EXECUTIVE SUMMARY

"B1" CATEGORY – MINOR MINERAL – CLUSTER - NON-FOREST LAND

TOTAL CLUSTER EXTENT: 55.04.3ha

SOOLAMALAI COLOUR GRANITE CLUSTER QUARRIES

At

Soolamalai Village, Bargur Taluk, Krishnagiri District.

Code	Name of the Proponent	S.F.No	Extent (Ha)
P1	Thiru.M.Kowshik Dhev	333 (P)	**1.98.0**
P2	Thiru.Salman Sathar	341/1(P)	**1.36.80**
P3	M/s.Bismilla Exports	339/1(P)	**1.02.0**

For Obtaining
Environmental Clearance under EIA Notification – 2006 Schedule Sl. No. 1 (a) (i): Mining Project

Compiled as per Tor Obtained Vide

P1- Lr No. SEIAA-TN/F.No.10247/SEAC/ToR- 1564/2023 Dated:27.09.2023.
P2- Lr No. SEIAA-TN/F.No.10354/SEAC/1(a)ToR-1611/2023 Dated: 06.11.2023.
P3- Lr No. SEIAA-TN/F.No.10365/SEAC/ToR-1643/2023 Dated:02.01.2024.

Environmental Consultant
GEO EXPLORATION AND MINING SOLUTIONS
Old No. 260-B, New No. 17,
Advaitha Ashram Road, Alagapuram,
Salem – 636 004, Tamil Nadu, India
Accredited for sector 1 Category 'A' & 38 Category 'B'
Certificate No : NABET/EIA/2225/RA 0276
Phone: 0427-2431989,
Email: ifthiahmed@gmail.com, geothangam@gmail.com
Web: www.gemssalem.com

Baseline Monitoring Period – March 2023 to May 2023

ENVIRONMENTAL LAB
EHS 360 LABS PRIVATE LIMITED,
10/2 Ground floor, 50th street, 7th Avenue,
Ashok Nagar, Chennai – 600 083.

Baseline Monitoring Period – Oct 2023-Dec 2023

JANUARY 2024

1. INTRODUCTION

This EIA report is prepared by considering Cumulative load of all proposed & existing quarries around Soolamalai Colour Granite Quarry (Total Cluster 55.04.3 Ha) lease at Soolamalai Village, Bargur Taluk, Krishnagiri District, Tamil Nadu State, Cluster area calculated as per MoEF & CC Notification S.O. 2269(E) Dated 1st July 2016.

The proponent has obtained necessary statutory clearances from the Department of Geology and Mining, Salem District, Tamil Nadu (Statutory Clearance Documents are enclosed along with Mining plan as Annexure No III). The total Extent of the quarries within the radius of 500m from this proposal is > 5Ha, hence the proposal falls under "B1" Category project as per the EIA notification, 2006 (As amended timely).

Proponent applied for Environmental Clearance to SEIAA, Tamil Nadu and obtained

P1- Lr No. SEIAA-TN/F.No.10247/SEAC/ToR- 1564/2023 Dated:27.09.2023

P2- Lr No. SEIAA-TN/F.No.10354/SEAC/1(a)ToR-1611/2023 Dated: 06.11.2023

P3- Lr No. SEIAA-TN/F.No.10365/SEAC/ToR-1643/2023 Dated:02.01.2024

for carrying out EIA and EMP studies for the Colour Granite Quarry.

To carry out the EIA studies and to prepare EIA and EMP studies the proposed & existing quarries of Soolamalai quarry have engaged a consultant M/s. Geo Exploration and Mining Solutions, Salem, Tamil Nadu. The Baseline Monitoring study has been carried out during post monsoon season (Oct - Dec 2023) considering the provisions of MoEF & CC Office Memorandum Dated: 29.08.2017 and MoEF & CC Notification S.O. 996 (E) Dated: 10.04.2015.

"Draft EIA report prepared on the basis of ToR Issued for carrying out public hearing for the grant of Environmental Clearance from SEIAA, Tamil Nadu"

1.1 DETAILS OF PROJECT PROPONENTS

1.1.2 Identification of Project Proponent-P1

Name of the Project Proponent	:	M. Kowshik Dhev,
Address	:	S/o. D. Mathiazhagan No:58-B, Gandhi Nagar, Krishnagiri District
State	:	Tamil Nadu
Pin code	:	635 001
Mobile No	:	+91 9443244390
Designation	:	Individual

1.1.3 Identification of Project Proponent-P2

Name of the Project Proponent	:	Thiru. Salman Sathar S/o. Sathar,
Address	:	No.125, Jagadevi, Jagadevipalayam, Krishnagiri District,
State	:	Tamil Nadu
Pin code	:	635 203
Mobile No	:	+91 95244 50667
Designation	:	Individual

1.1.4 Identification of Project Proponent-P3

Name of the Project Proponent	:	M/s. Bimillah Export (Managing Partner Thiru.S.Salman)
Address	:	No.125, Jagadevi, Jagadevipalayam, Krishnagiri District,
State	:	Tamil Nadu
Pin code	:	635 203
Mobile No	:	91 95244 50667
Designation	:	Partnership Firm

1.2 QUARRY DETAILS WITHIN 500 M RADIUS

PROPOSED QUARRIES				
CODE	**Name of the Owner**	**S.F.Nos & Village**	**Extent**	**Status**
P1	Thiru.M.Kowshik Dhev	333 (P), Soolamalai Village	**1.98.0**	Lr No.SEIAA-TN/F.No.10247/SEAC/ToR-1564/2023 Dated:27.09.2023
P2	Thiru.Salman Sathar	341/1(P) Soolamalai Village	**1.36.80**	Lr No. SEIAA-TN/F.No.10354/SEAC/1(a)ToR-1611/2023 Dated: 06.11.2023
`P3	M/s. Bismilla Exports	339/1(P) Soolamalai Village	**1.02.0**	Lr No. SEIAA-TN/F.No.10365/SEAC/ToR-1643/2023 Dated:02.01.2024
P4	M/s.TAMIN	283 (P), Soolamalai Village	**34.35.5**	Mining Plan forwarded to Directorate Chennai
TOTAL			**38.72.3 Ha**	
EXISTING QUARRIES				
CODE	**Name of the Owner**	**S.F. Nos & Village**	**Extent**	**Status**
*E-1	Tmt.Varalakshmi	335/4B, 341/4, Soolamalai Village	1.08.5	14/06/2018 To 13/06/2038
*E-2	M/s.TAMIN	176/1 Chendarapalli Village	15.23.5	29.12.2018 to 28.12.2038
E-3	Thiru.B.K.Murali	382/5A, etc Chendarapalli Village	2.78.5	28.02.2011-27.02.2031
E-4	Thiru.A.Sathar	375/2A etc., Chendarapalli Village	1.03.5	07.10.2013-06.10.2033
E-5	Tmt.D.Rukkammal	335/4A1, Soolamalai Village	1.20.0	14.12.2009-13.12.2029
E-6	Thiru.B.S Ravi	369/2, Chendarapalli Village	2.46.5	10.11.2003 - 09.11.2023
E-7	Thiru.B.S Ravi	339/2, Soolamalai Village	1.19.0	27.03.2006-26.03.2026
Total			**24.99.5 Ha**	
EXPIRED/ ABANDONED QUARRIES				
Ex-1	M/s.TAMIN	381, Chendarapalli Village	1.78.5	21.06.1999-20.06.2019
Ex-2	Thiru.B.C Krishnan	335/2, Soolamalai Village	0.40.50	26.06.1995 - 25.06.2005
TOTAL			**2.19.0 Ha**	
TOTAL CLUSTER EXTENT			**55.04.3 Ha**	

TABLE 1.3 SALIENT FEATURES OF THE PROPOSAL "P1"

Name of the Quarry		Thiru.M.Kowshik Dhev Colour granite quarry
Land type		Government Poramboke Land
Previous lease details		Tender Quarry – Fresh lease
Lease period		20 years
Mining Lease area		1.98.0 Ha
Location		333 (P), Soolamalai Village, Bargur Taluk, Krishnagiri District
Life of the Mine		20 years
Proposed Depth for five years plan period		23m
Ultimate Depth		Pit : 183m(L) x84m(B) x 23m(D)
Toposheet No		57- L/7
Latitude between		12°29'48.6998"N to 12°29'54.5131"N
Longitude between		78°18'0.9548"E to 78°18'8.2169"E
Topography		The applied lease area is undulated rocky terrain mostly covered up to 1.0m topsoil and below which weathered rock is observed for a thickness of 2.0m followed by fresh colour granite deposits. The average elevation of the study area is about 487m MSL.
Water level		62m-54m
Water Requirements		1.5KLD
Machinery proposed	Jackhammer	4
	Compressor	2
	Excavator	1
	Tipper	3
	Diesel Generator	1
	Diamond wire saw	1
Proposed manpower deployment		18
A. Project cost		Rs. 30,420,000
B.EMP Cost		Rs. 3,10,000/-
C.CER cost		Rs. 5,00,000/-
Total Project cost		Rs.3,07,30,000/-
Nearest Habitation		260m-NE
Reserved Forest		Thogarapalli Extn R.F – 4.83 km – South East
Wild Life Sanctuary		Cauvery North Wildlife Sanctuary – 36 Km -NW

TABLE 1.4 SALIENT FEATURES OF THE PROPOSAL "P2"

