MINING PLAN WITH PROGRESSIVE MINE CLOSURE PLAN

SUBMITTED UNDER KERALA MINOR MINERAL CONCESSION RULES, 2015

FOR

GRANITE / BUILDING STONE QUARRY OF

Mr E.S BAIJU.

THRIKKUR VILLAGE, MUKUNDAPURAM TALUK, THRISSUR DISTRICT

KERALA STATE

IN

Survey Nos. 127/P

Area: 0.9950 Ha

APPLICANT

MR. E.S BAIJU
EMMANIYEL HOUSE
VETTUKKAD PO
THRISSUR DISTRICT

PREPARED BY

NAZAR AHAMED K.V
DMG/KERALA/RQP/7/2016
N SQUARE MINING&ENVIRONMENTAL SOLUTIONS.LLP
XAITOON PLAZA, P.O EDAPAL
MALAPPURAM (Dist), KERALA-679576
Email:geologistna@gmail.com
Mobile No.8547097533, 9447177533

This mining plan is approved
28/03/18
Senior Geologist
District Office
Department of Mining & Geology
Chembukkavu, Thrissur-20

AUTHORIZATION LETTER BY THE APPLICANT

I, E.S Baiju (Applicant), hereby authorise Nazar Ahamed K.V RQP No-DMG/KERALA/RQP/7/2016 to prepare the Mining Plan Including PMCP under Kerala Minor Mineral Concession Rules, 2015 in respect of Granite Building Stone Quarry, over an area of 0.9950 hectares in Village- Thrikkur, Taluk- Mukundapuram, District- Thrissur, State-Kerala.

I request the District Geologist, Department of Mining & Geology, Thrissur, Kerala to make further correspondence regarding modification / withdrawal / re-submission and to collect the approved copies of the aforesaid Mining Plan with PMCP with the said recognized person on his following address:

Name of RQP :- NAZAR AHAMED K.V

Reg. No :- DMG/KERALA/RQP/7/2016

Address of RQP : - KARUVEETIL HOUSE

VELIYANCODE (PO), MALAPPURAM-679 576

Mobile No : - 91-8547097533

Email :- geologistna@gmail.com

Place: Thrikkur

Date: 08-03-2018.

E.S Baiju

Applicant

DEPT. OF MINING & GEOLOGY
DIST. OFFICE
THRISSUR
680 020
GOVT. OF KERALA

CERTIFICATE

1. This is to certify that the provisions of Kerala Minor Mineral Consession Rules, 2015 have been observed in the mining plan of Mr E.S Baiju, over an area 0.9950 Ha situated in Sy.Nos. 127/P of Thrikkur Village, Mukundapuram Taluk, Thrissur District of Kerala State, and wherever specific permissions are required, the applicant will approach the concerned authorities of the State Government ie, Department of Mining and Geology for obtaining permission.

2. Certified that the provisions of Mines Act 1952, Rules and Regulations made there under have been observed in the Mining plan and wherever specific permissions are required, the applicant will approach the Director General of Mines Safety for obtaining such permission.

3. It is also certified that the information furnished in the mining plan is correct to the best of my knowledge.

Place: Edappal

Nazar Ahamed K.V

Date: 8-3-18.

DMG/KERALA/RQP/7/2016

DEPT. OF MINING & GEOLOGY
DIST. OFFICE
THRISSUR
680 020
GOVT. OF KERALA

NAZAR AHAMED K.V
MANAGING DIRECTOR
N SQUARE MINING & ENVIRONMENTAL SOLUTIONS LLP.
RQP NO: DMG/KERALA/RQP/7/2016.

DECLARATION

1. The Mining Plan including Progressive Mine Closure Plan for granite building Stone Quarry over an area of 0.9950 hectares in Village- Thrikkur, Taluk- Mukundapuram, District- Thrissur, State- Kerala belonging to me, has been prepared in full consultation with RQP Mr.Nazar Ahammed K.V and I understand its contents and agree to implement the same in accordance with law and in case of default the approval would be withdrawn.

2. It is further declared that during the pendency period of the approval of above said document or thereafter if any change occurs in the address of applicant, it will be informed promptly.

Place: Thrikkur

Date: 08.03.2018

E.S Baiju

Applicant

UNDERTAKING

1. I, E.S Baiju (Applicant) for granite building Stone quarry over an area of 0.9950 hectares in Village- Thrikkur, Taluk- Mukundapuram, District- Thrissur, State- Kerala belonging to me, hereby undertake that all the commitments so made in the aforesaid Mining Plan with PMCP by the RQP Mr.Nazar Ahamed K.V to be deemed to have been made with my knowledge and consent and as such shall be acceptable to me and binding on me in all respects.

2. I, E.S Baiju (Applicant) for granite building Stone Quarry over an area of 0.9950 hectares in Village- Thrikkur, Taluk- Mukundapuram, District- Thrissur, State- Kerala belonging to me, hereby also undertake that all the measures proposed in this Progressive Mine Closure Plan will be implemented in a time bound manner from the date of approval of this PMCP as proposed.

Place: Thrikkur

Date: 08-03-2018.

E.S Baiju

Applicant

DEPT. OF MINING & GEOLOGY DIST. OFFICE THRISSUR GOVT. OF KERALA

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ABBREVIATIONS

RQP- Recognized Qualified Person

Ha- Hectare

KLD- Kilolitres per day

MSL-Mean Sea Level

BGL- Below Ground level

MT- Metric Ton

ROM- Run-of-mine

PPE-Personal Protective equipment

DGMS- Director General of Mines Safety

IL-Influence Length

OB- Over Burden

MMR- Metalliferous Mines regulation

KMMCR- Kerala Minor Mineral Concession Rules

CHAPTER 1

INTRODUCTION

This Mining plan is prepared for the quarry project situated at Survey No.127/P of Thrikkur-Village, Mukundapuram- Taluk, Thrissur- District, Kerala over an area of 0.9950 Ha in favour of E.S Baiju, who is the proprietor of building stone quarry. The ID proof, The Tax receipts, Possession certificates as applicable are enclosed as **Annexures**

This deposit of granite rock is not suitable for cutting to pre- determined sizes, polishing or carving and is not amenable for making value-added products in decorative, monumental and or ornamental fields of industry as a high- value item as it is weathered and fractured. This rock is not suitable for using as dimension stones, but can be used as ordinary building stones, road metal, rubble or ballasts after breaking into irregular pieces by blasting and breaking or otherwise as low value items like rubble, aggregates or other building materials.

This Mining Plan is duly certified by RQP as per the requirements of Kerala Minor Mineral Concession Rules, 2015. The mining plan is prepared at the request of the applicant. The applicant shall carry out Scientific mining and protection of environment as prescribed under Rule 77 of KMMCR and the applicant shall undertake all possible precautions for the protection of environment and control of pollution while conducting quarrying in the area for which permit is sought.

The information and data collection for preparing this mining plan has been collected during systematic field visits, complete survey of permit area.

1.2 GENERAL

Sl. No.	Particulars	
1.	General	
(a)	Name of the Applicant	Mr. E.S Baiju
	Address	EMMANIYEL HOUSE VETTUKKAD PO THRISSUR DISTRICT
	District	Thrissur
	State	Kerala
b.	Status of the Applicant	Proprietor
c.	Mineral which are Occurring in the area and which the Applicant intends to mine	Granite/ Building Stone
d.	Period for which the Quarry permit is granted / renewed/proposed to be Applied	Applied for 5 years
e.	**Details of the RQP preparing the mining plan**	
	Name	NAZAR AHAMED K.V
	Address	N SQUARE MINING & ENVIRONMENTAL SOLUTIONS LLP XAITOON PLAZA, P.O EDAPPAL MALAPPURAM (DIST) KERALA
	Phone	8547097533,9447177533
	E-mail	geologistna@gmail.com
	Registration No.	DMG/KERALA/RQP/7/2016
	Date of grant	20/12/2016
	Valid Up to	19/12/2026
f.	**Name of prospecting Agency** RQP has conducted detailed topographical survey and field studies in january 2018.	
g.	**Extent of area:0.9950Ha**	

Table 1: Description of Each Pillar in the Permit Area

Pillar No	Latitude	Longitude
BP 01	10°28'18.37"N	76°18'28.14"E
BP 02	10°28'20.92"N	76°18'28.28"E
BP 03	10°28'21.14"N	76°18'29.57"E
BP 04	10°28'21.12"N	76°18'30.62"E
BP 05	10°28'16.63"N	76°18'30.83"E
BP 06	10°28'17.11"N	76°18'28.12"E

google image showing the location of the permit boundary is given below:

CHAPTER2

2.1 LOCATION AND ACCESSIBILITY

a) DETAILS OF AREA

The details of the land covered in the permit area are as below:

State : Kerala

District : Thrissur

Taluk : Mukundapuram

Village : Thrikkur

Ownership/occupancy: Proprietor

Toposheet No : 58B/7

Latitude and Longitude:

Latitude (N)	10°28'16.63"N to 10°28'21.14"N
Longitude (E)	76°18'28.12"E to 76°18'30.83"E

b) INFRASTRUCTURE

Railway Station: - The nearest railway station is Ollur, which is located at a distance 10 km. from the permit area.

Police Station: - The nearest police station is Pudukkad Police station, which is located at a distance 8 km. from the permit area.

Medical Facilities: - The nearest hospital is at Govt hospital Thrikkur, which located at a distance 4 km from the permit area.

Educational Facilities: - The School facilities are available at Ponnukara JBS School which is located at a distance 3 km. from the permit area.

River: -The nearest river is Thrikkurpuzha, which located at a distance of 5 km from the permit area.

Fire and safety office: - The nearest fire station is Pudukad which is located at distance of 8 km

Ambulance:- The nearest Ambulance is Govt hospital Thrikkur which is located at distance of 4 km

CHAPTER-3

GEOLOGY AND EXPLORATION

3.1 TOPOGRAPHY

Topography of the permit area is hilly terrain with some of the proposed land is covered with native trees, shrubs, herbs, bushes etc. Highest elevation of the permit area is 95 M above MSL and lowest is 78 M above MSL. The drainage of the area is controlled by seasonal channels towards east side which joins to seasonal streams. The contour map/surface plan of the proposed area is enclosed as **Plate No.2.**

3.2 REGIONAL GEOLOGY

The district has in general an undulating topography with regional westerly slope. Thrissur district can be broadly in to four geological belts.

- Charnockite belt which is wide spread and most prominent in the district
- Gneissic belt represented by biotite gneiss, hornblende biotite gneiss and quartzo-feldspathic gneiss
- Granitic gneiss (PGC) restricted to the south eastern part and the quarternaries of the coastal tract.

3.2.1 LOCAL GEOLOGY

The main rock type in the quarry site is charnockite, consisting of pyroxenes, feldspars, quartz and occasional biotite. Two sets of joints are seen traversing the rocks, often rendering the rock mass as elongated and isometric blocks of different shapes and sizes. As a result, the quarry products cannot be used as blocks of dimension stone. Thin veins of pegmatite are seen intruding the charnockite mass. The upper part of the rock is weathered, giving rise to a thin veneer of soil, thickness of which does not exceed 1.0 m within the quarry site.

3.3 GENERAL DESCRIPTION OF FORMATIONS

The geological parameters / features of the ore body as obtained from the field mapping and exploration studies reveal the following:

Length of the ore body : ranging from 115 to 136 (Avg-125.5) m

Width of the ore body : ranging from 70 to 83 (Avg-76.5) m

This rock deposit is not suitable for making value-added products in decorative monumental or ornamental fields of industry. Geological map showing the litho units has been prepared and the cross sections showing the disposition of the litho units are marked and enclosed as **Plate No.3.**

3.4 DETAILS OF EXPLORATION

The permit area is an exposed rocky area. So no further exploration is proposed to be carried out in the next five year period.

3.5 METHOD OF ESTIMATION OF RESERVES

The estimation of ore reserves is made by conventional parallel cross section method using geological cross section. The geological cross sections are prepared across the strike of the ore body. The area of individual litho units in each and every cross section is calculated separately. The volume between the cross section is arrived on the basis of the average area of production cross section and multiplying sectional interval. And tonnage is arrived at by multiplying by bulk density.

Note : Following are the parameters considered for reserve estimation:

(i) In the allotted area, the mineral is exposed from the lowermost level of 78m MSL to the top most part of the hill at 95m MSL.

(ii) The further 10 m depth is considered for probable category of reserves below the proved category

(iii) Bulk Density of Stone and associated minor minerals is taken as 2.5Tonne /M^3.

3.6 RESERVES OF MINERALS

Considering the above parameters and exposures observed in the existing pit in the allotted area, the surface geological plan and geological cross-sections are prepared on a scale 1:1000. Accordingly, the reserves for Stone and associated minor minerals have been estimated on cross- sectional area method.

Geological Reserves: -

Table 2- Section wise Geological Reserve Estimation.

Proved Reserves:-

Section line	Area of cross section (m^2)	Influence length (m)	Vol. in m^3	Total Tonne
A-A'	1388	47	65236	163090
B-B'	1054	34	35836	89590
C-C'	1149	44	50556	126390
Total				**379070 MT**

Mineable Reserves: -

To estimate the mineable reserves, the reserves blocked under 7.5 statutory barriers and due to formation of systematic benches up to Ultimate Pit Limit have been considered.

Table 3- Section wise Mineable Reserve Estimation

Proved Reserves

Section line	Area of cross section (m2)	Influence length (m)	Vol. in m3	Total Tonne
A-A'	901	44	39644	99110
B-B'	776	34	26384	65960
C-C'	823	37	30451	76128
Total				**241198 MT**

Total Geological Reserve = 379070MT

Total Mineable Reserve = 241198 MT

Table 4- Reserve Estimation Table

RESERVE ESTIMATION				
MINEABLE RESERVES				
SECTION A-A'				
Bench	**Area**	**Influence**	**Density**	**Tonne**
90	240	44	2.5	26400
85	269	44	2.5	29590
80	221	44	2.5	24310
75	171	44	2.5	18810
TOTAL				**99110**

RESERVE ESTIMATION				
MINEABLE RESERVES				
SECTION B-B'				
Bench	**Area**	**Influence**	**Density**	**Tonne**
90	137	34	2.5	11645
85	214	34	2.5	18190
80	207	34	2.5	17595
75	218	34	2.5	18530
TOTAL				**65960**

RESERVE ESTIMATION				
MINEABLE RESERVES				
SECTION C-C'				
Bench	**Area**	**Influence**	**Density**	**Tonne**
90	76	37	2.5	7030
85	248	37	2.5	22940
80	270	37	2.5	24975

75	229	37	2.5	21183
TOTAL				76128

3.7 SUMMARY OF GEOLOGICAL & MINEABLE RESERVES

In this area the building stone exposures are bordering to the permit boundary. The mineable reserves are arrived after deducting the reserves locked in mines barrier along the boundary in compliance with Metalliferous Mines Regulations Act. Summary of Geological and mineable reserve is given below.

Table No. 5- Summary of Estimated Reserves

Reserves in MT	
Category	**R O M**
Geological reserves	**379070 MT**
Mineable reserves	**241198 MT**
Blocked reserves	**137873 MT**

Note : **Geological Reserves** =Mineable Reserves + Blocked Reserves

Of the above Geological reserves of **379070MT**, only **241198 MT** of reserves can be exploited / mined, while the balance of **137873 MT** of reserves is getting blocked which cannot be mined, due to the boundary and practical constraints. Hence for all practical purpose (for production and future planning) only Mineable reserves are considered.

CHAPTER- 4

4.1 MINING

The said area is proposed to work with conventional open cast method with bench system and mode of operation will be mechanized. Based on the mode and method so adopted and taking geological parameters of the ore body into consideration, the quarry pit is designed in such a way that the height of the bench is kept about 5.00 m max., and the width at 5.00 m min., maintaining a slope of 45^0 from the horizontal. 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 about **48239.5 MT**.

It is proposed to produce about 161 tonne/ day of ordinary stone. To achieve this, the proposed mine layout to be carried out systematically & scientifically is as follows:

DESCRIPTION FOR THE MINING LAYOUT

Considering 300 working days in a year and production per day of 161 Tonne/day with a proposed bench height of 5 m and bulk Density of rock as $2.5 m^3$/Ton,

$$\text{Volume of rock to be broken per day} = \frac{\text{Production per day}}{\text{Bulk Density of mineral}}$$

$$= \frac{161}{2.5}$$

$$= \mathbf{64.4\ m^3}$$

$$\text{Therefore, area to be broken per day} = \frac{\text{Volume of broken rock}}{\text{Bench Height}}$$

$$= \frac{64.4}{5}$$

$$= \mathbf{13\ m^2}$$

A) Site Preparation

- Remove the soil cover and expose the rock.
- Remove the loose boulders with the help of excavator and prepare free face for drilling.

- To develop haul road from the proposed quarry using natural gradient of the hill for movement of tippers.
- To give proper layout to the top bench.
- Once the site is prepared; production will be commenced by drilling holes of 32 mm diameter and 1.5 M in depth using jack hammer and compressor.
- The drill holes will be charged with explosive, and blasting will be done, size of the boulders so generated by blasting will be reduced by using rock breaker.
- The blasted material will be transported by road for the end use by the contractors.

B) **Drilling and Blasting:** Granite is compact rock, at places it is fractured also, production from the fractured zone will be obtained with the help of excavator, whereas from compact zone the production will be obtained by drilling and blasting.

PPEs - Protective goggles or shields fitted with unsplinterable glass or other suitable material will be provided to workers engaged in breaking, chipping or dressing the stone, Persons engaged in workshop on jobs involving work of cutting, chipping, grinding or drilling, rock or such other substance, and welders and their helpers will also be provided with protective segment to prevent eye injuries. Further, persons handling rock block chips and who are exposed to the hazard of injuries to hands shall be provided with gloves.

C) Loading and Transportation: Loading of granite will be done by excavator and will be sold out. Trucks / Tippers of 5 T will be used for transportation of mineral from mine site.

4.2 DEVELOPMENT AND PRODUCTION PLAN

The System or method of working shall be performed as stipulated under Rule 69(1) by formation of benches as per the Metalliferous Mines Regulations, issued under the Mines Act. The area is covered with a thin layer of weathered charnockite; recovery of saleable material is about 95% of ROM.

During the first year of mining, the work will be carried out from 90m to 85m MSL by bench cutting method to obtain the proposed rate of rock as shown on the section A-A', B-B'& C-C'. The details of bench wise production & total quantity of rock raised during this year are given in **Table No 6.**

During the second year of mining, the work will be carried out upto 85 MSL by bench cutting method as shown on section A-A', B-B' & C-C'. The details of bench wise production & total quantity of rock raised during this year are given in **Table No 7**.

During the third year of mining, the work will be carried out from 85m to 80m MSL for benches as shown on section A-A', B-B' & C-C'. The details of bench wise production & total quantity of rock raised during this year are given in **Table No 8.**

During the fourth year of mining, the work will be carried out from 80m to 75m MSL by forming benches as shown on section A-A', B-B' & C-C'. The details of bench wise production & total quantity of rock raised during this year are given in **Table No.9**.

During the fifth year of mining, the work will be carried out upto 75 MSL by forming benches as shown on section A-A', B-B' & C-C'. The details of bench wise production & total quantity of rock raised during this year are given in **Table No.10**.

Table No. 6 -Details showing estimation of bench- wise production of minerals during 1st Year of mine planning.

Bench (m) MSL	Section	Area (M^2)	Influence Length(IL)	Volume in M^3 (Area x I.L.)	ROM (MT)
95MSL to 90MSL	A-A'	240	44	10560	26400
95MSL to 90MSL	B-B'	137	34	4658	11645
95MSL to 90MSL	C-C'	76	37	2812	7030
90MSL to 85MSL	A-A'	28.76818	44	1265.8	3164.5
Total					**48239.5**

Table No.7 -Details showing estimation of bench- wise production of minerals during 2nd Year of mine planning.

Bench m MSL	Section	Area (M^2)	Influence Length(IL)	Volume in M^3 (Area x I.L.)	ROM (MT)
90MSL to 85MSL	A-A'	240.2318	44	10570.2	26425.5

90MSL to 85MSL	B-B'	214	34	7276	18190
90MSL to 85MSL	C-C'	39.17838	37	1449.6	3624
Total					**48239.5**

Table No.8- Details showing estimation of bench- wise production of mineral during 3rd Year of mine planning

Bench m MSL	Section	Area (M^2)	Influence Length(IL) (M)	Volume in M^3 (Area x I.L.)	ROM (MT)
90MSL to 85MSL	C-C'	208.8216	37	7726.4	19316
85MSL to 80MSL	A-A'	221	44	9724	24310
85MSL to 80MSL	B-B'	54.27647	34	1845.4	4613.5
Total					**48239.5**

Table No.9-Details showing estimation of bench- wise production of rock during 4 Year of mine planning.

