

BEFORE THE NATIONAL GREEN TRIBUNAL PRINCIPAL

BENCH, NEW DELHI

Original Application No. ³⁰⁴ OF 2019

IN THE MATTER OF:

M. HARIDASAN .

... Petitioner

VS

THE STATE OF KERALA

.... Respondent

AFFIDAVIT ON BEHALF OF THE RESPONDENT

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Filed on:17/09/2025


[NISHE RAJEN SHONKER]

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STATE OF KERALA

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BEFORE THE NATIONAL GREEN TRIBUNAL PRINCIPAL BENCH

NEW DELHI

OA No. 304 OF 2019IN THE MATTER OF:

M. HARIDASAN

...

PETITIONER

VERSUS

THE STATE OF KERALA

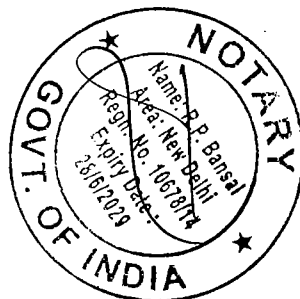
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RESPONDENT

AFFIDAVIT ON BEHALF OF THE RESPONDENTSTATE OF KERALA

I, Shanmuvathy Y, W/o Arun M, aged 44 years, Deputy Secretary, Government of Kerala, Law Wing, Travancore Palace, Kasturba Gandhi Marg, New Delhi, do hereby solemnly affirm and state as under:

That I am the Deputy Secretary to the Government of Kerala, the Respondent State and I am well conversant with the facts of the case as per the records available in my office and as such I am competent to swear this Affidavit.



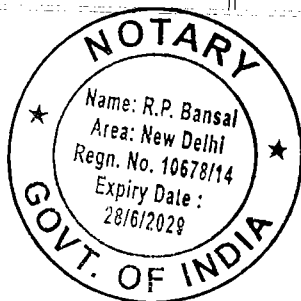
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1. New technology enables to fix the safe distance as 50m from the quarry Technology is being used for the extraction of Granite (building stone) rubbles now-a-days, is NONEL (from Non-Electric), which is a **non-electric shock tube initiation system** that uses a hollow plastic tube coated internally with a reactive powder to transmit a low-energy signal and reliably detonate explosives, providing a safer alternative to electric systems by being immune to stray electrical currents. The flexible plastic tube having 3mm outer diameter and 1.5mm inner diameter, inside of which is coated with an explosive composition. The system consists of detonators in the blast hole and surface connectors that control the firing sequence, making it suitable for a variety of applications, including mining, quarrying, and demolition. The study conducted by Gladius *et al.*, (2019) made certain remarks after using electrical method and NONEL method by recording various degrees of fragmentations, noise produced and vibration generated and made a conclusion that NONEL method is the safest way of carrying out blasting operation. The study has concluded that NONEL initiated blasts give very less ground vibration and NONEL initiation provides reasonably good solution to fly rock problem. Also Noise level has been reduced significantly by NONEL initiation system and the overall cost of blasting in NONEL is very less compared to electrical blasting and



hence it optimizes the cost of blasting. A comparison of both the devices is given below:

Feature	NONEL Blasting	Electric Blasting
Safety	Immune to common electrical hazards, such as stray currents, static electricity, and radio frequencies.	Susceptible to accidental detonation from external electrical sources, requiring extra precautions.
Delay Control	Blasts can be sequenced with very precise, programmed millisecond delays for optimal rock fragmentation.	Can also provide delays, but the system must be visually inspected and has a waiting period before the blast.
Set-up	Uses a system of connected plastic shock tubes. Simple clip connections reduce hook-up time.	Involves complex wiring of electric blasting caps, increasing the risk of broken wires in deep boreholes.
Environmental Effects	Significantly reduces ground vibration and noise compared to traditional detonating cord systems.	High-energy detonating cords on the surface can produce a loud airblast.
Initiation Point	Often initiates the explosion	May initiate from the top or



