M/s.Morayoor Granites Pvt Ltd

Ummerkutty.K, Director

Mucheth House, Elambra,Nellikuzhy, Ernakulam-686691

Contact: +91-8089085335 Email: morayoorec01@gmail.com

To

The Director- IA. II (M),

(Non-Coal Mining Sector)

Ministry OF Environment, Forest & Climate Change

Indira Paryavaran Bhawan,

Jorbagh, New Delhi- 110003

Ref: 1.MoEF&CC File No: IA-J-11015/82/2021-IA-II(NCM)

2.Proposal No : IA/KL/MIN/232178/2021

3. 6th EAC (Non-Coal Mining) meeting held during 9th – 11th November, 2022.

Sub: Seeking Environmental Clearance for Proposed Granite Building Stone Quarry of Morayoor Granites Pvt Ltd which is situated at Re Survey No.152/1-1, 152/1, 159/1-1, 159/1-2, 159/1-3, 160/1-1, 160/1-2, 160/1-3, 160/1-4, Re Survey Block No. 56 of Morayur Village, Kondotty Taluk, Malappuram District, Kerala for an area of 4.9797 hectares under B2 category.

Respected Sir,

Kindly refer to the above, I have submitted an application for obtaining EC for the Proposed Granite Building Stone Quarry of Morayoor Granites Pvt Ltd which is situated at Re Survey No.152/1-1, 152/1, 159/1-1, 159/1-2, 159/1-3, 160/1-1, 160/1-2, 160/1-3, 160/1-4, Block No. 56 of Morayur Village, Kondotty Taluk, Malappuram District, Kerala for an area of 4.9797 hectares under B2 category. The application is considered in Minutes of 6th EAC (Non-Coal Mining) meeting held during 9th – 11th November, 2022,directed to clarify on for following details, please find below the point wise reply to the queries raised.

1.The EAC noted that the production by jack hammer drilling is not sufficient to produce 650 TPD. The EAC asked the Project Proponent to revisit the methodology of the mining adopted specifically relating to Bench height, Drilling and Blasting and accordingly the project proponent needs to submit the comprehensive note on methodology of mining with proper justification. Accordingly, the mining plan needs to be revised.

The Detailed Methodology of Mining attached as **Annexure 1.**

2.The EAC opined that the proposed transportation is passing through the village road and hence asked the Project Proponent to conduct the traffic study as the PP is proposing to transport 140-150 no.of trips/day and also the measures and action plan to be taken to strengthen and maintenance of the approach road. PP should explore the possibility of bypassing the village road for transportation purpose and accordingly submit the map for transportation route.

The Detailed Traffic Study of the respective site attached as **Annexure 2**

3.The Project Proponent needs to refer the Central Pollution Control Board (CPCB) Guidelines for developing greenbelts and to rework on the spacing proposed for development of greenbelt and also to provide the no. of trees cut in the mine lease area and the compensatory afforestation plan, along with the no. of species to be planted and the type of species to be planted.

The Detailed Green Belt and Afforestation Development Plan attached as **Annexure 3**

4.The Project Proponent needs to revise the activity for promotion of education, health care and provision of solar lights in a more specific and in a monitorable and actionable manner along with the timeline for the completion of the said activities.

The Detailed CER Proposal along with the timeline for the completion of the said activities of the respective site attached as **Annexure 4.**

5.The Project Proponent to revise the activity and the cost of Environmental Management Plan (EMP).

The detailed Revised Environment Management Plan including EMP cost attached as **Annexure 5**

6.The Project Proponent needs to submit the arrangements made inside the mine lease area for washing vehicles.

The arrangements made for washing vehicles of lease area incorporated in Environmental Management Plan.High pressure washers will be used for vehicles cleaning .It has the ability to supply a high volume of pressurised water and to remove dirt,stuck on debris and other contaminants quickly and efficiently. We will arrange a specific free space in the quarry site for cleaning of vehicles and machineries and we will wash it weekly. About 2no’s of rock breaker,3no’s of jack hammer and 5no’s of Tippers/trucks were used in the respective site. The water required for cleaning of machineries and vehicles will be 15kLD.

7.The Project Proponent needs to submit the Letter of Intent (LoI) renewed by the Dept. of Mining & Geology vide letter dated 16.09.2022 in Parivesh.

The Letter of Intent (LoI) renewed by the Dept. of Mining & Geology vide letter dated 16.09.2022 attached as **Annexure 6**.

8.The Project Proponent needs to submit the District Survey Report (DSR) as per Ministry's Notification S.O3611(E) dated 25.07.2018 and in accordance with the Ministry's Notification dated 25.07.2018 and order of Hon'ble Supreme Court dated 10.11.2021 in Civil Appeal Nos. 3661-3662 of 2020 titled as State of Bihar V/s Pawan Kumar.

Regarding the District Survey Report, The DSR published in 2016 by Mining and Geology Department, Govt of Kerala is the currently valid DSR in the State of Kerala . This department has not revised the DSR thereafter. The DSR 2016 is the relevant complied effective document being followed and subscribed to by the state of Kerala as on this date. No changes to DSR 2016 have been made by this department thereafter. The certificate from the District Office of Mining and Geology Malappuram certified by District Geologist and Order of High Court dated 08/03/2022 was also attached as **Annexure 7**

9.The Project Proponent should submit definite time line for construction of garland drain, retaining wall and settling pond.

The details regarding the time line for construction of garland drain, retaining wall and settling pond and its construction cost also incorporated in Environmental Management Plan.We will designed a proper drainage management plan to prevent the contamination of public drainage and water bodies. We will construct a garland drainage at the start of mining itself. In the initial phase, garland drainage with silt traps will be constructed along the boundary pillars BP8-BP10-BP11-BP12. While mine progressing stage, garland drain will be constructed along the Boundary pillars BP8-BP7-BP6-BP4.Within 1year we will construct the garland drain of above mentioned area.In the second year, Garland Drainage with silt traps constructed in the northern stretch of the lease area i.e, along the boundary pillars BP2-BP1 .Garland Drains will be constructed in the lower slope of Project area about having dimensions of 1m width around the working benches.

The surface runoff water from the quarry area carries by Garland Drains and flows through silt traps at each slope breaks. Collected run-off from the lease area passess through Desiltation tanks. Two Desiltation tanks will be proposed in the quarry area. One Desiltation tank will be proposed nearer to the boundary pillars BP6 having dimensions of 3mx1.5mx2.5m and another one proposed nearer to boundary pillar BP2 of lease area having dimensions of 3mx1.5mx2.5m.Within 1 year we will construct the Desiltation tanks.Clarified and controlled water flow passes through check dam .From the check dam, the controlled flow only connect to the existing natural drainage.

The Top soil and Over Burden is managed by storing in the lowest part of the mining area i.e, in the North Side which will be protected with retaining walls made of RCC having dimensions of 2.5m height and 1m width. The retaining wall will have weep holes to drain out water to the garland drain We will maintained the stability of overburden by providing proper seeding. For more stability more deep routed trees and shrubs will be plant to protect it. Precautions will be taken to limit the height of the dump to 5 to 6 meters in order to preserve its fertility and shelf life.The retaing wall will be constructed within the first year of the mining period.

In view of the above submission, we request you to consider for the further proceedings of EC from EAC Committee.

Yours Faithfully

Place:Malappuram

Date:05-01-2023

Ummerkutty.K

(Authorised Signatory)

ANNEXURE 1

MINING METHODOLOGY

For

GRANITE STONE QUARRY PROJECT”

Village	**:- Morayur**
Taluk	**:- Kondotty**
District	**:- Malappuram**
State	**:- Kerala**
Proposed Lease area	**:-4.9797 Hectares**
Land	**:- Private land**

PROPRIETOR

Ummer Kutty K
Director
M/s.Morayoor granites Pvt Ltd
Mucheth House, Elambra
Nellikuzhy
Ernakulam-686691

Prepared By:

Mahesh.S
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Email id:*maheshsurendranpillai@gmail.com*

Introduction to the Project

The proposed Mining Project, which is situated at Re Survey No.152/1-1, 152/1, 159/1-1, 159/1-2, 159/1-3, 160/1-1, 160/1-2, 160/1-3, 160/1-4, Re Survey Block No. 56 of Morayur Village, Kondotty Taluk, Malappuram District, Kerala for an area of 4.9797 hectares in favor of Mr. Ummer Kutty K, Director of Morayoor Granites Pvt Ltd.

General information

	Lessee	
a	Name of the Proponent	Ummer Kutty.K
	Residential Address of the Proponent	Ummer Kutty.K, Director of Morayoor Granites Pvt Ltd Mucheth House, Elambra Nellikuzhy, Ernakulam-686691 Mob: 8089085335 Email: morayoorec01@gmail.com
b.	Status of the Applicant	Director
c.	Area of the proposed Project	4.9797 Ha
d.	Survey No. District/Taluk/ and Villageetc.	Re Survey No. 152/1-1, 152/1, 159/1-1, 159/1-2, 159/1-3, 160/1-1, 160/1-2, 160/1-3, 160/1-4, Re Survey Block No. 56 Morayur Village, Kondotty Taluk, Malappuram District, Kerala State
e.	Category/Sub Category and Schedule	B2
f	Status of the Proposed Area	Fresh quarry
g	Mineral which are Occurring in the area and which the Lessee intends to mine	Granite (Building Stone) - (Minor Minerals)
h	Period for which the Quarry operation is proposed	10 years
i	Total Minable Reserve	1576694 MT
j	Average Production of Stone	157669.4 MTA

The geographical location of the mine with respect to the pillar boundary of the proposed area is given below:-

Boundary Pillar	Latitude	Longitude
BP 1	11°06'40.96"N	76°0'40.59"E
BP 2	11°06'38.08"N	76°0'43.68"E
BP 3	11°06'36.72"N	76°0'42.02"E
BP 4	11°06'34.96"N	76°0'43.90"E
BP 5	11°06'34.43"N	76°0'42.91"E
BP 6	11°06'32.91"N	76°0'42.82"E
BP 7	11°06'25.96"N	76°0'43.75"E
BP8	11°06'25.44"N	76°0'40.63"E
BP9	11°06'31.07"N	76°0'39.87"E
BP10	11°06'33.28"N	76°0'38.30"E
BP11	11°06'34.63"N	76°0'36.26"E
BP12	11°06'35.75"N	76°0'37.59"E

Topography

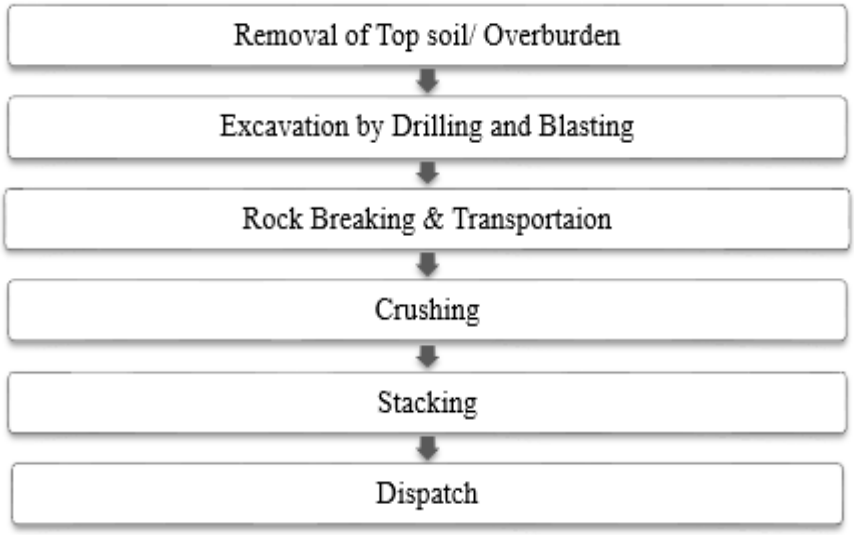
Topographically, lease area and its surroundings is an elevated terrain with quarry land covered with native trees, shrubs, herbs, grass, climbers, bushes etc. The highest elevation of the lease area is 310m MSL and lowest is 190m MSL.As the proposed area is hillrock, the drainage of the lease area is towards North East. No habitants are located in the lease area.

Local Geology

Main rock type in the study area is Charnockite. At places where they are exposed, the Charnockite is medium to coarse grained with dark grey quartz. The average soil and over burden thickness is 0.5m to 0.6m.Topographically the area is undulating.

Project description with process details (a schematic diagram/Flow chart showing the project layout, components of the Project etc.).

The proposed mining operations will be carried out by open cast semi-mechanized method. The process flow diagram given below depicts the mining process: -



Proposed Mining Method

The Mining plan of the respective site was prepared on the basis of Kerala Minor Mineral Concession Rules 2015 and its amendments. The quarrying activities will be carried out strictly as per the Mining Plan approved by District Geologist, Malappuram on 12/07/2021. The approach which was considered in the Mining Plan approved by District Geologist has been detailed below.

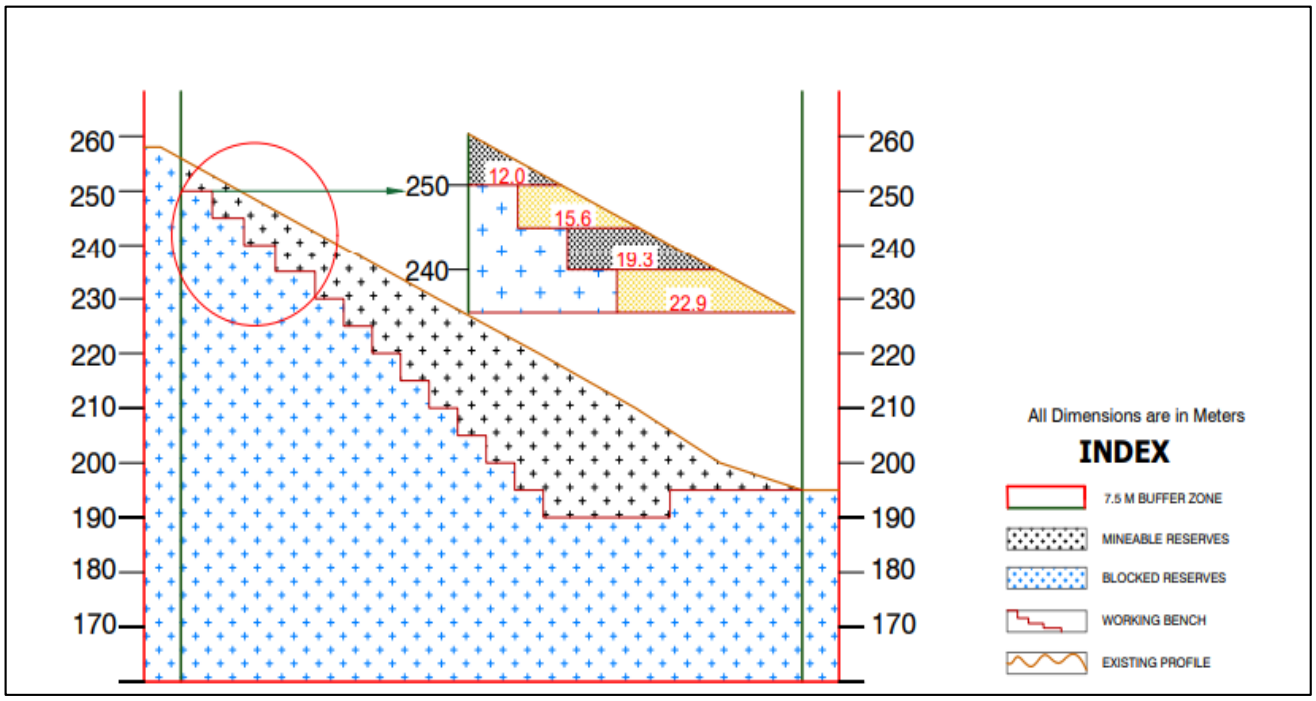
The said area proposed to work with conventional open cast method with bench system and mode of operation will be semi-mechanized. Based on the mode and method so adopted and taking geological parameters of the ore body into consideration, the quarry is designed in such a way that conceptually the height of the bench is kept about 5m max and maintaining a maximum slope of 45^0 from the horizontal plane. Mining will be done with the help of machineries like rock drills, jack hammer, compressors, hydraulic excavators, breakers etc. The targeted annual production of stone is 157669.4TPA.To achieve this, the proposed mine layout to be carried out systematically and scientifically is as follows.