Bench m MSL	Section	Area (M^2)	Influence Length(IL) (M)	Volume in M^3 (Area x I.L.)	ROM (MT)
85MSL to 80MSL	B-B'	152.7235	34	5192.6	12981.5
85MSL to 80MSL	C-C'	270	37	9990	24975
80MSL to 75MSL	A-A'	93.48182	44	4113.2	10283.0
Total					**48239.5**

Table No.10-Details showing estimation of bench- wise production of rock during 5 Year of mine planning.

Bench m MSL	Section	Area (M^2)	Influence Length(IL) (M)	Volume in M^3 (Area x I.L.)	ROM (MT)
80MSL to 75MSL	A-A'	77.51818	44	3410.8	8527

80MSL to 75MSL	B-B'	218	34	7412	18530
80MSL to 75MSL	C-C'	229	37	8473	21182.5
Total					**48239.5**

Table No.11- Year wise production of building stone for the first 5 years period

Sl. No.	Year	Bench MSL	ROM (in MT)
1	First Year	90 to 85	**48239.5**
2	Second Year	Upto 85	**48239.5**
3	Third Year	85 to 80	**48239.5**
4	Fourth Year	80 to 75	**48239.5**
5	Fifth year	Upto 75	**48239.5**
Total			**241197.5**

4.2.1 Proposed Rate of Production and Expected Life of Mine-

The annual production targets have been planned, the average proposed production (ROM) will be about 48239.5 MT for the next five year permit period. As per the production capacity proposed the life of the quarry will be 5 years.

Table 12- Proposed Production details of the Quarry

Sl. No.	Year	ROM (in MT)
1	I Year	**48239.5**
2	II Year	**48239.5**
3	III Year	**48239.5**
4	IV Year	**48239.5**
5	V Year	**48239.5**

4.2.2 Top Soil

A total quantity of 10192.5 tonne of topsoil is proposed to be removed during mining operations. The topsoil excavated from the quarry will be dumped separately at pre-determined place and subsequently utilized for spreading over reclaimed areas for plantation.

4.2.3 Waste

About 12,059.9 tonne of overburden (OB) will be generated throughout the mine life. This waste will be utilized within the pit for lying of haul roads. At the end use, OB can be reutilized as soil base for plantation.

4.3 EXTENT OF MECHANIZATION

Following machineries are proposed to be deployed at the quarry site.

Table No. 13- Machinery Details

Sl.No	Equipment/ Machinery	No. of units	Size/ Capacity
1.	Excavator	1	150 HP
2.	Excavator	1	100 HP
3.	Tipper	2	-
4.	Rock breaker	1	-
5.	Portable Compressor	1	-

CHAPTER-5

5.1 BLASTING

Granite is compact rock, at places it is fractured also. Production from the fractured zone will be obtained with the help of excavator, whereas from compact zone the production will be obtained by drilling and blasting. Drilling will be done by jack hammer with the help of air compressor.

- Whole location will be properly dressed by excavator to remove the loose boulders for efficient drilling and for avoiding jamming of drilling hammer and bits.
- Drill holes of 32mm diameter and 1.5 M in depth will be made.
- To reduce the noise level the holes will be blasted by using nitrate mixture and millisecond delay detonators.
- To maintain the bench height of 5 M, sub bench of 2.5 m will be formed first, later on two benches will be merged and one bench of 5m will be formed and maintained
- The spacing and burden will be kept at 1.0 M.
- About 30 to 50 holes will be blasted in one blast
- Yield per hole will be 1.5 x 1 x 1=1.5M^3.
- Number of blasts per day will be 2 blasts of 40 holes each

Blasting Pattern:

The blasting pattern entirely depends on the situation of the joints present in the rocks. The drilling is done as per the requirement of the rock fragmentation with desired production of mineral.

5.2 Requirement of explosive

- Charge per hole will be 375 grams
- Yield of explosive - about 6.6 M^3 per Kg. or 17.16 tonne/Kg
- For 48239.5 tonne per year or 4,020 tonne per month the requirement of explosive will be about 234 kg per month.

5.3 Precaution during blasting

No explosives other than those provided by company, the agent or manager shall be used in the mines and the explosives shall not be taken inside any building except magazine approved

by the licensing authority under the Indian Explosives Act 1884. Cases and containers for carrying explosives shall be of substantial construction and securely locked. Containers of steel or iron shall be galvanized and not more than 5 Kg explosives shall be carried in one case or container. The manager shall fix maximum number of shots that a blaster may fire in one shift and should not exceed 80 in case of electrical firing or 50 in case of firing with igniter codes. Shot firing tools conforming will be used and provisions under 162 on drilling, charging, stemming and firing of shot holes shall also compiled with.

As static charge can be generated and stored on bodies of persons wearing synthetic fiber cloths and socks and such potential may go up to 95,000 volts during dry months, especially on a cold day in a dry climate, blasters /shot fires and their helpers should not ware such clothes while on duty. They will be provided only non-conducting type of shoe or boots eg: leather sole footwear as prescribed under.

5.3.1 Type of Explosives to be used

Only class 2 and class 6 explosive is proposed for use as given below:-

Booster (20%)	Slurry explosive
Explosive (Column charge) (80%)	Nitrate Fuel oil (NFO). The NFO mixture can be readily produced at a site by mixing nitrate (94.5 %) with diesel oil (5.5 %).
Initiator	Delay /Electric detonators

a. Safety precautions to be adopted.

PRECAUTIONS:

- Blasting in the open cast pit will be done only during day time at designated hours.
- Only competent blasters will be appointed to handle explosives.
- Explosives will be stored in approved and licensed magazine as per Explosive Act Rules.
- Explosives will be brought from magazine to blasting site in licensed Explosive Van under the care of blaster.
- Sufficient warning signals will be given before blasting the holes.

- Guards will be posted on all roads and paths at least 250 m distance to stop entrance to the danger zone during blasting hour.
- Controlled blasting will be practiced to control vibrations and flying fragments.
- Optimum charge will be used, while blasting near office complex/ infrastructure site.
- Maximum charge per day will always be less than 10kg to limit the PPV levels within the DGMS standards of 15 mm/sec

b. Brief description on method of procurement and storage of explosives.

- Proper and safe storage of explosives in approved and Licensed Magazine.
- Proper, safe and careful handling and use of explosives by competent Blasters having Blaster's Certificate of Competency issued by DGMS.
- Proper security system to prevent theft/ pilferage, unauthorized entry into magazine area and checking authorized persons to prevent carrying of match box, lights, mobile phones, cigarette or beedi, etc.
- The explosives of class 2 will be used in their original cartridge packing and such cartridge shall not be cut to remove explosive for making cartridge of different size.
- Detonators will be conveyed in special containers. These will not be carried with other explosives.
- The holes which have been charged with explosives will not be left unattended till blasting is completed.
- Before starting charging, clear audible warning signals by Sirens will be given so that people nearby can take shelter.
- Blasting operations will be carried out in day times only.

5.3.2 Storage of explosives

Considering consumption, a 200 kg magazine is situated within the complex. The controlled blasting is proposed by adopting all the safety measures as per "MMR 1961" and with the permission of DGMS. Blasting will be performed as per requirement on the face.

Vibration Control

Vibration caused due to blasting will be controlled by the following steps:

- Blast holes will always be initiated by short delay detonators, rather than adopting

instantaneous detonating. Short delay in blasting of successive blast holes will effectively reduce the vibration problem.

- Number of holes per shot and blast will be kept to minimum, to guide the throw in the desired direction while keeping vibration and noise to minimum.
- Multiple blasting and "V" pattern of firing will be adopted to minimize forward throw and have a good rock pile.
- Mostly, holes will be fired towards the free face.
- Use of ANFO which has low velocity of detonation, will also reduce the vibration.
- Blasting shall not be permitted within 100 m of surface structure.
- Peak particle velocity at a distance of 100 m from the shot hole, shall not exceed 10mm/ sec.
- The flying fragments shall be controlled by muffled blasting and will not project beyond the distance of 300 m.
- Proper spacing & burden will be maintained.
- Optimum utilization of the explosives will be ensured.
- Direction of the hole will be maintained towards free face.
- Electric delay detonator will be used.
- Deck charging will be practiced for required fragmentation.

Noise Control

Noise control will be achieved by following the measures: -

1. Shooting of well-designed 5 numbers of blast holes / shot for 5 holes is planned daily, which will produce less noise momentarily.
2. Detonating fuse will not be used.
3. Blasts will be planned properly to eliminate noise.
4. No plaster shooting will be taken up, as this is the main reason of noise pollution.

Fly Rock Hazard Control

1. Stemming length will be kept not less than the burden.
2. It will be ensured that the burden will not be excessive.
3. Inter row delay will be selected in such a manner, so that each row pushes its burden in a forward direction rather than in an upward direction.

Each blasting operation will be unique in nature, involving different surface coatings, blast material quantity and working conditions. Before beginning of drilling & blasting operations, the applicant will identify the hazards from the knowledgeable person who had worked in masonry stone mining and being trained to recognize the hazards as well as to inform the authority for quickly corrective action to eliminate such hazards. The applicant will use engineering and administrative control measures, personal protective equipment's (PPE) including respiratory protection and training to protect workers involved in drilling & blasting activities. Engineering control measures such as substitution, isolation, containment and ventilation which are the primary means of preventing or reducing exposures to airborne hazards during drilling & blasting operations have to be implemented by the applicant. Administrative control measures including the use of good work and personal hygiene practices will also reduce exposure to health hazards.

Engineering Controls

1. Substitution

- Use of proper blasting material.
- Use of water soluble (slurry) explosives to reduce dust.

2. Isolation and Containment

- Use barriers and curtain walls to isolate the blasting operation from other workers.
- Use blast rooms or portable blast shelter for smaller operations.
- Use restricted areas for non-enclosed blasting operations.
- Keep co-workers away from the blaster.

Administrative Controls

Perform routine clean up using wet methods.

- Not to use compressed air to clean the working site as this will create dust in the air.
- Clean and decontaminate the equipments on the worksite.
- Schedule blasting when the least number of workers are at the site.
- Avoid blasting in windy conditions to prevent the spread of hazardous materials.

Medical Control

Medical control measures will be taken for the miners with a view to protect their health. The medical officer will visit the mine site once in a month and shall undertake the following need based functions.

- Pre-employment health examination of all miners.
- Emergency medical care.
- Health Education & Training.
- Health Counseling.
- Provide necessary medical and occupational health facilities.

Statutory Control

For ensuring compliance of the statutory requirements and to maintain the desirable standard for the mine, all the places will be under the control of qualified Mine Manager assisted by number of qualified Assistant Mines Managers, designated as Safety Officer and Welfare Officer and front line supervisors like Mine Foreman, Mining Mate, Blaster/ Shot-firer, Surveyors etc to look after the Safety, Health, Sanitation & Welfare of the work persons. They all will operate in the mine and ensure proper supervision and control in all the activities of mining to avoid any untoward incidents causing injury or harm or health hazards to workforce. For coordinating the activities of mine at corporate level, an Agent will be appointed with specific responsibilities. Owner of the mine will be responsible for providing all the facilities & assistances to mine management to ensure all the standards at a desired level.

Personal Hygiene Practices

- Prohibit eating, drinking or using tobacco products during drilling & blasting.
- Provide wash stations separately for the workers to wash their hands and face routinely before eating & drinking.
- Remove contaminated work clothes before eating & drinking.
- Provide separate accommodations and storage facilities for protective clothing and equipments.

Respiratory Protection

The driller & blaster will have respirator with the wearer's head, neck, and shoulders to protect the wearer from dust & splinters.

- A certified & approved blasting airline respirator with positive pressure blasting helmet will be provided if necessary.

Personal Protective Equipments

- Hearing protection
- Eye and face protection
- Helmet for head protection
- Leather gloves to protect to full forearm and aprons (or coveralls)
- Safety shoes or boots to protect legs
- Provide training to drillers & blasters and support personnel on drilling & blasting health and safety hazards, how to use controls, personal hygiene practices, safe work practices and the use of respirators.

Preventive Measures

1. Respirators should not be used as the only means of preventing or minimizing exposures to airborne contaminants. Dust source controls such as containment systems, local exhaust systems, and good work practices should be implemented as the primary means of protecting workers. When dust source controls cannot keep exposures below the recommended exposure limits, controls should be supplemented with the use of respiratory protection.
2. Environmental monitoring by trained personnel will be conducted in all -blasting applications. This is necessary to ensure that workers will not be over expose than the prescribed exposure limit as fixed by the authorities.
3. Anytime environmental conditions, airborne contaminants and their concentrations should be within the permissible limit.

CHAPTER-6

MINE DRAINAGE

6.1 Topography:

The quarry site is on the northern slope of a rocky hillock with sparse vegetation towards the lower reaches, consisting of shrubs, herbs, climbers, grass and occasional native trees. Towards the upper reaches, the vegetation cover becomes thicker. The highest elevation of the permit area is 95 m above MSL and lowest is 78 m above MSL. Drainage in the permit area is mainly towards east.

Normally, the mine will be closed during rains. In case of necessity, the accumulated rainy water (free from suspended solid material) from pit bottom may be allowed to flow out after settling through a check dam & may be allowed to spill over adjoining areas, facilitating uptake by native plants (coconut). The same will be also used for watering saplings/trees in the plantation site. The excess water will be allowed to be stored in the public tank for public irrigation.

6.2 Rain fall:

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 annual 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.

6.3 Water Table:

The nearest river is Thrikkur river which is at a distance of 5 km from the area.. The ground water depths were observed from the available open well within nearby sources. The observation made during the field studies indicate water level varying and between 15 m. to 20.0 m below ground level.

CHAPTER-7

7.0 STACKING OF MINERAL REJECTS AND DISPOSAL OF WASTE

7.1 Nature and Quality of Top-Soil and overburden to be generated

7.1.1 Top Soil

A total quantity of 10192.5 tons of topsoil is proposed to be removed during mining operations. The topsoil excavated from the quarry will be dumped separately at predetermined place and subsequently utilized for spreading over reclaimed areas for plantation.

7.1.2 Overburden

About 12059.9 tons of overburden (OB) will be generated throughout the mine life. This waste will be utilized within the pit for lying of haul roads. At the end use, OB can be reutilized as soil base for plantation.

CHAPTER-8

8.1 USE OF ROCKS

The rock produced from the quarry will be sold to contractors and consumers and will finally be consumed locally for road (State Highway & National Highway), building and construction works.

CHAPTER-9

9.1 SITE SERVICES AND EMPLOYMENT POTENTIAL

The mine site office, small workshop, first aid room, canteen & rest shelter will be provided in the mine area as per Mines Act. The total numbers of employees proposed including skilled and un-skilled workers are 10.The details of the proposed employees/workers including their position are given below:

Table 14- Employment Details

Sl. No.	Name of the post	Nos.
1	Mechanical Engineer	1
2	Quarry Supervisor	1
3	Mine Mate	1
4	Blasting Helpers	2
5	Blast man	1
6	Mine Labors	4
	Total	**10**

CHAPTER-10

10.0 ROCK PROCESSING

The stone excavated from the mine will be transported to the destination from mine-site through trucks/tractor-trolley. No beneficiation of stone will be done or required at mine site.

CHAPTER-11

11. 1 ENVIRONMENTAL MANAGEMENT PLAN

Environment Management Plan is a systematic programme which includes environment impact assessment, planning for offsetting the ill effects of development, implementing the programme for resource management, development planning, and close control over day-to-day operations, regular monitoring and auditing of environmental performance and collection of base line information which serve as a guide to determine how the future development will affect the environment compared to the present base line status.

(A) BASE LINE INFORMATION

Most of the useful base line information has been collected in the field. This has been helpful in preparation of the mining plan and is given below:

(i) EXISTING LAND USE PATTERN

Land use pattern as on date, plan period and conceptual period are given below.

Table No- 15- Land Use Pattern.

Sl.No	Particular	As on date	Plan Period	Conceptual period
1.	Area under Quarry pit	0.2283	0.3491	0.7094
2.	Green belt/ plantation	0.0000	0.1516	0.1516
3	Road	0.0134	0.0134	0.134
4.	Area for future use/undisturbed	0.6237	0.9950	0.0000
	Total area	**0.9950**	**0.9950**	**0.9950**

(ii) WATER REGIME

Natural water courses do not exist in the allotted area.

(a) Surface Water

There is no surface water body in the allotted area and hence there will be no effect on surface water due to mining activities.

(b) Ground Water

The nearest river is Thrikkur river which is at a distance of 5 km. The ground water depths were observed from the available open well within nearby sources. The observation made during the field studies indicate water level varying and between 15 m. to 20.0 m below ground level.

(iii) FLORA & FAUNA

Few local bushes and trees are there in the allotted area which dries during summer season. There is no demarcated / protected forest falling within the 3 km periphery of the allotted area.

(iv) CLIMATIC CONDITION

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.

(v) HUMAN SETTLEMENT

The proposed mining activities will be carried out away from the human settlement, nearest house is located at 132 m towards south east side from the permit area, so there will be no impact on human settlement by the proposed mining activities. For the proposed mining, the workers will be employed from the adjoining villages surrounding within 10km area so there is no proposal for human settlement to be made in the allotted area.

(vi) PUBLIC BUILDING, PLACES AND MONUMENTS

No such buildings, places of importance and monuments exist in and around the allotted area.

(vii) QUALITY OF AIR & WATER

QUALITY OF AIR

The quality of air at the allotted area is fresh & respirable.

QUALITY OF WATER

The area is a hilly terrain forming natural water sheds. The rain water flows down to these water sheds and forms natural watercourses outside the allotted area. There is no water source within the allotted area. The quality of water in the dug wells outside the allotted area is potable.

(viii) WEATHER THE AREA FALLS UNDER NOTIFIED AREA UNDER WATER ACT 1974

No

ENVIRONMENT IMPACT ASSESSMENT STATEMENT

AIR QUALITY

The proposed five years mining activities will have air pollution due to drilling and blasting operation, running of transport machinery like dumpers & excavators. To reduce these air pollution mitigation proposals like water spraying, wet drilling etc. have already been suggested.

WATER QUALITY

In the proposed five years mine working, the water will be used for spraying on haul roads and dumpers, wet drilling & sanitation requirement of the workers employed. This water will be met from nearby open well and quarry pond. There will be no impact of mining on the surface & ground water quality as it will not be used for any of the mining activities. The ground water depths were observed from the available open well within nearby sources. The observation made during the field studies are varying between 15.0 m. to 20.0 m below the existing ground level, whereas the proposed first five years mining will be only up to 40 MSL. So, there will be no water pollution. Hence, the water quality of the allotted area will not be

affected due to proposed mining operations. So, the quality of water will remain the same during the proposed five years of mining.

NOISE LEVEL

During the proposed mining operations, noise pollution will be there due to following activities: -

(1) Drilling of holes and running of compressors.

(2) Operation of excavators & dumpers.

(3) Blasting of drill holes.

VIBRATION LEVELS

Blasting of drill holes has been proposed for the mineral excavation which will produced vibration for a few moments.

WATER REGIME

The ground water depths were observed from the available open well within nearby sources. The observation made during the field studies indicate varying water level between 15.0 m. to 20.0 m below the ground level.

SOCIAL AND DEMOGRAPHIC PROFILE

The applicant shall spend 1% of profit for the development of the area. He donates money in the school, to the poor for treatment, temple and other social work.

HISTORICAL MONUMENTS

No public building, places of monuments exist in or nearby the allotted area, so there will be no effect by mining activities on any public building, places and monuments.

(C) ENVIRONMENT MANAGEMENT PLAN

(i) TEMPORARY STORAGE AND UTILISATION OF TOP SOIL

Topsoil Management

A total quantity of 10192.5 tonne of topsoil is proposed to be removed during mining operations. The topsoil excavated from the quarry will be dumped separately at predetermined place and subsequently will be utilized for spreading over reclaimed areas for plantation.

Overburden Management

About 12059.9 tonne of overburden (OB) will be generated throughout the mine life. This waste will be utilized within the pit for lying of haul roads. At the end use, OB can be reutilized as soil base for plantation.

