

BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL
Principal Bench, New Delhi
M.A. Nos. 80 to 83, 85 to 88, 95 and 96 of 2021
IN
Original Application No. 304/2019

M. Haridasan

...Applicant

Vs.

State of Kerala & Ors.

...Respondent(s)

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(Nazimuddin)

Scientist 'F'

Central Pollution Control Board,
Parivesh Bhawan, East Arjun Nagar,
Delhi-110032.

Place: Delhi

Date: 20.07.2022

INTERIM STATUS REPORT OF THE JOINT COMMITTEE CONSTITUTED BY HONOURABLE NATIONAL GREEN TRIBUNAL

1.0 Background

Honourable National Green Tribunal (NGT) in the matter of OA 304/ 2019, directed to maintain longer distances for siting stone quarries as per the order dated 21st July, 2020; relying on the report submitted by Central Pollution Control Board (CPCB), following precautionary principle considering the right of the inhabitants, who are affected by air and noise pollution generated in the course of mining. As per the order, it was mandated to have 100 and 200m distance for stone quarry operations without and with blasting respectively. Subsequently, the aggrieved mining/ quarry lessees (project proponents) in Kerala filed appeals (MA Nos. 80, 83, 85, 88 to 95 of 2021) in the OA 304/2019 seeking impleadment with specific prayer of '*not to interfere*' with the distance criteria already laid down by the mining department and Kerala State Pollution Control Board (KSPCB). After examining the project proponents' contentions in details, Honourable NGT directed for an expert study by a joint committee comprising representatives from IIT (ISM), Dhanbad, CSIR-CIMFR, Dhanbad, CSIR-CBRI, Roorkee, IIT, Roorkee, Wadia Institute of Himalayan Geology, Dehradun, Directorate General of Mine Safety (DGMS) and CPCB on the subject of safe distance for stone quarry mining from habitations vide order dated 09th December, 2021 and relevant portion of the directions are reproduced herewith:

"The Committee may inter-alia study the impact of blasting with NONEL Detonation technology at distances of 50m, 75m, 100m, 125m, 150m, 200m and 250m. The study will include the impact caused by vibrations on different soil strata /earth profile in the area and on noise and air levels, on building and human and wildlife. The study may be completed within three months and report furnished within four months. Any stakeholder will be at liberty to give their respective view point to the Committee. State of Kerala and Kerala State PCB will facilitate undertaking of above study".

A copy of the Honourable NGT order dated 09th December, 2021 is annexed as **Annexure I**.

2.0 Initiatives of Joint Committee

In compliance with the Honourable NGT directions, a joint committee was constituted vide CPCB office memorandum dated 18th January, 2022 (**Annexure II**) with members/ representatives as per nominations received from respective institutes/ organizations. A representative of the Kerala State Pollution Control Board (KSPCB) was included in the joint committee as special invitee to attend all committee meetings as coordinator/ nodal officer for facilitating the expert study in Kerala. After the constitution of the joint committee, KSPCB coordinator was requested to pool/ compile relevant first order data/ information for the joint committee meetings/ deliberations. KSPCB was also instructed to constitute a State level facilitation committee for facilitating field studies in Kerala and to take stock of the monitoring infrastructure/ facilities available for the expert study. A detailed letter was forwarded to the Chairman, KSPCB in this regard on 8th March, 2022 (**Annexure III**).

3.0 Committee Deliberations

The joint committee had carried out five online meetings to discuss and plan the methodology of the expert study. The first joint committee meeting was conducted on 14-03-2022 and the committee deliberated on the envisaged expert study as directed by Honourable NGT. The detailed minutes of the meeting held on 14-03-2022 is annexed as **Annexure IV**. In the initial meeting itself, the committee highlighted scientific site selection for the expert study as assessment of blast induced vibrations are very much dependent on the local geology/ lithology of the location. Hence it was decided to choose sites scientifically based on the geological profile of Kerala.

The site-specific empirical relationships for calculation of blast-induced vibration parameters like peak particle velocity (PPV) and peak particle displacement (PPD) are commonly used for estimation of blast loads in design. However, these relationships are not able to consider the variation in rock parameters and

uncertainty of in situ conditions. The Peak Particle Velocity (PPV) is generally a good index of damage to structure due to vibration. The vibration level at a distance depends on charge per delay, vibration frequency, rock characteristics (type, unit weight, layering, slope of layers), blast hole conditions, presence of water, propagation of surface and body waves in the ground, and to a lesser extent on method of initiation. Hence, it is important to select study locations in areas having distinct geological/ tectonic attributes as it affects propagation of vibration. Thus, the blast induced vibration studies need to be carried out in locations with distinct geotechnical profiles. Since Kerala has myriad geological/ lithological/ tectonic profiles, it is important to select sites representing different geological profiles for assessing vibration under varying geological profiles.

Geologically, Kerala is occupied by Precambrian crystallines, acid to ultra-basic intrusives of Archaean to Proterozoic age, Tertiary (Mio-Pliocene) sedimentary rocks and Quaternary sediments of fluvial and marine origin. Both the crystallines and the Tertiary sediments have been extensively lateritised. Rocks of Archaean Era encompass a wide spectrum of litho-assemblages ranging from Khondalite, Charnockite, Gneiss and meta-sedimentary rocks occupying the Western Ghats including the foothill region.

Main decisions taken in the first meeting of the Joint Committee are detailed below:

- The committee in its first sitting, sought first order data/ information on stone quarries in Kerala for the scientific planning of expert study. Committee put forth the requirements for the location map of all quarries in Kerala, the detailed geological/ tectonic maps of Kerala, approved mine plans of working quarries and the approved blasting protocol followed by the stone quarries.
- The committee was of the opinion that the expert study can be planned at selected locations and the site selections shall be on the basis of scientific rationale such as geological/ tectonic attributes, proximity to habitations/ forests and based on existing public complaints/ grievances.

- Committee highlighted that the local geological/ tectonic profile plays an important role in the propagation of vibration from quarrying activities and to select sites representing the distinct geological profile of Kerala.
- Committee also requested a site visit to representative quarry locations to understand how stone quarries function in Kerala.

The second joint committee meeting was carried out through online platform on 28-03-2022 to review the progress on the data/ information collection pertaining to stone quarries in Kerala. The special invitee/ KSPCB coordinator appraised the committee regarding the difficulties in getting relevant data from the concerned departments and the detailed minutes of the meeting is annexed as **Annexure V**.

Main decisions taken in the second meeting of the Joint Committee are detailed below:

The committee decided that the requisite first order data/ information shall be provided by Kerala/ KSPCB on priority. Following requirements were placed before the KSPCB Coordinator.

- Location of quarries in the form of shapefile or KML file.
- Topo sheets/ surface plan of operating quarries AND Mine plan including approved blasting protocol/ practices of operating quarries.

Meanwhile, KSPCB coordinator informed that nomination of representative from the Dept. of Mining and Geology to the State level facilitation committee was pending for a long time and the difficulties in getting requisite data/ information on stone quarries from the Dept. of Mining & Geology, Kerala. At this juncture, CPCB intervened in the issue and requested the Chief Secretary, Kerala and the Director, Directorate of Mining and Geology to nominate a representative from the Dept. of Mining & Geology, Kerala. to the state level facilitation committee constituted to undertake/ facilitate the expert studies in quarries. The letters to the chief secretary and the Dept. of Mining & Geology, Kerala, are annexed as **Annexure VI**.

The site visit of the joint committee was planned on 6th and 9th May, 2022 to visit stone quarries in Ernakulam District. Operational stone quarries in Pareekani,

Varapetty and Muzhavannur in Ernakulam district were visited by a five-member committee on 6th May, 2022 (Photographs annexed as **Annexure VII**). Another visit was scheduled on 9th May, 2022; but was called off due to inconvenience of committee members. During the site visit, the committee got acquainted with the operations of building stone quarries in Kerala and witnessed blasting using NONEL/ shock tube detonator technology in one of the quarries. After the site visit, the committee had a discussion on the practicality of deploying instruments for air pollution/ noise measurement, to conduct blasting trials uniformly and to assess vibrations using geophones/ seismographs through an expert agency.

Nevertheless, the efforts made by the joint committee and the nodal agency, there was a long pendency from the part of Kerala to provide the requisite first order/data information on stone quarries. The third joint committee meeting was carried out through online platform on 20-06-2022 to review the progress on the data/ information collection pertaining to stone quarries in Kerala.

It was observed that the requisite data / information sought by the committee is still not tabled by the Dept. of mining & Geology, Kerala. KSPCB has provided district wise quarry locations in the form of KML file and the committee observed that the data was having lacuna and without relevant attributes. The committee instructed KSPCB and the Dept. of Mining & Geology, Kerala, to provide data on war footing by 28-06-2022, so that the committee can select representative sites for the expert study. The minutes of the meeting is annexed as **Annexure VIII**.

Main decisions taken in the afore-said meeting are detailed below:

- Upon detailed deliberations, the committee expressed its disappointment in not having the required data/ information to go ahead with the study and asked Dept. of Mining & Geology, Kerala to table requisite first order data/ information on priority within a week's time.

Pending requirements from the State of Kerala as per the **Table 1** below was forwarded to the KSPCB coordinator to follow up:

Table 1: Pending requirements from the State of Kerala.

S. No.	Requirements	Action by	Deadline for submission
1	Geological map overlapping with all mine locations in the form of thematic maps as shapefile or KML file.	Dept. of Mining & Geology, Kerala.	28-06-22
2	Mine locations with attributes like size, scale of operations and area of afforestation in the case of large quarries.		
3	Details of detonator used for large, medium and small quarries with the short/ deep hole blasting.		
4	Mine plan including approved blasting protocol/ practices of largest operating quarries in each district.		
5	Latest annual returns on explosives filed by the largest operating quarries in each district.		

Joint committee reviewed the data/ information submitted by the Dept.of Mining & Geology in the fourth meeting held on 28-06-2022 and highlighted the lacuna in the data/ information submitted. The committee asked the concerned Dept. to provide the data/ information after rectifying the lacunas. The minutes of the meeting is annexed as **Annexure IX**. After the fourth meeting, Dept. of Mining & Geology, Kerala provided the digital geological/ lithological map of Kerala, mine plans of the largest quarries and locations of quarries and the data/ information. However, there was considerable delay from the concerned department to provide the data/ information to this committee. Adequacy of the data/ information provided by Kerala was reviewed by the joint committee in an online meeting held on 08th July, 2022.

4.0 Present status of expert study

As per the joint committee decisions, scientific site selection is the foremost step in the expert study to assess the effect of stone quarry operations and now the committee is in the process of selecting study locations having various geological/

lithological attributes. During the field visit, the committee observed huge variations in the blasting protocols adopted by the quarries irrespective of the local geological conditions. The present status of planning of the expert study is given in **Table 2** and the expert study components are detailed in **Table 3** below:

Table 2. Present status and scope of the expert study

S. No.	Component	Scope of work	Remarks
1	Scientific selection of study locations.	<p>Committee highlighted that the local geological/ tectonic/ lithological profile plays an important role in the propagation of vibration from quarrying activities and to select sites representing distinct geological profiles of Kerala. Considerable delay from Dept. of Mining & Geology, Kerala in providing the data/ information called for the committee. Based on the requisite data/ information received as on 28-06-2022, the joint committee has prepared the geological map of Kerala with quarry locations (Annexure X).</p> <p>Expert study will be conducted at nine representative stone quarries i.e., Three each in three zones (Northern/ Central/ Southern Kerala): One quarry each under large, medium and small scale categories shall be selected.</p>	<p>The committee is currently evaluating the quarry locations superimposed on lithological map of Kerala to select representative quarry sites for the expert study. The selection shall be made as per the local geology/ lithology, existing public complaints and proximity to sensitive areas.</p>

2	Planning of expert study.	<p>Vibration assessment proposed to be outsourced to an expert agency like CSIR-CIMFR. CIMFR agreed to extend their expertise in conducting blasting trials and to assess blast induced vibration and air overpressure (Annexure XI). Scope of study to be conducted by CSIR-CIMFR is under preparation in consultation with the experts from IIT (ISM), CIMFR and DGMS.</p> <p>Noise, water (surface and groundwater) and air pollution assessment shall be carried out by KSPCB with technical assistance of CPCB.</p>	Assessment of vibration, air overpressure, noise, water (surface and groundwater) and dust shall be carried out simultaneously for each selected study location.
3	Site visit to quarries in Kerala.	Committee visited three operational stone quarries in Ernakulam, Kerala on 6 th , May 2022.	Further, site visits shall be taken up prior to the assessment as and when required.
4	Hearing to the stakeholders.	Hearing would be organised by the Kerala State and record the views/ opinion of various stakeholders and general public, in vernacular language prior to the assessment. Online survey questionnaire is also under preparation.	Three physical sittings at northern, central and southern regions of Kerala to hear the stakeholders including project proponents is planned in the month of August, 2022.
5	Execution of expert study and report making.	Once the CSIR-CIMFR is ready with the blasting trials/ vibration assessment, the expert study shall be initiated after August,	Expert studies shall be completed immediately within a period of three months, excluding

		2022 once south west monsoon subsides in Kerala.	south-west monsoon months (June, July, August, 2022).
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Table 3: Expert study components

Study component	Methodology	Implementing Agency
Blast induced vibration, air over pressure, fly rock and study on the blast influence zone.	Blast induced ground vibration, air over pressure/ airblast assessment using seismographs or digital geophones at 50m, 75m, 100m, 125m, 150m, 200m and 250m perimeters from the blast point. High speed cameras shall be used to study the fly rock distance zone during the blasting trials. The study shall be able to suggest site specific safe blasting protocols.	Rock Excavation Engineering Division, CSIR-Central Institute of Mining and Fuel Research (CIMFR), Dhanbad.
Surface, Groundwater Noise and Air pollution monitoring.	Noise monitoring shall be carried out using class 1, noise level meters as per the CPCB noise monitoring protocols. Air pollution shall be assessed for PM 10 and 2.5 parameters. Monitoring shall be done at 50m, 75m, 100m, 125m, 150m, 200m and 250m radius around the blast point.	Kerala State Pollution Control Board and Central Pollution Control Board.
Hearing-stakeholders	Physical hearing and Online survey in English/ vernacular language on the impacts of stone quarries will be conducted under the coordination of KSPCB/ State of Kerala.	Department of Mining and Geology, Kerala and Kerala SPCB under the supervision of the Joint committee.

