

# EXECUTIVE SUMMARY

## DEVANNAGOUNDANUR AND THANGAYUR MULTI COLOUR GRANITE QUARRY

At

Devannagoundanur & Thangayur Village, Edappadi & Sankari Taluk,  
Salem District

### NAME OF PROPOSED PROJECT PROPONENTS APPLYING IN CLUSTER

Code	Name of the Proponent	S.F.No	Extent (Ha)
P1	Thiru. P.Jayaraj	90/1(P) & 90/2(P),	2.00.5
P2	Thiru. B. Venkatesh	1/1(P) & 1/2B(P)	2.31.5
P3	Thiru. B. Venkatesh	1/2B(P) & 1/3B(P)	3.12.0

“B1” CATEGORY/ MINOR MINERAL /CLUSTER/ NON-FOREST LAND/ PATTALAND

\* **CLUSTER EXTENT = 21.07.0 ha**

\* Cluster Calculated as per MoEF & CC Notification – S.O. 2269(E) Dated: 01.07.2016

### ToR Obtained vide

P1- Lr No.SEIAA-TN/F.No.t360/SEAC/ToR- 1315/2022 Dated: 21.12.2022

P2- Lr No. SEIAA-TN/F.No.9848/ToR- 1439/2023 Dated: 21.04.2023

P3- Lr No. SEIAA-TN/F.No.9855/ToR-1435/2023 Dated:24.04.2023.

### 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, geothagam@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, 50<sup>th</sup> street, 7<sup>th</sup> Avenue,

Ashok Nagar, Chennai – 600 083.

Baseline Monitoring Period – March 2023-May 2023

**JUNE 2023**

## 1. INTRODUCTION

This EIA report is prepared by considering Cumulative load of all proposed & existing quarries around Devannagoundanur and Thangayur Multicolor Granite quarry (Total Cluster 21.07.0 Ha) lease at Devannagoundanur and Thangayur Village, Sankari and Edappadi Taluk, Salem 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

CODE	Name of the proponent	Extent (Ha)	Terms of Reference (ToR)
P1	Thiru. P.Jayaraj	2.00.5	Lr No.SEIAA-TN/F.No.t360/SEAC/ToR-1315/2022 Dated: 21.12.2022
P2	Thiru. B. Venkatesh	2.31.5	Lr No. SEIAA-TN/F.No.9848/ToR-1439/2023 Dated: 21.04.2023
P3	Thiru. B. Venkatesh	3.12.0	Lr No. SEIAA-TN/F.No.9855/ToR-1435/2023 Dated:24.04.2023

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

To carry out the EIA studies and to prepare EIA and EMP studies the proposed & existing quarries of Devannagoundanur and Thangayur Multicolor Granite 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 (March - May 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 PROPONENT

PROPOSAL – P1	
Name of the Company	Thiru. P.Jayaraj,
Address	No.252, 1st Cross Street Periyasamy Nagar, Alagapuram Pudur, Salem – 636 016.
Mobile	+91 94429 49999
Status	Proprietor
PROPOSAL – P2	
Name of the Company	Thiru. B. Venkatesh,
Address	No.255, Kanakapura Main Road, 7th Block, Jayanagar, Bengaluru, Karnataka – 560 070,
Mobile	91 94425 17105, 97877 48008

<b>Status</b>	Proprietor
<b>PROPOSAL – P3</b>	
<b>Name of the Company</b>	<b>Thiru. B. Venkatesh,</b>
<b>Address</b>	No.255, Kanakapura Main Road, 7th Block, Jayanagar, Bengaluru, Karnataka – 560 070,
<b>Mobile</b>	91 94425 17105, 97877 48008
<b>Status</b>	Proprietor

The project proponent is an individual.

## 1.2 QUARRY DETAILS WITHIN 500 M RADIUS

PROPOSED QUARRIES				
CODE	Name of the Owner	S.F.Nos & Village	Extent	Status
P1	Thiru. P.Jayaraj, No.252, 1 <sup>st</sup> Cross Street Periyasamy Nagar, Alagapuram Pudur, Salem – 636 016.,	90/1(Part) & 90/2(Part), of Devannagoundanur Village, Sankari Taluk	2.00.5	Lr No. SEIAA-TN/F.No.t360/SEAC /ToR- 1315/2022 Dated: 21.12.2022
P2	Thiru. B. Venkatesh, No.255, Kanakapura Main Road, 7th Block, Jayanagar, Bengaluru, Karnataka – 560 070,	1/1(Part) and 1/2B(Part) Thangayur Village, Edappadi Taluk	2.31.5	Lr No. SEIAA-TN/F.No.9848/ToR- 1439/2023 Dated: 21.04.2023
P3	Thiru. B. Venkatesh, No.255, Kanakapura Main Road, 7th Block, Jayanagar, Bengaluru, Karnataka – 560 070,	1/2B(PART) AND 1/3B(PART) Thangayur Village, Edappadi Taluk	3.12.0	Lr No. SEIAA-TN/F.No.9855/ToR- 1435/2023 Dated:24.04.2023
P4	M/s. Classic Mines, No.2/140E, Mankuttaikadu, Morur Post, Tiruchengode Taluk, Namakkal District.	2/2A1B2, 2/2A2, 2/2B (P), 2/2A1C (P), Thangayur Village, Edappadi Taluk	2.83.0	Application under process
<b>TOTAL</b>			<b>10.27.0 Ha</b>	
EXISTING QUARRIES				
CODE	Name of the Owner	S.F. Nos & Village	Extent	Status
E-1	KMB Granite P Ltd, 4/59, Bharathi street, Swarnapuri Salem- 636004	76/2B, 76/7 Devannagoundanur Village, Sankari Taluk	2.10.5	17/03/2006 To 16/03/2026
E-2	M/s.Gem granites 58, Cathedral Road, Chennai -86	74/1B,74 /2B, 91/1	4.37.0	04.12.2008 to 3.12.2028
E-3	R.Navinladdha, S/o. (Late) Sri Rameshwarladdha, 31/1 Chandramuki Pattalama Temple street, South end Circle, Basavanagudi, Bengaluru- 560004.	9/1A1, 9/2A2, 9/2A3, 9/2B	4.32.5	22.12.2016- 21.12.2036
<b>Total</b>			<b>10.80.0 Ha</b>	
EXPIRED QUARRIES				
Ex-1	B. Venkatesh S/o.Babu, Sivasakthi, 255, Kanakapura Main Road, 7 <sup>th</sup> Block, Jaya Nagar Bangalore-70	100/2A & 2B Devannagoundanur Village, Sankari Taluk	3.74.5	01/03/2001 To 28/02/2021
Ex-2	M/s.Gem granites, 58, Cathedral Road, Chennai -86	104, Devannagoundanur Village, Sankari Taluk	1.77.0	30.9.1998 to 29.9.2018
Ex-3	M/s.Gem granites, 58, Cathedral Road, Chennai -86	106/1 Devannagoundanur Village, Sankari Taluk	4.87.0	30.9.1998 to 29.9.2018
Ex-4	KMB Granite P Ltd, 4/59, Bharathi street, Swarnapuri Salem- 636004	88/1P, Devannagoundanur Village, Sankari Taluk	1.75.5	19.8.1998 to 18.8.2018
Ex-5	Syhims Granites, No.4/59, Bharathi street, Swarnapuri, Five roads, Salem-4	89/3, Devannagoundanur Village, Sankari Taluk	1.39.3	08.9.1995 to 07.9.2005
<b>TOTAL</b>			<b>13.53.3 Ha</b>	
ABANDONED QUARRIES				
A1	Atlas Granite	2/2B, Thangayur Village,	4.00.0	25.4.1994 to

