

JUNE

2022

Executive Summary for Conducting Public Hearing

FOR

“Tmt.K. Indirani Rough Stone Quarry over a total extent of 1.44.0 Ha”

At

S.F.No. 95/12, 16, 18, 20(P) & 21(P) of Chithannavasal Village, Illuppur Taluk, Pudukkottai District, Tamilnadu State

Project Proponent:

**Tmt.K. Indirani,
W/o. Karuppaiah,
No.45, Thayinipatti Village,
Vilathupatti Post,
Illuppur Taluk,
Pudukkottai District - 622 101**

Project termed under schedule 1(a) Category B₁

Prepared By:

Ecotech Labs Pvt. Ltd.



NABET Accredited EIA Consultant

48, 2nd Main road, Ram Nagar South Extension,

Pallikarani

Chennai -600100

EXECUTIVE SUMMARY

1. Project Background:

The Proposed project total extent area is 1.44.0 Ha, Patta land in Chithannavasal Village of Illuppur Taluk, Pudukkottai District. The category of project is B1, It is a new Rough stone quarry in Chithannavasal village. The area is situated on Plain terrain sloping towards Western covered with Rough Stone which does not sustain any type of vegetation.

The quarry operation is proposed to carry out with conventional open cast mechanized mining with 5.0-meter vertical bench with a bench width of 5.0 meter. The Quarry operation involves shallow jack hammer drilling, slurry blasting, loading and transportation.

The quarry operation is proposed up to depth for 27m (2.0m Topsoil + 25.0m Rough Stone). The Total Geological reserve is about 3,67,531 m³ of Rough Stone. The Mineable Reserves of Rough stone is 1,21,198 m³. The year wise production/recoverable resources of rough stone for 5 years are 1,21,198 m³.

Mining Plan was approved by The Assistant Director, Dept. of Geology & Mining, Pudukkottai vide Rc No: 118/2020 (G&M) dated 13.10.2021. The project area does not fall in Hill Area Conservation Authority region. There is no interstate boundary, CRZ zone, Western Ghats, notified Bird sanctuaries, wild life sanctuaries as per Wild life protection Act 1972, within the radius of 15Km.

2. Nature & Size of the Project

The New Rough Stone Quarry over an extent of 1.44.0 Hectares land is located Chithannavasal Village of Illuppur Taluk, Pudukkottai District.

Mineral intends to quarry : Rough stone
District : Pudukkottai

Taluk : Illuppur
 Village : Chithannavasal
 S. F. Nos. : 95/12, 16, 18, 20(P) & 21(P)
 Extent : 1.44.0 Hectares

Table 1: Brief Description of the Project

S. No	Particulars	Details
1	Latitude	10° 27' 20.2308" N to 10° 27' 17.9149" N
2	Longitude	78° 44' 0.5983" E to 78° 43' 54.7747" E
3	Site Elevation above MSL	122 m from MSL
4	Topography	Plain terrain
5	Land use of the site	Patta land
6	Extent of lease area	1.44.0 Ha
7	Nearest highway	SH 71 - Tiruchirappalli to Thanjavur – 2.00 km, S
8	Nearest railway station	Vellanur Railway station - 7.09 Km – NE
9	Nearest airport	Tiruchirappalli International Airport – 33.57 Km - NW
10	Nearest town / city	Town - Illuppur - 13.38 Km -NW City - Illuppur - 13.38 Km -NW District – Pudukkottai - 10.89 Km – SE
11	Rivers / Canal	Nil
12	Lake	<ul style="list-style-type: none"> • Boating pond – 1.42 km, SW • Panangudi periyakulam – 2.53 km, SW • Annavaasal Periyakulam Lake – 4.35 km, NW • Perunjunai Lake – 4.43 km, SE • Kundu Pallam Lake – 4.88 km, SW
13	Hills / valleys	Nil in 15 km radius
14	Archaeologically places	Nil in 15 km radius
15	National parks / Wildlife Sanctuaries	Nil in 15 Km radius
16	Reserved / Protected	<ul style="list-style-type: none"> • Nartamalai R.F. – 1.58 km, N

	Forests	<ul style="list-style-type: none"> • Kudumiyamalai R.F. – 6.62 km, SW • Perambur R.F. – 8.08 km, SW
17	Seismicity	Proposed Lease area come under Seismic zone-II(low risk area)
18	Defense Installations	Nil in 15 Km radius

3. Need for the Project

- ❖ The mining activities as proposed are the backbone of all construction and infrastructure projects as the raw material for construction is available only from such mining. The Rough stone extracted will be transported to be Stone crusher of district Pudukkottai.
- ❖ The raw Rough stone as well as the crushed material of stone is in high demand in real estate, construction projects as well as in building construction projects.
- ❖ Rough stone is quarried for producing crusher aggregates to the nearby building contractors, road contractors and nearby villagers.
- ❖ After quarrying the entire reserves mined out, the area will be used as water reservoir to have an artificial recharge to the nearby wells.
- ❖ No damage to the land is caused, no reclamation or back filling is required.