5.0 Request for time extension

The joint committee is currently evaluating the data/ information provided by the Dept. of Mining & Geology, Kerala for scientific site selection for the expert study which will be conducted through following agencies as detailed below:

- i. Central Institute of Mining and Fuel Research (CIMFR): To carry out blasting trials and blast induced vibration assessment at 50m, 75m, 100m, 125m, 150m, 200m and 250m radius around the blast point. Scope of work to award the study to CIMFR by KSPCB in consultation with the Joint Committee.***
- ii. Kerala SPCB - Once the site selection is completed, the expert study shall be started immediately by CIMFR upon award of work by Kerala SPCB. Kerala SPCB shall bear the cost towards blasting trials and blast induced vibration assessment.
Noise monitoring shall be carried out using class 1 noise level meters as per the CPCB noise monitoring protocols. Air pollution shall be assessed for PM 10 and 2.5 parameters and other relevant parameters. All assessments and monitoring shall be done at 50m, 75m, 100m, 125m, 150m, 200m and 250m radius around the blast point.***
- iii. Joint Committee, CPCB, KSPCB and State Facilitation Committee: Data compilation, report preparation and its finalisation***

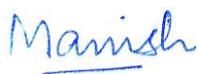
The Joint Committee could not carry out the expert study as per the time schedule in view of the long pendency in getting data/ information from the Department of Mining and Geology, Kerala and the on-going monsoon in Kerala State is a hindrance to take up field studies.

In view of the above, the joint committee prays for extension of time up to October 2022 to complete the expert study in compliance to the directions of the Honourable Tribunal. Proposed plan of action with time targets are submitted in the pert chart given in Table 4 below for consideration.

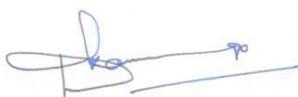
Table 4: Pert Chart for Carrying Out Expert Study

July, 2022	Aug, 2022	Sept, 2022	Oct, 2022
Pending data/information to be submitted on Annual Returns of Explosives submitted by the stone quarries to Petroleum Explosives Safety Organisation (PESO) and Dept. of Mining and Geology	Scientific site selection for expert study. Shortlisting quarries in northern, central and southern Kerala.	Expert Study in selected nine stone quarries. Three each in three zones (Northern/ Central/ Southern Kerala): One quarry under large, medium and small scale shall be selected:- Assessment of vibration at the site by CIMFR.	Expert Study in selected nine stone quarries. Three each in three zones (Northern/ Central/ Southern Kerala): One quarry under large, medium and small scale shall be selected: Assessment of Noise, Air Quality, Surface and Ground Water Quality by KSPCB and CPCB
Online survey in English/ Vernacular language.	Physical Hearing of Stakeholders by the Joint Committee, CPCB, KSPCB and State Level Facilitation Committee.	Study on the effects of stone quarrying on Forest and Wildlife during the Expert Study by <i>State Level Facilitation Committee</i> .	
Review of data/information for the scientific site selection for expert study.	Finalizing proposal for vibration assessment/ blasting trials with CSIR-CIMFR and Award of Work to CIMFR by KSPCB	Report preparation and finalization of the assessment report in consultation with the Joint Committee and submission of the expert study findings before Honourable NGT.	
Action by	Dept. of Mining and Geology, Kerala & KSPCB		
Action by	Joint committee, CPCB, KSPCB and State Level Facilitation Committee.		
Action by	KSPCB and CSIR-CIMFR		
Action by	Nodal Agency -CPCB		

Dated: 19th July, 2022



Prof. Manish Shrikhande



Dr. D P Kanungo



Dr. B S Choudhary



Dr. Siddharth Singh



Dr. R J Perumal



Shri. Venugopal Swamy Kadem



Dr. Ritesh Kumar



Dr. Deepesh V

Item No. 01

(Court No. 1)

**BEFORE THE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI**

(By Video Conferencing)

M.A. Nos. 80 to 83, 85 to 88, 95 and 96/2021

IN

Original Application No. 304/2019

M. Haridasan

Applicant

Versus

State of Kerala & Ors.

Respondent(s)

Poabs Granites (Pvt.) Ltd. & Anr.
Kuthirakulam P.O., Vellanand,
Thiruvanthapuram District,
Kerala State

Applicants in M.A.
Nos. 80 & 81/2021

M/s. Panachayil Industries
West Othara P.O.,
Thiruvalla Taluk,
Pathanamthitta District
Kerala State

Applicant in M.A.
Nos. 82 & 83/2021

Crystal Granites Ltd. & Anr.
Chulli P.O., Thathupara,
Ernakulam,
Kerala State-683581

Applicants in M.A.
Nos. 95 & 96/2021

Raju K. Thomas & Ors.
Vadasserikkara Post,
Pathanamthitta District,
Kerala-689662

Applicants in M.A.
No. 85/2021

Reji Joseph & Anr.
Narikkattu House,
Chamampathal Post,
Vazhoor, Kottayam District
Kerala-686517

Applicants in M.A.
No. 86/2021

Thomsun Aggregates
Kuttipparambil (H),
Vadaathoor P.O., Kottayam District
Kerala State-686010

Applicants in M.A.
No. 87/2021

Michael Granites & Ors.
Kanjirathumkunnu House,
Ramapuram Bazar Post,
Kottayam District,
Kerala State-686576

Applicants in M.A.
No. 88/2021

Date of hearing: 09.12.2021

**CORAM: HON'BLE MR. JUSTICE ADARSH KUMAR GOEL, CHAIRPERSON
HON'BLE MR. JUSTICE SUDHIR AGARWAL, JUDICIAL MEMBER
HON'BLE DR. NAGIN NANDA, EXPERT MEMBER**

Applicant: Ms. Nishtha Kumar Advocate for original applicant

Respondent(s): Mr. Krishnan Venugopal, Senior Advocate with
Mr. E.M.S. Anam, Advocate for Applicant in M.A 80-81/2021
Mr. E.M.S. Anam, Advocate for Applicant in
M.A. 82,83,95&96/2021
Mr. Abhilash M.R., Advocate for Applicant in M.A 85 to 88/2021
Mr. Jogy Scaria, Advocate for KSPCB

ORDER

1. These applications have been filed by mining lessees (project proponents) undertaking quarry mining at various locations in Kerala, which also involves blasting. Mining is beyond 50 meters while according to the original applicant longer distance has to be maintained, following precautionary principle having regard to the right of inhabitants, who are affected by air and noise pollution generated in the course of mining operations. This Tribunal earlier passed order dated 21.7.2020 laying down longer distance in the light of report of the CPCB by which the present PPs are aggrieved.

2. The PPs have drawn attention to the order of the Hon'ble Supreme Court dated 25.10.2021 in a batch of matters permitting filing of

applications before this Tribunal by the parties affected by the order of this Tribunal. The said batch of matters involved *inter-alia* the issue whether this Tribunal has jurisdiction to initiate *suo motu* action against violation of environmental norms which stands concluded by the judgment reported in *Municipal Corporation of Gr. Mumbai Vs. Ankita Sinha & Ors.*, 2021 (12) SCALE 184. Therein, it was held that the affected parties are entitled to be heard and they had not been heard in the present matter. The operative part of the order is reproduced below:

“In light of the issue answered by this Court in Civil Appeal Nos. 12122-12123 of 2018 and connected cases titled as "Municipal Corporation of Gr. Mumbai Vs. Ankita Sinha & Ors." reported in 2021(12) SCALE 184, it would be appropriate to permit the appellant(s) to raise all contentions/objections as may be available and permissible in law before the National Green Tribunal (In short "the Tribunal") in the first place. The Tribunal may consider those contentions/objections and record reasons for accepting or rejecting the same, so that the appellant(s) if dis-satisfied may have further remedy of appeal(s) before this Court.

In other words, all contentions raised in the present appeal(s) on these aspects, including on merits are left open, to be considered by the Tribunal afresh.

We say so because the judgment rendered by this Court predicates that even if the Tribunal intends to initiate suo motu action, must give opportunity to the parties likely to be affected before passing any adverse order against them. Viewed thus, the ex-parte preemptory order(s) passed by the Tribunal without giving opportunity to the person(s) likely to be affected by such order(s), be treated as effaced from the record.

Keeping that principle in mind, we deem it appropriate to relegate the appellant(s) before the Tribunal with liberty to raise all contentions as may be permissible in law, to be decided by the Tribunal afresh on its own merits.

Notably, the decision of the High Court assailed in these appeal(s) also gives that liberty to the appellant(s). However, we expressly grant such liberty to the appellant(s), as aforesaid, in terms of this order.

The appellant(s) may, therefore, file a formal application to take up all contentions before the Tribunal which may be considered by the Tribunal afresh on its own merits and in accordance with law, including raised in this appeal(s) and in respect of matters, referred to by the Tribunal in the earlier order. The Tribunal to decide the proposed application expeditiously.

Learned counsel for the appellant(s) submits that before the Tribunal finally answers the issues raised by the appellant(s), the Tribunal may consider of issuing appropriate interim order to enable the appellant(s) to give effect to the contract/lease agreement in respect of the project in question. We accede to this prayer.”

3. All the Applications are identical and relief sought is impleadment and directions not to interfere with the distance presently being followed as per rules laid down by the mining department and Kerala PCB.

4. We have heard learned Counsel for the parties.

5. As far as impleadment is concerned, the said prayer is granted, as the applicant has no objection to such a course being adopted in the light of order of the Hon’ble Supreme Court.

6. On merits also, stand in all the applications is almost same. The PPs claim to be carrying on quarry mining, using blasting at various locations under leases granted by the Mines Department of Kerala under the Kerala Minor Mineral Concession Rules, 1967. Minimum safety distance of 50m is maintained from nearest dwelling units. Grievance of the original applicant that 50m distance is not enough and reliance on observations of the Hon’ble Supreme Court in *M.C. Mehta v. Union of India*, (1996) 8 SCC 462 and *Mohammaed Haroon Ansari v. District Collector, Ranga Reddy District*, (2004) 1 SCC 491 is uncalled for.

7. To complete the narration, we may record that the Tribunal sought a report from CPCB and as per report dated 09.07.2020, it was suggested

that minimum distance should be 100m where blasting is not involved and 200m where blasting is involved. The Tribunal accepted the said view and, vide order dated 21.07.2020, issued directions in terms thereof which are reproduced for ready reference, as follows:

“3. Accordingly, the CPCB has filed its report on 09.07.2020 concluding as follows:

“6.0 Conclusion:

In view of available information, following minimum distance criteria may be considered for permitting stone quarrying by SPCBs:

Mining Type		Minimum Distance	Locations
A.	When Blasting is not involved	100 m	<i>Residential/ Public buildings, Inhabited sites, Protected monuments, Heritage sites, National / State Highway, District roads, Public roads, Railway line/area, Ropeway or Ropeway trestle or station, Bridges, Dams, Reservoirs, River, Canals, Lakes or Tanks, or any other locations to be considered by States.</i>
B.	When Blasting is involved	200 m **	

****Note: The regulations for danger zone (500 m) prescribed by Directorate General of Mines Safety also have to be complied compulsorily and necessary measures should be taken to minimise the impact on environment. However, if any states is already having stringent criteria than the above for minor mineral mining (i.e. more prescribed distances than the above), the same shall be applicable.”**

4. In view of the above, the said criteria be followed throughout India. The CPCB may monitor compliance.”

8. In view of rival submissions, question is whether there is any scope for interference by this Tribunal.

9. Original applicant has opposed the applications of the PPs and submitted that minimum distance of 200m must be maintained in the interest of safety of the inhabitants as well as flora and fauna in the area. The Tribunal must follow the ‘Precautionary’ principle and, if any, further

study is undertaken, mining may not be allowed within 200m pending such study. It was also submitted that mining is continuing illegally in violation of orders of Hon'ble Supreme Court and on that aspect the matter is being further raised before the Hon'ble Supreme Court by the applicant.

10. Stand of learned Counsel for the PPs is that distance of 50m is laid down under the Mines and Mineral Rules as well as under the orders of the State PCB. Any longer distance is beyond the jurisdiction of this Tribunal. CPCB also has no jurisdiction as powers under the EP Act are only with MoEF&CC.