		Edappadi Taluk		24.4.2004
	<b>Total</b>		<b>4.00.0 Ha</b>	
<b>TOTAL CLUSTER EXTENT</b>			<b>21.07.0 Ha</b>	

**TABLE 1.3 SALIENT FEATURES OF THE PROPOSAL “P1”**

Name of the Quarry		<b>Thiru. P.Jayaraj,</b>		
Lease period		20 years		
Mining Lease area		2.00.5 Ha		
Location		90/1(Part) & 90/2(Part), of Devannagoundanur Village, Sankari Taluk, Salem District		
First Scheme of Period		5 Years (2020-2025)		
Life of the Mine		20 years		
Existing Depth (As per Pit letter)		1) Pit 1 = 85m x 32m x 21m 2) pit 2 = 26mx 06m x 05m 3) Pit 3 = 18m x 16m x 05m 4) Pit 4 = 12m x 08m x 04m 5) Pit 5 = 93 m x 36m x 16m 6) Pit 6 = 40m x 37m x 10m		
Previous lease particulars		It is a patta land registered in the name of Applicant (Thiru.P.Jayaraj) vide patta nos.1157 & 815		
Proposed Depth for five years plan period		47m		
Ultimate Depth		213m(L) x 89m (W) x 47m (D) (2m Topsoil + 45m Multicolored Granite)		
Toposheet No		58 E/14		
Latitude between		11°33'31.55"N to 11°33'35.45"N		
Longitude between		77°50'36.05"E to 77°50'44.49"E		
Topography		The area is exhibits in elevated topography and the gradient towards Northwest side. The altitude of the area is ranges from 239m - 250m above from MSL.		
Machinery proposed	Jackhammer	4		
	Compressor	1		
	Hydraulic drilling machine	-		
	Hydraulic/Crawler crane	1		
	Mobile crane	-		
	Excavator	1		
	Tipper	2		
	Diesel Generator	2		
	Diamond wire saw	1		
	Water pump	-		
Water tanker	-			
Proposed manpower deployment		22		
A. Project cost		Rs. 2,44,92,382		
B.EMP Cost		Rs. 3,80,800/-		
C.CER cost		Rs. 5,00,000/-		
Total Project cost		Rs.2,53,69,882/-		
Nearest Habitation		600m-NW		

**TABLE 1.4 SALIENT FEATURES OF THE PROPOSAL “P2”**

Name of the Quarry		<b>Thiru. B. Venkatesh</b>		
Lease period		20 years		
Mining Lease area		2.31.5 Ha		
Location		1/1(Part) and 1/2B(Part) Thangayur Village, Edappadi Taluk		
Second Scheme of Mining Period		5 Years (2020-2025)		

Life of the Mine	20 years	
Existing Depth (As per Pit letter)	223m(L) x 98m (W) x 41m (D)	
Previous lease particulars	It is a Own patta land	
Proposed Depth for five years plan period	66m (1m topsoil + 65m Multi Colour granite)	
Ultimate Depth	233m(L) x 98m (W) x 66m (D) ((8m AGL + 58m BGL)	
Toposheet No	58 E/14	
Latitude between	11°33'40.25" N to 11°33'44.42"N	
Longitude between	77°51'06.75"E to 77°51'15.15"E	
Topography	The area exhibits slightly elevated topography. The gradient is gentle towards Northwest and altitude of the area is ranges from 236m to 244m above from MSL	
Machinery proposed	Jackhammer	7
	Compressor	2
	Wagon drilling machine	1
	Derric crane	1
	Mobile crane	-
	Excavator	2
	Tipper	2
	Diesel Generator	2
	Diamond wire saw	3
	Water pump	-
Water tanker	-	
Proposed manpower deployment	41	
A. Project cost	Rs. 3,60,67,000/-	
B.EMP Cost	Rs. 3,80,000/-	
C.CER cost	Rs. 5,00,000/-	
Total Project cost	Rs.3,64,47,000/-	
Nearest Habitation	660m-NW	

**TABLE 1.4 SALIENT FEATURES OF THE PROPOSAL "P3"**

Name of the Quarry	<b>Thiru. B. Venkatesh</b>	
Lease period	20 years	
Mining Lease area	3.12.0 Ha	
Location	1/2B(P) & 1/3B(P) Thangayur Village, Edappadi Taluk	
First Scheme of Mining Period	5 Years (2021-2026)	
Life of the Mine	20 years	
Existing Depth (As per Pit letter)	1) Pit 1 = 30m x 76m x 8m 2) pit 2 = 50m x 27m x 01m 3) Pit 3 = 80m x 84m x 08m	
Previous lease particulars	It is an Own patta land	
Proposed Depth for five years plan period	38m	
Ultimate Pit Dimension	233m(L) x 121m (W) x 38m (D)	
Toposheet No	58 E/14	
Latitude between	11°33'41.03" N to 11°33'46.32"N	
Longitude between	77°51'10.02"E to 77°51'20.75"E	
Topography	The area exhibits flat topography. The gradient is gentle towards North and altitude of the area is 243m above from MSL.	
Machinery proposed	Jackhammer	7
	Compressor	2
	Wagon drilling machine	1
	Derric crane	1
	Crawl crane	1
	Excavator	2
	Tipper	2
	Diesel Generator	2

	Diamond wire saw	3
	Water pump	-
	Water tanker	-
Proposed manpower deployment		41
A. Project cost		Rs. 4,01,47,000
B.EMP Cost		Rs. 3,80,000/-
C.CER cost		Rs. 5,00,000/-
Total Project cost		Rs.4,05,27,000/-
Nearest Habitation		660m-NW

### 1.3 STATUTORY DETAILS

#### Project – P1

- ☞ The proponent applied for Granite Quarry Lease, Dated: 23.12.2020.
- ☞ The quarry lease was granted in G.O. (3D) No.20, Industries (MMB.2) Department Dated 16.04.2015 for a period of twenty years.
- ☞ The mining plan was prepared in respect of Multi coloured granite quarry and the same was approved by the State Geology and Mining Department, Guindy, Chennai vide letter No.11697/MM5/2012 dated 14.02.2014.
- ☞ Proponent applied for ToR to get Environmental Clearance vide online Proposal No. SIA/TN/MIN/66915/2021 Dated: 25.08.2021
- ☞ The proposal was placed in 286<sup>th</sup> SEAC meeting held on 17.06.2022 and the committee recommended for issue of ToR.
- ☞ The proposal was considered in 580<sup>th</sup> SEIAA meeting held on 21.12.2022 and issued ToR vide - Lr No.SEIAA-TN/F.No.8360/SEAC/ToR- 1315/2022 Dated: 21.12.2022.

#### Project – P2

- ☞ Proponent applied for Multicolour Granite quarry lease Dated 26.02.2010.
- ☞ The quarry lease was granted vide G.O.(3D) No.15, Industries (MMB.2) Department Dated 18.03.2010 for a period of twenty years.
- ☞ As per direction issued by the District Collector's letter vide Rc.No.235/2015/Mines-A, dated: 04.05.2015 the lessee has obtained Environmental Clearance from the SEIAA, Tamil Nadu vide letter No. SEIAA-TN/F.No.5016/1(a)/EC. No:3309/2016, dated: 15.07.2016. Now, the second scheme of quarrying is prepared and submitted to obtain approval for the period of 2020-21 to 2024-25 (Five years).
- ☞ The Mining plan was approved by the Director of Geology and Mining, Guindy, Chennai Vide Rc. No. No. 7862/MM4/2022, dated: 05.01.2023 for an approval scheme period of five years from 2020-21 to 2024 - 25.
- ☞ Proponent applied for ToR to get Environmental Clearance vide online Proposal No. SIA/TN/MIN/418907/2023 Dated: 21.02.2023.
- ☞ The proposal was placed in 366<sup>th</sup> SEAC meeting held on 30.03.2023 and the committee recommended for issue of ToR.