Year wise Production of Building Stone for 10Years is detailed below.

Year	Bench	Minerals(TPA)
1	300-270	157669.4
2	270-260	157669.4
3	255-250	157669.4
4	250-245	157669.4
5	245-240	157669.4
6	235-230	157669.4
7	230-225	157669.4
8	225-215	157669.4
9	215-205	157669.4
10	200-190	157669.4
Total		1576694

Site Preparation and Bench Height Formation

1. Remove the soil cover and expose the rock
2. Remove the loose boulders with the help of excavator and prepare free face for drilling
3. To develop haul road from the proposed quarry using natural gradient of the hill for movement of tippers
4. Drill holes of 32mm diameter and 2.6m in depth will be made using Jack Hammer. The spacing and burden will be kept at 1m
5. To reduce the noise levels will be blasted by using nitrate mixture and millisecond delay detonators
6 About 48 holes will be blasted in one blast
7. Number of blast per day will be 2 no's and totally blast of 96 holes per day.
8. Give proper layout to the bench. To maintain the bench height of 5m, sub-bench of 2.5m will be formed first, later on two benches of 2.5m will be merged and one bench of 5m will be formed and maintained. The detailed figure of Bench Height Formation provided below.



Construction Stages of Bench

Bench Development Details

- In the initial stage of mining, the work will be carried out from 250m MSL-255m MSL.In this bench, width of the bench is 12m which is sufficient for the machinery operations. After completing the working operations in the first bench, the width of the bench will be reduced to 5m, while works start at immediate below bench(245-250m MSL)
- Similarly, in the further stages of mining, the width available for the safe mining operations at 245m MSL, 240m MSL and 235m MSL will be 15.6m,19.3m and 22.9m respectively.
- The same mining process is carried throughout the mining operation thereby sufficient working space will be available during the operational phase which will reduce the risk of accidents.

Drilling and Blasting Details

Drilling: The production of Granite Building Stone in Compact zone is obtained by Drilling and Blasting. Drilling will be done by Jack Hammer with the help of air compressor. About 3 No's of Jack hammers will be used in the respective site. It is capable of drilling 32mm diameter holes upto a depth of 2.6m.About 50no's of holes can be drilled using one jack hammer of above mentioned capacity. So, totally 150no's of holes can be drilled using 3 No's of Jack hammers.

Blasting: The controlled blasting is proposed by adopting all the safety measures as per "MMR 1961" and with the permission of DGMS. In this area for fragmentation of granite the blasting will be conducted. Multiple blast holes of 2.6m depth will be drilled with 32mm drill rod, Jack Hammer and Air Compressors of 100cfm Capacity.

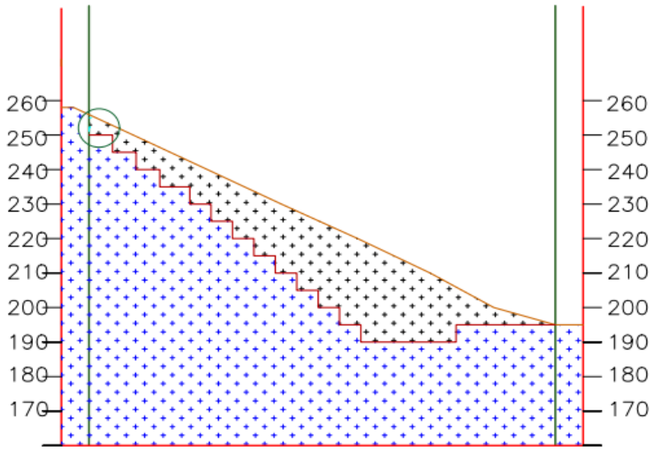
Requirement of Explosives: It is estimated about 375g of explosives per hole is required. About 48 holes per blast are proposed. Therefore about 96no's of holes required for 1 day blast. So, 36kg of explosives required for 96holes per day.

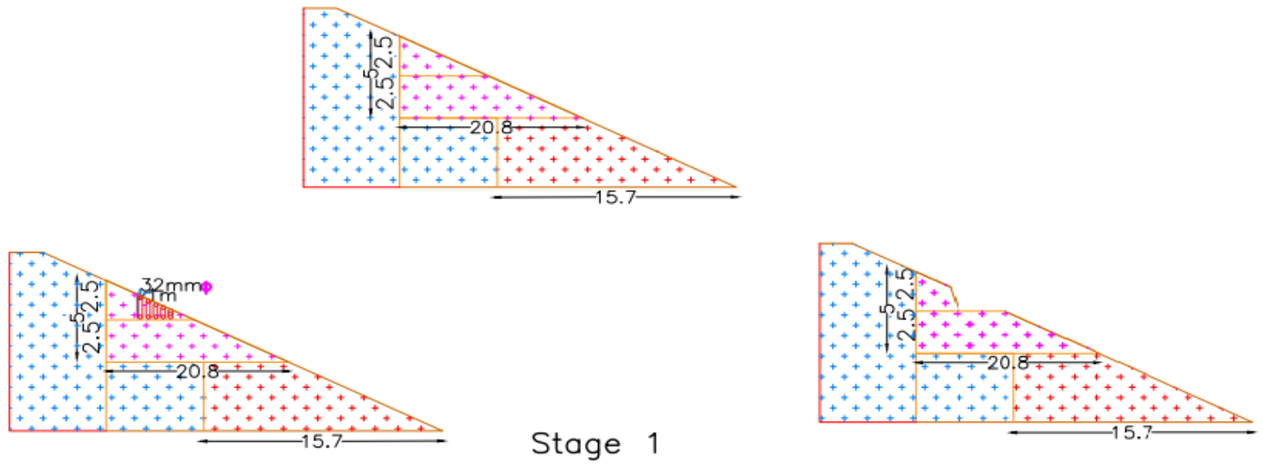
Blasting Details of the Respective Site

Diameter of the hole	32mm
Spacing	1m
Burden	1m
Depth	2.6m
No.of Working days	250
Charge/Hole	0.125kg/stick 3stick/hole=0.375kg
Pattern of Hole	Zig-Zag
Inclination of hole	70^0 from the horizontal
Quantity of rock broken	1x1x2.6x2.5=6.5MT
No.of holes per day	2x48=96

The targeted Average Annual Production of Stone is 157669.4MTA.Blasting were done 2times in a day. About 96no's of holes required for 1 day blasting for the granite stone production in the respective site. So, 3 No's of Jack hammers were sufficient to make 96 holes in a day.

Bench Formation Details



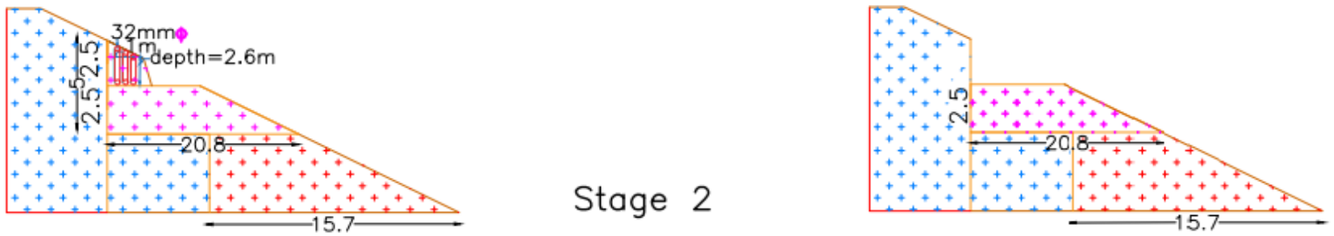


Stage 1

INDEX

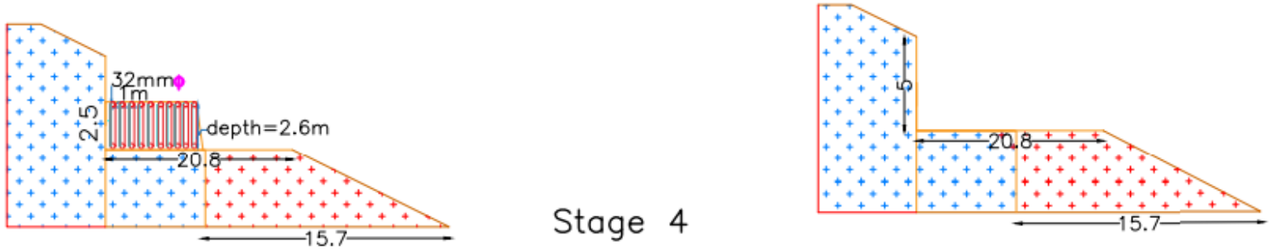
- 7.5 M BUFFER ZONE
- MINEABLE RESERVES
- BLOCKED RESERVES
- WORKING BENCH
- EXISTING PROFILE
- BLASTING HOLES

All Dimensions are in Metres



Stage 2

Stage 3



Stage 4

To maintain the bench height of 5m, sub-bench of 2.5m will be formed first (***Stage 3 in the above mentioned figure***), later on two benches of 2.5m will be merged and one bench of 5m will be formed (***Stage 4 in the above mentioned figure***) and maintained. The detailed representation of Bench Height Formation is provided above. The same approach was considered in the Mining Plan approved by District Geologist and the same has been detailed in the above figure.

Loading and Hauling:

Loading of the building stone blocks will be done mechanically to tippers of 10MT capacity and transported from the quarry to the stockyard and mineral rejection/waste will also be handled mechanically. In the quarry the road will be maintained with 1 in 16 gradients. Sufficient number of bunds and parapet walls will be made all along the quarry haulage roads wherever necessary in order to maintain safe working conditions by using the waste generated during the course of quarry operations.

RQP:

Mahesh. S

TC31/580, Navadeepam

S N Nagar Pettah (P O)

Kerala

ANNEXURE 2

TRAFFIC STUDY

For

GRANITE STONE QUARRY PROJECT”

Village	**:- Morayur**
Taluk	**:- Kondotty**
District	**:- Malappuram**
State	**:- Kerala**
Proposed Lease area	**:-4.9797 Hectares**
Land	**:- Private land**

Proprietor

Mr. Ummer Kutty K

Director, M/s. Morayoor granites Pvt Ltd

Mucheth House, Elambra

Nellikuzhy, Ernakulam-686691

Introduction to the Project

The proposed Mining Project, which is situated at Re Survey No.152/1-1, 152/1, 159/1-1, 159/1-2, 159/1-3, 160/1-1, 160/1-2, 160/1-3, 160/1-4, Re Survey Block No. 56 of Morayur Village, Kondotty Taluk, Malappuram District, Kerala for an area of 4.9797 hectares in favor of Mr. Ummer Kutty K, Director of Morayoor Granites Pvt Ltd.

General information

	Lessee	
a	Name of the Proponent	Ummer Kutty.K
	Residential Address of the Proponent	Ummer Kutty.K, Director of Morayoor Granites Pvt Ltd Mucheth House, Elambra Nellikuzhy, Ernakulam-686691 Mob: 8089085335 Email: morayoorec01@gmail.com
b.	Status of the Applicant	Director
c.	Area of the proposed Project	4.9797 Ha
d.	Survey No. District/Taluk/ and Villageetc.	Re Survey No. 152/1-1, 152/1, 159/1-1, 159/1-2, 159/1-3, 160/1-1, 160/1-2, 160/1-3, 160/1-4, Re Survey Block No. 56 Morayur Village, Kondotty Taluk, Malappuram District, Kerala State
e.	Category/Sub Category and Schedule	B2
f	Status of the Proposed Area	Fresh quarry
g	Mineral which are Occurring in the area and which the Lessee intends to mine	Granite (Building Stone) - (Minor Minerals)
h	Period for which the Quarry operation is proposed	10 years
i	Total Minable Reserve	1576694 MT

The geographical location of the mine with respect to the pillar boundary of the proposed area is given below:-

Boundary Pillar	Latitude	Longitude
BP 1	11°06'40.96"N	76°0'40.59"E
BP 2	11°06'38.08"N	76°0'43.68"E
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BP12	11°06'35.75"N	76°0'37.59"E

Traffic Movement and Transportation Management

The proposed Mining Project, situated at Re Survey No.152/1-1, 152/1, 159/1-1, 159/1-2, 159/1-3, 160/1-1, 160/1-2, 160/1-3, 160/1-4, Re Survey Block No. 56 of Morayur Village, Kondotty Taluk, Malappuram District, Kerala. As per the 6th EAC (Non-Coal Mining) meeting held during 9th – 11th November, 2022the, the EAC committee decided to direct the proponent to submit the detailed traffic study for the respective site.

A Traffic Study was conducted to determine the vehicular traffic measures and best possible route for material transportation from mines to destination points. It is proposed to take the material to different destination in routes.

Currently we had proposed, the approach road from the quarry site can accessible via Arimbra – Morayur road a village road which is connected to NH966.Since the existing proposal was changed because the road passes through a populated area. Hence instead of this Road, alternative route was considered for the Traffic Sudy which is currently using regular truck movement with sufficient capacity.The approach road connect the proposed project site with Malayil Road and then it reaches the Poolapees Junction where connected to Vengara Road-Poolapees Jn-Neduyirippu Road, connects NH 966. Both stretches have a minimum width of 7m which is sufficient to cater the additional traffic loads expecting from the proposed project

Vehicular Traffic density

Manual method was adopted for data collection .The vehicular traffic density survey was carried out on 6-12-2022 and 07-12-2022 on 7m wide for 12 hours on Malayil Road - Poolapees Junction (Distance-4.03km) and Vengara Road-Poolapees Junction –Neduyirippu Road (Distance 13.4km) respectively .The approach road connect proposed project site via Malayil Road - Poolapees Junction. The traffic data was collected by two teams in both sides of the road and they were managed and supervised to ensure efficient and proper collection of data.

The vehicles plying on road in both the directions were counted continuously for 12 hours. The vehicles were counted every hour and stipulated by Indian Road Congress (IRC).

