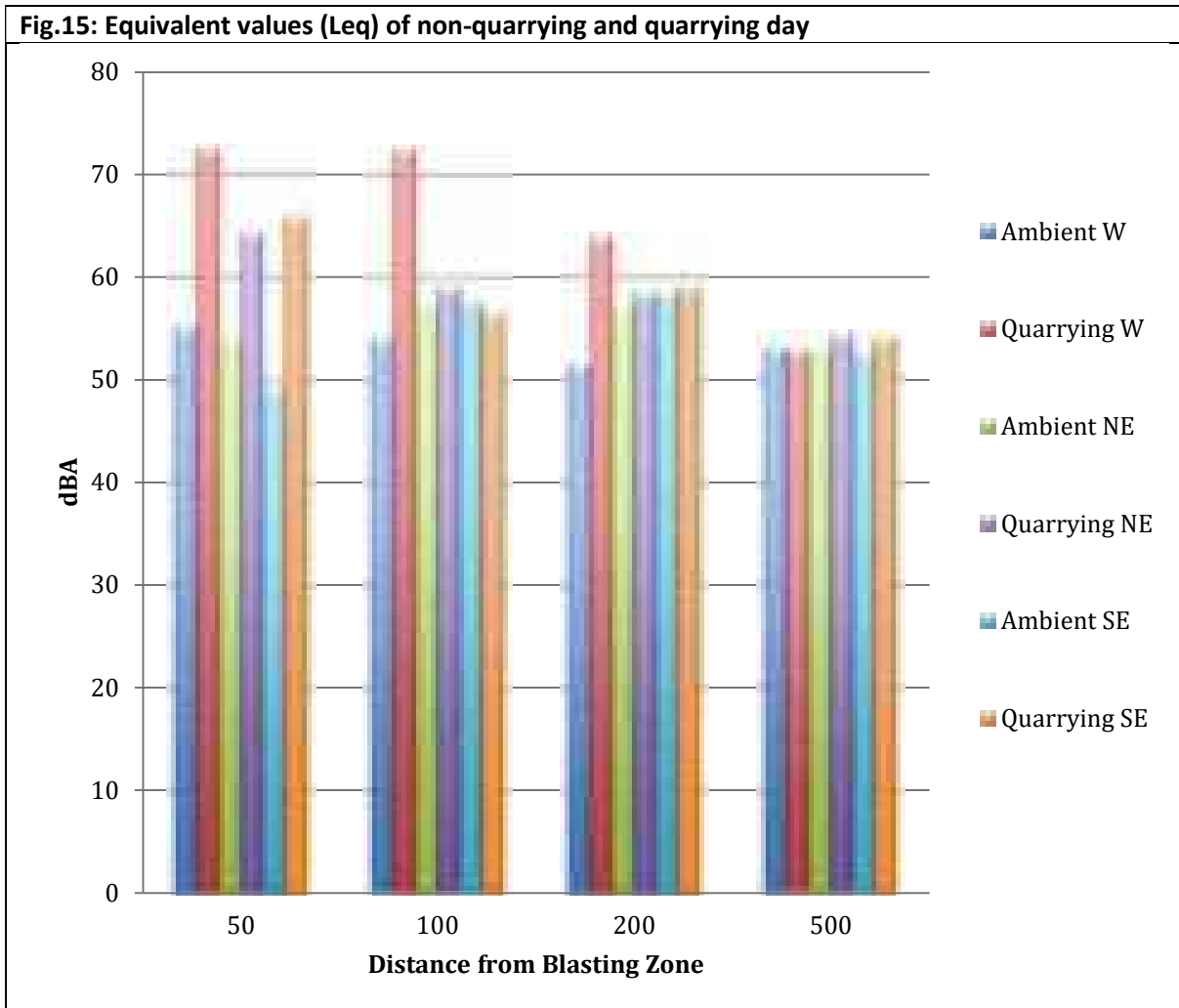
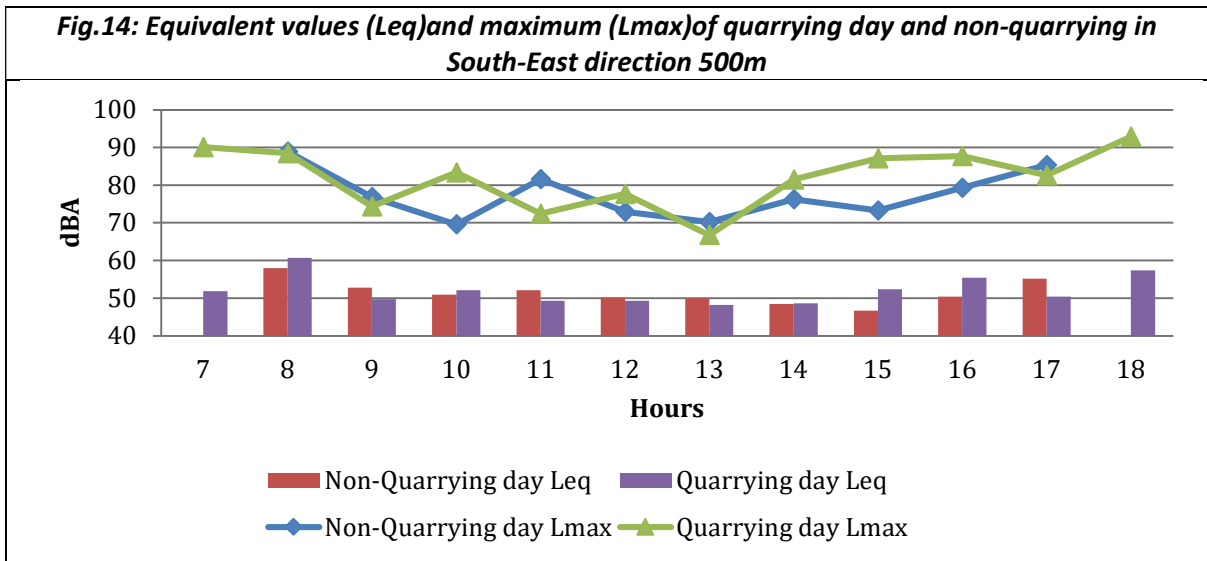


Fig.13: Equivalent values (Leq) and maximum (Lmax) of quarrying day and non-quarrying in South-East direction 200m





6.4 Water Quality			
<i>Sample Point: Old Quarry Pond</i>			
<i>Date of Sample: 28/12/2022</i>			
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



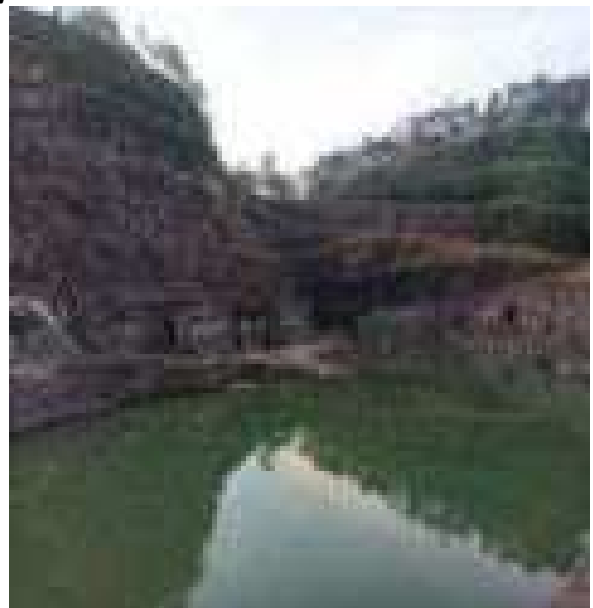
Monitoring team



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				
<p>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.</p>				
1.2 Topography & Geology				
<p>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.</p>				
1.3 Details of quarrying/ mining activities				
<p>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</p>				

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

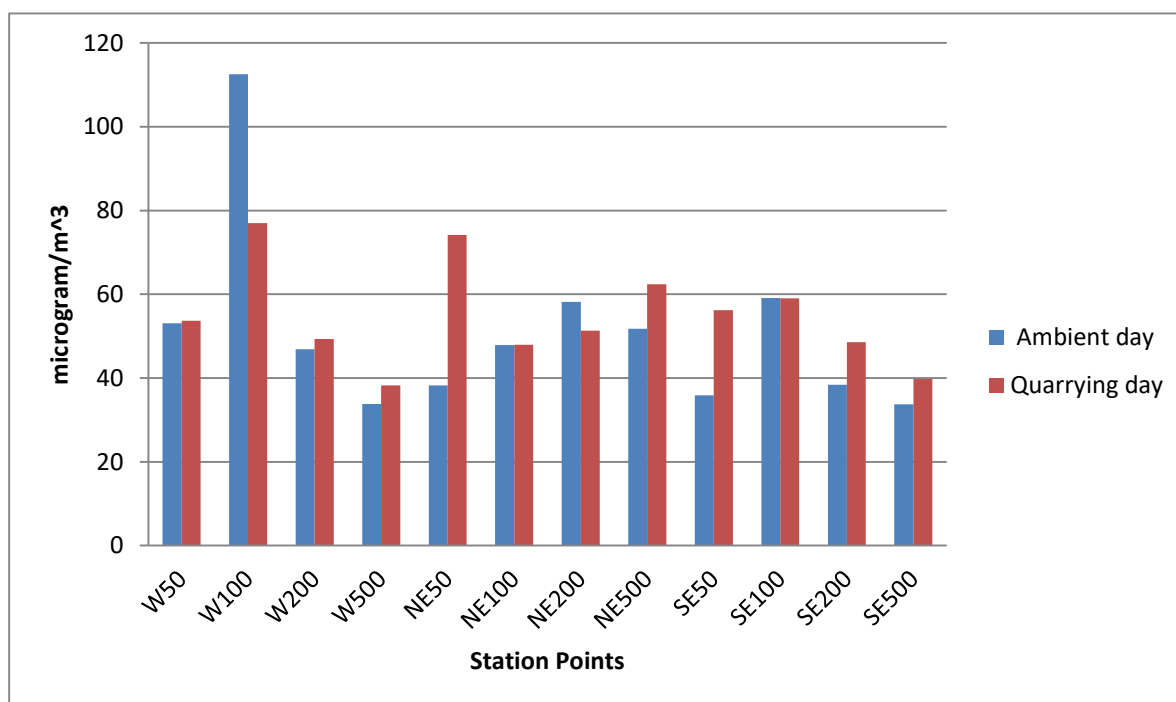


Fig.1: PM10 values observed during quarrying and non-quarrying day

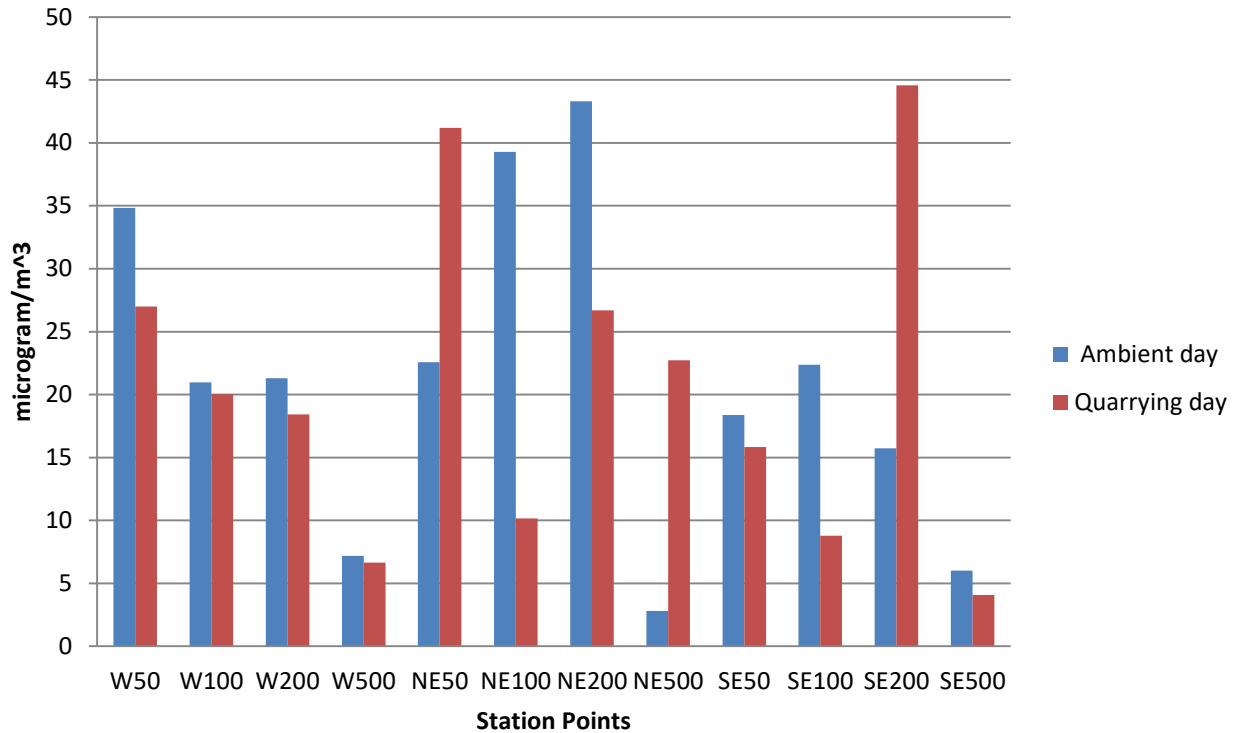


Fig.2: PM2.5 values observed during Quarrying and Non-quarrying day

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

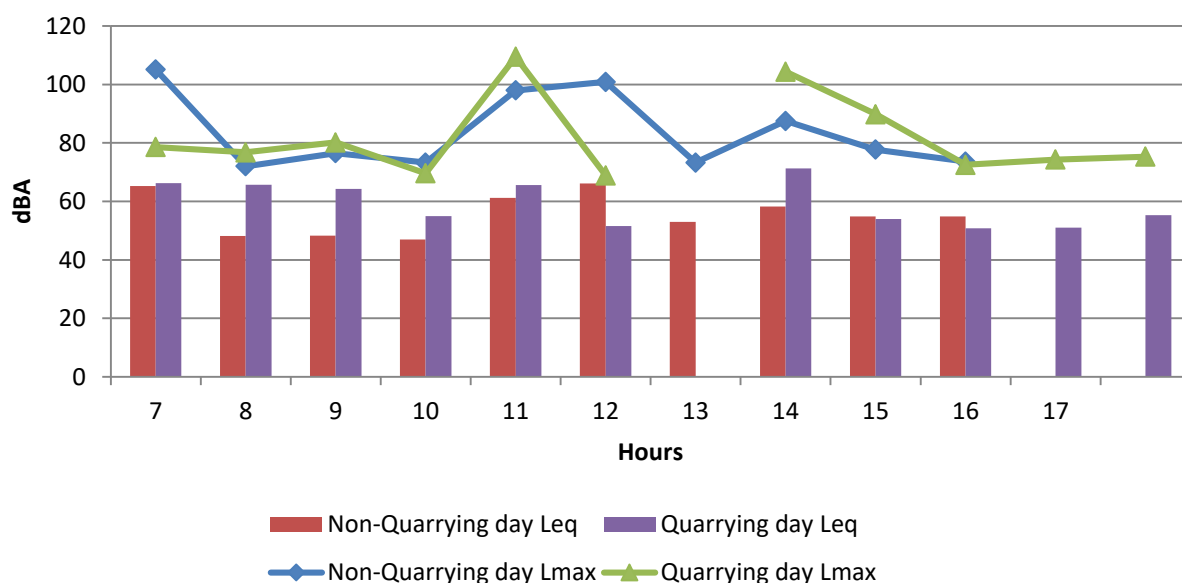


Fig.3: Noise Levels- Equivalent Values (L_{eq}) and Maximum Values (L_{max}) observed on Quarrying and Non Quarrying Day at West Direction 50 m

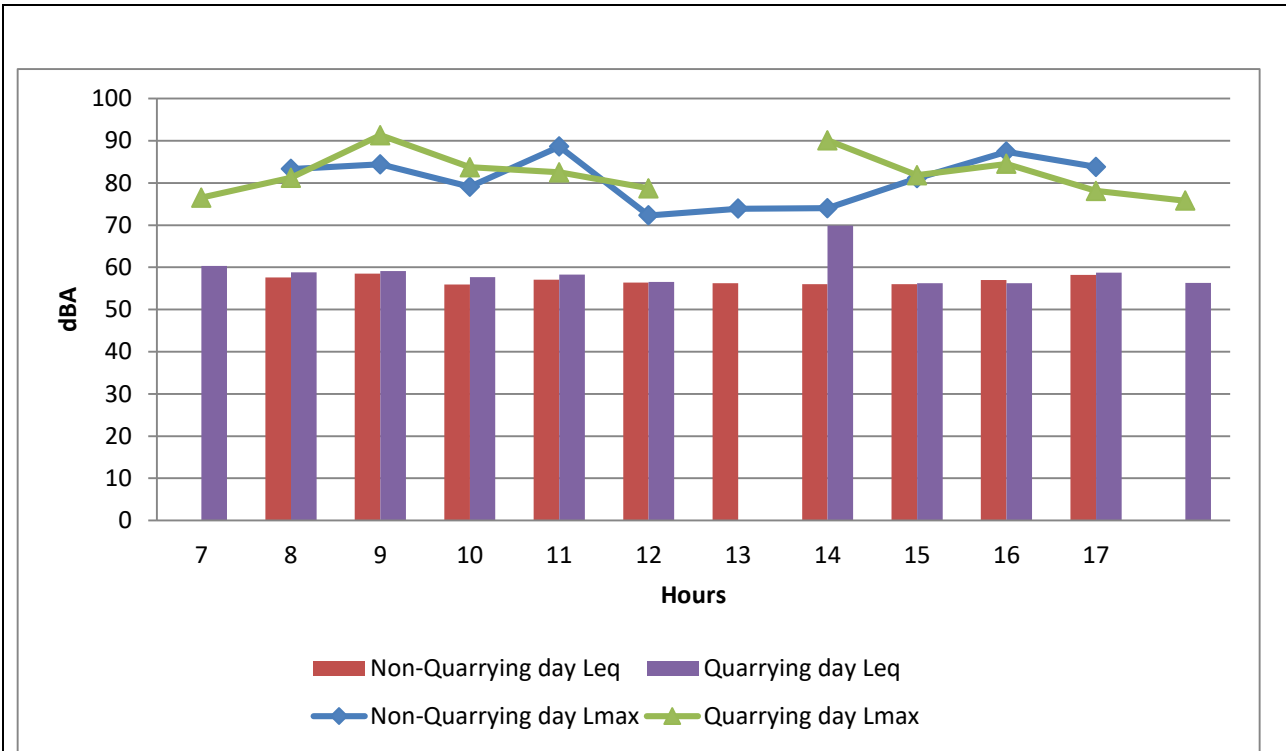


Fig.4: Noise Levels- Equivalent Values (Leq) and Maximum Values (L_{max}) observed on Quarrying and Non Quarrying Day at West Direction 100 m

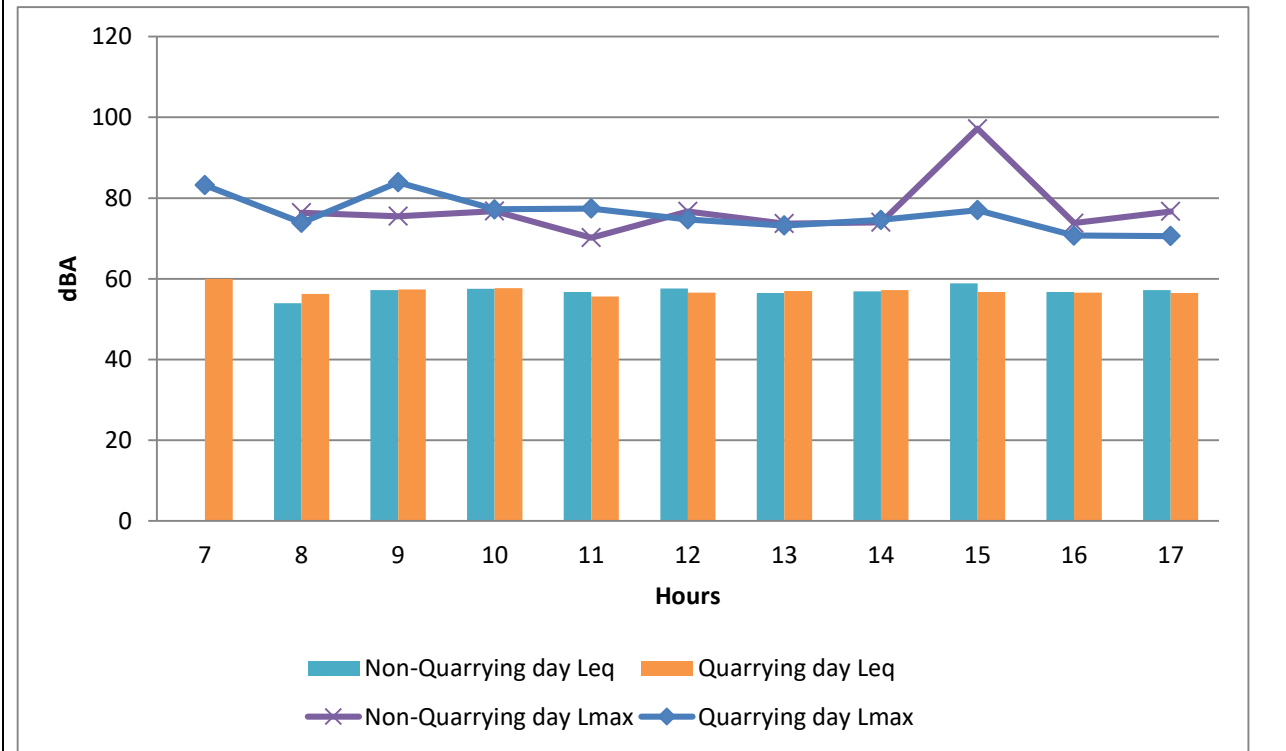


Fig.5: Noise Levels- Equivalent Values (Leq) and Maximum Values (L_{max}) observed on Quarrying and Non Quarrying Day at West Direction 200 m

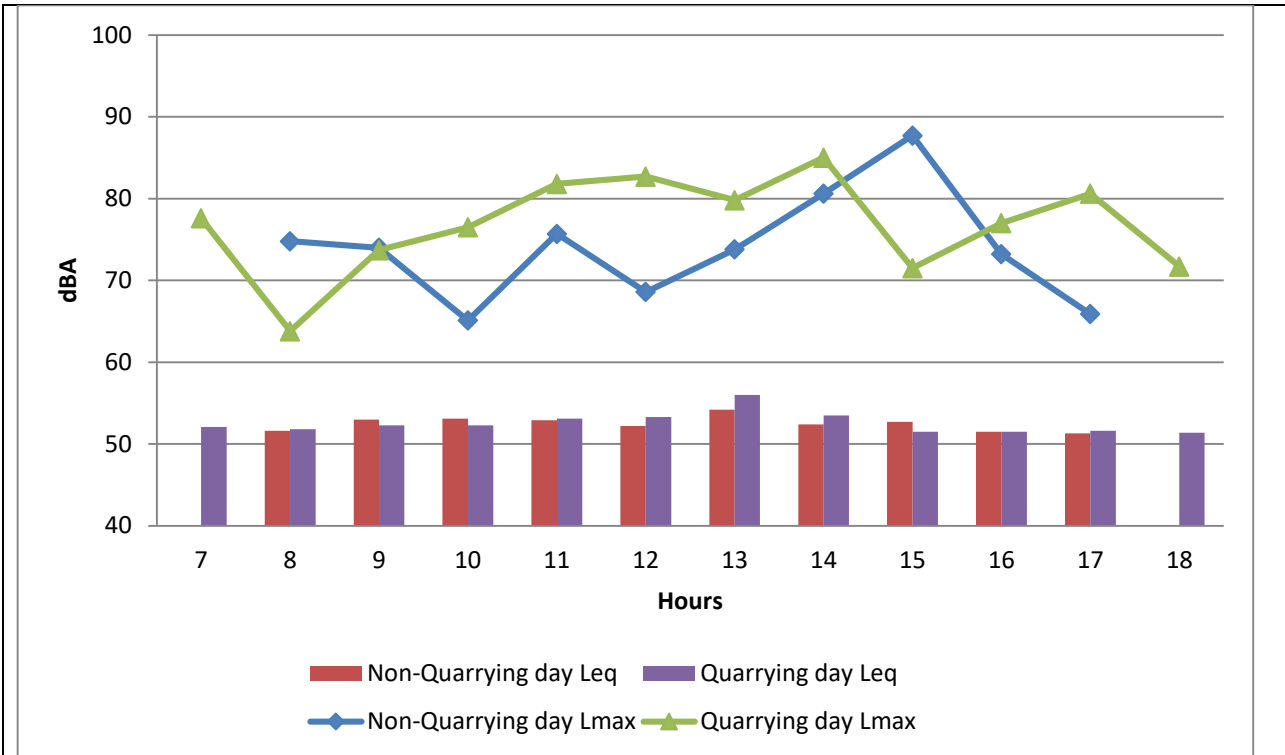


Fig.6: Noise Levels- Equivalent Values (Leq) and Maximum Values (L_{max}) observed on Quarrying and Non Quarrying Day at West Direction 200 m

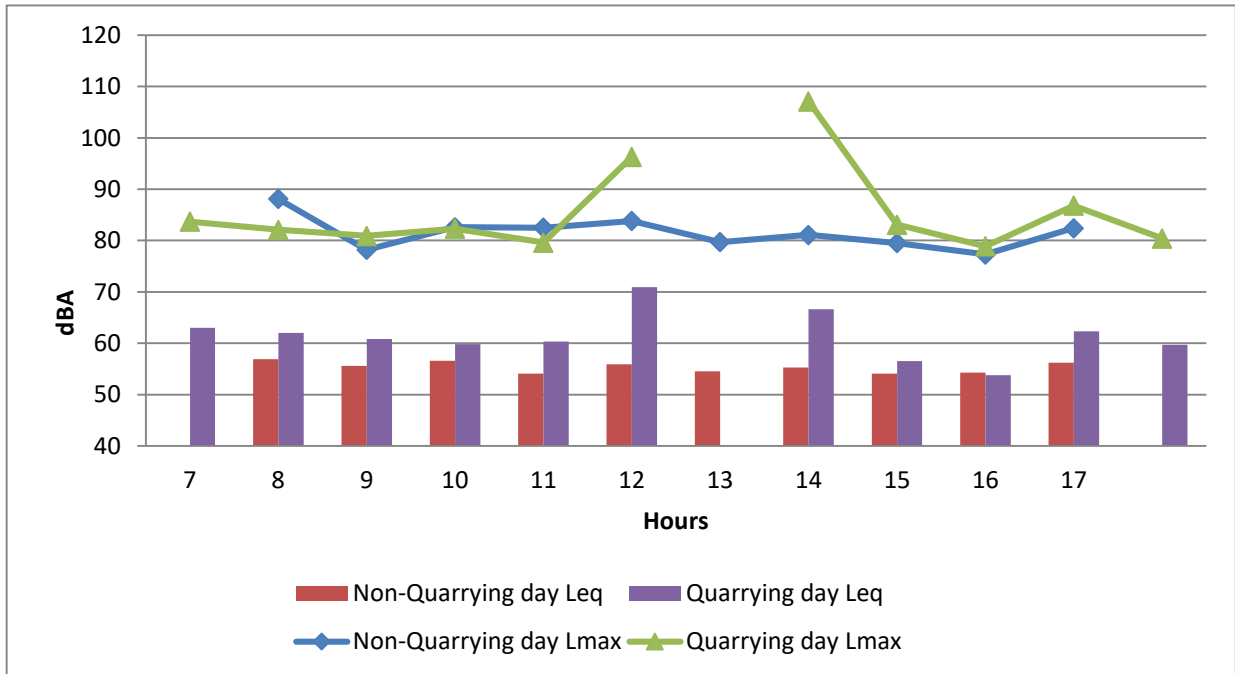


Fig.7: Noise Levels- Equivalent Values (Leq) and Maximum Values (L_{max}) observed on Quarrying and Non Quarrying Day at North East Direction 50 m