Name of the Quarry	Thiru.Salman Sathar Grey Granite quarry
Land type	Patta Land (Patta no 1998)
Lease period	20 years
Mining Lease area	1.36.8 Ha
Location	341/1 (Part) of Soolamalai Village, Bargur Taluk, Krishnagiri District
Mining Period	5 Years
Life of the Mine	20 years
Previous lease particulars	It is an Own patta land
Proposed Depth	28m
Ultimate Depth	151m(L) x 102m (W) x 28m (D)
Toposheet No	57L/07
Latitude between	12°29'32.7111"N to 12°29'39.1286"N
Longitude between	78°18'04.6583"E to 78°18'09.0436"E
Topography	The area is situated in flat terrain. The gradient is gentle towards southeast and altitude of the area is 478m above from MSL. The Grey granite formation is clearly visible right from the adjacent quarry lease.
Water level	64m-59m

Water requirement		1.8KLD
Machinery proposed	Jackhammer	6
	Compressor	2
	Crawler crane	1
	Mobile crane	
	Excavator	1
	Tipper	2
	Diesel Generator	1
	Diamond wire saw	1
Proposed manpower deployment		33
A. Project cost		Rs. 2,29,27,000/-
B.EMP Cost		Rs. 3,80,800/-
C.CER cost		Rs.5,00,000/-
Total Project cost		Rs. 2,33,07,000
Nearest Habitation		510m-NE
Reserved Forest		Thogarapalli Extn R.F – 4.36 km – South East
Wild Life Sanctuary		Cauvery North Wildlife Sanctuary – 36 Km -W Cauvery South Wildlife Sanctuary 44km-SW

TABLE 1.5 SALIENT FEATURES OF THE PROPOSAL "P3"

Name of the Quarry		M/s.Bismilla Exports Grey Granite Quarry (Managing Partner Thiru. S.Salman, S/o. Sathar)
Land type		Patta Land (Patta no 2012)
Lease period		20 years
Mining Lease area		1.02.0 Ha
Location		339/1 (Part) of Soolamalai Village, Bargur Taluk, Krishnagiri District
Mining Period		5 Years
Life of the Mine		20 years
Previous lease particulars		It is an Own patta land
Proposed Depth		18m
Ultimate Pit dimension		184m(L) x 41m (W) x 18m (D)
Toposheet No		57L/07
Latitude between		12°29'33.6345"N to 12°29'40.2216"N
Longitude between		78°18'00.3456"E to 78°18'02.5405"E
Topography		The area is situated in flat terrain. The gradient is gentle towards West and altitude of the area is 478m above from MSL. The Grey granite is clearly visible right from the nearby existing quarry pits and places are concealed under Reddish gravelly soil.
Water level		64m Bgl
Water requirement		1.8KLD
Machinery proposed	Jackhammer	4
	Compressor	2
	Crawler crane	1
	Excavator	1
	Tipper	2
	Diesel Generator	1
	Diamond wire saw	1
Proposed manpower deployment		30
A. Project cost		Rs. 4,96,24,000/-
B.EMP Cost		Rs. 3,80,800/-
C.CER cost		Rs.5,00,000/-
Total Project cost		Rs. 5,00,04,000/-
Nearest Habitation		600m-S

Reserved Forest	Thogarapalli Extn R.F – 4.45 km – South East
Wild Life Sanctuary	Cauvery North Wildlife Sanctuary – 35.5 Km -W Cauvery South Wildlife Sanctuary 43.4km-SW

Source: Approved mining plan and PFR

1.3 STATUTORY DETAILS

Project – P1

- Proponent applied for Colour Granite quarry lease Dated 07.11.2020.
- precise area communication has been granted as per Govt. Letter No. 893/MME.2/ 2021-1, Dated: 26.02.2021for twenty years.
- Mining plan was approved by the Director of Geology and Mining, Guindy, Chennai Vide Rc. No. 6941/MM4/2020, Dated: 17.05.2023.
- Proponent applied for ToR to get Environmental Clearance vide online Proposal No. SIA/TN/MIN/436906/2023 Dated: 16.07.2023 .
- The proposal was placed in 407th SEAC meeting held on 07.09.2023 and the committee recommended for issue of ToR.
- The proposal was considered in 658h SEIAA meeting held on 26.09.2023 & 27.09.2023 and issued ToR vide - Lr No. SEIAA-TN/F.No.10247/SEAC/ToR- 1564/2023 Dated:27.09.2023

Project – P2

- Proponent applied for Grey Granite quarry lease Dated 06.06.2022.
- The precise area communication has been granted as per Govt. letter No. 3842275/MME.2/2022-1, Dated: 17.04.2023 for a period of twenty years.
- Mining plan was approved by the Director of Geology and Mining, Guindy, Chennai Vide Rc. No. 7527/MM4/2023 dated: 26.05.2023.
- Proponent applied for ToR to get Environmental Clearance vide online Proposal No. SIA/TN/MIN/441102/2023 Dated: 21.08.2023.
- The proposal was placed in 416th SEAC meeting held on 13.10.2023 and the committee recommended for issue of ToR.
- The proposal was considered in 670th SEIAA meeting held on 06.11.2023 and issued ToR vide Lr No. SEIAA-TN/F.No.10354/SEAC/1(a)ToR-1611/2023 Dated: 06.11.2023.

Project – P3

- Proponent applied for Grey Granite quarry lease Dated 06.06.2022.
- The precise area communication has been granted as per Govt. letter No. 3774007/MME.2/2022-1, Dated: 17.04.2023 for a period of twenty years.
- The mining plan was prepared in respect of Colour granite quarry and the same was approved by the Commissioner, Department of Geology and Mining, Guindy, Chennai vide letter No. 7258/MM4/2022 dated: 26.05.2023.
- Proponent applied for ToR to get Environmental Clearance vide online Proposal No. SIA/TN/MIN/441454/2023 Dated: 23.08.2023.
- The proposal was placed in 416th SEAC meeting held on 13.10.2023 and 670th SEAC meeting held on 06.11.2023 project proponent has been furnished reply date on 26.12.2023.
- The proposal was considered in 685th SEIAA meeting held on 02.01.2024 and issued ToR vide Lr No. SEIAA-TN/F.No.10365/SEAC/ToR-1643/2023 Dated:02.01.2024.

2.0 PROJECT DESCRIPTION

The proposed project is site specific and there is no additional area required for this project. There is no effluent generation/discharge from the proposed quarries. Colour/Grey granite quarry is proposed to be excavated by opencast mechanized method involving splitting of rock mass of considerable volume from the parent rock mass by jackhammer drilling and blasting, hydraulic excavators are used for loading the Granite from pithead to the needy crushers and rock breakers to avoid secondary blasting.

2.1 SITE CONNECTIVITY TO THE PROJECT AREA

Nearest Roadway	NH77– Krishnagiri– Uthangarai –600m-S AH-45 – Krishnagiri– Bargur– 4km-NW
Nearest Village	Shendarapalli-840m-S
Nearest Town	Bargur- 7.0km – NE
Nearest Railway Station	Tirupattur Railway Station- 28.0km - E
Nearest Airport	Bangalore Airport - 99.0km - NW
Seaport	Ennore Port- 233km- North East

2.2 LAND USE PATTERN OF THE PROPOSED PROJECT

P1

Description	Present area (Ha)	Area to be required during the present Mining Plan period(ha)	Area at the end of life of quarry (Ha)
Area under quarry	Nil	0.49.0	1.43.0
Dumps	Nil	0.44.0	Backfilling
Stockyard	Nil	Nil	Nil
Infrastructure	Nil	0.01.0	0.01.0
Roads	Nil	0.01.0	0.01.0
Green Belt	Nil	0.53.0	0.53.0
Unutilized area	1.98.0	Nil	Nil
Grand Total	1.98.0	1.48.0	1.98.0

Source: Approved Mining Plan

P2

Description	Present area (Ha)	Area to be required during the present Mining Plan period(ha)	Area at the end of life of quarry (Ha)
Area under quarry	Nil	0.39.77	0.95.17
Waste dump	Nil	0.20.76	#Backfilled
Infrastructure	Nil	0.02.00	0.02.00
Roads	Nil	0.02.00	0.05.00
Green Belt	Nil	0.09.16	0.32.77
Stocking blocks	1.36.80	0.63.11	0.01.86
Grand Total	**1.36.80**	**1.36.80**	**1.36.80**

P3

Description	Present Area (Ha.)	Area required during this period(Ha)	Area at the end of life of quarry (Ha)
Area under quarry	Nil	0.35.83	0.62.14
Waste dump	Nil	0.24.30	#Backfilling

Infrastructure	Nil	0.02.00	0.02.00
Roads	Nil	0.02.00	0.02.00
Green Belt	Nil	0.12.09	0.35.80
Stocking blocks	1.02.0	0.25.78	0.00.06
Grand Total	**1.02.0**	**1.02.0**	**1.02.00**

Source: Approved Mining Plan

2.3 OPERATIONAL DETAILS OF LEASE APPLIED AREA

P1

Description	P1
Geological Resources ROM	3,95,760
Granite Recovery (20 % in m^3)	79,152
Granite Waste (80 % in m^3)	3,16,608
Weathered rock(m^3)	39,576
Side Burden(m^3)	-
Top Soil in m^3	19,788
Mineable Reserves ROM	1,75,300
Granite Recovery (20 % in m^3)	35,060
Granite Waste (80 % in m^3)	1,40,240
Weathered rock (m^3)	26,134
Side Burden (m^3)	-
Top Soil in m^3	13,832
Proposed Production for five years plan period ROM	43,213
Granite Recovery (20% in m^3)	8,643
Granite Waste (80 % in m^3)	34,570
Weathered rock(m^3)	8,910
Top Soil in m^3	4,956
Number of Working Days	300
Production of ROM per day in five-year plan period	29
Production of Granite per day	6
Total Waste per day (Granite waste +Weathered)	29