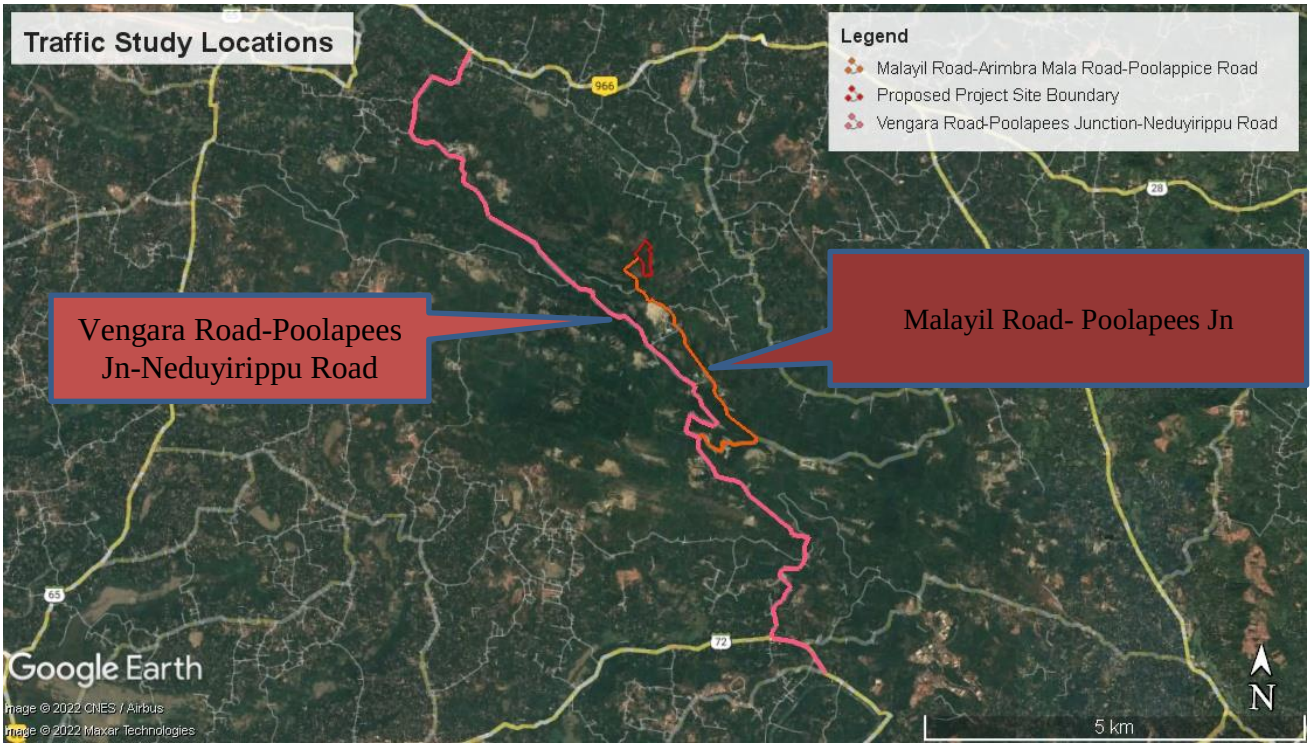

Figure 1: Traffic Study Locations

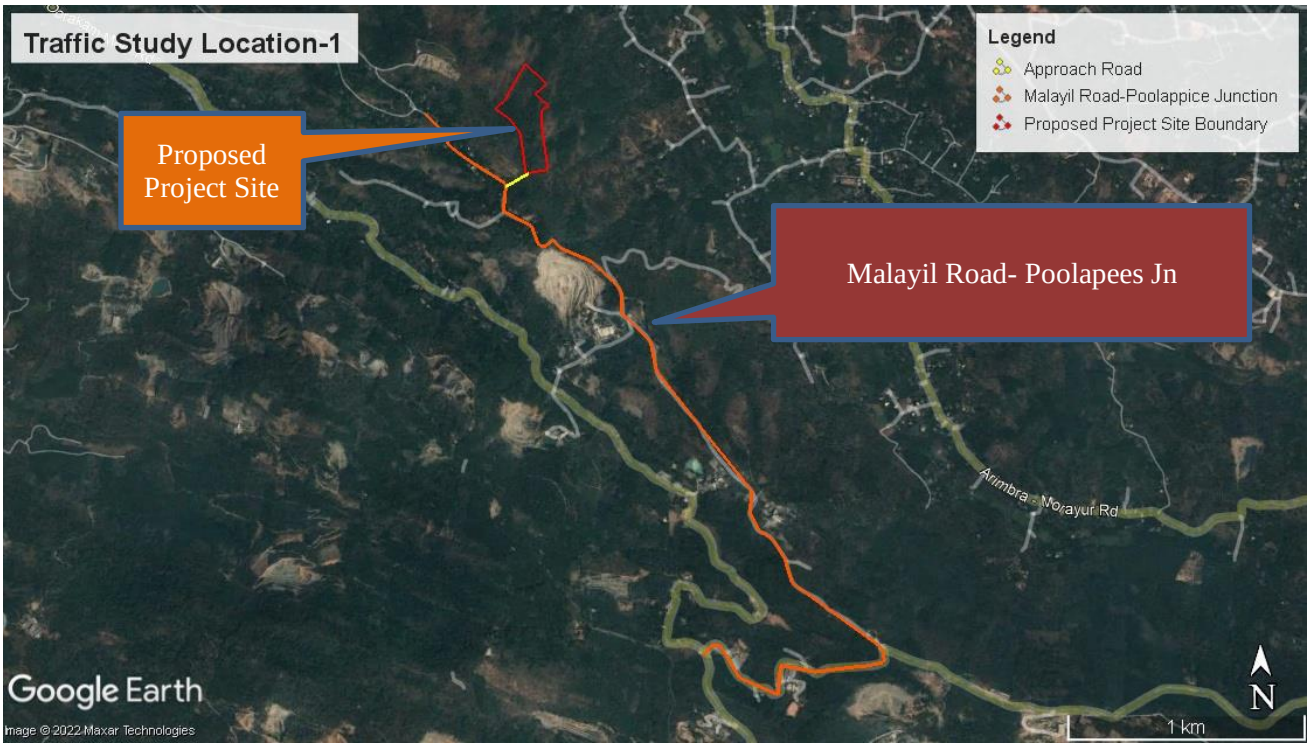

Figure 2: Traffic Study Location-1 (Malayil Road- Poolapees Jn)

Fig3: Photographs of Traffic Study Location-1 (Malayil Road-Poolapees Jn)

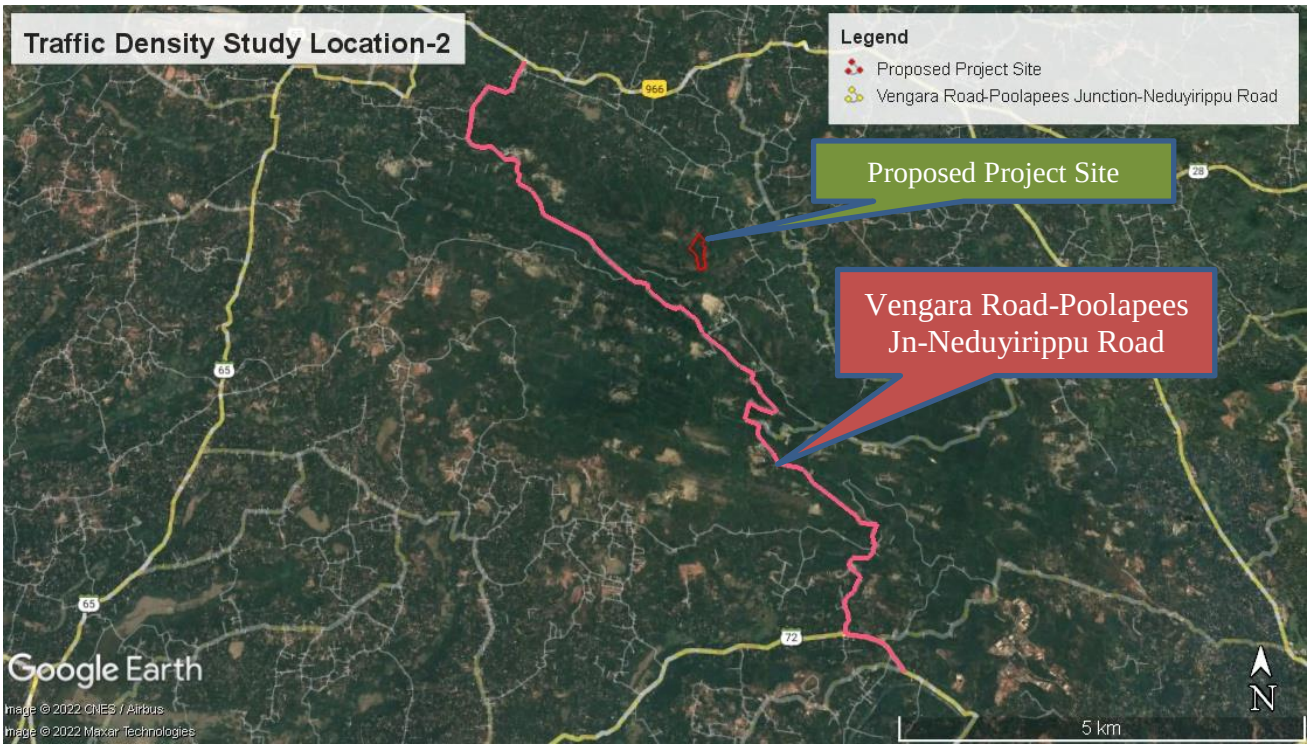

Fig 4: Traffic Study Location-2 (Vengara Road- Poolapees Jn-Neduyirippu Road)

Fig 5: Photographs of Traffic Study Location-2(Vengara Road- Poolapees Jn-Neduyirippu Road)

The duration of the count was determined prior to commencement of traffic counting. Manual counting of vehicles passing a point at a specific interval of 1 hour was done to identify the hourly pattern of traffic flow characteristics. The composition of traffic includes two wheelers (Cycle/Motor Cycle), Light Motor Vehicles (Passenger Cars/Van/Mini Tempo) and Heavy Motor Vehicles such as Lorries, Buses, Containers, etc. The hourly flow pattern of the study area was captured using traffic counting forms.

The traffic study was conducted on 06-12-2022 and 07-12-2022. 12hours counts were considered from 8am to 8pm. The traffic data collected for the study is given in Table 2& 3.

Analysis of Traffic Data

Typical hourly patterns of traffic flow generally show a number of distinguishable peaks. The traffic in this study area is heterogeneous in nature. When the traffic is composed of a number of types of vehicles, it is a common practice to convert the flow into equivalent passenger car unit (PCUs), by certain equivalency factors. The flow is then expressed as PCUs per hour or PCU's per day. PCU is a metric used in Transportation Engineering, to assess traffic-flow rate. A PCU is a measure of the impact that a mode of transport has on traffic variables (such as headway, speed, density) compared to a single standard passenger car. The conversion factors for various types of vehicles as per IRC 064-1990 are given in Table 1.

Traffic data collected continuously for 12 hours by visual observation and counting of vehicles under five categories, viz., car, two wheeler, three wheeler, buses and trucks. Total numbers of vehicles per hour under these categories were determined for both stations in Passenger Car Unit (PCU).The PCU values for type of vehicles provided in the Table 1.

Table 1: PCU values for Type of Vehicles

*Values of PCU	
Car	1
2 Wheeler	0.5
3 wheeler	0.8
Bus/Truck	3

Table 2: Vehicular Traffic Density Survey Results of Traffic Location -1(Malayil Road-Poolapees Junction)

Time	Car	2 Wheeler	3 wheeler	Buses/Trucks	Total hourly vehicle capacity in PCU (V)	V/C
8am -9am	26	84	18	22	148.4	0.07
9am-10am	30	96	20	20	154	0.07
10am -11am	26	78	19	20	140.2	0.07
11am – 12pm	21	82	16	24	146.8	0.07
12pm -01pm	20	60	14	25	136.2	0.06
01pm -02pm	22	48	8	25	127.4	0.06
02pm – 03pm	23	52	10	24	129	0.06
03pm -04pm	25	64	12	25	141.6	0.07
04pm-5pm	24	94	16	24	155.8	0.07
05pm- 06pm	30	83	18	22	151.9	0.07
06pm -7pm	26	71	11	18	124.3	0.06
7pm -8pm	28	54	8	25	136.4	0.06
Total Volume	**301**	**866**	**170**	**274**	**Design capacity C = 2000(IRC 64, 1990) Max hourly traffic V= 155.8PCU**	
In PCU for 12 hour	**301**	**433**	**136**	**822**		
PCU per hour	**25**	**36**	**11**	**69**		

From the traffic study results the current traffic volume in the Malayil Road -Poolapees Junction is 155.8PCU per hour. The implementation of proposed quarry will results in higher traffic volume in both directions.

Table 3: Vehicular Traffic Survey Results of Traffic Location-2 (Vengara-Poolapees Jn-Neduyirippu Road)

Time	Car	2 Wheeler	3 wheeler	Buses/Trucks	Total hourly vehicle capacity in PCU (V)	V/C
8am -9am	56	240	46	29	299.8	0.19
9am-10am	64	181	51	25	270.3	0.18
10am -11am	60	175	49	25	261.7	0.17
11am – 12pm	59	189	46	32	286.3	0.19
12pm -01pm	38	165	41	35	258.3	0.17
01pm -02pm	47	146	31	35	249.8	0.16
02pm – 03pm	55	110	35	34	240	0.16
03pm -04pm	59	146	42	33	264.6	0.17
04pm-5pm	82	199	58	26	305.9	0.20
05pm- 06pm	74	212	48	28	302.4	0.20
06pm -7pm	63	188	39	31	281.2	0.18
7pm -8pm	38	157	31	35	246.3	0.16
Total Volume	**695**	**2108**	**517**	**368**	**Design capacity C = 1500(IRC 64, 1990) Max hourly traffic V= 305.9 PCU**	
In PCU for 12 hour	**695**	**1054**	**413.6**	**1104**		
PCU per hour	**58**	**88**	**34**	**92**		

From the traffic study results, the current traffic volume in the Vengara-Poolapees Junction - Neduyirippu Road is 305.9PCU per hour. The implementation of proposed quarry will results in higher traffic volume in both directions

Impacts on Traffic Density

Considering the total production and transportation from the proposed quarry, the estimation of tippers for transport of the material is estimated as given in the Table 4.

Table 4:Estimation of Tippers for Transport for the Proposed Quarry

Particulars	**Traffic Volume of M/s.Morayur Granites Pvt Ltd (Proposed Quarry)**
Average annual Production Capcity (TPA)	157669.4
No of Working days	250
Production in a day (MT)	630.6
No of tippers/trucks per day 10 MT capacity	63
Considering round trips- Total number of trucks per day	126
No of tippers per 1 hour – @8hours a day working	7-8
Considering round trips- Total number of trucks per hour	14-16
Traffic Volume in PCU/hour	48

From the above table, it can be seen that the total number of trucks for transport of the building stone will be 63trips / day (max) for the proposed quarry .Considering the proposed quarry the traffic volume may increase by 48 PCU/hour for roads. The impact will be negligible.

Level of Service (LOS)

Level of Service is a qualitative measure describing operational conditions within a traffic stream and it describes these conditions in terms of factors such as speed and travel time, traffic interruptions, comfort, convenience and safety. Six LOS are recognized in IRC 64 1990. These are designated from A to F, with LOS A representing the best operating condition (free flow) and LOS F, the worst (forced/break down flow). The characteristics of traffic flow for each of these LOS are depicted in Table 5.