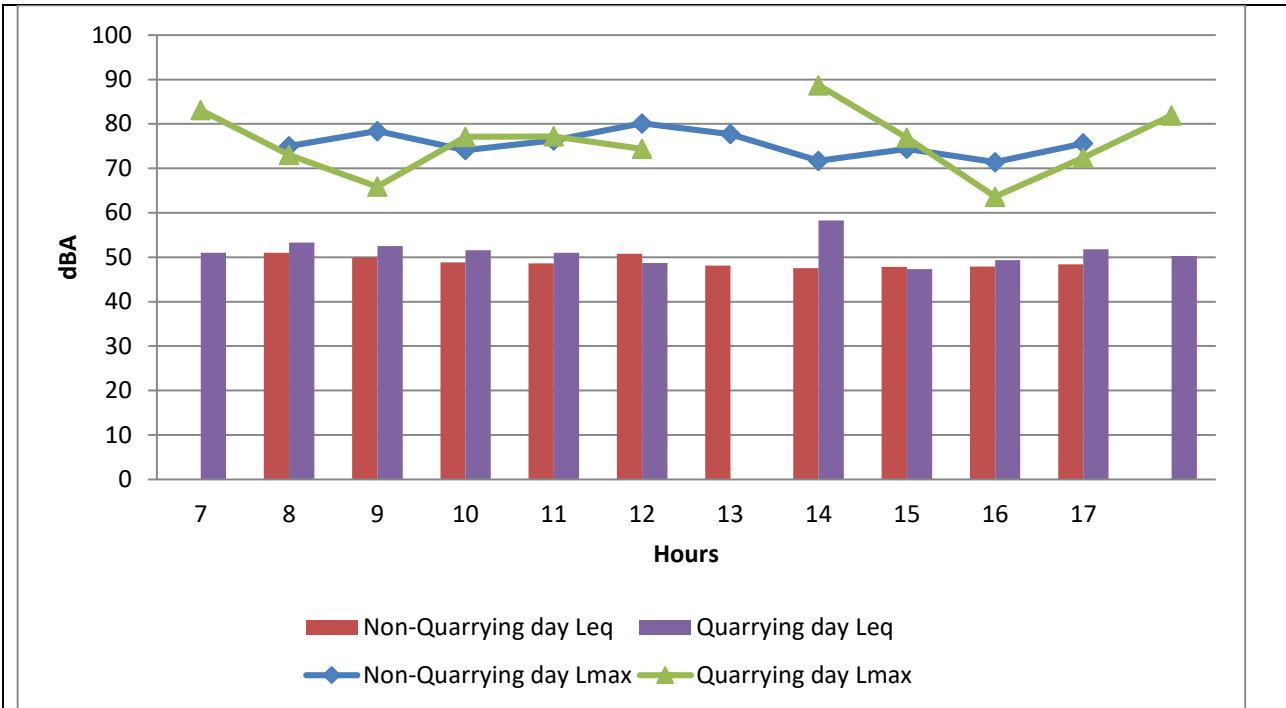


Fig.8: Noise Levels- Equivalent Values (Leq) and Maximum Values (L_{max}) observed on Quarrying and Non Quarrying Day at North East Direction 100 m

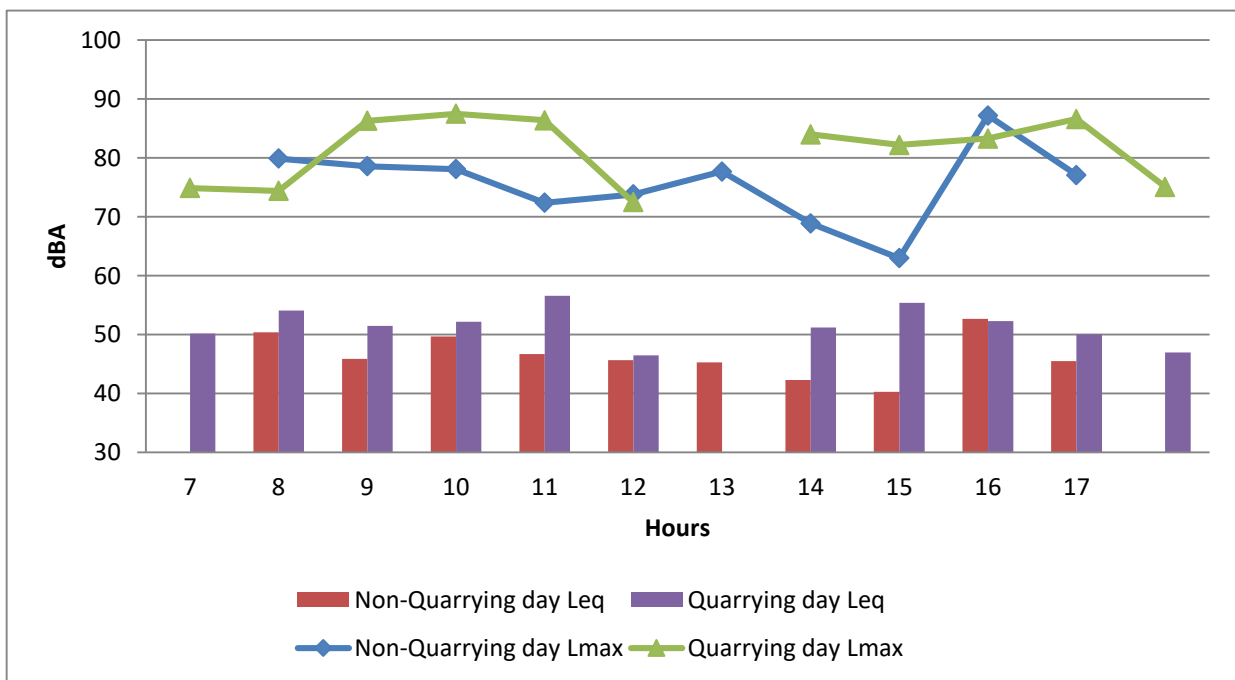


Fig.9: Noise Levels- Equivalent Values (Leq) and Maximum Values (L_{max}) observed on Quarrying and Non Quarrying Day at North East Direction 200 m

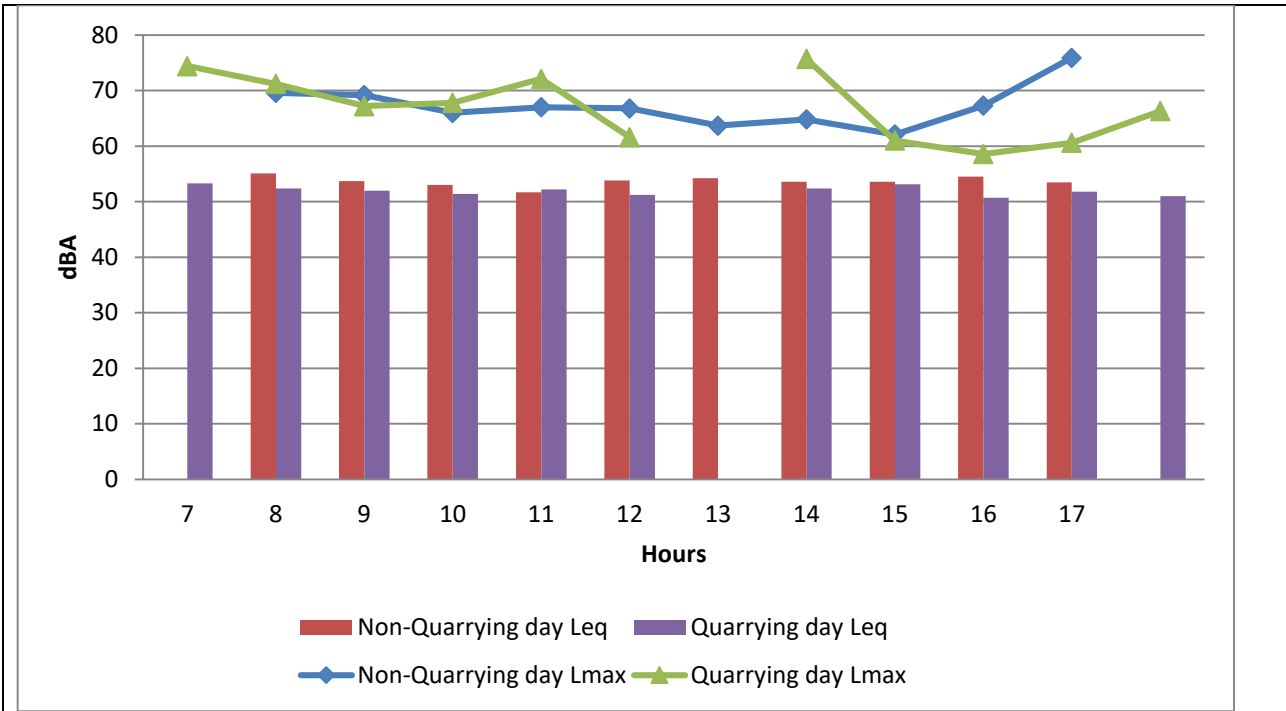


Fig.10: Noise Levels- Equivalent Values (Leq) and Maximum Values (L_{max}) observed on Quarrying and Non Quarrying Day at North East Direction 500 m

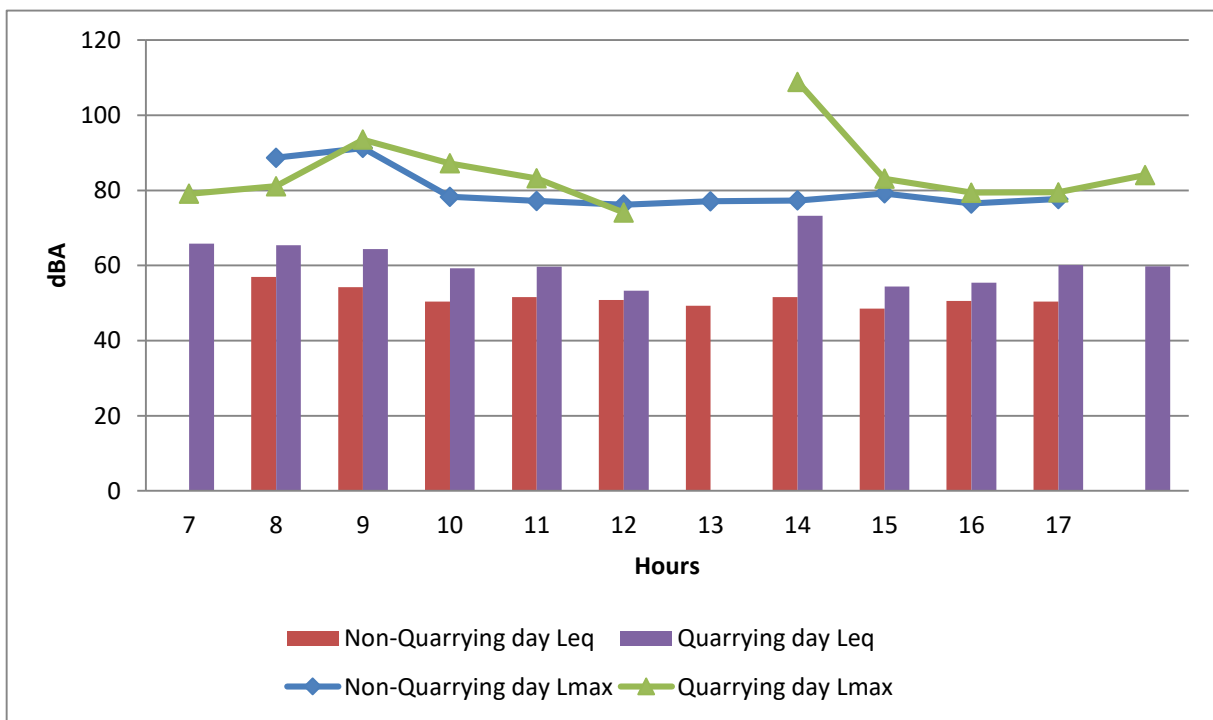


Fig.11: Noise Levels- Equivalent Values (Leq) and Maximum Values (L_{max}) observed on Quarrying and Non Quarrying Day at South East Direction 50 m

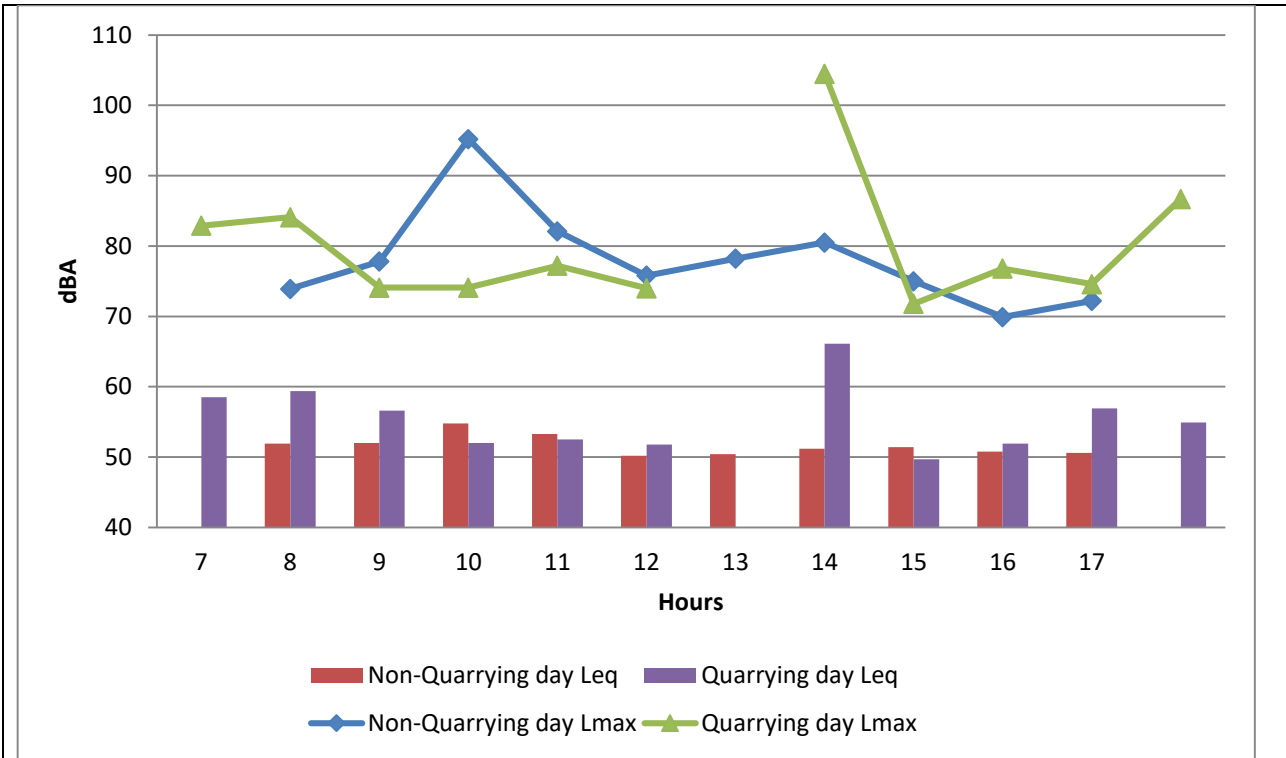


Fig.12: Noise Levels- Equivalent Values (Leq) and Maximum Values (L_{max}) observed on Quarrying and Non Quarrying Day at South East Direction 100 m

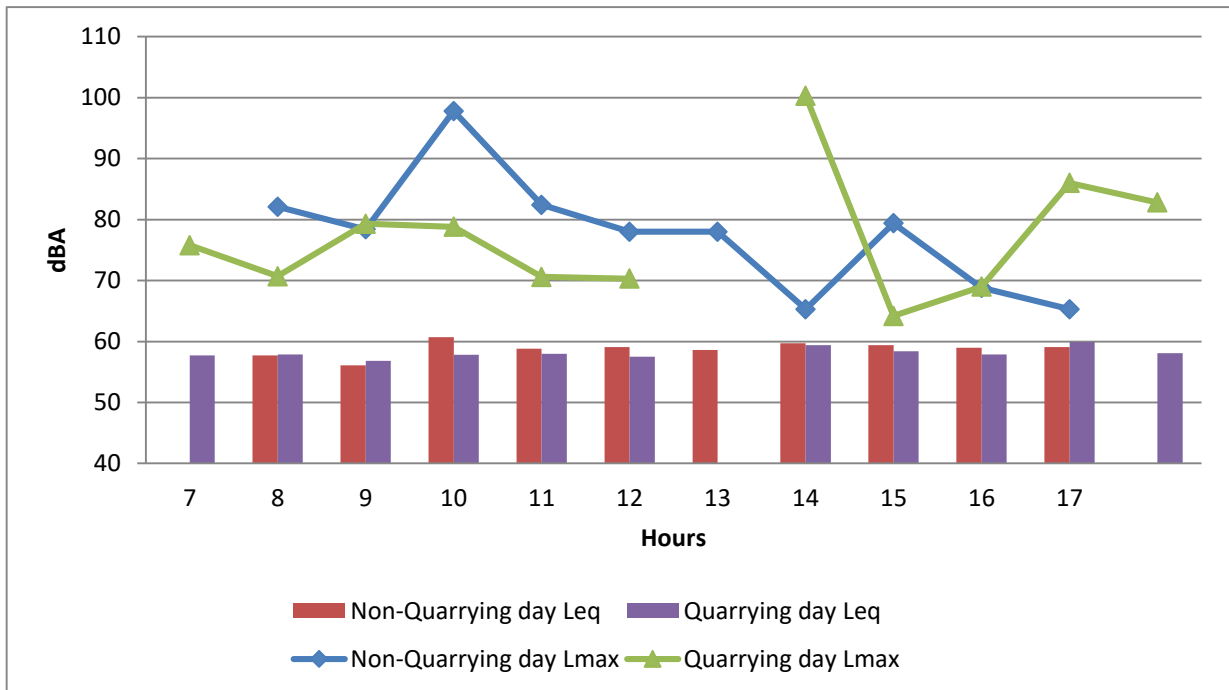


Fig.13: Noise Levels- Equivalent Values (Leq) and Maximum Values (L_{max}) observed on Quarrying and Non Quarrying Day at South East Direction 200 m

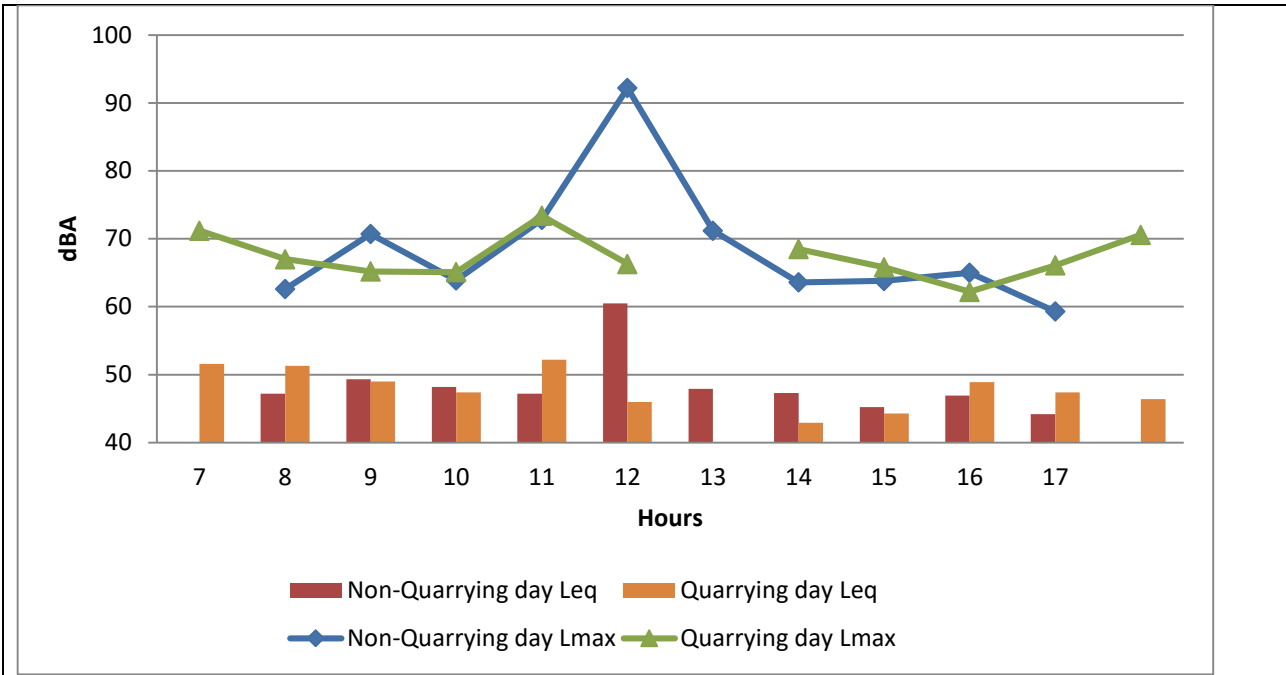


Fig.14: Noise Levels- Equivalent Values (Leq) and Maximum Values (L_{max}) observed on Quarrying and Non Quarrying Day at South East Direction 500 m

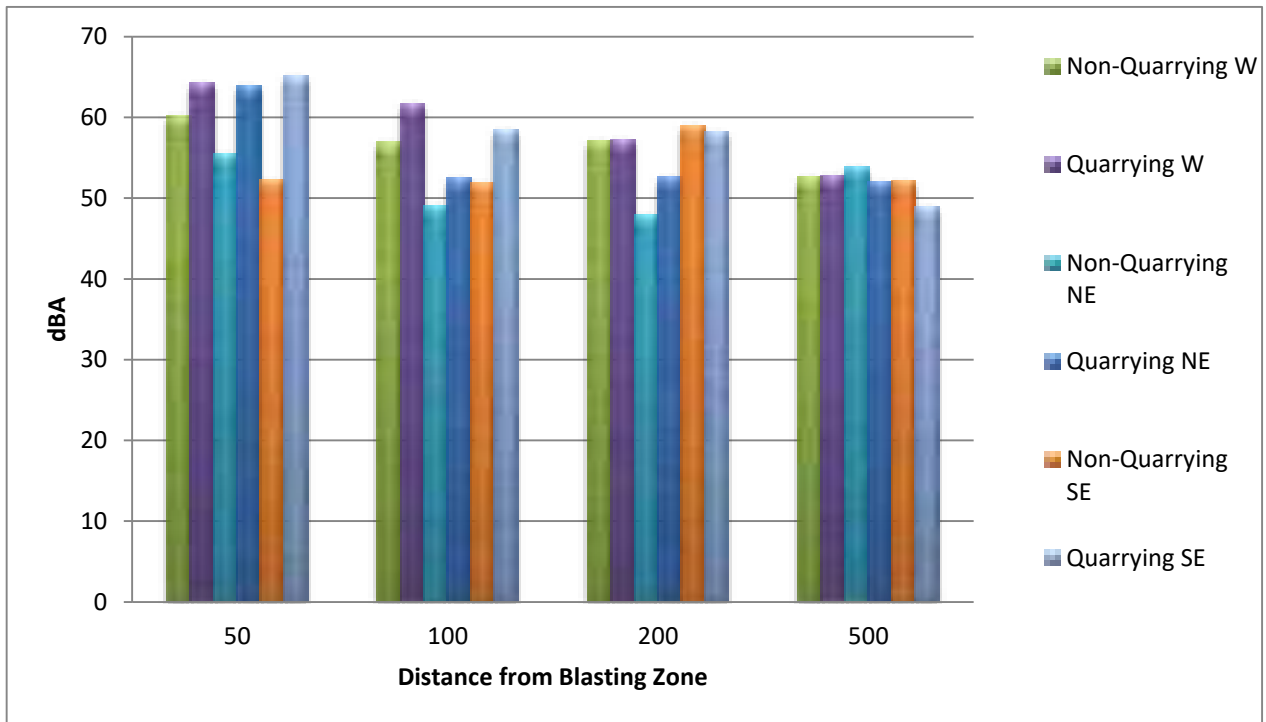


Fig.15: Equivalent values (Leq) of non quarrying and quarrying day

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





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 12-02-2019 and 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
<p>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.</p> <p>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.</p> <p>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</p>

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

<i>Weather: Non-quarrying day (07-01-2023)</i>				
<i>S.No.</i>	<i>Time (Hrs)</i>	<i>Temperature (°C)</i>	<i>Humidity (%)</i>	<i>Wind (m/s) & Direction</i>
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

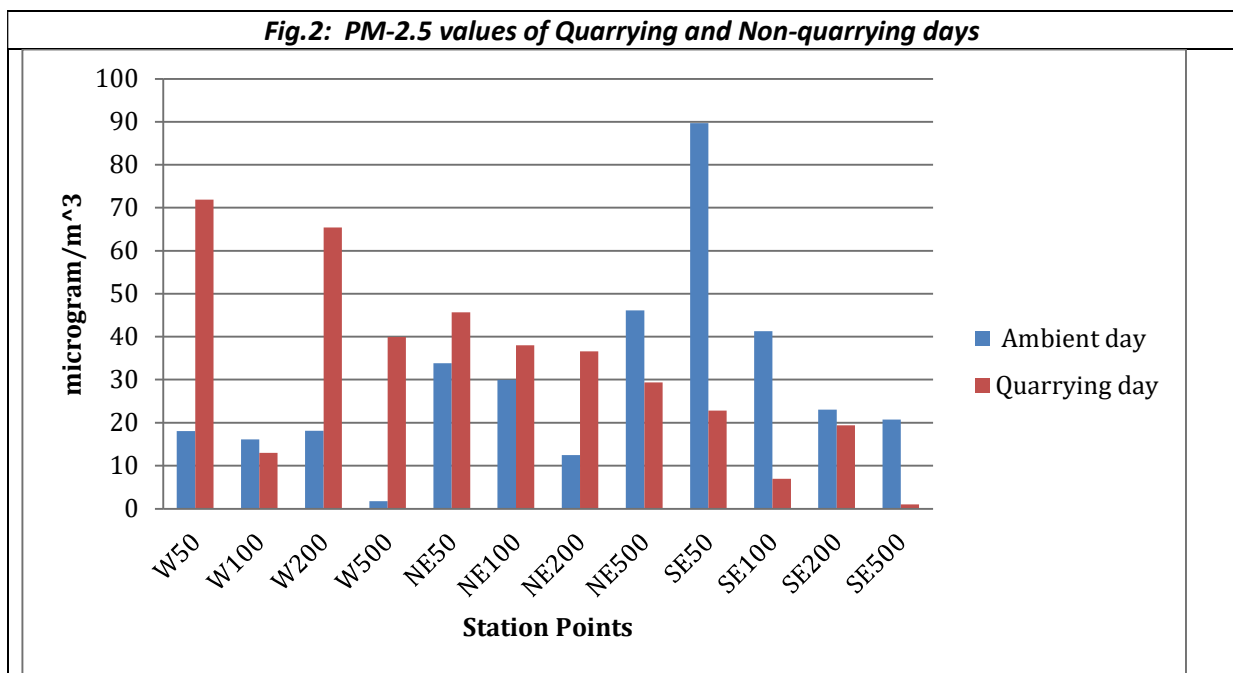
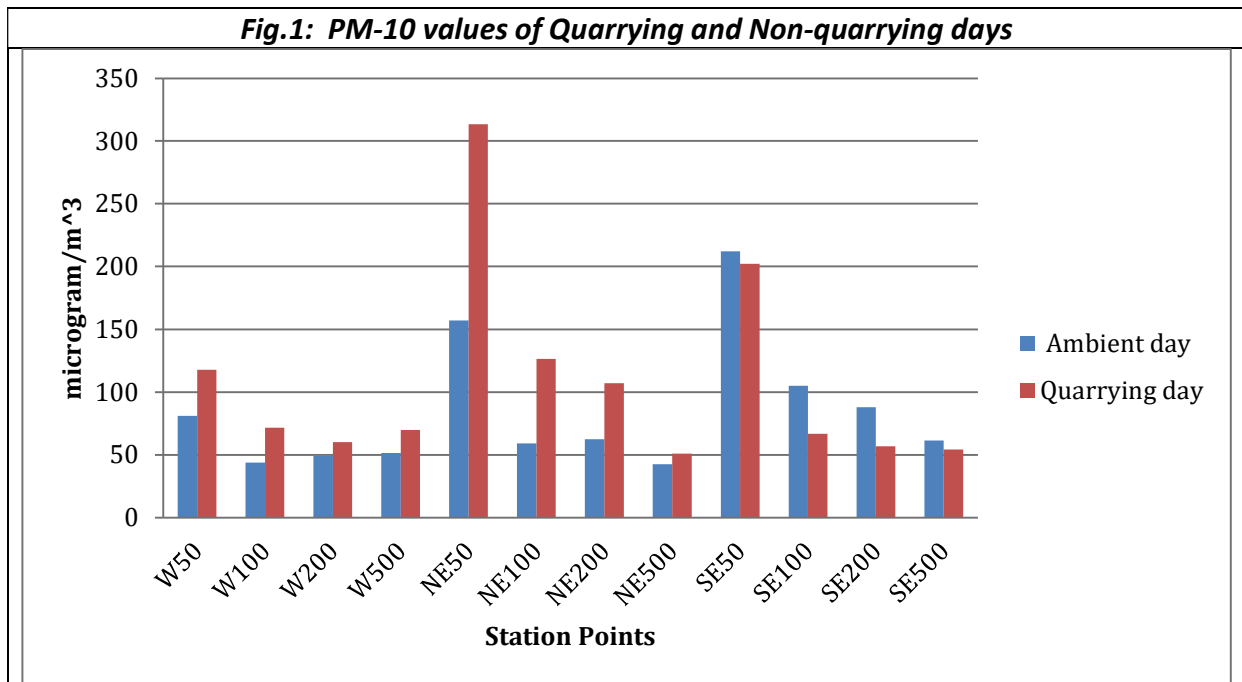


6.2 Particulate matters/dust

- 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



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:

L_{eq} = 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 meagre, resulted in minor changes in trend. Particularly in NE200 station, there was a dog farm nearby. Their barking caused higher L_{max} and higher L_{eq} 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 L_{max} 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 (L_{eq}) and maximum (L_{max}) of quarrying and non-quarrying day in West direction 50m

