

EXECUTIVE SUMMARY

PALAPATTI ROUGH STONE QUARRIES

At

Palapatti Village, Vazappadi Taluk, Salem District, Tamil Nadu State.

NAME OF PROPOSED PROJECT PROPONENTS FOR CONDUCTING PUBLIC HEARING

PROJECT PROPONENT	
Thiru.K.Venkatraman, Extent: 1.50.0 Ha S.F. No: 106 (Part-2), Palapatti Village, Vazappadi Taluk, Salem District ToR: Lr No. SEIAA-TN/F.No.9332/TOR-1244/2022 Dated: 30.08.2022	Tmt.S.Sumathi, Extent: 1.50.0 Ha S.F. No: 106 (Part-3), Palapatti Village, Vazappadi Taluk, Salem District ToR: Lr No. SEIAA-TN/F.No.9685/SEAC/TOR-1428/2022 Dated: 18.04.2023

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

* **CLUSTER EXTENT = 5.50.0 ha**

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

Environmental Consultant GEO EXPLORATION AND MINING SOLUTIONS



Old No. 260-B, New No. 17,
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Baseline Monitoring Period – March 2022 to May 2022

ENVIRONMENTAL LAB

KGS ENVIRO LABORATORY

No.16, F1, Bharathi Flats, Bharathiyar Street, Cholambedu Main Road,
Thirumullaivoyal, Chennai – 600 062.

JUNE 2024

1. INTRODUCTION

Rough Stone is the major requirements for construction industry. This EIA report is prepared by considering Cumulative load of the proposed Palapatti Rough Stone Quarries for four proposed Quarries with total extent of Cluster of 5.50.0 ha at Palapatti Village, Valappady Taluk, Salem District and 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 Terms of Reference for carrying out EIA and EMP studies for the Rough Stone Quarry.

Proponent Name	Extent (Ha)	Terms of Reference (ToR)
Thiru. S.Dhanapal,	1.00.0	Lr No. SEIAA-TN/F.No.8121/SEAC/TOR-930/2020 Dated :16.04.2021
Thiru.K.Venkatraman,	1.50.0	Lr No. SEIAA-TN/F.No.9332/TOR-1244/2022 Dated :30.08.2022
Tmt.S.Sumathi,	1.50.0	Lr No. SEIAA-TN/F.No.9685/SEAC/TOR-1428/2022 Dated :18.04.2023
Thiru.A.Rajarajacholan,	1.50.0	Lr No. SEIAA-TN/F.No.9333/ SEAC/TOR-1234/2022 Dated :30.08.2022

To carry out the EIA studies and to prepare EIA and EMP studies the proposed quarries of Palapatti Rough Stone Quarries have engaged a consultant M/s. Geo Exploration and Mining Solutions, Salem, Tamil Nadu. The Baseline Monitoring study has been carried out during summer season (March – May 2022) 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

Name of the Project Proponent	Thiru. S. Dhanapal
Communication Address	S/o. Sengodan, No.438, Mahakaliyamman Kovil Street, Dadagapatti Post, , Salem District– 636 006.
Mobile	+91 9865481777
Status	Proprietor
Name of the Project Proponent	Thiru.K.Venkatraman,
Communication Address	S/o. Thiru.Krishnan No.74A/77A, Narayanan Pillai Street, Peramanur, Salem District– 636 007.
Mobile	-
Status	Proprietor
Name of the Project Proponent	Tmt.S.Sumathi,
Communication Address	W/o.Sathishkumar,

	No.3/43, Nadu Street, Singipuram, Vazhappadi, Salem District– 636 115
Mobile	-
Status	Proprietor
Name of the Project Proponent	Thiru.A.Rajarajacholan,
Communication Address	S/o. Alagappan, No.3/22, Rajaveethi, Minnampalli Post, Vazhappadi, Salem District– 636 106
Mobile	-
Status	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	Extent	Status
P1	Thiru. S.Dhanapal, S/o. Sengodan, No.438, Mahakaliyamman Kovil Street, dagapatti Post., Salem District– 636 006	106 (Part-1)	1.00.0 ha	TOR Vide Lr No. SEIAA- TN/F.No.8121/SEAC/TOR- 930/2020 Dated :16.04.2021
P2	Thiru.K.Venkatraman, S/o. Krishnan, No.74A/77A, Narayanan Pillai Street, Peramanur, Salem – 636 007.	106 (Part-2)	1.50.0 ha	TOR Vide Lr No. SEIAA- TN/F.No.9332/TOR- 1244/2022 Dated :30.08.2022
P3	Tmt.S.Sumathi, W/o.Sathishkumar, No.3/43, Nadu Street, Singipuram, Vazhappadi, Salem – 636 115	106 (Part-3)	1.50.0 ha	TOR Vide Lr No. SEIAA- TN/F.No.9685/SEAC/TOR- 1428/2022 Dated :18.04.2023
P4	Thiru.A.Rajarajacholan, S/o.Alagappan, No.3/22, Rajaveethi, Minnampalli Post, Vazhappadi, Salem – 636 106.	106 (Part-4)	1.50.0 ha	TOR Vide Lr No. SEIAA- TN/F.No.9333/TOR- 1234/2022 Dated :30.08.2022
TOTAL			5.50.0 ha	
EXISTING QUARRIES				
NIL				
ABANDONED QUARRIES				
NIL				
Total Cluster Extent			5.50.0 Ha	

TABLE 1.3 SALIENT FEATURES OF THE PROPOSAL “P1”

Name of the Quarry	Thiru. S.Dhanapal Rough Stone Quarry	
Toposheet No	58-I/06	
Latitude between	11°42'24.17"N to 11°42'27.73"N	
Longitude between	78°18'03.95"E to 78°18'08.71"E	
Highest Elevation	448-400 m AMSL	
Proposed Depth of Mining	41 m agl (1m Topsoil + 40m Rough Stone)	
Geological Resources	Rough Stone in m ³	Topsoil m ³
	4,38,620	10,112
Mineable Reserves	Rough Stone in m ³	Topsoil m ³
	1,51,795	6,372
Proposal for this Mining Plan Period	Rough Stone in m ³	Topsoil m ³
	83,425	6,372
Existing Pit Dimension	-	

Ultimate Pit Dimension	108m (L) x 59m (W) x 71m (D) (56m agl +15 bgl)	
Water Level in the surrounds area	63 – 68 m bgl	
Method of Mining	Opencast Mechanized Mining Method involving drilling and blasting	
Topography	The lease applied area is hilly terrain. The area has gentle slope with a gradient of 1 to 4 towards Eastern side. The altitude of the area is 448-400m (max) above mean sea level. The area is covered by 1m (avg) thickness of Topsoil Formation. Massive Charnockite is found after 1m (Topsoil Formation) which is clearly inferred from the nearby existing quarry pit.	
Machinery proposed	Jack Hammer	2 Nos
	Compressor	1 Nos
	Excavator with Bucket & Rock Breaker	1 Nos
	Tipplers	1 Nos
Blasting Method	Controlled Blasting Method by shot hole drilling and small dia of 25mm slurry explosive are proposed to be used for shattering and heaving effect for removal and winning of Rough Stone. No deep hole drilling is proposed.	
Proposed Manpower Deployment	14 Nos	
Total Project Cost	Project Cost	Rs.40,91,000/-
	Environment Monitoring Cost	Rs.3,80,000/-
	Total	Rs.44,71,000/-
CER Cost	Rs.5,00,000/-	
Nearby Water Bodies	Tank near Anuppur	4.25km NE
	Tank near Kuttathupatti	2.40km NE
	Tank near Achanguttaipatti	5.63km NW
	Tank near Valasaiyur	5.25km SW
	Tank near D. Perumapalayam	7.47km SW
	Tank near Pallapatty	6.88km SW
	Tank near Poovanur	5.37km NW
	Tank near Vellalagundam	6km SE
	Tank near Chinnakavundapuram	7km SW
	Tank near Sukkampatti	5.2km NW
Tank Near Eripudur	1.8km SW	
Greenbelt Development Plan	Proposed to plant 600 trees in the 7.5m safety distance and village road	
Proposed Water Requirement	2.8 KLD	
Nearest Habitation	660m Southeast	