Table 5:Characteristics of the various Level of Service in Indian Roads as per IRC

Level of Service (LOS)	Characteristics	Existing Traffic/Design Service Volume
A (Excellent)	Represents a condition of free flow. Individual users are virtually unaffected by the presence of others in the traffic stream. Freedom to select desired speeds and to manoeuvre within the traffic stream is high. The general level of comfort and convenience provided to the road users is excellent	0.0 to 0.2
B (Very Good)	Represents a zone of stable flow, with the drivers still having reasonable freedom to select their desired speed and manoeuvre within the traffic stream. Level of comfort and convenience provided is somewhat less than LOS A, because the presence of other vehicles in the traffic stream begins to affect individual behaviour	0.2 to 0.4
C (Good)	This also is a zone of stable flow, but marks the beginning of the range of flow in which the operation of individual users becomes significantly affected by interaction with others in the traffic stream. The selection of speed is now affected by the presence of others and manoeuvring within the traffic stream requires substantial vigilance on the part of the users. The general level of comfort and convenience declines noticeably at this level	0.4 to 0.6
D (Fair)	Represents the limit of stable flow with conditions approaching close to unstable flow. Due to high density, the drivers are severely restricted in their freedom to select desired speed and manoeuvre within the traffic stream. The general level of comfort and convenience is poor. Small increases in traffic flow will usually cause operational problems at this level.	0.6 to 0.8
E (Poor)	Represents operating conditions when traffic volumes are at or close to the capacity level. The speeds are reduced to a low, but relatively uniform value. Freedom to manoeuvre within the traffic stream is extremely difficult and is generally accomplished by forcing a vehicle to give way to accommodate such manoeuvres. Comfort and convenience are extremely poor and driver frustration is generally high. Operations at this level are usually unstable because small increases in flow or minor disturbances within the traffic stream will cause break downs.	0.8 to 1.0
F (Very Poor)	Represents zone of forced or break down flow. This condition occurs when the amount of traffic approaching a point exceeds the amount which can pass it. Queues form behind such locations. Operations within the queue are characterised by stop and go waves which are extremely unstable. Vehicles may progress at a reasonable speed for several hundred meters and may then be required to stop in a cyclic fashion. Due to high volumes, break down occurs and long queues and delays result.	>1.0

Table 6: Impact in Traffic Density

Traffic Density	Existing Condition		After implementation of Quarry		Level of Service (LOS)
	V	V/C	V'	Anticipated V/C	
Maximum Hourly Traffic in Malayil Road-Poolapees Junction	155.8	0.07	1.1x155.8+48=219.38	0.10	A (Excellent)
Maximum Hourly Traffic in Vengara-Poolapees Junction-Neduyirippu Road	305.9	0.20	1.1x305.9+48=384.49	0.25	B(Very Good)

The Level of Service is excellent for Malayil-Poolapees Junction and Very Good for Vengara-Poolapees Junction-Neduyirippu Road. The road is safe for the further traffic.

Measures and Action Plan to be taken to Strengthen and Maintenance of the Approach Road.

Adequate control measures will be taken for a safe mode of transport.

- For smooth and safe operation of traffic, the approach road (single lane road) will be maintained by 3.75m wide paved carriage way with good quality shoulders such as moorum shoulders of minimum 1m width on either side.
- Maintain Speed limit of 20-30km/hr on Quarry Access Road.
- It is recommended that soil investigation shall be undertaken with respect to the Climatic Conditions to analyse the soil strength
- The peak hours will be avoided for the transportation.
- For smooth traffic flow and to avoid the possibility of road accidents, safety convex mirror will be installed at dangerous curves of the road.
- Considering the proposed quarry the traffic volume may increase by 48 PCU/hour for roads. It has the capacity to manage the additional traffic from the proposed granite building stone quarry project. The traffic flow in these stretches of the road remains smooth and stable for most of the time.
- To avoid traffic congestion on the roads, the traffic flow shall be scheduled.
- The road have the capacity to manage the additional traffic from the proposed quarry and it will not affect to the existing traffic in the road. The traffic flow in these stretches of the road remains smooth and stable for most of the time.

Results of Traffic Studies

The traffic study in both stretches such as Malayil Road-Poolapees Junction and Vengara-Poolapees Junction-Neduyirippu Road revealed the following

- Currently we had proposed, the approach road from the quarry site can accessible via Arimbra – Morayur road a village road which is connected to NH966.Since the existing proposal was changed because the road passes through a populated area. Hence instead of this Road, alternative route was considered for the Traffic Sudy which is currently using regular truck movement with sufficient capacity.The approach road connect the proposed project site with Malayil Road and then it reaches the Poolapees Junction where connected to Vengara Road-Poolapees Jn-Neduyirippu Road, connects NH 966. Both stretches have a minimum width of 7m which is sufficient to cater the additional traffic loads expecting from the proposed project
- The hourly pattern of traffic for the Malayil Road-Poolapees Junction and Vengara-Poolapees Junction-Neduyirippu Road were considered. The current traffic volume in the Malayil Road-Poolapees Junction and Vengara-Poolapees Junction -Neduyirippu Road and is 155.8PCU/hr and 305.9PCU/hour respectively. Most of the hours have a uniform flow except night. Vehicular movement during night is very less.
- Two Wheelers (Cycle, Motor cycles) constitute above 50% of the total traffic volume in both directions.
- Considering the proposed quarry the traffic volume may increase by 48 PCU/hour for roads. The impact will be negligible.
- The Level of Service is excellent for Malayil-Poolapees Junction and Very Good for Vengara-Poolapees Junction-Neduyirippu Road. The road is safe for the further traffic.
- The design service volumes of this road is not exceeding. Hence the road have the capacity to manage the additional traffic from the proposed quarry and it will not affect to the existing traffic in the road. The traffic flow in these stretches of the road remains smooth and stable for most of the time.

Mr. Ummerkutty K
Authorized Signatory

ANNEXURE 3

Green Belt & Afforestation Development Plan

For

"Granite Building Stone Quarry Project"

Village	***: Morayur***
Taluk	***: Kondotty***
District	***: Malappuram***
State	***: Kerala***
Proposed Lease area	***: 4.9797 Hectares***
Land	***: Private land***

Proprietor

Mr. Ummer Kutty K
Director, M/s. Morayoor granites Pvt Ltd
Mucheth House, Elambra
Nellikuzhy, Ernakulam-686691

Green Belt & Afforestation Development Plan

I. Existing Scenario

Topography of the Lease area is hilly terrain and proposed land is covered with native trees, shrubs, herbs bushes etc. The highest elevation of the lease area is 310 m MSL and lowest is 190 m MSL.The Total No. of Trees in Proposed Area is 657.About 129no's of Avenue Trees and 233no's of Rubber Trees to be removed from the quarry area which is in the Core Zone. About 295no's of trees were observed in Buffer Zone. The trees within the core zone have to be removed prior to quarrying. The plantation within the green belt area will be maintained and more no's of trees will be planted in this area. The Quarry Site and Google Image of the proposed site shown in Figure 01& 02 respectively which is provided below.

Figure 01: Photographs of proposed Quarry Site

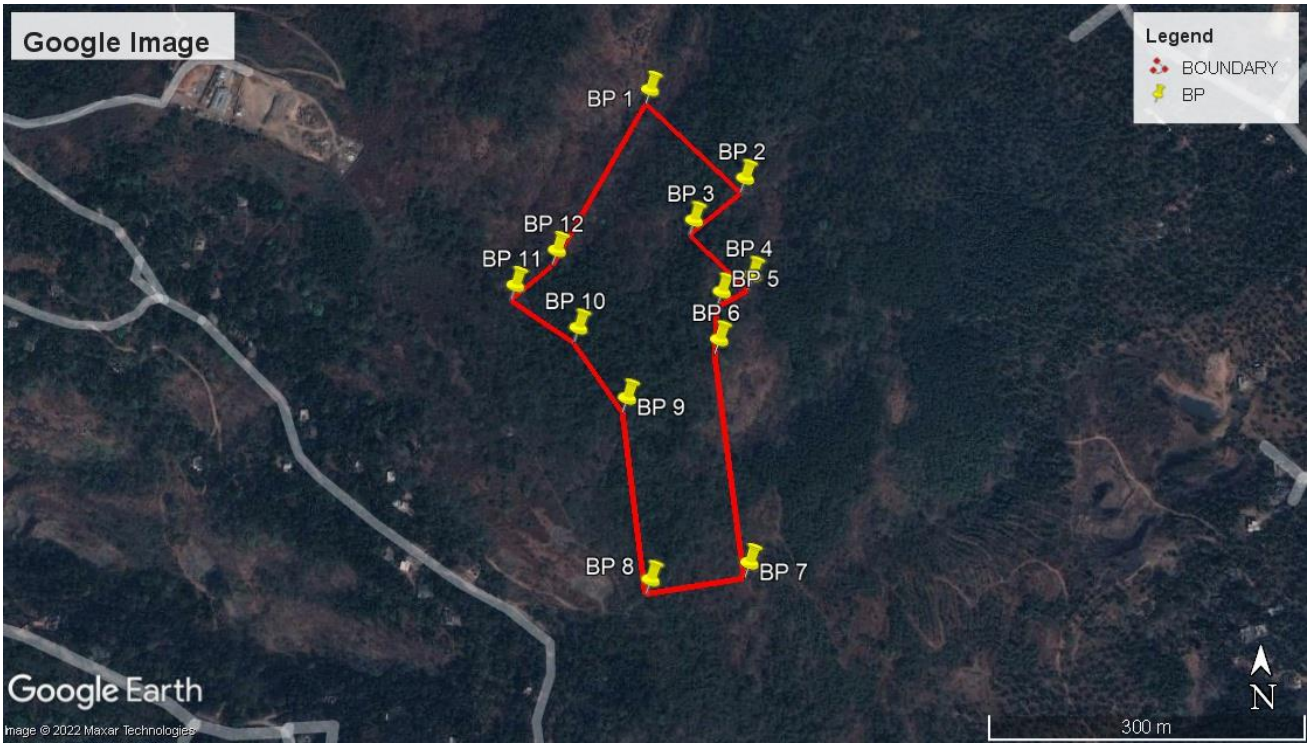

Figure 02: Google Image showing the Proposed Project site

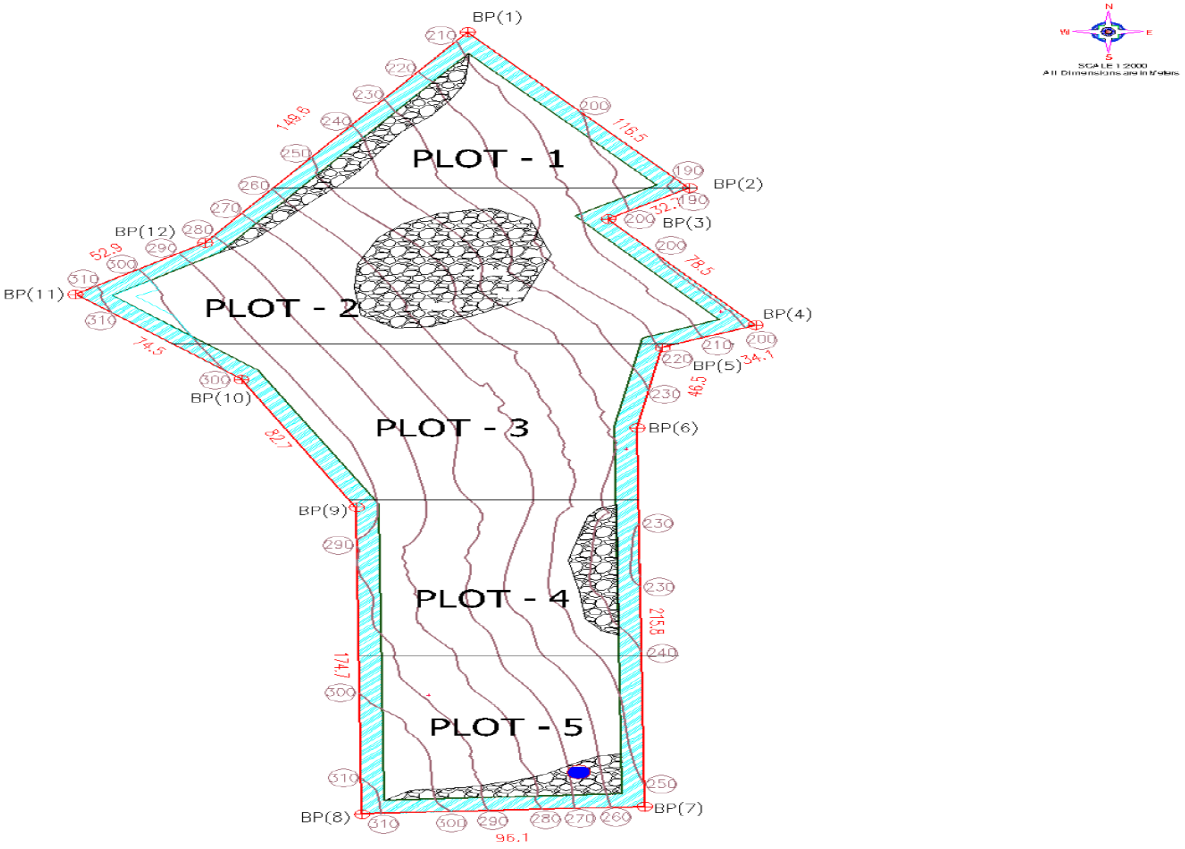

Figure 03: Sampling Plots identified in the study area

About 5 plots were analysed. The list of trees observed in the Core Zone and Buffer Zone indicates the number of individuals are provided in Table 01.

Table 01: List of trees observed and the Number of individuals

	Species	Plot 1		Plot 2		Plot 3		Plot 4		Plot 5		Total
		Core Zone	Barrier Zone	Core Zone	Barrier Zone	Core Zone	Barrier Zone	Core Zone	Barrier Zone	Core Zone	Barrier Zone	
1	*Hevea bresiliensis*	42	36	48	37	54	41	43	37	46	36	420
2	*Artocarpus heterophyllus* Lam.	1	0	0	1	1	1	0	1	1	0	6
3	*Bombax ceiba* L.	1	1	1	0	0	1	1	1	1	1	8
4	*Caryota urens* L.	1	2	1	1	1	1	1	1	2	1	12
5	*Cocos nucifera* L.	1	1	1	2	3	1	1	0	2	1	13
6	*Dillenia pentagyna* Roxb.	0	1	0	1	0	0	0	1	1	0	4
7	*Ficus hispida* L. f.	1	2	2	2	3	2	3	2	3	3	23
8	*Gliricidia sepium* (Jacq.) Kunth ex Walp.	2	4	4	3	4	5	6	4	9	7	48
9	*Macaranga peltata* (Roxb.) Muell.-Arg.	2	2	5	3	8	4	10	6	7	4	51
10	*Mangifera indica* L.	0	0	0	0	1	0	1	0	1	0	3
11	*Sapindus trifoliatus L.*	2	0	1	1	1	1	1	1	1	1	10
12	*Swietenia macrophylla* King	1	2	3	3	4	3	5	7	2	4	34
13	*Tectona grandis* L. f.	1	1	2	4	3	1	1	1	2	1	17
14	*Trema orientalis* (L.) Blume	0	0	1	1	2	1	1	0	1	1	8
	Total	***55***	***52***	***69***	***59***	***85***	***62***	***74***	***62***	***79***	***60***	**657**
Shannon diversity index		**1.2004**		**1.3900**		**1.4025**		***1.4842***		***1.5346***		

II. Proposal for Plantation in the Buffer Area

The details of land use pattern provided in Table 02.