P2

Description	P2
Geological Resources ROM	3,41,350
Granite Recovery (35 % in m^3)	1,19,472
Granite Waste (65 % in m^3)	2,21,877
Weathered rock(m^3)	27,308
Side Burden(m^3)	2,57,550
Total waste (Granite waste + SB)	2,49,185
Top Soil in m^3	13,654
Mineable Reserves ROM	1,12,305
Granite Recovery (35 % in m^3)	39,307
Granite Waste (65 % in m^3)	79,998
Weathered rock (m^3)	17,304
Side Burden (m^3)	-
Total waste (Granite waste + Weathered)	90,302
Top Soil in m^3	9,354
Proposed Production for five years plan period ROM	34,180
Granite Recovery (35% in m^3)	11,963
Granite Waste (65% in m^3)	22,217

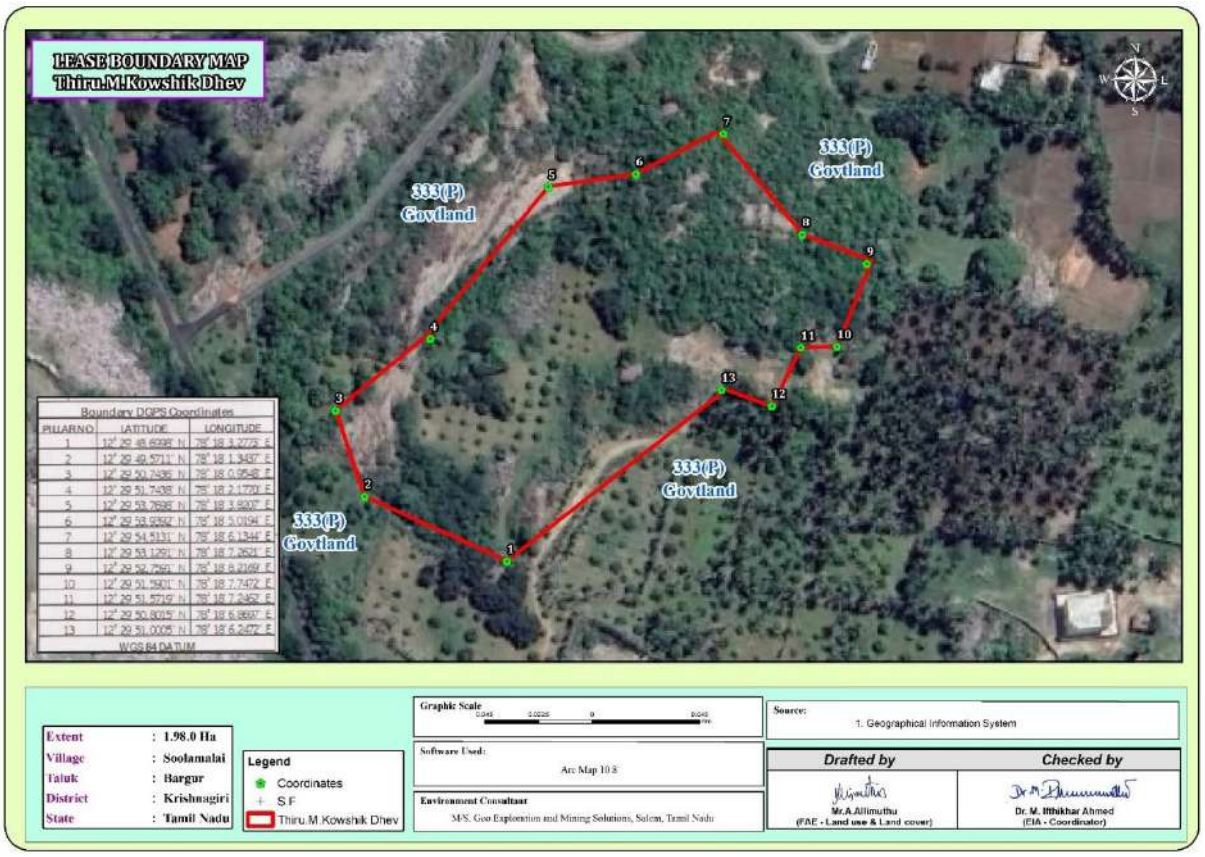
Weathered rock(m^3)	7,072
Top Soil in m^3	3,905
Number of Working Days	300
Production of ROM per day in five-year plan period	23
Production of Granite per day	8
Total Waste per day (Granite waste + Weathered)	20

P3

Description	P3
Geological Resources ROM	1,52,640
Granite Recovery (35 % in m^3)	53,424
Granite Waste (65 % in m^3)	99,216
Weathered rock(m^3)	20,352
Total waste (Granite waste + Weathered)	1,19,568
Top Soil in m^3	10,176
Mineable Reserves ROM	39,420
Granite Recovery (35% in m^3)	13,797
Granite Waste (65% in m^3)	25,623
Weathered rock (m^3)	10,712
Total waste (Granite waste +Weathered)	36,335
Side Burden (m^3)	-
Top Soil in m^3	6,032
Proposed Production for five years plan period ROM	25,840
Granite Recovery (35% in m^3)	9,044
Granite Waste (65 % in m^3)	16,796
Weathered rock(m^3)	6,308
Total waste (Granite waste +Weathered)	23,104
Top Soil in m^3	3526
Number of Working Days	300
Production of ROM per day in five-year plan period	17
Production of Granite per day	6
Total Waste per day (Granite waste +Weathered)	15

Source: Approved Mining Plan

FIGURE – 1: GOOGLE IMAGE SHOWING PROJECT AREA

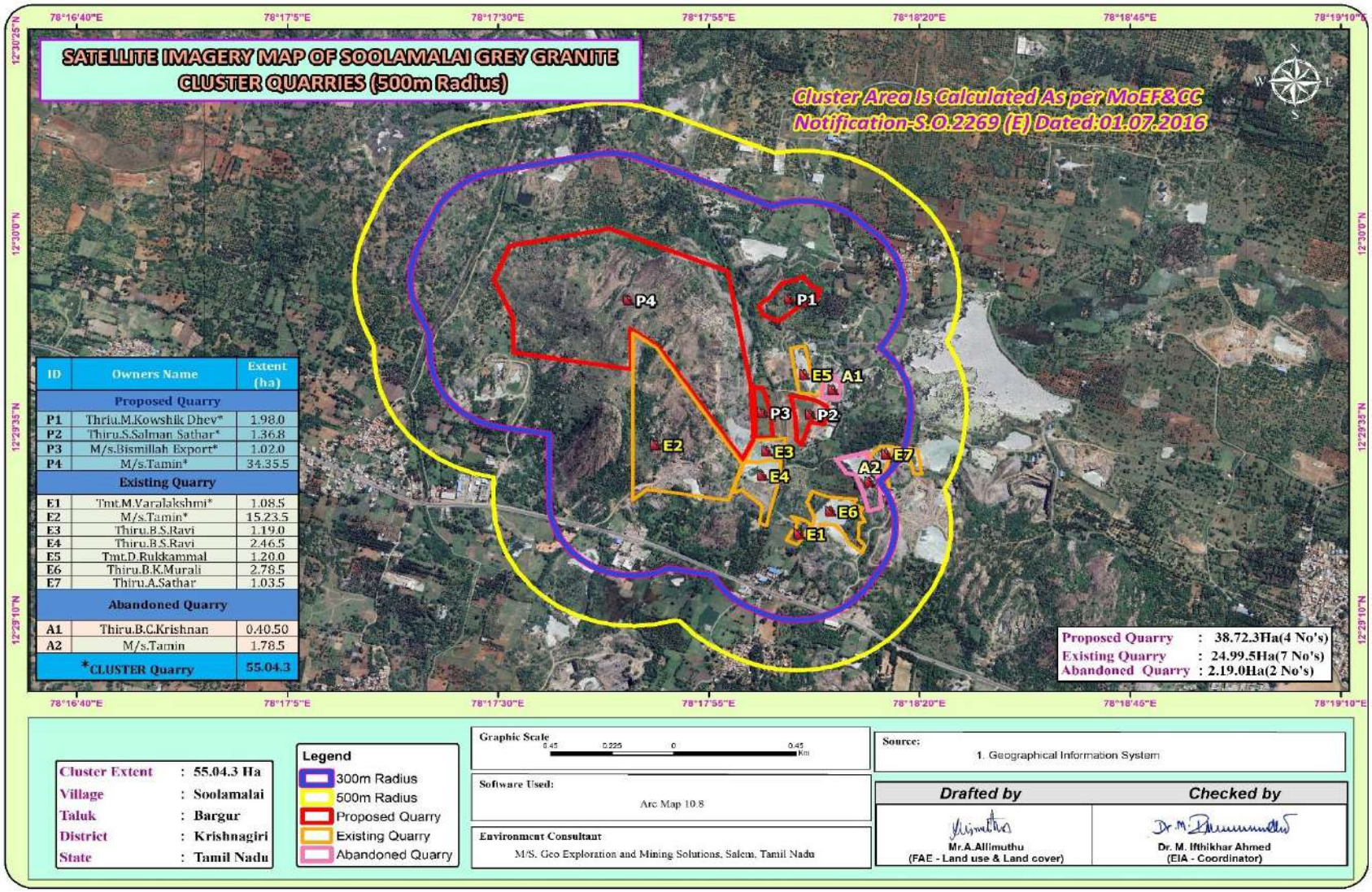


SATELLITE IMAGERY OF P1

SATELLITE IMAGERY OF P2

SATELLITE IMAGERY OF P3

FIGURE – 2: GOOGLE IMAGE SHOWING CLUSTER (500 m QUARRIES)