TABLE 1.4: BRIEF DESCRIPTION OF THE APPLIED PROJECT “P2”

Name of the Quarry	Thiru.K. Venkatraman Rough Stone Quarry	
Toposheet No	58-I/06	
S.f No & Extent	106 (P-IIq) and 1.50.0 Ha	
Land type	Government Poramboke Land	
Lease Period	10	
Proposed Period of Mining	5	
Latitude between	11°42'30.41"N to 11°42'28.96"N	
Longitude between	78°18'06.24"E to 78°18'00.47"E	
Highest Elevation	447 m AMSL	
Proposed Depth of Mining	43 m (1m Topsoil + 42m Rough Stone)	
Geological Resources	Rough Stone in m ³	Topsoil m ³
	7,80,604	15,000
Mineable Reserves	Rough Stone in m ³	Topsoil m ³
	3,39,516	11,700
Proposal for this Mining Plan Period	Rough Stone in m ³	Topsoil m ³
	3,02,716	11,700
Existing Pit Dimension	-	
Ultimate Pit Dimension	130.0m (L) x 90m (W) x 63m (D)	
Water Level in the surrounds area	70m bgl	
Method of Mining	Opencast Mechanized Mining Method involving drilling and blasting	
Topography	The lease applied for quarry lease is almost plain area sloping towards	

	western covered with Roughstone which does not sustain any type of vegetation. The altitude of the area is 447m Amsl.	
Machinery proposed	Jack Hammer	5 Nos
	Hydraulic Excavator	1 Nos
	Tippers	2 Nos
Blasting Method	Controlled Blasting Method by shot hole drilling and small dia of 25mm slurry explosive are proposed to be used for shattering and heaving effect for removal and winning of Rough Stone. No deep hole drilling is proposed.	
Proposed Manpower Deployment	18 Nos	
Total Project Cost	Fixed Cost	Rs.40,90,000/-
	Operational cost	Rs. 30,00,000/-
	Environment Monitoring Cost	Rs.3,50,000/-
	Total	Rs.74,40,000/-
CER Cost @ 2% of Project Cost	Rs.5,00,000/-	
Nearby Water Bodies	Tank near Anuppur	4.34km NE
	Tank near Kuttathupatti	2.54km NE
	Tank near Achanguttaipatti	5.47km NW
	Tank near Valasaiyur	5.13km SW
	Tank near D. Perumapalayam	7.38km SW
	Tank near Pallapatty	6.73km SW
	Tank near Poovanur	5.24km NW
	Tank near Vellalagundam	6km SE
	Tank near Chinnakavundapuram	7km SW
	Tank near Sukkampatti	5.2km NW
	Tank Near Eripudur	1.8km SW
Greenbelt Development Plan	Proposed to plant 900trees in the7.5m safety distance and village road	
Proposed Water Requirement	1.8 KLD	
Nearest Habitation	500m Southeast	

TABLE 1.5: BRIEF DESCRIPTION OF THE APPLIED PROJECT "P3"

Name of the Quarry	Tmt.S. Sumathi Rough Stone Quarry	
S.f No & Extent	106 (P-III) and 1.50.0 Ha	
Land type	Government Poramboke Land	
Lease Period	10	
Proposed Period of Mining	5	
Toposheet No	58-I/06	
Latitude between	11°42'27.93"N to 11°42'25.89"N	
Longitude between	78°18'05.14"E to 78°17'59.38"E	
Highest Elevation	471 m AMSL	
Proposed Depth of Mining	58 m (1 m Topsoil + 57m Rough Stone)	
Geological Resources	Rough Stone in m ³	Topsoil m ³
	6,34,948	15,000
Mineable Reserves	Rough Stone in m ³	Topsoil m ³
	3,47,617	13,000
Proposal for this Mining Plan Period	Rough Stone in m ³	Topsoil m ³
	3,09,617	13,000
Existing Pit Dimension	-	
Ultimate Pit Dimension	130m (L) x 100m (W) x 63m (D)	
Water Level in the surrounds area	70 m bgl	
Method of Mining	Opencast Mechanized Mining Method involving drilling and blasting	
Topography	The area applied for quarry lease is almost plain area sloping towards western covered with roughstone doesnot sustain any type of Vegetation. The altitude of the area is 471m Amsl.	
Machinery proposed	Jack Hammer	7 Nos
	Hydraulic Excavator	1 Nos
	Tippers	4 Nos
Blasting Method	Controlled Blasting Method by shot hole drilling and small dia of 25mm slurry explosive are proposed to be used for shattering and	

	heaving effect for removal and winning of Rough Stone. No deep hole drilling is proposed.	
Proposed Manpower Deployment	18 Nos	
Total Project Cost	Operational Cost	Rs.40,77,000/-
	Machinery Cost	Rs.30,00,000/-
	Environment Monitoring Cost	Rs.3,50,000/-
	Total	Rs.74,27,000/-
CER Cost	Rs.5,00,000/-	
Nearby Water Bodies	Tank near Anuppur	4.38km NE
	Tank near Kuttathupatti	2.58km NE
	Tank near Achanguttaipatti	5.50km NW
	Tank near Valasaiyur	5.11km SW
	Tank near D. Perumapalayam	7.36km SW
	Tank near Pallapatty	6.78km SW
	Tank near Poovanur	5.28km NW
	Tank near Vellalagundam	6km SE
	Tank near Chinnakavundapuram	7km SW
	Tank near Sukkampatti	5.2km NW
Tank Near Eripudur	1.8km SW	
Greenbelt Development Plan	Proposed to plant 900 trees in the 7.5m safety distance and village road.	
Proposed Water Requirement	3.0 KLD	
Nearest Habitation	360m East	

TABLE 1.6: BRIEF DESCRIPTION OF THE APPLIED PROJECT "P4"

Name of the Quarry	Thiru.A. Rajarajacholan Rough Stone Quarry	
S.f No & Extent	106 (P-IV) and 1.50.0 Ha	
Land type	Government Poramboke Land	
Lease Period	10	
Proposed Period of Mining	5	
Toposheet No	58-I/06	
Latitude between	11°42'24.27"N to 11°42'22.83"N	
Longitude between	78°18'04.05"E to 78°17'58.28"E	
Highest Elevation	471 m AMSL	
Proposed Depth of Mining	51 m (1 m Topsoil + 50m Rough Stone)	
Geological Resources	Rough Stone in m ³	Topsoil m ³
	7,77,500	15,000
Mineable Reserves	Rough Stone in m ³	Topsoil m ³
	3,39,925	11,700
Proposal for this Mining Plan Period	Rough Stone in m ³	Topsoil m ³
	3,00,650	11,700
Existing Pit Dimension	-	
Ultimate Pit Dimension	Pit-I	130m (L) x 90m (W) x 66m (D)
Water Level depth in the surrounds area	70m	
Method of Mining	Opencast Mechanized Mining Method involving drilling and blasting	
Topography	The lease applied area is hilly terrain. The area has gentle sloping towards western side. The altitude of the area is 471m (max) above mean sea level. The area is covered by 1m (avg) thickness of Topsoil Formation. Massive Charnockite is found after 1m (Topsoil Formation) which is clearly inferred from the nearby existing quarry pit.	
Machinery proposed	Jack Hammer	5 Nos
	Hydraulic Excavator	1 Nos
	Tippers	2 Nos
Blasting Method	Controlled Blasting Method by shot hole drilling and small dia of 25mm slurry explosive are proposed to be used for shattering and heaving effect for removal and winning of Rough Stone. No deep hole drilling is proposed.	
Proposed Manpower Deployment	18 Nos	
Total Project Cost	Fixed asset Cost	Rs.40,90,000/-