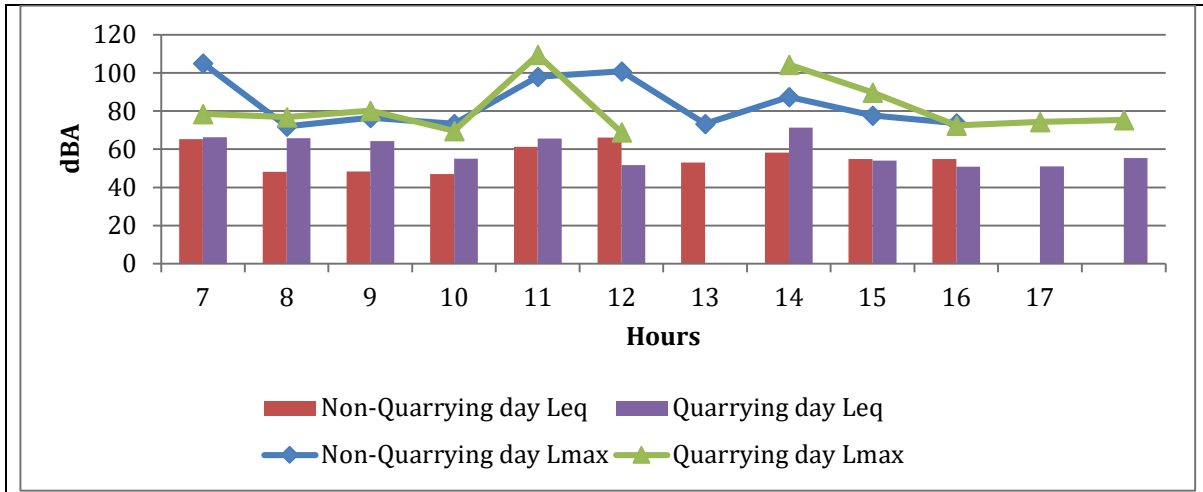


Fig.4: Equivalent values (Leq) and maximum (Lmax) of quarrying and non-quarrying day in West direction 100m

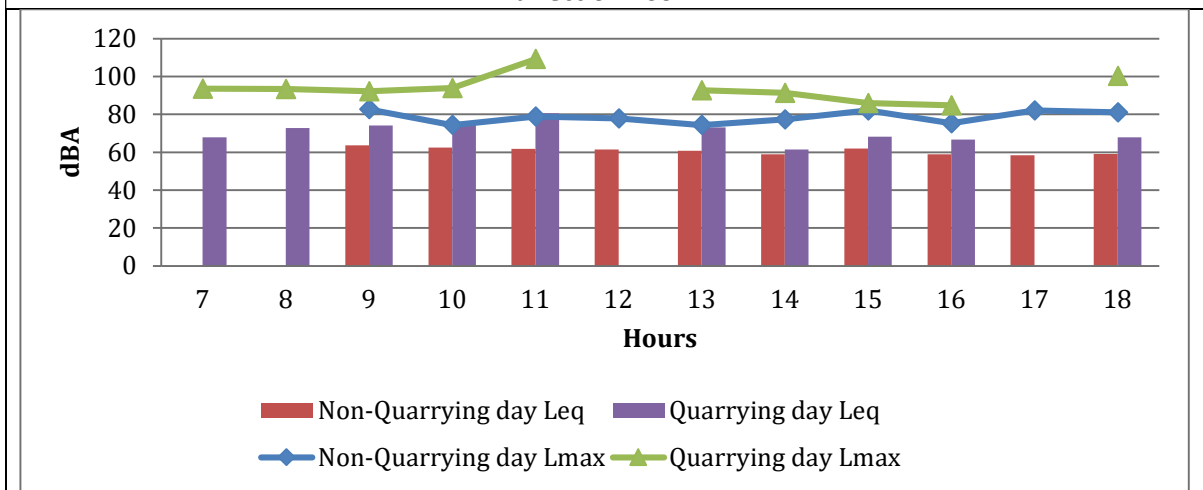


Fig.5: Equivalent values (Leq) and maximum (Lmax) of quarrying day and non-quarrying in West direction 200m

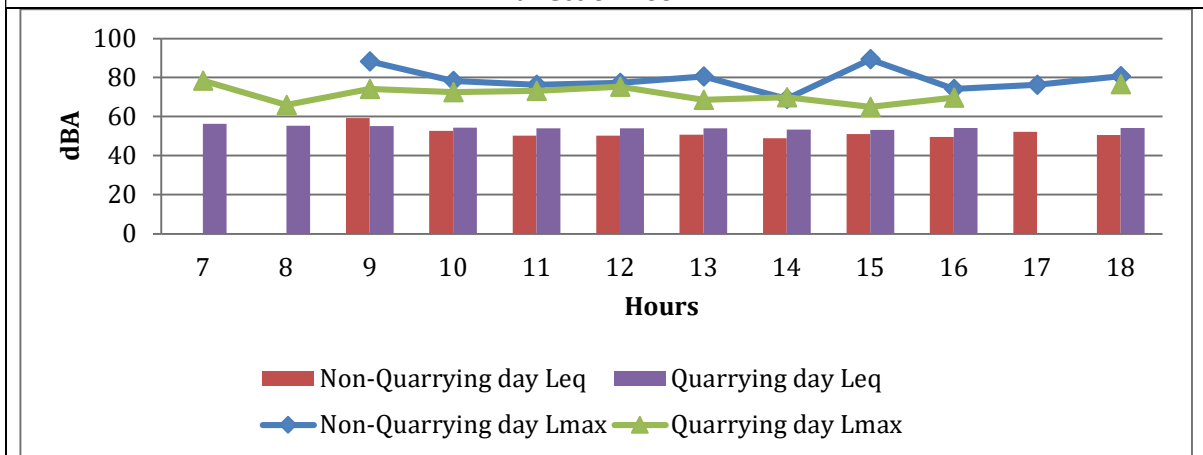


Fig.6: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in West direction 500m

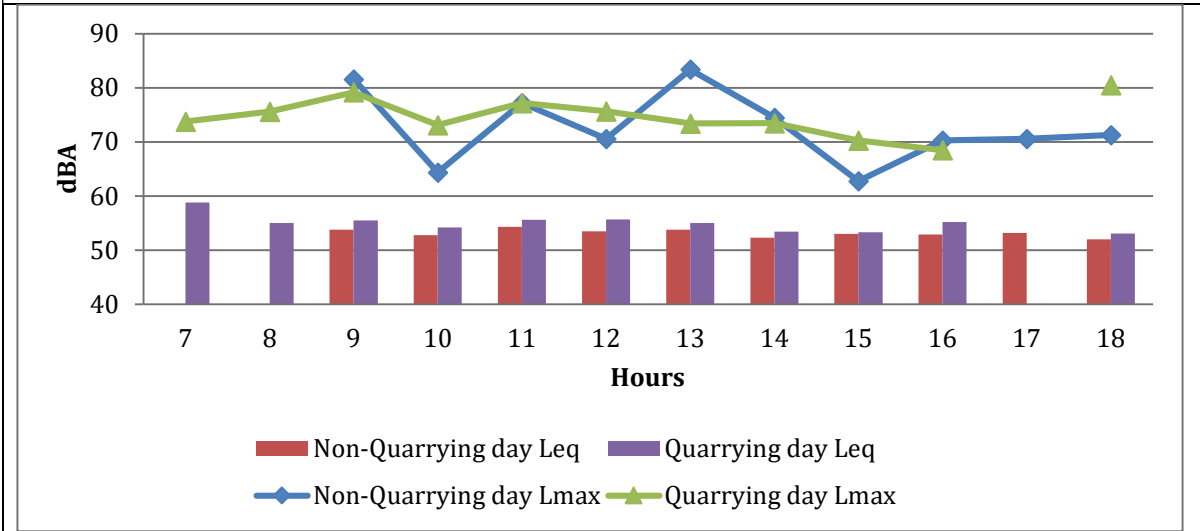


Fig.7: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in North-East direction 50m

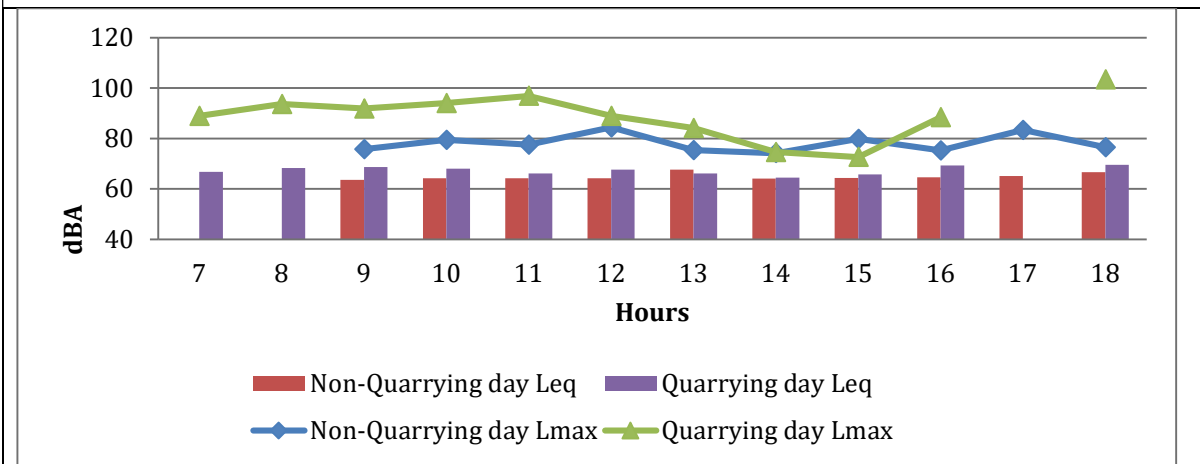


Fig.8: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in North-East direction 100m

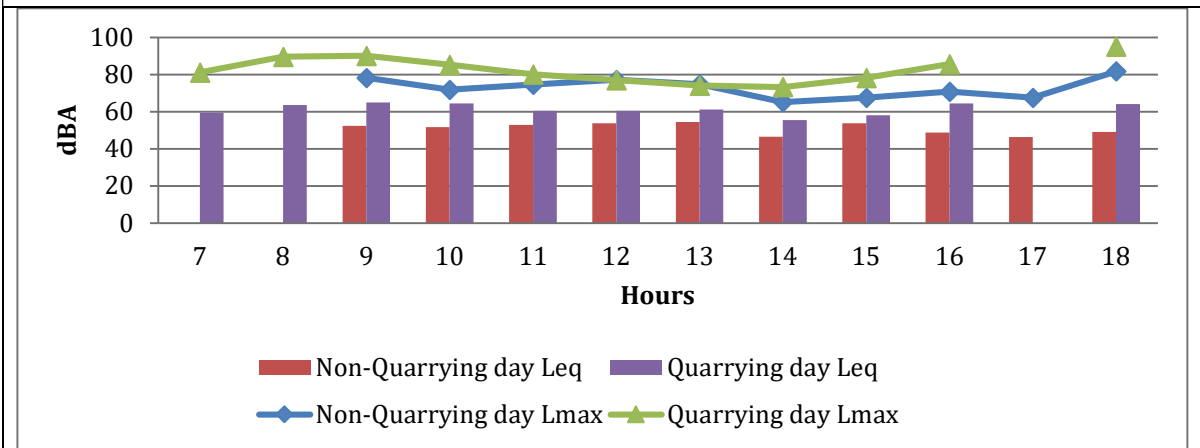


Fig.9: Equivalent values (Leq) and maximum (Lmax) of quarrying day and non-quarrying in North-East direction 200m

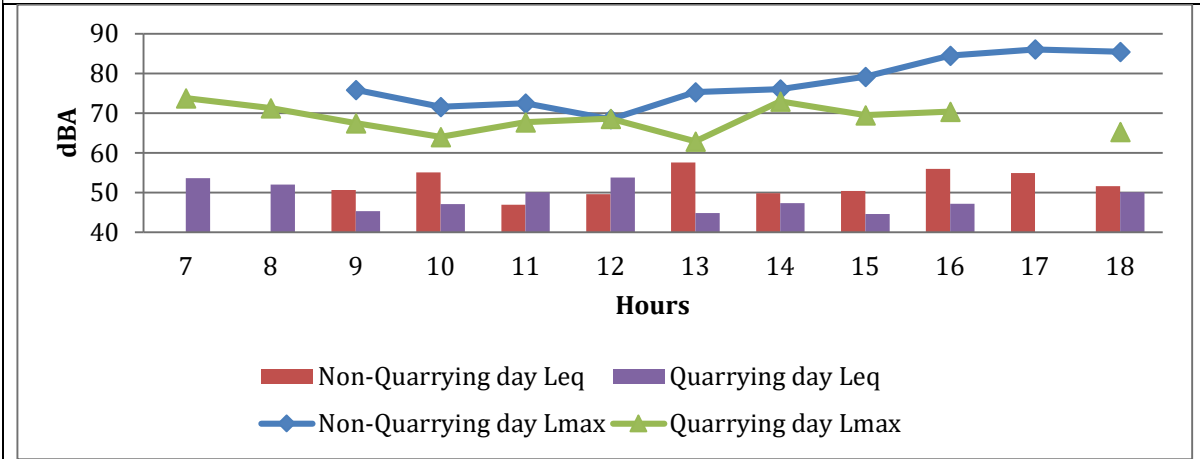


Fig.10: Equivalent values (Leq) and maximum (Lmax) of quarrying day and non-quarrying in North-East direction 500m

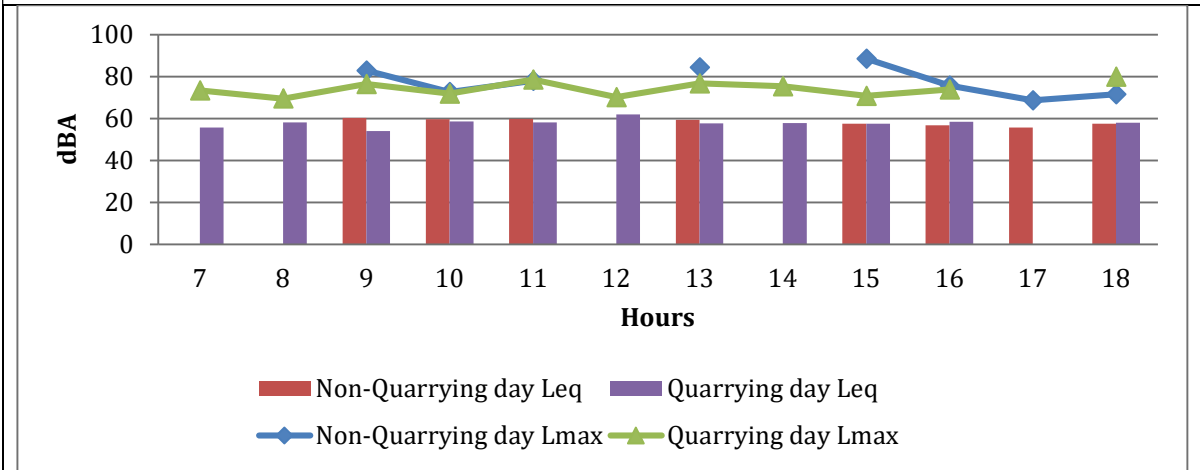


Fig.11: Equivalent values (Leq) and maximum (Lmax) of quarrying day and non-quarrying in South-East direction 50m

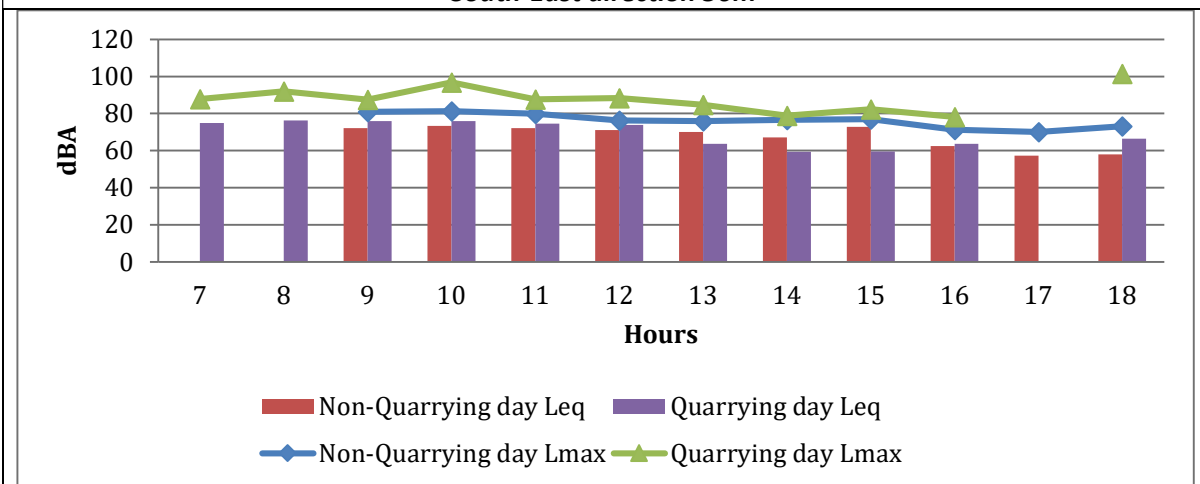


Fig.12: Equivalent values (Leq) and maximum (Lmax) of quarrying day and non-quarrying in South-East direction 100m

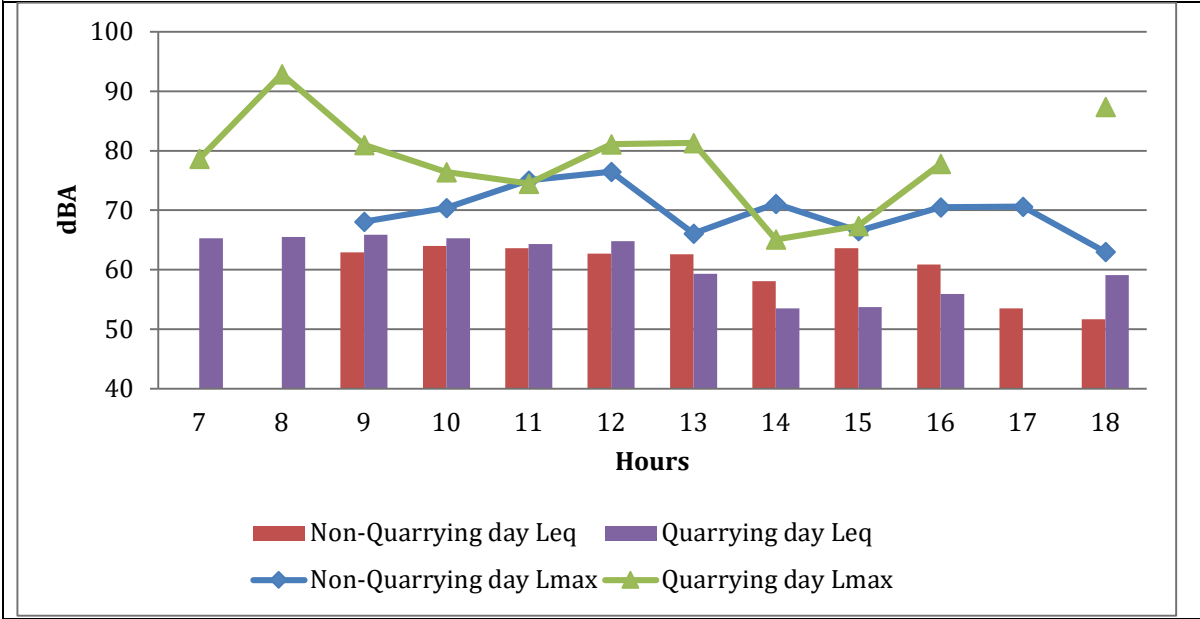
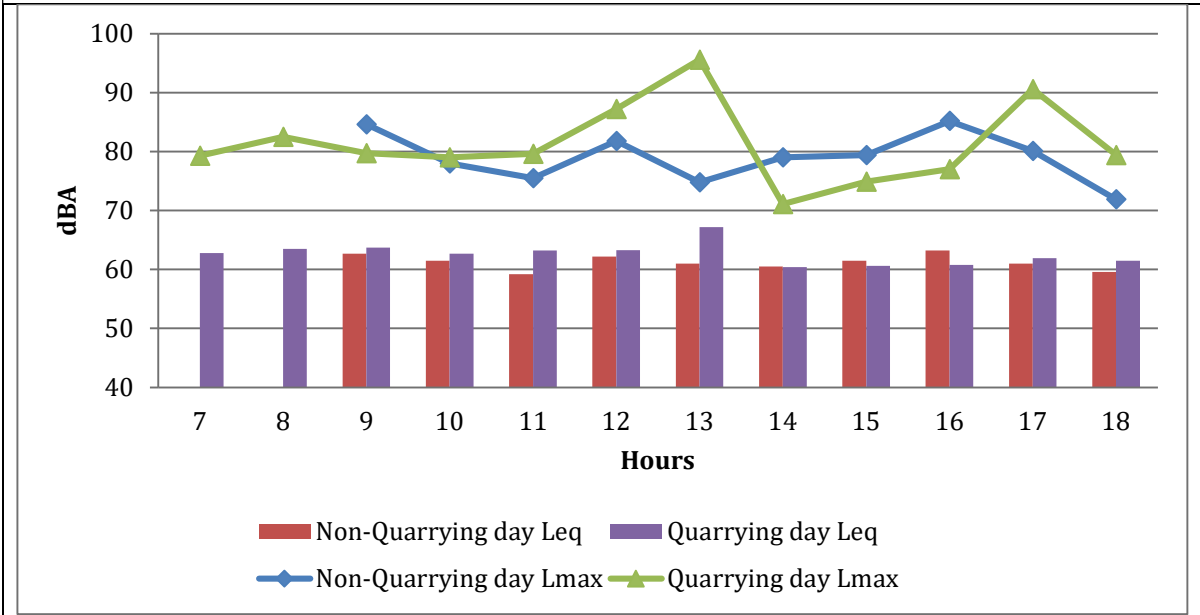
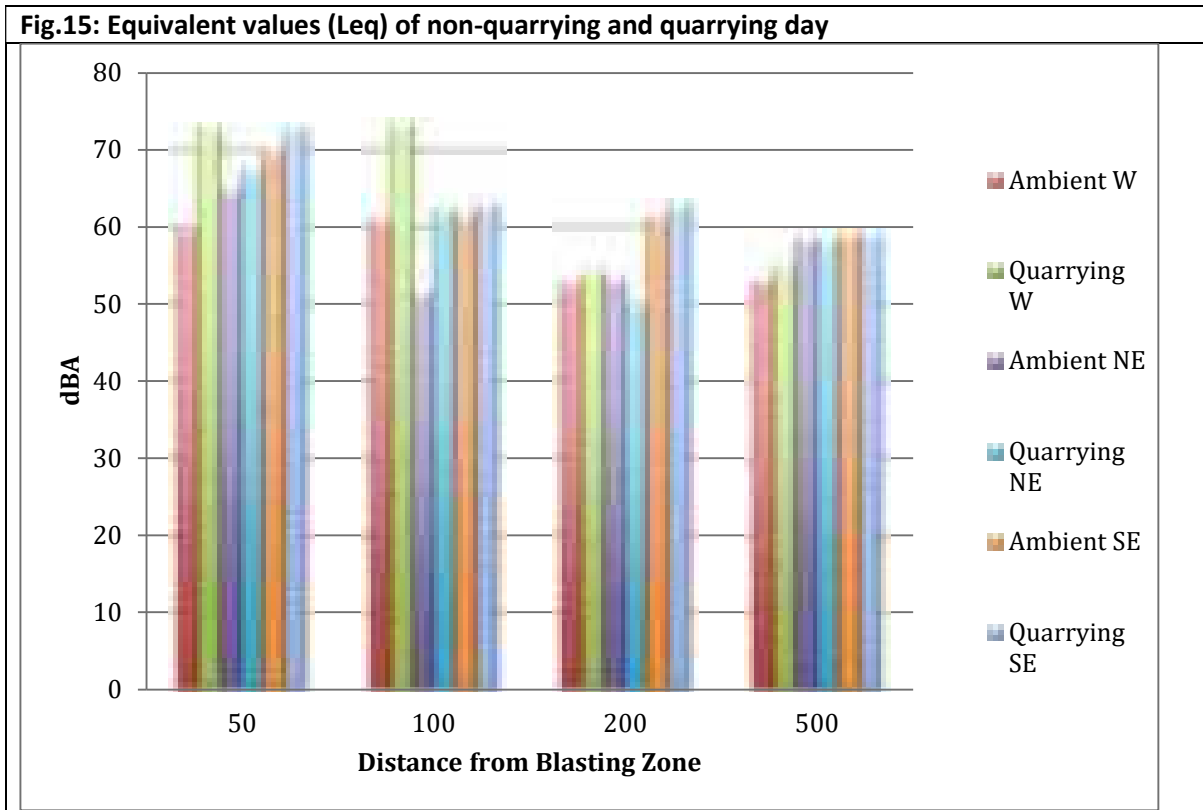
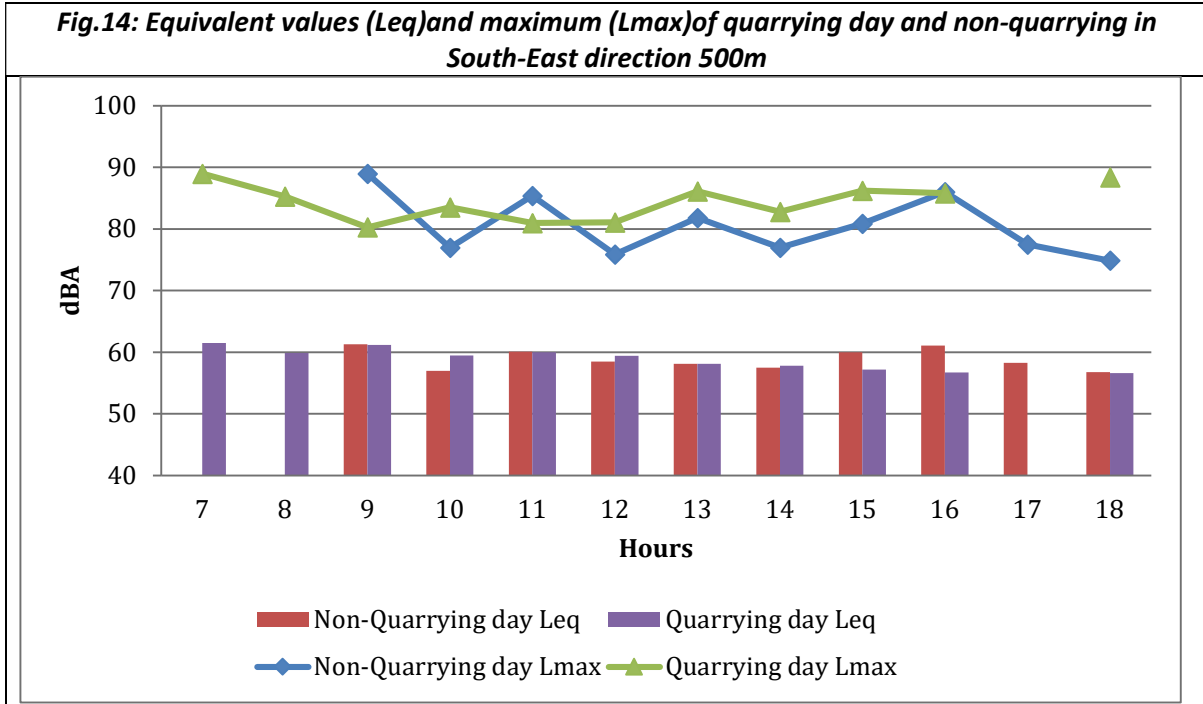


Fig.13: Equivalent values (Leq) and maximum (Lmax) of quarrying day and non-quarrying in South-East direction 200m





6.4 Water Quality			
<i>Sample Point: Old Quarry Pond</i>			
<i>Date of Sample: 28/12/2022</i>			
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 upto 15.12.2023. 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 1 hour 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
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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



