

EXECUTIVE SUMMARY

“B1” CATEGORY – MINOR MINERAL – CLUSTER - NON-FOREST LAND

TOTAL CLUSTER EXTENT: 10.13.3ha

GUTTUR BLACK GRANITE CLUSTER QUARRIES

At




Guttur Village, Bargur Taluk, Krish nagiri District.

Code	Name of the Proponent	S.F.No	Extent (Ha)
P1	Thiru.M. Kowshik Dhev	362/1(P), (Bit-1)	1.02.0
P2	Tvl.Magma Stone Exports	362/1 (P) (Bit-2)	1.42.0
P3	M/s. Om Sri Granites	397/1& 404/1	2.80.0
P4	Thiru.D. Mathiazhagan	309 (P),	1.64.0

**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.10243/SEAC/1 (a) ToR- 1579/2023 Dated:27.09.2023.
 P2- Lr No. SEIAA-TN/F.No.10245/SEAC/ToR-1557/2023 Dated: 27.09.2023.
 P3- Lr No. SEIAA-TN/F.No.10240/SEAC/ToR-1603/2023 Dated:07.11.2023.
 P4- File No.:10962 ToR Identification No.: T023B0108TN5368349N, Dated: 12.07.2024. .

<p>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 Cat ‘A’, sector 31 & 38 Cat ‘B’  Certificate No : NABET/EIA/2225/RA 0276  Phone: 0427-2431989, Email: ifthiahmed@gmail.com, geothangam@gmail.com Web: www.gemssalem.com</p>	<p>Laboratory EHS 360 LABS PRIVATE LIMITED, NABL Accredited Laboratory 10/2 Ground floor, 50th street, 7th Avenue, Ashok Nagar, Chennai – 600 083.</p>
<p><u>Baseline Monitoring Period</u> Oct -Dec 2023</p>	
<p>JANUARY 2024</p>	

1. INTRODUCTION

This EIA report is prepared by considering Cumulative load of all proposed & existing quarries around Guttur Colour Granite Quarry (Total Cluster 10.13.3 Ha) lease at Guttur 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.10243/SEAC/1 (a) ToR- 1579/2023 Dated:27.09.2023.

P2- Lr No. SEIAA-TN/F.No.10245/SEAC/ToR-1557/2023 Dated: 27.09.2023.

P3- Lr No. SEIAA-TN/F.No.10240/SEAC/ToR-1603/2023 Dated:07.11.2023.

P4- File No.:10962 ToR Identification No.: T023B0108TN5368349N, Dated: 12.07.2024

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 Guttur 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	:	Tvl.Magma Stone Exports (K.P.Anand – Managing Partner)
Address	:	S.No,480/1, Thuppugana palli Village, Shoolagiri Taluk, Krishnagiri District,
State	:	Tamil Nadu
Pin code	:	635 119

Mobile No : +91 94432 01111
 Designation : Partnership firm

1.1.4 Identification of Project Proponent-P3

Name of the Project Proponent : M/s. Om Sri Granites
 (Authorized Partner of Thiru.B.Sharath)
 Address : No.354/2B & 354/3B, Guttur Village,
 Bugur Taluk, Krishnagiri District,
 State : Tamil Nadu
 Pin code : 635 104
 Mobile No : 91 94483 86058 & 99868 19125
 Designation : Partnership Firm

1.1.5 Identification of Project Proponent-P4

Name of the Project Proponent : Thiru.D.Mathiazhagan
 S/o.Thiru.Devaraj Gounder.
 Address : No.58-B, Gandhi Nagar,
 Krishnagiri District,
 State : Tamil Nadu
 Pin code : 635 001
 Mobile No : 91 9842744190
 Designation : Individual

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	362/1(P), (Bit-1) Guttur Village	1.02.0	Lr No.SEIAA-TN/F.No.10243/SE AC/1 (a) ToR-1579/2023 Dated:27.09.2023
P2	Tvl.Magma Stone Exports	362/1 (P) (Bit-2) Guttur Village	1.42.0	Lr No. SEIAA-TN/F.No.10245/SE AC/ToR-1557/2023 Dated: 27.09.2023
P3	M/s. Om Sri Granites	397/1& 404/1, Guttur Village	2.80.0	Lr No. SEIAA-TN/F.No.10240/SE AC/ToR-1603/2023 Dated:07.11.2023
P4	Thiru.D. Mathiazhagan	309 (P), Guttur Village	1.64.0	File No.:10962 ToR Identification No.: T023B0108TN5368 349N, Dated: 12.07.2024.
TOTAL			6.88.0 Ha	
EXISTING QUARRY				
CODE	Name of the Owner	S.F. Nos & Village	Extent	Status
E-1	M/s. Om Sri Granites	354/2B & etc., Guttur Village	3.25.30	14/01/2020 To 13/01/2040
Total			3.25.30 Ha	
EXPIRED/ ABANDONED QUARRIES				
NIL				
TOTAL CLUSTER EXTENT			10.13.3 Ha	

TABLE 1.3 SALIENT FEATURES OF THE PROPOSAL “P1”

Name of the Quarry	Thiru.M.Kowshik Dhev Black granite quarry	
Land type	Government Poramboke Land	
Previous lease details	Tender Quarry – Fresh lease	
Lease period	20 years	
Mining Lease area	1.02.0 Ha	
Location	362/1(P), (Bit-1), Guttur Village, Bargur Taluk, Krishnagiri District	
Life of the Mine	20 years	
Proposed Depth for five years plan period	18m	
Ultimate Depth	80m(L) x72m(B) x 23m(D)	
Toposheet No	57- L/7	
Latitude between	12°27'02.2269"N to 12°27'03.8586"N	
Longitude between	78°24'16.5673"E to 78°24'21.4594"E	
Topography	The area is situated almost on an Undulated terrain with dolerite dyke outcrop noticed 2 meters above the ground level. A Dolerite dyke intruded into the country rock discordantly with a trend of almost East-West with vertical dipping. The dyke shows pinching and swelling structure. The area is ranges from 436-439m above from MSL. The area is a dry barren land devoid of Agriculture and Habitations. The land is not used for any specific vegetation.	
Water level	63m-70m	
Water Requirements	1.0 KLD	
Machinery proposed	Jackhammer	3
	Compressor	2
	Excavator	1
	Tipper	1
	Diesel Generator	1
	Diamond wire saw	1
Proposed manpower deployment	17	
A. Project cost	Rs. 2,01,20,000/-	
B.EMP Cost	Rs. 3,10,000/-	
Total Project cost	Rs.2,04,30,000/-	
C.CER cost	Rs. 5,00,000/-	
Nearest Habitation	330m·N	
Reserved Forest	Puligunda 1-R.F- 3km·SW Thogarapalli R.F – 6.0km·W Nandibanda R.F – 8.5km·N	
Wild Life Sanctuary	Cauvery North Wildlife Sanctuary – 47 Km ·W Vellode Birds sanctuary – 155.4km·SW	

TABLE 1.4 SALIENT FEATURES OF THE PROPOSAL “P2”

Name of the Quarry	Tvl.Magma Stone Exports Black Granite Exports (K.P.Anand – Managing Partner)	
Land type	Government Poramboke Land-Fresh Lease	
Lease period	20 years	
Mining Lease area	1.42.0 Ha	
Location	362/1 (P) (Bit-2) of Guttur Village, Bargur Taluk, Krishnagiri District	
Mining Period	5 Years	
Life of the Mine	20 years	
Previous lease particulars	Tender Quarry – Fresh lease	
Proposed Depth	23m	