- ☞ The proposal was considered in 613<sup>th</sup> SEIAA meeting held on 21.04.2023 and issued ToR vide Lr.No. SEIAA-TN/F.No. 9848/TOR-1439/2023, Dated :21/04/2023.

#### Project – P3

- ☞ The proponent applied for Granite Quarry Lease, Dated: 08.02.2016
- ☞ The quarry lease was granted vide G.O.(3D) No.18, Industries (MMB.2) Department Dated 08.02.2016 for a period of twenty years (Refer Annexure No. I). The quarry lease deed was executed on 03.03.2016 and the lease period is valid up to 02.03.2036.
- ☞ The mining plan was prepared in respect of Multi Colour granite quarry and the same was approved by the Commissioner, Department of Geology and Mining, Guindy, Chennai vide letter No. 5271/MM5/2014 dated 16.09.2014.
- ☞ Proponent applied for ToR to get Environmental Clearance vide online Proposal No. SIA/TN/MIN/418957/2023 Dated: 20.02.2023.
- ☞ The proposal was placed in 367<sup>th</sup> SEAC meeting held on 31.03.2023 and the committee recommended for issue of ToR.
- ☞ The proposal was considered in 614<sup>th</sup> SEIAA meeting held on 24.04.2023 and issued ToR vide Lr.No. SEIAA-TN/F.No. 9855/TOR-1435/2023, Dated :24/04/2023

## 1.4 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. Multicolour 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 Rough Stone from pithead to the needy crushers and rock breakers to avoid secondary blasting.

### 2.1 SITE CONNECTIVITY TO THE PROJECT AREA

Nearest Roadway	NH544– Salem – Coimbatore –7.6km-S SH221 – Edappadi – Eranapuram – 2.3km-NW
Nearest Village	470m-N
Nearest Town	Edappadi - 2.0km – NW
Nearest Railway Station	Sankari Railway Station- 10.0km - SE
Nearest Airport	Salem Airport - 34.0km - NE
Seaport	Nagapattinam 235km- North East

### 2.2 LAND USE PATTERN OF THE PROPOSED PROJECT

#### P1

Description	Present Area (Ha.)	Area utilized in %
Area under Quarry	0.69.0	34.4
Waste dump	0.08.6	4.2
Infrastructure	0.02.0	1.0
Roads	0.03.0	1.5
Green Belt	Nil	-

Stocking Blocks	1.17.9	58.9
<b>Grand Total</b>	<b>2.00.5</b>	<b>100</b>

Source: Approved Scheme of Mining Period

### P2

Description	Present Area (Ha.)	Area required during this Scheme period(ha)	Area at the end of life of quarry (ha)
Area under Quarry	1.87.2	Nil	1.87.2
Waste dump	Nil	Nil	Nil
Infrastructure	*Nil	*Nil	*Nil
Roads	0.01.0	Nil	0.01.0
Green Belt	Nil	0.19.0	0.32.8
Stocking Blocks	0.43.3	0.24.3	0.10.5
<b>Total</b>	<b>2.31.5</b>	<b>0.43.3</b>	<b>2.31.5</b>

### P3

Description	Present Area (Ha.)	Area utilized in %
Area under Quarry	0.52.2	16.8
Waste dump	0.13.8	4.4
Infrastructure	Nil	-
Roads	0.01.0	0.3
Green Belt	Nil	-
Stocking Blocks	2.45.0	78.5
<b>Grand Total</b>	<b>3.12.0</b>	<b>100</b>

Source: Approved Scheme of Mining Period

## 2.3 OPERATIONAL DETAILS OF LEASE APPLIED AREA

### P1

Description	P1
<b>Geological Resources ROM</b>	7,56,490
Granite Recovery (20 % in m <sup>3</sup> )	1,51,298
Granite Waste (80 % in m <sup>3</sup> )	6,05,192
Weathered rock(m <sup>3</sup> )	-
Side Burden(m <sup>3</sup> )	-
Top Soil in m <sup>3</sup>	20,396
<b>Mineable Reserves ROM</b>	2,19,107
Granite Recovery (20 % in m <sup>3</sup> )	43,821
Granite Waste (80 % in m <sup>3</sup> )	1,75,286
Weathered rock (m <sup>3</sup> )	-
Side Burden (m <sup>3</sup> )	-
Top Soil in m <sup>3</sup>	13,722
<b>Proposed Production for five years plan period ROM</b>	45,672
Granite Recovery (20% in m <sup>3</sup> )	9,134
Granite Waste (80 % in m <sup>3</sup> )	36,538
Weathered rock(m <sup>3</sup> )	-
Top Soil in m <sup>3</sup>	3,834
Number of Working Days	300
Production of ROM per day in five-year plan period	30
Production of Granite per day	6
Total Waste per day	24



(Granite waste)	
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Source: Approved Scheme of Mining Period

## P2

Description	P2
<b>Geological Resources ROM</b>	5,84,140
Granite Recovery (60 % in m <sup>3</sup> )	3,50,484
Granite Waste (40 % in m <sup>3</sup> )	2,33,656
Weathered rock(m <sup>3</sup> )	-
Side Burden(m <sup>3</sup> )	2,57,550
Total waste (Granite waste + SB)	4,91,206
Top Soil in m <sup>3</sup>	4,530
<b>Mineable Reserves ROM</b>	1,79,035
Granite Recovery (60 % in m <sup>3</sup> )	1,07,421
Granite Waste (40 % in m <sup>3</sup> )	71,614
Weathered rock (m <sup>3</sup> )	-
Side Burden (m <sup>3</sup> )	-
Top Soil in m <sup>3</sup>	-
<b>Proposed Production for five years plan period ROM</b>	1,25,220
Granite Recovery (60% in m <sup>3</sup> )	75,132
Granite Waste (40 % in m <sup>3</sup> )	50,088
Weathered rock(m <sup>3</sup> )	-
Top Soil in m <sup>3</sup>	-
Number of Working Days	300
Production of ROM per day in five-year plan period	83
Production of Granite per day	47
Total Waste per day (Granite waste)	33