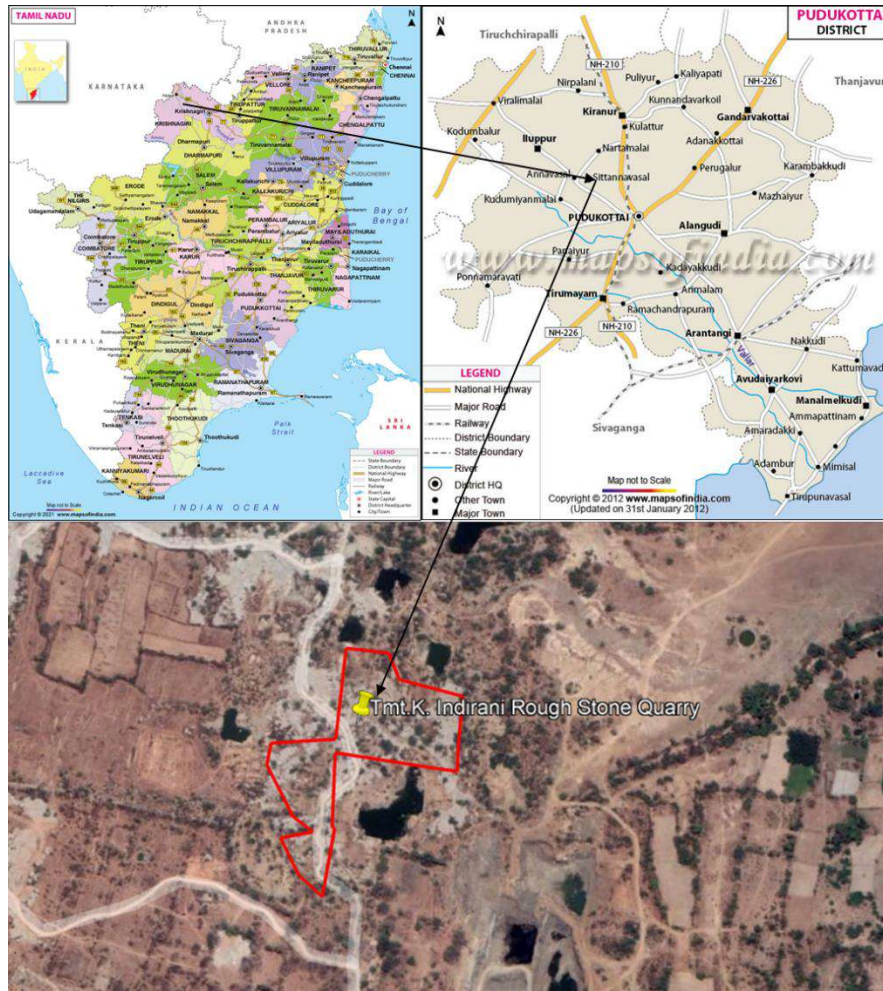


Figure 1: Location Map of the Project Site



Figure 2: Google Image of the Project Site

4. Charnockite

Charnockite and granitic gneisses are extensively quarried as rough stone which is used as aggregates for construction of building, laying of roads and for preparation of value added products like hollow blocks, pillar stones, M-sand etc. Charnockite occurs as massive bodies, greyish colour, medium to coarse grained, composed quartz, feldspar and orthopyroxene. At places, metamorphic gneissic banding (alternate dark and black colour) in charnockite is noticed. Top portion, it gives gneissic appearance but 1-5m depth below it is typical charnockite of grey colour.