Table 02: Land Use Pattern

S. No.	Land Use Category	Pre-Operational (Ha.)	Operational (Ha.)	Post-Operational (Ha.)
1	Excavation (Voids Only)	-	2.0815	-
2	Road	0.05	0.2	0.2
3	Built Up Area	-	-	-
4	Reclamation (Backfilled)	-	-	2.0815
5	Pond	-	1.8587	1.8587
6	Drainage	-	0.22	0.22
7	Green belt	-	0.6195	0.6195
8	Mineable Area	4.9297	-	-
Total Area		**4.9797**	**4.9797**	**4.9797**

About 0.6195 Ha of area coming under the Green Belt. 295 numbers of trees are currently existing in the Buffer Area, additionally 737 numbers of trees will be plant within the buffer area with an expecting survival rate of 90-95% with a plant interval of 2x3m wide.

Table 03: Proposal for Year Wise Afforestation Within the Buffer Area

Years	Number of species	Area in hectares	Expecting survival rate
1	148	0.6195	90-95%
2	148		
3	147		
4	147		
5	147		

III. Proposal for 5 Year Compensatory Plantation outside of the Lease Area

As a compensation of loss of trees within the core area, planation will be carried out side the lease area, more in the dry area in Survey No 160/1-2 for an area of 0.6516Ha. Yearly, we will plant about 217no's of trees for 5years.Totally we will plant around 1085no's of trees within the same area, expecting survival rate of 90-95% with a plant interval of 2x3m wide. Five year afforestation plan outside the quarry area is as follows.

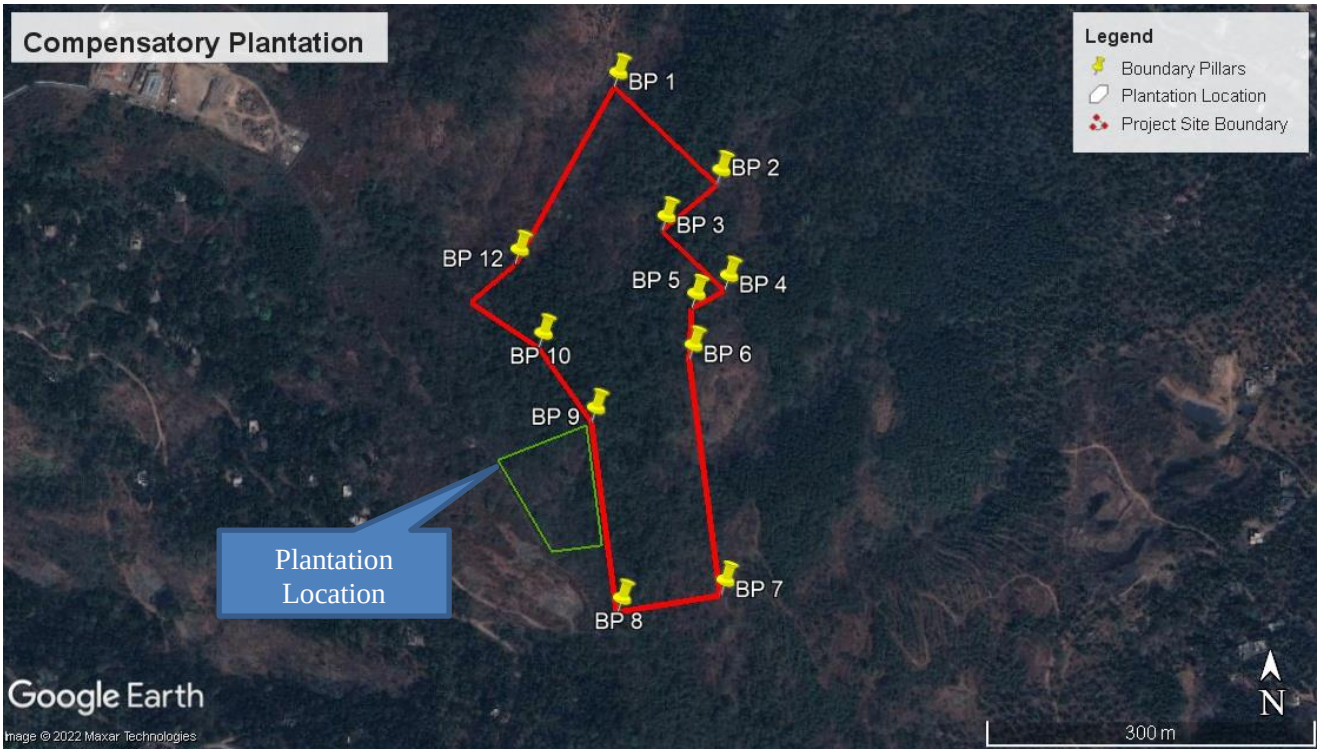

Figure 04: Google Image of Afforestation proposed outside of the Lease Area

The Geo-coordinates of the afforestation plantation locations are provided below

Table 04: Geo-coordinates of Afforestation Plantation proposing

Locations identified for Compensatory Plantations		
Latitude	11°6'27.21" N	11°6' 30.96" N
Longitude	76°0'37.04"E	76°0'40.15"E

Table 05: Proposal for Year Wise Afforestation outside of the Lease Area

Years	**No.of Species**	**Area in Hectares**	**Expecting Survival Rate**
1	217		
2	217		

Years	No.of Species	Area in Hectares	Expecting Survival Rate
3	217	0.6516	90-95%
4	217		
5	217		

Table 06: List of Species proposed to Plant tolerant to Air Pollution, Dust Collector and to control Noise Level

Sl.No.	Scientific Name	Common/ Vernacular Name	Family
1.	*Anogeissus latifolia*	Mazhukanjiram	Combretaceae
2.	*Terminalia arjuna*	Neermaruthu	Combretaceae
3.	*Dalbergia latifolia*	Eeti	Fabaceae
4.	*Sterculia villosa*	Para Vakka	Malvaceae
5.	*Butea monosperma*	Chamatha	Fabaceae
6.	*Bombax ceiba*	Elavu	Malvaceae
7.	*Dillenia pentagyna*	Pattipunna	Dilleniaceae
8.	*Grewia tiliifolia*	Unnam, Chadachi	Malvaceae
9.	*Alstonia scholaris*	Eazhilam pala	Apocynaceae
10.	*Holarrhena antidysenterica*	Kudakapala	Apocynaceae
11.	*Wrightia tinctoria*	Danthapala	Apocynaceae
12.	*Tabernaemontana heyneana*	Koonanpala	Apocynaceae
13.	*Mimusops elengi*	Elanji	Sapotaceae
14.	*Schleichera oleosa*	Poovam	Sapindaceae
15.	*Chionanthus mala-elengi*	Mala Elanji	Oleaceae
16.	*Tamarindus indica*	Puli	Fabaceae
17.	*Ficus benghalensis*	Aal	Moraceae
18.	*Ficus mysorensis*	Aal	Moraceae
19.	*Bambusa vulgaris*	Bamboo	Poaceae
20.	*Ficus callosa*	Aal	Moraceae
21.	*Polyanthia longifolia*	Arana maram	Annonaceae

IV. Proposal of Afforestation Plan and Reclamation of project Site

The reclamation will be start within the first year execution of mine quarrying, the benches will be reclaimed with planation. The process is planning to reclaim the area of year excavation within the 10year period. The entire quarry area has been considered in the mine closureplan, however, considering the possibility of expansion of the quarry site, the compensatoryafforestation will be plan for the reclamation of quarry site. At the end of life of quarry, about 2.0815ha will be reclaimed with quarry waste and totally 3469numbers of trees will be plant with in the quarry area (earlier benches) with plant interval of 2x3m wide. And expecting survivalrate of 90-95%.

The following native local trees are recommended for the afforestation after mining closure.

Table 07: List of species recommended for afforestation after mine closure

Sl No.	Scientific Name	Common/ Vernacular Name
1.	Mangifera *indica*	Mavu
2.	*Artocarpus heterophyllus*	Plavu
3.	*Artocarpus hirsutus*	Anjili
4.	*Annona squamosa*	Atha
5.	*Anacardium occidentale*	Kasumavu
6.	*Psidium guajava*	Pera
7.	*Mimusops elengi*	Elanji
8.	*Syzygium cumini*	Njaval
9.	*Phyllanthus emblica*	Nelli
10	*Syzygium aqueum*	Champa
11	*Ailanthus excelsa*	Pongalyam
12	*Swietenia macrophylla*	Mahagony
13	*Phyllanthus acidus*	Nelli puli
14	*Garcinia gummi-gutta*	Kudam puli
15	*Tamarindus indica*	Valan puli
16	*Ficus carica*	Athi
17	*Ficus benjamina*	Vellal
18	*Azadirachta indica*	Aryaveppu
19	*Spondias pinnata*	Ambazham
20	*Bombax ceiba*	Elavu

Sl No.	Scientific Name	Common/ Vernacular Name
21	*Cassia fistula*	Kanikkonna
22	*Chrysophyllum roxburghii*	Pulinchakka
23	*Cinnamomum malabatrum*	Vazhana
24	*Cinnamomum verum*	Karuva
25	*Zanthoxylum rhetsa*	Mullilavu
26	*Alstonia scholaris*	Ezhilam Pala
27	*Wrightia tinctoria*	Dantha Pala
28	*Tabernaemontana alternifolia*	Koonam Pala
29	*Litsea coriacea*	Vettithali
30	*Humboldtia brunonis var. brunonis*	Kattashokam
31	*Terminalia arjuna*	Neermaruth
32	*Grewia tiliifolia*	Unnam
33	*Pongamia pinnata*	Ungu

V. Conclusion

As part of quarrying and compensation afforestation, within the buffer area and outside the lease area, enough planation will be done which will be maintain properly. Quarry management hereby ensuring the maintenance of existing planation and additional plantation in future to maintain the vegetation of the land area.For the last 5years, as part of Social forestree Programme, during the World Environmental Day we will provide yearly 100no's of trees to the schools and primary helath centre etc.

Mr. Ummerkutty K
Authorized Signatory

ANNEXURE 4

Building Stone Quarry Owned By M/s Morayoor Granites Pvt Ltd

CER PROPOSAL

SITUATED AT

Survey Number : 152/1-1, 152/1, 159/1-1, 159/1-2, 159/1-3, 160/1-1, 160/1-2, 160/1-3, 160/1-4,

Re Survey Block No. 56

Morayur Village, Kondotty Taluk

Malappuram District, Kerala

Area – 4.9797 Ha

Introduction to the Project

The proposed Mining Project, which is situated at Re Survey No.152/1-1, 152/1, 159/1-1, 159/1-2, 159/1-3, 160/1-1, 160/1-2, 160/1-3, 160/1-4, Re Survey Block No. 56 of Morayur Village, Kondotty Taluk, Malappuram District, Kerala for an area of 4.9797 hectares in favor of Mr. Ummer Kutty K, Director of Morayoor Granites Pvt Ltd.

General information

1.1.1	**Lessee**	
a	Name of the Proponent	Ummer Kutty.K
	Residential Address of the Proponent	Ummer Kutty.K, Director of Morayoor Granites Pvt Ltd Mucheth House, Elambra Nellikuzhy, Ernakulam-686691 Mob: 8089085335 Email: morayoorec01@gmail.com
b.	Status of the Applicant	Director
c.	Area of the proposed Project	4.9797 Ha
d.	Survey No. District/Taluk/ and Villageetc.	Re Survey No. 152/1-1, 152/1, 159/1-1, 159/1-2, 159/1-3, 160/1-1, 160/1-2, 160/1-3, 160/1-4, Re Survey Block No. 56 Morayur Village, Kondotty Taluk, Malappuram District, Kerala State
e.	Category/Sub Category and Schedule	B2
f	Status of the Proposed Area	Fresh quarry
g	Mineral which are Occurring in the area and which the Lessee intends to mine	Granite (Building Stone) - (Minor Minerals)

h	Period for which the Quarry operation is proposed	10 years
i	Total Minable Reserve	1576694 MT
j	Average Production of Stone	157669.4 MTA

The geographical location of the mine with respect to the pillar boundary of the proposed area is given below:-

Boundary Pillar	**Latitude**	**Longitude**
BP 1	11°06'40.96"N	76°0'40.59"E
BP 2	11°06'38.08"N	76°0'43.68"E
BP 3	11°06'36.72"N	76°0'42.02"E
BP 4	11°06'34.96"N	76°0'43.90"E
BP 5	11°06'34.43"N	76°0'42.91"E
BP 6	11°06'32.91"N	76°0'42.82"E
BP 7	11°06'25.96"N	76°0'43.75"E
BP8	11°06'25.44"N	76°0'40.63"E
BP9	11°06'31.07"N	76°0'39.87"E
BP10	11°06'33.28"N	76°0'38.30"E
BP11	11°06'34.63"N	76°0'36.26"E
BP12	11°06'35.75"N	76°0'37.59"E

Morayur Village

(Source: Census of India 2011)

Sl.No	Details		Number/Area	
1	Area		2453Ha	
2	Number of Households		6501	
3	Total population (including institutional and houseless population)		Persons	33960
			Males	16299
			Females	17661
4	Scheduled Castes population		Persons	2313
			Males	1143
			Females	1170
5	Scheduled Tribes population		Persons	45
			Males	22
			Females	23
6	Literates		Persons	27392
			Males	13316
			Females	14076
7	Illiterates		Persons	6568
			Males	2983
			Females	3585
8	Total workers		Persons	8096
			Males	7123
			Females	973
9	Main workers		Persons	6200
			Males	5686
			Females	514
10	Industrial category of main workers	Cultivators	Persons	421
			Males	401
			Females	20
		Agricultural labourers	Persons	539
			Males	500
			Females	39
		Household industry workers	Persons	109
			Males	96
			Females	13
		Other workers	Persons	5131
			Males	4689
			Females	442

COMMUNITY ACTIVITIES PROPOSED

This proposed CER report was prepared in accord with the latest Memo regarding Corporate Environment Responsibility (F.No.22-65/2017-1A.III). And the funding allocated for the community activities is more than 2% of the capital investment. A Social activity budget proposal is prepared in consultation with the project proponent in materializing the Social Responsibility. General purpose of this proposal is for the assistance & promotion of the living standards of the poor & needy people surrounding the area where the mining activity is performed. As per the guidelines of Company's Act (Amendment) 2013, the study was mainly focused on the Promotion of Social Aspects and Promotion of Education.

The project proponent will implement CER activities in the local community around the project site. The CER schemes are identified to meet the specific needs and requirement of the concerned group/person of any organization/Institutions. In continuation to the recent OM No.22- 65/2017-IA.III dated 30/09/2020 and OM No. 22-65/2017-IA.III dated 20/10/2020 of the MoEF &CC. The project proponent has committed to address the concerns with respect to CER activities to be taken up and the budget for the same .About Rs.8,00,000 allocated as Non-Recurring expenses and Rs.3,00,000 allocated as Recurring expenses. The CER activities should be undertaken during the first three years of validity period of the EC and after ensure that the maintenance of the interventions undertaken can be carried out by the proponent during the remaining period of validity of the EC.

PROMOTION OF EDUCATION

A.Project will help in the Installation of 2KW Solar unit for the Govt.VHS School, Arimbra

Now a days schools are preparing a plan to implement solar power production to meet the rising electricity demand and decrease the amount spent on paying the electricity bill. This project will help in the Installation of 2KW Solar unit for the Govt.VHS School, Arimbra.