	Operational cost	Rs.30,00,000/-
	Environment Monitoring Cost	Rs.3,50,000/-
	Total	Rs.74,40,000/-
CER Cost	Rs.5,00,000	
Nearby Water Bodies	Tank near Anuppur	4.42km NE
	Tank near Kuttathupatti	2.64km NE
	Tank near Achanguttaipatti	5.54km NW
	Tank near Valasaiyur	5.07km SW
	Tank near D. Perumapalayam	7.34km SW
	Tank near Pallapatty	6.70km SW
	Tank near Poovanur	5.31km NW
	Tank near Vellalagundam	6km SE
	Tank near Chinnakavundapuram	7km SW
	Tank near Sukkampatti	5.2km NW
	Tank Near Eripudur	1.8km SW
Greenbelt Development Plan	Proposed to plant 900 trees in the 7.5m safety distance and village road.	
Proposed Water Requirement	2.0 KLD	
Nearest Habitation	320m South	

1.3 STATUTORY DETAILS

SCREENING –P1

- The project proponent applied for Rough Stone Quarry Lease Dated: 05.02.2020
- Precise Area Communication Letter was issued by the District Collector, Salem Rc.No.185/2020 Mines-A, Dated: 14.07.2020
- The Mining Plan was prepared by Recognized Qualified Person and approved by Assistant Director, Geology and Mining, Salem District, vide R.C. No. 185/2020 Mines-A, Dated :21.10.2020
- The proposed project falls under “B1” Category as per Order Dated: 04.09.2018 & 13.09.2018 passed by Hon'ble National Green tribunal, New Delhi in O.A. No. 173 of 2018 & O.A. No, 186 of 2016 and MoEF & CC Office Memorandum F. No. L-11011/175/2018-IA-II (M) Dated: 12.12.2018
- Proponent applied for ToR for Environmental Clearance vide online Proposal No. SIA/TN/MIN/58994/2020 Date: 08.12.2020
- The proposal was placed in 203rd SEAC meeting held on 23.02.2021 and the committee recommended for issue of ToR.
- The proposal was considered in 436th SEIAA meeting held on 30.03.2021 and issued ToR vide Letter No SEIAA-TN/F.No.8121/SEAC/ToR-930/2020 Dated 16.04.2021

SCREENING –P2

- The project proponent applied for Rough Stone Quarry Lease Dated: 06.02.2020
- Precise Area Communication Letter was issued by the District Collector, Salem Rc.No.186/2020 Mines-A, Dated: 28.05.2020
- The Mining Plan was prepared by Recognized Qualified Person and approved by Assistant Director, Geology and Mining, Salem District, vide R.C. No. 186/2020 Mines-A, Dated :19.06.2020
- The proposed project falls under “B1” Category as per Order Dated: 04.09.2018 & 13.09.2018 passed by Hon'ble National Green tribunal, New Delhi in O.A. No. 173 of 2018 & O.A. No, 186 of 2016 and MoEF & CC Office Memorandum F. No. L-11011/175/2018-IA-II (M) Dated: 12.12.2018
- Proponent applied for ToR for Environmental Clearance vide online Proposal No.

SIA/TN/MIN/70643/2021 Date: 03.01.2022

- The proposal was placed in 302nd SEAC meeting held on 17.08.2022 and the committee recommended for issue of ToR.
- The proposal was considered in 547th SEIAA meeting held on 30.08.2022 and issued ToR vide Lr No. SEIAA-TN/F.No.9332/TOR-1244/2022 Dated :30.08.2022.

SCREENING –P3

- The project proponent applied for Rough Stone Quarry Lease Dated: 06.02.2020
- Precise Area Communication Letter was issued by the District Collector, Salem Rc.No.187/2020 Mines-A, Dated: 30.05.2020
- The Mining Plan was prepared by Recognized Qualified Person and approved by Assistant Director, Geology and Mining, Salem District, vide R.C. No. 187/2020 Mines-A, Dated :26.06.2020
- The proposed project falls under “B1” Category as per Order Dated: 04.09.2018 & 13.09.2018 passed by Hon'ble National Green tribunal, New Delhi in O.A. No. 173 of 2018 & O.A. No, 186 of 2016 and MoEF & CC Office Memorandum F. No. L-11011/175/2018-IA-II (M) Dated: 12.12.2018
- Proponent applied for ToR for Environmental Clearance vide online Proposal No. SIA/TN/MIN/66919/2022 Date: 25.08.2021
- The proposal was placed in 365^d SEAC meeting held on 24.03.2023 and the committee recommended for issue of ToR.
- The proposal was considered in 612th SEIAA meeting held on 17.04.2023 & 18.04.2023 and issued ToR vide Lr No. SEIAA-TN/F.No.9685/SEAC/TOR-1428/2022 Dated :18.04.2023

SCREENING –P4

- The project proponent applied for Rough Stone Quarry Lease Dated: 06.02.2020
- Precise Area Communication Letter was issued by the District Collector, Salem Rc.No.188/2020 Mines-A, Dated: 30.05.2020
- The Mining Plan was prepared by Recognized Qualified Person and approved by Assistant Director, Geology and Mining, Salem District, vide R.C. No. 188/2020 Mines-A, Dated :19.06.2020
- The proposed project falls under “B1” Category as per Order Dated: 04.09.2018 & 13.09.2018 passed by Hon'ble National Green tribunal, New Delhi in O.A. No. 173 of 2018 & O.A. No, 186 of 2016 and MoEF & CC Office Memorandum F. No. L-11011/175/2018-IA-II (M) Dated: 12.12.2018
- Proponent applied for ToR for Environmental Clearance vide online Proposal No. SIA/TN/MIN/69164/2021 Date: 15.11.2021
- The proposal was placed in 302nd SEAC meeting held on 17.08.2022 and the committee recommended for issue of ToR.
- The proposal was considered in 547th SEIAA meeting held on 30.08.2022 and issued ToR vide Lr No. SEIAA-TN/F.No.9333/TOR-1234/2022 Dated :30.08.2022

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 this proposed quarry.