11. Further submission is that due to topography of the State of Kerala, longer distance will obstruct the legitimate mining activities in violation of sustainable development principle. With the use of Nonel Detonation technology, 50m distance is adequate and does not cause any adverse impact.

12. Reliance has also been placed on a CSIR-Central Institute of Mining & Fuel Research study conducted in June 2021 on "SCIENTIFIC STUDIES FOR DESIGN OF SAFE BLAST PARAMETERS AT PEROORKADA STONE MINE, KUTHIRAKALAM P.O. VELLANADU, THIRUVANANTHAPURAM, KERALA" concluding and recommending as follows:

"8. CONCLUSIONS AND RECOMMENDATIONS

8.1 Conclusions:

The following conclusions can be drawn from the results of the study on blast vibration analysis:

- i) From the blasting trials, with the designed blast patterns, it was observed that blast induced ground vibrations; air overpressure and fly rock were within safe limits*
- ii) The use of bottom hole-initiation systems like shock tubes in conjunction with noiseless trunk line delays (NTLD) during trial blasts kept the vibration and air over-pressure to the allowable limits.*

- iii) *Proper stemming with coarse grained sand reduced the chances of flyrock and limited to bare minimum within the quarry area.*
- iv) *The throw of the muck was found to be favourable for easy removal and handling by machines*
- v) *The maximum value of blast induced ground vibration (PPV) level recorded at the south eastern boundary from where the closest civil structure (water tank), is 1.024 mm/s with dominant excitation frequency as 82.25 Hz at a distance of 125 m.*
- vi) *The maximum projectiles range of flyrock was observed as 10-15 m from the blast site and the air overpressure levels recorded were within the safe limits (<128 dB).*
- vii) *This clearly indicates that the blast design parameters followed during the studies at the mine are quite safe to the nearby habitats and structures.*

8.2 Recommendations:

On the basis of data analysis and results of the study the following points are recommended for consideration and strict adherence for controlled blasting and safety of structures:

1. *It is recommended to practice the blast design parameters as burden =1 m spacing = 1.2m, hole depth = 1.8 m to 3m and specific charge = 0.35 kg/m³.*
2. *Maximum hole depth can be upto 3m. Holes of lesser depth may have a tendency of generating more flyrock.*
3. *In case of varying hole depth, charge per holes should be calculated on the basis of specific charge (0.35 kg/m³)*
4. *The hole diameter should be kept at 32mm and there should be no variation in diameter of the drilled holes.*
5. *Typical blast designs shown in the figure 6 and 7 should be followed for safe blasting practice*
6. *The safe maximum charge per delay for the distances of 45m and above, from the dwellings/structures is mentioned in Table-5, and Figure 16, which should be followed to contain the ground vibrations and flyrock within the limits.*
7. *Although, the nearest house not belonging to quarry owner, is towards South-east direction of the mine at a distance of 250 m and the safe maximum charge per blast for that distance, as per the Table-4, is 8.29 kg*
8. *Prilled Ammonium Nitrate Fuel Oil (ANFO) and Cartridge emulsion explosive of 25mm diameter to be used for all production blast rounds. Care should be taken to ensure utilization of explosive within the prescribed shelf-life period.*
9. *Blast rounds should be planned in such a manner that at least one free face is available*
10. *Maximum four rows are to be fired in each blast round to avoid cumulative confinement and flyrock problem.*
11. *Top of the face should be cleaned for any debris. The face should be cleared of muck of the previous blast as it creates flyrock.*
12. *The free face direction should be, as far as possible, opposite from the hutments/ structures (temporary or*

permanent). The propagation of the initiation should be opposite to the structures/ habitats.”

13. We have duly considered the above submissions. We do not find any merit in the objection of the PPs that this Tribunal has no jurisdiction in view of distance laid down under the Mines and Mineral Rules. in view of law laid down *inter-alia* in *Mantri Techzone Pvt. Ltd. v. Forward Foundation and Ors.*,¹ and *the Director General (Road Development) NHAI v. Aam Aadmi Lok Manch.*² There is also no merit in the contention that CPCB has no jurisdiction under the EP Act. CPCB has jurisdiction under EP Act, as per delegation under section 23 of the said Act as well statutory powers under the Air and Water Acts and also under directions of this Tribunal. Plea of the PPs that the study relied upon clinches the matter in their favour is also not born out from the said study. There is also no merit in the contention that even at the cost of environment mining must be allowed having regard to peculiar topography of Kerala.

14. Thus, while the stand of the PPs cannot be accepted, out of abundant caution, we are inclined to consider further expert study on the subject of safe distance for mining from habitations.

15. Accordingly, we constitute a seven-member joint Committee comprising CPCB, Indian Institute of Mines/ IIT, Dhanbad, CSIR - Central Institute of Mining & Fuel Research (CIMFR), Dhanbad, CSIR-Central Building Research Institute (CBRI), Roorkee, IIT Roorkee, Wadia Institute of Himalayan Geology, Dehradun and Directorate General of Mines Safety, GoI. The nodal agency will be CPCB for coordination and compliance. The cost of the study will be initially borne by CPCB and thereafter as may be decided by this Tribunal. The Committee may undertake visit to the

¹ 2019 SCC online SC 322, Para 43-47

² AIR 2020 (SC) 3471, Para 75

relevant sites and except for such visits, conduct proceedings online, if necessary. The Committee will be at liberty to take assistance from any other expert/institution. The Committee may inter-alia study the impact of blasting with Nonel Detonation technology at distances of 50m, 75m, 100m, 125m, 150m, 200m and 250m. The study will include the impact caused by vibrations on different soil strata /earth profile in the area and on noise and air levels, on building and human and wildlife. The study may be completed within three months and report furnished within four months. Any stakeholder will be at liberty to give their respective view point to the Committee. State of Kerala and Kerala State PCB will facilitate undertaking of above study. The report may be furnished to this Tribunal within four months by e-mail at judicial-ngt@gov.in preferably in the form of searchable PDF/ OCR Support PDF and not in the form of Image PDF and also upload the same on website of CPCB simultaneously so that the concerned parties/Departments can access the same for further course of action.

M.A. Nos. 80/2021, 82/2021, 95/2021 stand disposed of.

List OA 304/2019 for further consideration on 11.05.2022.

A copy of this order be forwarded to CPCB, Indian Institute of Mines/ IIT, Dhanbad, CSIR - Central Institute of Mining & Fuel Research (CIMFR), Dhanbad, CSIR-Central Building Research Institute (CBRI), Roorkee, IIT Roorkee, Wadia Institute of Himalayan Geology, Dehradun, Directorate General of Mines Safety, GoI, State of Kerala and Kerala State PCB by e-mail for compliance.

Adarsh Kumar Goel, CP

Sudhir Agarwal, JM

Dr. Nagin Nanda, EM

December 09, 2021

M.A. No. 80/2021 to M.A. No. 83/2021,

M.A. No. 95/2021, M.A. No. 96/2021,

M.A. No. 85/2021 to M.A. No. 88/2021

DV



**CENTRAL POLLUTION CONTROL BOARD
REGIONAL DIRECTORATE “NISARGA BHAWAN”, 1ST FLOOR
THIMMAIAH ROAD, 7 ‘D’ CROSS, SHIVANAGAR
BENGALURU-560 079**

Phone: 080-23233739, 080-23233827, Fax: 080-23234059

Email: zobangalore.cpcb@nic.in

Tech/39/RDS/NGT/2021-22/741

18th January, 2022

OFFICE MEMORANDUM

Sub: Constitution of Joint Committee as per the directions of Honourable National Green Tribunal (NGT), Principal Bench order dated 09-12-2021 in the matters of MA Nos. 80, 83, 85, 88, 89, 90, 91, 92, 93, 94, and 94 of 2021 in OA No. 304/2019.

Honourable NGT in the above matter of OA 304/ 2019, by an order dated 21-07-2020, directed to maintain longer distances for siting stone quarries in the light of Central Pollution Control Board (CPCB) report following precautionary principle considering the right of the inhabitants, who are affected by air and noise pollution generated in the course of mining. Subsequent, to the NGT order, the aggrieved mining lessees (project proponents) filed appeals (MA 80, 83, 85, 88 to 95 of 2021) in the OA 304/2019. All the MAs sought impleadment in the matter with specific prayer of not to interfere with the distance laid down by mining department and Kerala State Pollution Control Board (KSPCB).

After examining the project proponents' contentions in details, Honourable NGT is inclined to consider an expert study afresh by a joint committee on the impact of blasting using NONEL Detonator Technology in stone quarries. The study includes impacts on vibrations on different soil strata/ earth profile, on noise levels, on air pollution levels, on buildings, humans and wildlife. In compliance of the NGT directions, a joint committee is constituted with following members as per nominations received from respective institutes/organisations.

S. Suresh
18/1/2022

Members of Joint Committee

No	Name & Designation	Institute/ Organization
1	Prof. B S Choudhary, Associate Professor	Dept. of Mining Engineering, IIT (ISM), Dhanbad-826004. bhanwarschoudhary@iitism.ac.in , 91-326-223-5735
2	Dr. Siddharth Singh, Sr. Principal Scientist	CSIR-CIMFR, Barwa Road, Dhanbad-826001. ss@cimfr.nic.in , ssgcmri@yahoo.com , 9431122769
3	Dr. D P Kanungo, Chief Scientist	CSIR-CBRI, Roorkee-247667. dpanungo@cbri.res.in , 9412073009
4	Prof. Manish Shrikhande, Professor	Dept. of Earth Quake Engineering, IIT, Roorkee-247667. manish.shrikhande@eq.iitr.ac.in , 91-1332-285437
5	Prof. Ritesh Kumar, Assistant Professor	Dept. of Earth Quake Engineering, IIT, Roorkee-247667. ritesh.kumar@eq.iitr.ac.in , 91-01332-284981
6	Dr. R J Perumal, Scientist F	Wadia Institute of Himalayan Geology, Dehradun-248171. ramperu@wihg.res.in , 91-135-2525142
7	Shri. Venugopal Swamy Kadem, Dy. Director (Mining)	Directorate General of Mine Safety (DGMS), Bangalore Region, Bengaluru, Karnataka-560071. kademvenugopaldaswamy@gmail.com , 9434738698
8	Dr. Deepesh V, Scientist C (Member convener/ Nodal officer)	Central Pollution Control Board, Regional Directorate, Bengaluru, Karnataka-560079. deepesh.cpcb@nic.in , 9611128895

In compliance to NGT order, the joint committee shall formulate a methodology for the expert study. The impact assessment shall be conducted at various radial distances from the blasting point and committee shall recommend a safe distance to be maintained from the mines/ quarries. The committee may undertake visit to the relevant sites in Kerala and interact with the stakeholders. The scope of the joint committee may be amended from time to time based on NGT's interim orders, committee deliberations or any other issues highlighted by any of the stake holders.

CPCB shall technically coordinate the entire activity in organizing meetings with committee members, coordinating site visits, compilation of technical inputs, report finalization and filing of final report as nodal agency.

S. Suresh
18/11/2022

The joint committee will be free to coordinate with other concerned authorities and take assistance of any individual/ institution if required. In this connection, at any point of time if committee feels that any additional assistance from institution/ individual is required, same may be included as special invitee for considering the views but not as committee member. The committee may also consider other relevant issues related to the study based on the interactions with stakeholders. After finalization of the report by the joint committee, latest by 9th April, 2022, the report shall be sent to CPCB, Delhi for filing it in NGT, Principal Bench, Delhi after obtaining concurrence from Competent Authority. The time frame shall be strictly followed considering the date fixed for filing the report as per the NGT order.

Honourable NGT made KSPCB and other relevant Kerala State Departments responsible for the coordination/ arrangements for conducting field studies. Relevant field sites for the study shall be finalized in consultation with the KSPCB. As per the nomination of KSPCB, details of official nominated as Coordinator/ Nodal Officer for this purpose is given below.

Shri. Krishnan M N, Environmental Engineer (Coordinator/ Nodal officer)	Kerala State Pollution Control Board, District Office, Palakkad, Kerala. kspcbpalakkad@gmail.com , 9447975719
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Coordinator/ Nodal Officer from KSPCB shall be responsible for facilitating field studies and coordinating the functioning of joint committee in Kerala. The nodal officer from KSPCB shall participate in the joint committee meetings as a special invitee. KSPCB will arrange entire logistics, arrangement for field visits and meetings for all committee members till the report is accepted by NGT. KSPCB shall interact with State Departments responsible for mining/ minor mineral quarry activities for further arrangements to conduct the expert study, finalization of field visits, hearing of parties and meeting with other stake holders as per the NGT directions. The related monitoring shall also be arranged/ conducted by KSPCB as and when desired by the Joint Committee.

From time to time CPCB shall circulate minutes of the meetings and draft reports to all members through email and also through online messenger/ chat group, to be created exclusively for the purpose.

S. Suresh
 18.11.2022

Committee members are requested to share their mobile numbers for this purpose. It is the primary responsibility of all committee members to respond immediately and to provide suggestion/ concurrence to the minutes/ reports and in case of non-response from any members within the time frame, it will be considered as concurrence to the report. Individual correspondence may not be preferred and all views shall be posted in the group so that all committee members will have the track of the issues.