ID	Owners Name	Extent (ha)
Proposed Quarry		
P1	Thiru.M.Kowshik Dhev*	1.98.0
P2	Thiru.S.Salman Sathar*	1.36.8
P3	M/s.Bismillah Export*	1.02.0
P4	M/s.Tamin*	34.35.5
Existing Quarry		
E1	Tmt.M.Varalakshmi*	1.08.5
E2	M/s.Tamin*	15.23.5
E3	Thiru.B.S.Ravi	1.19.0
E4	Thiru.B.S.Ravi	2.46.5
E5	Tmt.D.Rukkammal	1.20.0
E6	Thiru.B.K.Murali	2.78.5
E7	Thiru.A.Sathar	1.03.5
Abandoned Quarry		
A1	Thiru.B.C.Krishnan	0.40.50
A2	M/s.Tamin	1.78.5
*CLUSTER Quarry		55.04.3

FIGURE – 3: TOPOSHEET MAP COVERING 10 KM RADIUS

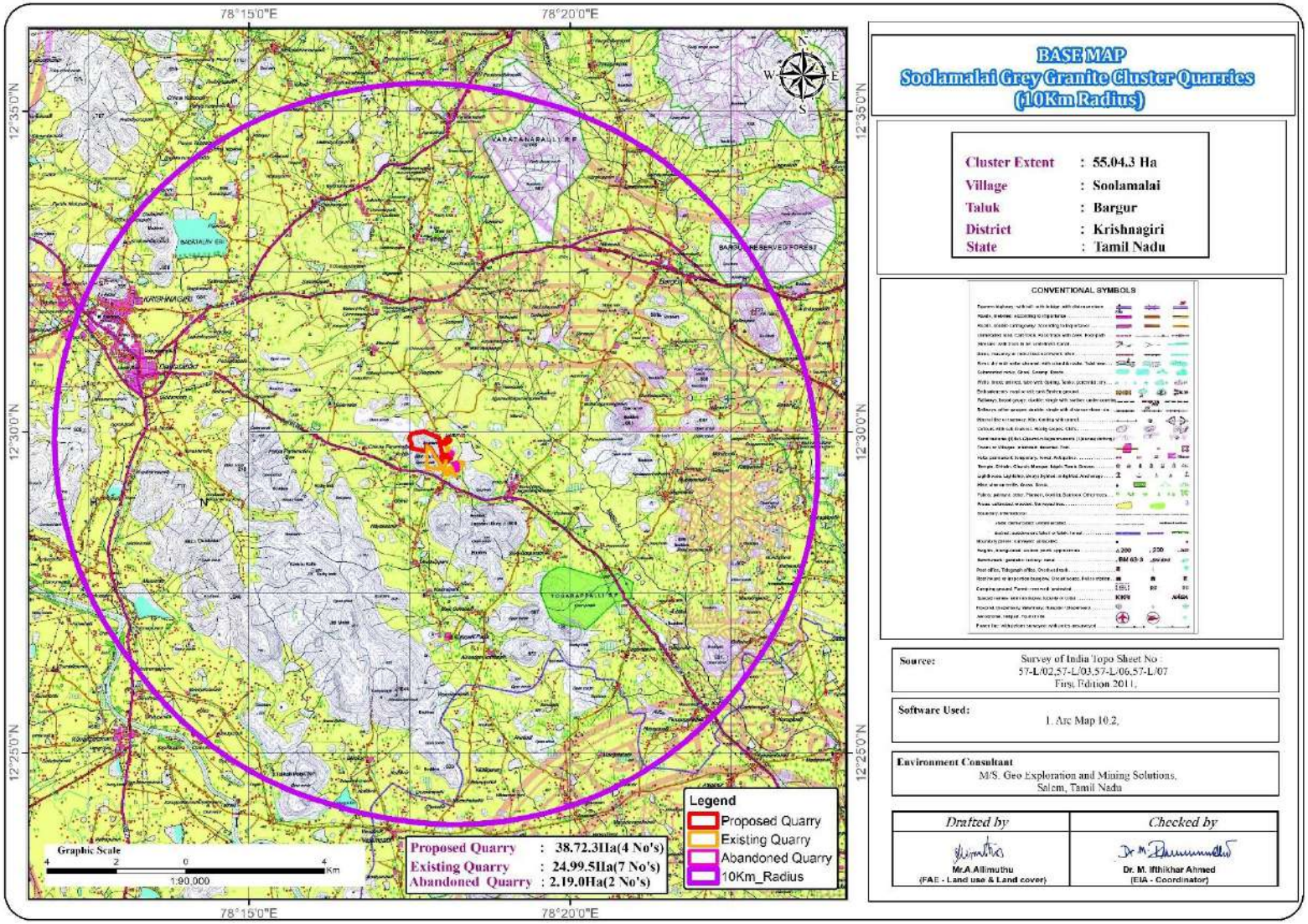
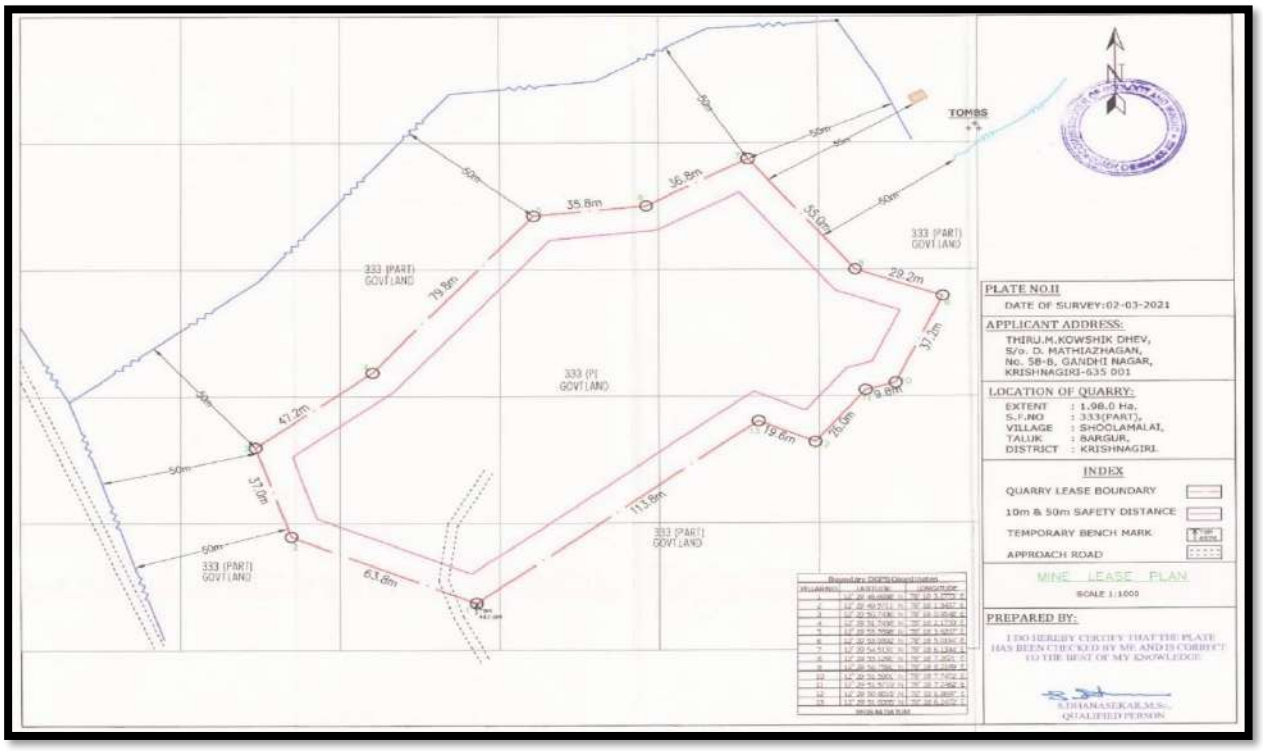