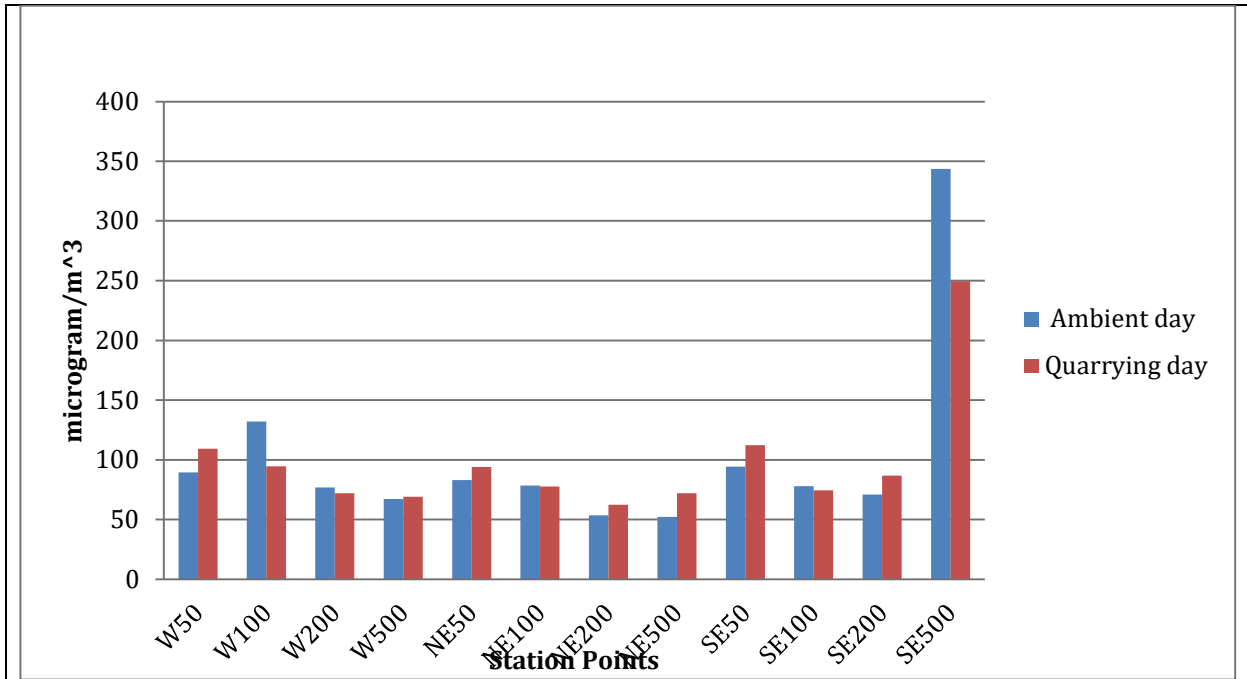
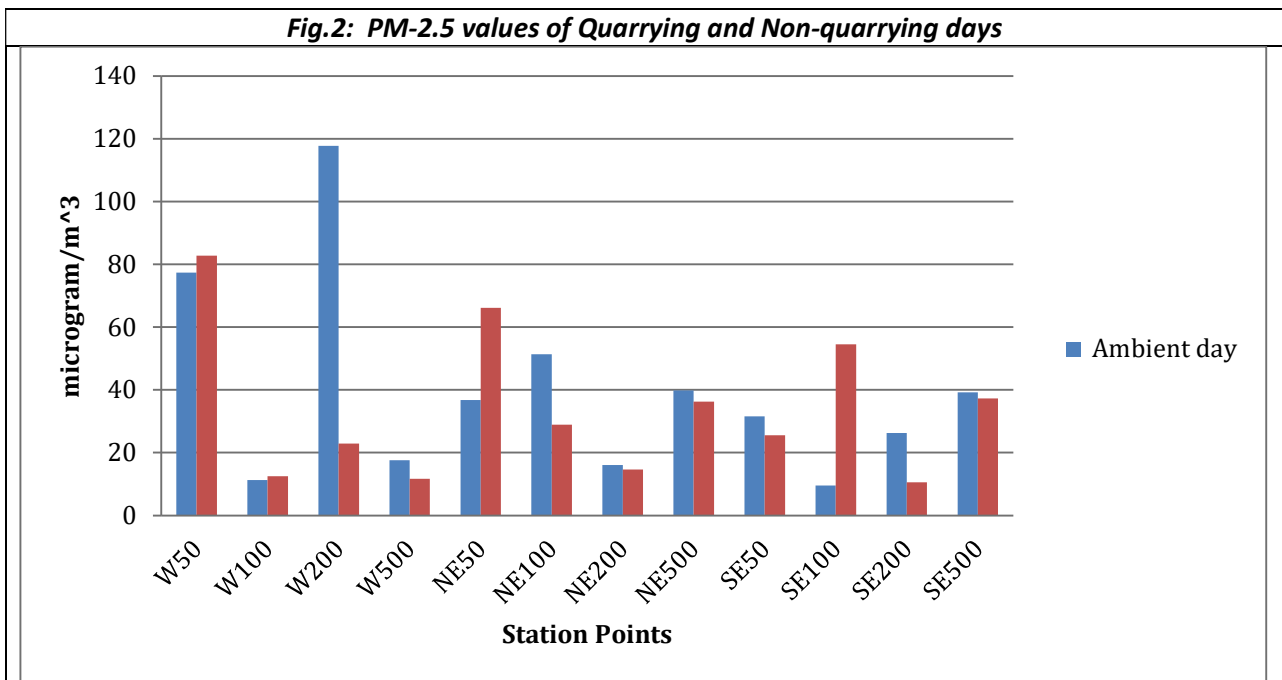


Fig.2: PM-2.5 values of Quarrying and Non-quarrying days



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:

L_{eq} = 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

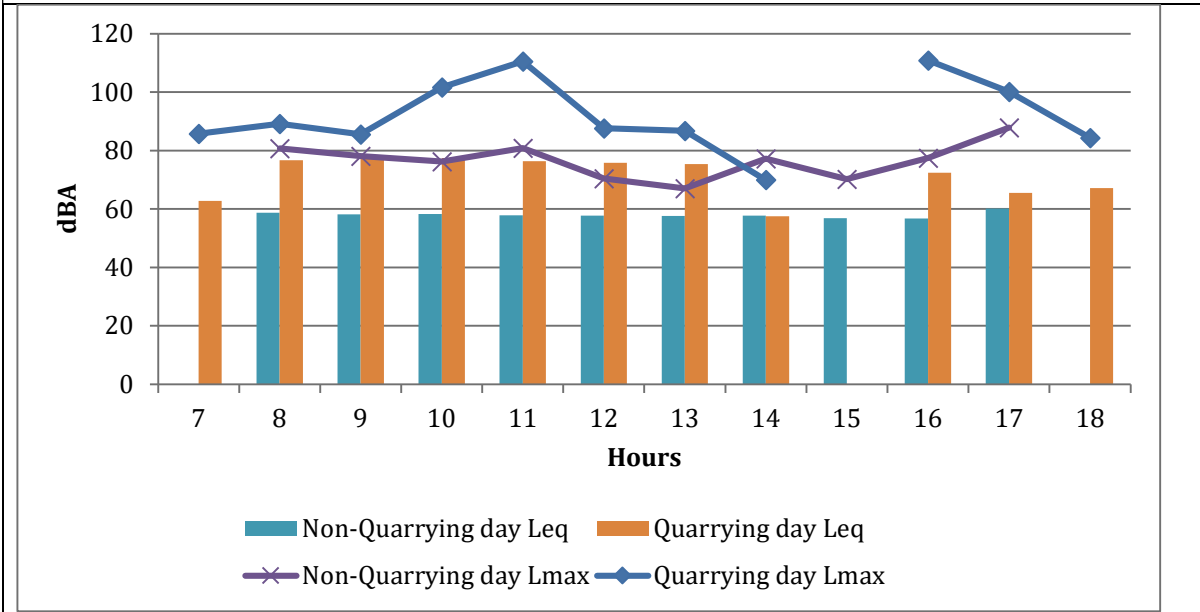


Fig.4: Equivalent values (Leq)and maximum (Lmax)of quarrying and non-quarrying day in West direction 100m

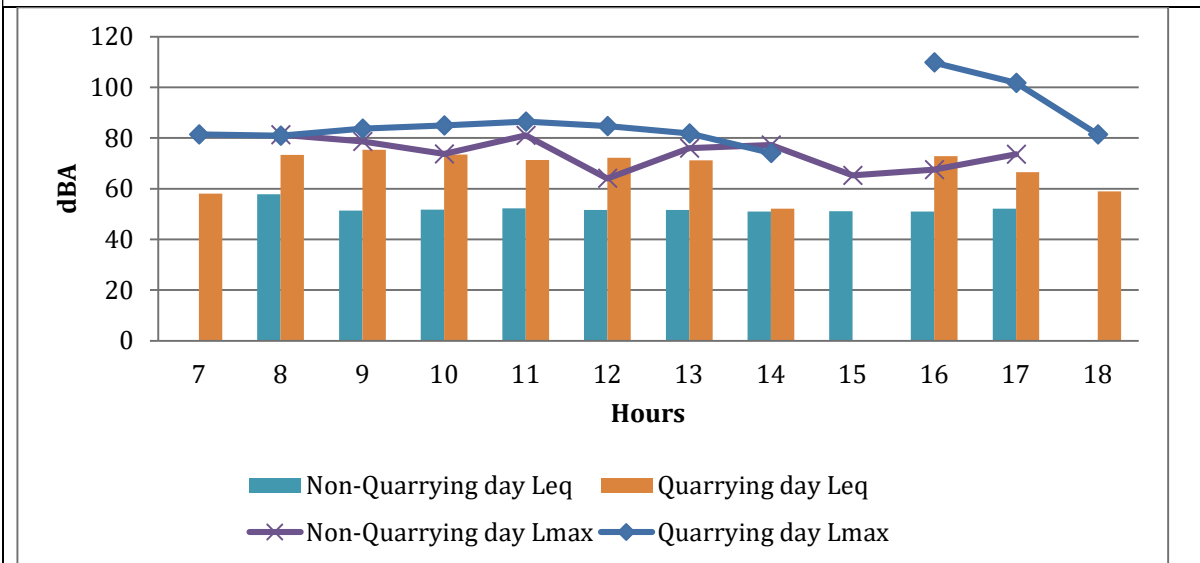


Fig.5: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in West direction 200m

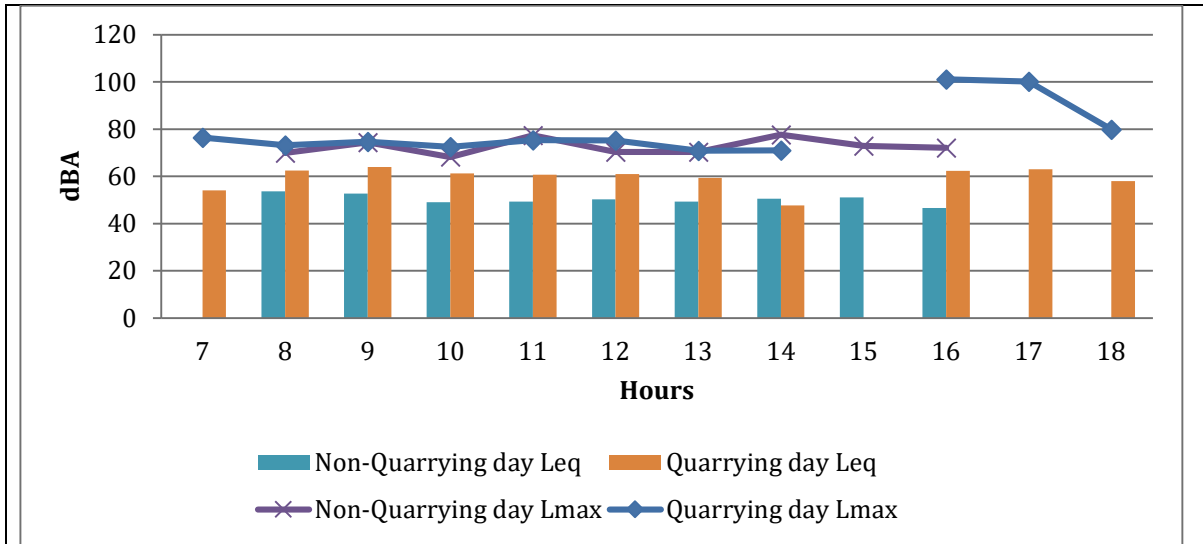


Fig.6: Equivalent values (Leq) and maximum (Lmax) of quarrying day and non-quarrying in West direction 500m

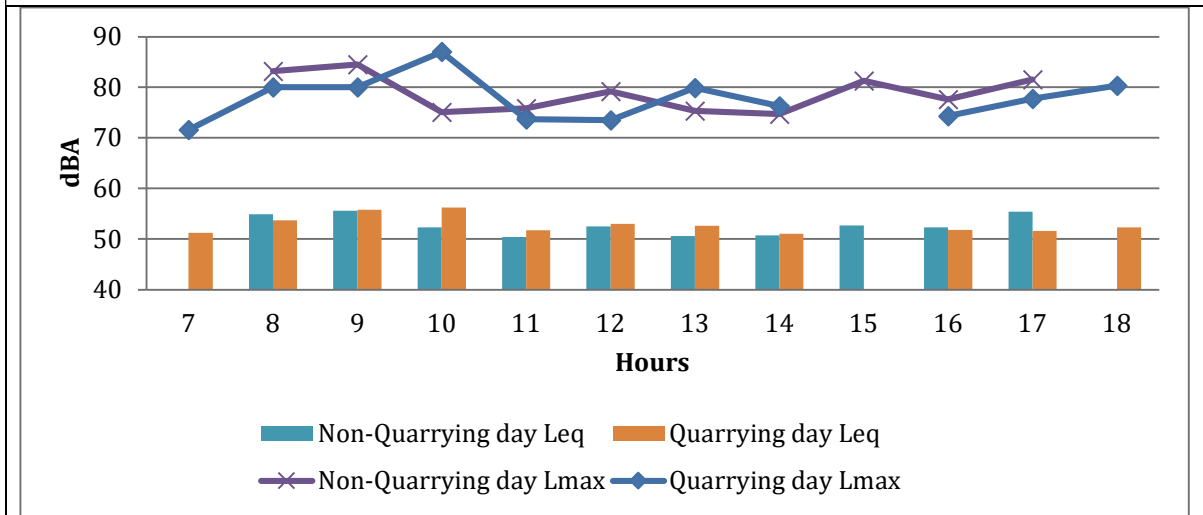


Fig.7: Equivalent values (Leq) and maximum (Lmax) of quarrying day and non-quarrying in North-East direction 50m

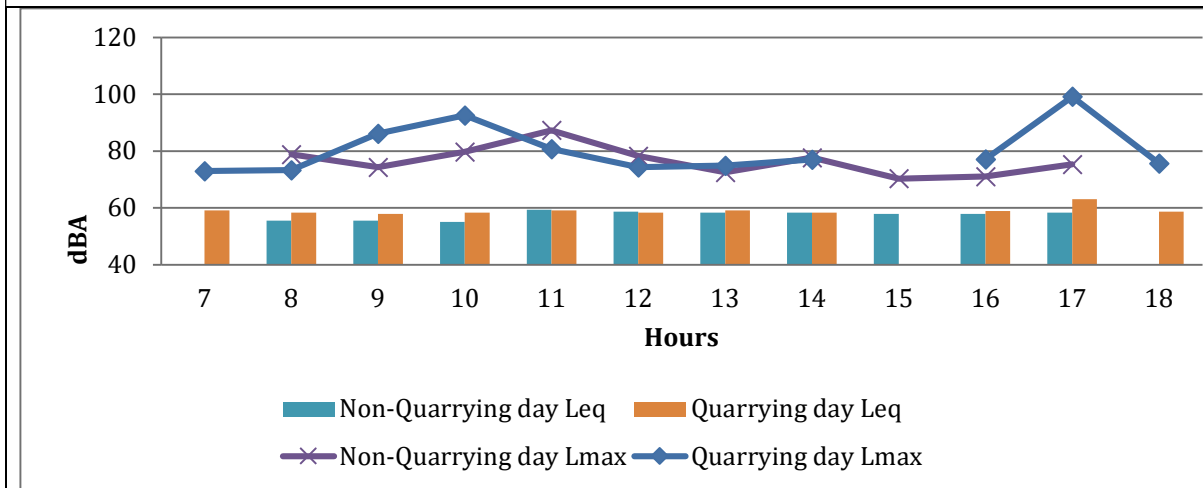


Fig.8: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in North-East direction 100m

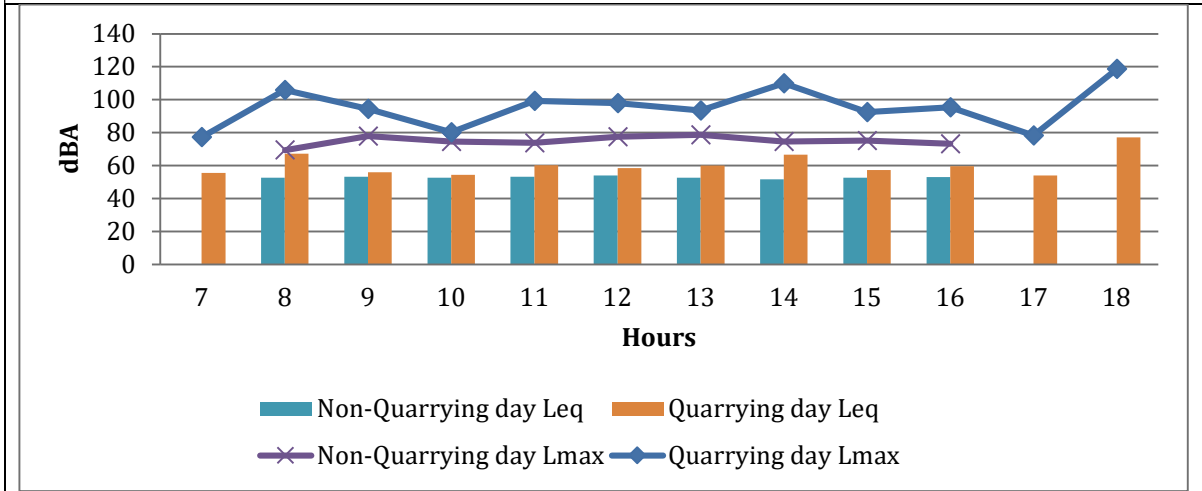


Fig.9: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in North-East direction 200m

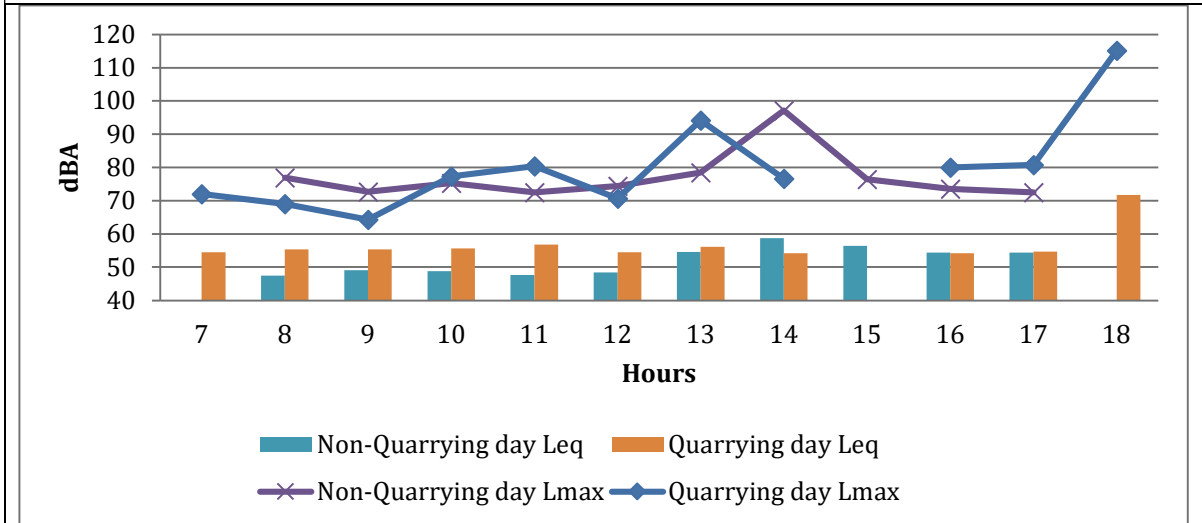


Fig.10: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in North-East direction 500m

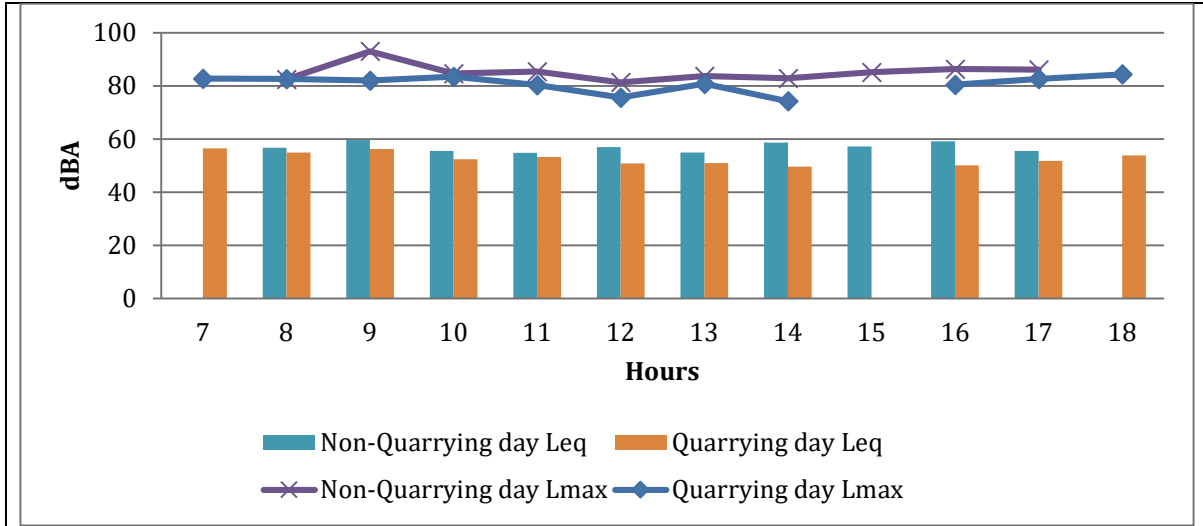


Fig.11: Equivalent values (Leq) and maximum (Lmax) of quarrying day and non-quarrying in South-East direction 50m

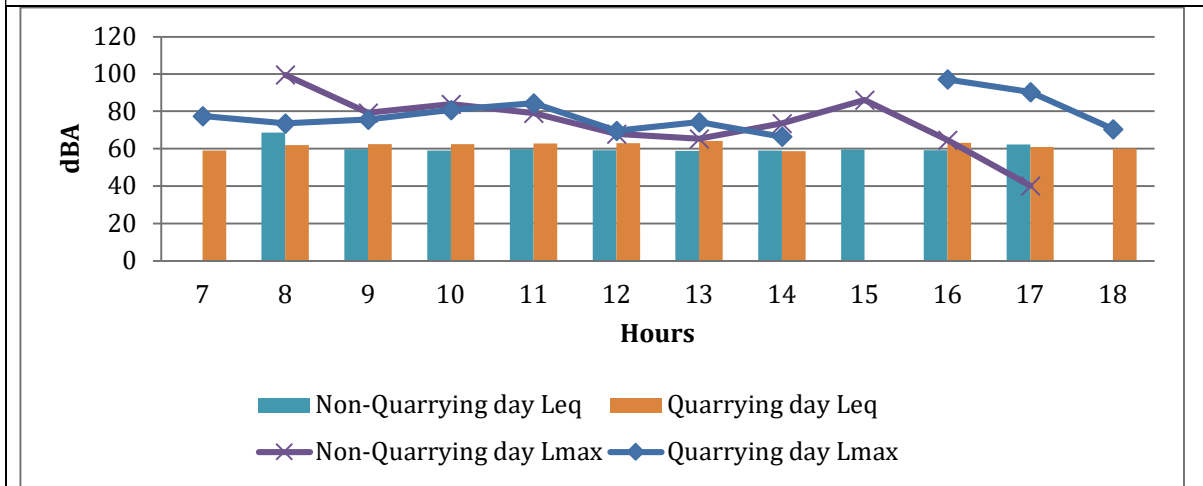
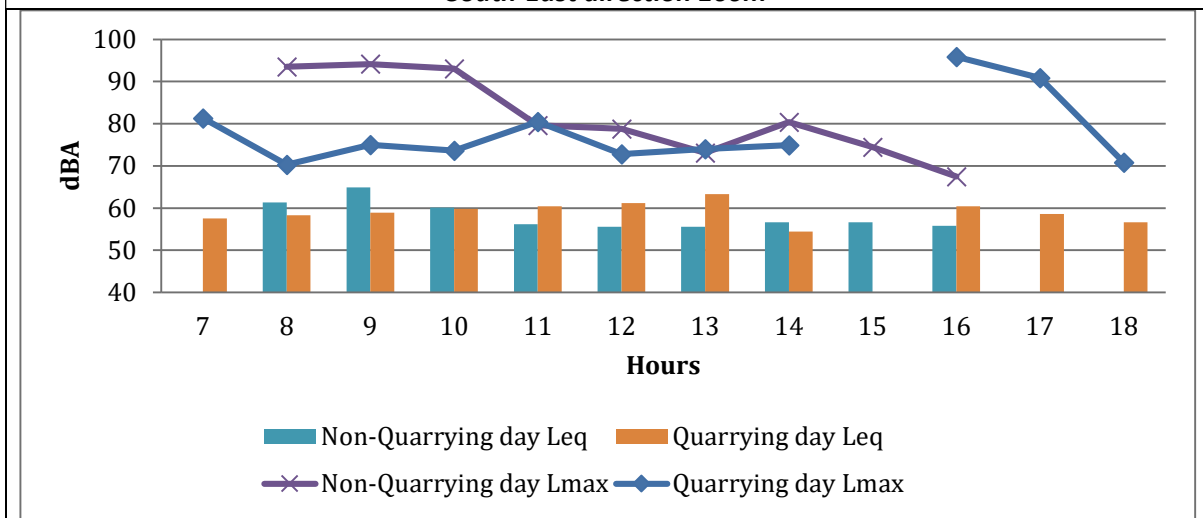


Fig.12: Equivalent values (Leq) and maximum (Lmax) of quarrying day and non-quarrying in South-East direction 100m



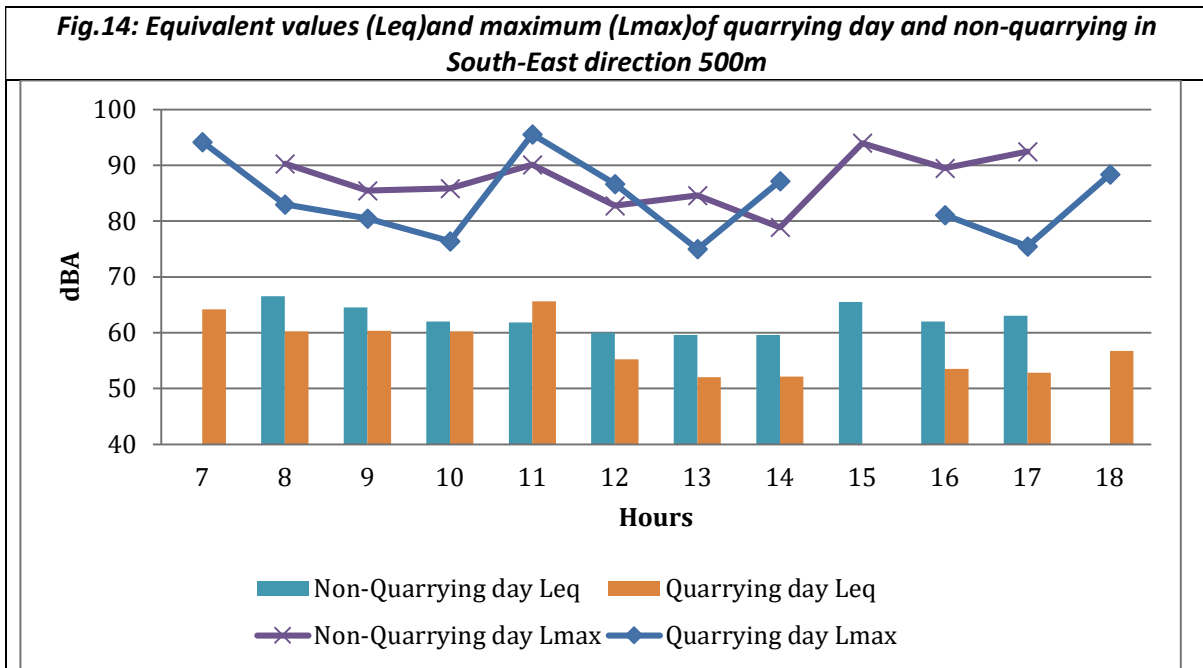
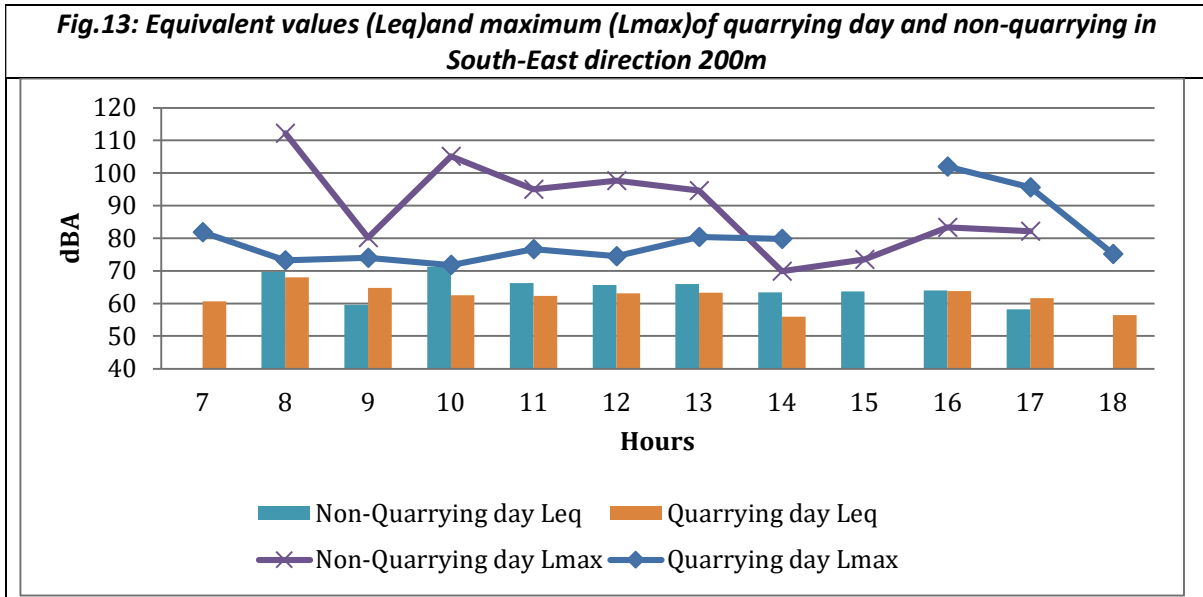
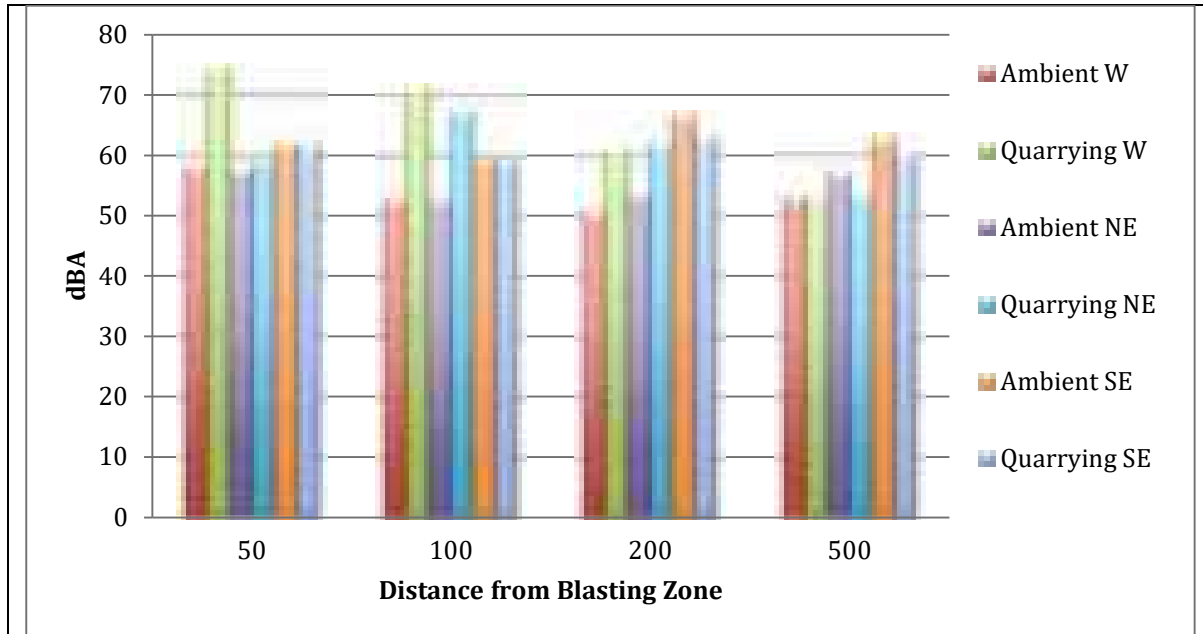


Fig.15: Equivalent values (Leq) of non-quarrying and quarrying day



6.4 Water Quality

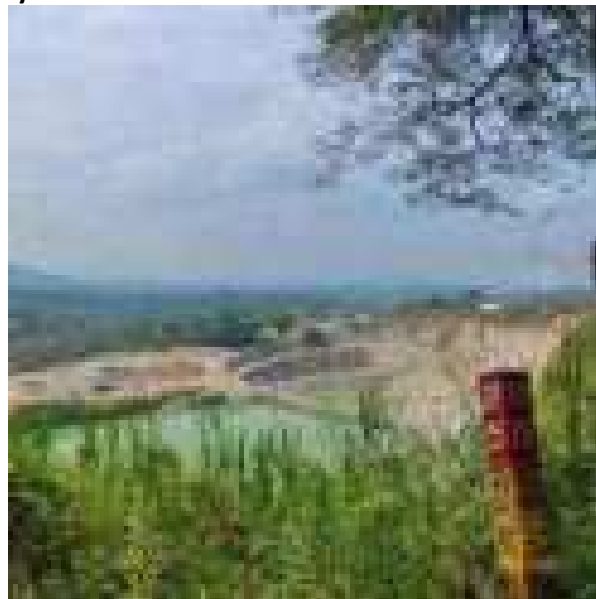
Sample Point: Old Quarry Pond

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	μ S/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 upto 14.02.2032.