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	from the bottom of the explosive charge, which leads to more efficient blasting.	middle, which can sometimes result in inefficient detonation.
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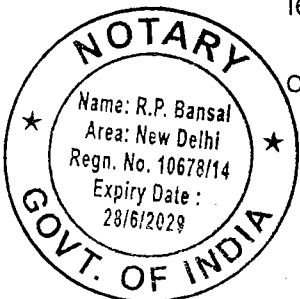
A copy of the said research paper is produced herewith and marked as **Annexure – 1**. It is most humbly submitted that due to its high efficiency and least pollution, the **State Environmental Impact Assessment Authority**, Kerala while issuing the environmental clearance (EC) for quarry project, **insists to use NONEL technology** for blasting the rock by making it as **one of the conditions in the EC**. Besides, the **Joint Committee** constituted under this Original Application conducted blasting experiments using NONEL technology.

2. Why insisting 50m as stipulation distance by the State of Kerala
 - a. **Legal:** At the outset of all, it is most humbly submitted the background scenario of this case. Section 15 of the Mines and Minerals (Development and Regulation) Act authorizes State government to formulate the Rules. The Kerala Minor Mineral Concession Rules, 2015 came into existence in supersession of the then prevailed Kerala Minor Mineral Concession Rules, 1967. The 2015 rules were framed in consideration of the sustainable mining



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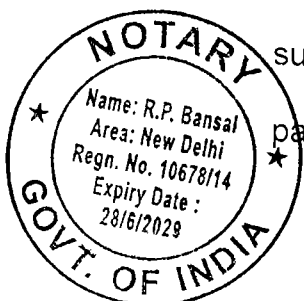
frame work suggested by the Hon'ble Supreme Court in Deepakkumar's case. Para 11 of the judgment emphasized that the Union Ministry of Mines along with Indian Bureau of Mines and respective State Governments should therefore make necessary provisions in this regard (sustainability) under the Mines and Minerals (Development and Regulation) Act, 1957, Mineral Concession Rules, 1960 and adopt model guidelines to be followed by all States. Accordingly there have been amendments in MM (D&R) Act, redrafting in Mineral Concession Rules and supersession in KMMCR. The Hon'ble Supreme Court arrived into a conclusion by interacting with the proceedings of the Ministry Mines, Indian Bureau of Mines and Ministry of Environment, Forest and Climate change. As stated above, there have been modifications in the Central Act and Rules. In 2016, the Government of India enacted Minerals (*Other than Atomic and Hydro Carbons Energy Minerals*) Concession Rules and Atomic Mineral Concession Rules. Even then the stipulations regarding distance criteria remained the same in the Central Rules. Rule 12 (1)(d) of the Minerals (*Other than Atomic and Hydro Carbons Energy Minerals*) Concession Rules and Rule 10 (1)(j) of the Atomic Mineral Concession Rules stipulate that " the lessee shall not carry on, or allow to be carried on, any mining operations at any point within a distance of **fifty metres** from any



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railway line, except under and in accordance with the written permission of the railway administration concerned, or under or beneath any ropeway or ropeway trestle or station, except under and in accordance with the written permission of the authority owning the ropeway, or from any reservoir, canal or other public works, or buildings, except under and in accordance with the prior permission of the State Government"

- b. **Scientific reasons:** The scientific observations are based on the report of the Joint Committee. While considering the Application OA 304 of 2019, the Hon'ble National Green Tribunal ordered to observe minimum distance of 200m from Residential/Public buildings, Inhabited sites, locations to be considered by States, if blasting is involved and to observe 100m, if blasting is not involved. Later, the Hon'ble Supreme Court while considering the Civil Appeal Nos. 12122 – 12123/2018, ordered 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." Accordingly the parties concerned including State of Kerala approached the Hon'ble



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Tribunal and after hearing the arguments raised by the parties concerned, the Hon'ble Tribunal vide Order Dated 09.12.2021 has constituted a Joint Committee composed of the experts from (1) Indian Institute of Mines/ Indian Institute of Technology (IIT), Dhanbad, (2) CSIR- Central Institute of Mining & Fuel Research (CIMFR), Dhanbad, (3) CSIR- Central Building Research Institute (CBRI), Roorkee, (4) Indian Institute of Technology (IIT), Roorkee, (5) Wadia Institute of Himalayan Geology, Dehradun, (6) Directorate General of Mine Safety and (7) Central Pollution Control Board (CPCB) and this joint committee was entrusted with the task of an expert study on the subject of safe distance for stone quarry from habitations.