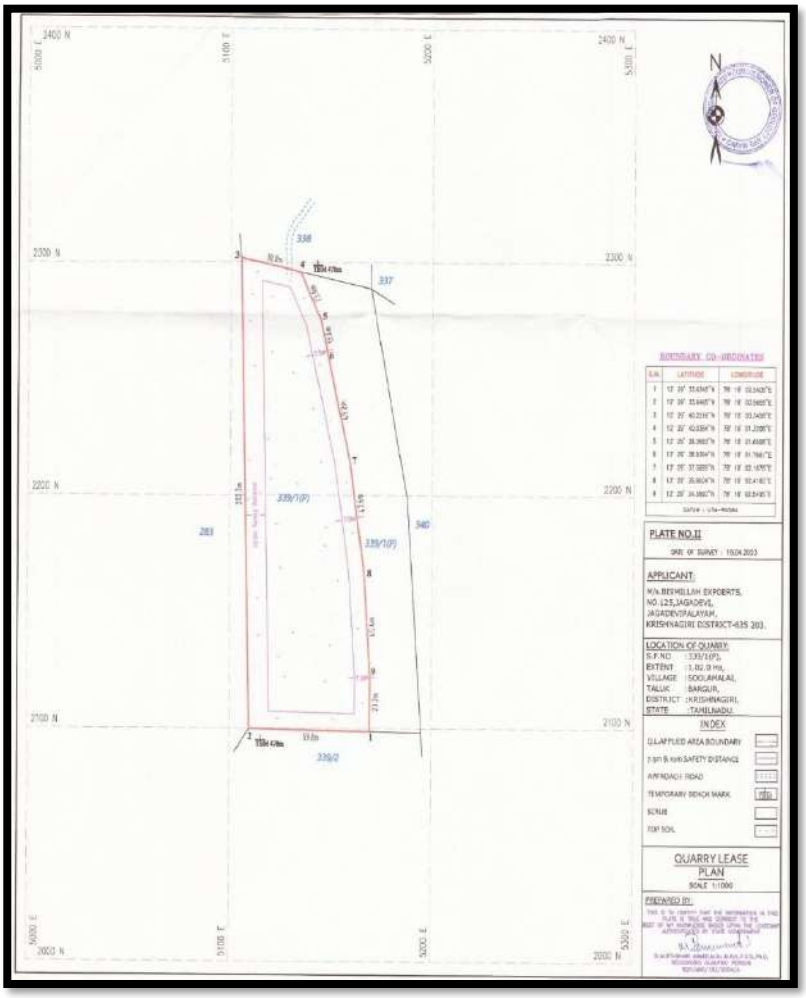
FIGURE – 4: QUARRY LEASE PLAN & SURFACE PLAN

P1



P2

P3



2.4 METHOD OF MINING

Opencast Mechanized Mining Method is being proposed by formation of 5.0-meter height bench with a bench width not less than the bench height. However, as far as the quarrying of Rough Stone is concerned, observance of the provisions of Regulation 106 (2) (b) as above is seldom possible due to various inherent petro genetic factors coupled with mining difficulties. Hence it is proposed to obtain relaxation to the provisions of the above regulation from the Director of Mines Safety for which necessary provision is available with the Regulation 106 (2) (b) of MMR-1961, under Mine Act – 1952.

The top layer of Topsoil will be Excavate directly by Hydraulic Excavators and preserved all along the safety barrier to facilitate greenbelt development during Mine Closure Stage. The Rough Stone is a batholith formation and the splitting of rock mass of considerable volume from the parent rock mass will be carried out by deploying jackhammer drilling and Slurry Explosives will be used for blasting. Hydraulic Excavators attached with Rock Breakers unit will be deployed for breaking large boulders to required fragmented sizes to avoid secondary blasting and hydraulic excavators attached

with bucket unit will be deployed for loading the Rough Stone into the tippers and then the stone is transported from pithead to the nearby crushers.

2.5 PROPOSED MACHINERY DEPLOYMENT

Drilling Equipment's-P1					
Type	**No of Unit**	**Dia of Hole mm**	**Size capacity**	**Make**	**Motive Power**
Jack Hammer	4	32	1.2m to 6m	Atlas Copco	Compressed air
Compressor	2	-	400psi	Atlas Copco	Diesel drive
Diamond Wire Saw	1	-	30m^3/day	Optima	Diesel Generator
Gen set	1	-	125kva	Powerica	CP 125 DSP (H.P)
Loading Equipment					
Type	**No of Unit**	**Capacity**	**Make**	**Motive Power**	
Excavator	1	350	Kobelco	Diesel Drive	
Haulage within the Mine & Transport Equipment					
Type	No of Unit	Capacity	Make	Motive Power	
Tipper	3	10 tonnes	Kobelco	Diesel Drive	

Drilling Equipment's-P2					
Type	**No of Unit**	**Dia of Hole mm**	**Size capacity**	**Make**	**Motive Power**
Jack Hammer	6	32	1.2m to 6m	Atlas Copco	Compressed air
Compressor	2	-	400psi	Atlas Copco	Diesel drive
Diamond Wire Saw	3	-	20m^3/day	Optima	Diesel Generator
Diesel Generator	2	-	125kva	Kirloskar	Diesel
Loading Equipment					
Type	**No of Unit**	**Capacity**	**Make**	**Motive Power**	
Crawler Crane	1	855	Tata P & H	Diesel Drive	
Excavator	1	300	Tata Hitachi	Diesel Drive	
Haulage within the Mine & Transport Equipment					
Type	No of Unit	Capacity	Make	Motive Power	
Tipper	2	20 tonnes	Tata	Diesel Drive	

Drilling Equipment's-P3					
Type	**No of Unit**	**Dia of Hole mm**	**Size capacity**	**Make**	**Motive Power**
Jack Hammer	4	32	1.2m to 6m	Atlas Copco	Compressed air
Compressor	2	-	140cfm/400psi	Atlas Copco	Diesel drive
Diamond Wire Saw	3	-	20m^3/day	Optima	Diesel Generator
Diesel Generator	2	-	125kva	Powerica	Diesel
Loading Equipment					
Type	**No of Unit**	**Capacity**	**Make**	**Motive Power**	
Crawler Crane	1	855	Tata P & H	Diesel Drive	

Excavator	1	300	Tata Hitachi	Diesel Drive
Haulage within the Mine & Transport Equipment				
Type	No of Unit	Capacity	Make	Motive Power
Tipper	2	10 tonnes	Tata	Diesel Drive

Source: Approved Mining Plan

2.6 CONCEPTUAL MINING PLAN/ FINAL MINE CLOSURE PLAN

The ultimate pit size is designed based on certain practical parameters such as economical depth of mining, safety zones, permissible area, etc.,

2.7 ULTIMATE PIT DIMENSION

Code	Length (Max) (m)	Width (Max) (m)	Depth (Max) (m)
P1	183	84	23
P2	151	102	28
P3	184	41	18

Source: Approved Mining Plan

3.0 DESCRIPTION OF THE ENVIRONMENT

The baseline status of the project environment is described section wise for better understanding of the broad-spectrum conditions. The baseline environment quality represents the background environmental scenario of various environmental components such as Land, Water, Air, Noise, Biological and Socio-economic status of the study area. Field monitoring studies to evaluate the base line status of the project site were carried out covering Oct– Dec 2023 as per CPCB & MoEF & CC guidelines.

3.1 ENVIRONMENT MONITORING ATTRIBUTES

Attribute	Parameters	Frequency of Monitoring	No. of Locations	Protocol
Land-use Land cover	Land-use Pattern within 10 km radius of the study area	Data from census handbook 2011 and from the satellite imagery	Study Area	Satellite Imagery Primary Survey
*Soil	Physio - Chemical Characteristics	Once during the study period	6 (1 core & 5 buffer zone)	IS 2720 Agriculture Handbook - Indian Council of Agriculture Research, New Delhi
*Water Quality	Physical, Chemical and Bacteriological Parameters	Once during the study period	6 (2 surface water & 4 ground water)	IS 10500& CPCB Standards
Meteorology	Wind Speed Wind Direction Temperature Cloud cover Dry bulb temperature Rainfall	1 Hourly Continuous Mechanical/Automatic Weather Station	1	Site specific primary data & Secondary Data from IMD Station
*Ambient Air Quality	PM10 PM2.5	24 hourly twice a week	8 (2 core & 6 buffer)	IS 5182 Part 1-23

	SO2 NOX Fugitive Dust	(October – December 2023)		National Ambient Air Quality Standards, CPCB
*Noise Levels	Ambient Noise	Hourly observation for 24 Hours per location	8 (2 core & 6 buffer zone)	IS 9989 As per CPCB Guidelines
Ecology	Existing Flora and Fauna	Through field visit during the study period	Study Area	Primary Survey by Quadrate & Transect Study Secondary Data – Forest Working Plan
Socio Economic Aspects	Socio–Economic Characteristics, Population Statistics and Existing Infrastructure in the study area	Site Visit & Census Handbook, 2011	Study Area	Primary Survey, census handbook & need based assessments.

3.2 LAND ENVIRONMENT

To study the land use pattern of the core as well as a buffer zone, land use/land cover details have been identified/ maps have been prepared in accordance with the Standard ToR point**.** A visual interpretation technique has been adopted for land use supervised classification based on training site by Level III classification with 1:50,000 scale for the preparation of land use mapping. Land use pattern of the area was studied through **LISSIII, Bhuvan, NRSC**. The 10 km radius map of study area was taken for analysis of ***Land use/Landcover.***

TABLE 3.1: LAND USE / LAND COVER TABLE 10 KM RADIUS

S.No	CLASSIFICATION	AREA_HA	AREA_%
BUILTUP			
1	Builtup Urban	590.86	1.64
2	Builtup Rural	497.72	1.38
3	Builtup Mining	229.83	0.64
AGRICULTURAL LAND			
4	Crop Land	20874.23	58.03
5	Agriculture Land	1207.97	3.36
6	Fallow Land	3929.12	10.92
BARREN/WASTE LANDS			
7	Barren Rocky	822.21	2.29
8	Scrub Land	4074.95	11.33
FOREST			
9	Forest	2901.53	8.07
WETLANDS/ WATER BODIES			
10	Waterbodies	844.23	2.35
TOTAL		**35972.64**	**100.00**

LU/LC Interpretation:

- The 10 km radius study area mainly comprises of crop land & Agriculture land accounting of 58.03% & 3.36% of the total study area. The study area also consists of fallow land of 10.92%.
- Water Bodies such as ponds/ lakes comprises of 2.35% of the core and buffer area.
- The Scrub land accounts of 11.33%. As per the primary survey, it was observed the scrub land is mainly occupied by the stony waste and left-over domestic waste generated by the nearby areas.

- 0.64% of the total study area is occupied by the mine industries of captive mines. The area occupied by Mainly Colour/grey granite of the total buffer area. As also observed within the primary survey, the 10 km buffer area is also occupied by the medium scaled granite and marble and small Brick kiln industries also located in the study area.
- 3% of the area is covered under the human Settlement. The nearest village within the 2 km radius from the project site boundary is observed to be villages like Anchur, Soolamalai, Chendarapalli, Chinnapanamudlu and Jagadevi etc.