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 is 750 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 south central 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
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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

<i>Weather: Non-quarrying day (15-01-2023)</i>				
<i>S.No.</i>	<i>Time (Hrs)</i>	<i>Temperature (°C)</i>	<i>Humidity (%)</i>	<i>Wind (m/s) & Direction</i>
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

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



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



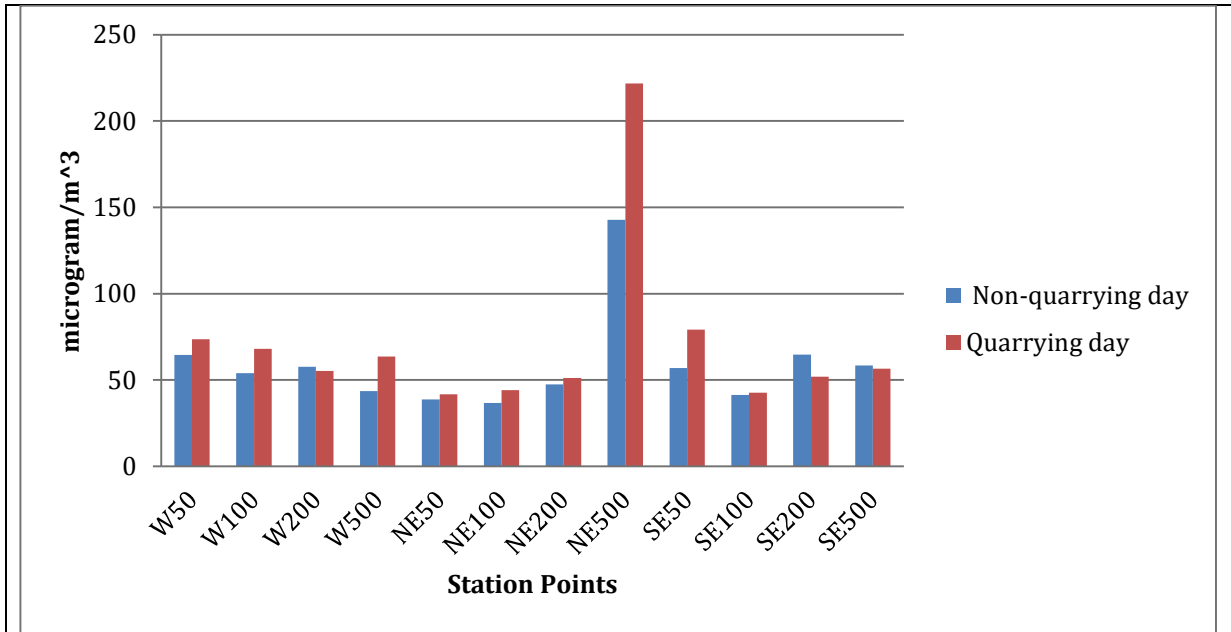
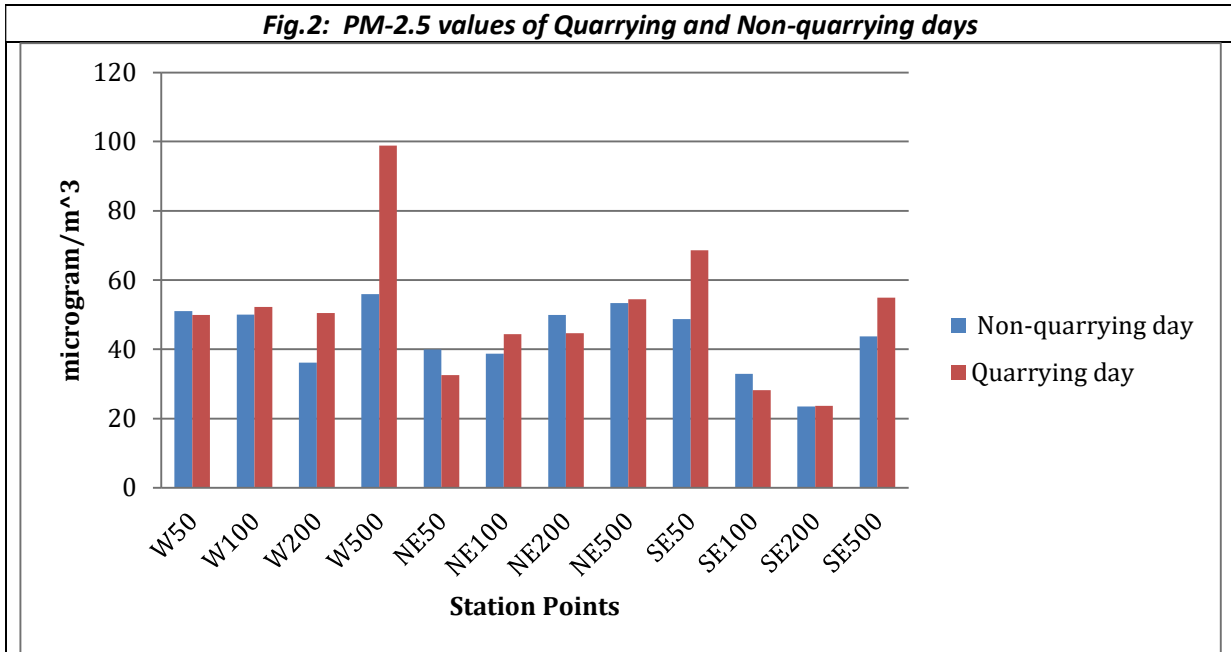


Fig.2: PM-2.5 values of Quarrying and Non-quarrying days



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:

L_{eq} = 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 (L_{eq}) and maximum (L_{max}) of quarrying and non-quarrying day in West direction 50m

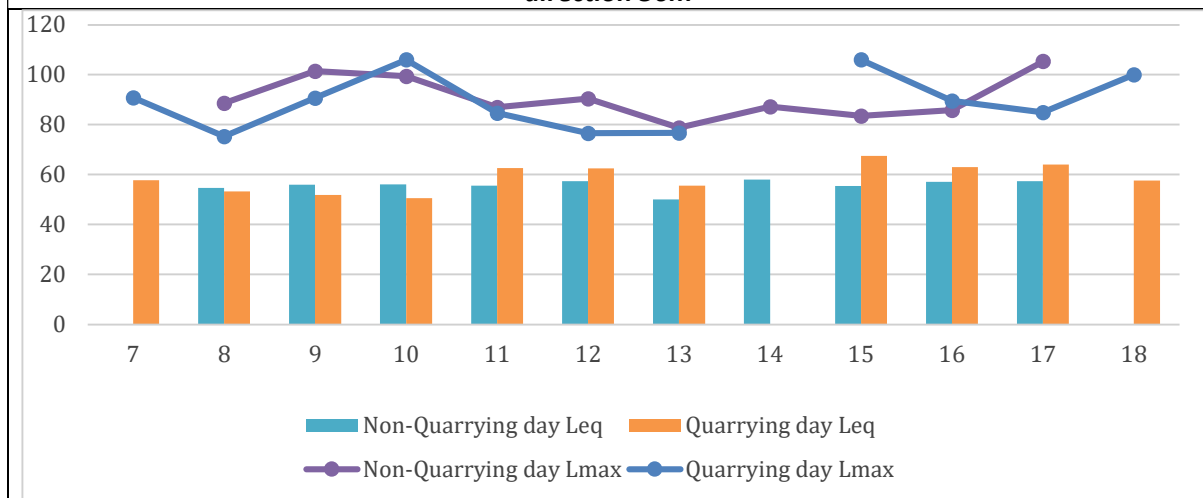


Fig.4: Equivalent values (Leq)and maximum (Lmax)of quarrying and non-quarrying day in West direction 100m

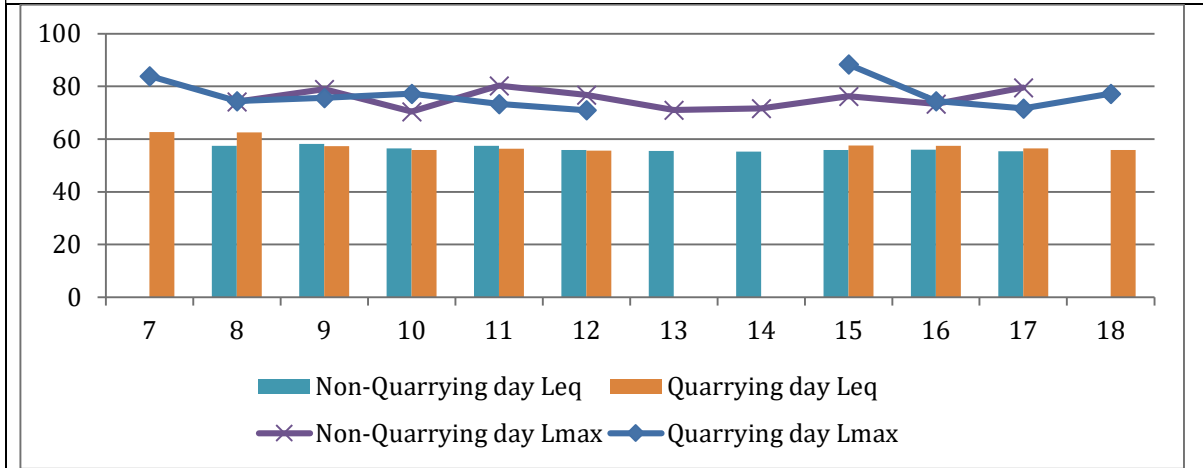


Fig.5: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in West direction 200m

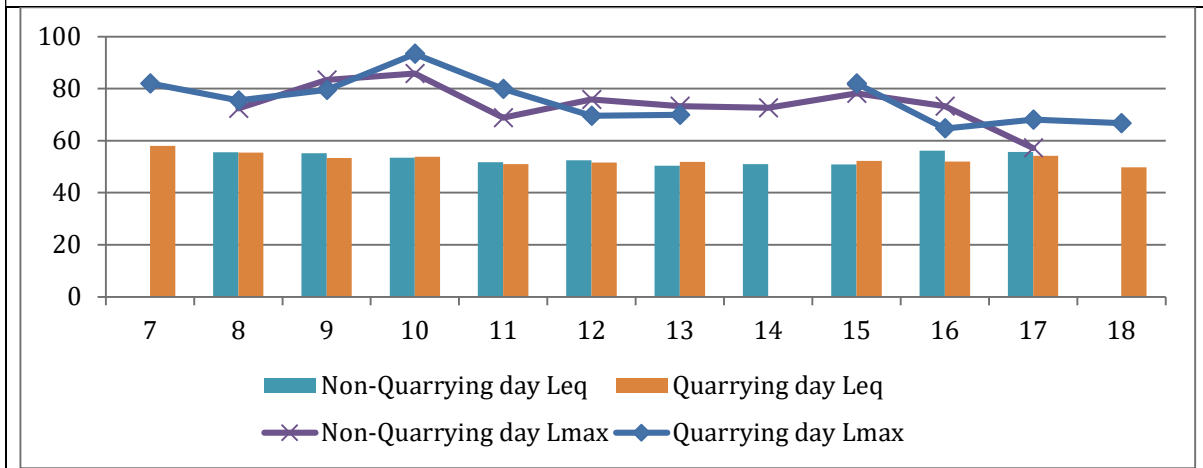


Fig.6: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in West direction 500m

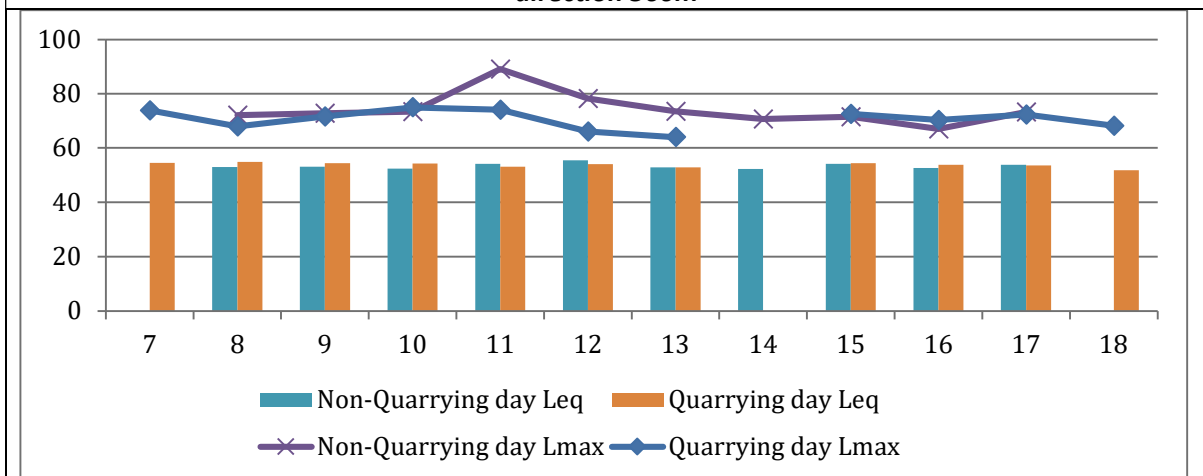


Fig.7: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in North-East direction 50m

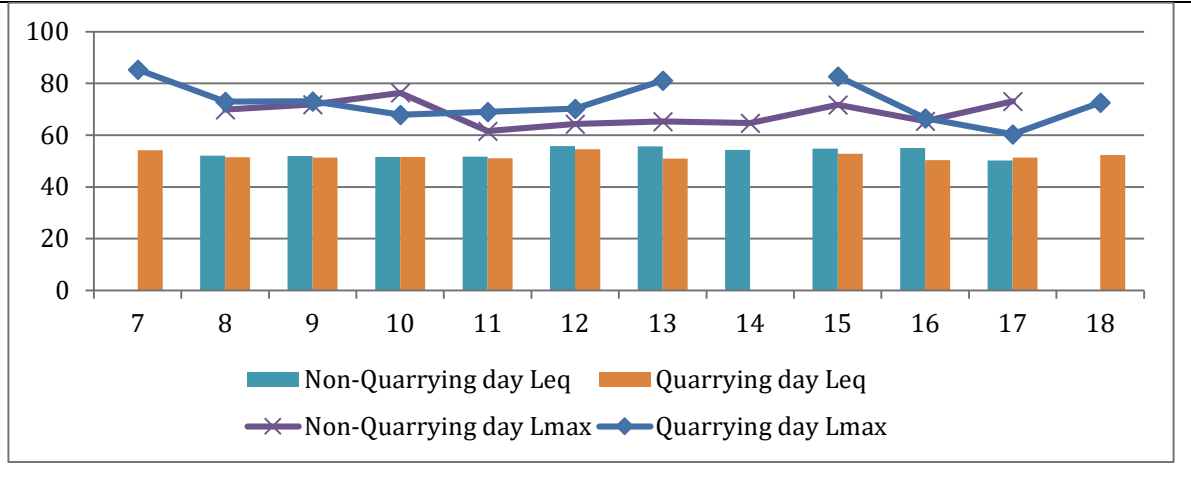


Fig.8: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in North-East direction 100m

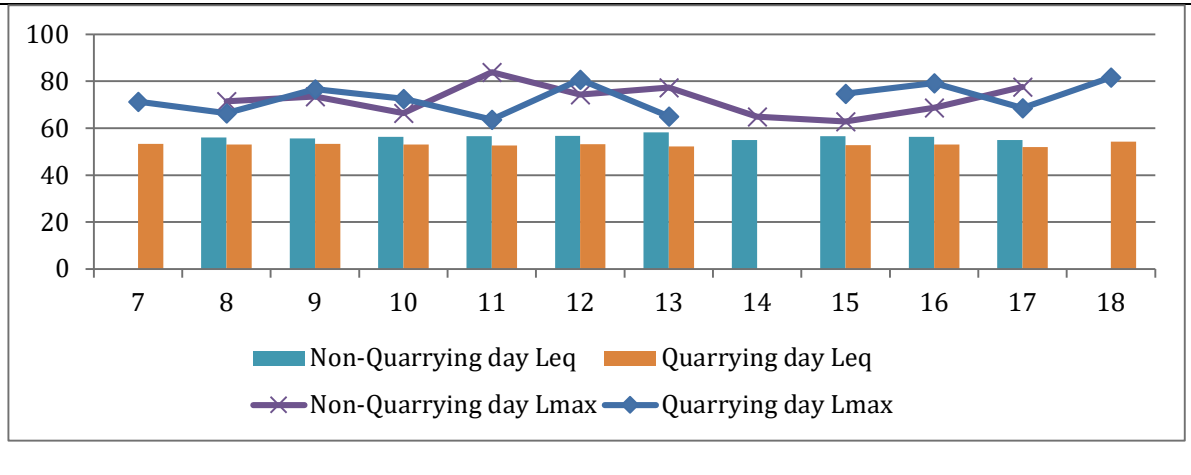


Fig.9: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in North-East direction 200m

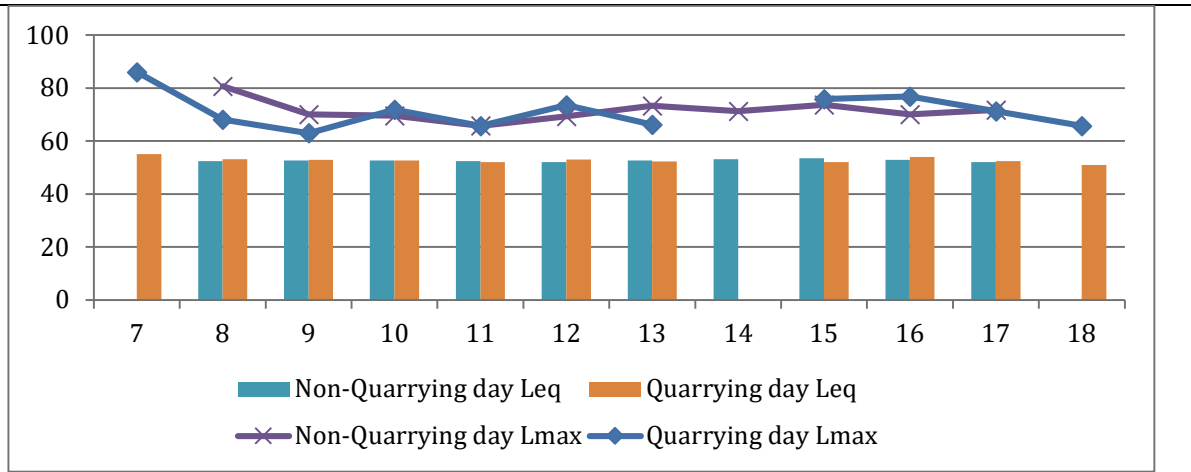


Fig.10: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in North-East direction 500m

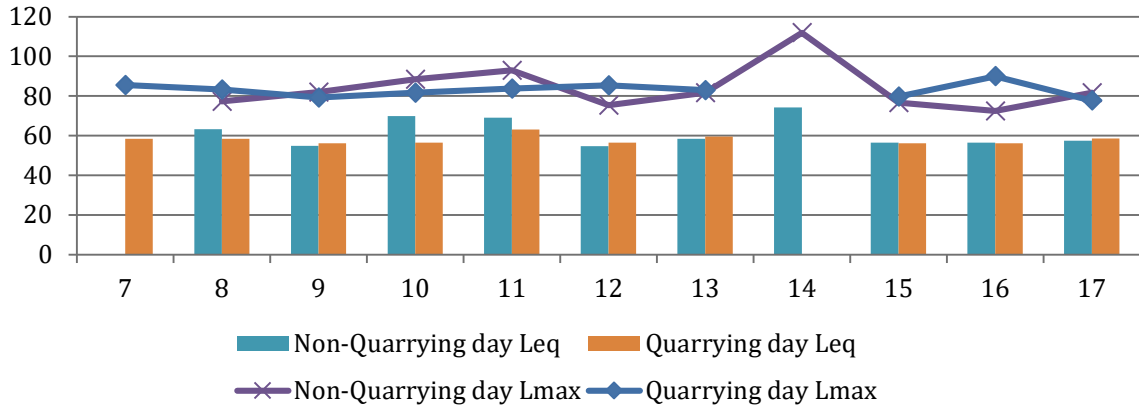


Fig.11: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in South-East direction 50m

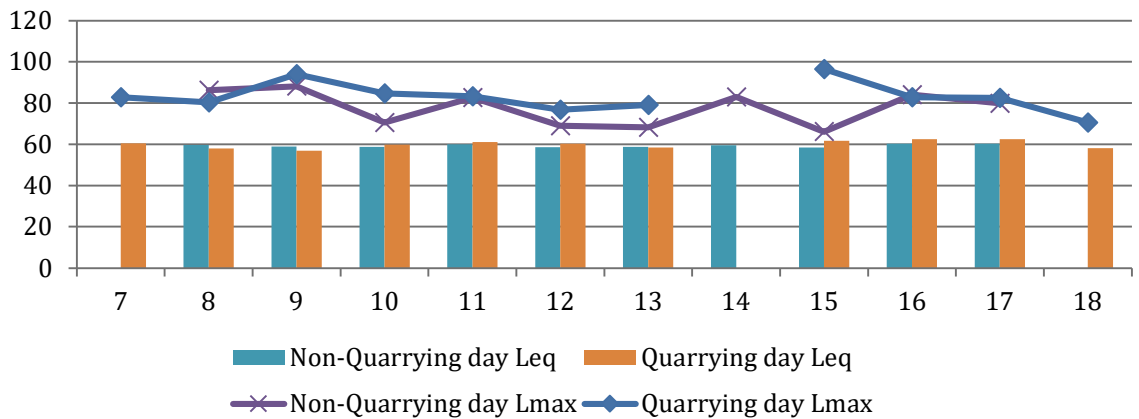


Fig.12: Equivalent values (Leq)and maximum (Lmax)of quarrying day and non-quarrying in South-East direction 100m

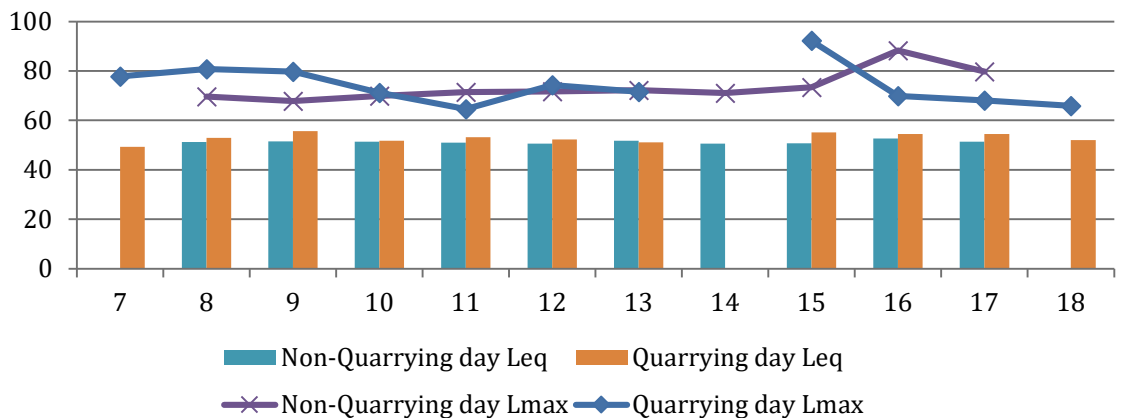


Fig.13: Equivalent values (Leq) and maximum (Lmax) of quarrying day and non-quarrying in South-East direction 200m

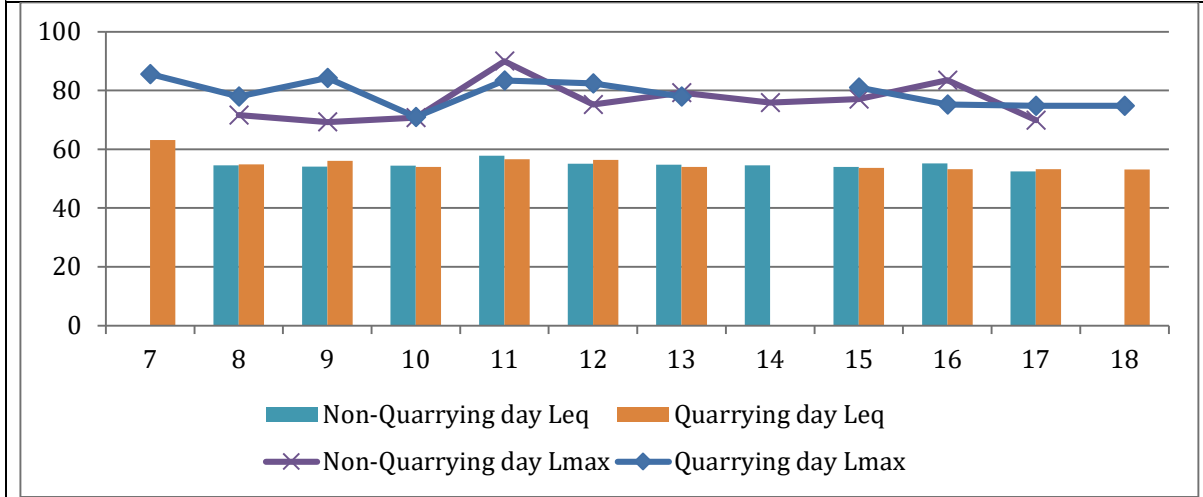


Fig.14: Equivalent values (Leq) and maximum (Lmax) of quarrying day and non-quarrying in South-East direction 500m