Particulars	**Total Amount**	**Type of Expense**
Installation of 2KW Solar unit for the Govt. H.S School, Arimbra	2,00,000	Non-Recurring
TOTAL	**2,00,000**	

SOCIAL ASPECTS

A.The Project will provide financial support to the 30 patients who economically backward at Morayur Panchayath.

Particulars	Calculation	Total Amount	Type of Expense
Financial Support for 30Patients	10,000x30	3,00,000	Non-Recurring
TOTAL		**3,00,000**	

B.Provide 60 no's of 15w Solar LED Street lights in co-operation with Panchayat and KSEB

To provide lighting at night and prevent accidents and to increase the safety, solar LED street lights will be provided. It uses the solar radiation energy to charge the battery with the solar panel during day time, and offer energy to the LED light equipment at night. This system has a double advantage in both utilization of new energy and energy-saving. This project will provide 60 no's of 15w Solar LED Street lights in co-operation with Panchayat and KSEB.

Particulars	Calculation	Total Amount	Type of Expense
Provide 60 no's of 15w Solar LED Street lights in co-operation with Panchayat and KSEB	5000X60	3,00,000	Non-Recurring
TOTAL		**3,00,000**	

SUMMARY OF CER ACTIVITIES PROPOSED

Year wise	Particulars	Calculation	Amount (Rs.)
First Year	Installation of 2KW Solar unit for the Govt.VHS School, Arimbra	2,00,000x1	2,00,000
Second Year	Financial support to the 30 patients who economically backward at Morayur Panchayath.	1,00,000X3	3,00,000
Third Year	Provide 60 no's of 15w Solar LED Street lights in co-operation with Panchayat and KSEB	5000x60	3,00,000
	Maintenance of Interventions		3,00,000
Total			**11,00,000**

The consent form the beneficiary for above mentioned activities is obtained and it will be done during the first 3 years of validity period of the EC and the remaining validity period will be used to ensure that the maintenance of the interventions are undertaken. The proponent allocated Rs 8,00,000 for the CER activities and an extra Rs. 3,00,000 for the maintenance purposes.

The total funds allocated for the CER activities=Rs 11Lakhs

Mr. UmmerKutty K

Director of M/s. Morayoor Granites Pvt Ltd

ANNEXURE 5

BASE LINE ENVIRONMENTAL DATA AND ENVIRONMENT MANAGEMENT PLAN

PROJECT:

BUILDING STONE QUARRY OWNED BY M/s MORAYOOR GRANITES PVT LTD

EXTENT : 4.9797 Ha,

RE SURVEY NO. 152/1-1, 152/1, 159/1-1, 159/1-2, 159/1-3, 160/1-1, 160/1-2, 160/1-3, 160/1-4,

Re Survey Block No. 56 of Morayur Village, Kondotty Taluk, Malappuram District, Kerala

INTRODUCTION

The proposed building stone quarry owned by M/s Morayoor Granites Pvt Ltd, is situated at Re Survey No.152/1-1, 152/1, 159/1-1, 159/1-2, 159/1-3, 160/1-1, 160/1-2, 160/1-3, 160/1-4, Re Survey Block No. 56 of Morayur Village, Kondotty Taluk, Malappuram District, Kerala for an area of 4.9797 hectares. The baseline environmental data was collected for various environmental attributes like ambient air, noise, and water quality etc., from the study area to identify impacts of the project by correlate the existing environment. The Environment Management Plan (EMP) is a site-specific plan developed to ensure that the project is implemented in an environmentally sustainable manner and to understand the potential environmental risks arising from the proposed project and take appropriate actions to minimize those risks. EMP also ensures that the project implementation is carried out in accordance with the planned design and by taking appropriate mitigative actions to reduce adverse environmental impacts during the project's life cycle. The studies, data collection have been carried out systematically and meticulously as per relevant IS codes, CPCB and MOEF&CC guidelines and the data collected for these parameters are given in this report.

The environmental parameters likely to be affected by mining are related to many factors, i.e. physical, social, economic, agriculture. Opencast mining involves drilling, blasting, loading and transport of the mineral, stacking of topsoil & overburden. The operations may disturb environment of the area in various ways, such as removal of mass, change of landscape, flora and fauna of the area, surface drainage, and change in air, water and soil quality. Therefore, it is essential to assess the impacts of mining on different environmental parameters, before starting the mining operations, so that abatement measures could be planned in advance for eco-friendly mining in the area. Potential Environmental impacts and their predictions of the project, taken into consideration are: -

1. Air Environment
2. Water Environment
3. Noise Environment
4. Land Environment
5. Biological Environment
6. Socio-Economic Environment

Baseline environmental data was assessed by primary data collection, Field monitoring (by NABL/MoEF&CC accredited lab) and from secondary sources.

1. AIR ENVIRONMENT

The ambient air quality depends upon the emission sources, meteorological conditions and the background concentration of specific contaminants. The principal objective of the Ambient Air Quality Monitoring (AAQM) is to assess the existing levels of ambient air quality in and around the permit area for assessing the impact on air quality due to mining activity in the region.

1.1 Meteorological parameters

The district has more or less the same climatic conditions prevalent elsewhere in the State viz. dry season from December to February and hot season from March to May, the South-West monsoon from June to September and the North-East monsoon from October to December. The normal rainfall of the district is 2793.3 mm. Out of this, major rainfall contribution is from SW monsoon followed by the NE monsoon. The South West monsoon is usually very heavy and nearly 73.5% of the rainfall is received during this season. NE monsoon contributes nearly 16.4% and March to May summer rain contributes nearly 9.9% and the balance 0.2% is accounted for during January and February months. ***(Source: District Survey Report).***

1.2 Ambient air monitoring

Field monitoring studies for 24 hourly frequencies was carried out to evaluate the baseline status of the project site in compliance with MoEF guidelines.

Table 01: Sampling and Analysis Techniques

Parameters	Technique	Technical protocol	Minimum detection Limit
Particulate Matter of size less than 10 μm (pm_{10})	Gravimetric Method	CPCB Guideline	5.0 $\mu g/m^3$
Particulate Matter of size less than 2.5 μm ($pm_{2.5}$)	Gravimetric Method	CPCB Guideline	3.0$\mu g/m^3$
Sulphur Dioxide (SO_2)	Improved west and Gaeke	IS 5182 Part 2	5.0 $\mu g/m^3$
Nitrogen Dioxide (NO_2)	Modified Jacob and Hochheiser	IS 5182 Part 6	5.0 $\mu g/m^3$
Carbon Monoxide (CO)	Non-Dispersive Infra-Red Spectroscopy	IS 5182 Part 10	0.1 mg/m^3

Table 02: Monitoring Results (Monitoring Date 29.04.2019)

Component	Air Quality at Location (µg/m3)				Standard Limit (NAAQS) (µg/m3)
	A1-E	A2-N	A3-S	A4-W	
PM10	49.6	50.4	51.2	49.5	100
PM2.5	18.4	20.5	21.0	20.1	60
SO2	6.8	3.5	2.6	2.7	80
NOx	6.1	4.2	3.1	2.9	80

Stations	Direction	Latitude	Longitude
A1	E	11° 6'30.98"N	76° 0'43.13"E
A2	N	11° 6'40.74"N	76° 0'40.44"E
A3	S	11° 6'25.43"N	76° 0'40.85"E
A4	W	11° 6'34.27"N	76° 0'36.46"E

From the field measurement result of the ambient air, it is observed from the report that the ambient air quality at site within the prescribed standards (NAAQS) with respect to PM10, PM2.5, NOx, SO2& CO.

2. WATER ENVIRONMENT

Assessment of baseline data on water environment includes Identification of water resources, Collection of water samples and analyzing the collected water sample from Storm water collection pond for physicochemical parameters as per IS 10500 -2012 standards.

Table 03: Water Analysis Result (Monitoring Date 29.04.2019)

Sl No	Parameters	Unit	Method	Result	Requirement (Acceptable limit)
1	pH at 25^0C	-	Cl.2 of IS 3025 (Pt 11):1983, Reaff. 2012	7.05	6.5-8.5
2	Odour	-	IS 3025 (Pt 5):1983, Reaff. 2012	Agreeable	Agreeable
3	Colour	Hazen Units,max	Cl. 2 of IS 3025 (Pt 4):1983, Reaff. 2012	4.0	5.0
4	Turbidity	NTU,max	IS 3025 (Pt 10):1984, Reaff.	0.60	1.0

			2012		
5	Total Dissolved Solids	mg/l,max	IS 3025(Pt 16):1984, Reaff. 2006	92	500
6	Total Hardness as $CaCO_3$	mg/l,max	Cl. 5 of IS 3025(Pt 21):2009, Reaff. 2012	30.30	200
7	Chloride as Cl	mg/l,max	Cl. 2 of IS 3025(Pt 32):1988, Reaff. 2009	31.08	250
8	Sulphate as SO_4	mg/l,max	Cl. 4 ofIS 3025(Pt 24):1986, Reaff. 2009	7.9	200
9	Alkalinity as $CaCO_3$	mg/l,max	Cl. 8.1 of IS 3025(Pt 23):1986,Reaff. 2009	25.56	200
10	Iron as Fe	mg/l,max	Cl. 6 of IS 3025 (Pt 53):2003,Reaff. 2009	0.07	1
11	Calcium as Ca	mg/l,max	Cl. 5of IS 3025(Pt 40):1991, Reaff. 2009	8.91	75
12	Magnesium as Mg	mg/l,max	Cl. 6 of IS 3025(Pt 46):1994, Reaff. 2009	1.96	30
13	E.coli or thermotolerant coliform bacteria	IS 1622 : 1981, Reaff.2009		Absent	Shall not be detectable in any 100 ml sample

Note: - BDL: Below Detection Limit MDL: Minimum Detection Limit

HYDROLOGY

The coastal plain with alluvial soil and high precipitation is a potential aquifer, suitable for filter point and tube wells. In the midland area with thick laterite cover open dug wells are ideal for tapping water for domestic needs. However, the valleys with alluvial deposit are highly potential for groundwater development. In the foothills of the mountains characterised by undulating topography, only valleys yield good groundwater. Some of the fracture zones or lineaments are also potential, but bore wells are site specific. The mountainous terrain in the east is generally unsuitable for groundwater development.

Hydrogeologically, the aquifer system in the district can be broadly divided into Crystalline aquifers (fractured basement rock aquifers), Laterite aquifers, Lateralized sedimentary (Tertiary) aquifers and Alluvial aquifers. Crystalline and Laterite aquifers constitute major part (85%) of the district. ***(Source: District Survey Report).***

3. NOISE ENVIRONMENT

The main objective of noise monitoring in the study area is to establish the baseline noise levels and assess the impact of the total noise expected to be generated during the mining operations in the project site.

Table 04: Result Presentation (Monitoring Date 29.04.2019)

Ambient Noise Level at Location (Leq dB(A))					CPCB standard Leq dB(A)
	N1-E	N2-N	N3-S	N4-W	
Day time	45.9	44.1	47.5	46.6	55
Night time	35.8	33.5	36.9	35.8	45

Stations	Direction	Latitude	Longitude
N1	E	11° 6'30.98"N	76° 0'43.13"E
N2	N	11° 6'40.74"N	76° 0'40.44"E
N3	S	11° 6'25.43"N	76° 0'40.85"E
N4	W	11° 6'34.27"N	76° 0'36.46"E

Results and Conclusion: -It is observed from the above monitoring results that the Noise levels at boundary of the mining site are within the prescribed national standards.

4. LAND ENVIRONMENT

As already mentioned, Topographically lease area and its surrounding is an elevated terrain with quarry land covered with native trees, shrubs, herbs, grass, climbers, bushes etc. The highest elevation of the lease area is 310 m MSL and lowest is 190 m MSL. As the proposed area is hillock, the drainage of the lease area is towards North East. No habitants are located in the lease area.

Regional Geology

From the exposure pattern of the rock types, the district can be divided into two geological belts: (i) Charnockite group of rocks covering a major part and (ii) Migmatite Complex towards the east. Wayanad group is represented by small bodies of metaultramafites (tal-tremolite schist, talc-pyroxene-garnet schist, banded magnetite quartzite) and high-grade schist and gneiss (hornblende-biotite schist and gneiss+garnet with amphibolite band) which extends into Tamil Nadu where it is known as

Sathyamangalam Group. The rocks of Peninsular Gneissic Complex, represented by granite gneiss and hornblende-biotite gneiss, form the next younger sequence. They have a very limited distribution near the eastern boundary. They have a very limited distribution near the estern boundary, extending into the adjacent district where they are known as Bhawani Group. A linear band of granite gneiss NE of Perinthalmanna and a large body of hornblende-biotite gneiss east of Manjeri are prominent units. Charnockit Group includes charnockite/charnockite gneiss, having the largest areal distribution, followed in decreasing order of abundance by banded magnetite quartzite, pyroxene granulite, amphibolite/hornblende granulite and pyroxenite, which occur as concordantas well as discordant bands, lenses, layers and enclaves both within charnockite as well as within gneisses of Migmatite Complex. The Migmatite Complex is represented by biotite-hornblende gneiss (or hornblende-biotite gneiss) and quartzo-feldspathic gneiss/garnet-biotite gneiss with enclaves of garnet-sillimanite gneiss+graphite distributed mostly in the central and northeastern part. Pegmatite and quartz veins constitute the acid intrusives, whereas gabbro and dolerite are basic intrusives. Near the coast, isolated cappings of Neogene Warkalli sediments comprising grit and clay beds are noticed. Lateritisation is widespread, at places attaining a thickness of more than10m. Extensive plateaus with laterite 'mesas' are common in the area. Angadipuram(west of Perinthalmanna), the type locality of laterite falls in this district. Quaternary unconsolidated sediments are restricted to the coastal plain. They have been classified into different morpho-stratigraphic units based on their lithic content and environment of formation. Guruvayur Formation (palaeo-marine), Periyar Formation (fluvial),Viyyam Formation (fluvio-marine) and Kadappuram Formation (marine***).(Source: District Survey Report)*.**

Local Geology

The local geology belongs to the regional geology. Main rock type in the study area is charnockite. At places where they are exposed, the charnockite is medium to coarse grained with dark grey quartz. The average soil & over burden thickness is 0.5 m to 0.6 m.

SOCIO ECONOMIC ENVIRONMENT

The permit area falls in Malappuram district of Kerala. Cashew and rubber are the main commercial crops of the area. Some locals are mainly connected with mining of different minerals & crushing industry. They work as subcontractors, transporters and mine workers. Some are also employed in different industries in the nearby town and do trading and commercial plantation. The demographic details of nearby villages around the proposed project site are detailed below.

ENVIRONMENT MANAGEMENT PLAN

The Environment Management Plan (EMP) of a project detailed the mitigation measures to be adopted to minimize various environment impacts, expected, so as to ensure low impact due to the project to the surrounding environment. This will ensure sustainable development and environment friendly mining operations. The Environment Management Plan for various aspects of environment are follows under:

1. LAND ENVIRONMENT

The total mine permit area of 4.9797 Ha is Private land. The present land use and ultimate stage of mining land use will be as under:

S. No.	Land Use Category	Pre-Operational (Ha.)	Operational (Ha.)	Post-Operational (Ha.)
1	Excavation (Voids Only)	-	2.0815	-
2	Road	0.05	0.2	0.2
3	Built Up Area	-	-	-
4	Reclamation (Backfilled)	-	-	2.0815
5	Pond	-	1.8587	1.8587
6	Drainage	-	0.22	0.22
7	Green belt	-	0.6195	0.6195
8	Mineable Area	4.9297	-	-
Total Area		**4.9797**	**4.9797**	**4.9797**

Anticipated potential impacts

- Land use change
- Loss of Top soil & overburden
- Soil erosion due to storm water

Mitigation measures

In order to minimize the adverse effects, the following suggestions have been made.