Ultimate Depth	157m(L) x 71m (W) x 23m (D)	
Toposheet No	57L/07	
Latitude between	12°27'00.3243"N to 12°27'03.9202"N	
Longitude between	78°24'25.7951"E to 78°24'32.0839"E	
Topography	The area is situated almost on an Undulated terrain with dolerite dyke outcrop noticed 4 meters above the ground level. A Dolerite dyke intruded into the country rock discordantly with a trend of almost East-West with vertical dipping. The dyke shows pinching and swelling structure. The area is ranges from 470m above from MSL. The area is a dry barren land devoid of Agriculture and Habitations. The land is not used for any specific vegetation.	
Water level	70m-63m	
Water requirement	1.0KLD	
Machinery proposed	Jackhammer	4
	Compressor	2
	Crawler crane	-
	Mobile crane	-
	Excavator	1
	Tipper	1
	Diesel Generator	1
	Diamond wire saw	1
Proposed manpower deployment	18	
A. Project cost	Rs. 2,62,20,000/-	
B.EMP Cost	Rs. 3,10,000/-	
Total Project cost	Rs. 2,65,30,000/-	
C.CER cost	Rs.5,00,000/-	
Nearest Habitation	470m-NW	
Reserved Forest	<ul style="list-style-type: none"> • Puligunda 1-R.F- 3.5km-SW • Thogarapalli R.F – 6.18km-W • Nandibanda R.F – 8.5km-N 	
Wild Life Sanctuary	Cauvery North Wildlife Sanctuary – 48km -W Vellode Birds sanctuaries – 155.4km-SW	

TABLE 1.5 SALIENT FEATURES OF THE PROPOSAL “P3”

Name of the Quarry	M/s. Om Sri Granites Black Granite Quarry (Thiru. B. Sharath - Partner)	
Land type	Government Poramboke Land	
Lease period	20 years	
Mining Lease area	2.80.0 Ha	
Location	397/1 and 404/1, of Guttur Village, Bargur Taluk, Krishnagiri District	
Mining Period	5 Years	
Life of the Mine	20 years	
Previous lease particulars	Tender Quarry – Fresh lease	
Proposed Depth	17m	
Ultimate Pit dimension	431m(L) x 44m (W) x 17m (D)	
Toposheet No	57L/07	
Latitude between	12°26'59.42"N to 12°27'07.57"N	
Longitude between	78°23'55.21"E to 78°24'11.35"E	
Topography	The area is undulated terrain. The gradient is gentle towards southeast side and altitude of the area is ranges from 437m to 443m Amsl.	
Water level	64m-59m Bgl	
Water requirement	1.8KLD	
Machinery proposed	Jackhammer	4

	Compressor	1
	Crawler crane	1
	Excavator	1
	Tipper	2
	Diesel Generator	1
	Diamond wire saw	1
Proposed manpower deployment		30
A. Project cost		Rs. 5,33,30,000/-
B.EMP Cost		Rs. 3,80,000/-
Total Project cost		Rs. 5,37,10,000/-
C.CER cost		Rs.5,00,000/-
Nearest Habitation		490m-NE
Reserved Forest		<ul style="list-style-type: none"> • Puligunda 1-R.F- 3.5km-SW • Thogarapalli R.F – 5.4km-W • Nandibanda R.F – 8.5km-N • Bargur R.F – 9.6km-N
Wild Life Sanctuary		Cauvery North Wildlife Sanctuary – 47km -W Vellode Birds sanctuaries – 155.2km-SW

TABLE 1.6 SALIENT FEATURES OF THE PROPOSAL “P4”

Name of the Quarry		Thiru.D.Mathiazhagan Black Granite Quarry
Land type		Government Poramboke Land
Lease period		20 years
Mining Lease area		1.64.0 Ha
Location		309 (P) of Guttur Village, Bargur Taluk, Krishnagiri District
Mining Period		5 Years
Life of the Mine		20 years
Previous lease particulars		Tender Quarry – Fresh lease
Proposed Depth		13m
Ultimate Pit dimension		236m(L) x 44m (W) x 23m (D)
Toposheet No		57L/07
Latitude between		12°27'00.3243"N to 12°26'59.9640"N
Longitude between		78°24'32.0839"E to 78°24'40.8703"E
Topography		The area is situated almost on an undulated terrain with dolerite dyke outcrop noticed with an average height 3m Agl. A dolerite dyke intruded into the country rock discordantly with a trend of almost East-West with vertical dipping.
Water level		70m-63m Bgl
Water requirement		1.0 KLD
Machinery proposed	Jackhammer	4
	Compressor	2
	Crawler crane	-
	Excavator	1
	Tipper	1
	Diesel Generator	1
	Diamond wire saw	1
Proposed manpower deployment		19
A. Project cost		Rs. 3,18,30,000/-
B.EMP Cost		Rs. 3,10,000/-
Total Project cost		Rs. 3,21,40,000
C.CER cost		Rs.5,00,000/-
Nearest Habitation		560m-NW

Reserved Forest	Puligunda 1-R.F- 3.5km-SW Thogarapalli R.F – 6.3km-W Nandibanda R.F – 8.5km-N
Wild Life Sanctuary	Cauvery North Wildlife Sanctuary – 47km -W

Source: Approved mining plan and PFR

1.3 STATUTORY DETAILS

Project – P1

- ☞ Proponent applied for Black Granite quarry lease Dated 07.11.2020.
- ☞ precise area communication has been granted as per Govt. Letter No. 894/MME.2/ 2021-1, Dated: 26.02.2021 for twenty years.
- ☞ Mining plan was approved by the Director of Geology and Mining, Guindy, Chennai Vide Rc. No. 6935/MM4/2020, Dated: 17.05.2023.
- ☞ Proponent applied for ToR to get Environmental Clearance vide online Proposal No. SIA/TN/MIN/436909/2023 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 658th SEIAA meeting held on 27.09.2023 and issued ToR vide - Lr No. SEIAA-TN/F.No.10243/SEAC/1 (a) ToR- 1579/2023 Dated:27.09.2023.

Project – P2

- ☞ Proponent applied for Black Granite quarry lease Dated 07.11.2020.
- ☞ The precise area communication has been granted as per Govt. letter No. 889/MME.2/2022-1, Dated: 26.02.2021 for a period of twenty years.
- ☞ Mining plan was approved by the Director of Geology and Mining, Guindy, Chennai Vide Rc. No. 6936/MM4/2023 dated: 11.05.2023.
- ☞ Proponent applied for ToR to get Environmental Clearance vide online Proposal No. SIA/TN/MIN/436898/2023 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 658th SEIAA meeting held on 26.09.2023 & 27.09.2023 and issued ToR vide Lr No. SEIAA-TN/F.No.10245/SEAC/ToR-1557/2023 Dated: 27.09.2023.

Project – P3

- ☞ Proponent applied for Black Granite quarry lease Dated 07.11.2020.
- ☞ The precise area communication has been granted as per Govt. letter No.897/MME.2/2022-1, Dated: 26.02.2021 for a period of twenty years.
- ☞ The mining plan was prepared in respect of Black granite quarry and the same was approved by the Commissioner, Department of Geology and Mining, Guindy, Chennai vide letter No. 6938/MM4/2020 dated: 18.04.2023.
- ☞ Proponent applied for ToR to get Environmental Clearance vide online Proposal No. SIA/TN/MIN/445220/2023 Dated: 21.09.2023.
- ☞ The proposal was placed in 417th SEAC meeting held on 18.10.2023 and the committee recommended for issue of ToR.
- ☞ The proposal was considered in 671th SEIAA meeting held on 07.11.2023 and issued ToR vide SEIAA-TN/F.No.10240/SEAC/ToR-1603/2023 Dated:07.11.2023.