11.0(C) (ii) YEAR WISE PROPOSALS FOR RECLAMATION OF LAND AFFECTED BYABANDONED QUARRIES AND OTHER MINING ACTIVITIES DURING FIRST FIVE YEARS

As the mining will progress, the areas where ultimate pit depth is reached, backfilling will be started. This will reduce the transportation of OB and waste outside the pit area.

11.0 (C) (iii) EXTENT OF BACKFILLING AND RECONTOURING

There is no proposal for backfilling and re-contouring during the next five years of this mining plan as terrain above the present mining will be quarried.

11.0(C) (iv) ALTERNATE USE OF UNFILLED/PARTIALLYFILLED/ EXCAVATION/ROAD SIDES/SLOPES AND MINE

The unfilled area of the quarry will be considered for storing rain water during monsoons for supply to locals during summer months for agricultural use.

11.0 (C) (v) USE OF ABANDONED QUARRIES/PITS PROPOSED TO BE USED AS RESERVOIR ETC

Abandoned pits will be utilized for water storage during rainy season. This water will be utilized for irrigation and plantation. It will also help in recharging the ground water. The outer boundaries will be properly fenced.

11.0 (C) (vi) PROGRAMME FOR AFFORESTATION

The year wise programme of eco-restoration for the life of mine, about 620 trees will be planted. Biological reclamation / ecological restoration for the mined area by plantation of the species as per the time schedule. Selection of species is based on high dust capturing, soil holding capacity, groundwater recharge capacity etc.

11.0 (C) (vii) PLANTATION PROGRAMME

(i) Plantation along the outer boundary of the permit area is proposed, this will help to improve the environment and ecology.

(ii) Plantation will be done around offices, road side and fencing boundary etc.

11.0 (C) (xiv) SPECIES TO BE PLANTED

Further afforestation programme up to conceptual plan period will be similar to the above five years programme which will be repeated every five years.

11.0 (C) (xv) POST PLANTING CARE

Post planting care is most essential for healthy growth of vegetation. This will comprise:

- Replacement of causalities at the first opportunity itself.
- Weeding monthly for first two months and later on six monthly.
- Irrigation fortnightly from Oct to March, once in 10 days between April and June.
- Soil working, manuring, mulching etc. twice in a year.
- Protection from grazing cattle etc.

11.0 (C) (xvi) TREATMENT AND DISPOSAL OF WATER FROM MINE

There will not be any disposal of water from the mine and hence no treatment of water is required. The mines working have been proposed quite above the ground water table.

MEASURES FOR MINIMISING ADVERSE EFFECTS ON WATER REGIME

- Garland drain will be constructed and maintained to channelize water, particularly during monsoon.
- Plantation will be carried out all along the periphery of the permit area.

General ground water level in the area is shallow and it occurs at a depth of about 8 to10 m from general ground level during monsoon. Quarry operations will not have adverse effect on ground water as workings are confined to above the ground water level.

11.0 (C) (xvii) PROTECTIVE MEASURES FOR GROUND VIBRATIONS / AIR BLAST CAUSED BY 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, blasting will be conducted. Multiple blast hole of 1.0 to 1.5m depth will be drilled with the help of 32mm drill rod, jack hammer and air compressor of 100 cfm capacity.

11.0 (C) (xviii) MEASURES FOR PROTECTING HISTORICAL MONUMENTS

There are no historical monuments in the permit area or buffer zone, therefore no measures for protecting of any monuments are required.

11.0 (C) (xix) REHABILITATION OF HUMAN SETTLEMENTS LIKELY TO BE DISTURBED DUE TO MINING ACTIVITY

The mining activity will be confined to an area outside human settlement. No population will be affected by mining activities and as such the question of rehabilitation of the people displaced by mining operations does not arise. No rehabilitation of human settlement is involved due to mining operation.

11.0 (C) (xx) SOCIO-ECONOMIC BENEFITS ARISING OUT OF MINE

Quarrying site is remote and under developed. Standard of living of the people in the proposed QL area is normally low, therefore due to industrial activity like Quarrying, local population within the buffer zone are to be benefited by direct and indirect employment opportunities created by the Quarrying activities.

The applicant shall be contributing ten percent of the amount of royalty to "The Quarry Safety fund" constituted by the District collector under rule 63 of KMMCR 2015.People will also be benefited for the facilities developed due to Quarrying activity.

Applicant will be providing medical checkup camps to the local villagers, supply of drinking water, and contribution of funds for social and cultural programme.

Quarrying activity contributes towards economic up-liftment by way of job opportunities in the region. Hence there will be an improvement in quality of life in the area. Quarrying activity will also boost the ancillary industries, business and market establishments.

The state government also will earn revenue in terms of royalty / consolidated royalty and contribution to the Quarry safety Fund".

11.0 (D) ENVIRONMENTAL MONITORING

An environment protection cum afforestation cell has been proposed. It will be responsible for implementing the proposed measures and monitor the progress of implementation and reinforce them wherever necessary.

11.0 (D) (ii) MANAGEMENT OF MINING ENVIRONMENT DEGRADATION (GENERAL)

Following control measures will be taken to abate the deteriorating impact on environment and improving the same. For affective management of this, a few persons will be exclusively provided who will be responsible for implementing the control measures and to monitor the progress of implementation of these measures in order to minimize environmental degradation.

11.0 (D) (iii) SOLID WASTE MANAGEMENT

The mine waste and top soil are proposed to be stacked in the dump area specially provided for the purpose. Care has been taken in selecting the site for the stacking yards for the stacking purpose. It is located in a secure place and having solid base and on non-used zone. These dump yards have been protected by toe walls. The toe walls will be constructed during first five year period. The height of these dumps will also be restricted and benched. A retaining wall 0.5 x 1.0 m will be made on low altitude side of the dump.

11.0 (D) (v) MONITORING OF AIR BORNE DUST

It is known that very fine silica dust is harmful to human beings. It is also known that dust between 0.2 to 5 microns is harmful to the lungs. Thus it is very important to know the dust concentration in the air where there is mining activity.

Vegetation cover will help in restricting the spread of dust in surrounding area. The bushes and scrubs will also act as barriers for arresting spread of dust there.

In the mine, dust is generated mostly by plying of tractor/trucks. Airborne dust generated by plying of trucks can be considerably reduced by sprinkling water on roads.

11.0 (D) (VI) MANAGEMENT OF NOISE PROBLEM

Sources of noise pollution have already been dealt. To reduce the noise caused by machineries and equipments at the mine, mufflers of adequate size and capacity shall be provided with equipments at the mine. Chief sources of noise pollution in the mine will be mining machineries. Based on LOI practice, in Directorate General of Mines Safety circular no.-158 (Tech.) of 1975, noise standards have been recommended. According to this, there is a warning limit value of 85 db (A) by which the danger of hearing impairment and deafness may result from unprotected ear.

Personnel protective equipment have to be used if there are single isolated out bursts of noise which can go above 130 db (A) impulse or 120 db (A). Noise from trucks can be reduced by using mufflers of adequate size and strength and better maintenance of the equipments. Noise will not be the problem as the mining has been proposed by semi-mechanized open cast method.

11.0 (D) (vii) MANAGEMENT OF 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 operations.

11.0 (D) (viii) MANAGEMENT OF LAND SLIDE PROBLEM

The final pit slope will not be kept at an angle steeper than45^0 which are not likely to cause any problem in respect of slope stability. Thus there is no likelihood of any land slide at any stage in future.

11.0 (D) (ix) MANAGEMENT OF HUMAN SETTLEMENT PROBLEM

The mining activity will be confined to remote area away from human settlements. No population will be affected by such mining activities. As such the question of rehabilitation of the people displaced by mining operations does not arise.

11.0 (D) (x) MANAGEMENT OF WILD LIFE HABITAT

No specific management is proposed because there is no wildlife, sanctuary etc. within the study area.

11.0 (D) (xi) MANAGEMENT OF FLORA

Existing flora will be improved by plantation of trees.

11.0 (D) (xii) MANAGEMENT OF TOP OVERBURDEN

About 12059.9 tonne of overburden (OB) will be generated throughout the mine life. This waste will be utilized within the pit for lying of haul roads. At the end use, OB can be reutilized as soil base for plantation.

11.0 (D) (xiii) MANAGEMENT OF CROPPING PATTERN

No management is specifically being proposed since there will be no adverse impact on cropping pattern due to mining in the permit area.

11.0 (D) (xiv) MANAGEMENT OF PLACES OF TOURIST INTEREST ETC.

Since there is no place of tourist interest in the area, no management is proposed.

11.0 (D) (xv) WATER COURSES, SPRINGS ETC. MANAGEMENT THEREOF

There are no water courses or springs and no action is contemplated.

11.0 (D) (xvi) MANAGEMENT OF SOCIO-ECONOMIC PROBLEMS

There will be positive impact on socio-economic conditions of the area due to mining. Locals will be given preference in the matters of employment.

11.0 (D) (xvii) CLIMATE-MANAGEMENT FOR IMPROVEMENT

Proposed plantation will improve present climatic conditions. This will be continuously monitored by environment management cell.

PROGRESSIVE

MINE

CLOSURE PLAN

1.0 INTRODUCTION

(a) Name and address of applicant:

Mr. E.S Baiju

Emmaniyel (H)
Vettukad (po)
Thrissur(dist)

(b) Location of the permit area:

1- District	:Thrissur
2- State	:Kerala
3- Taluk	:Mukundapuram
4- Village	:Thrikkur
5- Survey nos.	:127/P

(c) Extent of Permit Area

TYPE OF LAND	PRIVATE OWNED LAND
AREA	0.9950Ha

(d) Present Land use pattern

Present Land use pattern is given in the **Table No 14.**

(e) Methods of mining

The proposed method of mining will be Semi mechanized open cast mining. The basic mining techniques adopted will use of machines. For the systematic working of open cast mines, the main development work will be formation of systematic benching. The height of beneh will not be kept more than 5.0m at a time and the width of the benches will be always kept safe according to provisions. Mining will be done with the help of tools such as drills, jack-hammers, compressors, hand shovels, picks, excavators etc. The targeted annual production of Stone is about **48,239.5 MTA.**

(f) Mineral Processing Operations.

Sorting of minerals will be carried out manually. No other process of mineral processing operation has been proposed in the mining permit area.

(1.1) Reason for closure

This is an existing mine and economical mineral reserve does exist. Therefore in the mining permit area so reason for closure of mine is not applicable at present.

(1.2) Statutory Obligation

This is a not new mining permit area. The PMCP has been prepared in compliance of rules 37E (V1) as statutory obligation for closure of mine, though it is not applicable at present.

(1.3) Closure plan preparation

Name of RQP	**:- Nazar Ahamed K.V**
Reg No	**:- DMG/KERALA/RQP/7/2016**
Valid Up to	:- 19/12/2026
Address	:- **N Square Mining and Environmental Solutions LLP** 1st Floor, Xaitoon plaza, Edappal, Malappuram, Kerala -679576
Phone	:- 854 70 97 533,944 71 77 533
E-mail	:-geologistna@gmail.com

Executing Agency

Mr.E.S Baiju

(Applicant)

2.0 MINE DESCRIPTION

2.1 TOPOGRAPHY

The terrain surrounding the permit area forms part of a hill rock with some native trees, shrubs, herbs, climbers & grass etc. The highest elevation of the permit area is 95 m MSL and lowest is 78 m MSL.

2.2 REGIONAL GEOLOGY

The district has in general an undulating topography with a regional westerly slope. Thrissur district can be broadly divided in to four geological belts.

- Charnockite belt which is wide spread and most prominent in the district
- Gneissic belt represented by biotite gneiss, hornblende biotite gneiss and quartzo felspathic gneiss.

Granitic gneiss (PGC) restricted to the south eastern part and the quarternaries of the coastal tract.

2.3 LOCAL GEOLOGY

The main rock type in the quarry site is charnockite, consisting of pyroxenes, feldspars, quartz and occasional biotite. Two sets of joints are seen traversing the rocks, often rendering the rock mass as elongated and isometric blocks of different shapes and sizes. As a result, the quarry products cannot be used as blocks of dimension stone. Thin veins of pegmatite are seen intruding the charnockite mass.

2.4 GENERAL DESCRIPTION OF FORMATIONS

The geological parameters / features of the ore body as obtained from the field mapping and exploration studies reveal the following:

Length of the ore body : ranging from 115 to 136 (Avg-125.5) m

Width of the ore body : ranging from 70 to 83 (Avg-76.5) m

This rock deposit is not suitable for making value-added products in decorative monumental or ornamental fields of industry. Geological map showing the litho units and cross sections has been prepared and enclosed as **Plate No. 3**

2.5 GEOLOGICAL SECTION:

Geological cross sections have been drawn across the permit area has been prepared and enclosed as **Plate No.3**

2.6 DETAILS OF EXPLORATION:-

The permit area is already explored, the excavated pits give the idea of rock at depth. So no further exploration is required and proposed in this mining plan.

2.7 METHOD OF ESTIMATION OF RESERVES:

The following points have been considered while calculating the reserves of stone.

- The reserves of minerals have been estimated by using the method of preparation of sections, calculation of sectional area and applying the influence length of such sections to limited distance.
- Based on the actual geological mapping and cross section preparation, the proved reserve has been computed.
- The specific gravity of minerals has been taken as 2.5 i.e. 1 M^3 of mineral in situ = 2.5/M^3.

2.8 RESERVES OF MINERALS

The reserves of rock have been calculated and the geological and mineable reserves have been given in **Table No. 4**.

2.9 SUMMARY OF GEOLOGICAL & MINEABLE RESERVES

In this area the building stone exposures are bordering the permit boundary. The mineable reserves are arrived at after deducting the reserves locked in mines safety slope along with boundary incompliance with the Mineral Concession Rules. The summary of mineable and geological reserve is given in the **Table No-5**.

Mining methods

The proposed method of mining will be Semi mechanized open cast mining. The basic mining techniques adopted will use machinery. For the systematic working of open cast mines, the main development work will be formation of systematic benching. The height of bench will not be kept more than 5.0m at a time and the width of the benches will be always kept safe according to provisions. The Mining will be done with the help of tools such as drills, jack-hammer, compressors, hand shovels, picks, excavators etc. The targeted annual production of Stone is about 48239.5 MT. Summary of 5 year bench wise production details is given in the **Table No.11.**

Mineral Beneficiation:

No beneficiation is proposed

4.0 CLOSURE PLAN

4.1 Mined- out land:

At the end of life of the quarry, about 0.7094 Ha area will be the quarry pit, in which 0.7094 Ha will be reclaimed with quarry waste and soil. 0.1516 Ha used for plantation in a manner resembling the old topography has been proposed.

4.2 Water Quality management:

There is no natural water body in the permit area. Mining operation will terminate much before the water table and there is no intersection. No ground water management is required. There is well water available near the mine area which is suitable for drinking purposes.

4.3 Air Quality Management

Mining operation is of small scale so air pollution due to dust will be negligible. Wet drilling has been proposed to minimize the dust. Water sprinklers were proposed on either side of the road once in a day especially during the dry seasons.

4.4 Waste Management

About 12,059.9 tonne of overburden will be generated throughout the mine life. This waste will be utilized within the pit for lying of haul roads. At the end use, OB can be reutilized as soil base for plantation.

4.5 Topsoil Management

A total quantity of 10192.5 tonne of topsoil is proposed to be removed during mining operations. The topsoil excavated from the quarry will be dumped separately at predetermined place and subsequently utilized for spreading over reclaimed areas for plantation.

4.6 Tailing Dam Management

There is no proposal of beneficiation for processing of mineral as it is used directly in crude form, so no effluent will be generated. Therefore no tailing dam is required.

4.7 Infrastructure

Access road will be maintained.

4.8 Safety and Security

This is a small-scale open cast mine. Only some part of the area will be the working zone. Safety measure will be taken for that proposed area as per Mine Safety Act .Permit area will be fencing.

4.9 Disaster Management and Risk Assessment

Open cast mining method is adapted in this mine. If the benches are made with proposed height and width no risk will be there. There are provisions for first aid at the mine site, and the Public Health Centre with doctors is nearby. Mine Related disaster management training will be imparted to the personnel. Transportation facility is available at the mine site.

4.10 Care and Maintenance during temporary discontinuance

During the temporary discontinuance the working place will be fenced completely and board of discontinuance will be hanged on the main entrance of the working place. One choukidar will be kept on the permit area to watch the area and look after the survival of the plants.

4.11 Time scheduling for abandonment:

This scheduling for abandonment operations are not proposed in para 4 of closure plan. If the mine is closed due to unforeseen reasons then tentatively it will 12 months for closure.

4.12 Abandonment cost

Abandonment is not proposed during five years of mining operation. But implementation of waste management like retaining wall and afforestation is proposed as continuous process. Cost of these is around 50,000 to 60,000 Rs Per year.

Mr. E.S Baiju

(Applicant)

Nazar Ahamed K.V

NAZAR AHAMED K.V
MANAGING DIRECTOR
MINING & ENVIRONMENTAL SOLUTIONS LLP.
RQP NO: DMG/KERALA/RQP/7/2016.

DMG/KERALA/RQP/7/2016

ANNEXURES

ANNEXURE No: I

Address : 143, Immanuyil
9
Puthur Grama Panchayath
വിലാസം : 143, ഇമ്മാനുവൽ
9
പുത്തൂർ ഗ്രാമപഞ്ചായത്ത്

Electoral Registration Officer
ഇലക്ടറൽ രജിസ്ട്രേഷൻ ഓഫീസർ
For Ollur Constituency
ഒല്ലൂർ നിയോജകമണ്ഡലം

Place : Thrissur
സ്ഥലം : തൃശ്ശൂർ
Date / തീയതി : 05-12-1997

This card may be used as an Identity Card under different Government Schemes
ഈ കാർഡ് വിവിധ സർക്കാർ പദ്ധതികൾക്ക് കീഴിൽ തിരിച്ചറിയൽ കാർഡായി ഉപയോഗിക്കാവുന്നതാണ്

ELECTION COMMISSION OF INDIA
ഇന്ത്യ തിരഞ്ഞെടുപ്പ് കമ്മീഷൻ
IDENTITY CARD
തിരിച്ചറിയൽ കാർഡ്

KL/09/059/402243

Elector's Name : Baiju
വോട്ടറുടെ പേര്: ബൈജു
Father's/Mother's/
Husband's Name : Subramanian
അച്ഛന്റെ/അമ്മയുടെ/
ഭർത്താവിന്റെ പേര് : സുബ്രഹ്മണ്യൻ
Sex: ലിംഗം : M / പുരുഷൻ
Age as on 1-1-97 : 20
1-1-97 ൽ

DEPT. OF MINING & GEOLOGY
GOVT. OF KERALA

ANNEXURE No: 2

ഒറിജിനൽ

രസീത്

ബുക്ക് നമ്പർ: എൻ 71289 എൻ No. 7128807

3464-ാം നമ്പർ രജിസ്റ്റർ / ഉടമ്പടി അനുസരിച്ച് കരം / തുക ഒടുക്കിയതിന് രസീത് 3464

[illegible] [illegible] വില്ലേജ്

സർവ്വേ നമ്പരും സബ്ഡിവിഷൻ നമ്പരും	വിസ്തീർണ്ണം		[illegible]	[illegible]	[illegible]	ഏതു കാലത്തേക്കാണോ ഏതു തവണ വിഷയമാണോ	തുക		റിമാർക്സ്
	ഹെ.	ആർ					രൂപ	പൈ.	
127	2	02.35		BT	[illegible]	2017-18	410		

മേൽ വിവരിച്ച പ്രകാരം 410 രൂപ ... പൈസ

[illegible] (അക്ഷരത്തിൽ)

2017 -ാമാണ്ട് [illegible] മാസം 30 തീയതിയായ

ഇന്നേ ദിവസം സ്വീകരിച്ച് വില്ലേജ് കണക്കിൽ മുതൽ വച്ചിരിക്കുന്നു.

സ്ഥലം: [illegible]

തീയതി: 30/5/17

വില്ലേജ് ഓഫീസറുടെയോ / വില്ലേജ് അസിസ്റ്റന്റിന്റെയോ പേരും ഒപ്പും

DEPT. OF [illegible] & GEO[illegible] GOVT. OF KE[illegible]

ANNEXURE No: 3

നമ്പർ: 276/18

വില്ലേജ് ഓഫീസ് - തുമ്പൂർ

കൈവശ സർട്ടിഫിക്കറ്റ്

താഴെ ചേർത്ത വസ്തുവകകൾ തുമ്പൂർ വില്ലേജിൽ [illegible] എന്നയാളുടെ കൈവശത്തിലാണെന്നു സാക്ഷ്യപ്പെടുത്തുന്നു.