First joint committee meetings shall be conducted through online wherein, further dates for joint committee proceedings could be finalized considering the time frame set by NGT.

S. Suresh

18/11/2022

(S. Suresh)

Regional Director

9480672128

ssuresh.cpcb@nic.in

To:

1. Prof. B S Choudhary, Associate Professor, Dept. of Mining Engineering, IIT (ISM), Dhanbad-826004. bhanwarschoudhary@iitism.ac.in
2. Dr. Siddharth Singh, Sr. Principal Scientist, CSIR-CIMFR, Barwa Road, Dhanbad-826001. ss@cimfr.nic.in, ssgcmri@yahoo.com
3. Dr. D P Kanungo, Chief Scientist, CSIR-CBRI, Roorkee-247667. dpskanungo@cbri.res.in
4. Prof. Manish Shrikhande, Professor, Dept. of Earth Quake Engineering, IIT, Roorkee-247667. manish.shrikhande@eq.iitr.ac.in
5. Prof. Ritesh Kumar, Assistant Professor, Dept. of Earth Quake Engineering, IIT, Roorkee-247667. ritesh.kumar@eq.iitr.ac.in
6. Dr. R J Perumal, Scientist F, Wadia Institute of Himalayan Geology, Dehradun-248171. ramperu@wihg.res.in
7. Shri. Venugopal Swamy Kadem, Dy. Director (Mining), Directorate General of Mine Safety (DGMS), Bangalore Region, Bengaluru, Karnataka-560071. kademvenugopalaswamy@gmail.com
8. Dr. Deepesh V, Scientist C (Member convener/ Nodal officer), Central Pollution Control Board, Regional Directorate, Bengaluru, Karnataka-560079. deepesh.cpcb@nic.in
9. Shri Krishnan M N, Environmental Engineer, (Coordinator/ Nodal officer) District Office, KSPCB, Palakkad, Kerala. kspcbpalakkad@gmail.com
10. MS, Kerala State Pollution Control Board, Thiruvananthapuram, Kerala.
11. Director, Directorate of Mining & Geology, Thiruvananthapuram, Kerala.
12. DH, IPC-II, CPCB, Delhi.
13. Admin Section, CPCB, Bengaluru
14. Accounts Section, CPCB, Bengaluru

S. Suresh

18/11/2022

(S. Suresh)

Regional Director





NGT MATTER/ TOP PRIORITY

Tech/39/RDS/NGT/2021-22/ 885

8th March, 2022

To

The Chairman
Kerala State Pollution Control Board,
Head Office, Plamoodu Junction, Pattom P.O.
Thiruvananthapuram – 695004

Sub: Honourable National Green Tribunal (NGT), Principal Bench order dated 09-12-2021 in the matters of MA Nos. 80, 83, 85, 88, 89, 90, 91, 92, 93, 94, and 95 of 2021 in OA No. 304/2019: Information/ details sought for the expert study/ joint committee meeting.

Ref: CPCB, OM: Tech/39/RDS/NGT/2021-22/741, dated 18-01-2022.

Sir,

As per the Honourable NGT order dated 09-12-2021, it is directed to carry out expert study by a joint committee on the impact of blasting using NONEL Detonator Technology in stone quarries in Kerala. The study includes assessing impact of vibrations on different soil strata/ earth profile, noise levels, air pollution levels, impact on buildings, humans and wildlife. In compliance of the NGT directions, a joint committee is constituted as per the reference and Honourable NGT made KSPCB and other relevant Kerala State Departments responsible for the coordination/ arrangements for conducting field studies. Preliminary discussions with the nodal officers/ coordinators from CPCB and KSPCB were carried out and following preliminary requirements were delineated for the expert study.

- To formulate a facilitation committee with representatives from the Departments of Mining and Geology, Industry, Forest, organizations like PESO, KFRI and other concerned stake holders to facilitate field studies in Kerala. The facilitation committee and KSPCB shall make arrangements for the expert studies and specific role for each of the stake holders in the facilitation committee may be assigned by KSPCB.

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क्षेत्रीय निदेशालय (दक्षिण) : निसर्ग भवन, ए-ब्लॉक, प्रथम एवं द्वितीय तल, तिम्मय्या रोड, 7-डी मैन, शिवनगर, बेंगलूरु - ५६० ०७९.

Regional Directorate (South) : " Nisarga Bhawan ", A-Block, 1st & 2nd Floors, Thimmaiah Road, 7th D - Main, Shivanagar, Bengaluru - 560 079.

दूरभाष / Telephone : 080-23233739, 23233827, 23233996, 23233600, 23232559, 23226002, 23222539, Fax : 080-23234059

ई-मेल / E-mail : cpcbszo@yahoo.com, zobangalore.cpcb@nic.in

प्रधान कार्यालय : परिवेश भवन, पूर्वी अर्जुन नगर, दिल्ली- ११० ०३२.

Head Office : Parivesh Bhawan, East Arjun Nagar, Delhi - 110 032.

दूरभाष / Telephone : 011-43102030, Fax : 22305793, 22307078, 22307079, 22301932, 22304948

ई-मेल / E-mail : cpcb@nic.in वेबसाइट / Website : www.cpcb.nic.in

- To provide data/ information on the stone quarries operating in Kerala, including those operating in high hazard locations (earthquake/ landslide prone areas as per the hazard map of Kerala) and those operating in ecologically sensitive areas. KSPCB may also identify stone quarries where the expert studies can be considered.
- Details of facilities/ competency available with KSPCB/ other stake holder organizations/ R&D institutes that can be utilized for the expert study to assess the impact of blasting in terms of vibrations, noise, air pollutants and effects on buildings, humans & wildlife.

Since, the matter pertains to the stone quarries in Kerala, it would be a difficult task for CPCB to coordinate the field activities and logistics arrangements for the joint committee. In this scenario, it is requested that KSPCB may coordinate the field activities and logistic arrangements in Kerala. The expenditure/ cost involved with the expert study /logistic arrangements for the joint committee shall be re-appropriated once the study is completed as per the final verdict of Honourable NGT in this matter.

It is requested to update the actions plans and provide the data/ information sought preferably before the joint committee meeting fixed on 14th March, 2022.

Yours faithfully

S. Suresh

(S. Suresh)

Regional Director

9480672128

cpcbsuresh@gmail.com

Copy to:

1. The Member Secretary, KSPCB, H.O., Pattom P.O., Thiruvananthapuram – 695004.
2. Shri. M N Krishnan, Coordinator/ Nodal Officer, KSPCB, Palakkad.
3. The DH, Legal Division, CPCB, HO, Delhi.
4. The DH, IPC-II, CPCB, HO, Delhi.



MEETING MINUTES (14-03-2022)

Meeting title	<i>Meeting of the Joint Committee constituted as per the directions of Honourable National Green Tribunal (NGT), Principal Bench, Delhi's order dated 09-12-2021 in the matter of OA No. 304/2019.</i>
Sequence	Meeting # 01
Date	14 th March, 2022
Time	15.30 to 17.10
Platform/ Venue	Online meeting via 'Microsoft Teams'
Meeting link (if online)	https://teams.microsoft.com/l/meetupjoin/19%3ameeting_OGFmNjYyODUtNjYwNS00NDRiLTlhNDAtNDZiMDJkZDU2MTM1%40thread.v2/0?context=%7b%22Tid%22%3a%22b9e2357f-a574-4d46-b21f-5e27b9456f2c%22%2c%22Oid%22%3a%22866b38d8-1667-4f55-9dc5-1639323834ea%22%7d
Meeting facilitator	CPCB-3, IT Division, CPCB, Delhi.
Attendee's list	
1	Dr. Deepesh V, Scientist C, Central Pollution Control Board, Regional Directorate, Bengaluru, Karnataka-560079. (<i>Committee Member & Convener</i>)
2	Shri. Krishnan M N, Environmental Engineer, Kerala State Pollution Control Board (KSPCB), District Office, Palakkad, Kerala. (<i>Special invitee/ Coordinator-KSPCB</i>)
3	Shri. Venugopal Swamy Kadem, Dy. Director (Mining), Directorate General of Mine Safety (DGMS), Bangalore Region, Bengaluru, Karnataka-560071. (<i>Committee Member</i>)
4	Dr. D P Kanungo, Chief Scientist, CSIR-CBRI, Roorkee-247667. (<i>Committee Member</i>)
5	Prof. Ritesh Kumar, Assistant Professor, Dept. of Earth Quake Engineering, IIT, Roorkee-247667. (<i>Committee Member</i>)
6	Dr. R J Perumal, Scientist F, Wadia Institute of Himalayan Geology, Dehradun-248171. (<i>Committee Member</i>)
Absent list	
1	Prof. B S Choudhary, Associate Professor, Dept. of Mining Engineering, IIT (ISM), Dhanbad-826004. (<i>Committee Member</i>)
2	Dr. Siddharth Singh, Sr. Principal Scientist, CSIR-CIMFR, Barwa Road, Dhanbad-826001. (<i>Committee Member</i>)
3	Prof. Manish Shrikhande, Professor, Dept. of Earth Quake Engineering, IIT, Roorkee-247667. (<i>Committee Member</i>)

1.0 Introduction/ background

Honourable NGT in the matter of OA 304/ 2019, directed (order dated 21-07-2020) to maintain longer distances for siting stone quarries in the light of a report submitted by Central Pollution Control Board (CPCB) following precautionary principle considering the right of the inhabitants, who are affected by air and noise pollution generated in the course of mining. Subsequent, to the above NGT order, the aggrieved mining lessees (project proponents) filed appeals (MA Nos. 80, 83, 85, 88 to 95 of 2021) in the OA 304/2019. All the MAs sought impleadment in the matter with specific prayer of not to interfere with the distance laid down by the mining department and Kerala State Pollution Control Board (KSPCB). After examining the project proponents' contentions in details, Honourable NGT directed for an expert study by a joint committee on the subject of safe distance for mining from habitations. The honourable NGT order dated 09th December, 2021 is annexed as ***Annexure I***.

Specific directions were given to study the impact of blasting using NONEL detonator technology in stone quarries. The study includes impacts on vibrations on different soil strata/ earth profile, on noise levels, on air pollution levels, on buildings, humans and wildlife. In compliance with the NGT directions, joint committee was constituted with members/ representatives as per nominations received from respective institutes/ organizations. The CPCB office memorandum dated 18th January, 2022, regarding the constitution of the joint committee is annexed as ***Annexure II***. After the constitution of the joint committee, KSPCB was asked to pool relevant data/ information for the joint committee meetings/ deliberations. Certain actions were also suggested to KSPCB for facilitating field studies in Kerala and to take stock of the monitoring infrastructure/ facilities available for the expert study. A detailed letter was forwarded to the Chairman, KSPCB in this regard on 8th March, 2022 (***Annexure III***).

2.0 Opening remarks

The joint committee meeting was called for, to discuss on the expert study as directed by the honourable NGT on the subject of safe distance for mining in stone quarries from habitations. A meeting notice (***Annexure IV***) was sent to all committee members and the special invitee/ KSPCB coordinator on 9th March, 2022 (through email and notice shared via an exclusive chat group). A brief presentation (***Annexure V***) on the background of the matter, specific directions of NGT, and

the meeting agendas for deciding the expert study was emailed to all concerned along with the meeting notice.

During the meeting, three of the committee members could not participate in the discussions due to some technical glitches in the online meeting platform and due to other preoccupied assignments. Due to some initial hiccups in the online meeting platform, two of the committee members could not join the meeting in the scheduled time and the online meeting was delayed by 30 minutes. The formal meeting with the available quorum commenced by 16.00 hrs.

3.0 Discussions & action points

Dr. Deepesh V, member convener of the joint committee welcomed all the committee members/ special invitee and summarized the background of the matter, inception of the NGT OA 304/2019 and explained the expert study directed by the honorable NGT in its order dated 09-12-2021. He also presented the main agenda of the meeting, to formulate a plan for the expert field study and to chalk out a roadmap to execute the expert field study in selected locations in Kerala. Member convener opined that, the expert study as envisaged in the NGT order is to assess the vibrations, noise and air pollutants during the mining operations. The expert study has to deal with the assessment of vibration and its effect on the buildings/ structures in the vicinity and assessment of all three factors (vibration, noise and various air pollutants) and its effect on humans and wildlife.

Shri. Krishnan M N, the KSPCB coordinator (special invitee) was invited to throw some light on the stone quarries in Kerala. He explained the licensing mechanism (consent system) followed by KSPCB and informed that stone quarries are existing in all districts of Kerala except in Alappuzha district. He further, listed out various issues with the stone quarry operations as damage to buildings/ structures due to blasting, issues with the storage of overburden, dumping of waste/ muck, disturbance of natural streams, water pollution due to the discharge of mine pit water, issues with the discharge of wash water (used to wash m-sand) air pollution issues due to blasting, overburden/ earth removal, transportation, crusher operations, noise pollution from blasting/ transportation/ crusher functioning, etc. He also informed that the transportation of mined granites is something which is not included in the ambit of the consent mechanism and there are several issues with the transportation of mined granite aggregates. Huge multi-axle trucks (capacity up to

47.5 tons) are used by granite quarries to ferry aggregates to customers through small village roads. Due to the heavy traffic movement, there are several complaints on the bad quality of roads, dust pollution due to increased traffic, noise pollution from the truck fleet and accidents caused by the trucks in narrow village roads. It was reiterated that the operations inside the quarry are generally brought under the consent and the issues associated with transportation of stone aggregates outside the quarry is not addressed as it is not covered in the consent mechanism. Dr. Deepesh V, added to the discussion that according to a report on mapping of granite quarries in Kerala, published in 2017, there are 5924 odd quarries in Kerala ranging from 0.02 to 64.04 hectares in area. He also added that present statistics on granite quarries shall be obtained from the Mining & Geology Dept.