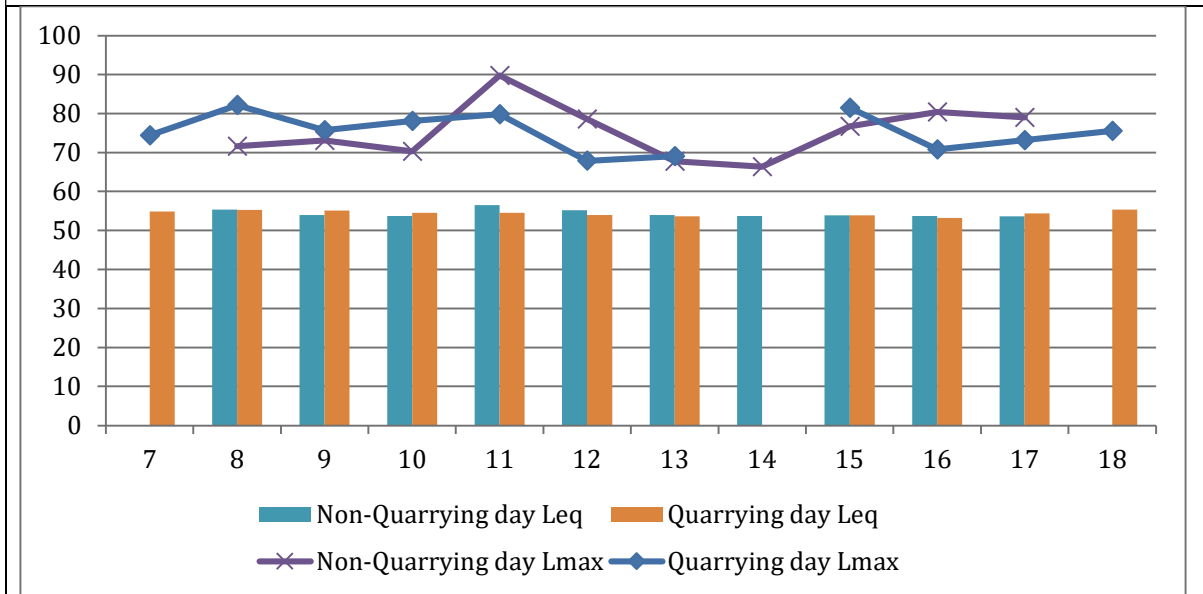
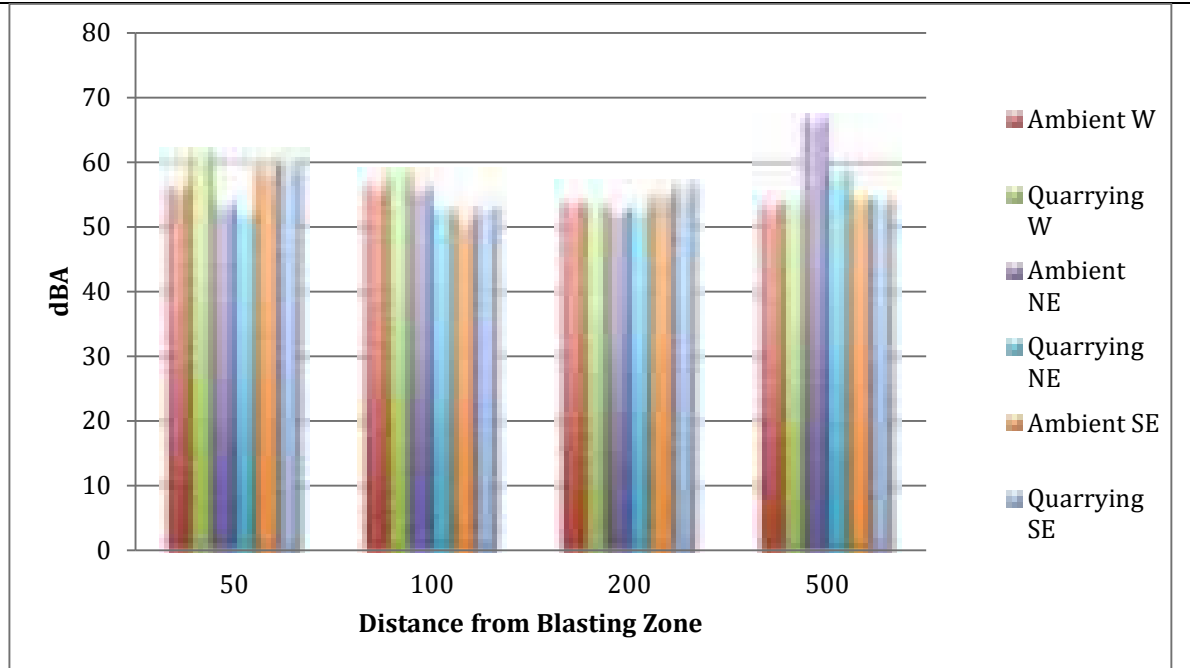


Fig.15: Equivalent values (Leq) of non-quarrying and quarrying day**6.4 Water Quality***Sample Point: Old Quarry Pond**Date of Sample: 28/12/2022*

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



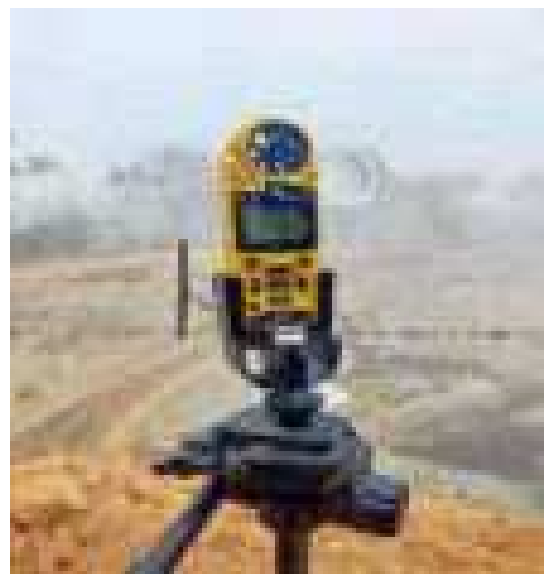
Monitoring team



Quarry site



Particulate matter monitoring



WEATHER 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 is 315 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 quaternary 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 15Tonnes carrying 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

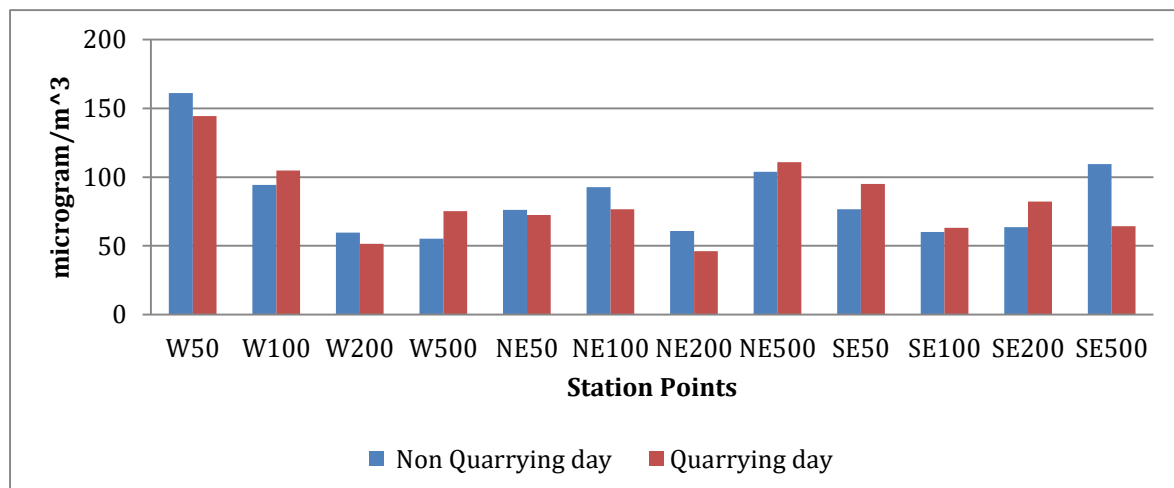


Fig.1: PM-10 values of Quarrying and Non-quarrying days

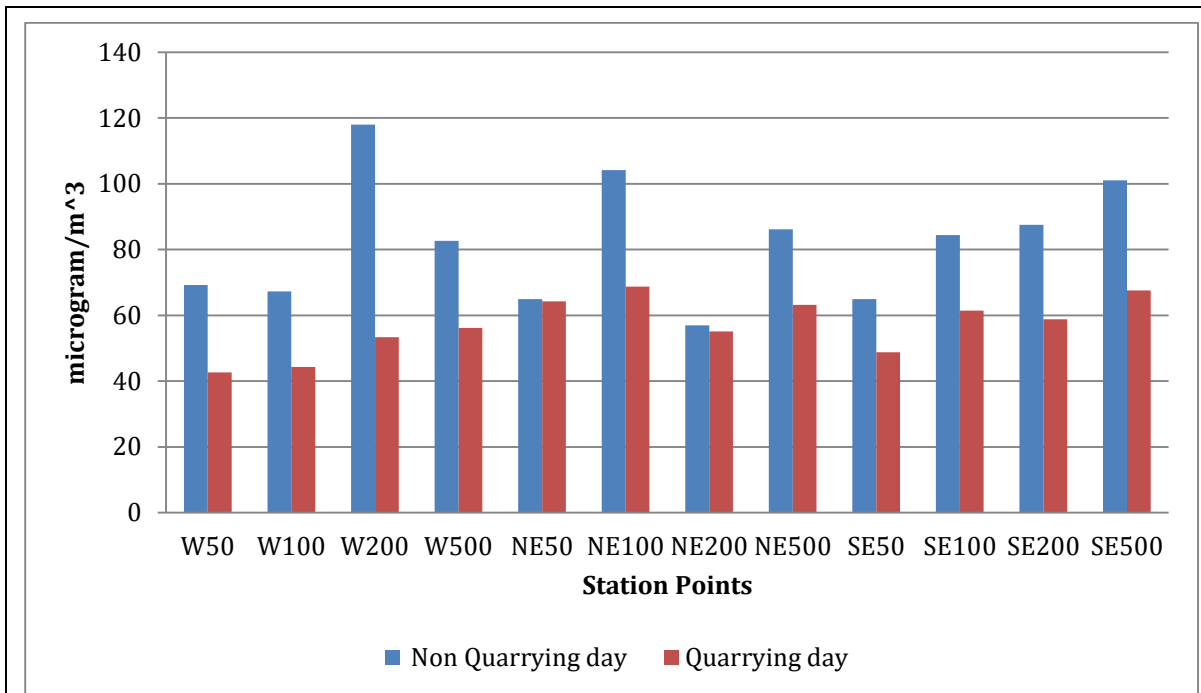


Fig.2: PM-2.5 values of Quarrying and Non-quarrying days

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

- (i) The PM₁₀ and PM_{2.5} values are varying erratically between non-quarrying and quarrying days. At some stations, PM₁₀ values have increased, but corresponding PM_{2.5} 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

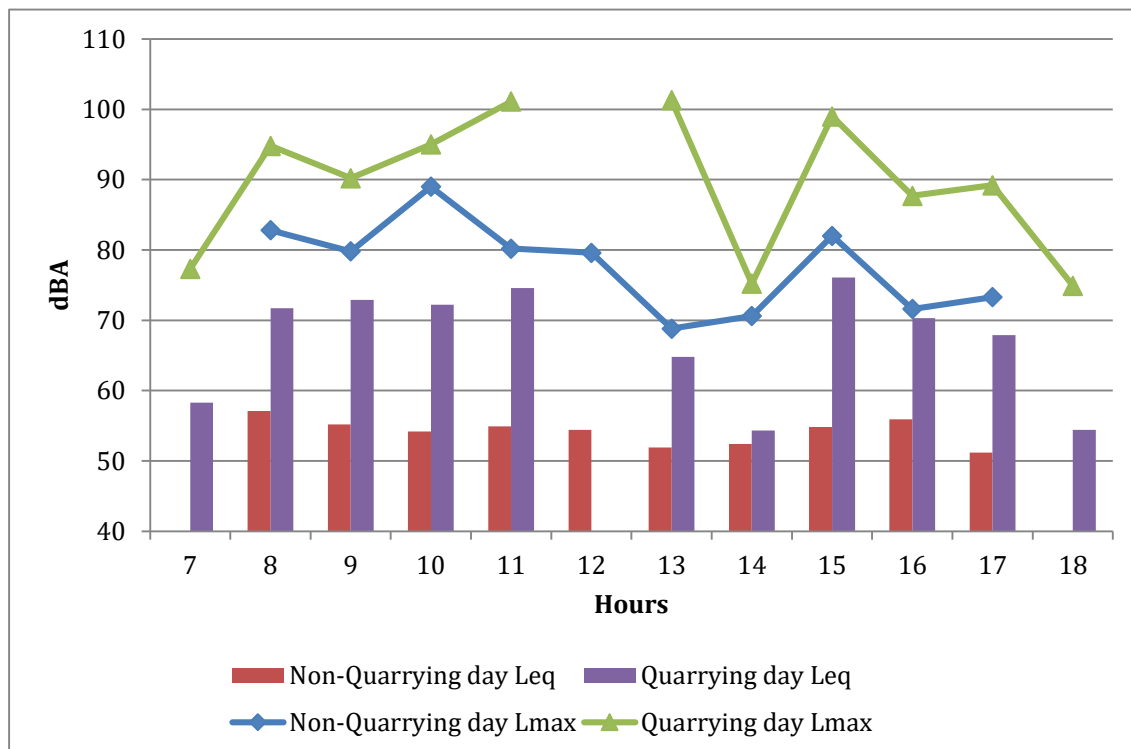


Fig.3: Equivalent values (L_{eq}) and maximum (L_{max}) Noise levels observed on quarrying and non-quarrying day in West direction 50m

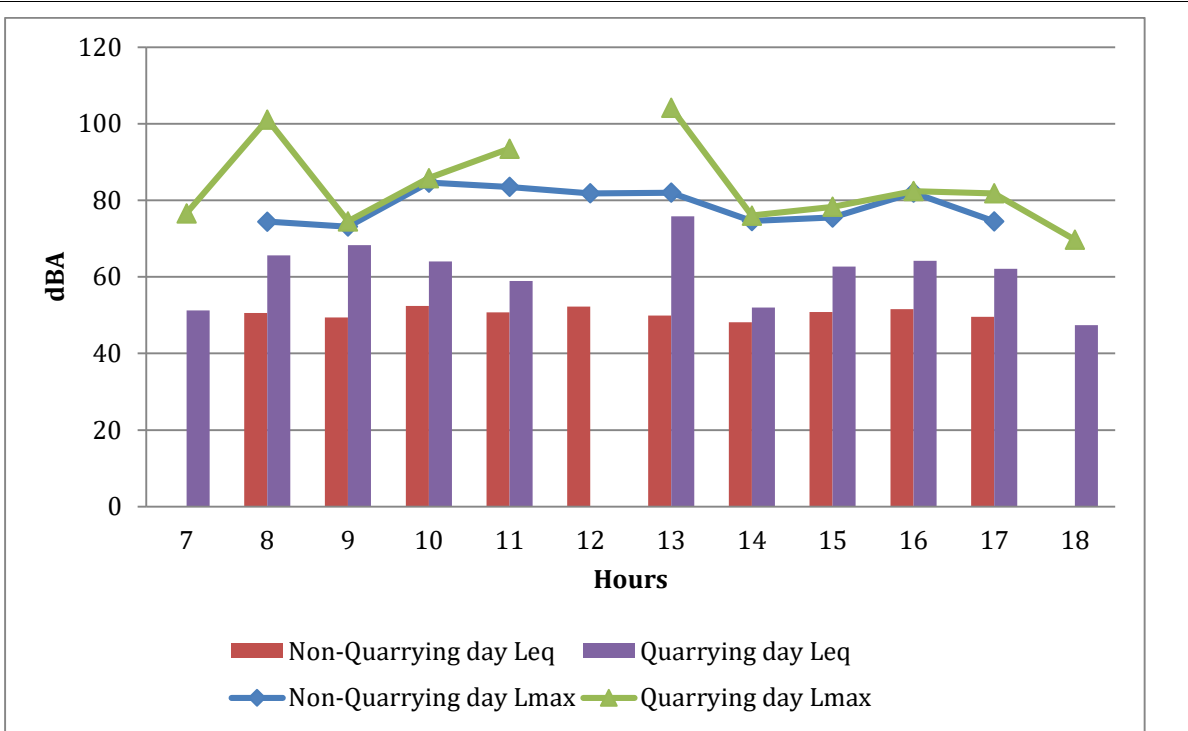


Fig.4: Equivalent values (Leq) and maximum (Lmax) observed on quarrying and non-quarrying day in West direction 100m

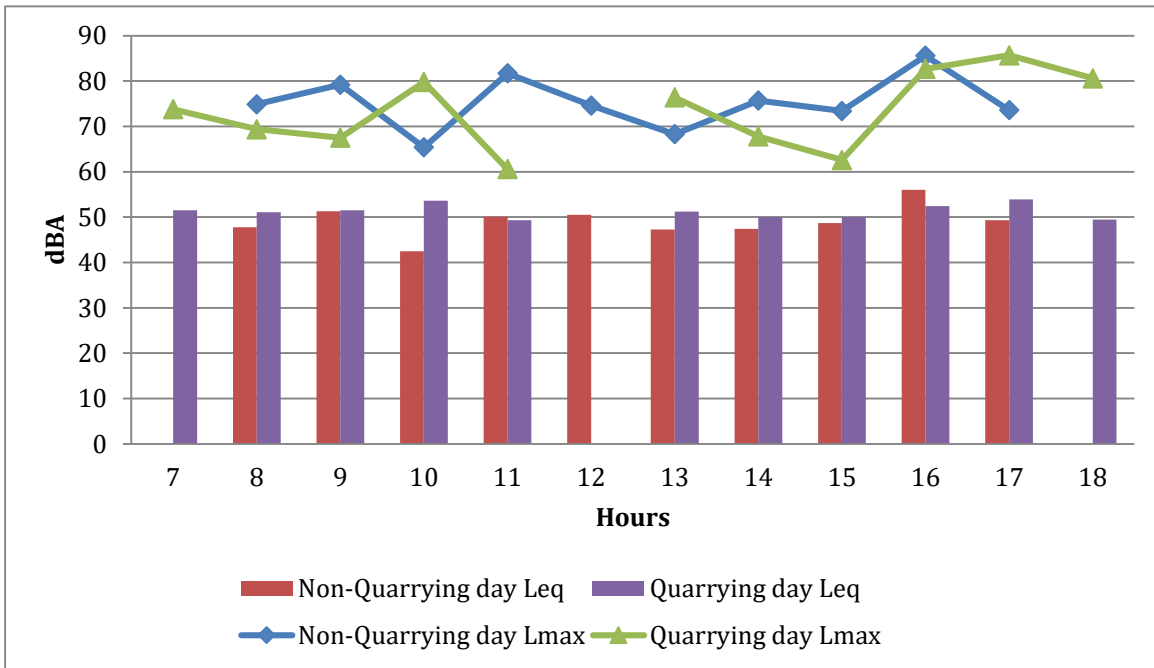


Fig.5: Equivalent values (Leq) and maximum (Lmax) observed on quarrying day and non-quarrying in West direction 200m

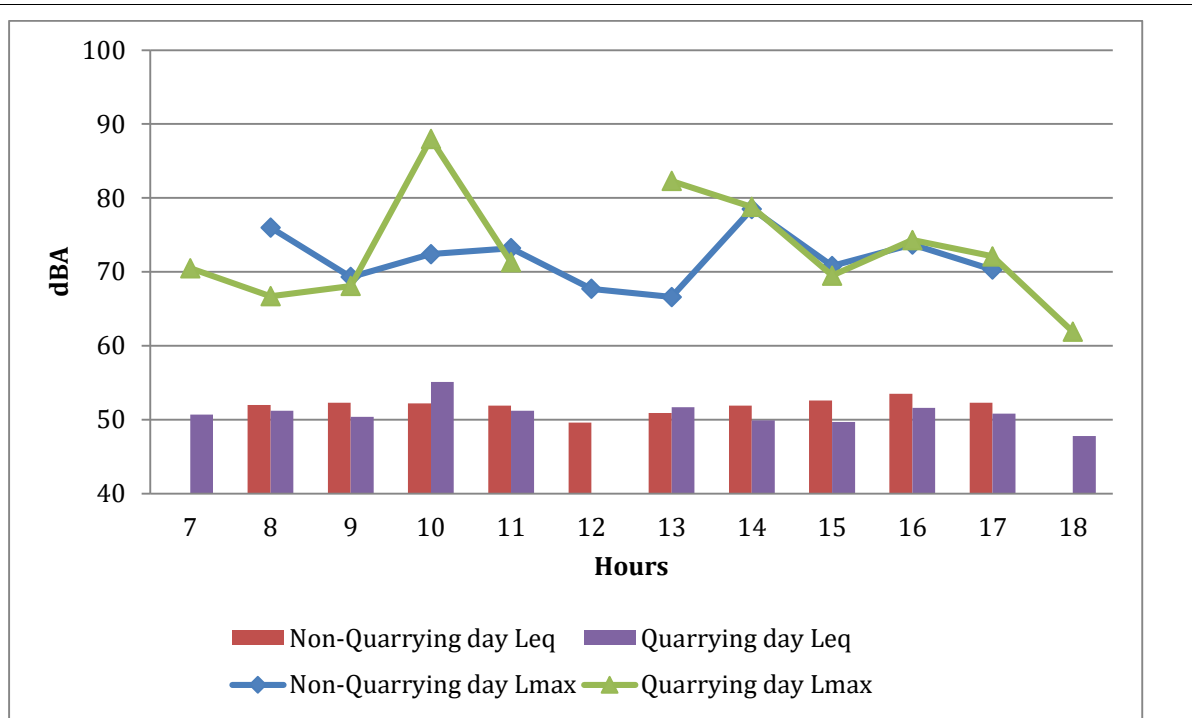


Fig.6: Equivalent values (Leq)and maximum (Lmax) observed on quarrying day and non-quarrying in West direction 500m

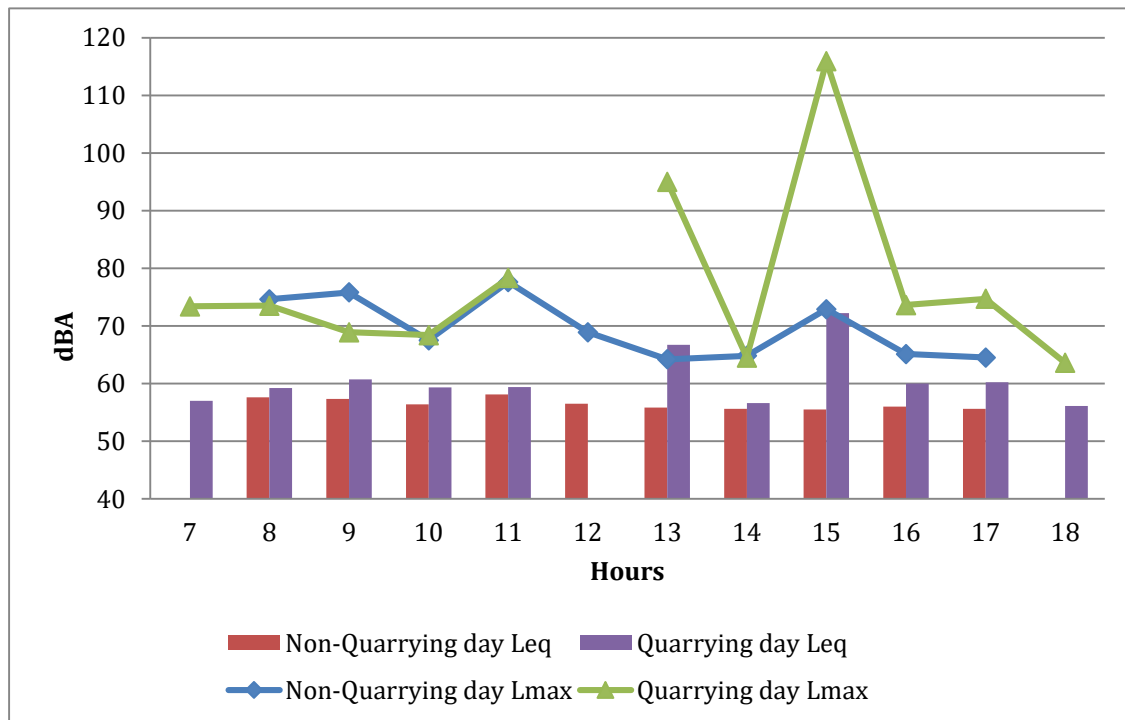


Fig.7: Equivalent values (Leq)and maximum (Lmax) observed on quarrying day and non-quarrying in North-East direction 50m

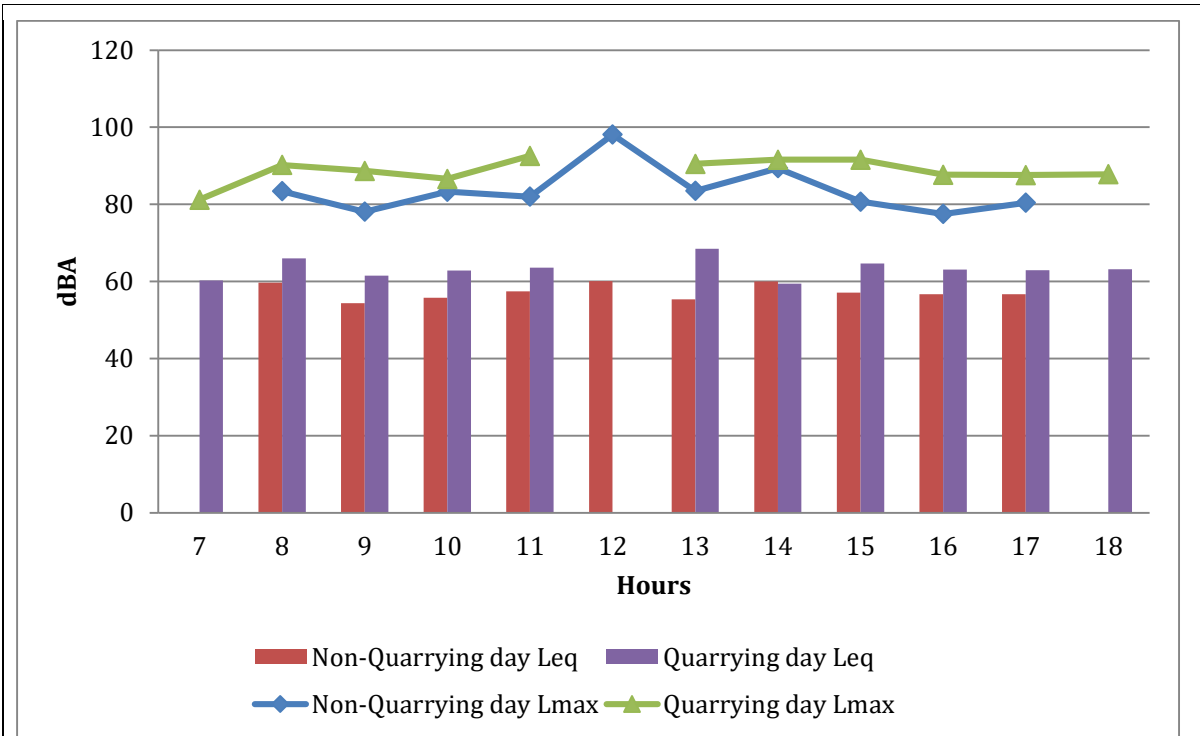


Fig.8: Equivalent values (Leq) and maximum (Lmax) observed on quarrying day and non-quarrying in North-East direction 100m