- Concurrent eco restoration will be carried out.

- Construction of check dams and collecting channel all around at the foot of the hill to prevent soil erosion during the monsoon season and also to collect the storm water for various use within the mine permit area.
- We are very conscious to prevent all quarry waste to enter in the public drainage or water bodies in around the project area. We will designed a proper drainage management plan to prevent the contamination of public drainage and water bodies. We will construct a garland drainage at the start of mining itself. In the initial phase, garland drainage with silt traps will be constructed along the boundary pillars BP8-BP10-BP11-BP12. While mine progressing stage, garland drain will be constructed along the Boundary pillars BP8-BP7-BP6-BP4. Within 1year we will construct the garland drain of above mentioned area.In the second year,Garland Drainage with silt traps constructed in the northern stretch of the lease area i.e, along the boundary pillars BP2-BP1 .Garland Drains will be constructed in the lower slope of Project area about having dimensions of 1m width around the working benches.The surface runoff water from the quarry area carries by Garland Drains and flows through silt traps at each slope breaks. Collected run-off from the lease area passess through Desiltation tanks. Two Desiltation tanks will be proposed in the quarry area. One Desiltation tank will be proposed nearer to the boundary pillars BP6 having dimensions of 3mx1.5mx2.5m and another one proposed nearer to boundary pillar BP2 of lease area having dimensions of 3mx1.5mx2.5m.Clarified and controlled water flow passes through check dam .From the check dam, the controlled flow only connect to the existing natural drainage.
- About 0.6195Ha of area coming under the Green Belt.295numbers of trees currently existing in the Buffer Area, additionally 737 numbers of trees will be plant within the buffer area, expecting survival rate of 90-95%. As a compensation of loss of trees within the core area, planation will be carried out side the lease area, more in the dry area in Survey No 160/1-2 for an area of 0.6516Ha. Yearly, we will plant about 217no's of trees for 5years.Totally we will plant around 1085no's of trees within the same area, expecting survival rate of 90-95% with a plant interval of 2x3m wide. For the last 5years,as part of Social forestree Programme, during the World Environmental Day we will provide yearly 100no's of trees to the schools, primary helath centre etc.
- It is proposed to reclaim the pit area and this area will be suitably planted with local species for eco-restoration in all possible means.

- Proper barricading and monitoring of the water stored area will be taken up to prevent accidents (if any)
- It is estimated that around 20701 cum of top soil will be generated from the proposed pit, which will be properly stacked and will be utilized for plantation over the reclaimed areas.
- It is also estimated that around 24841 cum of OB is generated which will be utilized in developing internal roads.
- The Top soil and over burden is managed by storing in the lowest part of the mining area i.e, in the North Side which will be protected with retaining walls having dimensions of 2.5m height and 1m width. The retaining wall will have weep holes to drain out water to the garland drain We will maintained the stability of overburden by providing proper seeding. For more stability more deep routed trees and shrubs will be plant to protect it. Precautions will be taken to limit the height of the dump to 5 to 6 meters in order to preserve its fertility and shelf life.

In the mine closure stage, water body will be formed in the quarried void from the mine floor level. Since the mine area is a sloping terrain it is suggested to construct a retaining wall and garland drain at the Toe of the hill of the ML area. This will help to retain the roll of rocks if any down wards. Besides, silted water if any will be collected in the garland drain will flow into the settling pond. Supernatant clear water will be let out of the area after passing through silt traps. Besides, the peripheral safety zone will also be developed with plantation. The mined area will be properly fenced all around. The rain water falling in the quarry will be harvested. This pit will act as a settling pond to prevent solids escaping along with discharge, before outlet etc. Besides, it is also suggested to construct a settlement pond outside the permit area on the Southern side so that the water can be diverted into this pond. The Mine closure is depicted in the Mine Closure plan(Reclamation Plan) and section.

2. AIR ENVIRONMENT

Anticipated potential impacts

- Drilling
- Blasting
- Transportation

Apart from the mining operations of drilling & blasting, movement of vehicles like dumpers, trucks, tankers etc. will generate dust. The transportation activities on unpaved area will results in fugitive

emissions to the tune of 1.261 kg/VkmT for PM10 and 0.126 kg/VkmT for PM2.5. (*Calculation based on USEPA- AP 42 series.*).

Mitigation measures:

Mining activities will generate certain quantities of dust during drilling, blasting, loading and transportation operations. The following measures will be taken to mitigate the fugitive dust from these operations.

- Laying of haul road as per the standards, black topping of permanent haul road and service road to avoid or eliminate air – borne dust.
- To avoid the dust generation from the drilling operations, wet drilling method will be adopted.
- Drill machines will be equipped with dust collectors.
- Use of appropriate explosives for blasting and avoiding overcharging of blast holes.
- Controlled blasting techniques will be adopted.
- Watering of haul road and other road at regular intervals using water tankers and sprinklers
- Provision of dust filters / mask to workers for highly dust prone and affected areas.
- About 0.6195Ha of area coming under the Green Belt.295numbers of trees currently existing in the Buffer Area, additionally 737 numbers of trees will be plant within the buffer area, expecting survival rate of 90-95%. As a compensation of loss of trees within the core area, planation will be carried out side the lease area, more in the dry area in Survey No 160/1-2 for an area of 0.6516Ha. Yearly, we will plant about 217no's of trees for 5years.Totally we will plant around 1085no's of trees within the same area, expecting survival rate of 90-95% with a plant interval of 2x3m wide. For the last 5years,as part of Social forestree Programme, during the World Environmental Day we will provide yearly 100no's of trees to the schools, primary helath centre etc.

- Periodical monitoring of ambient air quality in and around the permit area.

The extracted mineral will be transported from the quarry to the end user by adopting following measures so as to minimize dust emissions.

- In case of long transportation, the trucks after loading will be covered with tarpaulin sheets.
- Washing of machineries will be done weekly. High pressure washers will be used for vehicles cleaning .It has the ability to supply a high volume of pressurised water and to remove dirt,stuck on debris and other contaminants quickly and efficiently. We will arrange a specific free space

in the quarry site for cleaning of vehicles and we will wash the vehicles weekly.About 15Kld will be utilised for vehicle washing.

- Speed of the vehicles will be maintained within the prescribed limits.
- Trucks will not be over loaded and will be maintained to the body level.
- The proposed mining activity is attached with a crusher operation.

The following measures are being taken to control the dust emissions: -

- The unit is based on latest green technology and the entire unit is closed loop with proper control strategies.
- The unit is well equipped with dust extraction system like bag filters at all traverse points to control the dust emissions.
- Closed conveyor system with water sprinkling arrangements are adopted in this unit. Sufficient water is used to maintain the moisture content to control the fugitive emissions throughout the system.

3. WATER ENVIRONMENT

3. a. Domestic Sewage

Anticipated potential impacts

The domestic sewage generation, if discharged untreated, can contaminate the ground water and other ground & surface water sources.

Mitigation measures:

The sewage to the tune of 0.80 KLD will be generated from the site and the same will be diverted to the septic tank followed by soak pit.

3. b. Storm water contamination with silt

Anticipated potential impacts

Mining activities may cause adverse impacts due to siltation due to runoff/ storm water. An impact due to soil erosion during monsoon period is also significant in nature. This also has the potential to clog the water channels and to spoil agriculture.

Mitigation measures:

Some of the control measures adopted for controlling water pollution due to the siltation of storm water by mining operations are as follows: -

- Storm water drains with silt traps will be suitably constructed all along the periphery of the pit area (Garland drains) to collect the run-off from the permit area and divert into the storm water pond/tanks proposed within the complex.
- We are very conscious to prevent all quarry waste to enter in the public drainage or water bodies in around the project area. We will designed a proper drainage management plan to prevent the contamination of public drainage and water bodies. We will construct a garland drainage at the start of mining itself. In the initial phase, garland drainage with silt traps will be constructed along the boundary pillars BP8-BP10-BP11-BP12. While mine progressing stage, garland drain will be constructed along the Boundary pillars BP8-BP7-BP6-BP4. Within 1year we will construct the garland drain of above mentioned area.In the second year,Garland Drainage with silt traps constructed in the northern stretch of the lease area i.e, along the boundary pillars BP2-BP1 .Garland Drains will be constructed in the lower slope of Project area about having dimensions of 1m width around the working benches.The surface runoff water from the quarry area carries by Garland Drains and flows through silt traps at each slope breaks. Collected run-off from the lease area passess through Desiltation tanks. Two Desiltation tanks will be proposed in the quarry area. One Desiltation tank will be proposed nearer to the boundary pillars BP6 having dimensions of 3mx1.5mx2.5m and another one proposed nearer to boundary pillar BP2 of lease area having dimensions of 3mx1.5mx2.5m.Clarified and controlled water flow passes through check dam .From the check dam, the controlled flow only connect to the existing natural drainage.

- Appropriate channelization of storm water with channels of sufficient width. All measures will be taken not to disturb the existing drainage pattern adjacent to the other property.
- De-siltation traps and storm water collection pond proposed for silt removal.
- The storm water collected from the permit area will be utilized for dust suppression on haul roads, plantation within the premises, etc.
- The layout of channelization of storm water from the project site is shown in the Plate No: 09 of Approved Mine Plan
- Construction of check dams and collecting channel all around at the foot of the hill to prevent soil erosion during the monsoon season and also to collect the storm water for various use within the mine permit area.

4. NOISE ENVIRONMENT

Anticipated potential impacts

The main sources of noise in the project area are

- Drilling
- Blasting
- Compressors
- Vehicular movements
- Loading & unloading of materials

Mitigation measures

The following noise control measures are undertaken to bring down the noise levels: -

- Proper maintenance of machinery, equipment and improvement on design of machines.
- Use of personal protective devices i.e., earmuffs and earplugs by workers, who are working in high noise generating areas.
- Creation of wide green belt of dense foliage between mine areas and residential colonies.
- Regular medical check-up related health problems
- Proper training to personnel to create awareness about adverse noise level effects.
- Planned noise monitoring at suitable locations in the plant and outside location for proper effective remedial actions.

5. Other anticipated potential impacts in land environment

5.1 Ground Vibrations

The only source of ground vibrations is due to blasting operations. Based on the ground vibration studies made earlier proper care will be taken during blasting.

5.2 Blasting Hazards

Blasting in mining areas may give rise to ground vibrations. Fly rock is another problem that deserves attention. Based on ground vibration studies made earlier, proper precautions will be taken during blasting operations for controlling the ground vibrations.

Mitigation measures

The mitigation measures for addressing the various impacts due to blasting operation are presented below.

- Controlled blasting technique will be adopted in this project in order to reduce blast vibrations. Further, charge per delay will be regulated to minimize blast vibrations.
- Proper hook-up will be adopted while firing the drill holes. Moreover, the experience gained in other open cast mines would be gainfully utilized to limit the ground vibration levels within the prescribed limit of 15 mm/sec (as per DGMS). In practice, this is kept much less to about 10mm/sec.

In addition, the following guidelines will be adopted wherever required to check the ground vibrations:

- The maximum charge per delay will not be more than 18 kg so as to limit the PPV values to 15mm/ sec. as per DGMS permissible standard.
- Optimum delay sequence and stem to column ratio will be maintained to minimize the fly rock distance and ground vibration intensity.
- Basing on the distance of the nearest sensitive areas from the epicenter of the blast, charge weight will be altered to meet the stipulated standards.
- Design of optimum blast hole geometry considering bench height, diameter of hole, type of explosive, nature of rock, level of fragmentation required etc.
- Divide total charge/ blast in several parts so as to keep minimum explosive per delay i.e. use of millisecond delay detonators & relays.
- Avoid concentration of explosive by using deck charging.
- Avoiding blasting in unfavorable weather conditions.

5.3 Fly Rock Control Measures

There are a large number of factors that influence fly rocks. Most important of these factors are long explosive columns with little stemming at the mouth of the hole, irregular shape of face, long water column in holes, loose stones on face of the surface blasting area, and strong wind.

Mitigation measures

Certain preventive measures will be taken to minimize the risks arising from flying fragments. These are given below: -

Marking of danger zone:

The area falling within 250 m of the blasting area will be marked off as danger zone with red flags, or other appropriate signs, and entry of any unauthorized person into this zone will be prohibited during blasting operation.

Warning signals:

An audible warning signal will be given, fifteen minutes before actual firing of blast to enable persons to move out of danger zone. For this purpose, a set of sirens/ hooters will be provided at appropriate places.

Providing blasting shelters:

In order to protect the personnel engaged in blasting operations, blasting shelters will be provided for taking shelter during blasting.

5.4 Air blast control measures

The permit of explosive energy through air and movement of fragmented rocks are primary causes for noise and air over pressure during blasting.

Mitigation measures

Adoption of the following measures while carrying out blasting operation will help in reducing the intensity of air blasts and will also minimize the noise level associated with the air blasts. The measures suggested are given below: -

- Avoiding overcharging of blast holes
- Adequate stemming
- Maintaining proper inter-hole & inter-row delays.

6. ENVIRONMENT MANAGEMENT PLAN:

As there are no habitations or hutments in the core zone area, no rehabilitation or resettlement problems are involved. The existing environmental scenario in respect of ambient air quality, water quality, noise levels, water aspects, biological aspects, etc. show that all these environmental parameters are within the statutorily prescribed levels. As such, impact due to the project will be positive on socio-economic aspects. It will be ensured that the buffer zone of the mine permit will be properly preserved environmentally in all respects within sustainable limits through necessary monitoring. The project will be operated with care for minimizing environmental impacts with proper EMP measures for pollution control which will be continued in future also. The quarrying operation has resulted in direct employment opportunities for about 11 persons.

Because of such employment prospects and enhancement of income levels of local community, their lifestyle, conditions of living, educational and health status, etc. will considerably improve. Besides,

there are also benefits to the State and the Central governments through financial revenues by way of royalty, tax, duties, etc. from this project directly and also indirectly.

Sl. No	Area of Intervention	Non-Recurring Cost	Recurring Cost
1	Air Pollution		
	Personal protective equipment to mine workers	-	1,00,000
	Blast mats	2,00,000	1,00,000
	Wetting of roads (paved andunpaved) by water tanker	7,00,000	3,00,000
	Sprinkler System	3,00,000	1,00,000
	Sub Total	**12,00,000**	**6,00,000**
2	Noise & Vibration Pollution		
	Blasting siren & Notice Boards	85,000	1,00,000
	Subtotal	**85,000**	**1,00,000**
	Water Pollution		
3	Construction of Desiltation Tank and Check dam (storm water management)	9,00,000	1,50,000
	Construction of Ponds(Rain water harvesting)	4,00,000	1,00,000
	Seasonal Cleaning of Garland drain & Desiltation tanks	-	2,00,000
	Sub Total	**13,00,000**	**4,50,000**
	Ecological Environment		

4	Green Area development in 7.5mbuffer zone of mine leasearea	3,68,500	3,68,500
	Afforestation Plan nearer to lease area	5,42,500	5,42,500
	Social Forestree	2,50,000	2,50,000
	Subtotal	**11,61,000**	**11,61,000**
	Solid Waste Management		
5	Topsoil& Overburden Dumping Area Yard development	10,00,000	1,00,000
	Waste Oil Management	50,000	1,00,000
	Sub Total	**10,50,000**	**2,00,000**
	Grand Total	**47,96,000**	**25,11,000**

COMMUNITY ACTIVITIES PROPOSED

This proposed CER report was prepared in accord with the latest Memo regarding Corporate Environment Responsibility (F.No.22-65/2017-1A.III). And the funding allocated for the community activities is more than 2% of the capital investment. A Social activity budget proposal is prepared in consultation with the project proponent in materializing the Social Responsibility. General purpose of this proposal is for the assistance & promotion of the living standards of the poor & needy people surrounding the area where the mining activity is performed. As per the guidelines of Company's Act (Amendment) 2013, the study was mainly focused on the Promotion of Social Aspects and Promotion of Education.