The quarrying operation is proposed to be carried out by Opencast Mechanized Mining Method by deploying Heavy Earth Moving Machineries without deep hole drilling and blasting by Jack Hammer Drilling & Slurry Explosive during blasting by forming 5.0 m bench height and 5.0 m bench width. Excavators are proposed for Loading and tippers for transportation of Rough Stone & Gravel from pithead to the needy crushers. Rock Breakers are proposed to be deployed to avoid secondary blasting

2.1 SITE CONNECTIVITY TO THE PROJECT AREA

Nearest Roadway	National Highway (NH-79) Salem- Ulundurpet - 4.5Km-South State Highway (179A) Salem-Harur-4Km-West
Nearest Village	Kootathupatti – 2 km – North East
Nearest Town	Ayothiapattinam – 8Km – SouthWest
Nearest Railway Station	Minnampalli – 4.25km – SouthWest
Nearest Airport	Salem – 27Km – NorthWest
Seaport	Chennai - 236 km – North East

2.2 LAND USE PATTERN OF THE PROPOSED PROJECT

LAND USE PATTERN OF THE LEASE APPLIED AREA “P1”

DESCRIPTION	PRESENT AREA IN (HA)	AREA AT THE END OF MINING PLAN (HA)
Area under Quarrying	Nil	0.63.0
Infrastructure	Nil	0.01.0
Road	Nil	0.02.0
Green Belt	Nil	0.20.0
Unutilized area	1.00.0	0.14.0
TOTAL	1.00.0	1.00.0

LAND USE PATTERN OF THE LEASE APPLIED AREA “P2”

DESCRIPTION	PRESENT AREA IN (HA)	AREA AT THE END OF MINING PLAN (HA)
Area under Quarrying	Nil	1.13.0
Infrastructure	Nil	0.01.0
Road	0.01.0	0.01.0
Green Belt	Nil	0.35.0
Unutilized area	1.49.0	Nil
TOTAL	1.50.0	1.50.0

Source: Approved Mining Plan

LAND USE PATTERN OF THE LEASE APPLIED AREA “P3”

DESCRIPTION	PRESENT AREA IN (HA)	AREA AT THE END OF MINING PLAN (HA)
Area under Quarrying	Nil	1.28.0
Infrastructure	Nil	0.01.0
Road	0.01.0	0.01.0
Green Belt & Dump	Nil	0.20.0
Unutilized area	1.49.0	Nil
TOTAL	1.50.0	1.50.0

Source: Approved Mining Plan

LAND USE PATTERN OF THE LEASE APPLIED AREA “P4”

DESCRIPTION	PRESENT AREA IN (HA)	AREA AT THE END OF MINING PLAN (HA)
Area under Quarrying	Nil	1.13.0
Infrastructure	Nil	0.01.0
Road	0.01.0	0.01.0
Green Belt	Nil	0.35.0

Unutilized area	1.49.0	Nil
TOTAL	1.50.0	1.50.0

Source: Approved Mining Plan

2.3 OPERATIONAL DETAILS OF LEASE APPLIED AREA

OPERATIONAL DETAILS OF LEASE APPLIED AREA "P1"

PARTICULARS	DETAILS	
	Rough Stone	Topsoil
Geological Resources in m ³	4,38,620	10,112
Mineable Reserves in m ³	1,51,795	6,372
Year wise Production for five years in m ³	83,425	6,372
Mining Plan Period	5 Years	1 Years
Number of Working Days	300 Days	300 Days
Production per day in m ³	56	21
No of Lorry loads (6m ³ per load)	9	4
Total Depth of Mining	41 m (1 m Topsoil + 40 m Rough Stone)	

Source: Approved Mining Plan

OPERATIONAL DETAILS OF LEASE APPLIED AREA "P2"

PARTICULARS	DETAILS	
	Rough Stone	Topsoil
Geological Resources in m ³	780604	15000
Mineable Reserves in m ³	339516	11700
Yearwise Production for five years in m ³	302716	11700
Mining Plan Period	5 Years	1 Years
Number of Working Days	300 Days	300 Days
Production per day in m ³	202	39
No of Lorry loads (6m ³ per load)	34	7
Total Depth of Mining	43 m (1 m Topsoil + 42 m Rough Stone)	

Source: Approved Mining Plan

OPERATIONAL DETAILS OF LEASE APPLIED AREA "P3"

PARTICULARS	DETAILS	
	Rough Stone	Topsoil
Geological Resources in m ³	634948	15000
Mineable Reserves in m ³	347617	13000
Yearwise Production for five years in m ³	309617	13000
Mining Plan Period	5 Years	1 Years
Number of Working Days	300 Days	300 Days
Production per day in m ³	206	43
No of Lorry loads (6m ³ per load)	34	7
Total Depth of Mining	58 m (1 m Topsoil + 57m Rough Stone)	

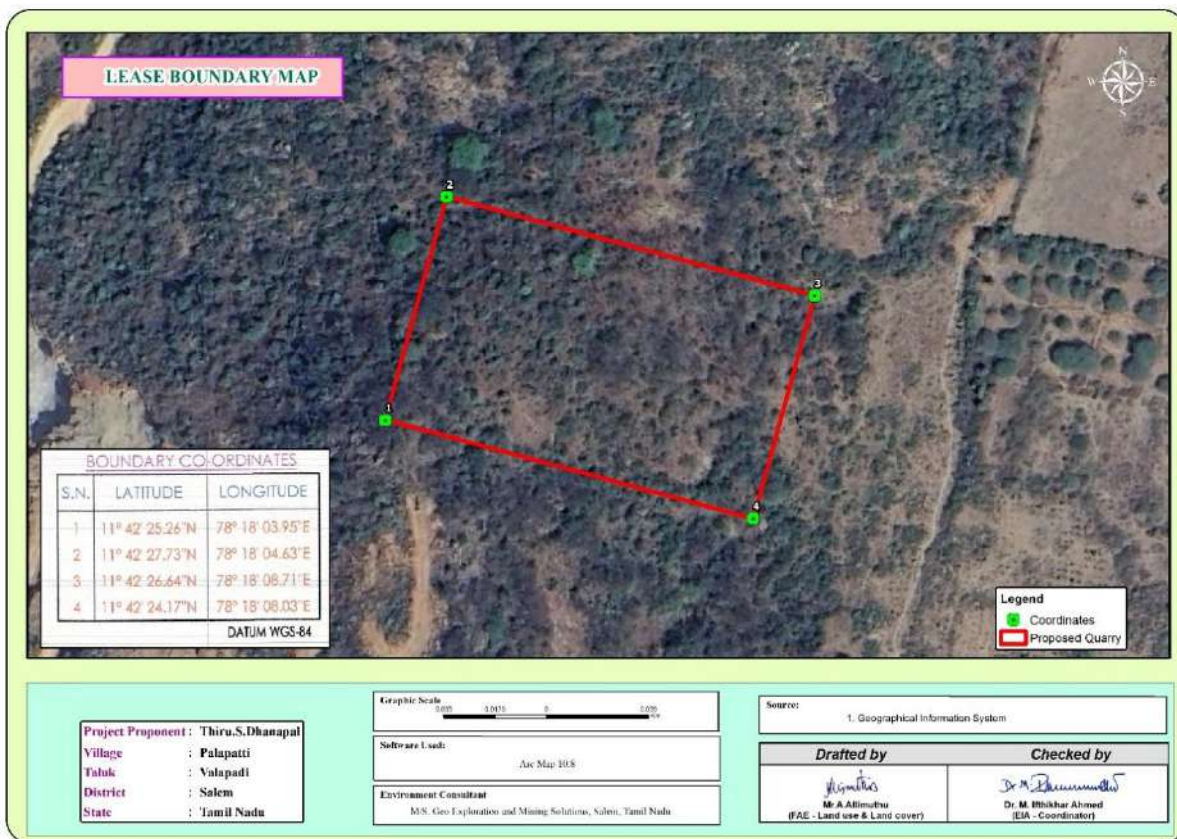
Source: Approved Mining Plan

OPERATIONAL DETAILS OF LEASE APPLIED AREA "P4"