Project – P4

- ☞ Proponent applied for Black Granite quarry lease Dated 07.11.2020.
- ☞ The precise area communication has been granted as per Govt. letter No.892/MME.2/2021-1, Dated: 26.02.2021 for a period of twenty years.
- ☞ The mining plan was prepared in respect of Black granite quarry and the same was approved by the Commissioner, Department of Geology and Mining, Guindy, Chennai vide letter No. 6937/MM4/2020 dated: 17.05.2023.

- ☞ Proponent applied for ToR to get Environmental Clearance vide online Proposal No. SIA/TN/MIN/447565/2023 Dated: 21.10.2023.
- ☞ The proposal was placed in 477th SEAC meeting held on 20.06.2024 and the committee recommended for issue of ToR.
- ☞ The proposal was considered in 736th SEIAA meeting held on 10.07.2024 and issued ToR Identification No.: T023B0108TN5368349N, Dated: 12.07.2024.

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 –4km-SW SH131 — Bargur-Thirupattur– 4.8km-NE
Nearest Village	Guttur-1km-SE
Nearest Town	Bargur- 10.5km – NW
Nearest Railway Station	Tirupattur Railway Station- 17.0km - NE
Nearest Airport	Bangalore Airport - 112.0km - NW
Seaport	Ennore Port- 228km- North East

2.2 LAND USE PATTERN OF THE PROPOSED PROJECTS

Land Use Pattern of the Proposed Project -P1

Description	Present area (Ha)	Area to be required during this Mining Plan period (Ha)	Area at the end of life of quarry (Ha)
Area under quarry	Nil	0.29.0	0.57.0
Waste dump	Nil	0.01.0	0.01.0
Infrastructure	Nil	0.01.0	0.01.0
Roads	Nil	0.43.0	0.43.0
Green Belt	Nil	0.10.0	Backfilling
Unutilized Area	1.02.0	0.18.0	Nil
Grand Total	1.02.0	1.02.0	1.02.0

Source: Approved Mining Plan

Land Use Pattern of the Proposed Project -P2

Description	Present area (Ha)	Area to be required during this Mining Plan period (Ha)	Area at the end of life of quarry (Ha)
Area under quarrying	Nil	0.45.0	1.09.0
Infrastructure	Nil	0.01.0	0.01.0
Roads	Nil	0.01.0	0.01.0
Green Belt	Nil	0.37.0	0.31.0
Dump	Nil	0.14.5	Backfilling
Unutilized Area	1.42.0	0.43.5	Nil
Grand Total	1.42.0	1.42.0	1.42.0

Land Use Pattern of the Proposed Project -P3

Description	Present area (Ha)	Area to be required during this Mining Plan period (Ha)	Area at the end of life of quarry (Ha)
Area under quarrying	Nil	1.67.4	1.92.4
Waste dump	Nil	0.21.5	Backfilling
Infrastructure	Nil	0.02.0	0.02.0
Roads	Nil	0.01.0	0.03.0
Green Belt	Nil	0.24.0	0.82.0
Stocking Blocks	2.80.0	0.64.1	Nil
Grand Total	2.80.0	2.80.0	2.80.0

Source: Approved Mining Plan

Land Use Pattern of the Proposed Project -P4

Description	Present area (Ha)	Area to be required during this Mining	Area at the end of life of quarry (Ha)
Area under quarrying	Nil	0.64.0	1.92.0
Waste dump	Nil	0.01.0	0.01.0
Infrastructure	Nil	0.01.0	0.01.0
Roads	Nil	0.48.0	0.43.0
Green Belt	Nil	0.31.0	Backfilling
Stocking Blocks	1.64.0	0.19.0	Nil
Grand Total	1.64.0	1.64.0	1.64.0

2.3 OPERATIONAL DETAILS OF LEASE APPLIED AREA

Operational Details - P1

Description	P1
Geological Resources ROM	72,000
Granite Recovery (10 % in m ³)	7,200
Granite Waste (90 % in m ³)	64,800
Weathered rock(m ³)	20,880
Side Burden(m ³)	1,03,200
Top Soil in m ³	10,440
Mineable Reserves ROM	34,960
Granite Recovery (10 % in m ³)	3,496
Granite Waste (90 % in m ³)	31,464
Weathered rock (m ³)	10,920
Side Burden (m ³)	27,720
Top Soil in m ³	5,840
Proposed Production for five years plan period ROM	8,250
Granite Recovery (10% in m ³)	825
Granite Waste (90 % in m ³)	7,425
Weathered rock(m ³)	4,588
Top Soil in m ³	2,432
Number of Working Days	300
Production of ROM per day in five-year plan period	6
Production of Granite per day	1
Total Waste per day (Granite waste + Weathered)	8

Source: Approved Mining Plan

Operational Details - P2

Description	P2
Geological Resources ROM	1,00,200
Granite Recovery (10 % in m ³)	10,020
Granite Waste (90 % in m ³)	90,180
Weathered rock(m ³)	28,694
Side Burden(m ³)	1,36,640
Total waste (Granite waste + Weathered)	1,19,144
Top Soil in m ³	13,347
Mineable Reserves ROM	85,390
Granite Recovery (10 % in m ³)	8,539
Granite Waste (90 % in m ³)	76,851
Weathered rock (m ³)	18,862
Side Burden (m ³)	37,915
Total waste (Granite waste + Weathered)	95,713
Top Soil in m ³	9,806
Proposed Production for five years plan period ROM	21,285
Granite Recovery (10% in m ³)	2,129
Granite Waste (90% in m ³)	19,156
Weathered rock(m ³)	6,710
Top Soil in m ³	3,591
Number of Working Days	300
Production of ROM per day in five-year plan period	14
Production of Granite per day	1
Total Waste per day (Granite waste + Weathered Rock)	17

Source: Approved Mining Plan

Operational Details –P3

Description	P3
Geological Resources ROM	2,18,250
Granite Recovery (10 % in m ³)	21,825
Granite Waste (90 % in m ³)	1,96,425
Side Burden m ³	1,98,060
Total waste (Granite waste + SB)	3,94,485
Top Soil in m ³	55,508
Mineable Reserves ROM	1,33,415
Granite Recovery (10% in m ³)	13,342
Granite Waste (90% in m ³)	1,20,073
Side Burden m ³	12,545
Total waste (Granite waste + Side Burden)	1,32,618
Top Soil in m ³	34,460
Proposed Production for five years plan period ROM	33,270
Granite Recovery (10% in m ³)	3,327
Granite Waste (90% in m ³)	29,943
Side Burden m ³	3,000
Total waste (Granite waste +SB)	32,943
Top Soil in m ³	29,300
Number of Working Days	300
Production of ROM per day in five-year plan period	22
Production of Granite per day	2
Total Waste per day (Granite waste +SB)	22

Source: Approved Mining Plan

Operational Details – P4

Description	P4
Geological Resources ROM	1,38,950
Granite Recovery (10 % in m ³)	13,895
Granite Waste (90 % in m ³)	1,25,055
Weathered rock(m ³)	32,362
Side Burden(m ³)	1,22,836
Total waste (Granite waste + Weathered)	157,417
Top Soil in m ³	16,181
Mineable Reserves ROM	1,11,286
Granite Recovery (10 % in m ³)	11,130
Granite Waste (90 % in m ³)	1,00,156
Weathered rock (m ³)	24,056
Side Burden (m ³)	40,464
Total waste (Granite waste + Weathered)	1,32,618
Top Soil in m ³	12,754
Proposed Production for five years plan period ROM	27,150
Granite Recovery (10% in m ³)	2,715
Granite Waste (90% in m ³)	24,435
Weathered rock(m ³)	12,208
Side Burden (m ³)	16,110
Top Soil in m ³	6,496
Number of Working Days	300
Production of ROM per day in five-year plan period	18
Production of Granite per day	2
Total Waste per day (Granite waste + Weathered Rock)	24