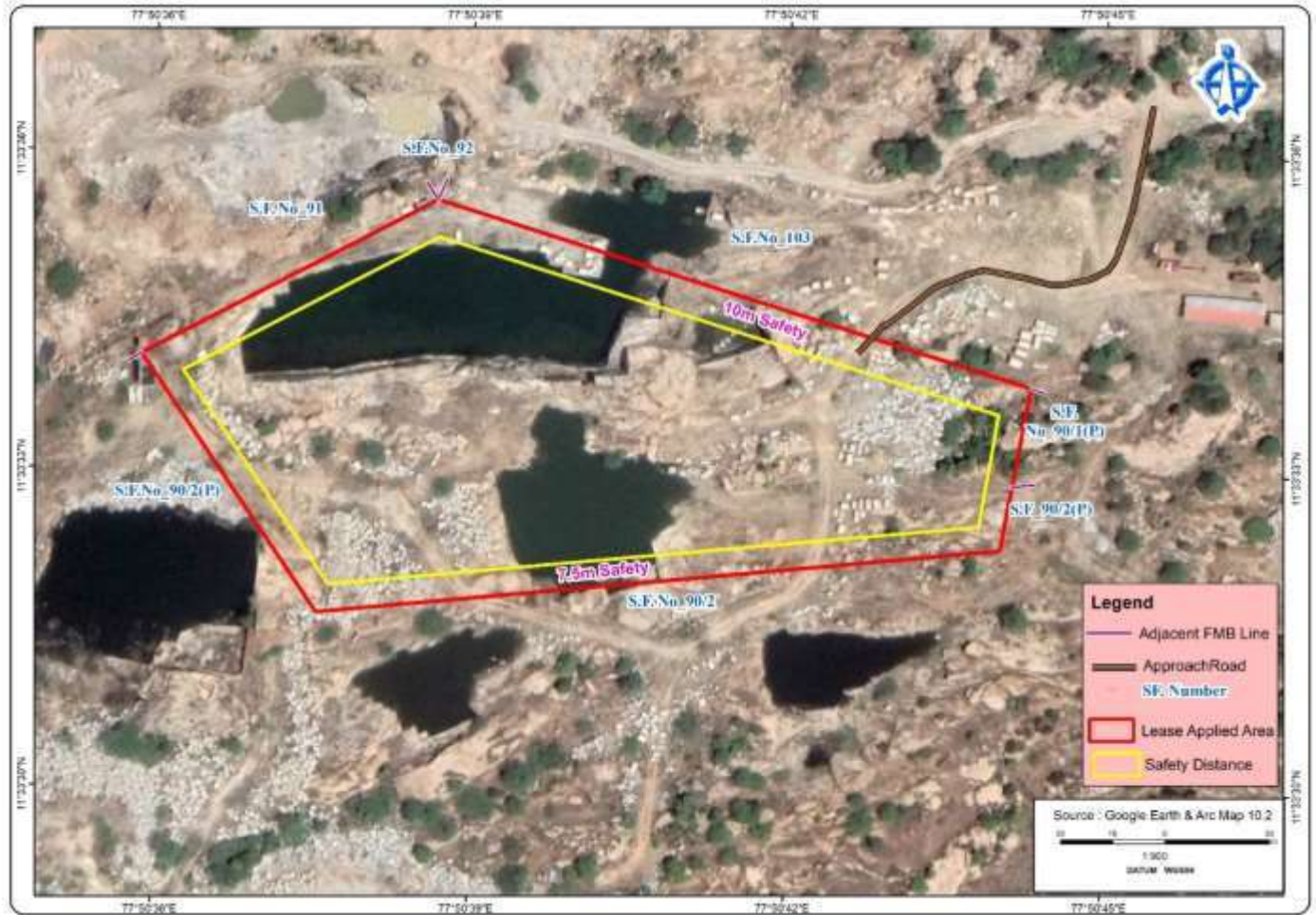
## P3

Description	P3
<b>Geological Resources ROM</b>	9,38,535
Granite Recovery (40 % in m <sup>3</sup> )	3,75,414
Granite Waste (60 % in m <sup>3</sup> )	5,63,121
Weathered rock(m <sup>3</sup> )	41,538
Total waste (Granite waste + Weathered)	6,04,659
Top Soil in m <sup>3</sup>	20,769
<b>Mineable Reserves ROM</b>	4,10,870
Granite Recovery (40% in m <sup>3</sup> )	1,64,348
Granite Waste (60 % in m <sup>3</sup> )	2,46,522
Weathered rock (m <sup>3</sup> )	31,204
Total waste (Granite waste + Weathered)	2,77,726
Side Burden (m <sup>3</sup> )	-
Top Soil in m <sup>3</sup>	16,083
<b>Proposed Production for five years plan period ROM</b>	1,88,330
Granite Recovery (40% in m <sup>3</sup> )	75,332
Granite Waste (60 % in m <sup>3</sup> )	1,12,998
Weathered rock(m <sup>3</sup> )	17,248
Total waste (Granite waste + Weathered)	1,30,246
Top Soil in m <sup>3</sup>	9,041
Number of Working Days	300

Production of ROM per day in five-year plan period	126
Production of Granite per day	50
Total Waste per day (Granite waste + Weathered)	87