3.3 SOIL ENVIRONMENT

The samples were analysed as per the standard methods prescribed in "Soil Chemical Analysis (M.L. Jackson, 1967) & Department of Agriculture, Cooperation & Farmers Welfare, Ministry of Agriculture & Farmers Welfare, Government of India". The important properties analysed for soil are bulk density, porosity, infiltration rate, pH and Organic matter, kjeldahi Nitrogen, Phosphorous and Potassium

Interpretation & Conclusion

The physical properties of the soil samples were examined for texture, bulk density, porosity and water holding capacity. The soil texture found in the study area is Clay Loam Soil 30.9% to 34.8% and Bulk Density of Soils in the study area varied between 1.10– 1.27 g/cc. The Water Holding Capacity 44.1 to 47.5 and Porosity of the soil samples is found to be medium i.e. ranging from 42.6 – 47.1 %.

- The nature of soil is slightly alkaline to strongly alkaline with pH range 8.44 to 8.77
- The available Nitrogen content range between 350.4to 484.6 mg/kg
- The available Phosphorus content range between 1.19 to 5.1 mg/kg
- The available Potassium range between 30 mg/kg to 44.5 mg/kg
- Whereas, the micronutrient as zinc (Zn) and iron (Fe) were found in the range of 1.04 to 2.9 mg/kg; 2.01 to 2.68 mg/kg.

Observation:

- The pH of the Soil indicates that the soil is Neutral and arid region and ideal for plant growth

3.4 WATER ENVIRONMENT

The study area is studded with few tanks that serve as the source of drinking water and also their surplus feeds adjoining tanks. The rainfall over the area is moderate, the rainwater storage in open wells and trenches are in practice over the area and the stored water acts as source of freshwater for couple of months after rainy season.

Surface Water

Ph:

The pH varied from 7.66 to 7.91 while turbidity found within the standards (Optimal pH range for sustainable aquatic life is 6.5 to 8.5 pH).

Total Dissolved Solids:

Total Dissolved Solids varied from 453 to 675mg/l, the TDS mainly composed of carbonates, bicarbonates, Chlorides, phosphates and nitrates of calcium, magnesium, sodium and other organic matter.

Other parameters:

Chloride varied between 51.7mg/l and 188.7mg/l. Nitrates varied from 6.6 to 7.2 mg/l, while sulphates varied from 51.7 to 78.4mg/l.

Ground Water

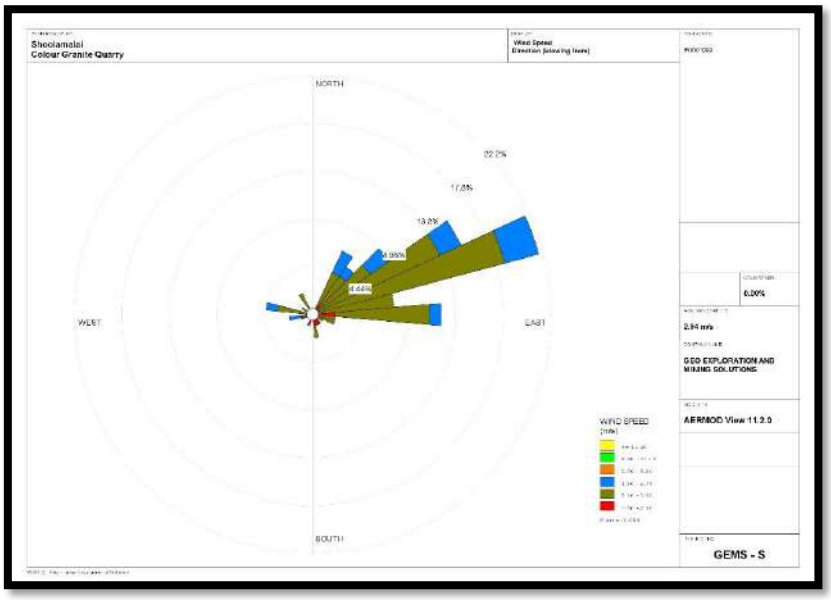
The pH of the water samples collected ranged from 7.09 to 7.73 and within the acceptable limit of 6.5 to 8.5. pH, Sulphates and Chlorides of water samples from all the sources are within the limits as per the Standard. On Turbidity, the water samples meet the requirement. Total Dissolved Solids were found in the range of 402-478 mg/l in all samples. Total hardness varied between 146.27-175.45mg/l.

On Microbiological parameters, the water samples from all the locations meet the requirement. The parameters thus analysed were compared with IS 10500:2012 and are well within the prescribed limits.

3.5 AIR ENVIRONMENT

The baseline studies on air environment include identification of specific air pollution parameters and their existing levels in ambient air. The ambient air quality with respect to the study zone of 10 km radius around the proposed quarry forms the baseline information.

FIGURE – 6: WIND ROSE DIAGRAM



3.6 SUMMARY OF AMBIENT AIR QUALITY

From the above data's, the concentration of main criteria pollutants has been observed that maximum concentration of PM10 is 46.9 µg/m^3 recorded at MGR Nagar and minimum is 40.3 µg/m^3 recorded at Project area (Core). The concentration of PM2.5 varies from Minimum 17.2 µg/m^3 was recorded at Kammampalli Village

and Maximum concentration of $PM_{2.5}$ recorded at 23.8 µg/m^3 Project area (Core). SO2 concentration level ranged from 8.9 – 5.0 µg/m^3 and NO^2 concentration ranged from 25.8– 18.3µg/m^3 in the study area. The concentration levels of the above criteria pollutants were observed to be well within the limits of NAAQS prescribed by CPCB.

3.7 NOISE ENVIRONMENT

Ambient noise levels were measured at 8 (Eight) locations around the proposed project area. Noise levels recorded in core zone during day time were from 41.2 – 42.3dB (A) Leq and during night time were from 36.3 – 37.2 dB (A) Leq. Noise levels recorded in buffer zone during day time were from 37.0– 42.2 dB (A) Leq and during night time were from 35.5– 37.2 dB (A) Leq.

The values of noise observed in some of the areas are primarily owing to quarrying activities due to cluster of quarries within 500m radius, movement of vehicles and other anthropogenic activities. Noise monitoring results reveal that the maximum & minimum noise levels at day time were recorded in the range of 45.8 dB(A) Leq in core zone and 36.5 dB(A) Leq in minimum core zone area and 31.7 dB(A) in core zone & 41.4 dB(A) in Project area (Core zone) at night time. Thus, the noise level for Industrial and Residential area meets the requirements of CPCB.

The values of noise observed in some of the areas are primarily owing to quarrying activities due to cluster of quarries within 500m radius, movement of vehicles and other anthropogenic activities.

3.8 ECOLOGICAL ENVIRONMENT

The study involved in the collection of primary data by conducting a survey in the field, examination of floral and faunal records in previously published reports and records. Analysis of the information is the view of the possible alteration in the environment of the project site. For the survey of fauna, both direct and indirect observation methods were used.

There is no schedule I species of animals observed within study area as per Wildlife Protection Act 1972 as well as no species is in vulnerable, endangered or threatened category as per IUCN. There is no endangered red list species found in the study area. Hence this small operation over short period of time will not have any significant impact on the surrounding flora and fauna.

3.9 SOCIO ECONOMIC ENVIRONMENT

It includes demographic structure of the area, provision of basic amenities viz., housing, education, health and medical services, occupation, water supply, sanitation, communication, transportation, prevailing diseases pattern as well as feature like temples, historical monuments etc., at the baseline level. This will help in visualizing and predicting the possible impact depending upon the nature and magnitude of the project.

The socio-economic study of surveyed villages gives a clear picture of its population, average household size, literacy rate and sex ratio etc. It is also found that a part of population is suffering from lack of permanent job to run their day-to-day life. Their expectation is to earn some income for their sustainability on a long-term basis.

The proposed project will aim to provide preferential 96 persons to the local people there by improving the indirect employment opportunity for 50 persons and in turn the social standards will improve.

4. ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

In order to maintain the environmental commensuration with the mining operation, it is essential to undertake studies on the existing environmental scenario and assess the impact on different environmental components. This would help in formulating suitable management plans sustainable resource extraction.

4.1 LAND ENVIRONMENT:

ANTICIPATED IMPACT

The main anticipated impact on the Land Environment due to quarrying operation is change in Landscape, change in Land – use Pattern. The total area applied for quarry lease is 4.36.8 Ha, the total extent of the cluster is 55.04.3 Ha (Cluster area is calculated as per MoEF & CC Notification – S.O. 2269 (E) Dated: 01.07.2016) including existing and proposed quarries. The proposed project area is proponent own patta and government/Poramboke land, no forest land involved in this lease applied area. The ultimate depth of the proposed project is quarrying is varying from 18-28m below the ground level and will not intersect the ground water table. The project is site specific.

MITIGATION MEASURES

- In the Opencast Method of Mining the degradation of land is insignificant, after completion of the quarrying operation the land, the land will be partially backfilled with dumped material and part of the area will be allowed to collect rainwater which will act as temporary reservoir, this Granite waste, overburden not produce any toxic effluents in the form of solid, liquid or gas
- Top Soil will be removed and utilized for greenbelt development in the safety barrier
- The periphery of the mining lease area will be converted to a greenbelt to prevent Noise and sound propagation to the nearby lands
- Construction of garland drains all around the quarry pit and construction of check dam at strategic location in lower elevations to prevent soil erosion due to surface runoff during rainfall and also to collect the storm water for various uses within the proposed area
- Barbed wire fencing will be re constructed at the conceptual stage, Security will be posted round the clock, to prevent inherent entry of the public and cattle.