Dr. R J Perumal suggested that the expert study directed by NGT essentially include the assessment of vibrations, noise and air pollutants generated during the course of mining. He highlighted that it will be a herculean task to extend the study in all quarries in Kerala and the study should be confined to selected, representative sites in Kerala. It was suggested that the site selection should be based on the tectonic/ geological profile of Kerala as the propagation of vibration depends on the geophysical attributes of the site. The importance of tectonic profile was explained as it may amplify the vibrations based on the local geological attributes. He also highlighted the requirement of site visits before finalizing the study locations in Kerala. This view was seconded by Dr. D P Kanungo and suggested mapping of quarries in tectonic/ geological map of Kerala to aid in the selection of representative study locations based on the local geological attributes. At this point, Shri. Venugopal Swamy Kadem, suggested the use of simulator softwares/ models to study the effect of vibrations. Dr. D P Kanungo opined that, though software simulation / numerical modeling is a handy tool, site specific studies are to be relied on in this matter as the amplification of vibrations depends a lot on the local geology of the site. Prof. Ritesh Kumar also vouched for the suggestions made by Dr. R J Perumal and Dr. D P Kanungo and highlighted the need for the scientific selection of representative study locations based on the tectonic/ geophysical map of Kerala.

Shri. Venugopal Swamy Kadem supported the above views regarding scientific site selection and insisted on detailed study on blasting practices in the stone quarries. He drew the attention of the joint committee to the regulation 164 of the Metalliferous Mines Regulations (MMR), 1961 and

explained the provision that if the shortest distance from the place of firing to any part of such building or structure is less than 50 m irrespective of the amount of the charge, no blasting shall be done except with the permission in writing of the Chief Inspector or the Regional Inspector and subject to such conditions as he may specify therein. He also urged that the study should be done considering various blasting practices (like deep hole/shot hole drilling and blasting) carried out in stone quarries with special emphasis on blasting protocols followed, assessment of fly rock generated and different types of blasting practiced. He also added that peak particle velocity (PPV) frequency in relation to blast induced vibrations and to explosive charge & blasting patterns adopted are to be studied in this matter. Available softwares shall be used for the expert study to be done. The quorum agreed to the above views and Dr. D P Kanungo opined that other joint committee members from CSIR-CIMFR and IIT (IISM) Dhanbad could have added more insight into the blasting and the related studies.

Shri. Krishnan M N specifically raised the query on any requirements to be arranged from Kerala/ KSPCB. In reply Dr. R J Perumal enumerated the requirements for the detailed tectonic/ geological map of Kerala (State and district wise maps) and the topo sheets of mining lease areas (for all the quarries). Dr. Deepesh V, added that the latest statistics of stone quarries and location maps (State and district wise maps) may be obtained from the Mining and Geology Dept. of Kerala. At this juncture, the member convener put forth the question of how the stakeholders are to be heard. It was discussed that views of the stakeholders can be taken through online platforms or by a physical meeting at a venue as identified by the KSPCB at a later stage. Shri. Venugopal Swamy Kadem pointed out that such an exercise shall be taken up before the finalization of the expert study as there could be issues which the committee should consider in the study. Dr. Deepesh informed that so far 19 representations/ complaints addressed to this committee were received by him and these need to be reviewed by the committee before finalizing the expert study.

The timelines of the expert study as per the Honourable NGT order were discussed and it was deliberated that planning/ execution of such expert studies need more time considering the fact that the study should be representative of the quarries operating in 13 districts of Kerala with specific local geological attributes. The quorum decided that in the next sitting, the possibility of deciding on a draft study plan could be made with the available data/ information and the

possibility of preliminary site inspection could be explored. The quorum generally agreed on the fact that the expert study may require more time for completion and request for the extension of time should be sought from NGT.

4.0 Closing remarks

The quorum unanimously opined that the views and opinion of the committee members who could not attend the meeting shall be sought and it was decided to convene another meeting in the last week of March, 2022. KSPCB coordinator was requested to provide the data/ information sought in the next sitting. It was also decided to share the data/ information/ materials through the exclusive chat group made for the joint committee. The member convener thanked all the joint committee members and the special invitee. It was decided to convene another meeting in the month of March, 2022 and the meeting concluded by 17.10 hrs.

Prepared by	Dr. Deepesh V, Member Convener
Date/ Version	22 nd March, 2022, Version 1.1
Approved by	1) Dr. D P Kanungo, Committee Member 2) Prof. Ritesh Kumar, Committee Member 3) Dr. R J Perumal, Committee Member 4) Shri. Venugopal Swamy Kadem, Committee Member 5) Dr. Deepesh V, Committee Member/ Convener 6) Shri. M N Krishnan, Special Invitee

Date: 22-03-2022

(Dr. Deepesh V)
Member Convener

MEETING MINUTES (28-03-2022)

Meeting title	<i>Meeting of the Joint Committee constituted as per the directions of Honourable National Green Tribunal (NGT), Principal Bench, Delhi's order dated 09-12-2021 in the matter of OA No. 304/2019.</i>
Sequence	Meeting # 02
Date	28 th March, 2022
Time	15.30 to 16.40
Platform/ Venue	Online meeting via 'Google Meet'
Meeting link (if online)	meet.google.com/pgx-nsdk-dxh
Meeting facilitator	CPCB, Regional Directorate, Bengaluru, Karnataka.
Attendees	
1	Dr. Deepesh V, Scientist C, Central Pollution Control Board, Regional Directorate, Bengaluru, Karnataka-560079. (<i>Committee Member & Convener</i>)
2	Prof. Manish Shrikhande, Professor, Dept. of Earthquake Engineering, IIT, Roorkee-247667. (<i>Committee Member</i>)
3	Shri. Venugopal Swamy Kadem, Dy. Director (Mining), Directorate General of Mine Safety (DGMS), Bangalore Region, Bengaluru, Karnataka-560071. (<i>Committee Member</i>)
4	Shri. Krishnan M N, Environmental Engineer, Kerala State Pollution Control Board (KSPCB), District Office, Palakkad, Kerala. (<i>Special invitee/ Coordinator-KSPCB</i>)
5	Dr. B S Choudhary, Associate Professor, Dept. of Mining Engineering, IIT (ISM), Dhanbad-826004. (<i>Committee Member</i>)
6	Dr. R J Perumal, Scientist F, Wadia Institute of Himalayan Geology, Dehradun-248171. (<i>Committee Member</i>)
7	Dr. Siddharth Singh, Sr. Principal Scientist, CSIR-CIMFR, Barwa Road, Dhanbad-826001. (<i>Committee Member</i>)
8	Dr. D P Kanungo, Chief Scientist, CSIR-CBRI, Roorkee-247667. (<i>Committee Member</i>)
9	Shri. Eby Varghese, Environmental Engineer, KSPCB, Thodupuzha, Idukki.
10	Shri. M. A. Shiju, Environmental Engineer, KSPCB, Kalpetta, Wayanad.
11	Smt. Pravithamol T. N, Asst. Environmental Engineer, KSPCB, Pathanamthitta.

Absent list	
1	Dr. Ritesh Kumar, Assistant Professor, Dept. of Earthquake Engineering, IIT, Roorkee-247667. (<i>Committee Member</i>)

1.0 Introduction

Honourable NGT in the matter of OA 304/ 2019, directed (order dated 21-07-2020) to maintain longer distances for siting stone quarries in the light of a report submitted by Central Pollution Control Board (CPCB) following precautionary principle considering the right of the inhabitants, who are affected by air and noise pollution generated in the course of mining. Subsequent, to the above NGT order, the aggrieved mining lessees (project proponents) filed appeals (MA Nos. 80, 83, 85, 88 to 95 of 2021) in the OA 304/2019. All the MAs sought impleadment in the matter with specific prayer of not to interfere with the distance laid down by the mining department and Kerala State Pollution Control Board (KSPCB). After examining the project proponents' contentions in details, Honourable NGT directed for an expert study by a joint committee on the subject of safe distance for mining from habitations. Specific directions were given to study the impact of blasting using NONEL detonator technology in stone quarries. The study includes impacts on vibrations on different soil strata/ earth profile, on noise levels, on air pollution levels, on buildings, humans and wildlife. Accordingly, the joint committee had the initial online meeting on 14-03-2022 and deliberated on planning an expert study as directed by the honourable NGT. The minutes of the initial meeting is annexed as ***Annexure-I***. A meeting notice (***Annexure II***) was sent to all committee members and the special invitee/ KSPCB coordinator on 25th March, 2022 (through email and shared via an exclusive chat group). Shri. M N Krishnan, the coordinator- KSPCB, made a request to permit his colleagues who are assigned to assist him with the requirements of the Joint Committee, to attend the meeting.

2.0 Opening remarks

The member convener extended a warm welcome to all the committee members, special invitee and other officials from KSPCB. The meeting started with the summary and outcome of the last joint committee meeting to decide on the expert study as directed by the honourable NGT on the subject of safe distance for mining in stone quarries from habitations. As per the decisions taken in the last meeting, KSPCB was asked to provide certain data/ information to aid the joint

committee to decide on selecting representative study locations in Kerala. Shri. M N Krishnan, coordinator-KSPCB/ special invitee was invited to update the status on data/ information sought from KSPCB/ Kerala.

Shri. M N Krishnan, coordinator-KSPCB informed the committee members that he has approached the Director, dept. of mining and geology for the tectonic/ geological map of Kerala State and districts. As per the information he got from the dept., KSPCB has to approach the Geological Survey of India (GSI) to get the geological maps of the State and each district. It was further appraised that the topo sheets of quarry (permit/ lease) area were not available with district offices of the mining and geology dept. and may be obtained from Survey of India (SoI) or any other line departments of the State of Kerala. He also added that location of the stone quarries in each and every district is available in the website of dept. of mining and geology, Kerala and KSPCB is presently compiling the data through their district level offices. It was stated that, as per the inputs received from the district offices of the dept. of mining and geology, there is no classification of mine/ quarry area based on tectonic/ geological attributes.

3.0 Discussions & action points

In response to the briefing of the coordinator-KSPCB, Dr. Siddharth Singh suggested that the mine plan has to be emphasized more for better planning and designing of the expert study. Member convener reiterated that, as informed by the coordinator-KSPCB, the tectonic/ geological maps have to be procured from Geological Survey of India (GSI) and other details have to be compiled from the database of dept. of mining and geology, Kerala. Dr. B S Choudhary opined that surface plan/ mine plan of the quarries has to be obtained for trial blast studies and this view was supported by Dr. D P Kanungo and he further added that with the details available in the mine plan/ surface plan it is possible to plan studies to assess the vibration on the nearby structures due to blasting. He also added that as a preliminary step, KSPCB should identify quarries based on the presence of structures within 50, 100, 150, 200 and 250m as specifically mentioned in the NGT order. He also suggested that if needed, the committee can co-opt experts from GSI or from the State dept. of mining and geology. Dr. R J Perumal, drew the attention to the importance of the mine lease area/ topo sheets and tectonic/ geological map of the State and each district. He further elaborated that the mine topo sheets could be handy in selecting quarries based on the extent (quarry area)

from largest to smallest quarries and the tectonic/ geological map could help locate quarries in distinct geological conditions. It was informed that the details should be available with the geology department and maps could be available in public domains and without this basic first order data it will be difficult to plan a scientific study. In reply, coordinator-KSPCB informed that the representative from the dept. of mining and geology, Kerala has been included in the facilitation committee mooted by KSPCB and all the relevant data could be sourced from the dept. The proceedings on the constitution of the facilitation committee at the State level is annexed as *Annexure III*.

There was a question on whether data of all the mines/ quarries operating/ existing in Kerala should be compiled or should be restricted to the shortlisted locations. Dr. R J Perumal, in reply stated that all quarries shall be covered for obtaining relevant details and that was the roadmap suggested by the committee in the previous meeting. He further added that once the whole data set is available the committee members can apply different rationale to prioritize/ shortlist the most relevant study sites after preliminary field visits. It was reiterated that it is important to have spatial data of mine quarry locations in all the districts. Dr. D P Kanungo suggested that the data may be consolidated district wise and presented in a suitable format for the committee to move forward with the expert study. Committee members pointed out that the data should be made available in the form of shapefile or KML file. Another requirement was highlighted by Dr. B S Choudhary, to have the blast plan of all the mines to get an idea of blasting practices, consumption of materials for blasting and thereby quarries using large quantities of blasting chemicals/ materials can be prioritized for the trial blast studies. Member convener informed that all relevant data should be available in the website/ database of the State dept. of mining and geology, Kerala and KSPCB may take lead to get it consolidated as per the suggestions of the committee on war footing.