Approved Scheme of Mining Period

**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)**

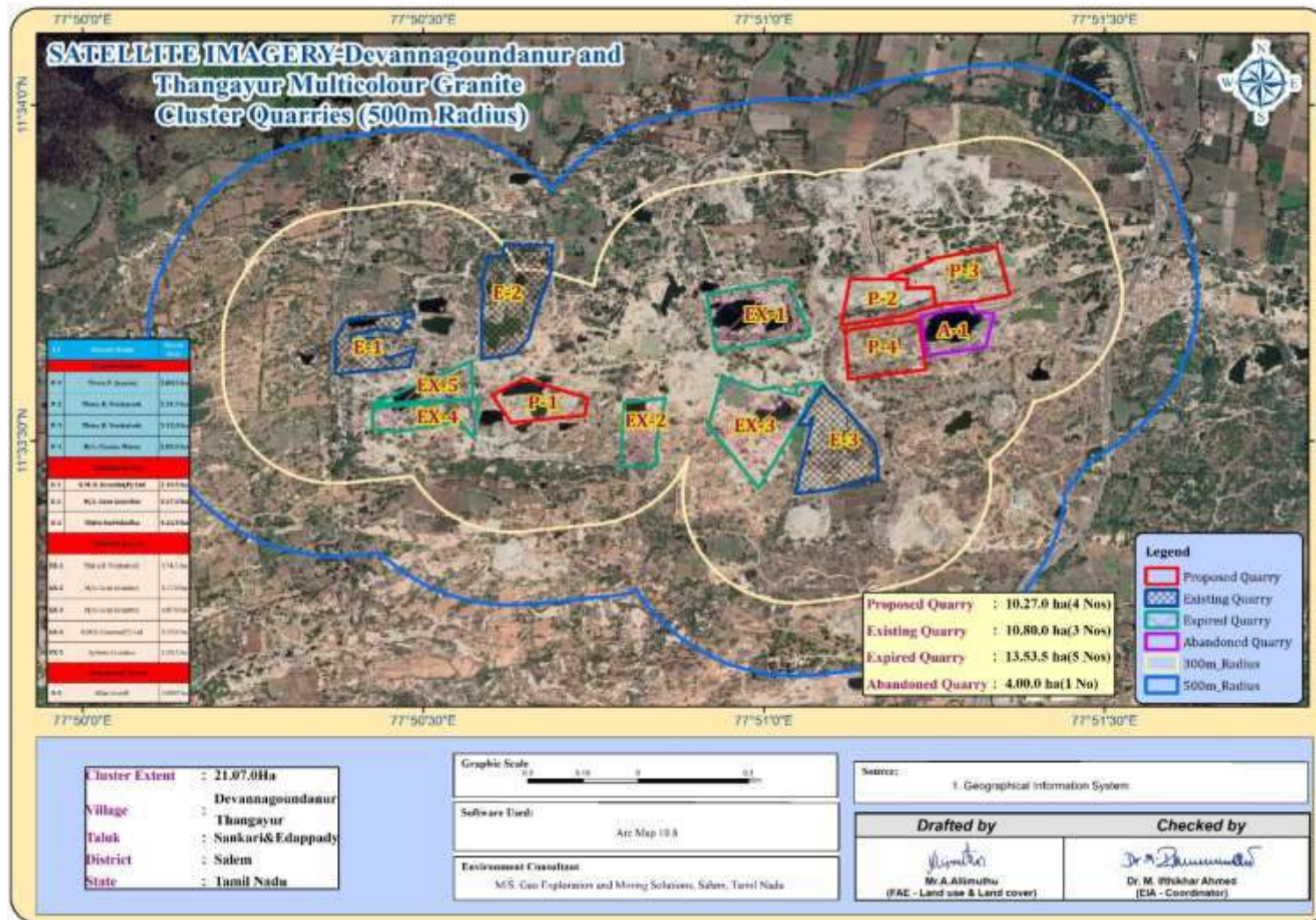


FIGURE – 3: TOPOSHEET MAP COVERING 10 KM RADIUS

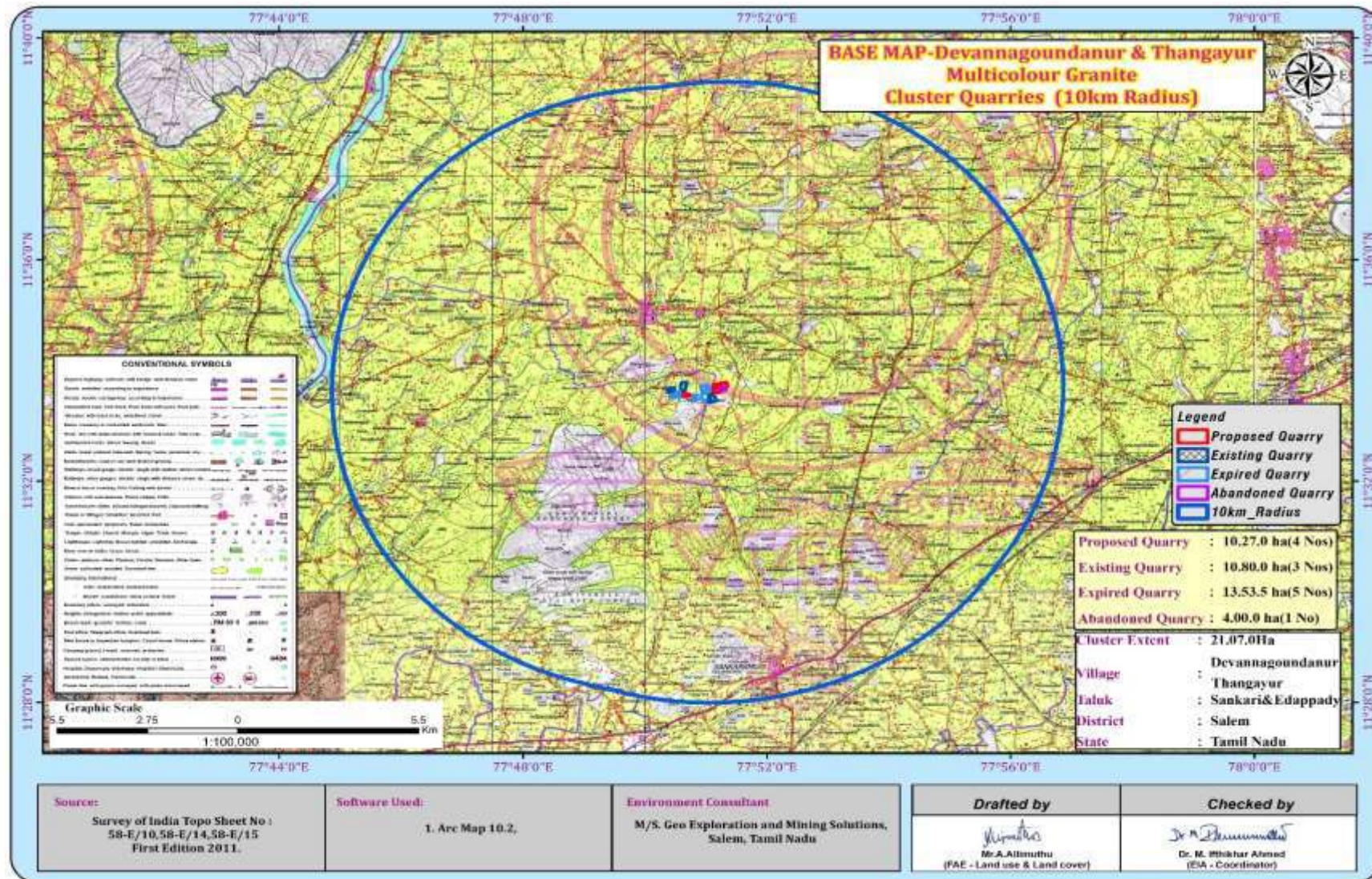
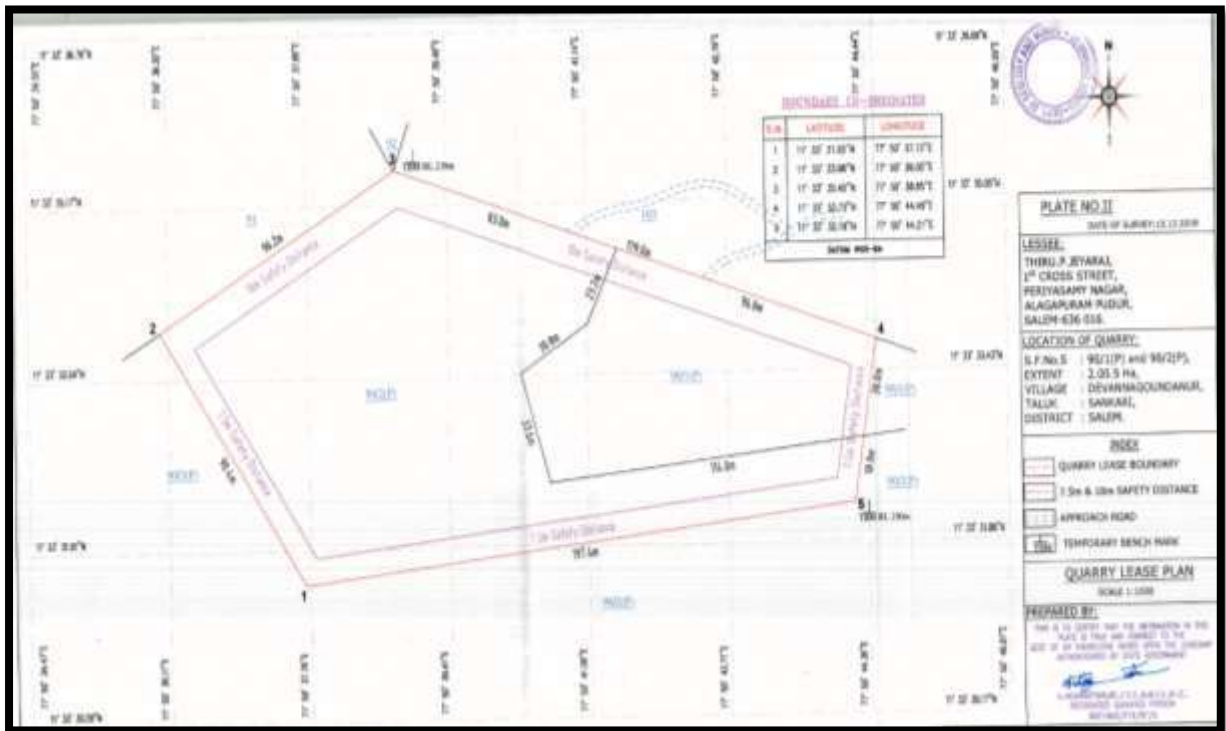
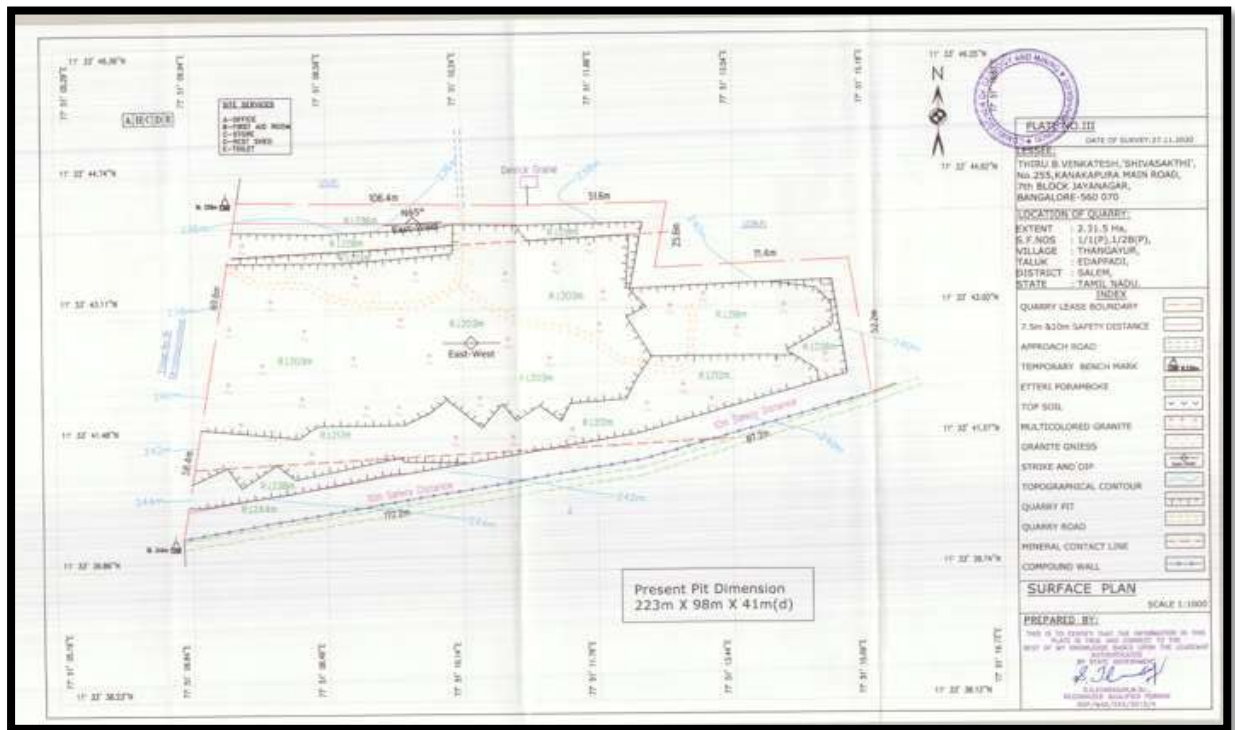