Approved Mining Plan

Figure 2.1 Google Image Showing Project Area-P1

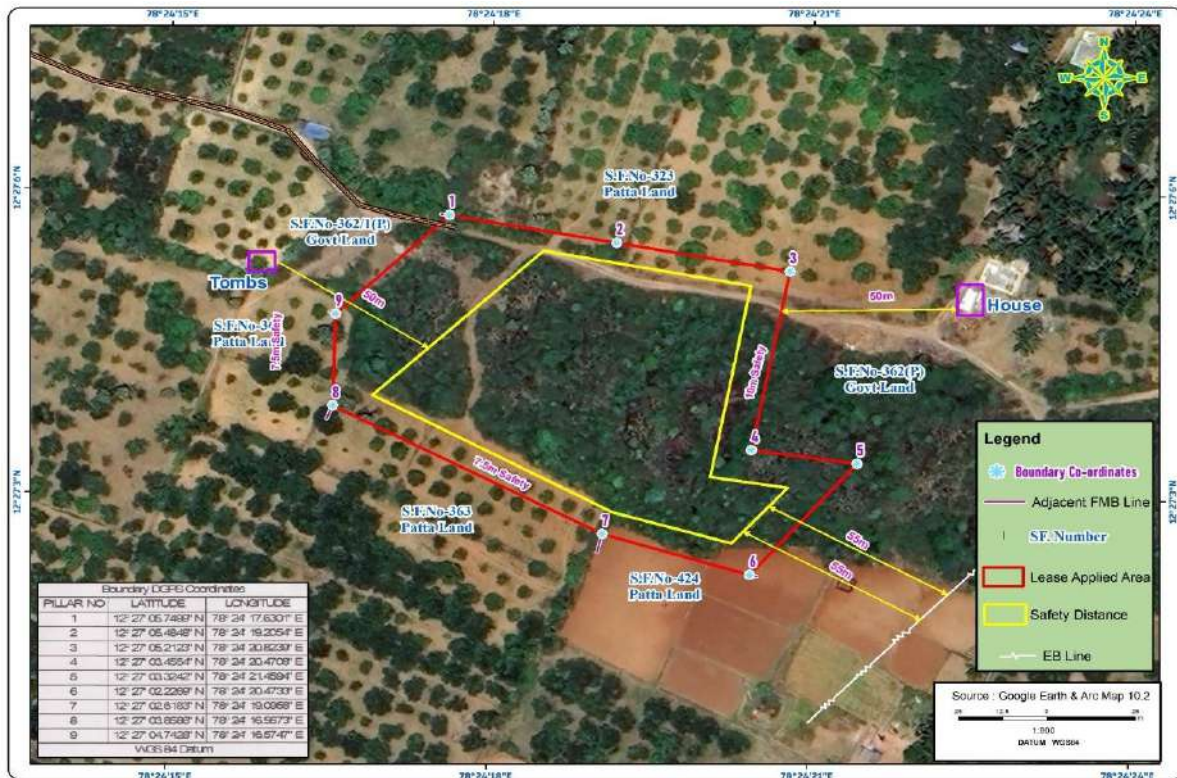


Figure 2.2: Google Image Showing Project Area-P2



Figure 2.3: Google Image Showing Project Area-P3

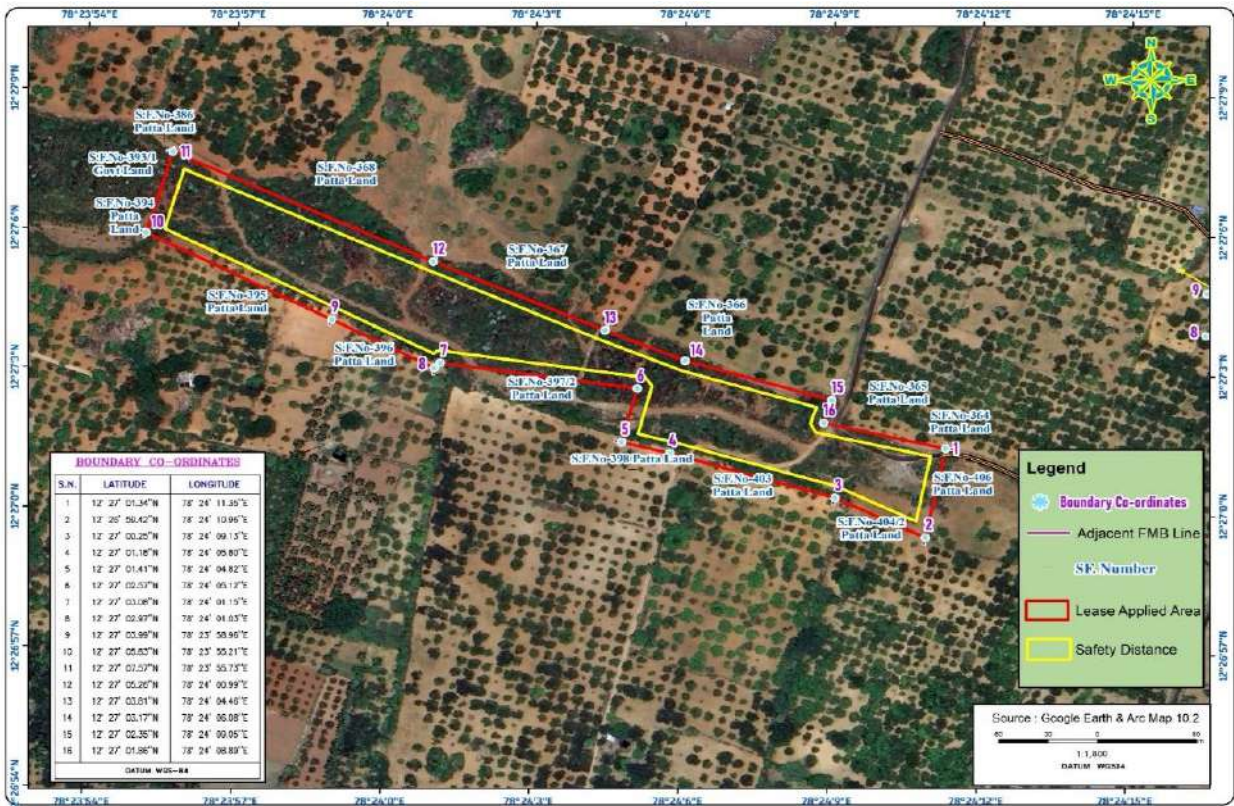


Figure 2.4: Google Image Showing Project Area-P4



FIGURE – 2.5: GOOGLE IMAGE SHOWING CLUSTER (500 m QUARRIES)