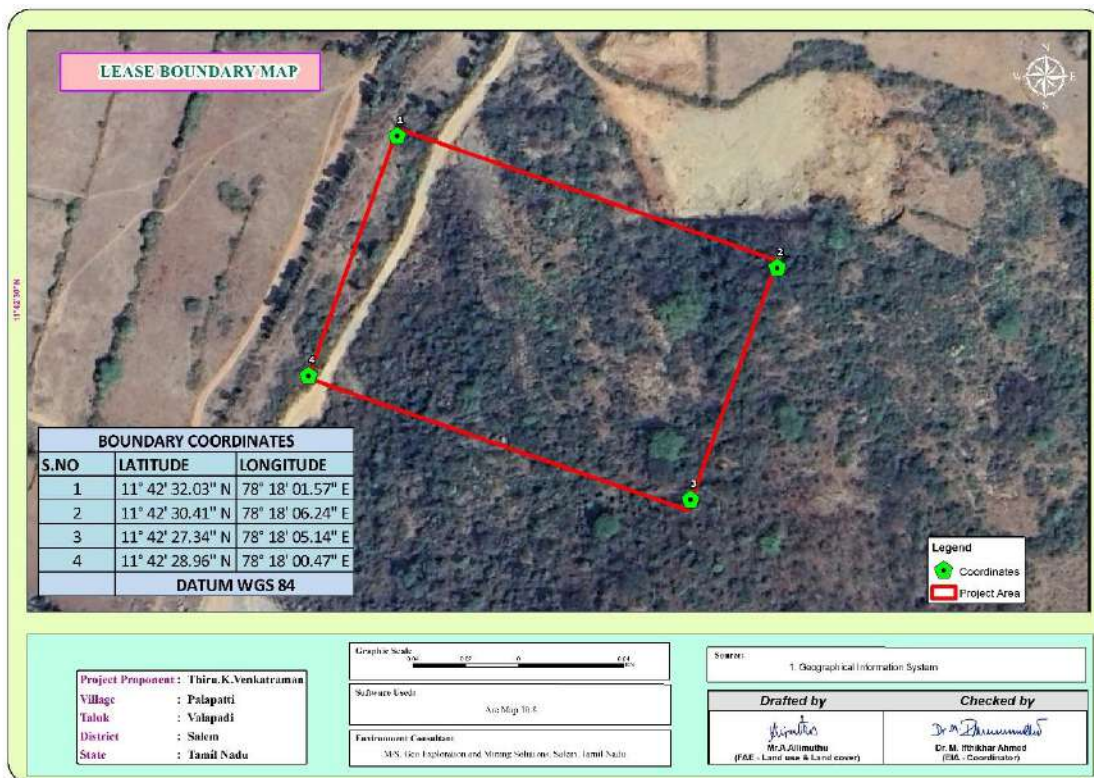
PARTICULARS	DETAILS	
	Rough Stone	Topsoil
Geological Resources in m ³	777500	15000
Mineable Reserves in m ³	339925	11700
Yearwise Production for five years in m ³	300650	11700
Mining Plan Period	5 Years	1 Years
Number of Working Days	300 Days	300 Days
Production per day in m ³	200	39
No of Lorry loads (6m ³ per load)	33	7
Total Depth of Mining	51 m (1 m Topsoil + 50m Rough Stone)	