4.2 SOIL ENVIRONMENT

IMPACT ON SOIL ENVIRONMENT

Erosion and Sedimentation (Removal of protective vegetation cover; Exposure of underlying soil horizons that may be less pervious, or more erodible than the surface layers; Reduced capacity of soils to absorb rainfall; Increased energy in storm-water runoff due to concentration and velocity; and Exposure of subsurface materials which are unsuitable for vegetation establishment).

MITIGATION MEASURES FOR SOIL CONSERVATION

- Run-off diversion – Garland drains will be constructed all around the project boundary to prevent surface flows from entering the quarry works areas. And will be discharged into vegetated natural drainage lines, or as distributed flow across an area stabilised against erosion.
- Sedimentation ponds - Run-off from working areas will be routed towards sedimentation ponds. These trap sediment and reduce suspended sediment loads before runoff is discharged from the quarry site. Sedimentation ponds should be designed based on runoff, retention times, and soil characteristics. There may be a need to provide a series of sedimentation ponds to achieve the desired outcome.
- Retain vegetation – Retain existing or re-plant the vegetation at the site wherever possible.
- Monitoring and maintenance – Weekly monitoring and daily maintenance of erosion control systems so that they perform as specified specially during rainy season.

4.3 WATER ENVIRONMENT

ANTICIPATED IMPACT

The impact due to mining on the water quality is expected to be insignificant because of no use of chemicals or hazardous substances during quarrying process. For the quarrying activity water will be utilized for wire saw cutting (which will be recycled), water sprinkling on haul roads and greenbelt development. The quarrying activity will not intersect ground water table as ultimate depth of the quarry from 18 -28m and water table is found at a depth of 64m summer and 59m rainy season BGL.

MITIGATION MEASURES

- With respect to Turbidity, Total Iron and Silica, Pre-treatment methods like settling or filtration, Water Softening (Ion Exchange) shall be adopted to make it fit for drinking purposes. But it can be used for other domestic purposes
- Rainwater will be collected in sump in the mining pit and will be allowed to store and pumped out to surface setting tank of 15 m x 10m x 3m to remove suspended solids if any. This collected water will be judiciously used for dust suppression onwards and such sites where dust likely to be generated and for developing green belt. The proponent will collect and judicially utilize the rainwater as part of rainwater harvesting
- Construction of garland drains to divert surface run-off into the quarrying area
- Retaining walls with weep hole will be constructed around the dump to arrest silt wash off
- Periodic analysis of quarry pit water and ground water quality in nearby villages
- Domestic sewage from site office & urinals/latrines provided in ML is discharged in septic tank followed by soak pits
- Wastewater discharge from mine will be treated in settling tanks before using for dust suppression and tree plantation purposes
- De-silting will be carried out before and immediately after the monsoon season
- Regular monitoring and analysing the quality of water in open well, bore wells and surface water.

4.4 AIR ENVIRONMENT

ANTICIPATED IMPACT

The air borne particulate matter generated by quarrying operation, and transportation. The emissions of Sulphur dioxide (SO_2), Oxides of Nitrogen (NOx) due to excavation/loading equipment and vehicles plying on haul roads are marginal. Loading - unloading and transportation of Granite and overburden, wind erosion of the exposed area and movement of light vehicles will be the main polluting source in the mining activities releasing Particulate Matter (PM_{10}) affecting Ambient Air of the area. Prediction of impacts on air environment has been carried out taking into consideration three proposed quarry aims to Cumulatively production about 1,03,233m^3 (ROM) on air environment and net increase in emissions by Open pit source modelling in AERMOD Software.

MITIGATION MEASURES

Drilling – To control dust at source, wet drilling will be practiced. Where there is a scarcity of water, suitably designed dust extractor will be provided for dry drilling along with dust hood at the mouth of the drill-hole collar.

Advantages of Wet Drilling:-

- In this system dust gets suppressed close to its formation. Dust suppression become very effective and the work environment will be improved from the point of occupational comfort and health.
- Due to dust free atmosphere, the life of engine, compressor etc., will be increased.
- The life of drill bit will be increased.
- The rate of penetration of drill will be increased.
- Due to the dust free atmosphere visibility will be improved resulting in safer working conditions.

Blasting

- Establish time of blasting to suit the local conditions and water sprinkling on blasting face
- Avoid blasting i.e., when temperature inversion is likely to occur and strong wind blows towards residential areas
- Controlled blasting includes Adoption of suitable explosive charge and short delay detonators, adequate stemming of holes at collar zone and restricting blasting to a particular time of the day i.e., at the time lunch hours, controlled charge per hole as well as charge per round of hole
- Before loading of material water will be sprayed on blasted material
- Dust mask will be provided to the workers and their use will be strictly monitored

Haul Road & Transportation

- Water will be sprinkled on haul roads twice a day to avoid dust generation during transportation.

- Transportation of material will be carried out during day time and material will be covered with taurpaulin.
- The speed of tippers plying on the haul road will be limited below 20 km/hr to avoid generation of dust.
- Water sprinkling on haul roads & loading points will be carried out twice a day.
- Main source of gaseous pollution will be from vehicle used for transportation of mineral; therefore, weekly maintenance of machines improves combustion process & makes reduction in the pollution.
- The un-metalled haul roads will be compacted weekly before being put into use.
- Over loading of tippers will be avoided to prevent spillage.
- It will be ensured that all transportation vehicles carry a valid PUC certificate.
- Grading of haul roads and service roads to clear accumulation of loose materials.

Green Belt

- Planting of trees all along main mine haul roads and regular grading of haul roads will be practiced to prevent the generation of dust due to movement of dumpers/trucks.
- Green belt of adequate width will be developed around the project areas.

Occupational Health

- Dust mask will be provided to the workers and their use will be strictly monitored
- Annual medical check-ups, trainings and campaigns will be arranged to ensure awareness about importance of wearing dust masks among all mine workers & tipper drivers
- Ambient Air Quality Monitoring will be conducted six months once to assess effectiveness of mitigation measures proposed.

4.5 NOISE ENVIRONMENT

ANTICIPATED IMPACT

Noise pollution poses a major health risk to the mine workers. Following are the sources of noise in the existing open cast mine project are being observed such as Drilling, & Blasting, Loading and during movement of vehicles.

MITIGATION MEASURES

- Usage of sharp drill bits while drilling which will help in reducing noise;
- Secondary blasting will be totally avoided and hydraulic rock breaker will be used for breaking boulders;
- Controlled blasting with proper spacing, burden, stemming and optimum charge/delay will be maintained;
- The blasting will be carried out during favourable atmospheric condition and less human activity timings by using nonelectrical initiation system;

- Proper maintenance, oiling and greasing of machines will be done every week to reduce generation of noise;
- Provision of sound insulated chambers for the workers working on machines (HEMM) producing higher levels of noise;
- Silencers / mufflers will be installed in all machineries;
- Green Belt/Plantation will be developed around the project area and along the haul roads. The plantation minimizes propagation of noise;
- Personal Protective Equipment (PPE) like ear muffs/ear plugs will be provided to the operators of HEMM and persons working near HEMM and their use will be ensured though training and awareness.
- Regular medical check–up and proper training to personnel to create awareness about adverse noise level effects.

4.6 BIOLOGICAL ENVIRONMENT

ANTICIPATED IMPACT

The developmental programs, policies, and projects operated or managed by government or private bodies can cause potentially significant changes in the physical, biological, and socio-economic environment. In some cases, the changes may be beneficial while in others it may be detrimental to the environment. Accordingly, environmental impact studies are required for systematic identification, qualification, and interpretation of the anticipated changes. The main environmental problems associated with mining activities are deforestation, land degradation (change in topography, soil erosion), visual intrusion, disturbance to the hydrological system, and water, air, and noise pollution which ultimately impact upon the floral and faunal status of the project area.

MITIGATION MEASURES

Greenbelt means the planting of special types of plants suitable to that particular agroclimatic zone and soil characteristics in a place that will make the area cooler, reduce air pollution, prevent soil erosion, and further improve the soil fertility status. A green belt around the periphery of the boundary and roadside will be created to avoid erosion of soil, prevention of landslides, and minimize air pollution and noise pollution in the project area. Green plants are capable of absorbing air pollutants and forming sinks for pollutants. Leaves with their vast area in a tree crown, absorb pollutants on their surface, effectively reducing their concentration and noise level in the ambient.

The objectives of the green belt cover will cover the following:

- Noise abatement
- Ecological restoration
- Aesthetic, biological and visual improvement of area due to improved vegetative and plantations cover.

GREENBELT DEVELOPMENT PLAN -P1-P3

P1

Year	No. of tress proposed to be planted	Area to be covered in m^2	Name of the species to be plant	Survival rate expected in %	No. of trees expected to be grown
I	60	1000	Neem, etc.,	70	42
II	60			70	42
III	60			70	42
IV	60			70	42
V	60			70	42

P2

Year	No. of tress proposed to be planted	Area to be covered in m^2	Name of the species to be plant	Survival rate expected in %	No. of trees expected to be grown
I	20	916	Neem, Pongamia pinnata, etc., trees	80	16
II	20			80	16
III	20			80	16
IV	20			80	16
V	20			80	16

P3

Year	No. of tress proposed to be planted	Area to be covered in m^2	Name of the species to be plant	Survival rate expected in %	No. of trees expected to be grown
I	30	1209	Neem, Casuarina, Pongamia pinnata, etc., trees	80	24
II	30			80	24
III	30			80	24
IV	30			80	24
V	30			80	24

4.7 SOCIO ECONOMIC ENVIRONMENT

The socio-economic impacts of mining are many. Impacts of a mine project may be positive or Negative. The adverse impacts attribute to physical displacement due to land acquisition, which is followed by loss of livelihood, mental agony, changes in social structure, and risk to food security etc., People are also directly affected due to pollution. Social Impact Assessment (SIA) is a process of analysis, monitoring and managing the social consequences of a project. Study on Socio-economic status has already been carried out using primary socio-economic survey for generating the baseline data of Socio-economic status.