Prof. Manish Shrikhande, added whether water saturation levels of the mines/ quarries need to be assessed in the study as the water tables in Kerala is generally high and many mines could be near to the coastal area. It was clarified that most of the quarries in Kerala are in the midlands/ foot hills and in the Western Ghats. Member convener raised a question whether public complaints/ grievances could be a possible rationale for the selection of quarries for the study and in reply, coordinator-KSPCB elaborated that after selecting quarries based on the geographical/ geological

attributes from three zones (Northern, Central and Southern Kerala) prioritizing could be done on the basis of public complaints/ grievances. At this juncture, Dr. D P Kanungo opined that it would be better if it is made district wise and Dr. R J Perumal supported his view and added that public complaint/ grievances could be a rationale for the selection of study location. Prof. Manish Shrikhande, pointed out whether there is any kind of moat/ trench around the quarries to arrest the propagation of vibration from quarries and it was clarified that constructing moats/ trenches are not practiced in the quarries in Kerala, probably due to the lateritic formation. Shri. Venugopal Swamy Kadem pointed out that the study should be done considering various blasting practices according to the approved blasting protocols. He also reiterated that modelling software shall be used for the expert study to simulate vibration due to blasting.

The committee then reviewed the requirements of the expert study, that is the assessment of noise, air pollutants and vibration around the mines as specified in the NGT order and member convener pointed out the number of instruments needed to be deployed in the perimeter of quarries as per the NGT directions. He further added that if the study is planned as per the 7 perimeters (50, 75, 100, 125, 150, 200 and 250m) around the quarry, 28 instruments are required to be deployed in 4 directions for the study. Another issue raised was the practical difficulties generally faced by the monitoring team to deploy the instruments around the quarry due to the rugged terrain and arrangement of power/ electricity connection. Member convener suggested that the committee should revisit the monitoring perimeters and probably have to restrict the monitoring perimeter after reviewing the ground realities. It was informed that assessment of noise and air pollutants can be entrusted to KSPCB and CPCB can provide necessary assistance with instruments and monitoring protocols. At this juncture, committee's opinion was sought on how to assess the vibration and it was suggested that geophones or accelerometer based vibration sensors could be deployed and Dr. D P Kanungo suggested that necessary inputs could be taken from CSIR-CIMFR and CSIR-CBRI and Dr. Siddharth Singh also stated that the expertise of these institutes could be explored and utilized for the study. In the discussions it was suggested that KSPCB need to identify few organization having expertise in the assessment of mining induced vibrations and committee members suggested Kerala/ KSPCB to approach NIT-Surathkal, NIRM-Kolar and FCRI-Palakkad for the assessment of vibration in the expert study.

The committee had a discussion on the procedure/ protocol to be adopted for hearing all stakeholders involved in the matter. Dr. Deepesh informed that several representations/ complaints addressed to this committee were received by him and how it has to be shared with other committee members. Dr. D P Kanungo suggested that this can be dealt with in a phased manner and in the initial phase the committee **needs** to compile all the views of the stakeholders according to region wise (North/ Central/ South Kerala) in the form of digital record. In the second phase the committee may have physical hearings with the stakeholders in all three regions (North/ Central/ South Kerala) based on the data compiled. In the third phase the views of the stakeholders can be considered for planning of the expert study. Dr. R J Perumal added that it is important to have site visits to selected locations during the hearing so that the contentions raised by the stakeholders can be related to the ground realities. Hence, it was decided to have site visits in all three regions and the selection of quarries for the preliminary visit could be made based on the public complaint records already available with the district offices of KSPCB. At this instance, Prof. Manish Shrikhande suggested that the process of hearing the stakeholders should be approached in a more structured manner by compiling the views of the stakeholders issue wise in a structured document. It was suggested that the views of the stakeholders may be recorded in an online document which can be later segregated district wise or issue wise and subsequently used for planning the expert study. The member convener, enquired the possibility of planning a site visit to few representative quarries in Kerala in the last week of April, 2021 and committee members expressed that mutually convenient dates may be finalized later. It was decided that the place of visit shall be finalized by KSPCB based on the number of quarries operating in three regions. Dr. Siddharth Singh suggested that the committee can consider visiting locations where cluster mines/ quarries operate.

4.0 Closing remarks

The committee decided that the requisite first order data/ information shall be provided by Kerala/ KSPCB on priority. Dr. R J Perumal listed out the requirements as:

- *Location of quarries in the form of shapefile or KML file.*
- *Topo sheets/ surface plan of operating quarries.*
- *Mine plan including approved blasting protocol/ practices of operating quarries.*

KSPCB coordinator was requested to provide the data/ information sought as shapefile/ KML file before the next sitting. The committee members were asked to suggest a convenient date for the

field visit proposed tentatively in the last week of April, 2022. It was also decided to explore the possibility of the next sitting of the joint committee in Kerala along with the field visit. Coordinator-KSPCB assured that he and his colleagues shall make endeavours on war footing to collect and compile the requisite data/ information from the Dept. of mining and geology, Kerala. The member convener thanked all the joint committee members, the special invitee and the officials from KSPCB. It was decided to convene next meeting after 20th of April, 2022 and the meeting concluded by 16.40 hrs.

Prepared by	Dr. Deepesh V, Member Convener
Date/ Version	7 th April, 2022, Version 1.1
Approved by	<ol style="list-style-type: none"> 1) Dr. D P Kanungo, Committee Member 2) Dr. Siddharth Singh, Committee Member 3) Dr. B S Choudhary, Committee Member 4) Dr. R J Perumal, Committee Member 5) Shri. Venugopal Swamy Kadem, Committee Member 6) Prof. Manish Shrikhande, Committee Member 7) Dr. Deepesh V, Committee Member/ Convener 8) Shri. M N Krishnan, Special Invitee

Date: 07-04-2022

(Dr. Deepesh V)
Member Convener



ANNEXURE-VI केन्द्रीय प्रदूषण नियंत्रण बोर्ड

CENTRAL POLLUTION CONTROL BOARD

पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय, भारत सरकार
MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE, GOVT. OF INDIA

NGT MATTER/ TOP PRIORITY

28th April, 2022

F. Tech/39 /Legal/ RDS/ 2022-23/ 75
To

The Chief Secretary
Government of Kerala
Room No. 202, North Sandwich Block
Govt. Secretariat
Thiruvananthapuram - 695001.
chiefsecy@kerala.gov.in

Sub: Honourable National Green Tribunal (NGT), Principal Bench matter of OA 304/2019: Expert study on the subject of safe distance for stone quarry mining from habitations in Kerala.

Ref: 1) NGT order dated 09-12-2021 in the matter of OA 304/2019.
2) Proceedings NO PCB/HO/EE4/NGT/O. A. 304/2019 dated 15.02.2022 of the Chairman, Kerala Pollution Control Board.

Sir,

As per the Honourable NGT order dated 09-12-2021 in the matter of safe distance for stone quarries in Kerala, it is directed to carry out expert study by a joint committee on the impact of blasting. The expert study includes assessing impact of vibrations on different soil strata/ earth profile, noise levels, air pollution levels, impact on buildings, humans and wildlife.

Honourable NGT made Kerala State Pollution Control Board (KSPCB) and other relevant Kerala State Departments responsible for the coordination/ arrangements for conducting field studies in this matter. As per the NGT directions, State of Kerala and KSPCB shall facilitate undertaking of above study.

Since, mining of minor mineral comes under the purview of Department of Mining and Geology, and being the custodian of all the relevant information/ data on stone quarry, it was suggested to constitute a State level facilitation committee including Department of Mining and Geology and other stakeholder departments/ organizations to oversee the facilitation of the expert study.

क्षेत्रीय निदेशालय (दक्षिण) : निसर्ग भवन, ए-ब्लॉक, प्रथम एवं द्वितीय तल, तिममय्या रोड, 7-डी मैन, शिवनगर, बेंगलूरु - ५६० ०७९.

Regional Directorate (South) : " Nisarga Bhawan ", A-Block, 1st & 2nd Floors, Thimmaiah Road, 7th D - Main, Shivanagar, Bengaluru - 560 079.

दूरभाष / Telephone : 080-23233739, 23233827, 23233996, 23233600, 23232559, 23226002, 23222539, Fax : 080-23234059

ई-मेल / E-mail : cpbcszo@yahoo.com, zobangalore.cpcb@nic.in

प्रधान कार्यालय : परिवेश भवन, पूर्वी अर्जुन नगर, दिल्ली- ११० ०३२.

Head Office : Parivesh Bhawan, East Arjun Nagar, Delhi - 110 032.

दूरभाष / Telephone : 011-43102030, Fax : 22305793, 22307078, 22307079, 22301932, 22304948

ई-मेल / E-mail : cpcb@nic.in वेबसाइट / Website : www.cpcb.nic.in

The joint committee already had two sittings and discussed in detail on how to plan and execute the expert study. Joint committee has already asked for several first order information/ data like location map, mine plan, mine lease area map, approved blast protocols, etc. and without the cooperation of the Department of Mining and Geology it is difficult to garner the requisite information sought by the joint committee.

However, it is learnt that nomination of a representative from the Department of Mining and Geology is long pending and KS PCB is facing issues in collecting relevant information/ data from the department. Joint Committee need to submit a status report before the next hearing date (11-05-2022).

In this scenario, it is requested to kindly intervene in the matter and direct the Director, Department of Mining and Geology to extend necessary cooperation by nominating a representative from the department in the facilitation committee and to provide all the requisite information to the joint committee on priority.

Since this is a matter under consideration of NGT, top priority may please be given for resolving the issues.

Yours faithfully

S. Suresh
28/4/2022
(S. Suresh)

Regional Director
9480672128

cpcbsuresh@gmail.com

Copy to:

1. The Director, Directorate of Mining and Geology, Kerala.
2. The DH, Legal section, CPCB, Delhi.
3. The MS, KSPCB, HO, Thiruvananthapuram.
4. The EE, KSPCB, DO, Palakkad.
5. Joint Committee members

S. SURESH
REGIONAL DIRECTOR
CENTRAL POLLUTION CONTROL BOARD
REGIONAL DIRECTORATE (SOUTH)
MIN. OF ENV, FORESTS & CC, GOVT. OF INDIA
BENGALURU - 560 079. MOB : 9480672128



Photographs of Site visit to stone quarry made on 06.05.2022 by the Joint Committee constituted by Hon'ble NGT.



Stone Quarry at Parikanni, Ernakulam



Blasting Site preparations at Stone Quarry Site at Varapatty, Ernakulam

MEETING MINUTES (20-06-2022)

Meeting title	<i>Meeting of the Joint Committee constituted as per the directions of Honourable National Green Tribunal (NGT), Principal Bench, Delhi's order dated 09-12-2021 in the matter of OA No. 304/2019.</i>
Sequence	Meeting # 03
Date	20 th June, 2022
Time	15.30 to 16.30 hrs. IST
Platform/ Venue	Online meeting via 'Google Meet'
Meeting link (online)	meet.google.com/xsc-rkee-dju
Meeting facilitator	CPCB, Regional Directorate, Bengaluru, Karnataka.
List of attendees/ absentees	See ANNEXURE

1.0 Introduction

Honourable NGT in the matter of OA 304/ 2019, directed (order dated 21-07-2020) to maintain longer distances for siting stone quarries in the light of a report submitted by Central Pollution Control Board (CPCB) following precautionary principle considering the right of the inhabitants, who are affected by air and noise pollution generated in the course of mining. Subsequent, to the above NGT order, the aggrieved mining lessees (project proponents) filed appeals (MA Nos. 80, 83, 85, 88 to 95 of 2021) in the OA 304/2019. All the MAs sought impleadment in the matter with specific prayer of not to interfere with the distance laid down by the mining department and Kerala State Pollution Control Board (KSPCB). After examining the project proponents' contentions in detail, Honourable NGT directed for an expert study by a joint committee on the subject of safe distance for mining from habitations. Specific directions were given to study the impact of blasting using NONEL detonator technology in stone quarries. The study includes impacts on vibrations on different soil strata/ earth profile, on noise levels, on air pollution levels, on buildings, humans and wildlife. Accordingly, the joint committee was constituted and had online committee meetings on 14-03-2022 and 28-03-2022. The joint committee also carried out field visits to three stone quarries operating in Ernakulam District on 06-05-2022. Shri. M N Krishnan, the coordinator- KSPCB, made a request to permit the members of the State level facilitation committee to attend the joint committee meeting.

2.0 Opening remarks

Shri J Chandra Babu, Regional Director (RD), CPCB, Bengaluru extended a warm welcome to all the committee members, special invitee, other members from the facilitation committee and officials from KSPCB. As suggested by the RD, Shri. Nazimuddin, Scientist E/ Divisional Head, IPC-II, CPCB, Delhi delivered the introductory remark especially on the inception of the *Suo Motu* application and the legal background of the matter. As suggested by the RD, Dr. Deepesh V, Member Convener, briefed about the directions of the honourable NGT order dated 09-12-2022, summarized the actions taken so far by the joint committee and the progress made in planning the expert study as directed by the honourable NGT on the subject of safe distance for mining in stone quarries from habitations. The delay in getting requisite data/ information to aid the joint committee in deciding on representative study locations in Kerala was also highlighted by member convener. Shri. J Chandra Babu, RD, enquired about the delay in getting the required information from the concerned Depts. and opined that the delay is affecting the activities of the joint committee and the overall progress in undertaking the expert study as envisaged in the NGT order. Shri. M N Krishnan, coordinator-KSPCB informed that KML files of stone quarry location were already prepared by KSPCB and shared with the committee members and as per the facilitation committee meeting held on 16-06-2022, obtaining approved mine plan/ blast protocol from the hard copies available in the dept. of mining and geology, Kerala is underway.