Source: Approved Mining Plan

FIGURE – 1: GOOGLE IMAGE SHOWING PROJECT AREA



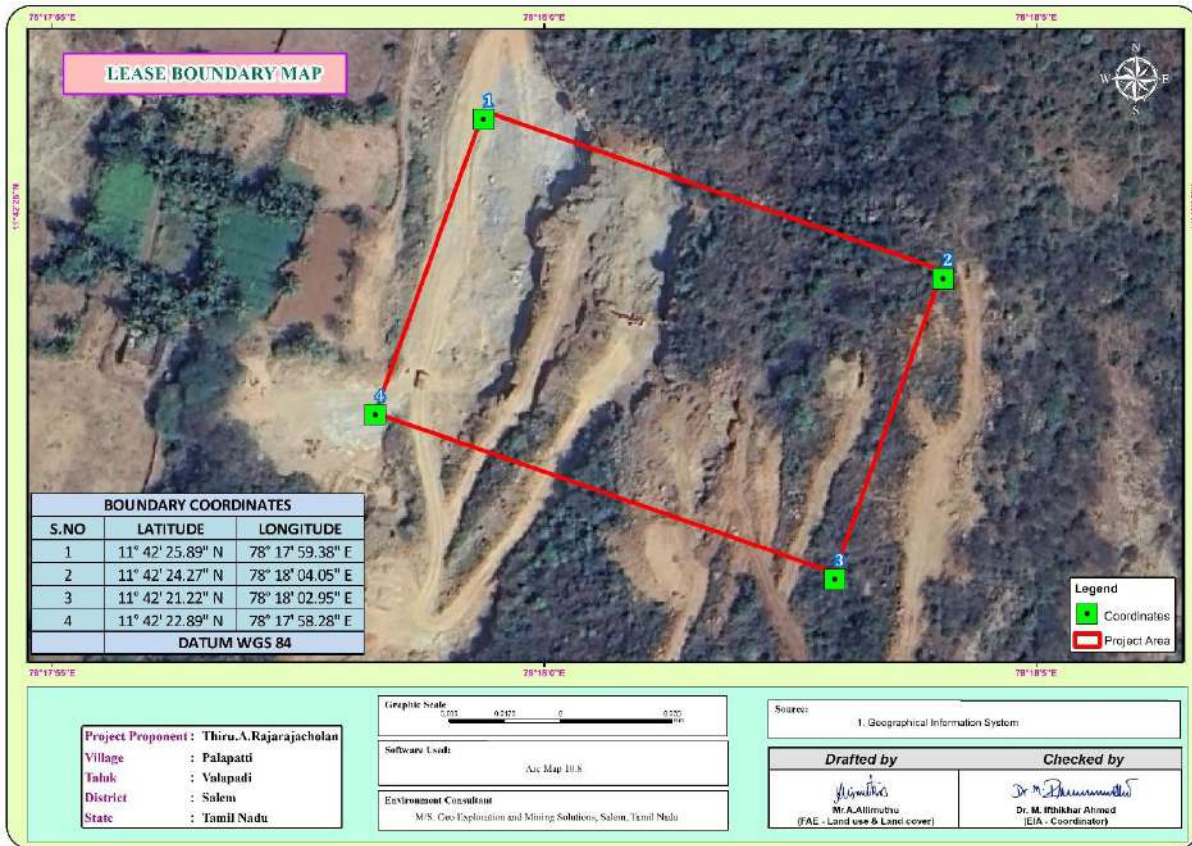
SATELLITE IMAGERY OF P1



SATELLITE IMAGERY OF P2



SATELLITE IMAGERY OF P3



SATELLITE IMAGERY OF P4