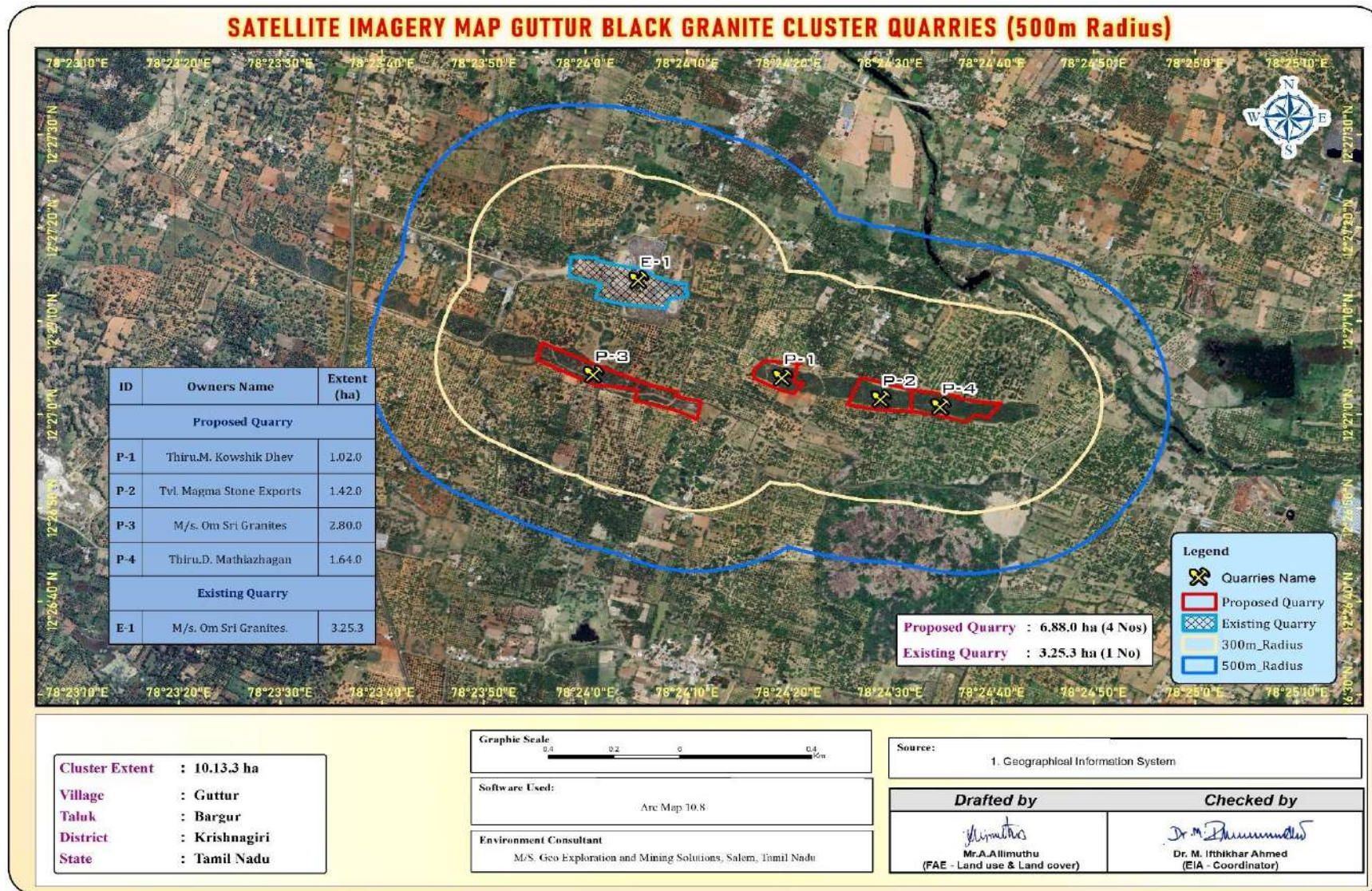


FIGURE – 2.6: TOPOSHEET MAP COVERING 10 KM RADIUS

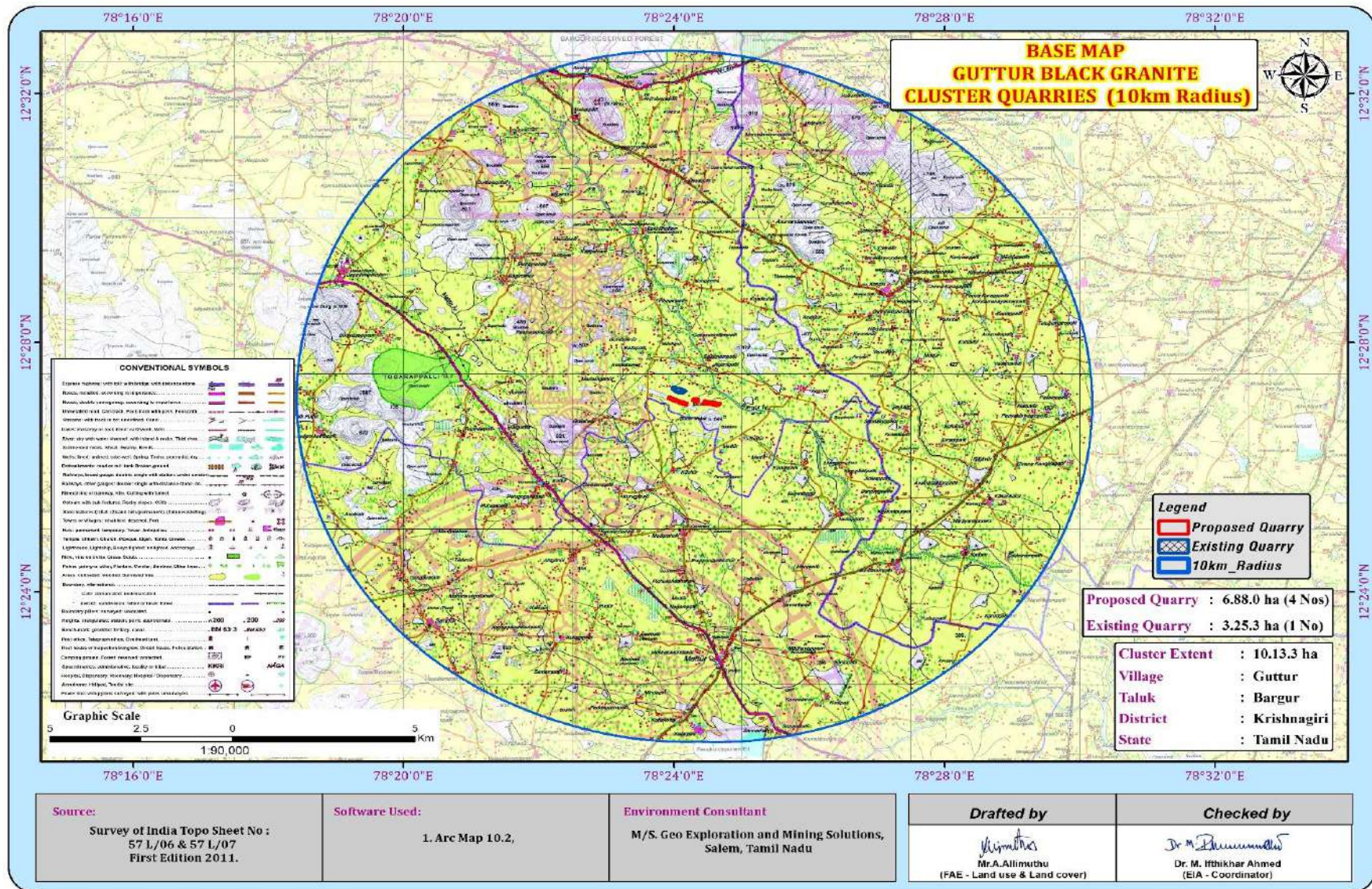
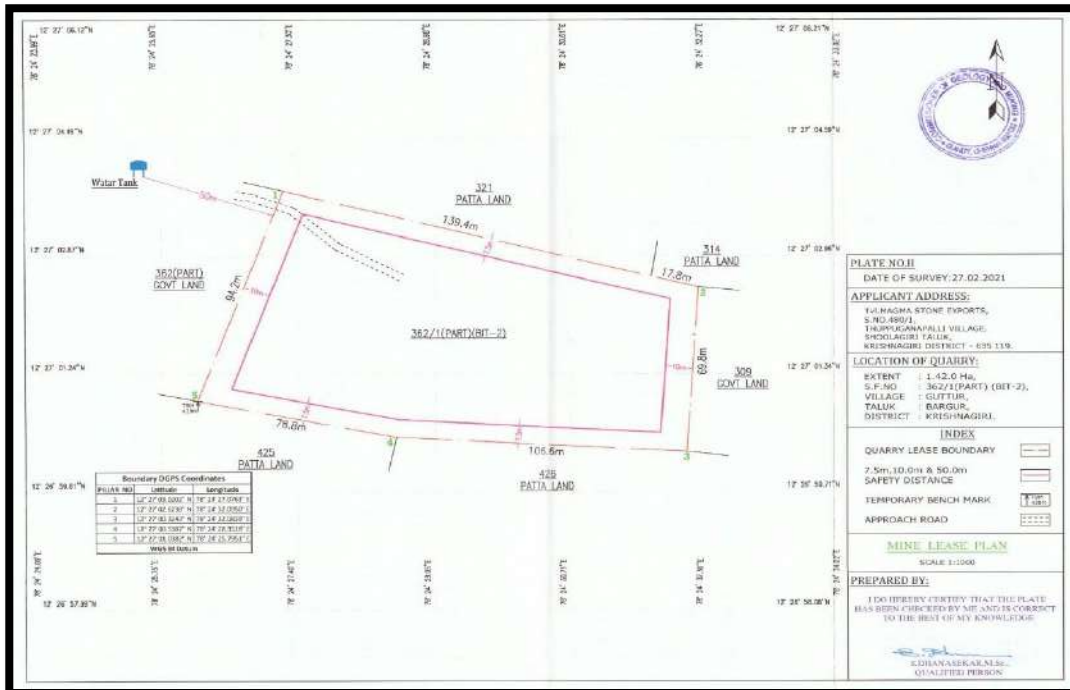