3.0 Discussions & action points

In response to the opening note/ briefing, Shri. J Chandra Babu, RD, opined that there is delay in the planning and implementation of the expert study due to lack of details for the scientific selection of study locations. Member convener pointed out the important deliberation during the field visit of the joint committee in the month of May, 2022 to entrust the vibration assessment studies to an expert institution like CSIR-CIMFR and RD invited Dr. Siddharth Singh, committee member to throw light on the possibility of such proposal. In reply, the committee member from CSIR-CIMFR confirmed that such studies can be undertaken by CIMFR and the only constraint is the time to carry out such studies in all stone quarries in Kerala, which may take more than a year to complete. The member convener clarified that the assessment needs to be carried out in 6-8 representative stone quarries and not in all the operational quarries and in reply it was confirmed that such assessment can be done in a months' time. At this juncture, Dr. D P Kanungo, committee member, reiterated that the assessment needs to be done in selected 9 quarries based on their scale of operation and

geological profile in the three distinct zones (northern, central and southern) of Kerala. Shri. J Chandra Babu, RD, requested the concerned committee member to share the time schedule for such assessments. Shri. Nazimuddin, Scientist E, CPCB, Delhi, summarized that based on the geological zoning, representative locations can be selected for the expert studies. Dr. R J Perumal, Committee Member pointed out that, so far KML files of stone quarry locations on Google Earth were provided by KSPCB and it lacks several required attributes like the magnitude, area, scale of operations and other relevant attributes like the local geological profile. Dr. B S Choudhary, committee member, supported this view and opined that the requisite information including mining plans are yet to be tabled before the committee. Dr. B S Choudhary opined that the surface plan/ mine plan of the quarries has to be obtained for trial blast studies and further added that with the details available in the mine plan/ surface plan it is possible to plan studies to assess the vibration on the nearby structures due to blasting. The committee members in unison opined that the tectonic/ geological map of Kerala has to be obtained from the Geological Survey of India (GSI) or any other line departments of the State of Kerala. State of Kerala being the facilitator for the expert study shall arrange for the geological map and proper KML files shall be provided for locating representative stone quarries for the expert study. In general, all the committee members expressed that there was a considerable delay from the part of Kerala in providing the requisite first order data/ information on stone quarries.

Shri. J Chandra Babu, RD, called up the concerned representative of the dept. of mining and geology to explain the delay from their part in providing the first order data/ information regarding stone quarries in Kerala. In reply Shri. Vinod M V, District Geologist replied that soft copies of the approved mine plans are not available and it has to be obtained by scanning the hard copies available in the Dept. He further added that the geological/ tectonic map of Kerala is not available with their Dept. and he informed that he will raise this issue in their internal meeting. Shri. J Chandra Babu, RD, reminded that without the cooperation of the mining & geology dept., Kerala, this committee cannot proceed further and it was requested to provide the required data/ information by 25-06-2022. Dr. D P Kanungo, added that the geological/ tectonic map of Kerala needs to be provided to the committee with location of stone quarries in the form of a proper KML file and the next meeting shall be on 28-06-2022 to review the progress after one week. Dr. R J Perumal, drew the attention of the members on getting the annual returns filed by the quarries to different depts. regarding the quantity and

type of explosives used. He reiterated that the requirements were discussed in previous meetings and passed on to the nodal officer, KSPCB for further actions.

Shri. Venugopal Swamy Kadem, committee member, elaborated on the possible scope of the vibration assessment and blasting trials to be done in the expert study. He explained that the stone quarries adopt different blasting procedures and the suitability of blasting protocol has to be brought into the ambit of the expert study. He also conveyed that, IISM and CIMFR, Dhanbad together can take up the vibration/ blasting assessments in all districts. He also suggested preparing joint committee report simultaneously with other activities after framing bar/ pert charts for the joint committee activities. Later in the discussions, member convener drew the attention of the committee members on the NGT directions to assess the effect of NONEL blasting and whether the study shall be made making blasting protocol uniform in all quarries. In reply Shri. Venugopal Swamy Kadem replied that NONEL is the blast initiation method and the blasting method could be short or deep hole detonation. In his view, both short/ deep hole blasting with NONEL initiator needs to be assessed in the expert study. Dr. Sajeev T V, member of the facilitation committee also asked the pertinent question of whether this expert study is evaluating different blasting procedures and based on the study outcome whether the committee would recommend safe blasting protocol for the stone quarries. Shri. J Chandra Babu, RD, requested the committee members to share their views on this aspect to the joint committee/ CPCB.

Shri. Venugopal Swamy Kadem also pointed out the earlier decision to hear the stakeholders before the expert study. Dr. D P Kanungo, added that a database of petitions/ grievances may be prepared and maintained in a spreadsheet apart from having physical hearing. Dr. Deepesh, member convener informed that an online survey in english and vernacular language can be planned for documenting public opinion and complaints. Other committee members also supported the view that hearing can be done through online survey and physical sitting at selected locations. Dr. Sajeev T V, member of the facilitation committee reminded that many of the general public may not be computer savvy, hence physical sitting is must when it comes to hearing of stakeholders. Shri. J Chandra Babu, RD, informed that KSPCB shall coordinate the physical hearing to be conducted in three regions and KSPCB to give wide publicity for such hearings.

Shri. J Chandra Babu, RD, again asked the representative of mining & geology dept., Kerala to commit a date for providing the desired information and in reply Shri. Vinod M V, enquired whether the mine plan of all operation quarries need to be given. Dr. R J Perumal, clarified that details of all quarries are not required and the details have to be given with largest operational quarries as effect of noise, dust and vibration can be determined as threshold levels. It was explained that based on the scale of operation, mine plans, annual returns and other details to be provided for largest mines. It was suggested to provide the information as thematic maps with geological map as base layer and other themes like magnitude, location, detonation type, etc., making different thematic layers on the base map. It was requested that the Dept. of mining & geology to submit the information within a week's time and the representative of mining & geology, Kerala committed to provide the desired information to the joint committee.

Dr. D P Kanungo, highlighted the need to review other requirements of the expert study, that is the assessment of noise and air pollutants as directed in the honourable NGT order. Shri. J Chandra Babu, RD, assured that the noise and air pollution part can be done by the KSPCB and assistance if any required shall be extended from CPCB. It was reassured that KSPCB and CPCB shall take care of the assessment of noise and dust pollution. It was also reminded that KSPCB needs to initiate communication to invite proposals from CIMFR for the vibration assessment / blasting trials.

Dr. Sajeev, from the Kerala Forest Research Institute (KFRI), Kerala, member of the facilitation committee agreed to share all the relevant information available with him from his previous studies related to stone quarries in Kerala. He agreed to route all details through the KSPCB coordinator to the committee members.

4.0 Closing remarks

Shri. Nazimuddin, Scientist E, CPCB, Delhi, suggested making a brief note on the progress made so far and the plan of the expert study which could serve as a brief interim status report in this matter. Shri. J Chandra Babu, RD, entrusted Dr. Deepesh V, member convener to prepare an interim report and circulate to all committee members for concurrence.

Upon detailed deliberations, the committee decided that the requisite first order data/information shall be provided by the Dept. of Mining & Geology, Kerala on priority within a week's time and KSPCB to follow up. Dr. R J Perumal, listed out the requirements as:

<i>No.</i>	<i>Requirements</i>	<i>Action by</i>	<i>Deadline</i>
1	Geological map overlapping with all mine locations in the form of thematic maps as shapefile or KML file.	Dept. of Mining & Geology, Kerala.	28-06-22
2	Mine locations with attributes like size, scale of operations and area of afforestation in the case of large quarries.		
3	Details of detonator used for large, medium and small quarries with the short/ deep hole blasting.		
4	Mine plan including approved blasting protocol/ practices of largest operating quarries in each district.		
5	Latest annual returns on explosives filed by the largest operating quarries in each district.		

Desired information shall be provided by the Mining & Geology, Dept., Kerala. KSPCB coordinator to follow up with the line department to provide the data/ information sought by the joint committee before the next sitting. Next committee meeting tentatively fixed on 28-06-2022 for reviewing the progress on obtaining data/ information from Mining & Geology, Dept., Kerala.

The Regional Director thanked all the joint committee members, the special invitee, members of the facilitation committee and the officials from KSPCB. It was decided to convene next meeting on 28th June, 2022 and the meeting concluded by 16.30 hrs.

Prepared by	Dr. Deepesh V, Member Convener
Date/ Version	22 nd June, 2022, Version 1.1
Approved by the joint committee members.	<ol style="list-style-type: none"> 1. Dr. D P Kanungo, Committee Member 2. Dr. Siddharth Singh, Committee Member 3. Dr. B S Choudhary, Committee Member 4. Dr. R J Perumal, Committee Member 5. Shri. Venugopal Swamy Kadem, Committee Member 6. Prof. Manish Shrikhande, Committee Member 7. Dr. Deepesh V, Committee Member/ Convener 8. Shri. M N Krishnan, Special Invitee

Date: 22-06-2022

(Dr. Deepesh V)
Member Convener

ANNEXURE

Attendees/ Participants list	
<i>Joint Committee Members</i>	
1	Prof. Manish Shrikhande, Professor, Dept. of Earthquake Engineering, IIT, Roorkee.
2	Dr. D P Kanungo, Chief Scientist, CSIR-CBRI, Roorkee.
3	Dr. B S Choudhary, Associate Professor, Dept. of Mining Engineering, IIT (ISM), Dhanbad.
4	Dr. Siddharth Singh, Sr. Principal Scientist, CSIR-CIMFR, Barwa Road, Dhanbad.
5	Dr. R J Perumal, Scientist F, Wadia Institute of Himalayan Geology, Dehradun.
6	Shri. Venugopal Swamy Kadem, Dy. Director (Mining), Directorate General of Mine Safety (DGMS), Bangalore Region, Bengaluru, Karnataka..
7	Dr. Deepesh V, Scientist C, Central Pollution Control Board, Regional Directorate, Bengaluru, Karnataka. (<i>Member convener</i>)
8	Shri. Krishnan M N, Environmental Engineer, Kerala State Pollution Control Board (KSPCB), District Office, Palakkad, Kerala. (<i>Special invitee/ Coordinator-KSPCB</i>)
<i>Central Pollution Control Board officials</i>	
9	Shri. Nazimuddin, Scientist E/ Div. Head, IPC-II, Central Pollution Control Board, Delhi.
10	Shri. J Chandra Babu, Regional Director, Central Pollution Control Board, Regional Directorate, Bengaluru, Karnataka.
11	Shri. Gaurav Gehlot, Scientist C, IPC-II, Central Pollution Control Board, Delhi.
<i>Members of State level facilitation committee</i>	
12	Shri. Vinod M V, District Geologist, Palakkad, Dept. of Mining & Geology, Kerala.
13	Dr. Sajeev T V, Sr. Scientist, Kerala Forest Research Institute (KFRI), Kerala.
14	Representative from District Industries Center, Palakkad, Industries Dept., Kerala.
15	Shri. Eby Varghese, Environmental Engineer, KSPCB, Thodupuzha, Idukki.
16	Shri. M. A. Shiju, Environmental Engineer, KSPCB, Kalpetta, Wayanad.
17	Smt. Pravithamol T. N, Asst. Environmental Engineer, KSPCB, Pathanamthitta.
Absent list	
1	Dr. Ritesh Kumar, Assistant Professor, Dept. of Earthquake Engineering, IIT, Roorkee.

MEETING MINUTES (28-06-2022)

Meeting title	<i>Meeting of the Joint Committee constituted as per the directions of Honourable National Green Tribunal (NGT), Principal Bench, Delhi's order dated 09-12-2021 in the matter of OA No. 304/2019.</i>
Sequence	Meeting # 04
Date	28 th June, 2022
Time	15.45 to 16.25 hrs. IST
Platform/ Venue	Online meeting via 'Google Meet'
Meeting link (online)	meet.google.com/jqm-jhvm-wdq
Meeting facilitator	CPCB, Regional Directorate, Bengaluru, Karnataka.
List of attendees/ absentees	See ANNEXURE

Honourable NGT in the matter of OA 304/ 2019, directed (order dated 21-07-2020) to maintain longer distances for siting stone quarries in the light of a report submitted by Central Pollution Control Board (CPCB) following precautionary principle considering the right of the inhabitants, who are affected by air and noise pollution generated in the course of mining. Subsequent, to the above NGT order, the aggrieved mining lessees (project proponents) filed appeals (MA Nos. 80, 83, 85, 88 to 95 of 2021) in the OA 304/2019. All the MAs sought impleadment in the matter with specific prayer of not to interfere with the distance laid down by the mining department and Kerala State Pollution Control Board (KSPCB). After examining the project proponents' contentions in detail, Honourable NGT directed for an expert study by a joint committee on the subject of safe distance for mining from habitations. Specific directions were given to study the impact of blasting using NONEL detonator technology in stone quarries. The study includes impacts on vibrations on different soil strata/ earth profile, on noise levels, on air pollution levels, on buildings, humans and wildlife. Accordingly, the joint committee was constituted and had online committee meetings on 14-03-2022, 28-03-2022, 20-06-2022 and 28-06-2022. The joint committee also carried out field visits to three stone quarries operating in Ernakulam District on 06-05-2022.