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

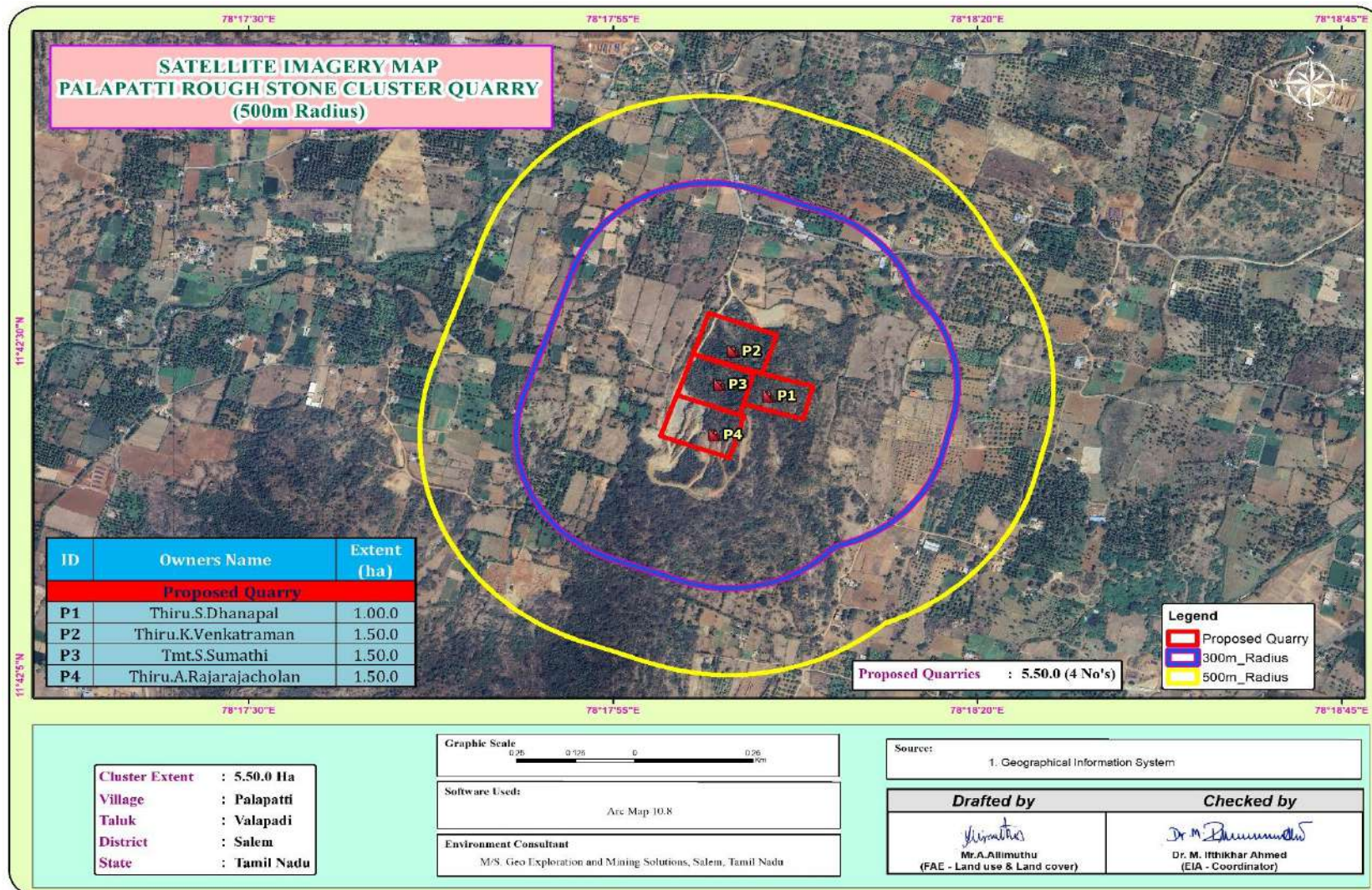


FIGURE – 3: TOPOSHEET MAP COVERING 10 KM RADIUS

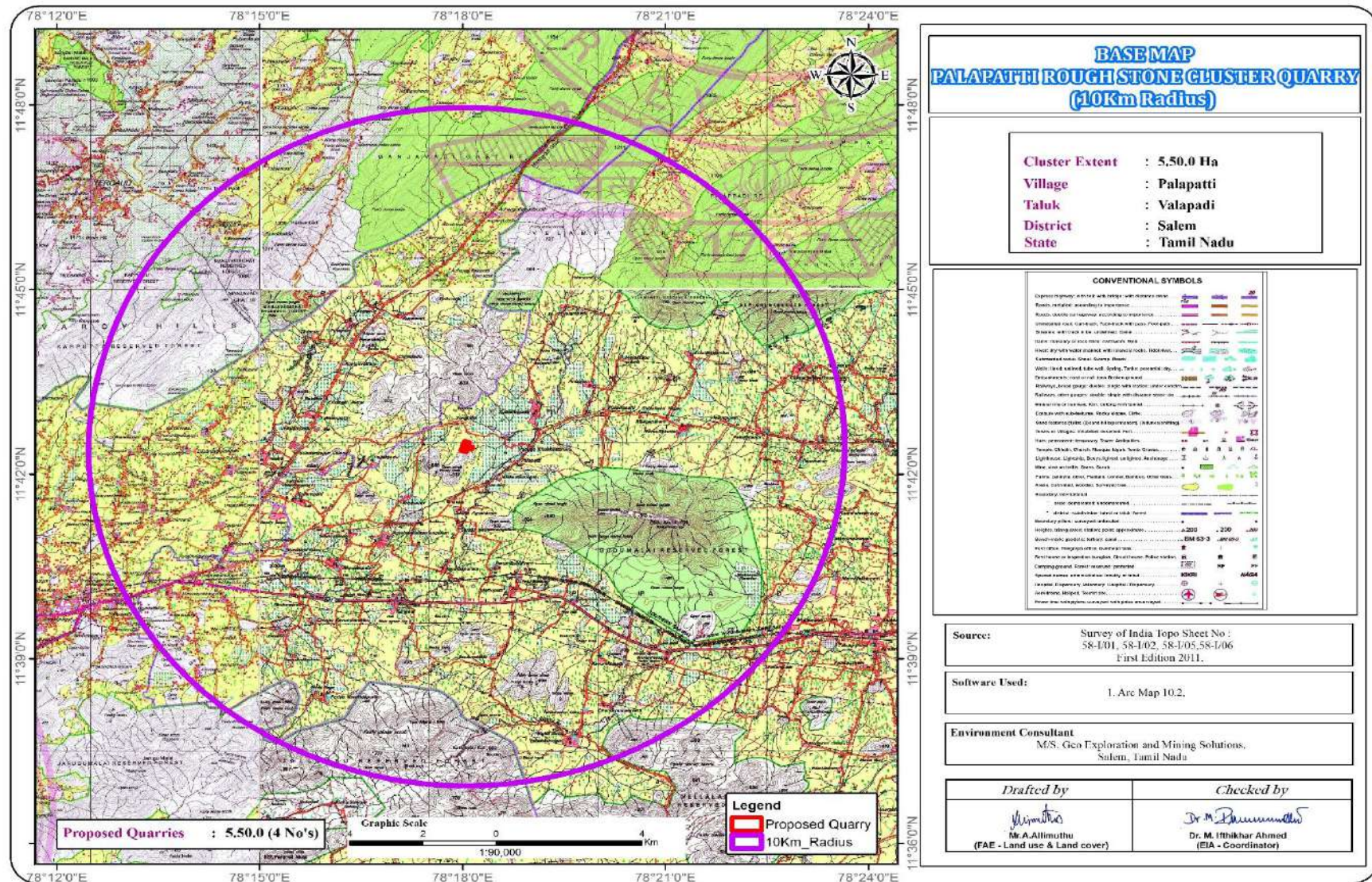
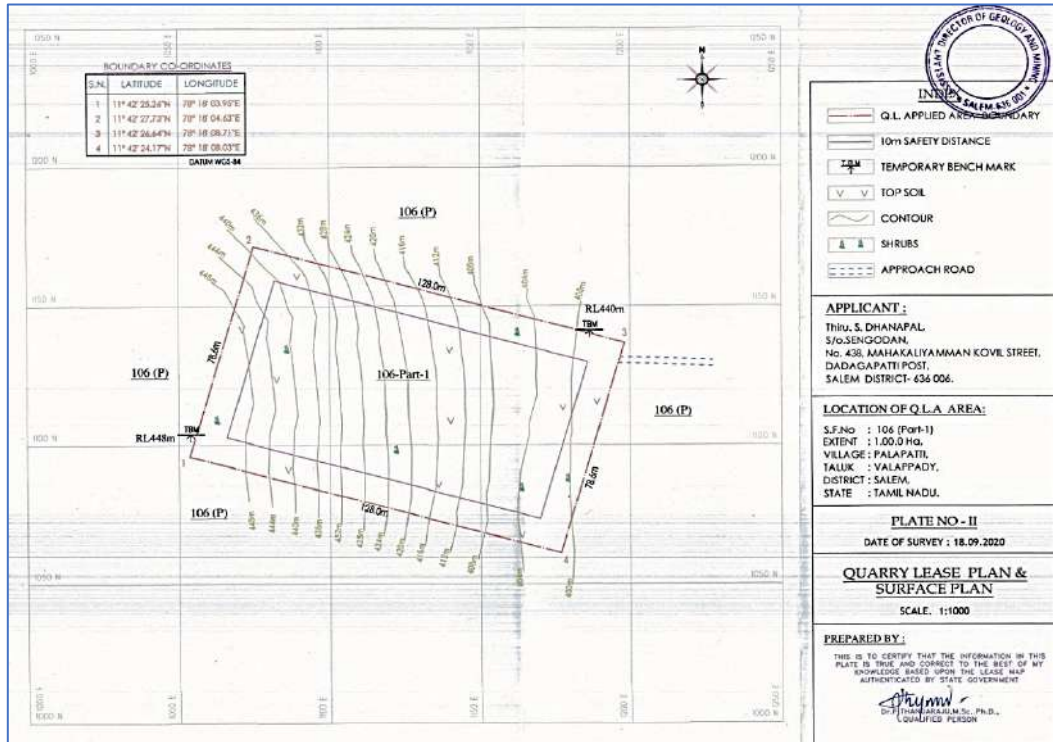
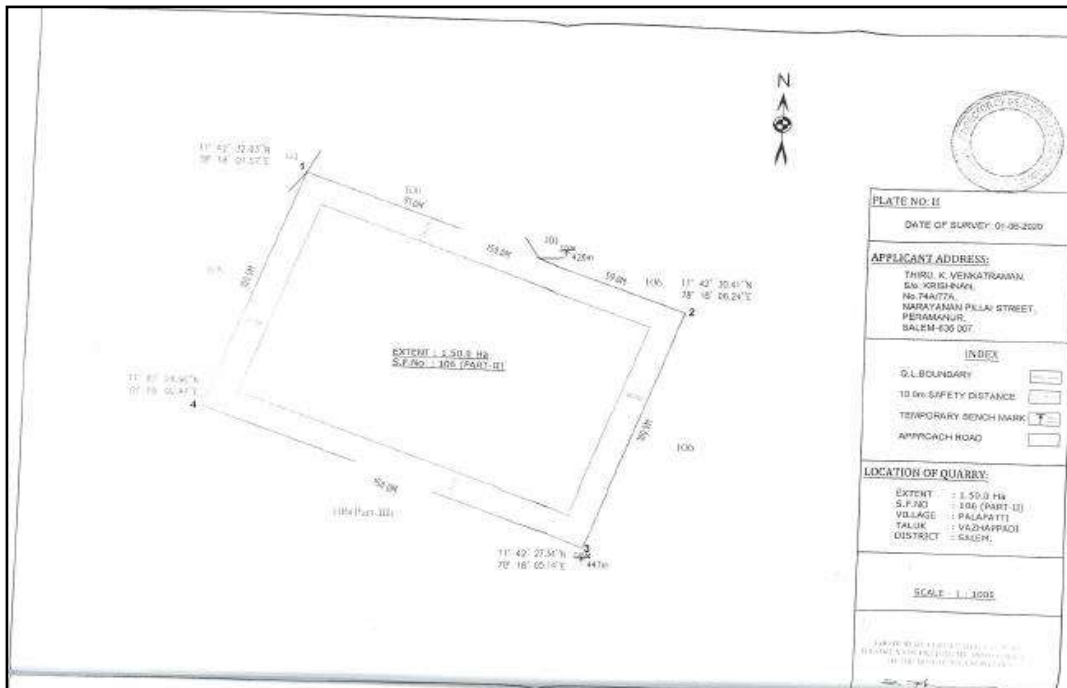