FIGURE – 2.7: QUARRY LEASE PLAN & SURFACE PLAN

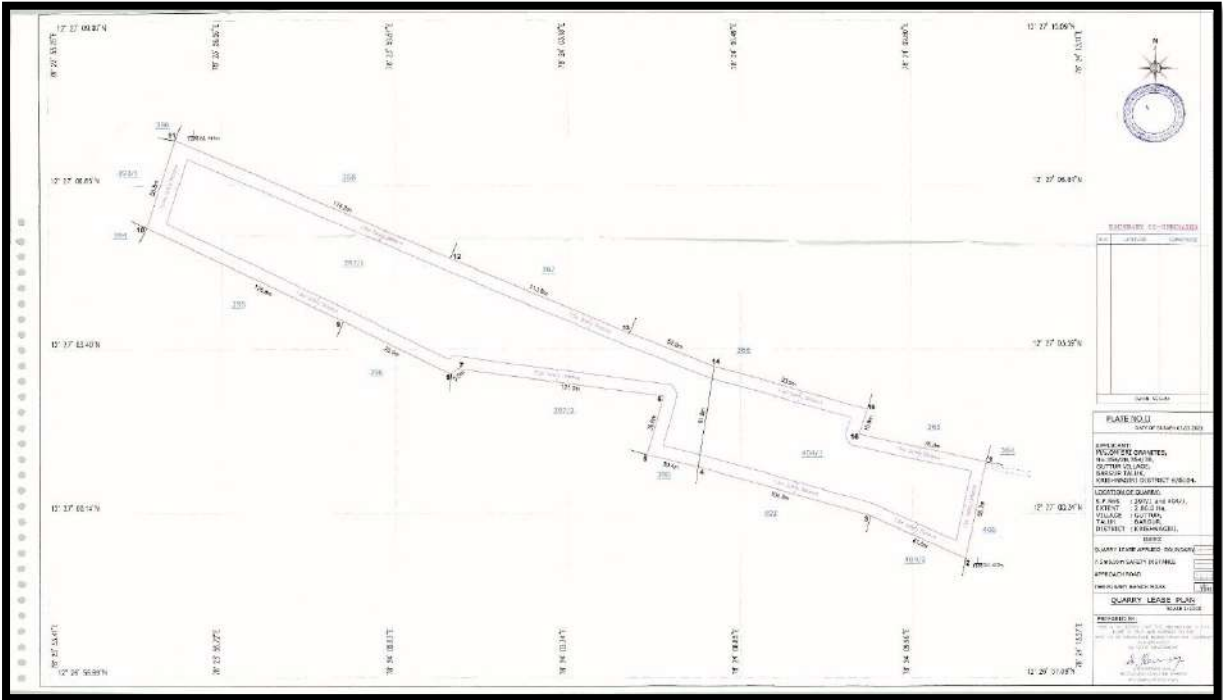
P1



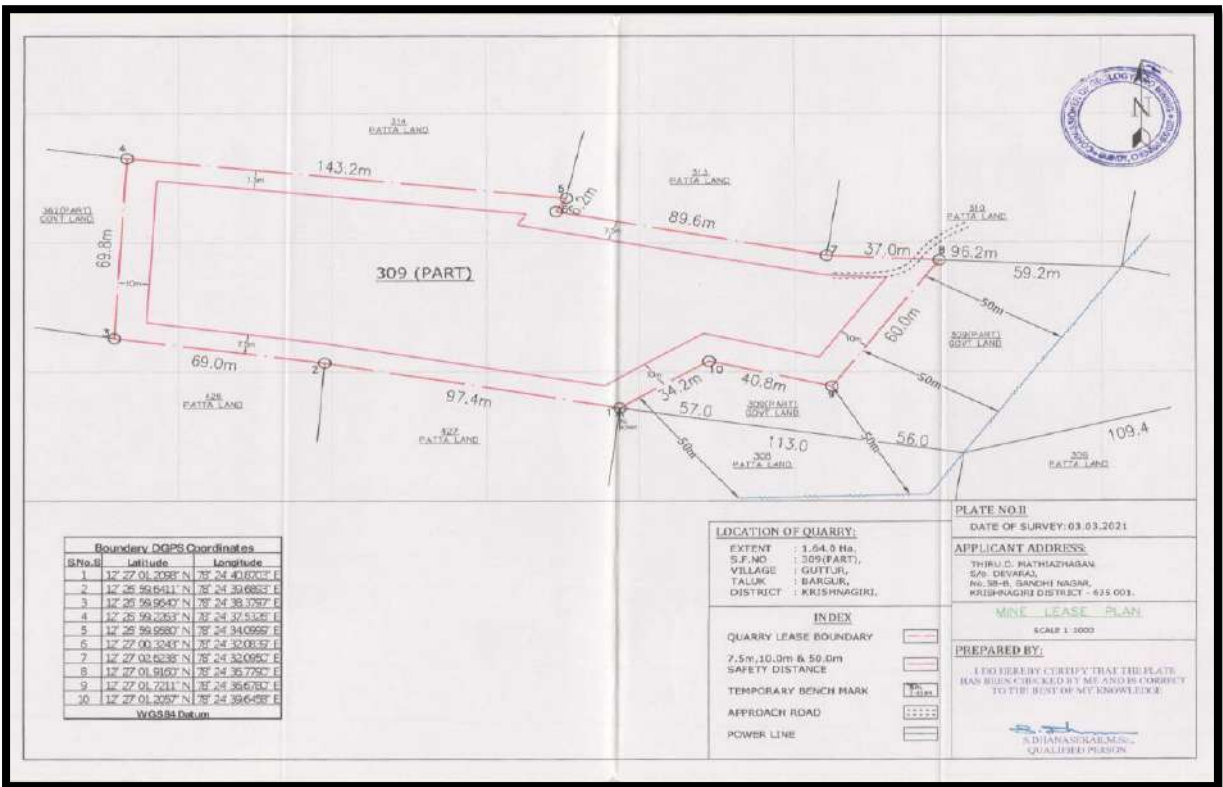
P2



P3



P4



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

P1

Drilling Equipment's					
Type	No of Unit	Dia of Hole mm	Size capacity	Make	Motive Power
Jack hammer	3	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	-	Cp125 D5P (H.P)
Loading Equipment					
Type	No of Unit	Capacity	Make	Motive Power	
Excavator	1	300	Tata Hitachi	Diesel Drive	
Haulage within the Mine & Transport Equipment					
Type	No of Unit	Capacity	Make	Motive Power	
Tipper	1	10 tonnes	Tata	Diesel Drive	