It is most humbly submitted that the report of the Joint Committee (of Experts) has many misappropriations and lack of standard scientific methodology, which reflected in the result of these experiments. It is humbly submitted that unreasonable result might lead to an illogical interpretation. The report of the Joint Committee is composed of two parts. (1) the first part, which deals with physical hearing and online survey and (2) the second part consisted of the result of the experiments undertaken. The interpretation of the observation made under the first part – physical hearing and online survey – clearly

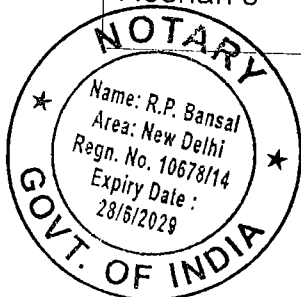


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indicates that there is no need to impose more stringent regulations including the extension of existing distance criteria. The online survey clearly indicates that out of the 6734 responses received by the Joint Committee 65.3% are living near to the stone quarries and 74.7% have no grievances related to stone quarry.

It is most humbly submitted that the second part – the Result of the live experiments conducted by the Joint Committee has many anomalies which reflects lacking of proper methodology as well as design. There were 497 granite (building stone) quarries functioning in Kerala during the year 2022 – 2023. The sample set was composed of only 9 quarries (1.8%) to interpret the whole scenario. Standard sampling with an acceptable margin of error of $\pm 20\%$ requires a minimum of 23 samples to represent the data set of 497 quarries. While going through the report, the following observations are made about the selected quarries (Page 25).

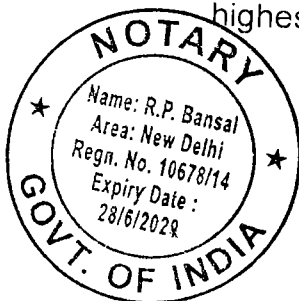
Quarry	District	Rock type	Topography*
POABS Granites	Trivandrum	Garnet – Biotite Gneiss	Midland
Muhammed Roshan's	Kollam	Charnockite	Midland



quarry			
Adukadu Granites	Pathanamthitta	Charnockite	Highland
Cochin Blue Metal	Kottayam	Charnockite	Midland
United Granites and Metals	Idukki	Hornblende Gneiss	Midland
Parakkal Granites	Ernakulam	Hornblende Gneiss	Midland
Penta Granites	Palakkad	Charnockite	High Midland
Profile Sand	Wayanad	Hornblende Gneiss	High Land
National Granites	Kasargod	Garnet – sillimanite Kyanite gneiss	Highland

*Derived by the Department of Mining and Geology from the list of Joint Committee

Besides, the reason for site selection was not given. Districts with highest number of working quarries are omitted. They are



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Malappuram (130 quarries), Kozhikkode (69 quarries), Kannur (54 quarries) and Thrissur (25 quarries).

There is no mention whether the rock strata is massif or jointed. And there is no observation regarding the propagation of waves through massif Charnockite and fractured Charnockite. And it is failed to interpret whether there is any propagation distinction exists among different grade of Metamorphic rocks due to lack of sampling. Besides, the records attached to the report pertaining to the nature and timing of blasting conducted in quarries (Eg. Page No. 1037 with respect to M/s. Parackal Granites) show that the blasting is carried out every day in 2 prefixed timings with maximum 60 holes. It is rarely that quarry in Kerala functions with blasting of 60 holes at a time. The Committee has erroneously created a circumstance to project maximum ground vibration in each case, which is unfair and unjust.