വില്ലേജ്	സർവ്വേ നമ്പർ	വിസ്തീർണം
തുമ്പൂർ	127	2.0235 Hq

(as per the Doc No. 2745/2004 of SRO Nellayi)

ഈ സർട്ടിഫിക്കറ്റ് [illegible] ആവശ്യാർത്ഥമാണ് നൽകിയിട്ടുള്ളത്.

27/2/18

വില്ലേജ് ഓഫീസർ
വില്ലേജ് ഓഫീസർ
തുമ്പൂർ - തൃക്കൂർ

GOVT. OF KERALA DEPT. OF MINING & GEOLOGY DIST. OFFICE THRISSUR

ANNEXURE No: 4

നമ്പർ : 1586/17

വില്ലേജ് ഓഫീസ്
....കല്ലേക്കാട്....
തിയ്യതി : 23/11/17

സാക്ഷ്യപത്രം

.....പാലക്കാട്..... ജില്ലയിൽ ....മുതലമട..... താലൂക്കിൽ .....കിണാപുത്തൂർ..... വില്ലേജിൽ .....127..... സർവ്വേ നമ്പറിൽ ~~.....~~ 0.9950 Ha ഫൈകടർ വിസ്തൃതിയിലുള്ള നിർദ്ധിഷ്ട കരിങ്കൽ ഖനനപ്രദേശത്തിന്റെ അതിരുകൾ പില്ലറുകൾ സ്ഥാപിച്ച് തിരിച്ചിട്ടിരിക്കുകയാണ്. എന്ന് ഇതിനാൽ സാക്ഷ്യപ്പെടുത്തുന്നു.

ഈ സാക്ഷ്യപത്രം .....പാലക്കാട്..... മൈനിംഗ് & ജിയോളജി ആഫീസിൽ ഹാജരാക്കുന്നതിന് വേണ്ടിയാണ് അനുവദിക്കുന്നത്.

(ഒപ്പ്)
23/11
വില്ലേജ്ഓഫീസർ

ഓഫീസ് സീൽ

.9950 Ha

DEPT. OF MINING & GEOLOGY
GOVT. OF KERALA
DIST. OFFICE
THRISSUR

ANNEXURE No: 5

1586/17

സാക്ഷ്യപത്രം

ശ്രീ./ ശ്രീമതി [illegible] (പേരും വിലാസവും) എന്നയാൾ [illegible] പേരിൽ

[illegible] സബ് രജിസ്ട്രാർ ആഫീസിൽ

2745/04 നമ്പറായി രജിസ്റ്റർ ചെയ്ത ആധാരപ്രകാരം

[illegible] വില്ലേജിൽ 127 സർവ്വെ

നമ്പർ പ്രകാരമുള്ള 2.0235 ഹെക്ടർ ഭൂമി മറ്റു ആവശ്യങ്ങൾക്ക്/പ്രത്യേക ആവശ്യങ്ങൾക്ക് അസൈൻ ചെയ്ത് കൊടുത്തതല്ല എന്ന് സാക്ഷ്യപ്പെടുത്തുന്നു. കൂടാതെ ടി ഭൂമി റിസർവ്വ് വനത്തിന്റെ പരിധിയിൽ ഉൾപ്പെടുന്നതല്ലായെന്നും ടി വകകളിന്മേൽ കോടതി / ബാങ്ക് അറ്റാച്ച്മെന്റ് ഇല്ലായെന്നും സാക്ഷ്യപ്പെടുത്തുന്നു. (ഈ സാക്ഷ്യപത്രം തൃശ്ശൂർ മൈനിംഗ് & ജിയോളജി ആഫീസിൽ ഹാജരാക്കുന്നതിനു വേണ്ടിയാണ് അനുവദിക്കുന്നത്.

23/11

വില്ലേജാഫീസർ

ഓഫീസ് സീൽ

DEPT. OF MINING & GEOLOGY

ANNEXURE No: 6

भारतीय गैर न्यायिक

एक सौ रुपये Rs. 100

रु. 100 ONE HUNDRED RUPEES

सत्यमेव जयते

भारत INDIA

INDIA NON JUDICIAL

കേരളം केरल KERALA BM 172773

സമ്മതപത്രം

2017-ാം ആണ്ട് ഡിസംബർ മാസം 6 -ാം തിയ്യതി തൃശ്ശൂർ ജില്ല മുകുന്ദപുരം താലൂക്ക് തൃക്കൂർ വില്ലേജ്, ഇലഞ്ഞിക്കൽ വീട്ടിൽ തോമസ് മക്കൾ പ്രിൻസ്, സിറിൽ, ജിസ് എന്നിവർ തൃശ്ശൂർ ജില്ല തൃശ്ശൂർ താലൂക്ക് പുത്തൂർ വില്ലേജ് ചെറുകുന്ന് ദേശത്ത് ഇമ്മണിയിൽ വീട്ടിൽ വി.എ.സുബ്രഹ്മണ്യൻ മകൻ ബൈജു.ഇ.എസ് പേർക്ക് എഴുതി കൊടുത്ത സമ്മതപത്രം.

തൃശ്ശൂർ ജില്ല മുകുന്ദപുരം താലൂക്ക് തൃക്കൂർ വില്ലേജ് സർവ്വേ 127 ൽ ഞങ്ങളുടെ ഉടമസ്ഥതയിലുള്ള സ്ഥലത്തിൽ നിന്ന് പ്ലാനിൽ കാണിച്ചിട്ടുള്ള അളവുകളോടുകൂടിയ (0.9950 ഹെക്ടർ) സ്ഥലത്തുനിന്നും സാധാരണ കരിങ്കല്ല് ഖനനം

NOTARY
JOSE. P.A.
THRISSUR DISTRICT
Reg. No: 4306/2017
GOVT. OF INDIA

DEPT. OF MINING & GEOLOGY

16139 Rs 100

VENDOR ... KUTTICHIRA
K. E. SEBASTIAN

TREASURY
29 NOV

1-12-2017

കേരളം केरल KERALA

BM 172775

ചെയ്യുന്നതിന് ക്വാറി പെർമിറ്റ് കിട്ടുന്ന തിയതി മുതൽ 5 വർഷത്തേയ്ക്ക് സമ്മതിച്ചിരിക്കുന്നു. ആയതനുസരിച്ച് ടി വസ്തുവിൽ നിന്നും കരികല്ല് ഖനനം ചെയ്യുന്നതിന് വനം പരിസ്ഥിതി മന്ത്രാലയത്തിൽ നിന്നും MOEF പെർമിറ്റ് എടുക്കുന്നതിനും ഇതിനാൽ ഞങ്ങൾ പൂർണ്ണ സമ്മതം രേഖപ്പെടുത്തി തരുന്നതുമാകുന്നു.

എന്ന്,

തോമാസ്

പ്രിൻസ് തോമാസ്

സിറിൽ തോമാസ്

ജിസ് തോമാസ്

DEPT. OF MINING & GEOLOGY DISTRICT OFFICER KERALA

NOTARY GOVT. OF INDIA JOSE. P.A. THRISSUR DISTRICT Reg. No. SPECIAL/206/2017 ADHESIVE

ATTESTED

JOSE, P.A.
Advocate,
Notary & Commissioner of Oath
Ayyanthole, Thrissur-680 003, Kerala
Phone Res: 0480-2753854
(M): 98952 74480, 88486 53997

16/11

VENDOR No: 21 PANAMKUTTICHIRA
K. R. SEBASTIAN

TREASURY STAMP 29 NOV

ANNEXURE No: 7

POLUCHEM LABORATORIES (P) LTD.

CHEMICAL, ENVIRONMENTAL AND MICROBIOLOGY LABORATORY

PALLATH BUILDING, N. KALAMASSERY P. O., ERNAKULAM - 683104

Phone : 0484-2544030, 8281982322, 9747400085, 9747400089, www.poluchem.com, poluchem@gmail.com

ACCREDITED BY KSPCB AS "A" GRADE LABORATORY

TEST REPORT

Client Name & Address		
Mr. Byju E.S. Thrikkur Thrissur	Certificate No:	PL/AMB/RT/7470/2017
	Date of issue:	31/07/2017
	Date of monitoring	24/07/2017 08.45 Hrs to 25/07/2017 08.45 Hrs
	Date of sample received:	26/07/2017
	Date of analysis	26/07/2017
	Monitoring Location	Quarry owned by Mr. Byju E.S. Sy. No: 127/P Taluk : Mukundapuram Village : Thrikkur Panchayath : Thrikkur District :Thrissur, Kerala
	Sample description	Ambient air -Near south side boundary
	Sample code given by client	Nil

SL NO	PARAMETERS	TEST METHOD	RESULTS	Limit as per NAAQS
01	Particulate Matter (PM_{10})	I S 5182 Part 23 2006	54.7 $\mu g/m^3$	100 $\mu g/m^3$
02	Particulate Matter ($PM_{2.5}$)	WI/AMB2.5/01	28.6 $\mu g/m^3$	60 $\mu g/m^3$
03	Sulphur dioxide	I S 5182 Part 2 2001	8.9 $\mu g/m^3$	80 $\mu g/m^3$
04	Nitrogen dioxide	IS 5182 Part 06 2006	7.8 $\mu g/m^3$	80 $\mu g/m^3$

Note: NAAQS-National Ambient Air Quality Standards

* End of the Report*

For and on behalf of
POLUCHEM LABORATORIES (P) LTD.

SREEJA RAMESH
QUALITY MANAGER

AUTHORIZED SIGNATORY

POLUCHEM LABORATORIES (P) LTD.
CHEMICAL, ENVIRONMENTAL AND MICROBIOLOGY LABORATORY
PALLATH BUILDING, N. KALAMASSERY P. O., ERNAKULAM - 683104
Phone : 0484-2544030, 8281282322, 9747400085, 9747400083, www.poluchem.com, poluchem@gmail.com
ACCREDITED BY KSPCB AS 'A' GRADE LABORATORY

TEST REPORT

Client Name & Address	Certificate No:	PL/AMB/RT/7471/2017
Mr. Byju E.S. Thrikkur Thrissur	Date of issue:	31/07/2017
	Date of monitoring	24/07/2017 08.30 Hrs to 25/07/2017 08.30 Hrs
	Date of sample received:	26/07/2017
	Date of analysis	26/07/2017
	Monitoring Location	Quarry owned by Mr. Byju E.S. Sy. No. 127/P Taluk : Mukundapuram Village : Thrikkur Panchayath : Thrikkur District :Thrissur, Kerala
	Sample description	Ambient air -Near West side boundary
	Sample code given by client	Nil

SL NO	PARAMETERS	TEST METHOD	RESULTS	Limit as per NAAQS
01	Particulate Matter (PM_{10})	I S 5182 Part 23 2006	56.5 $\mu g/m^3$	100 $\mu g/m^3$
02	Particulate Matter ($PM_{2.5}$)	WI/AMB2.5/01	26.3 $\mu g/m^3$	60 $\mu g/m^3$
03	Sulphur dioxide	I S 5182 Part 2 2001	8.4 $\mu g/m^3$	80 $\mu g/m^3$
04	Nitrogen dioxide	IS 5182 Part 06 2006	6.4 $\mu g/m^3$	80 $\mu g/m^3$

Note: NAAQS-National Ambient Air Quality Standards

* End of the Report*

The results are related only to the sample collected for analysis. This certificate shall not be reproduced except in full and without the written permission with authorized signatory

For and on behalf of
POLUCHEM LABORATORIES (P) LTD.
SREEJA RAMESH
QUALITY MANAGER
POLUCHEM LABORATORIES (P) LTD.
AUTHORIZED SIGNATORY

POLUCHEM LABORATORIES (P) LTD.
CHEMICAL, ENVIRONMENTAL AND MICROBIOLOGY LABORATORY
PALLATH BUILDING, N. KALAMASSERY P. O., ERNAKULAM - 683104
Phone : 0484-2544030, 8281982322, 9747400085, 9747400089, www.poluchem.com, poluchem@gmail.com
ACCREDITED BY KSPCB AS "A" GRADE LABORATORY

TEST REPORT

Client Name & Address		
Mr. Byju E.S. Thrikkur Thrissur	Certificate No:	PL/AMB/RT/7468/2017
	Date of issue:	31/07/2017
	Date of monitoring	24/07/2017 08.00 Hrs to 25/07/2017 08.00 Hrs
	Date of sample received:	26/07/2017
	Date of analysis	26/07/2017
	Monitoring Location	Quarry owned by Mr. Byju E.S. Sy. No: 127/P Taluk : Mukundapuram Village : Thrikkur Panchayath : Thrikkur District :Thrissur, Kerala
	Sample description	Ambient air -Near East side boundary
	Sample code given by client	Nil

SL NO	PARAMETERS	TEST METHOD	RESULTS	Limit as per NAAQS
01	Particulate Matter (PM_{10})	I S 5182 Part 23 2006	58.7 $\mu g/m^3$	100 $\mu g/m^3$
02	Particulate Matter ($PM_{2.5}$)	WI/AMB2.5/01	30.2 $\mu g/m^3$	60 $\mu g/m^3$
03	Sulphur dioxide	I S 5182 Part 2 2001	10.4 $\mu g/m^3$	80 $\mu g/m^3$
04	Nitrogen dioxide	IS 5182 Part 06 2006	7.6 $\mu g/m^3$	80 $\mu g/m^3$

Note: NAAQS-National Ambient Air Quality Standards

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TEST REPORT

Client Name & Address		
Mr. Byju E.S. Thrikkur Thrissur	Certificate No:	PL/AMB/RT/7470/2017
	Date of issue:	31/07/2017
	Date of monitoring	24/07/2017 08.45 Hrs to 25/07/2017 08.45 Hrs
	Date of sample received:	26/07/2017
	Date of analysis	26/07/2017
	Monitoring Location	Quarry owned by Mr. Byju E.S. Sy. No: 127/P Taluk : Mukundapuram Village : Thrikkur Panchayath : Thrikkur District :Thrissur, Kerala
	Sample description	Ambient air -Near south side boundary
	Sample code given by client	Nil

SL NO	PARAMETERS	TEST METHOD	RESULTS	Limit as per NAAQS
01	Particulate Matter (PM_{10})	I S 5182 Part 23 2006	54.7 $\mu g/m^3$	100 $\mu g/m^3$
02	Particulate Matter ($PM_{2.5}$)	WI/AMB2.5/01	28.6 $\mu g/m^3$	60 $\mu g/m^3$
03	Sulphur dioxide	I S 5182 Part 2 2001	8.9 $\mu g/m^3$	80 $\mu g/m^3$
04	Nitrogen dioxide	IS 5182 Part 06 2006	7.8 $\mu g/m^3$	80 $\mu g/m^3$

Note: NAAQS-National Ambient Air Quality Standards

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TEST REPORT

Client Name & Address		
Mr. Byju E.S. Thrikkur Thrissur	Certificate No:	PL/AMB/RT/7471/2017
	Date of issue:	31/07/2017
	Date of monitoring	24/07/2017 08.30 Hrs to 25/07/2017 08.30 Hrs
	Date of sample received:	26/07/2017
	Date of analysis	26/07/2017
	Monitoring Location	Quarry owned by Mr. Byju E.S. Sy. No: 127/P Taluk : Mukundapuram Village : Thrikkur Panchayath : Thrikkur District :Thrissur, Kerala
	Sample description	Ambient air -Near West side boundary
	Sample code given by client	Nil

SL NO	PARAMETERS	TEST METHOD	RESULTS	Limit as per NAAQS
01	Particulate Matter (PM_{10})	I S 5182 Part 23 2006	56.5 $\mu g/m^3$	100 $\mu g/m^3$
02	Particulate Matter ($PM_{2.5}$)	WI/AMB2.5/01	26.3 $\mu g/m^3$	60 $\mu g/m^3$
03	Sulphur dioxide	I S 5182 Part 2 2001	8.4 $\mu g/m^3$	80 $\mu g/m^3$
04	Nitrogen dioxide	IS 5182 Part 06 2006	6.4 $\mu g/m^3$	80 $\mu g/m^3$

Note: NAAQS-National Ambient Air Quality Standards

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TEST REPORT

Client Name & Address		
Mr. Byju E.S. Thrikkur Thrissur	Certificate No:	PL/AMB/RT/7469/2017
	Date of issue:	31/07/2017
	Date of monitoring	24/07/2017 08.15 Hrs to 25/07/2017 08.15 Hrs
	Date of sample received:	26/07/2017
	Date of analysis	26/07/2017
	Monitoring Location	Quarry owned by Mr. Byju E.S. Sy. No: 127/P Taluk : Mukundapuram Village : Thrikkur Panchayath : Thrikkur District :Thrissur, Kerala
	Sample description	Ambient air -Near North side boundary
	Sample code given by client	Nil

SL NO	PARAMETERS	TEST METHOD	RESULTS	Limit as per NAAQS
01	Particulate Matter (PM_{10})	I S 5182 Part 23 2006	56.2 $\mu g/m^3$	100 $\mu g/m^3$
02	Particulate Matter ($PM_{2.5}$)	WI/AMB2.5/01	27.4 $\mu g/m^3$	60 $\mu g/m^3$
03	Sulphur dioxide	I S 5182 Part 2 2001	9.7 $\mu g/m^3$	80 $\mu g/m^3$
04	Nitrogen dioxide	IS 5182 Part 06 2006	5.3 $\mu g/m^3$	80 $\mu g/m^3$

Note: NAAQS-National Ambient Air Quality Standards

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ANNEXURE No: 8

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TEST REPORT

Ref.No. PL/RT/SW/7478/2017 Date of Issue: 31/07/2017

Name & address of customer : Mr. Byju E.S.,Thrikkur, Thrissur.

Project Site : Quarry owned by Mr. Byju E.S.
Sy. No: 127/P
Taluk : Mukundapuram
Village : Thrikkur
Panchayath : Thrikkur
District :Thrissur, Kerala

Sample drawn by : Poluchem Laboratory Sample Collector

Sample description : Water Sample

Location of sampling : Surface Water - 1

Date of sample collected : 25/07/2017

Date of analysis started : 25/07/2017

Date of completion of analysis : 30/07/2017

Parameters tested	Test method	Results	Acceptable Limit As Per IS 10500-2012
Color	IS 3025 (P) 04 – 1983	8 Hazen Unit	5 Hazen Unit
Odour	IS 3025 (P) 05 – 1983	Agreeable	Agreeable
Turbidity	IS 3025 (P) 10 – 1984	3 NTU	1 NTU
pH	IS 3025 (P) 11 – 1983	6.62	6.5 – 8.5
Total Dissolved Solids	IS 3025 (P) 15 – 1984	69 mg/l	500 mg/l
Total Hardness as $CaCO_3$	IS 3025 (P) 21 – 1983	27 mg/l	200 mg/l
Total Alkalinity as $CaCO_3$	IS 3025 (P) 23 – 1986	18.7 mg/l	200 mg/l
Residual Chlorine	IS 3025 (P) 26 – 1986	BDL	0.2 mg/l
Chloride as Cl	IS 3025 (P) 32 – 1988	14.36 mg/l	250 mg/l
Calcium as Ca	IS 3025 (P) 40 – 1991	8.79 mg/l	75 mg/l
Magnesium as Mg	IS 3025 (P) 46 – 1994	4.12 mg/l	30 mg/l
Total Iron as Fe	IS 3025 (P) 53 – 2003	0.51 mg/l	0.3 mg/l
Sulphate as SO_4	IS 3025 (P) 31 – 1988	8.74 mg/l	200 mg/l
Fluoride as F	IS 3025 (P) 60 – 2008	BDL	1.0 mg/l

Note : BDL – Below Detection Level

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For Poluchem Laboratories (P) Ltd.