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P2

Drilling Equipment's					
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	-	Cp125 D5P (H.P)
Loading Equipment					
Type	No of Unit	Capacity	Make	Motive Power	
Excavator	1	300	Tata Hitachi	Diesel Drive	
Haulage within the Mine & Transport Equipment					
Type	No of Unit	Capacity	Make	Motive Power	
Tipper	1	10 tonnes	Tata	Diesel Drive	

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P3

Drilling Equipment's					
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	1	-	400psi	Atlas Copco	Diesel drive
Diamond Wire saw	1	-	30m ³ /day	Optima	Diesel Generator
Diesel Generator	1	-	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	1	10 tonnes	Tata	Diesel Drive	

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P4

Drilling Equipment's					
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	1	-	400psi	Atlas Copco	Diesel drive
Diamond Wire saw	1	-	30m ³ /day	Optima	Diesel Generator
Diesel Generator	1	-	125kva	Powerica	Diesel
Loading Equipment					
Type	No of Unit	Capacity	Make	Motive Power	
Excavator	1	300	Tata Hitachi	Diesel Drive	
Haulage within the Mine & Transport Equipment					
Type	No of Unit	Capacity	Make	Motive Power	
Tipper	1	10 tonnes	Tata	Diesel Drive	

Approved Mining Plan

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 in m	Width in m	Depth in m
P-1	80	72	23
P-2	157	71	23
P-3	431	44	17
P-4	236	44	23

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 SO2 NOX Fugitive Dust	24 hourly twice a week (October – December 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 (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.

Source: On-site monitoring/sampling by EHS 360 Labs Private Limited in association with GEMS

* All monitoring and testing are been carried out as per the Guidelines of CPCB and MoEF & CC

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	RURAL	348.17	0.94
2	URBAN	1253.38	3.39
3	MINING	168.22	0.46
AGRICULTURAL LAND			
4	CROP LAND	26806.64	72.51
5	PLANTATION	2519.38	6.81
FOREST			
6	FOREST	1133.36	3.07
BARREN/WASTE LANDS			
7	SCRUB LAND	3370.07	9.12
WETLANDS/ WATER BODIES			
8	WATER BODIES/LAKE	1371.33	3.71
TOTAL		36970.55	100.00

LU/LC Interpretation:

- ☞ The 10 km radius study area mainly comprises of crop land & Plantation accounting of 72.51% & 6.81% of the total study area. The study area also consists of Scrub land of 9.12%.
- ☞ Water Bodies such as ponds/ lakes comprises of 3.71% of the core and buffer area.
- ☞ The forest land accounts of 3.07%. 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.

- ☞ 0.46% of the total study area is occupied by the mine industries of captive mines. The area occupied by Mainly Black 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.
- ☞ 4.3% 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 Jinjampadi, Guttur, Ambali, and Batlapalli 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 31.9% to 33.6% and Bulk Density of Soils in the study area varied between 1.05– 1.16 g/cm³. The Water Holding Capacity 44.1 to 49.1.

- The nature of soil is slightly alkaline to strongly alkaline with pH range 8.19 to 8.77
- The available Nitrogen content range between 379.2 mg/kg to 410.7 mg/kg
- The available Phosphorus content range between 1.66 to 5.5 mg/kg
- The available Potassium range between 29.1mg/kg to 35.5 mg/kg
- Whereas, the micronutrient as zinc (Zn) and iron (Fe) were found in the range of 1.68 to 3.3 mg/kg; 1.59 to 3.01 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 7.04 to 7.67 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 438 to 468mg/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 90mg/l to 110mg/l. Nitrates varied from 6.1 to 7.1 mg/l, while sulphates varied from 48.6 to 65.7mg/l.

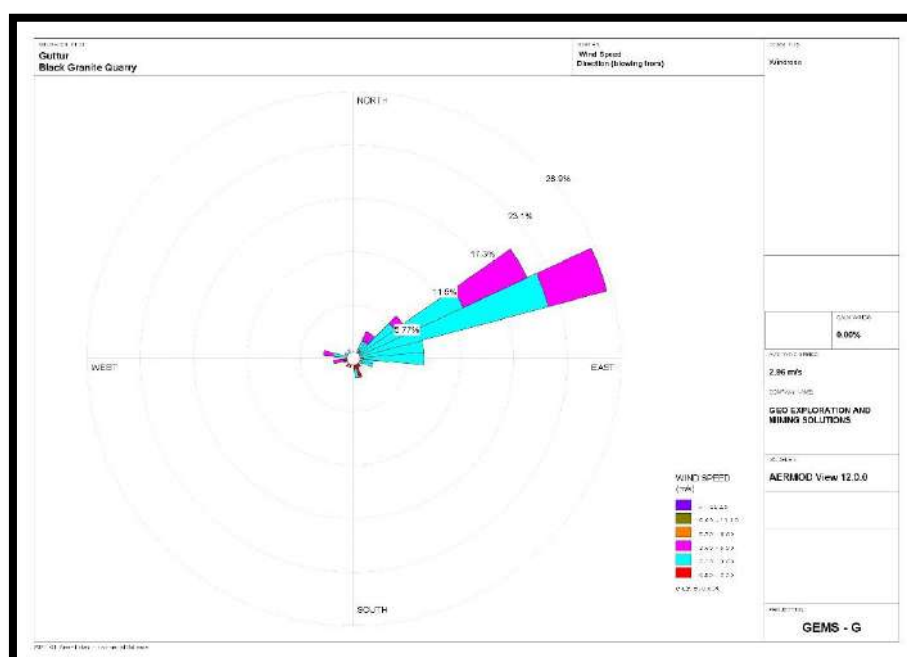
Ground Water

The pH of the water samples collected ranged from 7.49 to 7.83 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 413-197.43mg/l in all samples. Total hardness varied between 156.37-571mg/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 46.5 µg/m³ recorded at Thathankuttai Village and minimum is 40.1 µg/m³ recorded at Madarahalli Village. The concentration of PM_{2.5} varies from Minimum 18 µg/m³ was recorded at Guttur Village and Maximum concentration of PM_{2.5} recorded at 26.3 µg/m³ Project area (Core). SO₂ concentration level ranged from 4.2 – 7.9 µg/m³ and NO₂ concentration ranged from 18.3– 24.3µg/m³ 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.