Shri J Chandra Babu, Regional Director (RD), CPCB, Bengaluru welcomed all the committee members, special invitee, other members from the facilitation committee and officials from KSPCB. Thereafter, he requested KSPCB and representative of Department of Mining &

Geology (DMG), Government of Kerala to apprise on the action taken in light of the decisions taken in the meeting held on 20.06.2022.

Meeting started with a briefing by M N Krishnan, KSPCB Coordinator, on the effort taken by KSPCB in getting the requisite data/ information from Dept. of Mining & Geology (DMG). Shri. M N Krishnan, elaborated the effort already taken by DMG in obtaining the digital geological map of Kerala from Geological Survey of India (GSI) office at Thiruvananthapuram and also from Kerala State IT mission, Thiruvananthapuram.

Shri. Vinod M V, member of facilitation committee and representative of DMG, Kerala informed that GSI has expressed their inability to share the digital geological map of Kerala and they have approached the Kerala State IT Mission for the same and committed that he shall get the digital map in two days. He also added that mine plans from few more districts are pending and shall be getting it in a few days.

In response to the information updated by KSPCB and DMG representatives, Shri. J Chandra Babu, RD, opined that it is disappointing that the DMG, Kerala is unable to provide the data/ information to the joint committee for the past six months. Committee members Dr. B S Choudhary, Dr. R J Perumal and Dr. Siddharth Singh also expressed their disappointment on the statement that the DMG Kerala is not having a digital geological map of Kerala in spite of the fact that they are the nodal department of all mining / quarrying activities in Kerala. Dr. Deepesh V, member convener requested Shri. Vinod M V to explain about the data available in the DMG website and about the “Kompass” portal hosted by DMG, Kerala. In reply, it was informed that the portal is used for issuing transit/ vehicle passes to convey/ transport the quarried materials and other details including district maps are already available in the website and digital maps requested by the joint committee are not available with the DMG. At this juncture, Dr. R J Perumal insisted that the inability of DMG, Kerala to provide data shall be noted and brought to the notice of Honourable NGT.

Shri J Chandra Babu, RD also reiterated that the lacuna from the part of DMG, Kerala to provide data shall be viewed seriously by the Honourable Tribunal. Representative of DMG, Kerala was asked to provide a letter on their inability/ limitations on providing the requisite data/ information to the committee so that it can be filed before the Honourable NGT prior to the next date of hearing.

Dr. B S Choudhary, briefly outlines the methodology of blasting trails/ vibration assessment and to explore alternative sources of obtaining data/ information vital for planning the study. Committee members also discussed whether the committee can limit the requirements so that the studies can be done without depending much on DMG. Meanwhile, Dr. R J Perumal presented and explained the map he created from the quarry location data already shared by KSPCB and requested Shri. M N Krishnan to give some more information like the scale of operation, area, etc.

Shri. M N Krishnan, informed that for issuing consent under Water and Air Acts, they rely on the mine plans available with the DMG and he assured that the Chairman and Member Secretary of KSPCB shall intervene in this matter to ensure that all relevant data is provided by the DMG.

Thereafter, Shri J Chandra Babu, RD, opined that the KSPCB coordinator shall personally visit the director, DMG to ensure cooperation and get all requisite information at the earliest. In case they fail to provide all the data/ information, it was decided to record the same in the interim report to be filed by the joint committee. Dr. Siddharth Singh, voiced his concern on how to get the information if the DMG is not having the data/ information and urged on considering alternative ways to get details by field visits/ surveys.

Joint committee decided to have another meeting to appraise the progress in garnering requisite information in the next meeting which is tentatively scheduled on 07-07-2022 at 3.30 PM IST sitting. Upon detailed deliberations, the committee decided that all requisite first order data/ information shall be provided by the Dept. of Mining & Geology, Kerala on priority within a week's time and KSPCB to follow up.

<i>No.</i>	<i>Requirements</i>	<i>Action by</i>	<i>Deadline</i>
1	Geological map overlapping with all mine locations in the form of thematic maps as shapefile or KML file.	Dept. of Mining & Geology, Kerala.	06-07-22
2	Mine locations with attributes like size, scale of operations and area of afforestation in the case of large quarries.		
3	Details of detonator used for large, medium and small quarries with the short/ deep hole blasting.		
4	Mine plan including approved blasting protocol/ practices of largest operating quarries in each district.		
5	Latest annual returns on explosives filed by the largest operating quarries in each district.		

Desired information shall be provided by the Mining & Geology, Dept., Kerala. KSPCB coordinator to follow up with DMG to obtain the remaining data/ information sought by the joint committee before the next sitting.

The meeting ended with a vote of thanks by the member convener to all the joint committee members and other officials who participated in the meeting.

The meeting concluded by 16.20 hrs.

Prepared by	Dr. Deepesh V, Member Convener
Date/ Version	3rd July, 2022, Version 1.1
Approved by the joint committee members.	<ol style="list-style-type: none"> 1. Dr. Siddharth Singh, Committee Member 2. Dr. B S Choudhary, Committee Member 3. Dr. R J Perumal, Committee Member 4. Prof. Manish Shrikhande, Committee Member 5. Dr. Deepesh V, Committee Member/ Convener 6. Shri. M N Krishnan, Special Invitee

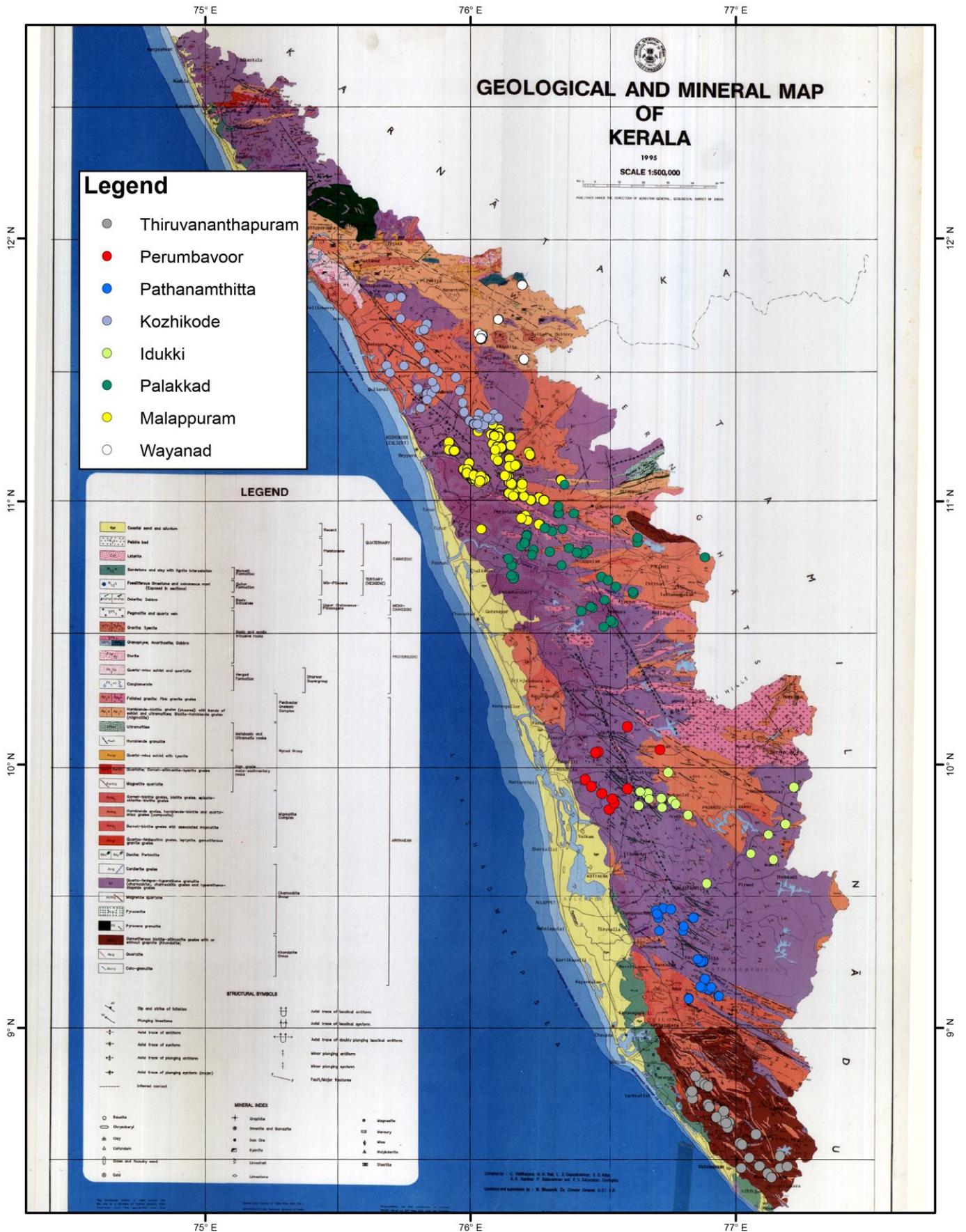
Date: 03-07-2022

(Dr. Deepesh V)
Member Convener

ANNEXURE

Attendees/ Participants list	
<i>Joint Committee Members</i>	
1	Prof. Manish Shrikhande, Professor, Dept. of Earthquake Engineering, IIT, Roorkee.
2	Dr. B S Choudhary, Associate Professor, Dept. of Mining Engineering, IIT (ISM), Dhanbad.
3	Dr. Siddharth Singh, Sr. Principal Scientist, CSIR-CIMFR, Barwa Road, Dhanbad.
4	Dr. R J Perumal, Scientist F, Wadia Institute of Himalayan Geology, Dehradun.
5	Dr. Deepesh V, Scientist C, Central Pollution Control Board, Regional Directorate, Bengaluru, Karnataka. (<i>Member convener</i>)
6	Shri. Krishnan M N, Environmental Engineer, Kerala State Pollution Control Board (KSPCB), District Office, Palakkad, Kerala. (<i>Special invitee/ Coordinator-KSPCB</i>)
<i>Central Pollution Control Board officials</i>	
7	Shri. J Chandra Babu, Regional Director, Central Pollution Control Board, Regional Directorate, Bengaluru, Karnataka.
<i>Members of State level facilitation committee</i>	
8	Shri. Vinod M V, District Geologist, Palakkad, Dept. of Mining & Geology, Kerala.
9	Smt. Pravithamol T. N, Asst. Environmental Engineer, KSPCB, Pathanamthitta.
Absent list	
1	Dr. Ritesh Kumar, Assistant Professor, Dept. of Earthquake Engineering, IIT, Roorkee.
2	Dr. D P Kanungo, Chief Scientist, CSIR-CBRI, Roorkee.
3	Shri. Venugopal Swamy Kadem, Dy. Director (Mining), Directorate General of Mine Safety (DGMS), Bangalore Region, Bengaluru, Karnataka..

GEOLOGICAL AND MINERAL MAP OF KERALA AND STONE QUARRY LOCATIONS





सीएसआईआर- केन्द्रीय खनन एवं ईंधन अनुसंधान संस्थान
CSIR-Central Institute of Mining and Fuel Research

ANNEXURE-XI



(वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद / Council of Scientific & Industrial Research)

(अंतर्गत वैज्ञानिक तथा औद्योगिक अनुसंधान विभाग, विज्ञान और प्रौद्योगिकी मंत्रालय, भारत सरकार)

(Under the Department of Scientific & Industrial Research, Ministry of Science & Technology, Govt. of India)

बरवा रोड, धनबाद - 826015, झारखण्ड, भारत / Barwa Road, Dhanbad - 826015, Jharkhand, India

(आई एस ओ 9001 प्रमाणित संस्थान / ISO 9001 Certified Institute)

Ref. CSIR-CIMFR/REE/KSPCB/20222

Date: June 29, 2022

To:

Sri Krishnan M. N.

Environmental Engineer & Nodal Officer

Kerala State Pollution Control Board (KSPCB)

District Office, Palakkad

Near District Panchayath Office, Palakkad-678 001

Kerala State

Subject: Scientific studies for the assessment of influence zones due to blasting at quarries in the State of Kerala as per the order of the Hon'ble NGT OA 304/2020

[Reference PCB/PLKD/TG-304/2019]

Dear Sir,

This has reference to your letter No. PCB/PLKD/TG-304/2019 dated 27.06.2022 to the Director, CSIR-Central Institute of Mining and Fuel Research (CSIR-CIMFR) regarding your query for the possible engagement of CSIR-CIMFR to carry out vibration studies in the quarries of Kerala State for the assessment of blasting influence zones. We express our willingness to take up the study and will carry out on priority basis.

To apprise you, the Rock Excavation Engineering Division (erstwhile Blasting Department) is having expertise and equipped with all modern instruments for the assessment of blasting impacts to the surrounding environments. We assure you that the study will be carried out as per your requirement and will deliver the best plausible solution.

Thanking you,

Yours faithfully,

 29.06.2022

(C. Sawmliana)

Sr. Principal Scientist & HoS

Rock Excavation Engineering Division

Phone No. 9471191134

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