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Continuation of Test Certificate No: 7478/2017

Parameters tested	Test method	Results	Acceptable Limits As per IS-10500-2012
Selenium as Se	IS 3025 (P)56 – 2003	BDL	0.01 mg/l
Arsenic as As	IS 3025(P) 37– 1988	BDL	0.01 mg/l
Copper as Cu	IS 3025(P) 42– 1992	BDL	0.05 mg/l
Manganese as Mn	IS 3025(P) 59– 2006	BDL	0.1 mg/l
Cadmium as Cd	IS 3025(P) 41– 1992	BDL	0.003 mg/l
Chromium as Cr	IS 3025 (P)52 – 2003	BDL	0.05 mg/l
Zinc as Zn	IS 3025(P) 49 – 1994	BDL	5 mg/l
Mercury as Hg	IS 3025(P) 48 – 1994	BDL	0.001 mg/l
Cyanide as CN	IS 3025(P)27 – 1986	BDL	0.05 mg/l
Lead as Pb	IS 3025(P) 47– 1994	BDL	0.01 mg/l
Aluminum as Al	IS 3025 (P) 5 – 2003	BDL	0.03 mg/l
Boron as B	IS 3025(P) 57– 2005	BDL	0.5 mg/l

Note : BDL – Below Detection Level

MICROBIOLOGY ANALYSIS

Parameters tested	Unit	Test method	Results	Acceptable Limit As per IS – 10500-2012
Coliforms	MPN/100ml	IS 1622: 1981	110	Absent
E coli	Present or Absent/100ml	IS 1622: 1981	Present	Absent

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TEST REPORT

Ref.No. PL/RT/SW/7479/2017 Date of Issue: 31/07/2017

Name & address of customer : Mr. Byju E.S.,Thrikkur, Thrissur.

Project Site : Quarry owned by Mr. Byju E.S.
Sy. No: 127/P
Taluk : Mukundapuram
Village : Thrikkur
Panchayath : Thrikkur
District :Thrissur, Kerala

DEPT. OF MINING & GEOLOGY DIST. OFFICE THRISSUR GOVT OF KERALA

Sample drawn by : Poluchem Laboratory Sample Collector
Sample description : Water Sample
Location of sampling : Surface Water - II
Date of sample collected : 25/07/2017
Date of analysis started : 25/07/2017
Date of completion of analysis : 30/07/2017

Parameters tested	Test method	Results	Acceptable Limit As Per IS 10500-2012
Color	IS 3025 (P) 04 – 1983	10 Hazen Unit	5 Hazen Unit
Odour	IS 3025 (P) 05 – 1983	Agreeable	Agreeable
Turbidity	IS 3025 (P) 10 – 1984	4 NTU	1 NTU
pH	IS 3025 (P) 11 – 1983	6.81	6.5 – 8.5
Total Dissolved Solids	IS 3025 (P) 15 – 1984	39 mg/l	500 mg/l
Total Hardness as $CaCO_3$	IS 3025 (P) 21 – 1983	14.6 mg/l	200 mg/l
Total Alkalinity as $CaCO_3$	IS 3025 (P) 23 – 1986	12.3 mg/l	200 mg/l
Residual Chlorine	IS 3025 (P) 26 – 1986	BDL	0.2 mg/l
Chloride as Cl^-	IS 3025 (P) 32 – 1988	13.64 mg/l	250 mg/l
Calcium as Ca	IS 3025 (P) 40 – 1991	3.65 mg/l	75 mg/l
Magnesium as Mg	IS 3025 (P) 46 – 1994	1.24 mg/l	30 mg/l
Total Iron as Fe	IS 3025 (P) 53 – 2003	0.57 mg/l	0.3 mg/l
Sulphate as SO_4	IS 3025 (P) 31 – 1988	3.21 mg/l	200 mg/l
Fluoride as F	IS 3025 (P) 60 – 2008	BDL	1.0 mg/l

Note : BDL – Below Detection Level

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Parameters tested	Test method	Results	Acceptable Limits As per IS-10500-2012
Selenium as Se	IS 3025 (P)56 – 2003	BDL	0.01 mg/l
Arsenic as As	IS 3025(P) 37– 1988	BDL	0.01 mg/l
Copper as Cu	IS 3025(P) 42– 1992	BDL	0.05 mg/l
Manganese as Mn	IS 3025(P) 59– 2006	BDL	0.1 mg/l
Cadmium as Cd	IS 3025(P) 41– 1992	BDL	0.003 mg/l
Chromium as Cr	IS 3025 (P)52 – 2003	BDL	0.05 mg/l
Zinc as Zn	IS 3025(P) 49 – 1994	BDL	5 mg/l
Mercury as Hg	IS 3025(P) 48 – 1994	BDL	0.001 mg/l
Cyanide as CN	IS 3025(P)27 – 1986	BDL	0.05 mg/l
Lead as Pb	IS 3025(P) 47– 1994	BDL	0.01 mg/l
Aluminum as Al	IS 3025 (P) 5 – 2003	BDL	0.03 mg/l
Boron as B	IS 3025(P) 57– 2005	BDL	0.5 mg/l

Note : BDL – Below Detection Level

MICROBIOLOGY ANALYSIS

Parameters tested	Unit	Test method	Results	Acceptable Limit As per IS – 10500-2012
Coliforms	MPN/100ml	IS 1622: 1981	50	Absent
E coli	Present or Absent/100ml	IS 1622: 1981	Absent	Absent

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TEST REPORT

Ref.No. PL/RT/SW/7477/2017 Date of Issue: 31/07/2017

Name & address of customer : Mr. Byju E.S.,Thrikkur, Thrissur.

Project Site : Quarry owned by Mr. Byju E.S.
Sy. No: 127/P
Taluk : Mukundapuram
Village : Thrikkur
Panchayath : Thrikkur
District :Thrissur, Kerala

DEPT. OF MINING & GEOLOGY DIST. OFFICE THRISSUR

Sample drawn by : Poluchem Laboratory Sample Collector

Sample description : Water Sample

Location of sampling : Bore Well Water

Date of sample collected : 25/07/2017

Date of analysis started : 25/07/2017

Date of completion of analysis : 30/07/2017

Parameters tested	Test method	Results	Acceptable Limit As Per IS 10500-2012
Color	IS 3025 (P) 04 – 1983	7 Hazen Unit	5 Hazen Unit
Odour	IS 3025 (P) 05 – 1983	Agreeable	Agreeable
Turbidity	IS 3025 (P) 10 – 1984	2 NTU	1 NTU
pH	IS 3025 (P) 11 – 1983	6.34	6.5 – 8.5
Total Dissolved Solids	IS 3025 (P) 15 – 1984	98 mg/l	500 mg/l
Total Hardness as $CaCO_3$	IS 3025 (P) 21 – 1983	76 mg/l	200 mg/l
Total Alkalinity as $CaCO_3$	IS 3025 (P) 23 – 1986	43 mg/l	200 mg/l
Residual Chlorine	IS 3025 (P) 26 – 1986	BDL	0.2 mg/l
Chloride as Cl	IS 3025 (P) 32 – 1988	47.1 mg/l	250 mg/l
Calcium as Ca	IS 3025 (P) 40 – 1991	28.4 mg/l	75 mg/l
Magnesium as Mg	IS 3025 (P) 46 – 1994	20.3 mg/l	30 mg/l
Total Iron as Fe	IS 3025 (P) 53 – 2003	0.46 mg/l	0.3 mg/l
Sulphate as SO_4	IS 3025 (P) 31 – 1988	11.7 mg/l	200 mg/l
Fluoride as F	IS 3025 (P) 60 – 2008	BDL	1.0 mg/l

Note : BDL – Below Detection Level

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Parameters tested	Test method	Results	Acceptable Limits As per IS-10500-2012
Selenium as Se	IS 3025 (P)56 – 2003	BDL	0.01 mg/l
Arsenic as As	IS 3025(P) 37– 1988	BDL	0.01 mg/l
Copper as Cu	IS 3025(P) 42– 1992	BDL	0.05 mg/l
Manganese as Mn	IS 3025(P) 59– 2006	BDL	0.1 mg/l
Cadmium as Cd	IS 3025(P) 41– 1992	BDL	0.003 mg/l
Chromium as Cr	IS 3025 (P)52 – 2003	BDL	0.05 mg/l
Zinc as Zn	IS 3025(P) 49 – 1994	BDL	5 mg/l
Mercury as Hg	IS 3025(P) 48 – 1994	BDL	0.001 mg/l
Cyanide as CN	IS 3025(P)27 – 1986	BDL	0.05 mg/l
Lead as Pb	IS 3025(P) 47– 1994	BDL	0.01 mg/l
Aluminum as Al	IS 3025 (P) 5 – 2003	BDL	0.03 mg/l
Boron as B	IS 3025(P) 57– 2005	BDL	0.5 mg/l

Note : BDL – Below Detection Level

MICROBIOLOGY ANALYSIS

Parameters tested	Unit	Test method	Results	Acceptable Limit As per IS – 10500-2012
Coliforms	MPN/100ml	IS 1622: 1981	23	Absent
E coli	Present or Absent/100ml	IS 1622: 1981	Present	Absent

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TEST REPORT

Ref.No. PL/RT/SW/7476/2017 Date of Issue: 31/07/2017

Name & address of customer : Mr. Byju E.S.,Thrikkur, Thrissur.

Project Site : Quarry owned by Mr. Byju E.S.
Sy. No: 127/P
Taluk : Mukundapuram
Village : Thrikkur
Panchayath : Thrikkur
District :Thrissur, Kerala

Sample drawn by : Poluchem Laboratory Sample Collector
Sample description : Water Sample
Location of sampling : Well Water
Date of sample collected : 25/07/2017
Date of analysis started : 25/07/2017
Date of completion of analysis : 30/07/2017

Parameters tested	Test method	Results	Acceptable Limit As Per IS 10500-2012
Color	IS 3025 (P) 04 – 1983	4 Hazen Unit	5 Hazen Unit
Odour	IS 3025 (P) 05 – 1983	Agreeable	Agreeable
Turbidity	IS 3025 (P) 10 – 1984	1 NTU	1 NTU
pH	IS 3025 (P) 11 – 1983	6.59	6.5 – 8.5
Total Dissolved Solids	IS 3025 (P) 15 – 1984	86 mg/l	500 mg/l
Total Hardness as $CaCO_3$	IS 3025 (P) 21 – 1983	44 mg/l	200 mg/l
Total Alkalinity as $CaCO_3$	IS 3025 (P) 23 – 1986	24 mg/l	200 mg/l
Residual Chlorine	IS 3025 (P) 26 – 1986	BDL	0.2 mg/l
Chloride as Cl^-	IS 3025 (P) 32 – 1988	24.6 mg/l	250 mg/l
Calcium as Ca	IS 3025 (P) 40 – 1991	11.74 mg/l	75 mg/l
Magnesium as Mg	IS 3025 (P) 46 – 1994	4.57 mg/l	30 mg/l
Total Iron as Fe	IS 3025 (P) 53 – 2003	0.43 mg/l	0.3 mg/l
Sulphate as SO_4	IS 3025 (P) 31 – 1988	8.64 mg/l	200 mg/l
Fluoride as F	IS 3025 (P) 60 – 2008	BDL	1.0 mg/l

Note : BDL – Below Detection Level

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Continuation of Test Certificate No: 7476/2017

Parameters tested	Test method	Results	Acceptable Limits As per IS-10500-2012
Selenium as Se	IS 3025 (P)56 – 2003	BDL	0.01 mg/l
Arsenic as As	IS 3025(P) 37– 1988	BDL	0.01 mg/l
Copper as Cu	IS 3025(P) 42– 1992	BDL	0.05 mg/l
Manganese as Mn	IS 3025(P) 59– 2006	BDL	0.1 mg/l
Cadmium as Cd	IS 3025(P) 41– 1992	BDL	0.003 mg/l
Chromium as Cr	IS 3025 (P)52 – 2003	BDL	0.05 mg/l
Zinc as Zn	IS 3025(P) 49 – 1994	BDL	5 mg/l
Mercury as Hg	IS 3025(P) 48 – 1994	BDL	0.001 mg/l
Cyanide as CN	IS 3025(P)27 – 1986	BDL	0.05 mg/l
Lead as Pb	IS 3025(P) 47– 1994	BDL	0.01 mg/l
Aluminum as Al	IS 3025 (P) 5 – 2003	BDL	0.03 mg/l
Boron as B	IS 3025(P) 57– 2005	BDL	0.5 mg/l

Note : BDL – Below Detection Level

MICROBIOLOGY ANALYSIS

Parameters tested	Unit	Test method	Results	Acceptable Limit As per IS – 10500-2012
Coliforms	MPN/100ml	IS 1622: 1981	Absent	Absent
E coli	Present or Absent/100ml	IS 1622: 1981	Absent	Absent

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ANNEXURE No: 9

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CHEMICAL, ENVIRONMENTAL AND MICROBIOLOGY LABORATORY

PALLATH BUILDING, N. KALAMASSERY P. O., ERNAKULAM - 683104

Phone : 0484-2544000, 8281982322, 9747400085, 9747400089, www.poluchem.com, poluchem@gmail.com

ACCREDITED BY KSPCB AS "A" GRADE LABORATORY

TEST REPORT

Client Name & Address	Certificate No:	PL/RT/SD/7475/2017
Mr. Byju E.S. Thrikkur Thrissur	Date of issue:	31/07/2017
	Date of monitoring	24/07/2017 08.45 Hrs to 25/08/2017 08.45 Hrs
	Monitoring Location	Quarry owned by Mr. Byju E.S. Sy. No: 127/P Taluk : Mukundapuram Village : Thrikkur Panchayath : Thrikkur District :Thrissur, Kerala
	Sample Description	Ambient Sound Level (Leq)

Monitoring Location	Time	Results
Near south side boundary	08.45 Hrs	46.8 dB (A)
	09.45 Hrs	47.6 dB (A)
	10.45 Hrs	48.1 dB (A)
	11.45 Hrs	50.3dB (A)
	12.45 Hrs	52.6 dB (A)
	13.45 Hrs	49.7 dB (A)
	14.45 Hrs	46.1 dB (A)
	15.45 Hrs	45.5 dB (A)
	16.45 Hrs	44.9 dB (A)
	17.45 Hrs	43.7 dB (A)
	18.45 Hrs	42.5 dB (A)
	19.45 Hrs	41.3 dB (A)
	20.45 Hrs	40.4 dB (A)
	21.45 Hrs	38.6 dB (A)
	22.45 Hrs	37.8 dB (A)
	23.45 Hrs	35.4 dB (A)
	00.45 Hrs	32.2 dB (A)
	01.45 Hrs	33.3 dB (A)
	02.45 Hrs	35.7 dB (A)
	03.45Hrs	38.5 dB (A)
	04.45 Hrs	40.8 dB (A)
	05.45 Hrs	41.4 dB (A)
	06.45 Hrs	43.6 dB (A)
	07.45 Hrs	44.8 dB (A)
Leq (Day time)		46.8 dB (A)
Leq (Night time)		32.5 dB (A)

*End of the Report *

For Poluchem Laboratories (P) Ltd.

SREEJA RAMESH
QUALITY MANAGER
POLUCHEM LABORATORIES (P) LTD.

Authorized Signatory

POLUCHEM LABORATORIES (P) LTD.

CHEMICAL, ENVIRONMENTAL AND MICROBIOLOGY LABORATORY

PALLATH BUILDING, N. KALAMASSERY P. O., ERNAKULAM - 683104

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TEST REPORT

Client Name & Address	Certificate No:	PL/RT/SD/7472/2017
Mr. Byju E.S. Thrikkur Thrissur	Date of issue:	31/07/2017
	Date of monitoring	24/07/2017 08.00 Hrs to 25/08/2017 08.00 Hrs
	Monitoring Location	Quarry owned by Mr. Byju E.S. Sy. No: 127/P Taluk : Mukundapuram Village : Thrikkur Panchayath : Thrikkur District :Thrissur, Kerala
	Sample Description	Ambient Sound Level (Leq)

Monitoring Location	Time	Results
Near East side boundary	08.00 Hrs	45.5 dB (A)
	09.00 Hrs	46.3 dB (A)
	10.00 Hrs	48.6 dB (A)
	11.00 Hrs	49.8 dB (A)
	12.00 Hrs	50.8 dB (A)
	13.00 Hrs	49.9 dB (A)
	14.00 Hrs	46.7 dB (A)
	15.00 Hrs	44.3 dB (A)
	16.00 Hrs	43.3 dB (A)
	17.00 Hrs	42.2 dB (A)
	18.00 Hrs	41.4 dB (A)
	19.00 Hrs	40.9 dB (A)
	20.00 Hrs	39.5 dB (A)
	21.00 Hrs	38.3 dB (A)
	22.00 Hrs	36.9 dB (A)
	23.00 Hrs	34.8 dB (A)
	00.00 Hrs	33.5 dB (A)
	01.00 Hrs	34.3 dB (A)
	02.00 Hrs	36.5 dB (A)
	03.00 Hrs	37.1 dB (A)
	04.00 Hrs	39.6 dB (A)
	05.00 Hrs	40.4 dB (A)
	06.00 Hrs	41.6 dB (A)
	07.00 Hrs	43.4 dB (A)
Leq (Day time)		48.5 dB (A)
Leq (Night time)		36.4 dB (A)

*End of the Report *

DEPT. OF MINING & GEOLOGY DIST. OFFICE THRISSUR 680 020 GOVT. OF KERALA

For Poluchem Laboratories (P) Ltd.

SREEJA RAMESH
QUALITY MANAGER
POLUCHEM LABORATORIES (P) LTD.

Authorized Signatory

POLUCHEM LABORATORIES (P) LTD.

CHEMICAL, ENVIRONMENTAL AND MICROBIOLOGY LABORATORY

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TEST REPORT

Client Name & Address	Certificate No:	PL/RT/SD/7473/2017
Mr. Byju E.S. Thrikkur Thrissur	Date of issue:	31/07/2017
	Date of monitoring	24/07/2017 08.15 Hrs to 25/08/2017 08.15 Hrs
	Monitoring Location	Quarry owned by Mr. Byju E.S. Sy. No: 127/P Taluk : Mukundapuram Village : Thrikkur Panchayath : Thrikkur District :Thrissur, Kerala
	Sample Description	Ambient Sound Level (Leq)

Monitoring Location	Time	Results
Near North side boundary	08.15 Hrs	46.6 dB (A)
	09.15 Hrs	47.8 dB (A)
	10.15 Hrs	49.4 dB (A)
	11.15 Hrs	50.4 dB (A)
	12.15 Hrs	51.1 dB (A)
	13.15 Hrs	50.6 dB (A)
	14.15 Hrs	47.4 dB (A)
	15.15 Hrs	45.7 dB (A)
	16.15 Hrs	44.6 dB (A)
	17.15 Hrs	43.2 dB (A)
	18.15 Hrs	42.4 dB (A)
	19.15 Hrs	41.9 dB (A)
	20.15 Hrs	40.6 dB (A)
	21.15 Hrs	39.4 dB (A)
	22.15 Hrs	37.4 dB (A)
	23.15 Hrs	35.4 dB (A)
	00.15 Hrs	34.2 dB (A)
	01.15 Hrs	35.3dB (A)
	02.15 Hrs	37.2 dB (A)
	03.15Hrs	38.3 dB (A)
	04.15 Hrs	40.8 dB (A)
	05.15 Hrs	41.4 dB (A)
	06.15 Hrs	42.5 dB (A)
	07.15 Hrs	44.9 dB (A)
Leq (Day time)		46.8 dB (A)
Leq (Night time)		32.5 dB (A)

*End of the Report *

DEPT. OF MINING & GEOLOGY DIST. OFFICE THRISSUR KERALA

For Poluchem Laboratories (P) Ltd.

SREEJA RAMESH
QUALITY MANAGER
POLUCHEM LABORATORIES (P) LTD.

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POLUCHEM LABORATORIES (P) LTD.

CHEMICAL, ENVIRONMENTAL AND MICROBIOLOGY LABORATORY

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TEST REPORT

Client Name & Address	Certificate No:	PL/RT/SD/7474/2017
Mr. Byju E.S. Thrikkur Thrissur	Date of issue:	31/07/2017
	Date of monitoring	24/07/2017 08.30 Hrs to 25/08/2017 08.30 Hrs
	Monitoring Location	Quarry owned by Mr. Byju E.S. Sy. No: 127/P Taluk : Mukundapuram Village : Thrikkur Panchayath : Thrikkur District :Thrissur, Kerala
	Sample Description	Ambient Sound Level (Leq)

Monitoring Location	Time	Results
Near West side boundary	08.30 Hrs	44.5 dB (A)
	09.30 Hrs	45.2 dB (A)
	10.30 Hrs	47.6 dB (A)
	11.30 Hrs	48.8 dB (A)
	12.30 Hrs	49.6 dB (A)
	13.30 Hrs	48.4 dB (A)
	14.30 Hrs	45.8 dB (A)
	15.30 Hrs	43.9 dB (A)
	16.30 Hrs	42.4 dB (A)
	17.30 Hrs	41.5 dB (A)
	18.30 Hrs	40.2 dB (A)
	19.30 Hrs	39.3 dB (A)
	20.30 Hrs	38.4 dB (A)
	21.30 Hrs	37.8 dB (A)
	22.30 Hrs	35.7 dB (A)
	23.30 Hrs	33.6 dB (A)
	00.30 Hrs	32.5 dB (A)
	01.30 Hrs	33.4 dB (A)
	02.30 Hrs	35.2 dB (A)
	03.30 Hrs	36.3 dB (A)
	04.30 Hrs	38.6 dB (A)
	05.30 Hrs	39.4 dB (A)
	06.30 Hrs	40.6 dB (A)
	07.30 Hrs	42.4 dB (A)
Leq (Day time)		45.9 dB (A)
Leq (Night time)		38.2 dB (A)

*End of the Report *

DEPT. OF MINING & GEOLOGY DIST. OFFICE THRISSUR

For Poluchem Laborstories (P) Ltd.