FIGURE – 4: QUARRY LEASE PLAN & SURFACE PLAN

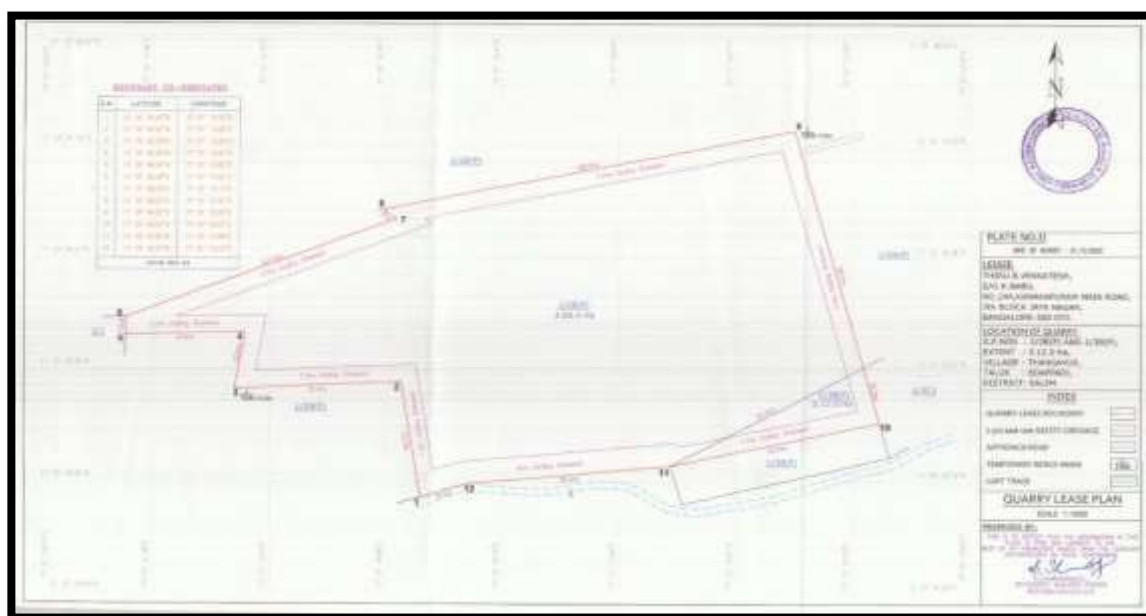
P1



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	1	32	1.2m to 6m	Atlas Copco	Compressed air
Compressor	4	-	140cfm/400psi	Atlas Copco	Diesel drive
Diamond Wire Saw	1	-	20m <sup>3</sup> /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	20 tonnes	Tata	Diesel Drive	
<b>Drilling Equipment's "P2"</b>					
<b>Type</b>	<b>No of Unit</b>	<b>Dia of Hole mm</b>	<b>Size capacity</b>	<b>Make</b>	<b>Motive Power</b>
Jack Hammer	7	32	1.2m to 6m	Atlas Copco	Compressed air
Compressor	2	-	140cfm/400psi	Atlas Copco	Diesel drive
Diamond Wire Saw	3	-	20m <sup>3</sup> /day	Optima	Diesel Generator
Diesel Generator	2	-	125kva	Powerica	Diesel
Wagon Drill	1	32	60 HP	Alimake	Diesel
Loading Equipment					
<b>Type</b>	<b>No of Unit</b>	<b>Capacity</b>	<b>Make</b>	<b>Motive Power</b>	
Derrick Crane	1	855	Tata P & H	Diesel Drive	
Excavator	2	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	
<b>Drilling Equipment's "P3"</b>					
<b>Type</b>	<b>No of Unit</b>	<b>Dia of Hole mm</b>	<b>Size capacity</b>	<b>Make</b>	<b>Motive Power</b>
Jack Hammer	7	32	1.2m to 6m	Atlas Copco	Compressed air
Compressor	2	-	140cfm/400psi	Atlas Copco	Diesel drive
Diamond Wire Saw	3	-	20m <sup>3</sup> /day	Optima	Diesel Generator
Diesel Generator	2	-	125kva	Powerica	Diesel
Wagon Drill	1	32	60 HP	Alimake	Diesel
Loading Equipment					
<b>Type</b>	<b>No of Unit</b>	<b>Capacity</b>	<b>Make</b>	<b>Motive Power</b>	
Crawler Crane	1	855	Tata P & H	Diesel Drive	
Excavator	2	300	Tata Hitachi	Diesel Drive	
Haulage within the Mine & Transport Equipment					
Type	No of Unit	Capacity	Make	Motive Power	
Tippers	2	20 tonnes	Tata	Diesel Drive	

Approved Scheme of Period

## 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	213	89	47 m
P2	233	98	66 m
P3	233	121	38

Approved Scheme of Period

## 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 March– May 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's 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	PM <sub>10</sub> PM <sub>2.5</sub> SO <sub>2</sub> NO <sub>x</sub> Fugitive Dust	24 hourly twice a week (March 2023-May 2023)	8 (2 core & 6 buffer)	IS 5182 Part 1-23 National Ambient Air Quality Standards, CPCB
*Noise Levels	Ambient Noise	Hourly observation for 24 Hours per location	8 (2core & 6buffer zone)	IS 9989 As per CPCB Guidelines
Ecology	Existing Flora and Fauna	Through field visit during the study period	Study Area	Primary Survey by Quadrante & 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_%
<b>BUILTUP</b>			
1	URBAN	437.44	1.28
2	RURAL	242.52	0.71
3	MINING	538.17	1.57
<b>AGRICULTURAL LAND</b>			
4	CROP LAND	22583.56	66.05
5	PLANTATION	103.63	0.30
6	FALLOW LAND	5547.96	16.23
<b>FOREST</b>			
7	FOREST	1917.91	5.61
<b>BARREN/WASTE LANDS</b>			
8	SCRUB LAND	2350.638739	6.87
<b>WETLANDS/ WATER BODIES</b>			
9	WATER BODIES/LAKE	470.08	1.37
<b>TOTAL</b>		34191.91	100.00