5. Geological Resources

The geological reserves have been calculated based on the cross section method

Table 2. Geological resources

GEOLOGICAL RESERVES								
Section	Bench	L (m)	W (m)	D (m)	Volume In M3	Geological Reserves in m3 @ 95%	Mine waste in m3 @ 5%	Top Soil in m3
XY-AB	I	50	98	2				9800
	II	50	98	5	24500	23275	1225	

	III	50	98	5	24500	23275	1225	
	IV	50	98	5	24500	23275	1225	
	V	50	98	5	24500	23275	1225	
	VI	50	98	5	24500	23275	1225	
TOTAL					122500	116375	6125	9800
XY-CD	I	60	70	2				8400
	II	60	70	5	21000	19950	1050	
	III	60	70	5	21000	19950	1050	
	IV	60	70	5	21000	19950	1050	
	V	60	70	5	21000	19950	1050	
	VI	60	70	5	21000	19950	1050	
TOTAL					105000	99750	5250	8400
X1Y1-EF	I	57	79	2				9006
	II	57	79	5	22515	21389	1126	
	III	57	79	5	22515	21389	1126	
	IV	57	79	5	22515	21389	1126	
	V	57	79	5	22515	21389	1126	
	VI	57	79	5	22515	21389	1126	
TOTAL					112575	106946	5629	9006
X2Y2-GH	I	39	48	2				3744
	II	39	48	5	9360	8892	468	
	III	39	48	5	9360	8892	468	
	IV	39	48	5	9360	8892	468	
	V	39	48	5	9360	8892	468	
	VI	39	48	5	9360	8892	468	
TOTAL					46800	44460	2340	3744
GRAND TOTAL					386875	367531	19344	30950

Table 3. Year wise Production Plan

YEARWISE DEVELOPMENT AND PRODCUTION RESERVES									
YEAR	Section	Benc h	L (m)	W (m)	D (m)	Volume In M3	Recoverable Reserve in m3 @ 95%	Mine waste in m3 @ 5%	Top Soil in m3
I-YEAR	XY - AB	I	43	80	2				6880
		II	41	78	5	15990	15191	799	
	XY - CD	I	53	55	2				5830
		II	51	53	5	13515	12839	676	
	TOTAL						29505	28030	1475
II-YEAR	XY - AB	III	36	73	5	13140	12483	657	
	XY - CD	III	46	48	5	11040	10488	552	
	TOTAL						24180	22971	1209
III-	XY - AB	IV	31	68	5	10540	10013	527	

YEAR	XY - CD	IV	41	43	5	8815	8374	441	
	TOTAL					19355	18387	968	
IV- YEAR	XY - AB	V	26	63	5	8190	7781	409	
		VI	21	58	5	6090	5786	304	
	XY - CD	V	36	38	5	6840	6498	342	
		VI	31	33	5	5115	4859	256	
	TOTAL					26235	24924	1311	
V- YEAR	XIY1 - EF	I	42	64	2				5376
		II	38	60	5	11400	10830	570	
		III	28	50	5	7000	6650	350	
		IV	18	40	5	3600	3420	180	
		V	8	30	5	1200	1140	60	
		VI	8	20	5	800	760	40	
	XIY1 - GH	I	24	33	2				1584
		II	20	29	5	2900	2755	145	
		III	10	19	5	950	903	47	
		IV	10	9	5	450	428	22	
	TOTAL					28300	26886	1414	6960
	TOTAL					127575	121198	6377	19670

6. Mining

Opencast mining

The quarry operation is proposed to carry out with conventional open cast mechanized mining with 5.0 meter vertical bench with a bench width of 5.0 meter. The Quarry operation involves shallow jack hammer drilling, blasting, loading and transportation.

Process Description

- The reserves and resource are arrived based upon the Geological investigation
- Removal of Topsoil by Excavators and directly Loaded into Tippers.
- Removal of Rough Stone by Excavators by Drilling and Blasting.
- Shallow Drilling With Jackhammer of 32mm Dia.
- Minimum Blasting With Class 2 Explosives.
- Loading of Rough Stone By Excavators Into Tippers.

7. Water Requirement

Total water requirement for the mining project is 1.81 KLD. Domestic water will be sourced from nearby Chithannavasal Village and other water will be source from nearby road tankers supply.

Table 4. Water Balance

Purpose	Quantity	Source
Drinking Water	0.81 KLD	Packaged Drinking water vendors available in Chithannavalal which is about 1.27 Km Northwest of the area
Green belt	0.5 KLD	Other domestic activities through road tankers supply
Dust suppression	0.5 KLD	From road tankers supply
Total	1.81 KLD	

8. Manpower

Total manpower required for the project is approximately 18 persons. Workers will be from nearby villages.

Table 5. Man Power

1.	Skilled	Operator	2 No.
		Mechanic	1 No.
		Blaster/Mat	1 No.
2.	Semi – skilled	Driver	2 Nos
3.	Unskilled	Musdoor / Labors	7 Nos
		Cleaners	2 Nos
		Office Boy	1 No
4.	Management & Supervisory staff		2 No.
	Total		18 Nos.

No child less than 18 years will be entertained during quarrying operations.