SREEJA RAMESH
QUALITY MANAGER
POLUCHEM LABORATORIES (P) LTD.

Authorized Signatory

ANNEXURE No: 10

National Accreditation Board for Testing and Calibration Laboratories

(A Constituent Board of Quality Council of India)

CERTIFICATE OF ACCREDITATION

POLUCHEM LABORATORIES (P) LTD.

has been assessed and accredited in accordance with the standard

ISO/IEC 17025:2005

"General Requirements for the Competence of Testing & Calibration Laboratories"

for its facilities at

Pallath Building, North Kalamassery, Dist. Ernakulam, Kerala

in the field of

TESTING

DEPT. OF MINING & GEOLOGY DIST. OFFICE GOVT OF KERALA

Certificate Number TC-6589 *(in lieu of T-1658 & T-2938)*

Issue Date 25/08/2017 **Valid Until** 24/08/2019

This certificate remains valid for the Scope of Accreditation as specified in the annexure subject to continued satisfactory compliance to the above standard & the relevant requirements of NABL.

(To see the scope of accreditation of this laboratory, you may also visit NABL website www.nabl-india.org)

Signed for and on behalf of NABL

N. Venkateswaran
Program Director

8907697010003000493

Anil Relia
Chief Executive Officer

National Accreditation Board for Testing and Calibration Laboratories

(A Constituent Board of Quality Council of India)

SCOPE OF ACCREDITATION

Laboratory	**Poluchem Laboratories (P) Ltd., Pallath Building, North Kalamassery, Dist. Ernakulam, Kerala**	
Accreditation Standard	**ISO/IEC 17025: 2005**	
Certificate Number	**TC-6589** *(in lieu of T-2938 & T-1658)*	**Page 1 of 9**
Validity	**25.08.2017 to 24.08.2019**	**Last Amended on 29.11.2017**

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		BIOLOGICAL TESTING		
I.	**FOOD AND AGRICULTURAL PRODUCTS**			
1.	**Herbs, Spices and Condiments**	Total Plate Count	USFDA:BAM:EDITION8: JAN2001: CHAP-3	≥10 CFU /g
		Coliforms	USFDA:BAM:EDITION8: SEP 2002: CHAP-4 Revision July 2017	<3MPN to ≥ 1100MPN/g ≥10 CFU /g
		E coli	USFDA:BAM:EDITION8: SEP 2002: CHAP-4 Revision July 2017	<3MPN to ≥1100MPN/g
		Yeast and mold	USFDA:BAM:EDITION8:AP R 2001: CHAP-12	≥ 10 CFU /g
		Staphylococcus aureus	USFDA:BAM:EDITION8:JA N 2001: CHAP-12 Revision March 2016	≥ 10 CFU /g
		Salmonella	USFDA:BAM:EDITION8:N OV 2011: CHAP-5 Revision Aug 2016	Present/Absent/25g
2.	**Jams, Juices and Concentrates**	Total Plate Count	USFDA:BAM:EDITION8:JA N2001: CHAP-3	≥ 10 CFU /g
		Coliforms	USFDA:BAM:EDITION8:SE P 2002: CHAP-4	<3MPN to ≥ 1100MPN/g ≥ 10 CFU /g
		E coli	USFDA:BAM:EDITION8:SE P 2002: CHAP-4	<3MPN to ≥1100MPN/g
		Yeast and mold	USFDA:BAM:EDITION8:AP R 2001: CHAP-18	≥ 10 CFU /g
		Staphylococcus aureus	USFDA:BAM:EDITION8:JA N 2001: CHAP-12	≥ 10 CFU /g
		Salmonella	USFDA:BAM:EDITION8:N OV 2011: CHAP-5	Present/Absent/25g

Ashok Kumar
Convenor

N. Venkateswaran
Program Director

National Accreditation Board for Testing and Calibration Laboratories

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SCOPE OF ACCREDITATION

Laboratory Poluchem Laboratories (P) Ltd., Pallath Building, North Kalamassery, Dist. Ernakulam, Kerala

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-6589 *(in lieu of T-2938 & T-1658)*

Validity 25.08.2017 to 24.08.2019 **Last Amended on** 29.11.2017

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
3.	Tea	Total Plate Count	USFDA:BAM:EDITION8:JAN2001: CHAP-3	≥ 10 CFU /g
		Coliforms	USFDA:BAM:EDITION8:SEP 2002: CHAP-4 Revision July 2016	<3MPN to ≥ 1100MPN/g ≥ 10 CFU /g
		E coli	USFDA:BAM:EDITION8:SEP 2002: CHAP-4 Revision July 2017	<3MPN to ≥1100MPN/g
		Yeast and mold	USFDA:BAM:EDITION8:JAN 2001: CHAP-12	≥ 10 CFU /g
		Staphylococcus aureus	USFDA:BAM:EDITION8:JAN 2001: CHAP-12 Revision March 2016	≥ 10 CFU /g
		Salmonella	USFDA:BAM:EDITION8:NOV 2011: CHAP-5 Revision August 2016	Present/Absent/25g
4.	Bakery and Confectionery Products	Total Plate Count	USFDA:BAM:EDITION8:JAN2001: CHAP-3	≥ 10 CFU /g
		Coliforms	USFDA:BAM:EDITION8:SEP 2002: CHAP-4 Revision July 2016	<3MPN to ≥ 1100MPN/g ≥ 10 CFU /g
		E coli	USFDA:BAM:EDITION8:SEP 2002: CHAP-4 Revision July 2017	<3MPN to ≥1100MPN/g
		Yeast and mold	USFDA:BAM:EDITION8:JAN 2001: CHAP-12	≥ 10 CFU /g
		Staphylococcus aureus	USFDA:BAM:EDITION8:JAN 2001: CHAP-12 Revision March 2016	≥ 10 CFU /g
		Salmonella	USFDA:BAM:EDITION8:NOV 2011: CHAP-5 Revision August 2016	Present/Absent/25g
5.	Canned and Processed Foods	Total Plate Count	USFDA:BAM:EDITION8:JAN2001: CHAP-3	≥ 10 CFU /g

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Validity 25.08.2017 to 24.08.2019 Last Amended on 29.11.2017

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Coliforms	USFDA:BAM:EDITION8:SEP 2002: CHAP-4 Revision July 2016	<3MPN to ≥ 1100MPN/g ≥ 10 CFU /g
		E coli	USFDA:BAM:EDITION8:SEP 2002: CHAP-4 Revision July 2017	<3MPN to ≥1100MPN/g
		Yeast and mold	USFDA:BAM:EDITION8:JAN 2001: CHAP-12	≥ 10 CFU /g
		Staphylococcus aureus	USFDA:BAM:EDITION8:JAN 2001: CHAP-12 Revision March 2016	≥ 10 CFU /g
		Salmonella	USFDA:BAM:EDITION8:NOV 2011: CHAP-5 Revision August 2016	Present/Absent/25g
6.	Vegetable and Vegetable Products	Total Plate Count	USFDA:BAM:EDITION8:JAN2001: CHAP-3	≥ 10 CFU /g
		Coliforms	USFDA:BAM:EDITION8:SEP 2002: CHAP-4 Revision July 2016	<3MPN to ≥ 1100MPN/g ≥ 10 CFU /g
		E coli	USFDA:BAM:EDITION8:SEP 2002: CHAP-4 Revision July 2017	<3MPN to ≥1100MPN/g
		Yeast and mold	USFDA:BAM:EDITION8:JAN 2001: CHAP-12	≥ 10 CFU /g
		Staphylococcus aureus	USFDA:BAM:EDITION8:JAN 2001: CHAP-12 Revision March 2016	≥ 10 CFU /g
		Salmonella	USFDA:BAM:EDITION8:NOV 2011: CHAP-5 Revision August 2016	Present/Absent/25g

Ashok Kumar
Convenor

DEPT. OF MINING & GEOLOGY GOVT. OF KERALA

N. Venkateswaran
Program Director

National Accreditation Board for Testing and Calibration Laboratories

(A Constituent Board of Quality Council of India)

SCOPE OF ACCREDITATION

Laboratory	**Poluchem Laboratories (P) Ltd., Pallath Building, North Kalamassery, Dist. Ernakulam, Kerala**	
Accreditation Standard	**ISO/IEC 17025: 2005**	
Certificate Number	**TC-6589** *(In lieu of T-2938 & T-1658)*	**Page 4 of 9**
Validity	**25.08.2017 to 24.08.2019**	**Last Amended on 29.11.2017**

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
7.	**Other Specified Food Items**			
a.	**Cooked Ready to Serve / Eat Food (Curries/ Chappathis / Boiled Rice) & Raw Food (Fruits and Vegetable Salad)**	Total Plate Count	USFDA:BAM:EDITION8: JAN2001: CHAP-3	≥10 CFU /g
		Coliforms	USFDA:BAM:EDITION8: SEP 2002: CHAP-4 Revision July 2017	<3MPN to ≥ 1100MPN/g ≥10 CFU /g
		E coli	USFDA:BAM:EDITION8: SEP 2002: CHAP-4 Revision July 2017	<3MPN to ≥1100MPN/g
		Staphylococcus aureus	USFDA:BAM:EDITION8: JAN 2001: CHAP-12 Revision March 2016	≥10 CFU /g
		Salmonella	USFDA:BAM:EDITION8: NOV 2011: CHAP-5 Revision Aug 2016	Present/Absent/25g
II.	**WATER**			
1.	**Drinking Water**	Coliforms	IS 1622:1981 (RA 2009)	<2MPN to ≥ 1600MPN/ 100 ml
		E coli	IS 1622:1981 (RA 2009)	<2MPN to ≥ 1600MPN/ 100 ml
2.	**Water for Swimming Pool and Spa**	Standard Plate Count	IS 3328:1993 (RA 2003)	≥10 CFU /ml
		Coliforms	IS 1622:1981 (RA 2009)	<2MPN to ≥ 1600MPN/ 100 ml
		Feacal coliforms	IS 1622:1981 (RA 2009)	<2MPN to ≥ 1600MPN/ 100 ml
		E coli	IS 1622:1981 (RA 2009)	<2MPN to ≥ 1600MPN/ 100 ml

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Convenor

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Program Director

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Validity	**25.08.2017 to 24.08.2019**	**Last Amended on 29.11.2017**

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection

CHEMICAL TESTING

I.	**ATMOSPHERIC POLLUTION**			
1.	**Stack Emission**	Temperature	Indicative method IS 11255 (Part 3): 2008	Ambient -500 °C
		Velocity	Pitot Tube method IS 11255 (Part 3): 2008	1 to 60 m/sec
		Volume of Emission	IS 11255 (Part 3): 2008 By Calculation	100 Nm_3/hr to 1000000 Nm_3/hr
		Particulate Matter	IS 11255 (Part 1): 1985 (RA 2014)	1 mg/m^3 to 5000 mg/m^3
		Sulphur Dioxide	IS 11255(Part 2): 1985 (RA 2014)	3 mg/m^3 to 5000 mg/m^3
		Oxides of Nitrogen	IS 11255 (Part 7): 2005 (RA 2017)	2 mg/m^3 to 4000 mg/m^3
		Ammonia	IS 11255 (Part 6): 1999 (RA 2014)	5 mg/m^3 to 5000 mg/m^3
2.	**Ambient Air**	Particulate Matter (Particle Size less than 10µm) or PM_{10}	IS 5182 (Part 23): 2006 (RA 2012) CPCB Guidelines for the Measurement of Ambient Air Pollutants, Volume I, May 2011	1 $\mu g/m^3$ to 1000 $\mu g/m^3$
		Particulate Matter (Size less than 2.5µm) or $PM_{2.5}$	USEPA Quality Assurance Handbook, Vol. II, Part II; Quality Assurance Guidance Document 2.12; CPCB Guidelines for the Measurement of Ambient Air Pollutants, Volume I, May 2011	1 $\mu g/m^3$ to 1000 $\mu g/m^3$

DEPT. OF MINING & GEOLOGY

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Validity 25.08.2017 to 24.08.2019 Last Amended on 29.11.2017

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Sulphur dioxide (SO_2)	IS 5182 (Part 2): 2001 (RA 2017)	4 $\mu g/m^3$ to 1050 $\mu g/m^3$
		Nitrogen dioxide (NO_2)	IS 5182 (Part 6): 2006 (RA 2017)	6 $\mu g/m^3$ to 750 $\mu g/m^3$
		Carbon monoxide (CO)	SOP/PCL/COA/17	1 ppm to 100 ppm
		Hydrogen Sulphide (H2S)	IS 5182 (Part 7): 1973 (RA 2014)	6 $\mu g/m^3$ to 600 $\mu g/m^3$
		Equivalent Noise Level (L_{eq})	SOP/PCL/SL/17	30 dB(A) to 130 dB(A)
II.	WATER			
1.	Surface Water, Ground Water, Drinking Water, Packaged Drinking Water, Construction Water, Swimming Pool Water, Industrial Water, Irrigation Water & Purifier Water	pH at 25° c	IS 3025 (Part 11): 1983 (RA 2017)	2to12
		Conductivity at 25° C	IS 3025 (Part 14): 1984 (RA 2013)	1 µmhos/cm to 20000 µmhos/cm
		Colour	IS 3025 (Part 4): 1983 (RA 2017)	1 Hazen colour unit to 50 Hazen colour unit
		Odour	IS 3025 (Part 5): 1983 (RA 2017)	Qualitative
		Turbidity	IS 3025 (Part 10): 1984 (RA 2017)	1 NTU to 500 NTU
		Total Dissolved Solids	IS 3025 (Part 16): 1984 (RA 2017)	1 mg/l to 500 mg/l
		Total Hardness as $CaCO_3$	IS 3025 (Part 21): 1983 (RA 2014)	1 mg/l to 500 mg/l
		Calcium as Ca	IS 3025 (Part 40): 1991 (RA 2014)	1 mg/l to 500 mg/l
		Magnesium as Mg	IS 3025 (Part 46): 1994 (RA 2014)	1 mg/l to 500 mg/l
		Chloride as Cl	IS 3025 (Part 32): 1988 (RA 2014)	1 mg/l to 500 mg/l
		Alkalinity as $CaCO_3$	IS 3025 (Part 23): 1986 (RA 2014)	1 mg/l to 500 mg/l

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SCOPE OF ACCREDITATION

Laboratory	**Poluchem Laboratories (P) Ltd., Pallath Building, North Kalamassery, Dist. Ernakulam, Kerala**	
Accreditation Standard	**ISO/IEC 17025: 2005**	
Certificate Number	**TC-6589** *(in lieu of T-2938 & T-1658)*	**Page 7 of 9**
Validity	**25.08.2017 to 24.08.2019**	**Last Amended on 29.11.2017**

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Acidity as $CaCO_3$	IS 3025 (Part 22): 1986 (RA 2014)	1 mg/l to 500 mg/l
		Iron as Fe	IS 3025 (Part 53): 2003 (RA 2014) Spectrophotometric Method	0.05 mg/l to 5 mg/l
		Silica as SiO_2 (Reactive)	IS 3025 (Part 35): 1988 (RA 2014) Ammonium Molybdate method	0.05 mg/l to 200 mg/l
		Phosphate as PO_4	IS 3025 (Part 31): 1988 (RA 2014) Spectrophotometric Method	1 mg/l to 500 mg/l
		Sulphate as SO_4	IS 3025 (Part 24): 1986 (RA 2009) Spectrophotometric Method	1 mg/l to 500 mg/l
		Residual Chlorine as Cl	IS 3025 (Part 26): 1986 (RA 2014) Spectrophotometric Method	0.1 mg/l to 10 mg/l
		Chromium(Cr^{6+})	IS 3025 (Part 52): 2003 (RA 2014) Spectrophotometric Method	0.05 mg/l to 10 mg/l
		Fluoride as F	IS 3025 (Part 60): 2008 (RA 2013) Spectrophotometric Method	0.10 mg/l to 10 mg/l
		Phenolic Compounds As C_6H_5OH	IS 3025 (Part 43): 1992 (RA 2014)	0.05 mg/l to 10 mg/l
		Nitrate as NO_3	IS 3025 (Part 34): 1988 (RA 2014) Spectrophotometric Method	1 mg/l to 5 mg/l

Ashok Kumar
Convenor

DEPT. OF MINING & GEOLOGY DIST. OFFICE THRISSUR

N. Venkateswaran
Program Director

National Accreditation Board for Testing and Calibration Laboratories

(A Constituent Board of Quality Council of India)

SCOPE OF ACCREDITATION

Laboratory	Poluchem Laboratories (P) Ltd., Pallath Building, North Kalamassery, Dist. Ernakulam, Kerala
Accreditation Standard	ISO/IEC 17025: 2005
Certificate Number	TC-6589 *(in lieu of T-2938 & T-1658)* Page 8 of 9
Validity	25.08.2017 to 24.08.2019 Last Amended on 29.11.2017

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		22 Oil & Grease	IS 3025 (P) 39) 1991 (RA 2014) Partion Gravimetric Method	1 mg/l to 50 mg/l
II.	POLLUTION & ENVIRONMENT			
1.	Waste Water (Effluent / Sewage)	pH at 25'c	IS 3025 (Part 11): 1983 (RA 2017)	2 to 12
		Colour	IS 3025 (Part 4): 1983 (RA 2017)	1 Hazen colour unit to 50 Hazen colour unit
		Odour	IS 3025 (Part 5): 1983 (RA 2017)	Qualitative
		Turbidity	IS 3025 (Part 10): 1984 (RA 2017)	1 NTU to 5000 NTU
		Total Dissolved Solids	IS 3025 (Part 16): 1984 (RA 2017)	1 mg/l to 50000 mg/l
		Total Suspended Solids	IS 3025 (Part 17): 1984 (RA 2017)	1 mg/l to 5000 mg/l
		Total Solids	IS 3025 (Part 15): 1984 (RA 2014)	10 mg/l to 50000 mg/l
		Residual Chlorine	IS 3025 (Part 26): 1986 (RA 2014) Spectrophotometric Method	0.1 mg/l to 10 mg/l
		COD	IS 3025 (Part 58): 2006 (RA 2017) Open Reflux method	10 mg/l to 10000 mg/l
		BOD	IS 3025 (Part 44): 1993 (RA 2014) Winklers method	2 mg/l to 15000 mg/l
		Ammonia	IS 3025 (Part 34): 1988 (RA 2014) Spectrophotometric Method	1 mg/l to 500 mg/l
		Oil & Grease	IS 3025 (Part 39): 1991 (RA 2014) Partion Gravimetric Method	1 mg/l to 500 mg/l

Ashok Kumar
Convenor

DEPT. OF MINING & GEOLOGY
DIST. OFFICE THRISSUR

N. Venkateswaran
Program Director

National Accreditation Board for Testing and Calibration Laboratories

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Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-6589 *(In lieu of T-2938 & T-1658)*

Validity 25.08.2017 to 24.08.2019 **Last Amended on** 29.11.2017

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Fluoride as F	IS 3025 (Part 60): 2008 (RA 2014) Spectropholometric Method	0.10 mg/l to 10 mg/l
		Phenolic Compounds As C_6H_5OH	IS 3025 (Part 43): 1992 (RA 2014) Chloroform Extraction Without distillation	0.05 mg/l to 10 mg/l
		Nitrate as NO_3	IS 3025 (Part 34): 1988 (RA 2014) Spectrophotometric Method	1 mg/l to 5 mg/l
		Chromium(Cr^{6+})	IS 3025 (Part 52): 2003 (RA 2014) Spectrophotometric Method	0.05 mg/l to 10 mg/l

DEPT. OF MINING & GEOLOGY DIST. OFFICE THRISSUR GOVT. OF KERALA

Ashok Kumar
Convenor

N. Venkateswaran
Program Director

ANNEXURE No: II

GOVERNMENT OF KERALA

DEPARTMENT OF MINING AND GEOLOGY

Directorate of Mining and Geology, Pattom Palace PO,
Kesavadasapuram, Thiruvananthapuram-695004, Kerala
www.dmg.kerala.gov.in

FORM Q

CERTIFICATE OF RECOGNITION AS QUALIFIED PERSON TO PREPARE MINING PLANS FOR QUARRYING MINOR MINERALS IN KERALA

(Issued under Rule 54 of the Kerala Minor Mineral Concession Rules, 2015)

Shri. Nazar Ahamed K.V, S/O Shri. A.K.K. Ahamed, Karuveetil, Veliancode P.O, Malappuram, – 679 599, Kerala, having given satisfactory evidence of his qualification and experience is hereby granted **RECOGNITION** under Rule 54 of the Kerala Minor Mineral Concession Rules, 2015 as qualified person to prepare Mining Plans for quarrying minor minerals in Kerala.