**LU/LC Interpretation:**

- ∞ The 10 km radius study area mainly comprises of crop land & Agriculture Plantation land accounting of 66.05% & 0.30% of the total study area. The study area also consists of fallow land of 16.23%.
- ∞ Water Bodies such as ponds/ lakes comprises of 1.37% of the core and buffer area.
- ∞ The Scrub land accounts of 7%. 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.
- ∞ 1.57% of the total study area is occupied by the mine industries of captive mines. The area occupied by Mainly Multicolored 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.
- ∞ 2% 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 Kartikad, Sarpraikad and Kunja 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 30.5% to 36.1% and Bulk Density of Soils in the study area varied between 1.02– 1.14 g/cc. The Water Holding

Capacity and Porosity of the soil samples is found to be medium i.e. ranging from 44.1 – 51.2 % . & 40.3-43.9%.

- The nature of soil is slightly alkaline to strongly alkaline with pH range 7.87 to 8.72
- The available Nitrogen content range between 295 to 516 kg/ha
- The available Phosphorus content range between 1.03 to 3.2kg/ha
- The available Potassium range between 19 to 40.3 mg/kg
- Whereas, the micronutrient as zinc (Zn) and iron (Fe) were found in the range of 0.95to 2.41 mg/kg; 1.89 to 2.61 mg/kg.

### 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 7.02 to 7.39 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 596 to 712 mg/l, the TDS mainly composed of carbonates, bicarbonates, Chlorides, phosphates and nitrates of calcium, magnesium, sodium and other organic matter.

##### Other parameters:

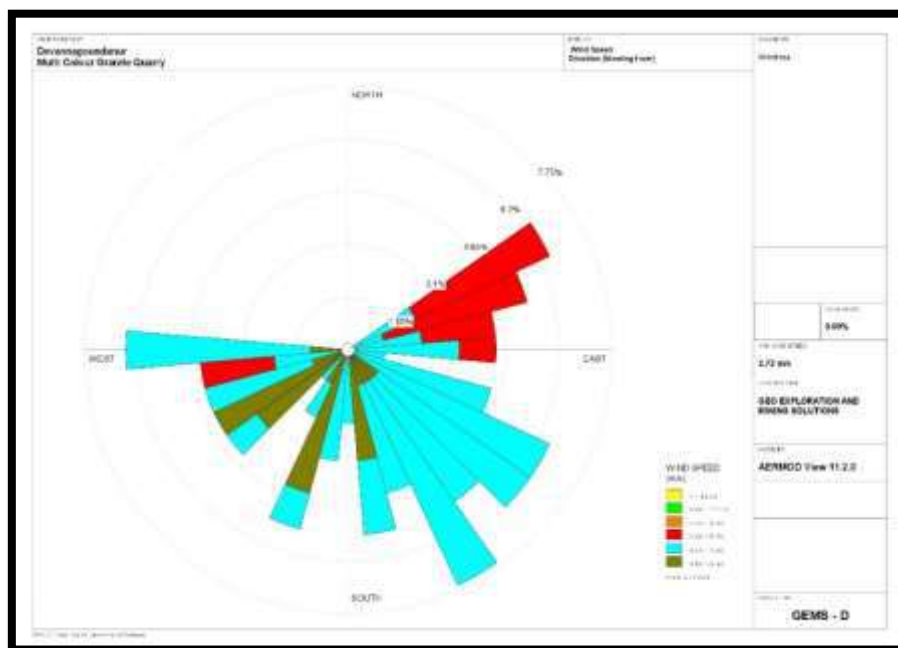
Chloride varied between 103mg/l and 112 mg/l. Nitrates varied from 6.8 to 12.8 mg/l, while sulphates varied from 47.8 to 51.6 mg/l.

#### Ground Water

The pH of the water samples collected ranged from 7.15 to 7.68 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 474-628 mg/l in all samples. Total hardness varied between 112.4-155.7mg/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 PM<sub>10</sub> is 49.3  $\mu\text{g}/\text{m}^3$  recorded at Near Proposed area and minimum is 42.0  $\mu\text{g}/\text{m}^3$  recorded at Kavadikanur Village. The concentration of PM<sub>2.5</sub> varies from 20.0  $\mu\text{g}/\text{m}^3$  Minimum concentration was recorded at Konganapuram Village and Maximum concentration of PM<sub>2.5</sub> recorded at 29.3  $\mu\text{g}/\text{m}^3$  Manjalkalpatti Village. SO<sub>2</sub> concentration level ranged from 7.5 – 5.0  $\mu\text{g}/\text{m}^3$  and NO<sub>2</sub> concentration ranged from 24.5– 20.5 $\mu\text{g}/\text{m}^3$  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 41.9 – 42.2dB (A) Leq and during night time were from 36.9 – 37.0 dB (A) Leq. Noise levels recorded in buffer zone during day time were from 36.1– 40.9 dB (A) Leq and during night time were from 34.6 – 37.3 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.

### 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**

- Permanent or temporary change on land use and land cover.
- Change in Topography: Topography of the ML area will change at the end of the life of the mine.
- Movement of heavy vehicles sometimes cause problems to agricultural land, human habitations due to dust, noise and it also causes traffic hazards.
- Due to degradation of land by pitting the aesthetic environment of the core zone may be affected.
- Earthworks during the rainy season increase the potential for soil erosion and sediment laden water entering the water ways.
- If no due care is taken wash off from the exposed working area may choke the water course & can also causes the siltation of water course.

## MITIGATION MEASURES

- The mining activity will be gradual confined in blocks and excavation will be undertaken progressively along with other mitigative measures like phase wise development of greenbelt etc.,
- Construction of garland drains all around the quarry pits and construction of check dam at strategic location in lower elevations to prevent erosion due to surface runoff during rainfall and also to collect the storm water for various uses within the proposed area
- Green belt development along the boundary within safety zone. The small quantity of water stored in the mined-out pit will be used for greenbelt.
- Thick plantation will be carried out on unutilized area, top benches of mined out pits, on safety barrier, etc.,
- At conceptual stage, the land use pattern of the quarry will be changed into Greenbelt area and temporary reservoir.
- In terms of aesthetics, natural vegetation surrounding the quarry will be retained (such as in a buffer area i.e., 7.5 m safety barrier and other safety provided) so as to help minimise dust emissions.
- Proper fencing will be carried out 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 major sources of water pollution normally associated due to mining and allied operations are:
  - Generation of waste water from vehicle washing.
  - Washouts from surface exposure or working areas
  - Domestic sewage
  - Disturbance to drainage course in the project area
  - Mine Pit water discharge
- Increase in sediment load during monsoon in downstream of lease area
- This being a mining project, there will be no process effluent. Waste from washing of machinery may result in discharge of Oil & grease, suspended solids.
- The sewage from soak pit may percolate to the ground water table and contaminate it.
- Surface drainage may be affected due to Mining
- Abstraction of water may lead to depletion of water table