9. Solid Waste Management

Table 6 Solid Waste Management

S. No	Type	Quantity	Disposal Method
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1	Organic	3.24 kg/day	Municipal bin including food waste
2	Inorganic	4.86 kg/day	TNPCB authorized recyclers

As per CPCB guidelines: MSW per capita/day =0.45 kg/day

Table 7 500m Radius Cluster Mine

1) Existing other quarries:

S. No.	Name of the Owner	Village & Taluk	S.F.Nos.	Extent in Hect.	Lease Period
1.	Thiru.R.Radha	Chithannavasal Illuppur	94(p) (Q.No.3) (south)	2.00.0	28.06.2017 to 27.06.2022
2.	Thiru.K.R.N. Ramesh	Chithannavasal Illuppur	95/1 & etc	0.96.0	11.08.2017 To 10.08.2022
3.	Thiru.G.Murugesan	Irumbali, Kulathur	98/1,2	0.70.0	24.01.2017 to 23.01.2022

2) Proposed Quarries

S. No.	Name of the Owner	Village & Taluk	S.F.Nos.	Extent in Hect.	Lease Period
1.	Tmt.K.Indrani.	Chithannavasal Illuppur	95/12, 95/16, 95/18, 95/20(part) and 95/21(part)	1.44.0	Proposed

2	Thiru.R.Sathiyamoorthy	Chithannavasal Illuppur	95/22, 95/23, 95/24	0.94.5	Proposed
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3) Lease Expired

S. No.	Name of the Owner	Village & Taluk	S.F.Nos.	Extent in Hect.	Lease Period
1.	Thiru.A.S.Pitchai.	Mathiyanallur Illuppur	241/3(p)	1.21.5	29.05.2015 to 28.05.2020
2	Tmt.S.Sooriya	Mathiyanallur Illuppur	280(part)	1.00.0	14.10.2016 to 13.10.2021

The Total extent of the Existing / Lease expired / Proposed quarries are 8.26.0 Ha

10. Land Requirement

The total extent area of the project is 1.44.0 Ha, Patta land in Chithannavasal Village of Illuppur Taluk, Pudukkottai District.

Table 8 Land Use Breakup

Sl. No.	Description	Present Area (Ha.)	Area in use during the quarrying period (Ha.)
01.	Area under Quarrying	Nil	0.86.0
02.	Infrastructure	Nil	0.01.0
03.	Roads	0.01.0	0.01.0
04.	Green Belt	Nil	0.56.0
05.	Unutilized Area	1.43.0	Nil
	TOTAL	1.44.0Ha	1.44.0Ha

11. Human Settlement

There are no habitations within 500m radius. There are villages located in this area within 5km radius of the quarry.

Table 9 Habitation

S.No	Direction	Village	Distance in kms	Population
1	North	Irambali	2.0Kms	280
2	East	Panampatti	3.0Kms	210
3	South	Madiyanallur	2.6kms	350
4	West	Annavasal	3.5Kms	960

12. Power Requirement

The Rough Stone Quarry project does not require huge water and electricity for the project.

16 Litre diesel per hour for excavator for mining and loading for Rough stone needed.

13. Scope of the Baseline Study

This chapter contains information on existing environmental scenario on the following parameters.

1. Micro – Meteorology
2. Water Environment
3. Air Environment
4. Noise Environment
5. Soil / Land Environment
6. Biological Environment
7. Socio-economic Environment

13.1 Micro – Meteorology

Meteorology plays a vital role in affecting the dispersion of pollutants, once discharged into the atmosphere. Since meteorological factors show wide fluctuations with time, meaningful interpretation can be drawn only from long-term reliable data.

- i) Average Minimum Temperature : 24 °C
- ii) Average Maximum Temperature. : 34 °C
- iii) Average Annual Rainfall of the area : 742.12 mm

13.2 Air Environment

Ambient air monitoring was carried out on monthly basis in the surrounding areas of the Mine Lease area to assess the ambient air quality at the source. To know the ambient air quality at a larger distance i.e. in the study area of 5 km. radius, air quality survey has been conducted at 5 locations. Major air pollutants like Particulate Matter (PM10), Sulphur Dioxide (SO₂), Nitrogen Dioxide (NO₂) were monitored and the results are summarized below.

The baseline levels of PM10 (68-41 µg/m³), PM2.5 (35-15 µg/m³), SO₂ (23-6 µg/m³), NO₂ (30-12 µg/m³), all the parameters are well within the standards prescribed by National Ambient Air Quality during the study period from March to May 2022.