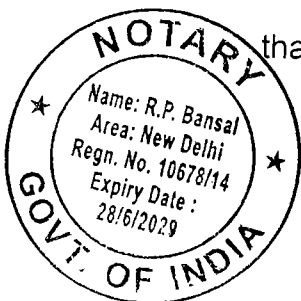
It is humbly submitted that regarding the suggestions and recommendation of the Joint Committee (Page No. 41, Item 8.0.: Suggestions and Recommendation) with respect to blasting experiment that as per the assessment study, the influence zone of ground vibration is 50-100 m from the blasting zone and the fly rock



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ejections were noticed in two instances and it were less than 25 m from the blast zone. The result which obtained when the blasting is carried out every day in 2 prefixed timings with maximum 60 holes. Hence the result is not the outcome of normal practice of blasting. It is most humbly requested to refer Table 5 of the Page 33 of the Report. It has been reported that the maximum value of Peak Particle Velocity (PPV) recorded at a Distance of 50m from the blasting face is 8.21mm/s (Trivandrum District), which is below the permissible level of 10mm/s as stipulated by the DGMS. Hence there is no reason to enhance the distance limit from 50m.

It is most humbly submitted that the result of the propagation of suspended particulate matter (SPM) and respiratory particulate matter (RPM) (in report it is mentioned as Particulate Matter) has no unique interpretation. Sampling/ monitoring of particulates (PM 10 & 2.5) was planned at 50, 100, 200 and 500 m distances in three directions from the blasting zone. There are huge misappropriations in result. In some cases, the result shows the level of particulate matter is higher during non-blasting days rather than the blasting days (Page 994, 1011, 1026, 1043, 1057 etc). Similarly concentration of particulate matter is higher at far away locations than the locations nearby to blasting face ((Page 994, 1011, 1026,

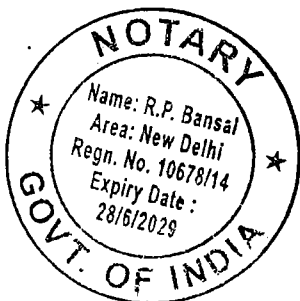


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1043 etc). No specific reason is pointed out by the Joint Committee for this anomaly. Rather they have suggested to have enhanced distance criteria, which is illogical and unjustifiable.

Aspects missed in the report

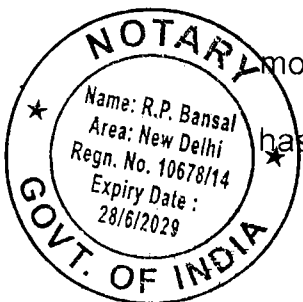
Only criterion used is dividing the State into 3 zones with 3 quarries in each zone. No geographical attributes is given, whether located in midland, highland or high ranges of Western Ghats. It is for analyzing whether the quarrying is progressing below the regional ground or opened with hilly flanks. In most of the cases, the quarries located in midland region develop downwards by forming benches, while the quarries of highland or high ranges develop along the flanks. The propagation of explosive waves and dispersion of pollutants have different pattern in above two cases. The lithology of the quarries selected clearly shows (Figure 2, Page No. 16) that 4 quarries are with Charnockite of Granulite facies of metamorphism (high grade metamorphic conditions) and 5 are with Gneissic rocks representing Amphibolite facies of metamorphism (medium to high grade metamorphic conditions). All 9 sites have metamorphic rocks and the metamorphic rocks are formed when existing rocks are transformed by intense heat, pressure, or chemical fluids and this process, called metamorphism, involves physical and chemical changes, such as the



rearrangement or formation of new minerals. Prominent metamorphic rock types of southern Kerala like Khondalite and Leptynite are omitted. From the above it is vivid that the representation of the sampling locations did not justify the whole scenario of Kerala.