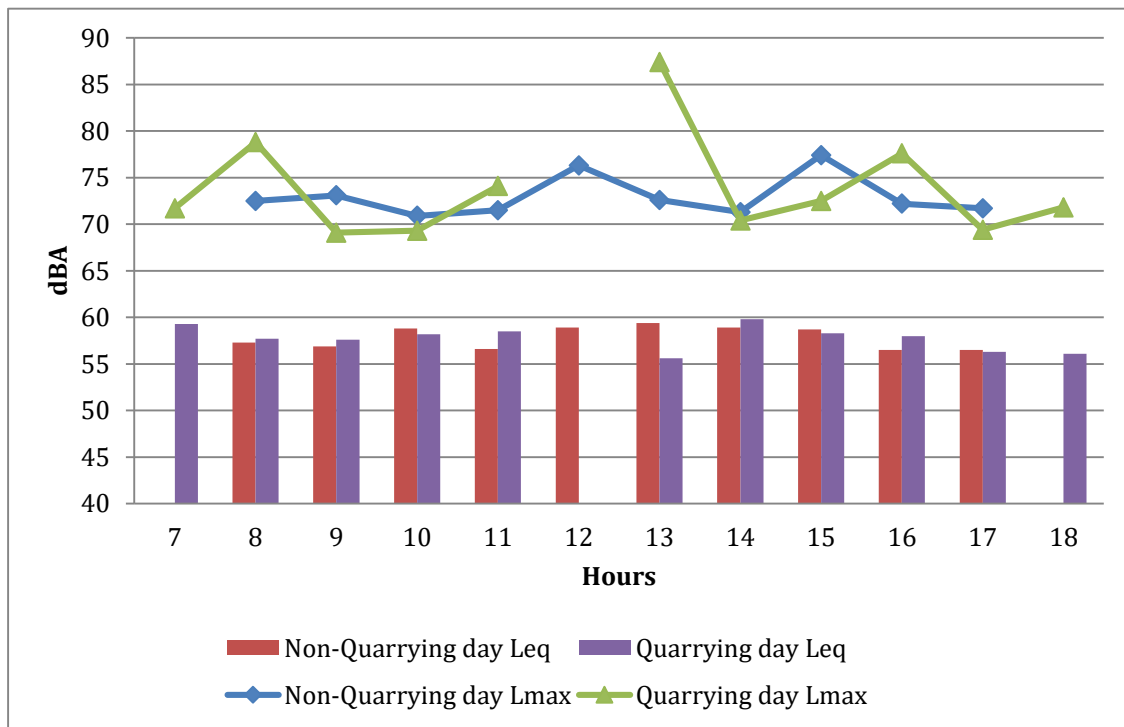


Fig.9: Equivalent values (Leq) and maximum (Lmax) observed on quarrying day and non-quarrying in North-East direction 200m

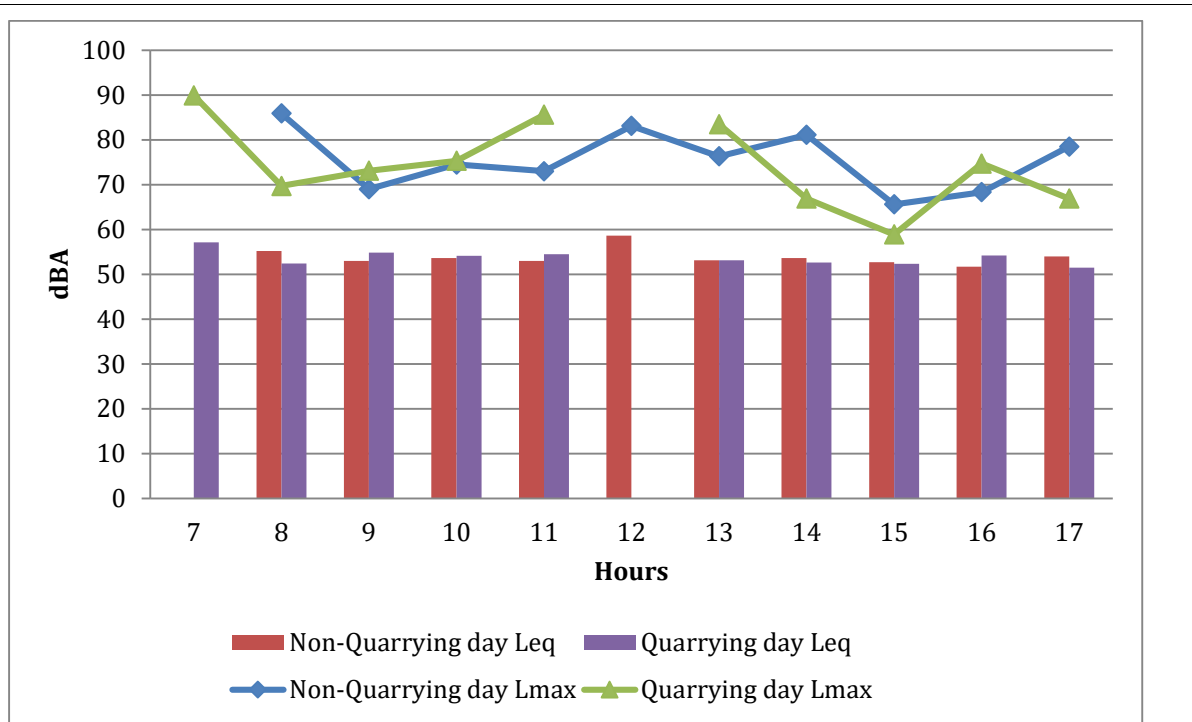


Fig.10: Equivalent values (Leq) and maximum (Lmax) observed on quarrying day and non-quarrying in North-East direction 500m

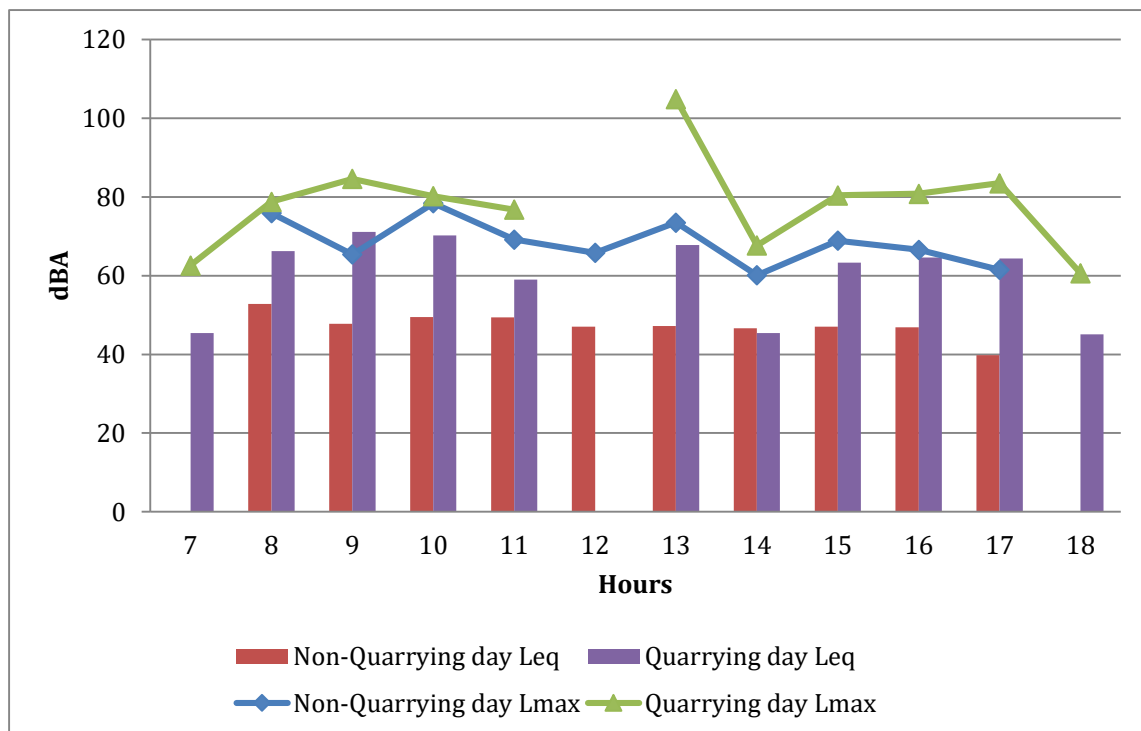


Fig.11: Equivalent values (Leq) and maximum (Lmax) observed on quarrying day and non-quarrying in South-East direction 50m

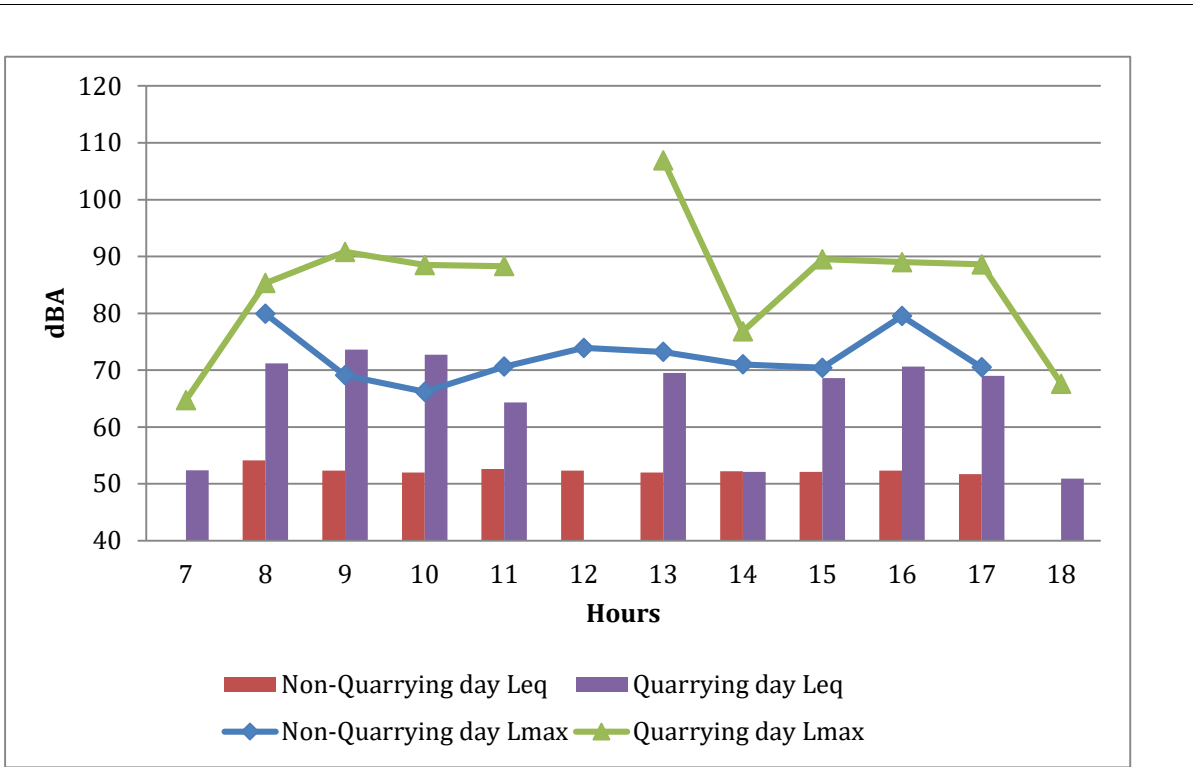


Fig.12: Equivalent values (Leq) and maximum (Lmax) observed on quarrying day and non-quarrying in South-East direction 100m

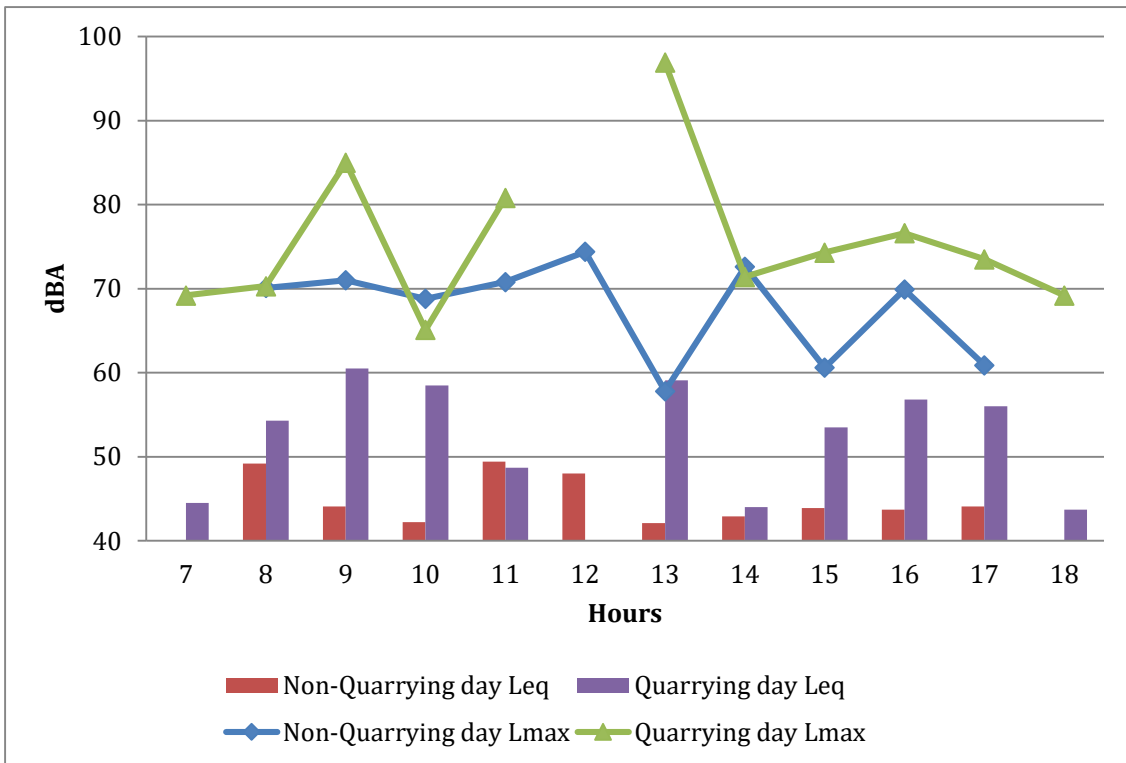


Fig.13: Equivalent values (Leq) and maximum (Lmax) observed on quarrying day and non-quarrying in South-East direction 200m

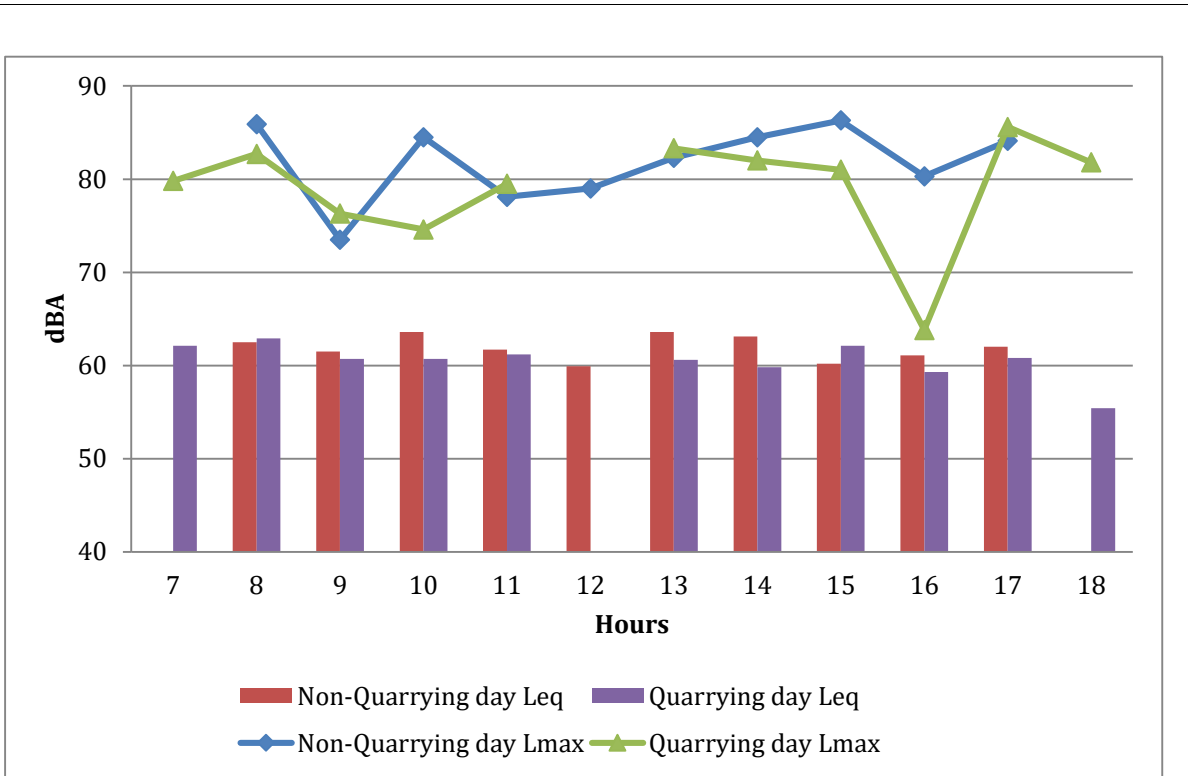


Fig.14: Equivalent values (Leq) and maximum (Lmax) observed on quarrying day and non-quarrying in South-East direction 500m

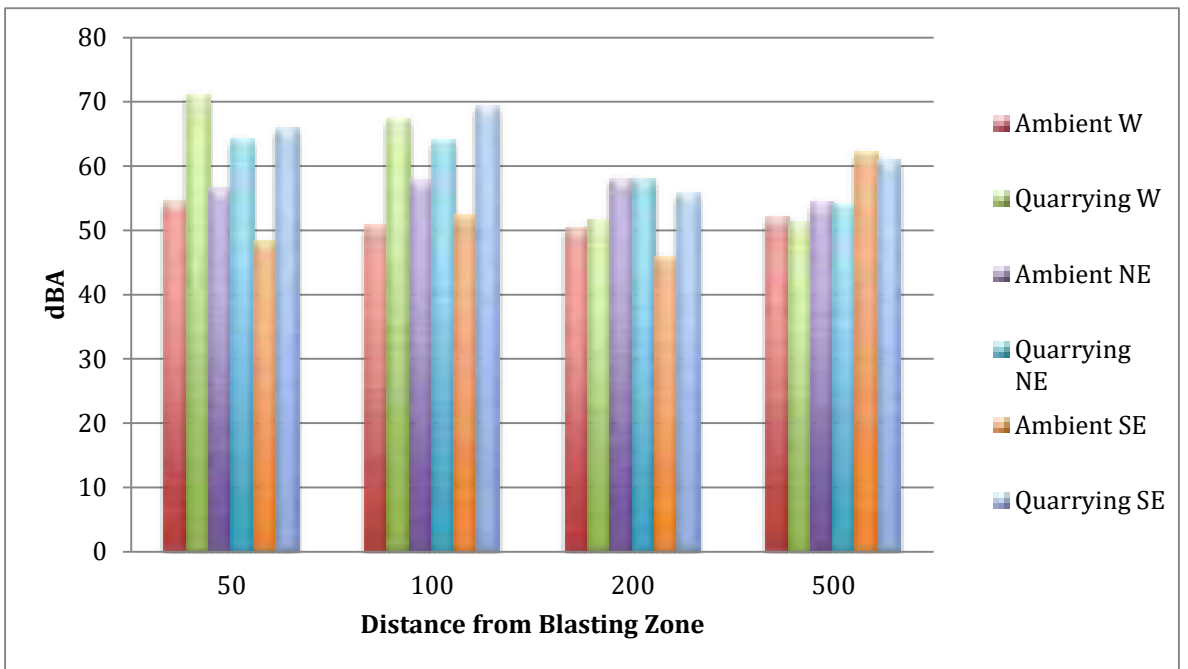


Fig.15: Equivalent values (Leq) observed on non-quarrying and quarrying day

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 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

SI 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 DOI	Kochi Corporation	No Consent, No STP	Issued
2		M/s ABM Tower behind GCDA, Kadavantra 682020	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
3		M/s Penta queen apartment B2 Padivattom, Edapally - 682024	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
4		M/s Penta queen apartment B3 Padivattom, Edapally - 682024	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
5		M/s Penta queen apartment A Padivattom, Edapally - 682024	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
6		M/s Penta queen apartment C Padivattom, Edapally - 682024	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
7		Galaxy Arcade Peediakkal road SRM Road - 682018	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
8		M/s West Rock One Apartment P J Anony Road Pachalam - 682012	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
9		M/s Watermelon Apartment Kathrikadavu, Kaloor 682017	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
10		Vigyana sagar hostel Marine engineering training institute Giri nagar, Shipyard Ltd.	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
11		Vanshika Apartments Vidhta nagar road Panampilly nagar- 682020	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
12		The tapioca restaurant mylady chambers, pottakuzhi rd, kaloor- 682017	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
13		Star homes south star Kathrikadavu, Kaloor 682017	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued

14	Skyline Zircon Apartment panampilly link road,Kadavantra 682020	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
15	Skyline Marble Arch Apartment owners, Kattakar road west, Kathrikadavu 682017	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
16	Galaxy Wintage Apartment Aryapadam Lane, Mamangalam Elamakkara, 682017	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
17	J K Royal House Kathrikadavu, Kaloor 682017	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
18	J M Manor Link avenue road, Kaloor 682017	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
19	Little Soi. Aditya tower Panampilly nagar 682020	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
20	NB Spring Terrace Apartment Tagore lane, Elamakkara 682026	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
21	PMJ Towers Vidhya nagar, Kadavantra 682020	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
22	Presidency Homes Journalist Colony, Kathrikadavu 682017	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
23	Skyline Belair Apartment Shihab Thangal Road Panampilly nagar, 682036	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
24	Dadd's Extended stay Canal road, Gandhinagar	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
25	D D Rose Gate Kadavantra, Ernakulam 682020	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
26	Vinayaka Boys hostel Banerji road, Kaloor 682017	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
27	The wood Ford Yuvajana samajam road. Kadavantra 682020	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, STP not working	Issued
28	Namasita Apartment, Vidhya nagar road, Panampilly nagar, 682020	Apartment	Ernakulam	Ernakulam DOI	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, Elamakara, 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 DOI	Kochi Corporation	No Consent, No STP	Issued
48	LORDS COTTAGE,KARSHAKA ROAD, VADUTHALA ERNAKULAM, 682012	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
49	GALAXY METRO EDAPPALLY RAGHAVAN PILLAI RD, ELAMAKKARA, ERNAKULAM, KERALA - 682026	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
50	SPARKLE SCAPES APARTMENTS, TAGORE LANE, ELAMAKKARA, ERNAKULAM, 682026	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
51	MON AMOUR APARTMENTS, ELAMAKKARA, KOCHI, 682026	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
52	MON COEUR, VIVEKANANDA NAGAR ROAD, ELAMAKKARA,ERNAKULAM - 682026	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
53	LOTUS ENCLAVE Puthukkalavattom Rd, Elamakkara, Kochi, 682026	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
54	ANASWARA SOUPARNIKA Puthukkalavattom Rd, Elamakkara, Kochi, Kerala 682026	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
55	RDS FLAIR, EDAPPALLY RAGHAVAN PILLAI RD, ELAMAKKARA, ERNAKULAM - 682026	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
56	CVC CALISTA EDAPPALLY RAGHAVAN PILLAI RD, ELAMAKKARA, ERNAKULAM - 682026	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
57	DREAM FLOWER SONATA Mercy Lane 2, Elamakkara, Ernakulam, Kerala 682026	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
58	DREAM FLOWER ZETA Punnakkal Mercy Lane, Punnakkal, Elamakkara, Kochi, Kerala 682026	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
59	GOOD EARTH HEAVEN, Perandoor Rd, Mamangalam, Elamakkara, Ernakulam, Kerala 682026	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
60	VB ROYAL, opp. Gayathri Kalayanamadapam, Edappally, Ernakulam, Kerala 682024	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
61	KALPAKA CASTLE, Subhash Nagar Elamakkara, Subhash Nagar Road, Ponekkara, Edappally, Kochi, Kerala 682024	Apartment	Ernakulam	Ernakulam DOI	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 DOI	Kochi Corporation	No Consent, No STP	Issued
63	ORION APARTMENT, OPP. AL AMEEN PUBLIC SCHOO;, CHERANALLOOR, EDAPPALLY	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
64	NATIONAL AVENUE, National Avenue, Manimala Cross Road, Ponekkara, Edappally, Ernakulam, Kerala 682024,	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
65	NATIONAL NANDANAM, Edapally Palace Rd, Ponekkara, Edappally, Ernakulam, Kerala 682024	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued

66	ANASWARA SOUPARNIKA APARTMENT Puthukkalavattom Rd, Elamakkara, Kochi, Kerala 68202A	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
67	SI flat, Kurishupally Rd, Ravipuram, Perumanoor, Ernakulam, Kerala 682036	Apartment	Ernakulam	Ernakulam DOI	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 DOI	Kochi Corporation	No Consent, No STP	Issued
69	Pooja flat, Thamburatti Parambu Rd, Mamangalam, Elamakkara, Ernakulam, Kerala 682565	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
70	Galaxy cherry wood, Kaloore, Kochi, Kerala 682017	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
71	OLIVE GARDENS, NH BYPASS, NEAR OBERON MALL, PADIVATOM, EDAPALLY, ERNAKULAM, 682024	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
72	REGAL APARTMENTS, STADIUM ROUND, JAWAHARLAL NEHRU INTERNATIONAL STADIUM, KALOOR, KOCHI, 682017	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
73	REGAL PALMS, ERAMATH W RD, CHEMBUMUKKU, EDAPALLY, ERNAKULAM, 682037	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
74	JM Crescent Apartments, P.J. Antony Road, Sonia Nagar, Mamangalam, Edapally, Ernakulam - 682024	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
75	Infra Splendor Apartments, Edappally, Ernakulam - 682565	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
76	Sky park residency, Janatha Rd, Mamangalam, Elamakkara, Kochi - 682025	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
77	Mayura Apartments, 3rd Cross Rd, Girinagar Housing colony, Giri Nagar, Kadavanthra - 682020	Apartment	Ernakulam	Ernakulam DOI	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 DOI	Kochi Corporation	No Consent, No STP	Issued
79	Garden court 277W+XJC, Elamakkara, Kochi, Kerala 682026	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
80	Sapphire heights Vennala, Ernakulam, Kerala 682028	Apartment	Ernakulam	Ernakulam DOI	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, Ponnurrunni East, Ponnurrunni, Vyttila, Ernakulam, Kerala 682028	Apartment	Ernakulam	Ernakulam DOI	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 DOI	Kochi Corporation	No Consent, No STP	Issued
95	Jewel planet, Vaikom road, Vyttila SH15, Vyttila, Ernakulam, Kerala 682019	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
96	Santhi river dail, Vaikom road, Vyttila	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
97	Vrindavan apartment, Vyttila junction	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
98	Aiswarya Apartment, Chambakkara - Kannadikadu Road	Apartment	Ernakulam	Ernakulam DOI	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 DOI	Kochi Corporation	No Consent, No STP	Issued
100	Toch Retreat flat, Janatha road, Vyttila	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
101	Choice garden, TocH road end, Vyttila	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
102	Jewel homes, Vyttila Janatha road, near manamel temple	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
103	DLF riverside, near manamel temple, Vyttila Janatha road	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
104	Paradise tower, south Chittoor, Chittoor 682027	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
105	Galaxy high field, Vidya nagar, Panampilly nagar 682036	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
106	Metro paradise apartment, Chittoor Cheranalloor road, Amrita nagar, Edappally, Ernakulam 682024	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
107	Sparcle scape apartment, Tagore lane, Elamakkara 682026	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
108	Zaatar Restaurant, HP 17,Main Avenue, Panampilly Nagar, Ernakulam, 682036	Restaurant	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
109	Fruitbae, Panampilly, 5th Cross Rd, K.V. Nagar, Panampilly Nagar, 682036	Restaurant	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
110	Starbucks,G-258, Main Avenue, MIG Housing Society, Panampilly Nagar, Kochi - 682036	Restaurant	Ernakulam	Ernakulam DOI	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 Socceity, 682036	Restaurant	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
114	Happy Cup Cafe, Main Avenue, MIG Housing Socceity, 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 Socceity, 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 DOI	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 DOI	Kochi Corporation	No Consent, No STP	Issued
128	Jewel homes Canal, Mamangalam, Elamakkara, Ernakulam, Kerala 682026	Apartment	Ernakulam	Ernakulam DOI	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 DOI	Kochi Corporation	No Consent, No STP	Issued
130	Marvel Mansions X7JX+W3Q, Thammanam - Pullepady Rd, Kathrikad Kaloor, Ernakulam, Kerala 682017	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
131	Pulickal Avenue, St Francis Xavier Church Rd, Kathrikadavu, Kaloor, Ernakulam, Kerala 682017	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
132	DD nest Pipeline Rd, Kathrikadavu, Thammanam, Ernakulam, Kerala 682017	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
133	IMA House Behind Jawaharlal Nehru International Stadium, Kathrikadavu, Palarivattom, Kochi, Kerala 682025	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
134	jewel pearl X8Q2+99C, Vattaparambu West Lane, Kathrikadavu Kaloor, Ernakulam, Kerala 682017	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
135	Kent hail garden X8R2+7HM, Kathrikadavu, Kaloor, Ernakulam, Kerala 682017	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
136	Vismaya Apartments Kaloor, Kochi, Kerala 682017	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
137	Seiken Eastend Ponoth Rd, Kaloor, Ernakulam, Kerala 682017	Apartment	Ernakulam	Ernakulam DOI	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, Elamakara, Ernakulam, Kerala 682026	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
140	Dream Flower Celesta Vivekananda Nagar Rd Extention, Elamakara, 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 DOI	Kochi Corporation	No Consent, No STP	Issued
151	Yasoram Valluvassery Enclave X875+793, Water Land Rd, Chilavannoor, Kochi, Kerala 682020	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
152	Jomer Residency Apts Ravindran Rd, Chilavannoor, Ernakulam, Kerala 682020	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
153	Fern Icon Panchavati Colony, Vyttila, Ernakulam, Kerala 682019	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
154	Panchavadi Apartment X8C5+FMV, Panchavati Colony, Vyttila, Kochi, Kerala 682019	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
155	Pittappilly Enclave X8C5+F9R, Panchavati Colony Rd, Panchavati Colony, Kadavanthra, Kochi, Kerala 682019	Apartment	Ernakulam	Ernakulam DOI	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 DOI	Kochi Corporation	No Consent, No STP	Issued
157	Blue moon pearl apartment X8F5+2P7, Vyttila, Kochi, Kerala 682019	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
158	Abad Harmony Paradise Rd, Vyttila, Kochi, Kerala 682019	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
159	Paradise Apartment PRRA-18, Vyttila, Kochi, Kerala 682019	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
160	Betron Towers Elamkulam, Ernakulam, Kerala 682020	Apartment	Ernakulam	Ernakulam DOI	Kochi Corporation	No Consent, No STP	Issued
161	Jerusalem Residency Blossom Road, Elamkulam, Ernakulam, Kerala 682020	Apartment	Ernakulam	Ernakulam DOI	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, Vytila, Ernakulam, Kerala 682020	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
164	Bluemoon Apartments Emerald and Ruby Ponnurunni, Vytila, Ernakulam, Kerala 682020	Apartment	Ernakulam	Ernakulam DO1	Kochi Corporation	No Consent, No STP	Issued
165	Skyline rosemount Kunjanbava Rd, Ponnurunni, Vytila, 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