13.3 Noise Environment

Ambient noise levels were measured at 5 locations around the proposed project site. The maximum Day noise and Night noise were found to be 56 dB(A) and 53 dB(A) respectively in Indian Oil petrol Pump, Annavasal and Arokiya Madha Church. The minimum Day Noise and Night noise were 40 dB(A) and 41 dB(A) respectively which was observed in Government elementary school Ariyur and Meivazhi Salai.

13.4 Water Environment

- The average pH ranges from 7.13 – 8.4.
- TDS value varied from 292 mg/l to 610 mg/l

- Hardness varied from 98 to 288 mg/l
- Chloride varied from 17.6 to 56.7 mg/l

13.5 Land Environment

The analysis results shows that the majority of soil in the project and surrounding area is slightly alkaline in nature and pH value ranges from 5.65 to 8.36 with organic matter 0.25 to 0.39 %. The concentration of Nitrogen, Phosphorus & Potassium has been found to be in good amount in the soil samples.

13.6 Biological Environment

The proposed Mining lease area is mostly dry barren ground with small shrubs and bushes. No specific endangered flora & fauna exist within the mining lease area.

14. Rehabilitation/ Resettlement

- The overall land of the mine is Patta land. There are no displacement of the population within the project area and adjacent nearby area. Social development of nearby villages will be considered in this project.
- The mine area does not cover any habitation. Hence the mining activity does not involve any displacement of human settlement.

15. Greenbelt Development

1. The development of greenbelt in the peripheral buffer zone of the mine area.
2. Green belt has been recommended as one of the major component of Environmental Management Plan, which will improve ecology, environment and quality of the surrounding area.
3. Local trees like Neem, Pungam, Naval etc will be planted along the lease boundary and avenues as well as over Non-active dumps at a rate of 100 trees per annum with interval 5m.
4. The rate of survival expected to be 80% in this area

Table.10 Plantation/ Afforestation Program

Name of species proposed	Survival	No of species
Neem, Pungam, Poovarasu, Naval, Mantharai, Arasa Maram, Magizham, Vilvam, vaagai, Marudha maram, Thandri, Poovarasu, Quaker buttons, Thethankottai maram, Manjadi, Usil, Aathi, Panai, Uzha, Illuppai, Eachai, Vanni Maram	80%	500
Total		500

16. Anticipated Environmental Impacts

16.1 Air Environment and Mitigation Measures

1. Water sprinkling will be done on the roads & unpaved roads.
2. Proper mitigation measures like water sprinkling will be adopted to control dust emissions.
3. Plantation will be carried out on approach roads, solid waste site & nearby mine premises.
4. To control the emissions regular preventive maintenance of equipments will be carried out.

16.2 Noise Environment and Mitigation Measures

1. Periodical monitoring of ambient noise will be done as per CPCB guidelines.
2. No other equipment except the transportation vehicles and excavator for loading will be allowed.
3. Noise generated by these equipments shall be intermittent and does not cause much adverse impact

17. Responsibilities for Environmental Management Cell (EMC)

The responsibilities of the EMC include the following:

- i. Environmental Monitoring of the surrounding area
 - ii. Developing the green belt/Plantation
 - iii. Ensuring minimal use of water

iv. Proper implementation of pollution control measures

18. Environmental Monitoring Program

A monitoring schedule with respect to Ambient Air Quality, Water & Wastewater Quality, Noise Quality as per Tamil Nadu State Pollution Control Board (TNPCB), shall be maintained.

19. Project Cost

The total project cost is **Rs 90,49,000** for deployment of machinery and creation of infrastructural facilities like approach road, mine office / Workers Shed, First Aid Room etc., including electrifications and water supply

Table .11 Project Cost details

S. No.	Description	Cost
1	Fixed Asset Cost	14,80,000
2	Operational Cost	30,00,000
3	EMP Cost	46,19,000
	Total	90,49,000

20. Corporate Environmental Responsibility

The Corporate Environment Responsibility (CER) fund will be provided to the below activity.

Table 12 CER Cost

S.No.	CER Activity	CER value (Rs)
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1.	Government Higher Sec. School, Annavasal Provision of <ul style="list-style-type: none"> ➤ Solar powered smart class, ➤ Infrastructure, ➤ Environmental books for library (in Tamil language), ➤ Greenbelt facilities and ➤ Basic amenities such as safe drinking water, Hygienic Toilets facilities, furniture. 	5,00,000
Total		5,00,000

21. Benefits of the Project

- There is positive impact on socioeconomics of people living in the villages. Mining operations in the subject area has positive impact by providing direct and indirect jobs opportunities
- The project is environmentally compatible, financially viable and would be in the interest of construction industry thereby indirectly benefiting the masses.
- Quarrying in this area is not going to have any negative impact on the social or cultural life of the villagers in the near vicinity.