Why specific gravity and presence of fractures/joints are important

It is most respectfully submitted that the consumption of energy and propagation of explosive waves differs significantly from rock to rock, largely due to differences in specific gravity and other physical properties like fractures and joints. Specific gravity, a measure of relative density, is a key component of a rock's acoustic impedance, which controls how effectively a blast's energy is transferred and how quickly the resulting waves attenuate. Specific gravity (density) directly influences a rock's acoustic impedance, which is the product of the rock's density and its seismic velocity. Seismic waves travel faster through denser, more competent (hard) rocks than through less dense, softer ones. A dense rock has high acoustic impedance, which leads to a more efficient transfer of explosive energy. The explosive wave travels faster and further before dissipating, causing a wider, more extensive fracture zone. On the other hand a less dense rock has lower acoustic impedance. The explosive energy is not



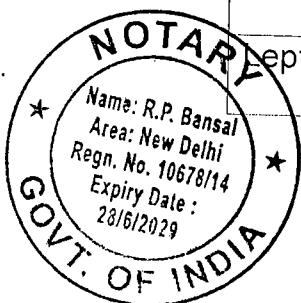
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transmitted as efficiently, and the wave loses amplitude and energy more quickly. This results in a smaller crushed zone.

Specific gravity also affects how explosive energy is consumed during blasting. In higher specific gravity rocks, the explosive wave has a high-intensity, short-duration pulse, which is initially used to crush the rock in the immediate vicinity of the blast hole. The high compressive strength of hard, dense rock keeps this crushed zone relatively small. In softer, lower-density rock, the wave attenuates more rapidly.

Similarly, the discontinuities like joints and fractures act as barriers and conduits for explosive energy. They cause the wave to reflect and refract, dissipating energy and leading to more complex crack patterns than in intact (hard) rock. A rock with more fractures will dissipate energy faster. Besides, pores and other voids scatter and dissipate wave energy. Saturated rocks can have better energy transmission than dry, porous rocks because the presence of water improves the "coupling" between rock particles, though the effect can vary based on rock type. The Major rock types of Kerala are listed below

Rock Type	Origin	Sp. Gravity
Khondalite	Metamorphic	2.5
Leptynite	Metamorphic	2.7



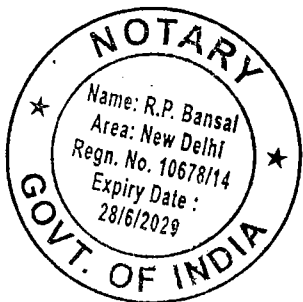
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Charnockite	Metamorphic	2.7
Garnet – Biotite gneiss	Metamorphic	2.9
Hornblende Biotite gneiss	Metamorphic	2.9
Ambhibolite	Metamorphic	2.8

It is most respectfully submitted that the disagreement of the State is regarding the vibration study conducted by the Joint Committee. There is no structural interpretation of the quarries kept for vibration studies.

Observation on the Report

It is most respectfully submitted that the report of the Joint Committee has flaws in many aspects. There are extrapolations in different aspects to draw a conclusion that there is necessity to enhance the safe distance of quarrying. But the results are self explanatory to remind us that there is no need to enhance the present distance stipulation of quarrying. It is evident from the report that there are two sets of impacts, either by Peak Particle Velocity or by Particulate Matter. In the first case, here is possibility of reduce the PPV by reducing the quantity of explosives used for blasting and also by reducing number of holes. In the second case, there are well

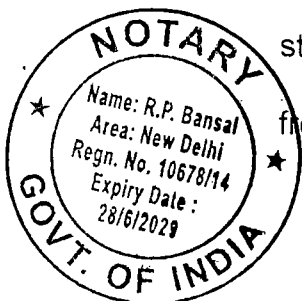


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advanced modern equipments to reduce the level of pollutants. The report never attempted to find a possible solution to reduce the level of pollutants and vibration. Hence it is prayed that the report of the joint committee may be rejected and regulatory distance from the quarrying/ mining area may kindly be restored as 50m.

Social aspects

Kerala is sole state in India, which has successfully enacted land reforms stipulations under the Kerala Land Reforms Act, 1963. Section 82(1)(b) of the Kerala Land Reforms Act, 1963, specifies the land ceiling that enables a family of two to five members to hold between twelve and fifteen acres. Family of 2–5 members is entitled to hold 10 standard acres, with a maximum limit of 15 acres. Adult unmarried person or family with one member can hold the maximum land of 7.5 acres. Family of more than 5 members can hold 10 standard acres, plus one standard acre for each additional member, with a maximum limit of 20 acres. Companies and organizations can hold up to 15 acres, but may be granted exemptions for industrial or other public-interest purposes under Section 81(3). Hence due to distribution of land, landless individual has been decreased, but the maximum holding limited to 15 Acres when compared with other states of India. Under such circumstances, if stipulation is raised from 50m, the following will be minimum requirement of land for a