POLLUTED RIVER STRETCH WATER QUALITY MONITORING PROGRAMME January 2023

Station Name		KAVVAI RIVER			
Type of Water body		RIVER			
Completed by		JSA1, JSA2			
Agency		KERALA STATE POLLUTION CONTROL BOARD			
Date and time of sample taken		18-01-2023	18-01-2023	18-01-2023	18-01-2023
Sl. No.	Determinants	Kankol	Karkkuzhithodu	Thiruvananthapuram Bridge	Kuttyol palam
1	Temperature, 0C	28	30	31	28
2	Dissolved Oxygen, mg/l	4.5	5.2	3.4	5.3
3	pH	6.3	6.8	6.85	6
4	Conductivity, μ mhos/cm	90.2	98.6	33300	118
5	BOD, mg/l	1.2	2.4	2.9	3.5
6	Turbidity, NTU	1.1	1.6	2.1	1
7	Total Alkalinity, mg/l	18	19	53	18
8	Chloride, mg/l	16	18	19900	20
9	Ammoniacal-N, mg/l	BDL	0.002	BDL	BDL
10	Hardness as CaCO ₃ , mg/l	20	18	7900	20
11	Calcium as CaCO ₃ , mg/l	12	12	5500	15
12	Magnesium as CaCO ₃ , mg/l	8	6	2400	5
13	Sulphate, mg/l	0.66	0.0023	52.63	BDL
14	Phosphate, mg/l	BDL	BDL	BDL	BDL
15	Fluoride, mg/l	BDL	BDL	BDL	BDL
16	Total Coliform, MPN/100 ml	600	800	600	600
17	Fecal Coliform, MPN/100 ml	300	420	320	300


 Director
 Kerala State Pollution Control Board
 Thiruvananthapuram


 JSA1

POLLUTED RIVER STRETCH II WATER QUALITY MONITORING PROGRAMME JANUARY 2023

Station Name		PERUMBA RIVER			
Type of Water body		RIVER			
Coordinates		JSA1, JSA2			
Agency		KERALA STATE POLLUTION CONTROL BOARD KANNUR			
Date of sample taken		20-01-2023	20-01-2023	12-01-2023	18-01-2023
Determinants		KACHERIKADVU	CHANDAPUR	KANDAKALI	
1	Temperature, °C	30	31	28	31
2	Dissolved Oxygen, mg/l	2.6	6.52	6.3	3.9
3	pH	8.94	6.84	5.7	6.84
4	Conductivity, $\mu\text{mhos/cm}$	86.2	79	11.7	18000
5	DO, mg/l	0.92	1.11	1.03	2.2
6	Turbidity, NTU	1.3	0.8	2.2	1.1
7	Total Alkalinity, mg/l	10	12	17	46
8	Total Hardness, mg/l	1	10	11	20000
9	Ammonical N, mg/l	NDL	NDL	0.0321	0.0602
10	Hardness as CaCO ₃ , mg/l	12	28	17	7600
11	Calcium as CaCO ₃ , mg/l	8	12	17	5200
12	Magnesium as CaCO ₃ , mg/l	4	13	4	2400
13	Sulphate, mg/l	0.11	2.76	0.01	100.27
14	Phosphate, mg/l	NDL	NDL	0.0024	NDL
15	Fluoride, mg/l	NDL	NDL	1.05	NDL
16	Total Coliform, MPN/100 ml	400	700	200	800
17	Fecal Coliform, MPN/100 ml	200	140	100	600

Assistant Scientist
 Kerala State Pollution Control Board
 District Office, Kannur-670002

POLLUTED RIVER STRETCH WATER QUALITY MONITORING PROGRAMME JANUARY 2023

Station Name	KUPPAM RIVER						
Type of Water body	RIVER						
Completed by	ISA1, ISA2						
Agency	KERALA STATE POLLUTION CONTROL BOARD KANNUR						
Date of sample taken	19-01-2023	19-01-2023	12-01-2023	19-01-2023	19-01-2023	19-01-2023	19-01-2023
Sl.No	Determinants	VEJILJIDAN KFFL	MANGALAS SURRY	KUPPAM BRIDGE	VARIANKOT TAM	VELLAVTI	KUTTYERIKADAVI
1	Temperature, 0C	29	5.4	29	30	31	31
2	Dissolved Oxygen, mg/l	6.1	7.82	6.06	6.6	6.2	6.6
3	pH	6.67	6.6	6.4	6.66	6.28	6.5
4	Conductivity, μ mhos/cm	24400	21400	18360	18660	15060	9600
5	BOD, mg/l	2.9	3	2.2	2.1	2	1.4
6	Turbidity, NTU	2.3	2.6	1.8	3.1	2.2	1.2
7	Total Alkalinity, mg/l	38	37	29	20	26	21
8	Chloride, mg/l	20000	8200	6200	6000	14009	10600
9	Ammoniacal-N, mg/l	0.0112	BDL	0.0909	BDL	BDL	BDL
10	Hardness as CaCO ₃ , mg/l	4100	2500	2100	2000	2160	1200
11	Calcium as CaCO ₃ , mg/l	3200	1300	1800	1100	1000	860
12	Magnesium as CaCO ₃ , mg/l	900	1200	300	900	1160	40
13	Fluoride, mg/l	221.3	232.14	179.09	66.32	68.11	38.26
14	Phosphate, mg/l	BDL	BDL	0.06	BDL	BDL	BDL
15	Fluoride, mg/l	0.3	0.6	0.08	BDL	BDL	BDL
16	Total Coliform, MPN/100 ml	800	630	900	600	520	620
17	Fecal Coliform, MPN/100 ml	600	380	480	180	180	380


 Scientist
 KERALA STATE POLLUTION CONTROL BOARD
 KANNUR

POLLUTED RIVER STRETCH WATER QUALITY MONITORING PROGRAMME JANUARY 2023

Station Name		RAMAPURAM RIVER			
Type of Water body		RIVER			
Completed by		JSAT, ISAZ			
Agency		KERALA STATE POLLUTION CONTROL BOARD KANNUR			
Date of sample		19-01-2023	19-01-2023	12-01-2023	17-01-2023
Sl.No	Determinants	KAPUGAT.	ATHIYADAM	RAMAPURAM	VAYALAPRA
1	Temperature, 0C	29	30	29	30
2	Dissolved Oxygen, mg/l	5.4	7.4	5.6	5.9
3	pH	7.35	6.77	6.7	7.06
4	Conductivity, umhos/cm	88.4	135	5210	39900
5	BOD, mg/l	2.6	3	4.33	2.9
6	Turbidity, NTU	1.1	1.3	0.4	2.8
7	Total Alkalinity, mg/l	12	18	59	50
8	Chloride, mg/l	19	24	1700	18000
9	Ammoniacal-N, mg/l	0.0045	BDL	0.182	0.0092
10	Hardness as CaCO ₃ , mg/l	25	10	250	5400
11	Calcium as CaCO ₃ , mg/l	17	7	110	3200
12	Magnesium as CaCO ₃ , mg/l	8	3	140	2200
13	Sulphate, mg/l	6.92	5.38	62.03	128.2
14	Phosphate, mg/l	BDL	BDL	BDL	BDL
15	Fluoride, mg/l	BDL	BDL	BDL	BDL
16	Total Coliform, MPN/100 ml	600	360	900	800
17	Fecal Coliform, MPN/100 ml	300	180	500	420


 Assistant Secretary
 Kerala State Pollution Control Board
 (Kannur) (Kannur, Kerala - 574001)

1.Kavvayi

Sl.no	Drain	BOD on January 2023	Remarks
1	Katti thodu	No water	Waste disposal from side by shops, Hotels, nearby mosque.
2	School ground thodu	No water	
3	Kalikadapuram thodu	No water	
4	Koorlkadavu	No water	Drain covered with mud ,plastic wastes
5	Ulliyathu kadavu	8.6	Plastic waste seen , black color water with h,s smell. No change in water from last month
6	Kallatu karlavu	Small amount of water which cannot be fetched	
7	Multathu kadavu	4.8	Plastic waste seen.
8	Vadipram thodu	Small amount of water which cannot be fetched	Construction work going on, one side is full of plastic waste ,

2.Peruvaimba

	Drain	BOD on January 2023	Remarks
1	Naranga thodu	5.1	Plastic waste was noticed, water with smell.
2	Perumba thodu	4.4	Plastic waste was noticed , water with smell, nearby shopping complex shops are dumping waste.

3	Valliothodu	3.4	Water with Plastic waste.
4	Panapuzha thodu	0.62	
5	Poomkottu Chal	0.92	Plastic waste seen side water road.
6	Manjangottu Thode	1.2	
7	Kannelamthodu	1.88	
8	Appithodu	0.62	
9	Mavullapoyil thodu	1.2	Plastic waste,
10	Kollali thodu	No water	Small amount of water
11	Kannada thodu	1.1	
12	Koyakkotu thodu Thokadu	1.2	
13	Cherottuvayal thodu	No water	
14	Kayyil arakulam thodu Kunjimagalam puzha	3.1	
15	Taluvayal thodu	No water	

3. Ramapuram thodu

No.	Stream	BOD on January 2023	Remark
1	Kapugal thodu	1.11	
2	Chembali kundu	1.1	Plastic waste and floating bottles are noticed.

3	Kulapram kundam thodu Kavilavalapu thodu	3.6	
4	Aduthila thodu	No water	
5	Ottayi thodu	3.3	
6	Moolakadavu	4.1	Oil presence in water, decayed organic materials are seen ,

4. Kuppam

Sl.no	Drain	BOD on January 2023	Remarks
1	Karuvanchal	2.2	
2	Karthikapuram	1.8	Plastic waste was noticed
3	Near Udayagiri Bridge	0.68	
4	Mukkada Thodu	1.8	
5	Nippanankurmi Thodu	2	
6	Kuttaparamba- Neduvodu Thodu	0.98	Plastic waste, are floating in water and the thodu is full of plastic wastes coming from upstream and so
7	D/S of Alakode Hospital	No water	
8	Pathayachira	2.62	Turbid water present with high Plastic waste.

9	Near the houses on bank of main River (@ Pariyaram GP)	3.8	
10	Near House Boat @ Pariyaram GP	3.	
11	Kavinmunabu	2.26	
12	Manja Thodu	3.32	
13	Sulthan Thodu	5.6	Floating waste is seen, plastic and intestinal waste of animals are floating.
14	Chera thodu	8.2	

email: kspcbpta@gmail.com

Phone/ fax: 0468-2223983

കേരള സംസ്ഥാന മലിനീകരണ നിയന്ത്രണ ബോർഡ്
KERALA STATE POLLUTION CONTROL BOARD

മിട്ടു ഭവനിൽ, OPP അന്താരാഷ്ട്ര കെ.കെ. നായർ റോഡ്, കുമ്പളംഗേശ്വരൻ്റെ മന്ദിരം, പാലക്കാട് ജില്ല
DISTRICT OFFICE, OPP GENERAL HOSPITAL, KK NAIR ROAD, BEHIND AVG MOTORS, PATHANAMTHITTA 689645

web site: www.keralapcb.nic.in - for Online registration, visit krocmms.nic.in or keralapcbonline.com

PCB/PTA/ICO/4337/2013

13.01.2023

From

Environmental Engineer (I/C)

To

The Chief Environmental Engineer
Regional office
Kerala State Pollution Control Board
Thiruvananthapuram

Sub:- Analysis report of CETP, Kinfra, Adoor - reg

Ref:- That office Letter No.PCB/HO/SEE2/AMR/2019 dated 03.03.2022.

Sir,

With reference to the above, I am forwarding herewith the analysis report of CETP for the month of December, 2022 for your kind information.

Yours faithfully,

ENVIRONMENTAL ENGINEER(I/C)

**KERALA STATE POLLUTION CONTROL BOARD, DISTRICT OFFICE,
PATHANAMTHITTA**

INSPECTION REPORT FOR THE MONTH OF DECEMBER 2022 (CETP)

Date of Inspection	Name of unit	Quantity of Effluent m ³ /day	ETP Units	Analysis Report of Effluent sample			Mode of disposal of treated effluent	Mode of disposal of ETP Sludge
				pH	BOD	FC		
20.12.2022	Common ETP, Kinfra, Adoor	225	Screen chamber, equalization tank, aeration tank clarifier, filter feed tank, chlorine dosing, activated carbon filter, pressure sand filter, clean water tank, sludge tank, sludge drying beds	6.8	28	Nil	Soak pit	Sludge drying beds

KERALA STATE POLLUTION CONTROL BOARDS, DISTRICT OFFICE, WAYANAD
POPULATION REPORT FOR THE MONTH OF JANUARY - 2017

Ward No.	Ward Name	Population							Total
		Male	Female	Total	Male	Female	Total	Total	
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 District Engineer
 Wayanad

Population Report for the month of January - 2017



Telephone: 04972711621

KERALA STATE POLLUTION CONTROL BOARD

DISTRICT OFFICE

6TH FLOOR, RUBCO HOUSE, SOUTH BAZAR
KANNUR 670002

No. PCB/KNR/DO/616/2022

Dated: 06.01.2023

From

The Environmental Engineer

To

The Chairman
Kerala State Pollution Control Board,
Head Office,
Thiruvananthapuram.

Sub : Kerala Antimicrobial Resistant Strategic Action Plan (KARSAP) - reg.

Ref :- That Office Letter no. PCR/HO/SEE2/AMR/2019 dated 03.03.2022.

Sir,

As per reference cited above regarding minutes of the Executive Committee meeting held on 29.01.2022 about Kerala Antimicrobial Resistant Strategic Action Plan (KARSAP), I am enclosing herewith report of inspection of hospitals for the month of November 2022.

Yours faithfully

ENVIRONMENTAL ENGINEER



Encl: As above

SR	NO	DATE OF INSPECTION	HOSPITAL HOSPITAL	RT OF JRM	TYPE OF TREATMENT RECEIVED	WWT	REQUIREMENTS OF THE TREATMENT					SCORE OF DESIGN OF EFFLUENT EFFLUENT	WWT OF DESIGN OF EFFLUENT
							JR	BDQ-421	TOTAL SUSPENDED SOLIDS (mg/l)	COD (mg/l)	BOD (mg/l)		
1	11-1-2022	St. Joseph Hospital Kottayam	36	115KLD	SCREEN CHAMBER, AEROBIC REACTOR, PRESSURE SAND FILTER, ACTIVATED CARBON FILTER, BIO DIGESTER	7.55	7	19.1	NUM.	NUM.	AGRICULTURE, DRYING BED		
2	21-11-2022	MM HOSPITAL (PALLAYAKKAL)	30	145KLD	COLLECTION TANK, CHEMICAL MIXING TANK, PRIMARY SETTLING TANK, AERATION TANK, SECONDARY SETTLING TANK, GRIER FEED TANK, PRESSURE SAND FILTER, DISINFECTION, ACTIVATED CARBON FILTER, 400-LPH	5.37	4	12	89L	89L	AGRICULTURE DRYING BED		
3	21-11-2022	KIVITTA HOSPITAL (PALLAYAKKAL)	24	175KLD	EAR SERVED, EQUALIZATION TANK, MBBR TANK, SECONDARY SETTLING TANK, GRIER FEED TANK, PRESSURE SAND FILTER, DISINFECTION, TREATED COLLECTION TANK, ULTRAFILTRATION	6.37	11	8.2	50L	50L	DRYING BY SOLAR RADIATION		
4	21-11-2022	A.S.B Memorial	24	95000	Sludge trap, primary clarifier, flocculation tank, fine air-lift, sludge collection tank, equalization tank, MBBR tank, flash mixer, flocculation tank, secondary clarifier, filter feed, pressure sand filter, activated carbon filter, chlorine dosing system, treated water tank	6.84	3	10.2	80L	80L	DRAINING, GARDENS, DRYING BED		
5	21-11-2022	LOUNDA HOSPITAL (PALLAYAKKAL)	14	95000	SCREEN, 90 TRAP, COLLECTION TANK, FLASH MIXER AND FLOCCULATOR, PRIMARY CLARIFIER, EQUALIZATION TANK, AERATION TANK, SECONDARY CLARIFIER, TERTIARY CLARIFIER, DISINFECTANT REACTOR, SAND FILTER, ACTIVATED CARBON ADSORBER, TREATED WATER	6.89	15	8.1	30L	30L	DRYING TANK		

10/11/2022



KERALA STATE POLLUTION CONTROL BOARD

DISTRICT OFFICE, THIRAKKULAM - B1, PERUMBRANUR

P.O. 20734, Dist. Hospital, KSPCB Road, Near Kattankulathur, Perumbranur 688542

Telephone : 2484-282747

E-mail : pcb@kspcb.org

Website : www.kspcb.org

PCB PERUMBRANUR OFFICE

Date: 23.02.2023

ANALYSIS REPORT

Source : CTP RUBBER PARK, TRAPURAM

Sample Point : FILTER OUTLET

D.O.S. : 07.02.2023

D.O. Rd. : 08.02.2023

Collected by : NAMPAN

Sample ID : PCB-09

Sl.No	Parameter	Unit	Value	Test Method	KSPCB Limit
1	pH		7.62	APHA, 4100-07-04 25° Celsius 2017	6.5-9.0
2	BOD	mg/l	110	APHA, 5210-B, 25° Celsius 2017	5
3	COD	mg/l	220	APHA, 5210-B, 25° Celsius 2017	250
4	CHL. RESIDU	mg/l	NDL	APHA, 5420-B, 25° Celsius 2017	10
5	SS	mg/l	61.6	APHA, 2540-D, 25° Celsius 2017	100
6	TDS	mg/l	1387.6	APHA, 2540-C, 25° Celsius 2017	2100
7	AMMONIACAL NITROGEN	mg/l	73.4	APHA 4500-NH ₃ -F, 25° Celsius 2017	5
8	SULPHIDES	mg/l	344	APHA 4500-S ²⁻ -F, 25° Celsius 2017	2
9	FLUORIDES	mg/l	0.85	APHA, 4100-F, 25° Celsius 2017	2
10	CHLORIDES	mg/l	102	APHA, 4100-CL-B, 25° Celsius 2017	1000
11	SULPHATES	mg/l	181.32	APHA, 4100-SO ₄ ²⁻ , 25° Celsius 2017	1000
12	PHENOLIC COMPOUNDS	mg/l	NDL	APHA, 5510-C, 25° Celsius 2017	1

Handwritten signature in green ink

28 FEB 2023

SARANYA DAS K.
Assistant Scientist



KERALA STATE POLLUTION CONTROL BOARD

DISTRICT OFFICE IERNAKULAM -II, PERUMBRAYOOR

PWC 20125, Govt. Hospital-KERTC Road, Near National Auditorium, Perumbrayoor-682 542

Telephone: 0494-2383747

E-mail: pcd@kstatemil.gov.in

Website: www.kstatemil.gov.in

Date: 23.02.2023

PCB/PER/LAB/1/2023

ANALYSIS REPORT

Source : IETP KINPRA SMALL INDUSTRIES MILLAD

Sample Point : ACF OUTLET

DATA : 07.02.2023

D.O. No : 18.02.2023

Collected by : NAMP-II

Sample ID : PCB-00

Sl.No	Parameter	Unit	Value	Test Method	KSPCB Limit
1	pH		8.33	APHA, 4500 H ⁺ -B, 23 rd Edition 2017	6.0-9.0
2	BOD	mg/l	280	APHA, 5210 B, 23 rd Edition 2017	10
3	COD	mg/l	400	APHA, 5220 B, 23 rd Edition 2017	100
4	SS	mg/l	75.6	APHA, 2540 D, 23 rd Edition 2017	100
5	OIL & GREASE	mg/l	3.3	APHA, 1530 B, 23 rd Edition 2017	10
6	FLOURIDES	mg/l	0.075	APHA, 4500-F, 23 rd Edition 2017	2
7	CHLORIDES	mg/l	88	APHA, 4500-Cl, 23 rd Edition 2017	1000
8	PHOSPHATES	mg/l	1.84	APHA, 4500-P, 23 rd Edition 2017	1
9	SULPHATES	mg/l	42.31	APHA, 4500-SO ₄ , 23 rd Edition 2017	1000
10	SULPHIDES	mg/l	284	APHA, 4500-S ²⁻ , 23 rd Edition 2017	2
11	AMMONIACAL NITROGEN	mg/l	21.7	APHA, 4500-NH ₃ -2, 23 rd Edition 2017	50
12	PHENOLIC COMPOUNDS	mg/l	0.12	APHA, 4500-C, 23 rd Edition 2017	1

ANALYSIS REPORT
23.02.2023

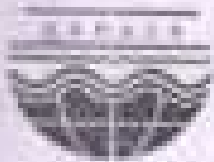
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2-8 FEB 2023

SARANYA DAS, K.
Assistant Scientist

KERALA STATE POLLUTION CONTROL BOARD

കേരള സംസ്ഥാന മലിനീകരണ നിയന്ത്രണ ബോർഡ്



DISTRICT OFFICE, WAYANAD
 491 001 Wayanad
 District Office, Ponnappara Road, Kalpetta, 671122
 തിരുവനന്തപുരം - മലിനീകരണ നിയന്ത്രണ ബോർഡ്



ANALYSIS REPORT

WATER EFFLUENTS		NO.		308		Date: 11.04.2023	
SOLID WASTE							
Source		FSTP of Kalpetta Municipality					
Date of sample collection		20.03.2023		Sample received from		S.E.D.O.WND	
Ref. no.		PCB/WFO/ST/73/2018					
Date of Receipt		20.03.2023		Period of Analysis		25.03.2023 - 18.04.2023	
Scientist in charge of Analysis							
Sl No.	Determinant	unit	Value				
			Sample ID No. PCB 308				
1	pH		4.4				
2	Total Suspended Solids	mg/l	7.4				
3	BOD for 5 days @ 20°C	mg/l	7.3				
4	Cl & Favour	mg/l	NIL				

*Note : The pH value is below the permissible limit.

[Signature]
 Assistant Scientist
 Kerala State Pollution Control Board
 District Office, Wayanad

DEPARTED
ON 17/3/2023



email: kspcbpta@gmail.com

Phone/ fax: 0468-2223983

കേരള സംസ്ഥാന മലിനീകരണ നിയന്ത്രണ ബോർഡ്

KERALA STATE POLLUTION CONTROL BOARD

DISTRICT OFFICE, OPP GENERAL HOSPITAL, KK NAIR ROAD, BEHIND AVG MOTORS, PATHANAMTHITTA 689645

web site: www.keralapcb.nic.in - for Online registration, visit krcrms.nic.in or keralapcbonline.com

PCB/PTA/TG/248/2016

16.03.2023

From

Environmental Engineer (I/C)

To

The Chief Environmental Engineer
Regional Office
Thiruvananthapuram

Sub:- Kerala Antimicrobial Resistant Strategic Action Plan (KARSAP) – reg

Ref:- That office Letter No.PCB/HO/SEE2/AMR/2019 dated 03.03.2022.

Sir,

As per the direction cited above regarding Antimicrobial Resistant Strategic Action Plan (KARSAP), I am enclosing herewith the inspection report for the month of February, 2023.

Yours faithfully,

ENVIRONMENTAL ENGINEER(I/C)

Copy to : Member Secretary
KSPCB, Thiruvananthapuram

KERALA STATE POLLUTION CONTROL BOARD, DISTRICT OFFICE, PATHANAMTHITTA

INSPECTION REPORT FOR THE MONTH OF FEBRUARY 2023 (HOSPITALS).

Sl No:	Date of Inspection	Name of hospital	No. of beds	Quantity of Effluent m ³ /day	STP Units	Analysis Report of treated Effluent sample (pH,BOD,FC)			Mode of disposal of treated effluent	Mode of disposal of STP Sludge
						pH	BOD	FC		
1	07.02.2023	Believers church medical centre, Kozhikode	50	30	Bar Screens, Oil & Grease trap, Chemical Addition, Primary Settling Tank, Equalization, Upflow anaerobic reactor, Aeration Tank, Secondary Settling tank, Pressure sand filter, Activated carbon filter and Disinfection, Soak pit	7.2	32	Nil	Reuse and dispose through soak pit.	Sludge drying bed
2	09.02.2023	Pushpagiri Medical College Hospital, Thiruvalla	1200	659	Bar screen, equalization tank, aeration tank, secondary clarifier, flash mixer, flocculator, tertiary clarifier, filter feed tank, PSF, ACF, treated water tank, ultra filter feed tank, ultra filter	7.1	28	Nil	Reuse (flushing of toilet, gardening)	Sludge Filter Press and Sludge Drying Beds



KERALA STATE POLLUTION CONTROL BOARD

DISTRICT OFFICE, CHENNAIKulam, III FLOOR, MADHAVAR

PO BOX 2032, CHENNAI - 600 022. Phone: 0471-2511100. Fax: 0471-2511101. Email: kspcb@kspcb.org

Telephone: 0471-2511100

Email: kspcb@kspcb.org

Website: www.kspcb.org

Date: 21.01.2023

PCB/PMRL/AB/1/2017

ANALYSIS REPORT

Source: SEPTAGE TREATMENT PLANT, BEATHIMAPURAM

Sample Point: FILTERED EFFLUENT TANK

D.O.S: 19.08.2022

D.C. R/L: 19.08.2022

Collected by: NAMP

Sample ID: PCB-24

S.No.	Parameters	Unit	Value	Test Method	KSPCB Limit
1	pH		6.79	APHA, 4500 H ₊ B 25 ^o January 2017	6.5-8.5
2	BOD	mg/l	110	APHA, 5210 B 25 ^o January 2017	10
3	COD	mg/l	120	APHA, 5220 B 25 ^o January 2017	250
4	SS	mg/l	19.8	APHA, 5340 B 25 ^o January 2017	100
5	PHOSPHATES	mg/l	0.33	APHA, 4500 P 25 ^o January 2017	1
6	SULPHATES	mg/l	108.79	APHA, 4500 SO ₄ 15 ^o January 2017	1000
7	SULPHIDES	mg/l	0.2	APHA, 4500 S ₂ 25 ^o January 2017	2.8
8	AMMONICAL NITROGEN	mg/l	21.48	APHA, 4500 NH ₄ 25 ^o January 2017	50
9	FACIAL COLIFORM	vfu/100ml	130	APHA 9223 B 25 ^o January 2017	1000
10	FACIAL STREPTOCOCCI	cfu/100ml	800	APHA 9230 A 25 ^o January 2017	-

Asst. Insp.
21/01/23
State Engineer
Chennai



SARANYA DAS K.
 Assistant Scientist



KERALA STATE POLLUTION CONTROL BOARD

INDUSTRIAL OFFICE - I, ENNATHI AM - II, PERUMBIYANUR

PWC 20788/2019 (Project) KSPCB/Board, New Industrial Complex, Perumbiyannur-686 002.

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Date: 08/03/2023

PCN/HR/ENL/AM/1/2013

ANALYSIS REPORT

Source: SEWAGE TREATMENT PLANT, HRATHAPURAM

Sample Point: FILTERED EFFLUENT TANK

D.O.S: 11.03.2023

D.O. Re: 22.02.2023

Collected by: NAMP1

Sample ID: PCB-62

S.No.	Parameters	Unit	Value	Test Method	KSPCB Limit
1	pH		6.20	APHA, 8140 H, B 25 °C follow 2017	6.5-8.5
2	BOD	mg/l	70	APHA, 5210 H, 20 °C follow 2017	30
3	COD	mg/l	192	APHA, 5220 H, 20 °C follow 2017	250
4	SS	mg/l	80.0	APHA, 5460 A, 20 °C follow 2017	100
5	PHOSPHATES	mg/l	0.36	APHA, 4500 P-1, 20 °C follow 2017	1
6	SULPHATES	mg/l	64.1	APHA, 4500 SO4, 20 °C follow 2017	1000
7	SULPHIDES	mg/l	136.2	APHA, 4500 S ²⁻ , B 20 °C follow 2017	2.0
8	AMMONIACAL NITROGEN	mg/l	10.1	APHA, 4500 NH ₄ -N, 20 °C follow 2017	50
9	FACIAL COLIFORM	cfu/100ml	0	APHA 9222 B, 20 °C follow 2017	10000
10	FACIAL STREPTOCOCCI	cfu/100ml	117	APHA 9350 A, 20 °C follow 2017	-

NAMP1
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New Office Building-12
08 MAR 2023
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Signature
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