#### **MITIGATION MEASURES**

- Garland drain, settling tank will be constructed along the project area. The Garland drain will be connected to settling tank and sediments will be trapped in the settling traps and only clear water will be discharged out to the natural drainage
- Rainwater will be collected in sump in the mining pits and will be allowed to store and pumped out to surface settling tank of 15 m x 10m x 3m to remove suspended solids if any. This collected water will be judiciously used for dust suppression and such sites where dust likely to be generated and for developing green belt. The proponent will collect and judiciously utilize the rainwater as part of rainwater harvesting system.
- Providing benches with inner slopes and through a system of drains and channels, allowing rain water to descent into surrounding drains, so as to minimize the effects of erosion & water logging arising out of uncontrolled descent of water
- Reuse the water collected during storm for dust suppression and greenbelt development within the mines
- Installing interceptor traps/oil separators to remove oils and greases. Water from the tipper wash-down facility and machinery maintenance yard will pass through interceptor traps/oil separators prior to its reuse;
- Using flocculating or coagulating agents to assist in the settling of suspended solids during monsoon seasons;

- Periodic (every 6 month once) 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
- Waste water 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 (every 6 month once) and analysing the quality of water in open well, bore wells and surface water

#### **4.4 AIR ENVIRONMENT**

##### **ANTICIPATED IMPACT**

- During mining, at various stages activities such as excavation, drilling, blasting, and transportation of materials, particular matter (PM), gases such as Sulphur dioxide, oxides of Nitrogen from vehicular exhaust are the main air pollutants.
- Emissions of noxious gases due to incomplete detonation of explosive may sometimes pollute the air.
- The fugitive dust released from the mining operations may cause effect on the mine workers who are directly exposed to the fugitive dust.
- Simultaneously, the air-borne dust may travel to longer distances and settle in the villages located near the mine lease area.

##### **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 tarpaulin.
- 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 through 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 trees proposed to be planted	Area to be covered in m <sup>2</sup>	Name of the species to be plant	Survival rate expected in %	No. of trees expected to be grown
2020-21	24	216	Neem, Casuarina, Pongamia pinnata, etc., trees	80	19
2021-22	24	216		80	19
2022-23	24	216		80	19
2023-24	24	216		80	19
2024-25	24	216		80	19

**P2**

Year	No. of trees proposed to be planted	Area to be covered in m <sup>2</sup>	Name of the species to be plant	Survival rate expected in %	No. of trees expected to be grown
2020-21	40	380	Neem, Casuarina, Pongamia pinnata, etc., trees	80	32
2021-22	40	380		80	32
2022-23	40	380		80	32
2023-24	40	380		80	32
2024-25	40	380		80	32

**P3**

Year	No. of trees proposed to be planted	Area to be covered in m <sup>2</sup>	Name of the species to be plant	Survival rate expected in %	No. of trees expected to be grown
2021-22	60	554	Neem, Casuarina, Pongamia pinnata, etc., trees	80	48
2022-23	60	554		80	48
2023-24	60	554		80	48
2024-25	60	554		80	48
2025-26	60	554		80	48

#### **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.

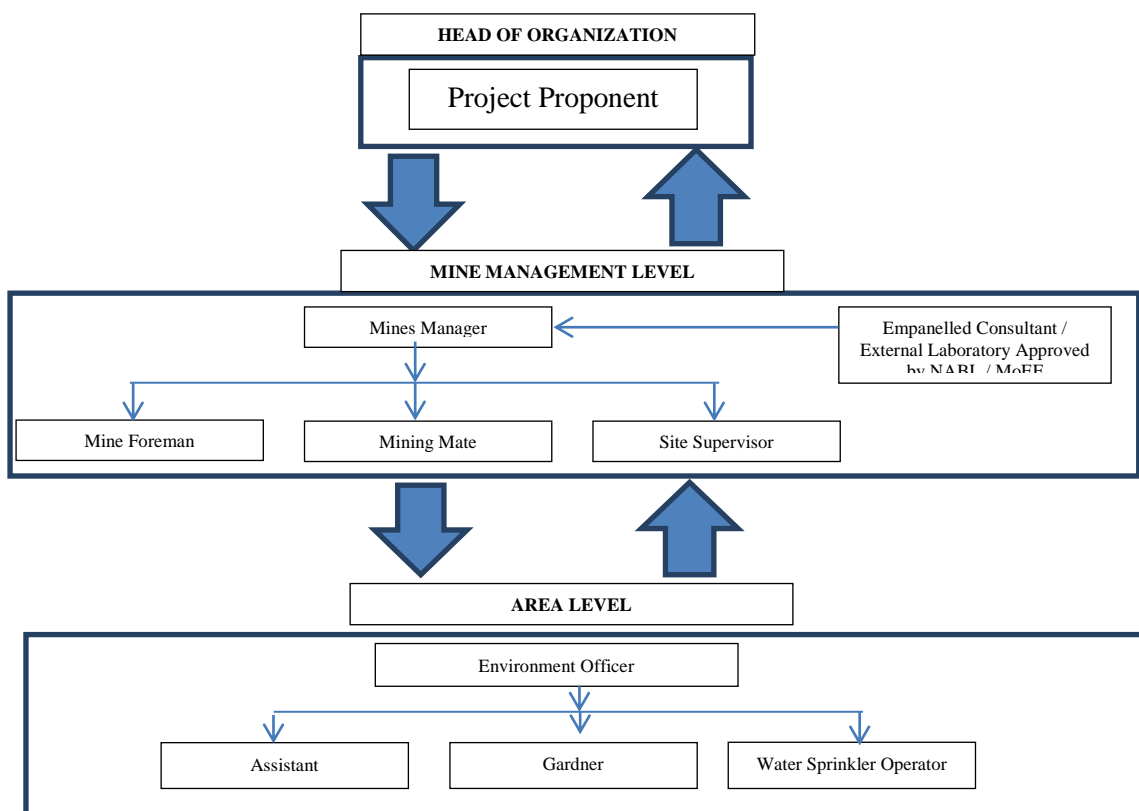
#### **6. ENVIRONMENT MONITORING PROGRAM**

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 ENVIRONMENTAL MONITORING CELL



## 6.2 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 <sub>2.5</sub> , PM <sub>10</sub> , SO <sub>2</sub> and NO <sub>x</sub> .
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 31<sup>st</sup> 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 <sup>3</sup>	Mineable Reserves of Granite in m <sup>3</sup>	Proposed production of ROM for five-year period in m <sup>3</sup>	Production of ROM Per Day in m <sup>3</sup>	Production of Granite Per day in m <sup>3</sup>	Number of Lorry loads of Granite per day
P1	2,19,107	43,821	45,672	30	6	1
P2	1,79,035	1,07,421	1,25,220	83	50	8
P3	4,10,870	1,64,348	1,88,330	126	50	8
E1	186202	37240	23052	15	3	1
E2	2,91,890	25,532	1,50,865	101	8	1
E3	7,61,050	4,65,215	50,517	34	20	3
<b>Total</b>	<b>20,48,154</b>	<b>8,43,577</b>	<b>5,83,656</b>	<b>389</b>	<b>137</b>	<b>22</b>

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 E1	45.3	49.2	50.7	
Habitation Near E2	42.6	54.1	54.4	
Habitation Near E3	46.5	41.0	47.6	

#### SOCIO ECONOMIC BENEFITS

Location code	Employment	Project Cost	CER
P1	22	Rs. 2,44,92,382	Rs.5,00,000/-
P2	41	Rs. 3,60,67,000/-	Rs.5,00,000/-
P3	41	Rs. 4,01,47,000	Rs.5,00,000/-
Total	104	Rs. 10,07,06,382	Rs.15,00,000/-

A total of 86 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

Multi colour Granite quarry of Devannagoundanur and Thangayur Village aims to Production of cumulatively is about 3,59,222m<sup>3</sup> of ROM and 1,59,598 Granite recovery (for the entire scheme of mining 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

## 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.