Anticipated Impact

From the primary Socio-economic survey & through secondary data available from established literature and census data 2011, it is found that there would be positive impact on Socio-economic condition of the nearby area. There is no habitation within 600m of the proposed mining lease area. Therefore, no major impact is anticipated on the nearby habitation during the entire life of the mine.

Mitigation Measures

- Good maintenance practices will be adopted for plant machinery and equipment, which will help to avert potential noise problems
- Green belt will be developed in and around the project site as per Central Pollution Control Board (CPCB) guidelines
- Air pollution control measure will be taken to minimize the environmental impact within the core zone
- For the safety of workers, personal protective appliances like hand gloves, helmets, safety shoes, goggles, aprons, nose masks and ear protecting devices will be provided as per mines act and rules
- Benefit to the State and the Central governments through financial revenues by way of royalty, tax, duties, etc., from this project directly and indirectly
- From above details, the quarry operations will have highly beneficial positive impact in the area

5. ANALYSIS OF ALTERNATIVES (TECHNOLOGY AND SITE)

No alternatives are suggested as all the mine sites are mineral specific.

6. ENVIRONMENT MONITORING PROGRAM

An Environment monitoring cell (EMC) will be constituted to monitor the implementation of EMP and other environmental protection measures in all the proposed quarries. The responsibilities of this cell will be:

- Implementation of pollution control measures
- Monitoring programme implementation
- Post-plantation care
- To check the efficiency of pollution control measures taken
- Any other activity as may be related to environment
- Seeking expert's advice when needed.

6.1 POST ENVIRONMENTAL CLEARANCE MONITORING SCHEDULE

S. No.	Environment Attributes	Location	Monitoring		Parameters
			Duration	Frequency	
1	Air Quality	2 Locations (1 Core & 1 Buffer)	24 hours	Once in 6 months	Fugitive Dust, $PM_{2.5}$, PM_{10}, SO_2 and NO_x.
2	Meteorology	At mine site before start of Air Quality Monitoring & IMD Secondary Data	Hourly / Daily	Continuous online monitoring	Wind speed, Wind direction, Temperature, Relative humidity and Rainfall

3	Water Quality Monitoring	2 Locations (1SW & 1 GW)	-	Once in 6 months	Parameters specified under IS:10500, 1993 & CPCB Norms
4	Hydrology	Water level in open wells in buffer zone around 1 km at specific wells	-	Once in 6 months	Depth in bgl
5	Noise	2 Locations (1 Core & 1 Buffer)	Hourly – 1 Day	Once in 6 months	Leq, Lmax, Lmin, Leq Day & Leq Night
6	Vibration	At the nearest habitation (in case of reporting)	–	During blasting Operation	Peak Particle Velocity
7	Soil	2 Locations (1 Core & 1 Buffer)	–	Once in six months	Physical and Chemical Characteristics
8	Greenbelt	Within the Project Area	Daily	Monthly	Maintenance

7. ADDITIONAL STUDIES

7.1 RISK ASSESSMENT

The methodology for the risk assessment has been based on the specific risk assessment guidance issued by the Directorate General of Mine Safety (DGMS), Dhanbad, vide Circular No.13 of 2002, dated 31st December, 2002. The DGMS risk assessment process is intended to identify existing and probable hazards in the work environment and all operations and assess the risk levels of those hazards in order to prioritize those that need immediate attention. Further, mechanisms responsible for these hazards are identified and their control measures, set to timetable are recorded along with pinpointed responsibilities.

The whole quarry operation will be carried out under the direction of a Qualified Competent Mine Manager holding certificate of competency to manage a metalliferous mine granted by the DGMS, Dhanbad for proposed project. Risk Assessment is all about prevention of accidents and to take necessary steps to prevent it from happening.

7.2 DISASTER MANAGEMENT PLAN

Natural disasters like Earthquake, Landslides have not been recorded in the past history as the terrain is categorized under seismic zone III. The area is far away from the sea hence the disaster due to heavy floods and tsunamis are not anticipated.

The Disaster Management Plan is aimed to ensure safety of life, protection of environment, protection of installation, restoration of production and salvage operations in this same order of priorities.

The objective of the Disaster Management Plan is to make use of the combined resources of the mine and the outside services to achieve the following:

- Rescue and medical treatment of casualties;
- Safeguard other people;
- Minimize damage to property and the environment;
- Initially contain and ultimately bring the incident under control;

- Secure the safe rehabilitation of affected area; and
- Preserve relevant records and equipment for the subsequent inquiry into the cause and circumstances of the emergency.

7.3 CUMULATIVE IMPACT STUDY

CUMULATIVE PRODUCTION LOAD OF GRANITE

Quarry	Mineable Reserves ROM in m^3	Mineable Reserves of Granite in m^3	Proposed production of ROM for five-year period in m^3	Production of ROM Per Day in m^3	Production of Granite Per day in m^3	Number of Lorry loads of Granite per day
P1	1,75,300	35,060	43,213	29	6	1
P2	1,12,305	39,307	34,180	23	8	1
P3	39,420	13,797	25,840	17	6	1
P4	4,15,020	41,502	60,213	40	4	1
Total	**7,42,045**	**1,29,666**	**1,63,446**	**109**	**24**	**4**
E1	55,640	11,128	12,510	8	2	1
E2	4,33,951	43,395	1,20,680	80	2	1
Total	**4,89,591**	**54,523**	**1,33,190**	**88**	**4**	**2**
G.Total	**12,31,636**	**1,84,189**	**2,96,636**	**197**	**28**	**6**

Source: Approved Mining plan of Respective mines

PREDICTED NOISE INCREMENTAL VALUES FROM CLUSTER

Location ID	Background Value (Day) dB(A)	Incremental Value dB(A)	Total Predicted dB(A)	Residential Area Standards dB(A)
Habitation Near P1	47.5	44.5	49.3	55
Habitation Near P2	44.2	42.4	46.4	
Habitation Near P3	43.2	42.4	45.8	
Habitation Near P4	44.2	42.1	46.8	
Habitation Near E1	45.3	49.2	50.7	
Habitation Near E2	42.6	54.1	54.4	

SOCIO ECONOMIC BENEFITS

Location code	Employment	Project Cost	CER
P1	18	Rs. 3,04,20,000/-	Rs.5,00,000/-
P2	33	Rs. 2,29,27,000/-	Rs.5,00,000/-
P3	30	Rs. 4,96,24,000/-	Rs.5,00,000/-
P4	54	Rs.100,000,00/-	Rs.5,00,000/-
E1	35	Rs. 2,70,00,00/-	Rs.5,00,000/-
E2	26	Rs.100,000,00/-	Rs.5,00,000/-
Total	**196**		**Rs.30,00,000**

A total of 196 people will get employment due to 6 mines in cluster and already employed. Allocation for Corporate Environment Responsibility (CER) shall be made as per Government of India, MoEF & CC Office Memorandum F.No.22-65/2017-IA.III, Dated: 01.05.2018 by all the mines.

8. PROJECT BENEFITS

Colour Granite quarry of Soolamalai Village aims to Production of cumulatively is about 1,03,233m^3 of ROM and 29,650 m^3 Granite recovery (for the entire period) for Life of Mine of 20 Years. This will enhance the socio-economic activities in the adjoining areas and will result in the following benefits

- Increase in Employment Potential
- Improvement in Socio-Economic Welfare
- Improvement in Physical Infrastructure
- Improvement in Social infrastructure
- To meet out the demand supply gap of Granite and enhance the foreign exports

9. ENVIRONMENT MANAGEMENT PLAN

The Environment Monitoring cell discussed formed by the mine management will ensure effective implementation of environment management plan and to ensure compliance of environmental statutory guidelines through Mine Management Level.

The said team will be responsible for:

- Monitoring of the water/ waste water quality, air quality and solid waste generated
- Analysis of the water and air samples collected through external laboratory
- Implementation and monitoring of the pollution control and protective measures/ devices which shall include financial estimation, ordering, installation of air pollution control equipment, waste water treatment plant, etc.
- Co-ordination of the environment related activities within the project as well as with outside agencies.
- Collection of health statistics of the workers and population of the surrounding villages.
- Green belt development.
- Monitoring the progress of implementation of the environmental monitoring programme.
- Compliance to statutory provisions, norms of State Pollution Control Board, Ministry of Environment and Forests and the conditions of the environmental clearance as well as the consents to establish and consents to operate.

10. CONCLUSION

Various aspects of mining activities were considered and related impacts were evaluated. Considering all the possible ways to mitigate the environmental concerns Environmental Management Plan was prepared and fund has been allocated for the same. The EMP is dynamic, flexible and subjected to periodic review. For project where the major environmental impacts are associated, EMP will be under regular review. Senior Management responsible for the project will conduct a review of EMP and its implementation to ensure that the EMP remains effective and appropriate. Thus, the proper steps will be taken to accomplish all the goals mentioned in the EMP and the project will bring the positive impact in the study area.

****