The registration number is DMG/KERALA/RQP/7/2016

This recognition is valid for a period of 10 years ending 19/12/2026

Photograph of RQP

Signature of RQP

DEPT. OF MINING & GEOLOGY GOVT. OF KERALA

T. K. Ramakrishnan
DIRECTOR OF MINING AND GEOLOGY [I/C]

T.K. RAMAKRISHNAN
Director of Mining & Geology(I/c)
Kesavadasapuram, Pattom P.O.
Thiruvananthapuram-695004.

Place: Thiruvananthapuram
Date: 20-12-2016

DEPT. OF MINING & GEOLOGY
DIST. OFFICE THRISSUR
GOVT. OF KERALA

ANNEXURE No: 12

No.3042/C2/TD(): 2017

District Office of the Department
of Mining & Geology, Mini Civil Station,
Chembukkavu, Thrissur-20
Web:-www.dmg.kerala.gov.in.
E- mail:-geo.thr.dmg@kerala.gov.in.
Phone: 0487 2320677
Dated: 28.02.2018

From

The Senior Geologist
District Office
Department of Mining & Geology
Thrissur

To

Sri.E.S.Baiju, Emmaniyel House
P.O.Vettukkad, Thrissur

Sir,

Sub:- Mines and Minerals- Minor minerals- Granite Building stone-Application for QP under the KMMC Rules 2015- applied area inspected- other document to be produced- letter of intent as per the Rules- forwarding of reg.

Ref:- 1. Your application dt.10.11.18 for Quarrying permit
2. KMMC Rules 2015

Attention is invited to the above reference. As per the reference 1st cited you have applied for grant of QP from this office/Dept for the extraction of Granite Building Stone from an area of 0.9950 Hect/ Ares in Survey No. 127/P of Thrikkur Village of Mukundapuram Taluk of Thrissur District. As per the documents attached with your application this office inspected the area applied for QP and its surroundings on 23.01.2018. On inspection, this office has realized that, quarrying permit can be granted under the provisions contained in the KMMC Rules, 2015, only subject to the production of Environmental Clearance Certificate from District Environmental Impact Assessment Authority, Thrissur, Kerala or Ministry of Environment and Forest, New Delhi, which mandatory in respect of new cases for quarrying permits or quarrying leases. In addition to the Environmental Clearance Certificate as mentioned above, you have to produce the following valid documents to the satisfaction of this office in accordance with the relevant statutes.

1. Consent from the Pollution Control Board authorities concerned
2. Explosive license from the authorities concerned
3. D&O licence from the LSGD authorities concerned

It is also informed that as per the provisions contained in the KMMC Rules, 2015, this letter of intent shall be treated as a QP under these Rules for the purpose of issuing licences/ permissions/ consents/NOC's etc by the other statutory authorities concerned.

Yours faithfully,

Senior Geologist

DEPT. OF MINING & GEOLOGY DIST. OFFICE THRISSUR GOVT. OF KERALA

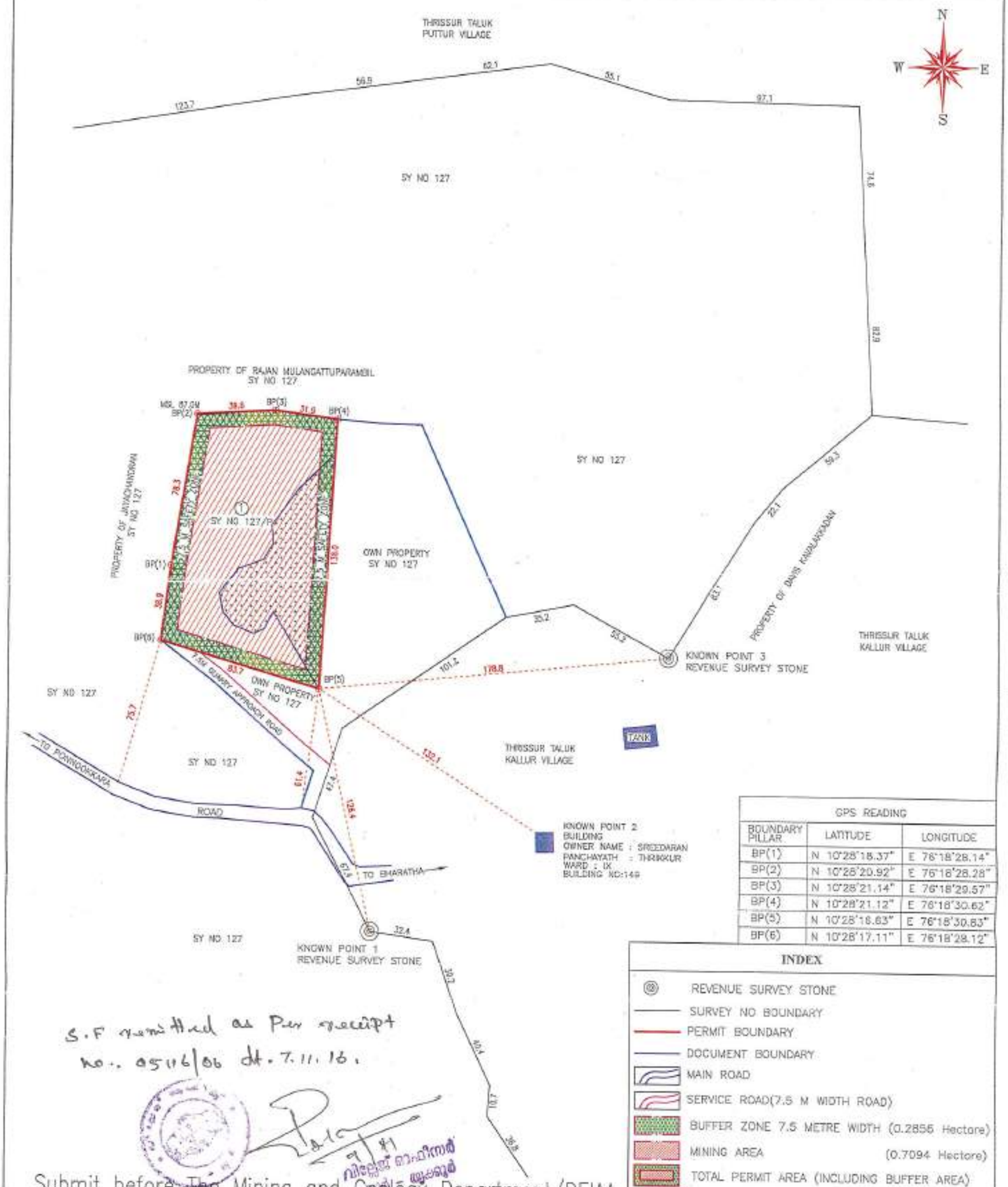
PLATES

2533/17

DISTRICT : THRISSUR
TALUK : MUKUNDAPURAM
VILLAGE : THRIKKUR
SY NO : 127/P

SURVEY MAP

Scale 1cm = 20m
PERMIT AREA–0.9950 H



GPS READING		
BOUNDARY PILLAR	LATITUDE	LONGITUDE
BP(1)	N 10°28'18.37"	E 76°18'28.14"
BP(2)	N 10°28'20.92"	E 76°18'28.28"
BP(3)	N 10°28'21.14"	E 76°18'29.57"
BP(4)	N 10°28'21.12"	E 76°18'30.62"
BP(5)	N 10°28'18.63"	E 76°18'30.63"
BP(6)	N 10°28'17.11"	E 76°18'28.12"

INDEX

- REVENUE SURVEY STONE
- SURVEY NO BOUNDARY
- PERMIT BOUNDARY
- DOCUMENT BOUNDARY
- MAIN ROAD
- SERVICE ROAD(7.5 M WIDTH ROAD)
- BUFFER ZONE 7.5 METRE WIDTH (0.2856 Hectare)
- MINING AREA (0.7094 Hectare)
- TOTAL PERMIT AREA (INCLUDING BUFFER AREA)
- EXISTING QUARRY (0.3102 Hectare)

S.F remitted as Per receipt No. 05116/06 dt. 7.11.16.

Submit before The Mining and Geology Department/DEIAA

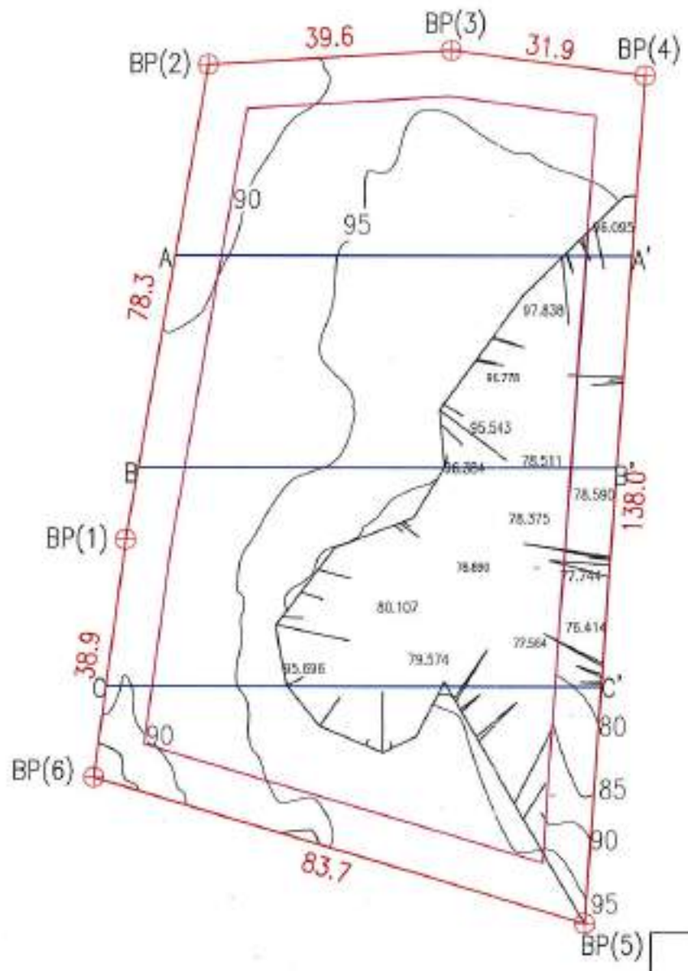
DETAILS OF PROPERTY

PLAN MARK	DOC.NO.	SY.NO.	TOTAL LAND AREA	BUFFER ZONE AREA	MINING AREA	TOTAL PERMIT AREA	NAME OF OWNER
1	2745/04	127/P	2.0235 H	0.2856 H	0.7094 H	0.9950 H	LANJIKKAL THOMAS ,PRINCE THOMAS SIRIL THOMAS & JIS THOMAS

PLATES NO: 1

PLATES NO: 2

SURFACE PLAN



INDEX	
	PERMIT BOUNDARY
	SAFETY LINE
	CONTOUR
	EXISTING QUARRY

BUILDING STONE QUARRY OF Mr.E.S.Baiju	
AREA :0.9950 Ha	SY.No : 127/p
VILLAGE :THRIKKUR	TALUK : MUKUNDAPURAM
DISTRICT :THRISSUR	STATE : KERALA
DATE OF SY:1-1-2018	SCALE : 1:1000

GPS READING

BOUNDARY PILLAR	LATITUDE	LONGITUDE
BP(1)	N 10°28'18.37"	E 76°18'28.14"
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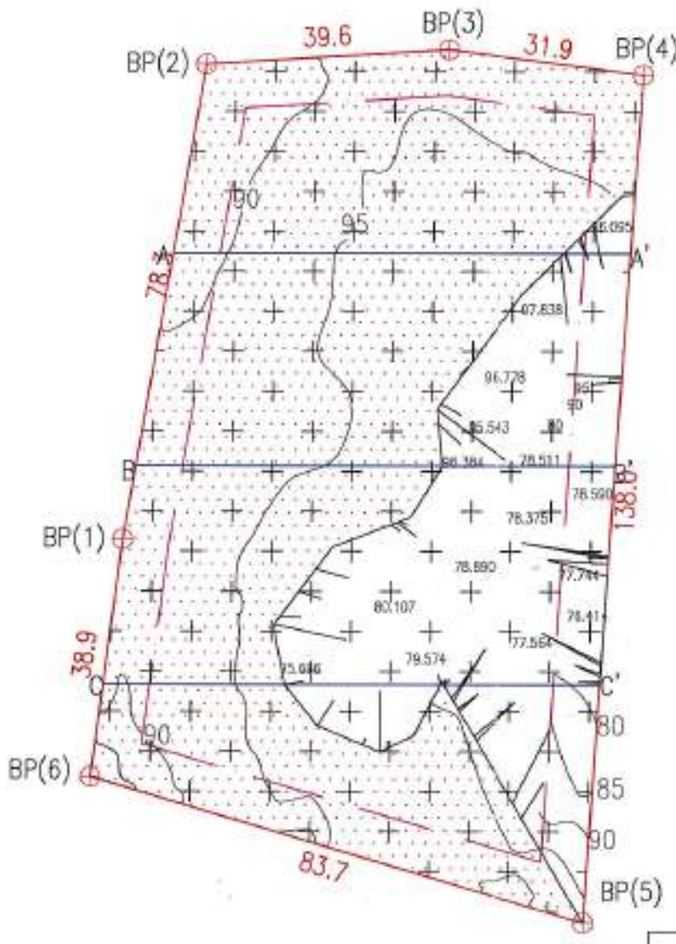
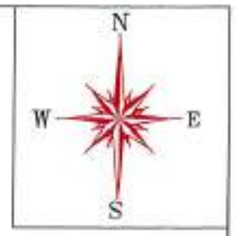
NAZAR AHAMED K.V
MANAGING DIRECTOR
R SQUARE MINING & ENVIRONMENTAL SOLUTIONS LLP.
RQP NO: DMG/KERALA/RQP//2018.

GEOLOGICAL PLAN





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	PERMIT BOUNDARY
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	CONTOUR
	EXISTING QUARRY
	SOIL
	SOIL ON CHARNOKITE

BUILDING STONE QUARRY OF Mr.E.S.Baiju	
AREA :0.9950 Ha	SY.No : 127/p
VILLAGE :THRIKKUR	TALUK : MUKUNDAPURAM
DISTRICT :THRISSUR	STATE : KERALA
DATE OF SY:1-1-2018	SCALE : 1:1000

GPS READING

BOUNDARY PILLAR	LATITUDE	LONGITUDE
BP(1)	N 10°28'18.37"	E 76°18'28.14"
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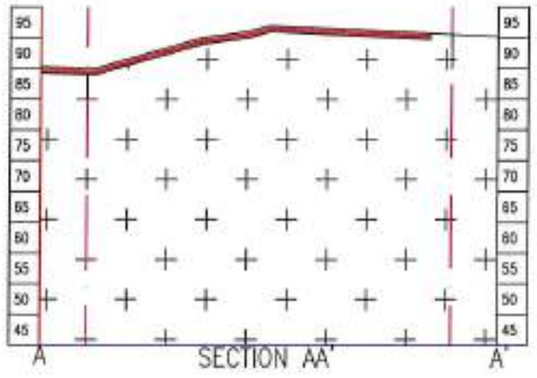
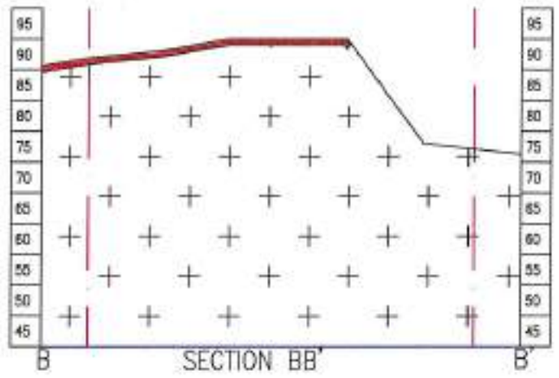
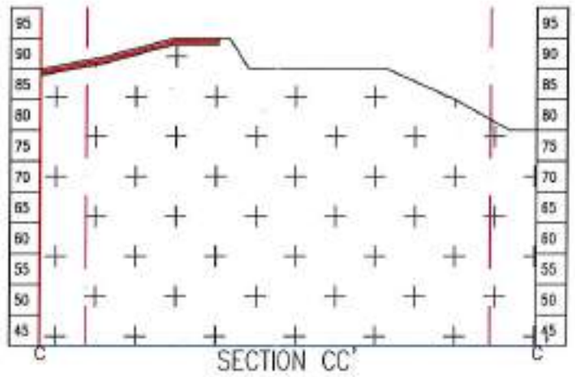
NAZAR AHAMED K.V
MANAGING DIRECTOR
N SQUARE MINING & ENVIRONMENTAL SOLUTIONS LLP.
RQP NO: DMG/KERALA/RQP/77/2018.

PLATES NO: 4

GEOLOGICAL CROSS SECTION







BUILDING STONE QUARRY OF Mr.E.S.Baiju	
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VILLAGE :THRIKKUR	TALUK : MUKUNDAPURAM
DISTRICT :THRISSUR	STATE : KERALA
DATE OF SY:1-1-2018	SCALE : 1:1000

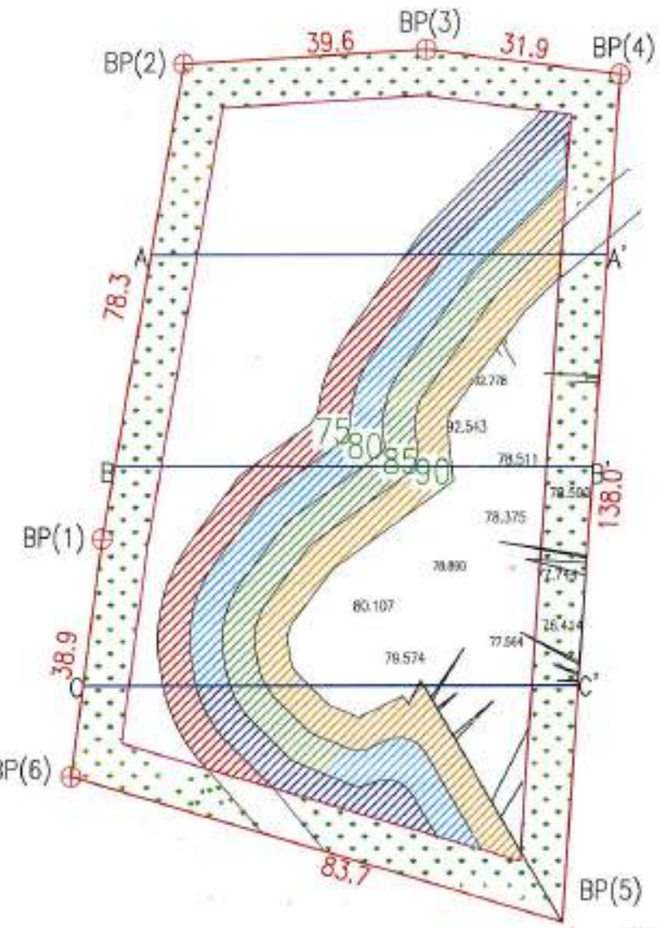
INTEX	
	PERMIT BOUNDARY
	7.5 SAFTY LINE
	SOIL
	CHARNOKITE
	MINE BENCHES

GOVT. OF KERALA DEPT. OF MINING & GEOLOGY DIST. OFFICE THRISSUR

NAZERALI M.S.K.V
MANAGING DIRECTOR
N SQUARE MINING & ENVIRONMENTAL SOLUTIONS LLP.
RQP NO: DMG/KERALA/RQP/77/2015

PLATES NO: 5

PRODUCTION PLAN



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	EXISTING QUARRY
	GREEN BELT

BUILDING STONE QUARRY OF Mr.E.S.Baiju	
AREA :0.9950 Ha	SY.No : 127/p
VILLAGE :THRIKKUR	TALUK : MUKUNDAPURAM
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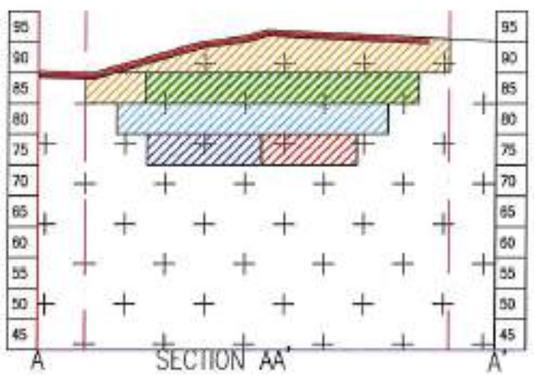
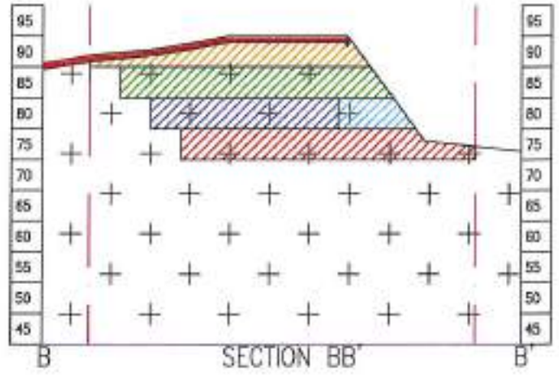
DEPT. OF MINING & GEOLOGY GOVT. OF KERALA

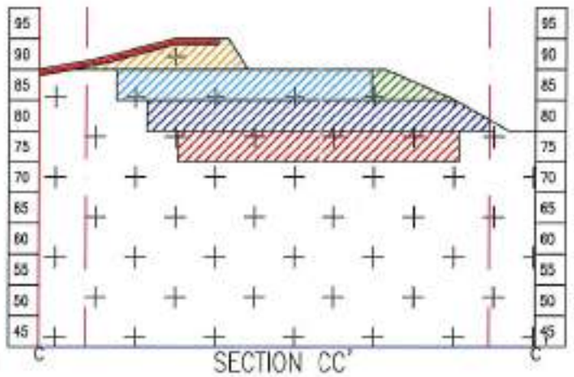
NAZARANNED K.V
MANAGING DIRECTOR
E SQUARE MINING & ENVIRONMENTAL SOLUTIONS LLP.
ROP NO: DMG/KERALA/ROP/7/2016.