The project proponent will implement CER activities in the local community around the project site. The CER schemes are identified to meet the specific needs and requirement of the concerned group/person of any organization/Institutions. In continuation to the recent OM No.22- 65/2017-IA.III dated 30/09/2020 and OM No. 22-65/2017-IA.III dated 20/10/2020 of the MoEF &CC. The project

proponent has committed to address the concerns with respect to CER activities to be taken up and the budget for the same .About Rs.8,00,000 allocated as Non-Recurring expenses and Rs.3,00,000 allocated as Recurring expenses. The CER activities should be undertaken during the first three years of validity period of the EC and after ensure that the maintenance of the interventions undertaken can be carried out by the proponent during the remaining period of validity of the EC.

PROMOTION OF EDUCATION

A.Project will help in the Installation of 2KW Solar unit for the Govt.VHS School, Arimbra

Now a days schools are preparing a plan to implement solar power production to meet the rising electricity demand and decrease the amount spent on paying the electricity bill. This project will help in the Installation of 2KW Solar unit for the Govt.VHS School, Arimbra.

Particulars	**Total Amount**	**Type of Expense**
Installation of 2KW Solar unit for the Govt. H.S School, Arimbra	2,00,000	Non-Recurring
TOTAL	**2,00,000**	

SOCIAL ASPECTS

A.The Project will provide financial support to the 30 patients who economically backward at Morayur Panchayath.

Particulars	**Calculation**	**Total Amount**	**Type of Expense**
Financial Support for 30Patients	10,000x30	3,00,000	Non-Recurring
TOTAL		**3,00,000**	

B.Provide 60 no's of 15w Solar LED Street lights in co-operation with Panchayat and KSEB

To provide lighting at night and prevent accidents and to increase the safety, solar LED street lights will be provided. It uses the solar radiation energy to charge the battery with the solar panel during day time, and offer energy to the LED light equipment at night. This system has a double advantage in both utilization of new energy and energy-saving. This project will provide 60 no's of 15w Solar LED Street lights in co-operation with Panchayat and KSEB.

Particulars	Calculation	Total Amount	Type of Expense
Provide 60 no's of 15w Solar LED Street lights in co-operation with Panchayat and KSEB	5000X60	3,00,000	Non-Recurring
TOTAL		**3,00,000**	

SUMMARY OF CER ACTIVITIES PROPOSED

Year wise	Particulars	Calculation	Amount (Rs.)
First Year	Installation of 2KW Solar unit for the Govt.VHS School, Arimbra	2,00,000x1	2,00,000
Second Year	Financial support to the 30 patients who economically backward at Morayur Panchayath.	1,00,000X3	3,00,000
Third Year	Provide 60 no's of 15w Solar LED Street lights in co-operation with Panchayat and KSEB	5000x60	3,00,000
	Maintenance of Interventions		3,00,000
Total			**11,00,000**

The consent form the beneficiary for above mentioned activities is obtained and it will be done during the first 3 years of validity period of the EC and the remaining validity period will be used to ensure that the maintenance of the interventions are undertaken. The proponent allocated Rs 8,00,000 for the CER activities and an extra Rs. 3,00,000 for the maintenance purposes.

The total funds allocated for the CER activities=Rs 11Lakhs

DECLARATION

"I hereby given undertaking that the data and information given in the application and enclosures are true to the best of my knowledge and belief and I am aware that if any part of the data and information submitted is found to be false or misleading at any stage, the project will be rejected and clearance give, if any to the project will be revoked at our risk and cost."

UmmerKutty K

Director

M/s Morayoor Granites Pvt Ltd

ANNEXURE 6

No. DMG/802/2022-M4

Directorate of Mining &Geology
Kesavadasapuram, Pattom Palace P.O.
Thiruvananthapuram-695 004
email : director@dmg.kerala.gov.in
Web: www.dmg kerala.gov.in
Tel/Fax: 0471-2447429
Date: 16-09-2022

From

Director of Mining &Geology

To

M/s.Morayur Granites Private Limited
Mucheth House,Elambra, Nellikuzhy
Ernakulam-686691
(Represented by its Director,Sri Ummerkutty.K)

Sir,

Sub: Mines&Minerals-Minor Minerals-Granite Building Stone-Quarrying Lease application submitted by M/s.Morayur Granites Private Limited, Mucheth House, Elambra, Nellikuzhy, Ernakulam-686691(Represented by its Director,Sri Ummerkutty.K) -Request of extension of Letter of Intent-Order issued–reg

Ref:
1. Application dated. 05/11/2018 submitted by M/s.Morayur Granites Private Limited, Mucheth House, Elambra, Nellikuzhy, Ernakulam-686691 (Represented by its Director, Sri Ummerkutty.K)
2. KMMC Rules, 2015.
3. Letter of Intent No.4072/M3/2019 Dated.30.05.2019
4. Application submitted by the applicant dated.05.01.2022
5. Honourable Supreme Court Judgement dt.20/10/2021in civil appeals12122-12123/2018.
6. O.A No.304/2019 pending before the Honourable NGT

As per reference 1st cited an application has been filed before this office in respect of M/s.Morayoor Granites Private Limited, Mucheth House, Elambra, Nellikuzhy, Ernakulam-686691(Represented by its Director,Sri Ummerkutty.K) for granting Quarrying lease for an area of **4.9797 Ha** of land in Re survey Block No.56 Re survey Nos. **152/1-1, 152/1, 159/1-1, 159/1-2, 159/1-3, 160/1-1, 160/1-2, 160/1-3, 160/1-4** of **Morayur Village, Kondotty Taluk in Malappuram District.** On verification of the application it is found genuine in all respects and hence Letter of Intent vide ref(3) was issued in accordance with reference (2) rules . Thereafter vide reference (4) cited the applicant had submitted that they could not obtain the valid clearances from the authorities during the stipulated time and have requested to extend the validity of the Letter of Intent already issued.On scrutiny of the application it is found genuine and hence the following orders issued.

The Letter of Intent issued as per reference 3rd cited is extended until further orders subject to the same conditions specified therein and also subject to the decision on 200m distance criteria from the Hon.National Green Tribunal in OA 304/2019.

Your's Faithfully
Devidas N. IAS
DIRECTOR

Copy to: Copy to

1) The Member Secretary,SEIAA,Thampanoor Bus Terminal, Thiruvananthapuram.
2) The Chairman,SEIAA,Thampanoor Bus Terminal, Thiruvananthapuram.
3) The Deputy Chief Controller of Explosives, CSEZ, CGO Complex, Kakkanad, Ernakulam.
4) Kerala State Pollution Control Board, District Office, Malappuram District.
5) The Secretary, Morayur Grama Panchayath, Malappuram District.
6) The Tahsildar, Kondotty Taluk Office,Malappuram District.

For kind attention of statutory authorities.

[The statutory authorities while issuing licence/consents/NOCs based on this letter of intent may refer this letter of intent in the respective licence/consent/clearance /NOC while issuing the same. The statutory authorities may refer the survey map and consider the extent of applied area, quantity of mineral proposed to be extracted and the period of lease applied for while issuing such documents. The authorities may note that the operation as per their licence shall start only after execution and registration of Quarrying Lease granted by this office.All the survey Nos./Re Survey numbers with Block No.included in the survey map submitted in this connection shall be included in all the aforesaid File No.DMG/802/2022-M4 documents.]

7) The Geologist, District Office, Malappuram (The Geologist shall forward all the above said documents to this office for grant of quarrying lease with recommendations)

Signed by Devidas N. Ias
Date: 16-09-2022 11:51:44

DEPARTMENT OF MINING & GEOLOGY
GOVT. OF KERALA

ANNEXURE 7

IN THE HIGH COURT OF KERALA AT ERNAKULAM

PRESENT

THE HONOURABLE MRS. JUSTICE ANU SIVARAMAN

TUESDAY, THE 8TH DAY OF MARCH 2022 / 17TH PHALGUNA, 1943

WP(C) NO. 6510 OF 2022

PETITIONER :-

UMMER KUTTY.K, AGED 44 YEARS
S/O. ABDURAHIMAN K, MUCHETH HOUSE, ELAMBRA,
NELLIKUZHY, ERNAKULAM - 686 691.

BY ADVS.
G.S.KRISHNAN KARTHA
LIJIN THAMBAN

RESPONDENTS :-

1 **UNION OF INDIA REPRESENTED BY ITS SECRETARY,**
MINISTRY OF ENVORONMENT AND FORESTS,
INDIRA PARYAVARAN BHAWAN, JORBAGH ROAD,
NEW DELHI - 110 003.

2 **THE EXPERT APPRAISAL COMMITTEE**
MINISTRY OF ENVIRONMENT AND CLIMATE CHANGE, 3R DFLOOR,
INDIRA PARYAVARAN BHAVAN, VAYU WING, ALINGANJ,
JORBAGH ROAD, NEW DELHI - 110 003
REPRESENTED BY ITS MEMBER SECRETARY

3 **STATE OF KERALA REPRESENTED BY THE SECRETARY,**
DEPARTMENT OF INDUSTRIES, GOVERNMENT SECRETARIAT,
THIRUVANANTHAPURAM - 695 001

4 **THE GEOLOGIST**
DISTRICT OFFICE, MINING AND GEOLOGY DEPARTMENT,
MALAPPURAM, MINI CIVIL STATION, MANJERI - 676 517.

5 **THE STATE ENVIRONMENT IMPACT ASSESSMENT AUTHORITY**
(SEIAA), KERALA, REPRESENTED BY ITS SECRETARY,
K.S.R.T.C BUS TERMINAL COMPLEX, 4TH FLOOR, THAMPANOOR,
THIRUVANANTHAPURAM - 695 001

BY SRI.MANU S., ASG OF INDIA
BY SRI.M.P.SREEKRISHNAN, SC

THIS WRIT PETITION (CIVIL) HAVING COME UP FOR ADMISSION ON 08.03.2022, ALONG WITH WP(C).6477/2022 AND WP(C).6895/2022, THE COURT ON THE SAME DAY DELIVERED THE FOLLOWING:

JUDGMENT

Dated this the 8th day of March, 2022

[WP(C) Nos.6477/2022, 6510/2022 and 6895/2022]

These writ petitions are filed seeking directions to the 2nd respondent to process the application submitted by the petitioners for Environmental Clearance on the basis of Ext.P4 District Survey Report (for short, 'the DSR'), without insisting on the DSR in terms of the notification dated 25.7.2018.

2. Heard the learned counsel for the petitioners and the learned ASGI as well as the learned Standing Counsel appearing for the SEIAA.

3. It is submitted by the learned Standing Counsel that the SEIAA has been reconstituted on 3.3.2022.

4. It is submitted by the learned counsel for the petitioners that the Geologist has certified that as far as the State of Kerala is concerned, the valid DSR is the one published in the year 2016 by the Department of Mining and Geology, Government of Kerala and no further changes have been made to the DSR 2016 by the Department thereafter.

Having considered the contentions advanced and in view of the fact that the applications have been uploaded and are pending before the 2nd respondent, there will be a direction to the

2nd respondent to take up the applications submitted by the petitioners for Environmental Clearance on the basis of the DSR 2016. Appropriate steps shall be taken, in accordance with law.

These writ petitions are ordered accordingly.

Sd/-
ANU SIVARAMAN
JUDGE

Jvt/8.3.2022

APPENDIX OF WP(C) 6510/2022

PETITIONER EXHIBITS

Exhibit P1	A TRUE COPY OF THE LETTER OF INTENT ISSUED BY THE DIRECTOR OF MINING AND GEOLOGY DATED 30-05-2019 TO THE PETITIONER.
Exhibit P2	A TRUE COPY OF THE APPLICATION SUBMITTED BEFORE THE 2ND RESPONDENT WITH RESPECT TO PROPOSAL NO. IA/KL/MIN/232178/2021 FOR PRIOR ENVIRONMENTAL CLEARANCE BY THE PETITIONER.
Exhibit P3	A TRUE COPY OF THE CERTIFICATE ISSUED BY 4TH RESPONDENT DATED 15-12-2021
Exhibit P4	A TRUE COPY OF THE DISTRICT SURVEY REPORT OF MINOR MINARALS OF MALAPPURAM DISTRICT, NOVEMBER 2016 BY DEPARTMENT OF MINING AND GEOLOGY
Exhibit P5	A TRUE COPY OF THE JUDGMENT IN WP(C) NO. 5522/2022 DATED 18-02-2022
Exhibit P6	A TRUE COPY OF THE JUDGMENT IN WP(C) NO. 5077/2022 DATED 16-02-2022

HIGH COURT OF KERALA
AT ERNAKULAM

Number and Year of the Case : WP(C) 6510/2022
Name Of Applicant : LIJIN THAMBAN
Number and Date of Application : A 47997/2022 , 21-11-2022
Date when the copy was delivered : 22-11-2022

Examiner

No. DOM/M-4051/2021

District Office of Mining and Geology,
Malappuram,
Mini Civil Station, Manjeri,
email:geo.mal.dmg@kerala.gov.in.
Phone No:0483-2760695
Dated:15-12-2021

CERTIFICATE

This is to certify that the Department of Mining and Geology has prepared the District Surevey Report (DSR) during the year 2016 in accordance with the guidelines issued by the Ministry of Environment, Forest and Climate Change (MOEFCC), Government of India vide Notification No. SO 141(E) Dated 15-01-2016. Since it satisfied the requirements under the Notification No. SO 3977 (E) Dated14-08-2018 also, this District Survey Report has been accepted and adopted for the proceedings of the State level Expert Appraisal Committee (SEAC) and State Environment Impact Assessment Authority (SEIAA) of Kerala in connection with application seeking Environmnetal clearance for mining projects, including cluster situations.

District Survey Report is an essential document for the processing of applications seeking environmental clearance for the mining projects and the District Survey Report published by the Department of Mining and Geology, Govt of Kerala during the year 2016 is the one which exists at present. The Departmnet has not revised the District Survey Report since then. The District Survey Report, 2016 is the relevant, complied and effective document being followed and accepted by the State of Kerala as on date. No change has been brought into the District Survey Report, 2016 by the Department of Mining and Geology, thereafter.

(This certificate is issued to producr before the Expert Appraisal Committee of theMinistry of Environment, Forest and Climate Change (MoEFCC), Government of India)

15/12/21
Senior Geologist

GEOLOGIST
DIST. Office Of Mining & Geology
Mini Civil Station, Manjeri
Malappuram District

Copy to:
Mr.Ummer Kutty K
Director
Morayoor Granites Pvt Ltd
Mucheth House, Elambra
Nellikuzhy
Ernakulam-686691