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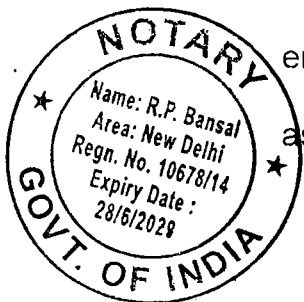
person applying for permission (here for the convenience the shape of the applied area is taken as rectangular)

Applied Area	Minimum area (in Acres) required to run the quarry, if the distance clearance under			
	50m	100m	150m	200m
2.47 Acres (1 Hectare)	9.88	19.77	39.54	61.78
12.35 Acres (5 Hectare)	25.95	44.48	66.72	96.37

It is evident from the above table that if the distance criteria is increased, the area suitable for mining in Kerala may be reduced substantially, which warrants imminent shortage of construction material.

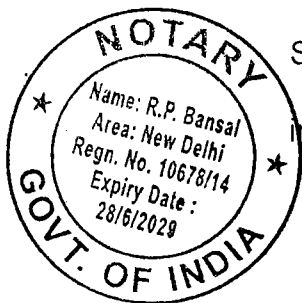
Western Ghats Ecologically Sensitive Area (ESA):

The Ministry of Environment, Forest and Climate change constituted a High-Level Working Group to study the ecology, environmental integrity and holistic development of the Western Ghats, given their rich and unique biodiversity. The group was tasked with taking a comprehensive view of the issues involved, aiming to harmonize environmental and biodiversity protection with the needs and aspirations of local and indigenous people. Additionally, the High



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Level Working Group was to focus on sustainable development and the environmental integrity of the region, suggesting steps and a way forward to prevent further degradation of the fragile ecology of the Western Ghats. The High Level Working Group had since submitted its report to the Ministry on 15th April, 2013 which was kept in the public domain seeking comments or views of concerned stakeholders and was also sent to the concerned six State Governments of the Western Ghats region namely, Gujarat, Maharashtra, Goa, Karnataka, Kerala and Tamil Nadu for their considered comments or views on the report. The High Level Working Group has identified approximately thirty-seven percent of the Western Ghats as ecologically sensitive which covers an area of 59,940 square kilometre of natural landscape of Western Ghats and represents a continuous band of natural vegetation extending over a horizontal distance of 1,500 kilometre and is spread across six states of Western Ghats region namely, Gujarat, Maharashtra, Goa, Karnataka, Kerala and Tamil Nadu and includes Protected Areas and World Heritage Sites of Western Ghats and the High Level Working Group has recommended prohibition or regulation of identified projects and activities in the Western Ghats Ecologically Sensitive Areas which have maximum interventionist and destructive impacts on ecosystems.



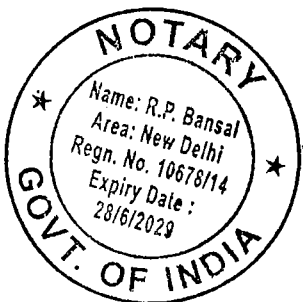
The Ministry vide O.M No. 1-4/2012 – RE (Pt.), dated the 20th December 2013, had *inter-alia* sought suggestions from the State Governments on modifications in the boundary of the Ecologically Sensitive Area as identified by the High Level Working Group on the basis of physical verification. The State **Government of Kerala had earlier undertaken the exercise of demarcating Ecologically Sensitive Areas in the state by physical verification. The Ecologically Sensitive Area recommended by the Kerala State Government is spread over an area of 9,993.7 square kilometers, which includes 9,107 square kilometers of forest area and 886.7 square kilometers of non-forest area, and thus the Ecologically Sensitive Area in the Kerala State is 9,993.7 square kilometers, compared to the 13,108 square kilometers recommended by the High-Level Working Group.** Earlier the Ministry issued a draft notification vide S. O. No. 733 (E), dated the 10th March 2014, declaring Ecologically Sensitive Area in the Western Ghats taking into account the Ecologically Sensitive Area demarcated by Kerala Government for the State of Kerala instead of Ecologically Sensitive Area recommended by High Level Working Group for the State, while for other States of Western Ghats region the Ecologically sensitive Area recommended by the High Level Working Group was considered. Since then, many draft notifications