PLATES NO: 6

PRODUCTION CROSS SECTION







PROJECTIONS

I YEAR	
II YEAR	
III YEAR	
IV YEAR	
V YEAR	

INTEX

	PERMIT BOUNDARY
	7.5 SAFTY LINE
	SOIL
	CHARNOKITE
	MINE BENCHES

BUILDING STONE QUARRY OF Mr.E.S.Baiju	
AREA :0.9950 Ha	SY.No : 127/p
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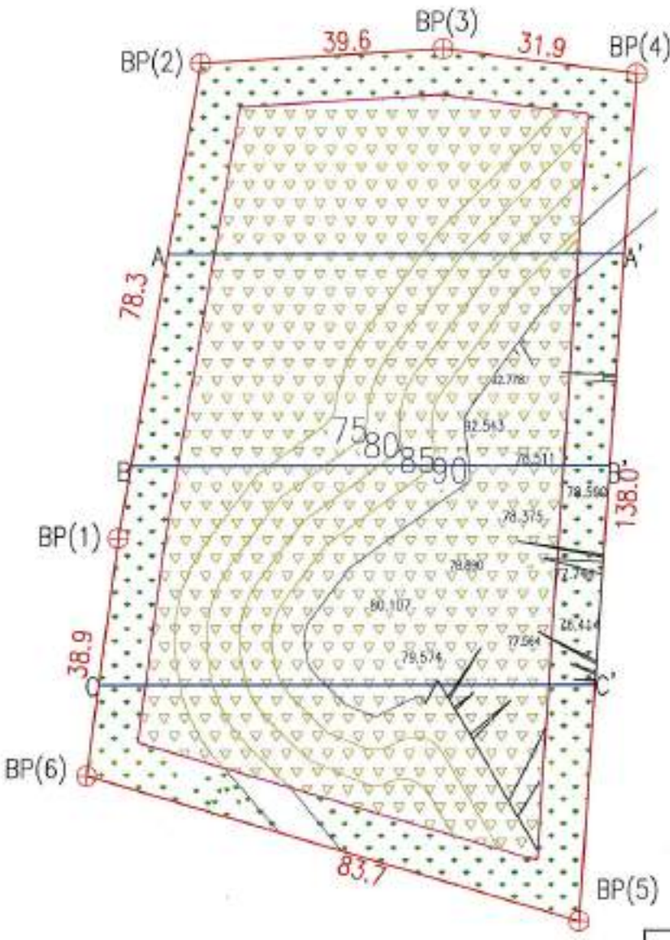
DISTRICT :THRISSUR	STATE : KERALA
DATE OF SY:1-1-2018	SCALE : 1:1000

DEPT OF MINING & GEOLOGY DIST. OFFICE THRISSUR GOVT OF KERALA

NAZAR ABRAHAM P.V
MANAGING PARTNER
M SQUARE MINING & ENVIRONMENTAL SOLUTIONS LLP
RQP NO: DMG/KERALA/RQP/7/2018

POSTMINE CLOSURE/CONCEPTUAL PLAN



REFERENCE	
GREEN BELT	
MINE BENCHES	
PLANTATION	

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	PERMIT BOUNDARY
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	QUARRY APROCH ROAD
	EXISTING QUARRY
	GREEN BELT

BUILDING STONE QUARRY OF Mr.E.S.Baiju	
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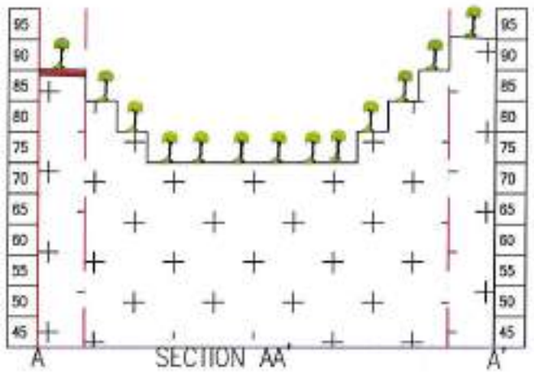
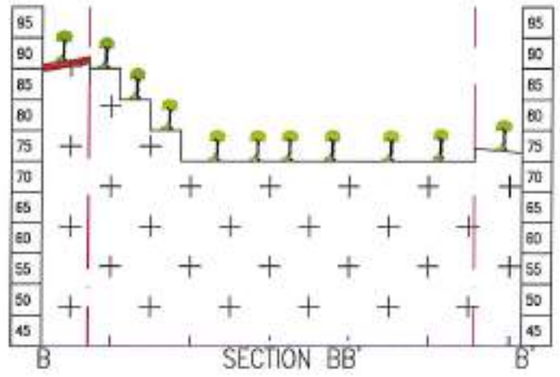
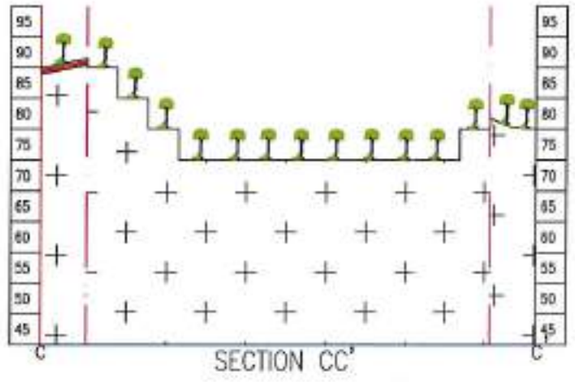
NAZAR AHAMED K.V
MANAGING DIRECTOR
N SQUARE MINING & ENVIRONMENTAL SOLUTIONS LLP.
RQP NO: DMG/KERALA/RQP/7/2015

CONCEPTUAL SECTION







BUILDING STONE QUARRY OF Mr.E.S.Baiju	
AREA :0.9950 Ha	SY.No : 127/p
VILLAGE :THRIKKUR	TALUK : MUKUNDAPURAM
DISTRICT :THRISSUR	STATE : KERALA
DATE OF SY:1-1-2018	SCALE : 1:1000

INTEX	
	PERMIT BOUNDARY
	7.5 SAFTY LINE
	SOIL
	CHARNOKITE
	MINE BENCHES
	PLANTATION

DEPT. OF MINING & GEOLOGY
DIST. OFFICE
THRISSUR
GOVT OF KERALA

NAZAR AHAMED K.V
MANAGING DIRECTOR
N SQUARE MINING & ENVIRONMENTAL SOLUTIONS LLP.
RQP NO: DMG/KER/AM/2019/

ENVIRONMENT PLAN OF Mr.E.S BAIJU

PLATES NO: 9

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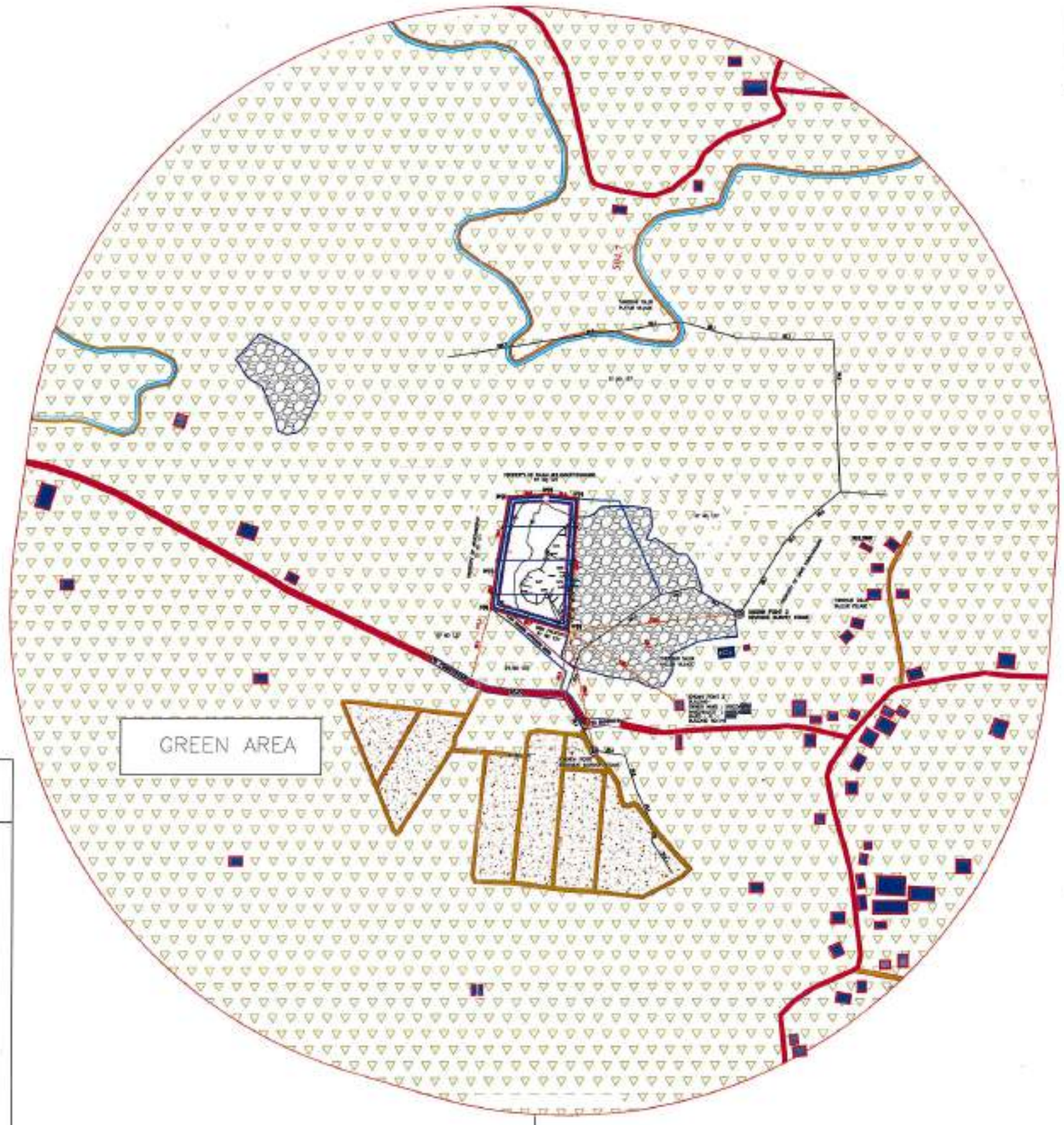


LEGEND

- PRIVATE ROAD
- PUBLIC ROAD
- QUARRY
- GREEN AREA
- OPEN LAND
- CANAL
- LEASE BOUNDARY
- BUFFER ZONE
- MINED AREA
- HOUSES/BUILDINGS
- GARLAND DRAIN WATER FLOW
- SETTING POND WITH RETENTION WALL
- CHECK DAM

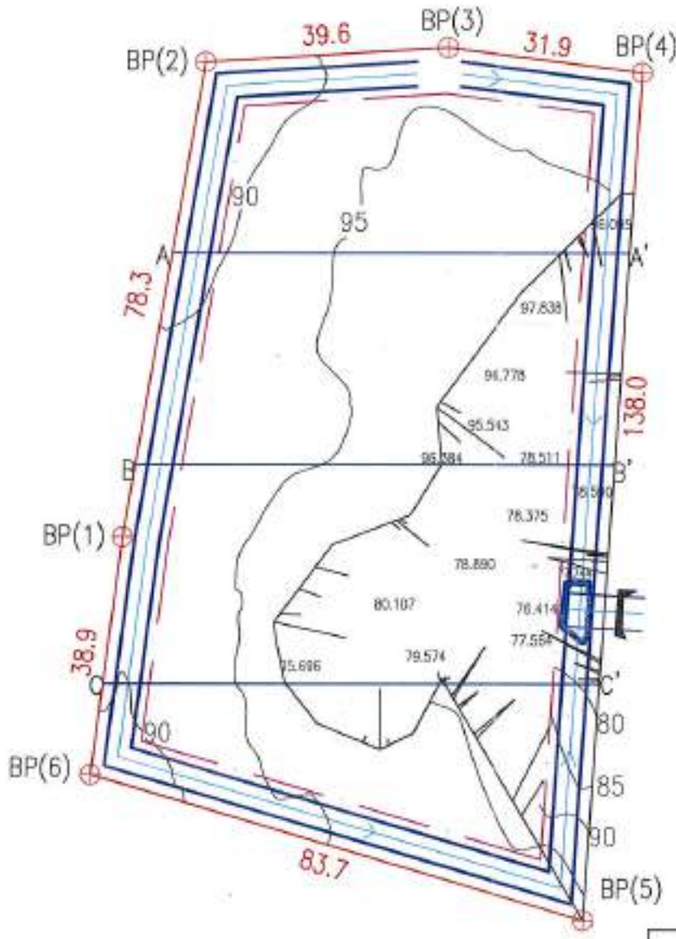
DEPT. OF MINING & GEOLOGY
DIST. OFFICE
THRISSUR
680 020
GOVT. OF KERALA

BAZAR AHAMED K.V
MANAGING DIRECTOR
N SQUARE MINING & ENVIRONMENTAL SOLUTIONS LLP.

SCALE 1:5000 DWG/KERALA/ROP/7/2016.

PLATES NO: 10

DRAINAGE PLAN



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REFERENCE	
GARLAND DRAIN WITH FLOW DIRECTION	
SETTLING POND WITH RETENTION WALL	
CHECK DAM	

INDEX

	PERMIT BOUNDARY
	SAFETY LINE
	CONTOUR
	EXISTING QUARRY

BUILDING STONE QUARRY OF Mr.E.S.Baiju	
AREA :0.9950 Ha	SY.No : 127/p
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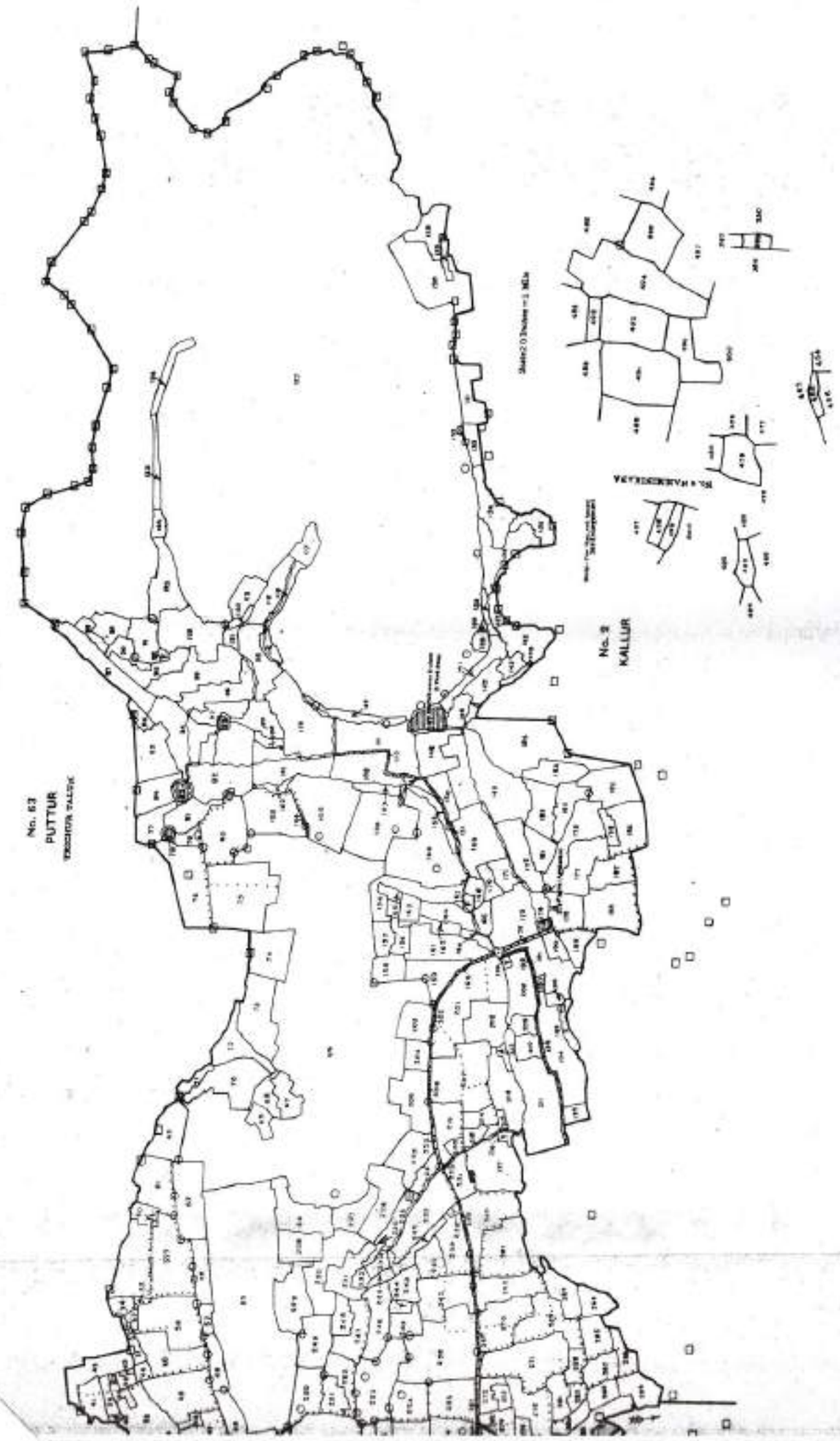
NAZAR AHAMED K.V
MANAGING DIRECTOR
N SQUARE MINING & ENVIRONMENTAL SOLUTIONS LLP.
ROP NO: DMG/KERALA/ROP/7/2016

PLATES NO: 11



Photoprint, Cochin Survey Office, Trichur.
1083

SUPERINTENDENT
REGIONAL ARCHIVES
ERNAKULAM, KOCHI -11

STATE ARCHIVES DEPT
Ernakulam
Kochi - 11
REGIONAL ARCHIVES

This mining plan is approved

28/03/2014

Senior Geologist
District Office
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