Overall Ambient Air Quality of proposed project area and its buffer zone is good during monitoring period and there are no any abnormal values recorded. The maximum concentration in the core zone is due to the

quarrying activity of the cluster of quarries situated within 500m radius. 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 40.2 – 42.4dB (A) Leq and during night time were from 34.8 – 36 dB (A) Leq. Noise levels recorded in buffer zone during day time were from 37.3–41.8 dB (A) Leq and during night time were from 33.5– 35.8 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 46.3 dB(A) Leq in Paradasapatti Village and 30.2 dB(A) Leq in minimum Madarahalli and Kappalvadi Village and 30.2 dB(A) in Project area ,Thathankuttai, Madarahalli and Kappalvadi & 41.2 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 6.88.0 Ha, the total extent of the cluster is 10.13.3 Ha (Cluster area is calculated as per MoEF & CC Notification – S.O. 2269 (E) Dated: 01.07.2016) proposed quarries. The proposed project area is government/Poramboke land, no forest land involved in this lease applied area. The ultimate depth of the proposed project is quarrying is varying from 13-23m 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

- The following mitigation measures are suggested for water management
- The quarrying operation will be carried out well above the water table. There is no intersection of surface water bodies (Streams, Canal, Odai etc..) in the proposed project area. During rainy season rain water will be collected in the quarry pit and later used for greenbelt development and for the water sprinkling in the haul roads. There is no proposal for discharging of quarry pit water outside the project area.
- There is no proposal Granite processing or workshop within the project area thus there is no effluent anticipated in the mine.

4.4 AIR ENVIRONMENT

ANTICIPATED IMPACT

The air borne particulate matter generated by quarrying operation, and transportation. The emissions of Sulphur dioxide (SO₂), Oxides of Nitrogen (NO_x) 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 (PM₁₀) affecting Ambient Air of the area. Prediction of impacts on air environment has been carried out taking into consideration three proposed quarries aims to Cumulatively production about 90,225m³ (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 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

Greenbelt development plan-P1

Year	No. of trees 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	50	1000	Neem, Pongamia etc.,	70	35
II	50			70	35
III	50			70	35
IV	50			70	35
V	50			70	35

Greenbelt development plan-P2

Year	No. of trees 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, Pongamia etc.,	70	42
II	60			70	42
III	60			70	42
IV	60			70	42
V	60			70	42

Greenbelt development plan-P3

Year	No. of trees 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	50	2,400	Neem, Casuarina, Pongamia pinnata, etc., trees	80	40
II	50			80	40
III	50			80	40
IV	50			80	40
V	50			80	40

Greenbelt development plan-P4

Year	No. of trees 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	2,400	Neem, Casuarina, Pongamia pinnata, etc., trees	70	42
II	60			70	42
III	60			70	42
IV	60			70	42
V	60			70	42

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.

Construction Phase***Anticipated Impacts:***

- ♣ No. of people will get employment during the construction stage resulting in the ancillary development and growth. Nearby Local people will be given preference for employment on the basis of their skill and experience.
- ♣ Further due to proposed project, influx of working community will also generate an indirect employment through development of nearby market/ shops, trade centers, activities, transportation etc.
- ♣ Population influx during the construction phase can introduce various water and vector borne diseases which can lead to various unhygienic health problems in the area by disturbing the existing sanitation infrastructure.
- ♣ Rapid diverse population influx at the project site can create unusual behavioural activity such as worker-community conflicts, increase violence such as theft/stabbing and increased consumption of drugs/alcohol within the area.
- ♣ Impacts on the health of nearby villagers can be envisaged due to the transportation activities leading to short term exposure of fugitive dust, resulting in various acute diseases such as increased eye irritation, nausea, headache etc.

Mitigation measures:

- ♣ Deploying of mobile toilets or the construction of temporary toilets will be done near to the construction site with the adequate water supply.
- ♣ Awareness programme will be conducted before the monsoon season regarding the spread of water borne/ vector diseases.
- ♣ Mosquito repellents will be provided in the nearby villages and at construction site to avoid the spread of diseases.
- ♣ To overcome behavioural impact, proper site in charge with timely supervision will be done. In advance, facilities with equipped medical and safety services will be provided to take a control over the incident/violence if any caused.
- ♣ To overcome behavioural impact, supervision will be done by site in charge. In advance, emergency cell will be formed with fully equipped communication system, medical and safety services to take control over the incident/violence caused.

Operation Phase:***Anticipated Impacts:***

- ♣ Long term exposure to the pollutants such as PM, SO₂ and NO₂ Cement dust have a potential to create health impacts such as risk of cardiovascular and respiratory disease, eye irritation, bronchitis, lung damage, increased heart ailments, etc.
- ♣ Other impacts, associated with the applied for granite quarry Project will create a positive impact as it will result in the overall development of the area in respect to the infrastructure development, educational growth, health facilities etc., as a part of the CSR activity.

Mitigation Measures:

- ♣ In order to mitigate the long-term health impacts, efficient Air Pollution Control Equipment (APCE) like Bag House / Bag Filter / ESP will be installed at all major stacks to keep the emissions within the permissible limits. To reduce the gaseous emission, Pyro-process itself acts as a long SO₂ scrubber and De - NO_x system will be installed for fuel burning along with calciner for low NO_x formation. To reduce fugitive emission from vehicles and machineries will be regularly monitored and maintained.
- ♣ For emergency, proposed to develop an occupational health centre for its employees and nearby villagers.

4.6.2 Impact Evaluation:

Table 4.3.1 Impact Evaluation Impact evaluation is given in table below.

Impact Evaluation Element	Impact on socio economics due to the applied for Guttur Black Granite Cluster Quarries of Government/Poramboke land of Guttur Village of Bargur Taluk, Krishnagiri District, Tamil Nadu State.
Potential Effect/ Concern	Proposed and Existing project will provide direct & indirect employment opportunities to the local residents, which will help to increase their earning and better living standard as well as further up-liftment of socio-economic status of the area.
Characteristics of Impacts	

Nature	Positive		Negative	Netural
	✓			
Type	Direct	Indirect	Cumulative	
			✓	
Extent	Project area	Local	Zonal	Regional
		✓		
Duration	Short time		Long term	
			✓	
Intensity	Low		Medium	High
			✓	
Frequency	Remote (R)	Occasional (O)	Periodic (P)	Continuous (C)
			✓	
Significance of Impact				
Significance	Insignificant	Minor	Moderate	Major
			✓	

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	34,960	3,496	8,520	6	1	1
P2	85,390	8,539	21,285	14	1	2
P3	1,33,415	13,342	33,270	22	2	4
P4	1,11,286	11,130	27,150	18	2	3
Total	3,65,051	36,507	90,225	60	6	10
E1*	1,57,730	39,432	23,823	16	4	3
Total	1,57,730	39,432	23,823	16	4	3
G.Total	5,22,781	75,939	1,14,048	76	10	13

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	45.2	49.7	51.0	55
Habitation Near P2	44.2	46.7	48.6	
Habitation Near P3	42.2	46.3	47.7	
Habitation Near P4	43.2	45.1	47.3	
Habitation Near E1	44.6	54.5	54.9	

SOCIO ECONOMIC BENEFITS

Location code	Employment	Project Cost	CER
P1	17	Rs.2,04,30,000/-	Rs.5,00,000/-
P2	18	Rs. 2,65,30,000/-	Rs.5,00,000/-
P3	30	Rs. 5,37,10,000/-	Rs.5,00,000/-
P4	19	Rs. 3,21,40,000/-	Rs.5,00,000/-
E1	43	Rs. 3,38,86,000/-	Rs.5,00,000/-

A total of 84 people will get employment due to 4proposed mines in cluster and 43 people are already employed at existing mines. 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

Guttur Black granite cluster quarries aims to Production of cumulatively is about **90,225m³** of ROM and **8,996m³** Granite recovery @10% (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

- 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.