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were come out and the last draft notification of the Western Ghats Ecologically Sensitive Areas has come out on 31.07.2024 vide Notification No. S.O. 3060(E), in which **the Eco-sensitive Area in the State of Kerala covers an area of 9,993.7 square kilometer**, including 9,107 square kilometers of forest area and 886.7 square kilometers of non-forest area. In the said draft notification it is addressed that the detailed village-wise boundary descriptions of the Eco-sensitive Area, along with its cadastral map proposed by the State Government are available on the website of the Kerala State Biodiversity Board. It is also described in the draft notification that **there shall be a complete ban on mining, quarrying and sand mining in Ecologically Sensitive Area and all existing mines shall be phased out within five years from the date of issue of the final notification or on the expiry of the existing mining lease, and whichever is earlier.** Currently the Department of Mining and Geology does not consider the application for mineral concession, if the applied area is reported as part of the ESA by Revenue/ LSG Departments. A true copy of the Draft Notification dated 31.07.2024 of the MoEF & CC is produced herewith and marked as Annexure – 2.

Besides, Kerala is a land having the population density of 860/km², which is very high above the national average of 492/km². Besides,



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State has 29.66% of the area under the land use classification category 'Forest' (11,522 km² out of the 38,863 km²). Apart from that there are 18 wildlife sanctuaries and 6 National Parks in Kerala. More than that the Geological and Geographical constraints like susceptibility to disaster like landslides are to be taken into consideration before granting permission for quarrying. Besides, the State is having a North to South orientation and hence having a costal stretch of 590km embedded with lagoons and lakes inviting Costal Zone Regulations. When take a traverse, the State is endowed with 44 Rivers, in which 3 flowing towards east. Rivers and its tributaries again compel to leave a distance clearance of 50m as per the Kerala Minor Mineral Concession Rules, 2015. From the above data, the land capable of keeping under mining is very less when compared to other states.

3. It is most humbly submitted that the following is the status of both Granite and Laterite Building stone quarries of Kerala

	Working	Pending Applications	
		Under Processing	LOI Issued
Quarrying Lease	436	882	351
Quarrying Permit	353	1274	633



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Total	789	2156	984
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4. It is humbly submitted that the applicants who have filed for fresh lease/ renewal are not party to the Hon'ble Tribunal, so any order will be prejudicial to them. In this connection it is humbly placed on record that the State is ready to argue the matter on merits and therefore there is no requirement to consider an interim prayer at this stage. Besides, so far none of the parties including the Amicus had asked for any interim relief.

Shanmuvathy Y.
DEPONENT

SHANMUVATHY Y.
Deputy Secretary to Government
Govt. of Kerala (PEN-644377)
Law Wing, O/o the Resident Commissioner,
Travancore Palace, K.G. Marg,
New Delhi-110001

VERIFICATION

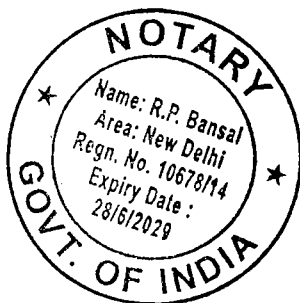
I, the above-named deponent do hereby verify that the contents of this affidavit from paras 1 to 4 are true and correct to the best of my knowledge

and belief and nothing material has been concealed therein. Verified on this

17th day of September, 2025 at New Delhi.

N.R. Shanker
ADV

IDENTIFIED BY



ATTESTED
NOTARY PUBLIC
DELHI
17 SEP 2025

Shanmuvathy Y.
DEPONENT

SHANMUVATHY Y.
Deputy Secretary to Government
Govt. of Kerala (PEN-644377)
Law Wing, O/o the Resident Commissioner,
Travancore Palace, K.G. Marg,
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