FIGURE – 4: QUARRY LEASE PLAN & SURFACE PLAN

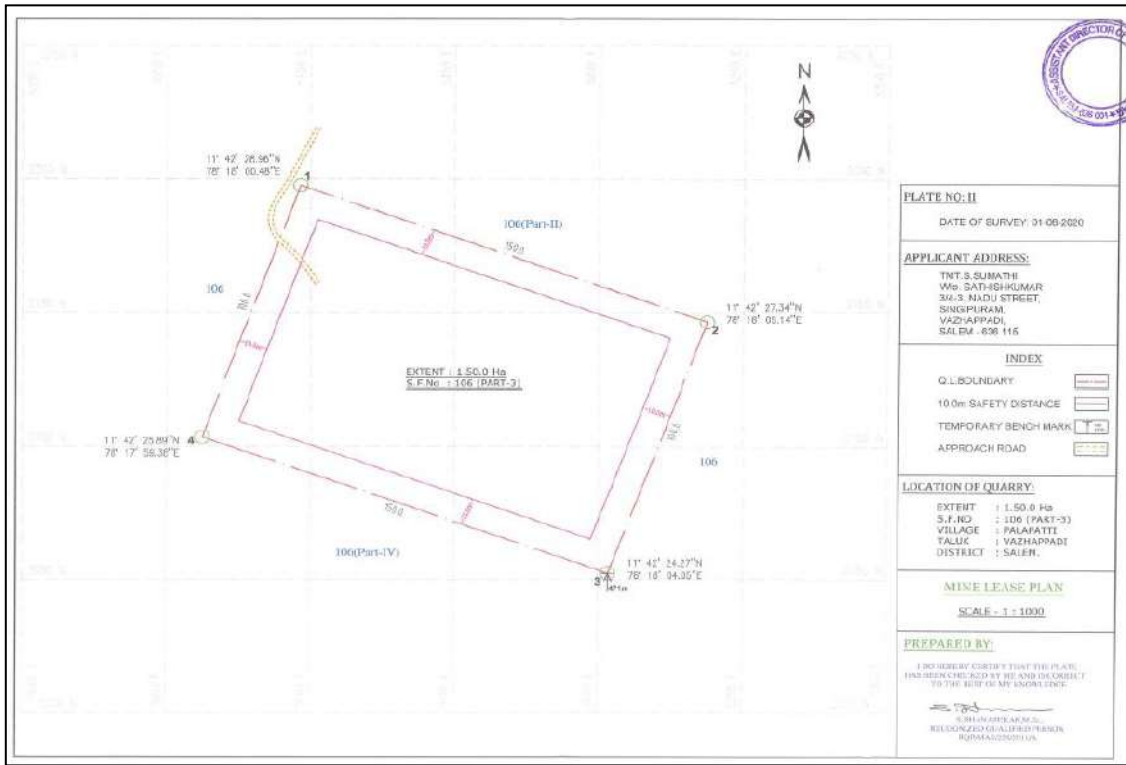
P1- Thiru. S.Dhanapal



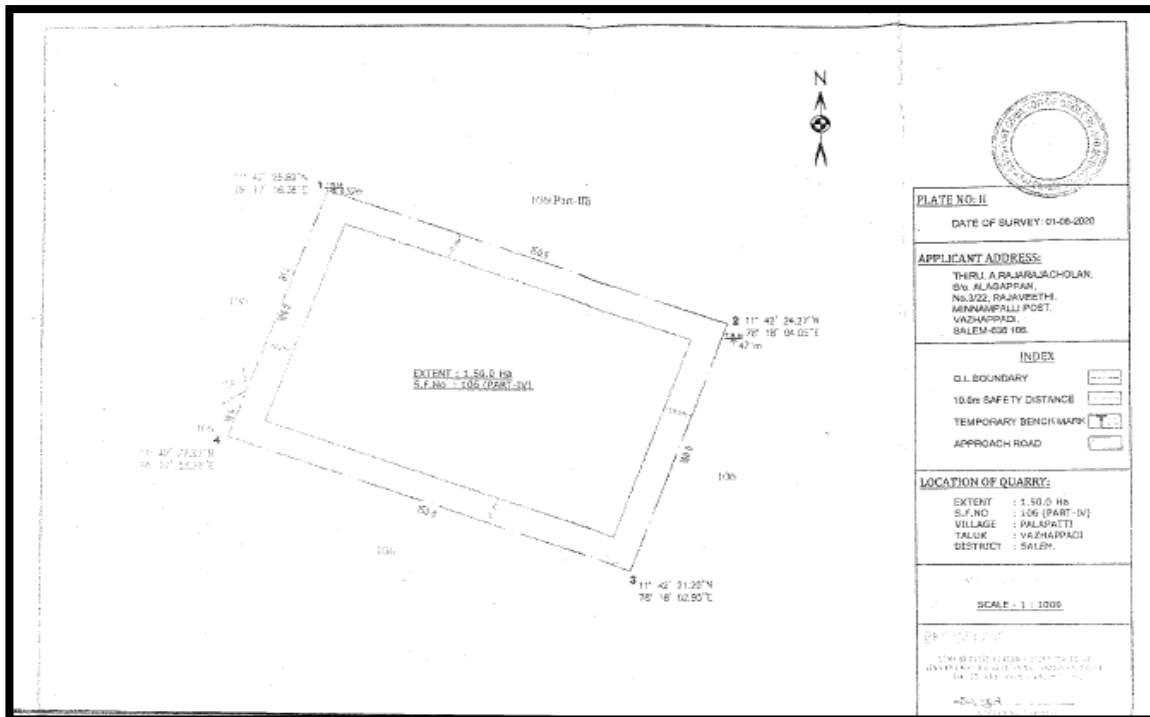
P2- Thiru.K.Venkatraman,



P3- Tmt.S.Sumathi,



P4- Thiru.A.Rajarajacholan,



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

PROPOSAL – P1				
S.NO.	TYPE	NOS	SIZE/CAPACITY	MOTIVE POWER
1	Jack hammers	2	1.2m to 2.0m	Compressed air
2	Compressor	1	400psi	Diesel Drive
3	Excavator with Bucket / Rock Breaker	1	300 HP	Diesel Drive
4	Tipper	1	20 Tonnes	Diesel Drive
PROPOSAL – P2				
S.NO.	TYPE	NOS	SIZE/CAPACITY	MOTIVE POWER
1	Jack hammers	5	1.2m to 2.0m	Compressed air
2	Hydraulic Excavator	1	300 HP	Diesel Drive
3	Tippers	2	20 Tonnes	Diesel Drive
PROPOSAL – P3				
S.NO.	TYPE	NOS	SIZE/CAPACITY	MOTIVE POWER
1	Jack hammers	7	1.2m to 2.0m	Compressed air
2	Hydraulic Excavator	1	300 HP	Diesel Drive
3	Tippers	4	20 Tonnes	Diesel Drive
PROPOSAL – P2				
S.NO.	TYPE	NOS	SIZE/CAPACITY	MOTIVE POWER
1	Jack hammers	5	1.2m to 2.0m	Compressed air
2	Hydraulic Excavator	1	300 HP	Diesel Drive
3	Tippers	2	20 Tonnes	Diesel Drive

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

P1

Pit	Length (Max) (m)	Width (Max) (m)	Depth (Max)
I	108	59	71m

P2

Pit	Length (Max) (m)	Width (Max) (m)	Depth (Max)
I	130	90	63m

P3

Pit	Length (Max) (m)	Width (Max) (m)	Depth (Max)
I	130	100	63m

P4

Pit	Length (Max) (m)	Width (Max) (m)	Depth (Max)
I	130	90	66m

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 2022 to May 2022 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 (1 surface water & 5 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 ₁₀ PM _{2.5} SO ₂ NO _x Fugitive Dust	24 hourly twice a week (March 2022 to May 2022)	8 (1 core & 7 buffer)	IS 5182 Part 1-23 National Ambient Air Quality Standards, CPCB

*Noise Levels	Ambient Noise	Hourly observation for 24 Hours per location	8 (1core & 7 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 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 **LIIII, 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_%
BUILT UP			
1	Builtup-Urban	78.9276	0.236
2	Builtup-Rural	747.101	2.239
3	Mining Area	212.708	0.637
AGRICULTURAL LAND			
4	Agricultural Land	3728.83	11.17
5	Crop Land	10872.8	32.58
6	Fallow Land	3424.71	10.26
BARREN/WASTE LANDS			
7	Scrub Land	2060.26	6.175
WATER BODIES			
8	Water Bodies	143.249	0.429
FOREST			
9	Evergreen Forest	1608.65	4.821
10	Deciduous Forest	9615.31	28.81
11	Scrub Forest	871.415	2.611
	Total	33363.9606	100.00

From the above table, pie diagram and land use map it is inferred that the majority of the land in the study area is Agriculture land (includes crop and fallow land) 54.01% followed by Forest land 36.24%, Scrub land 6.17%, Built up area 2.74%, Mining land 0.63% and Water bodies 0.43%

The total mining area within the study area is 212.70 ha i.e., 0.637%. The cluster area of 5.50 ha contributes about 2.58% of the total mining area within the study area. This small percentage of Mining Activities shall not have any significant impact on the environment.

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

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 to Sandy Loam Soil and Bulk Density of Soils in the study area varied between 0.68 – 1.27 g/cc. The Water Holding Capacity 31.6-45.8% and Porosity of the soil samples is found to be medium i.e. ranging from 22.4 – 36.1 %.

Chemical Characteristics –

- The nature of soil is slightly alkaline to strongly alkaline with pH range 7.29 to 8.36
- The available Nitrogen content range between 128 to 186 kg/ha
- The available Phosphorus content range between 0.52 to 31.6 kg/ha
- The available Potassium range between 30.5 to 59.3 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 is 7.40 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 is 318 mg/l, the TDS mainly composed of carbonates, bicarbonates, Chlorides, phosphates and nitrates of calcium, magnesium, sodium and other organic matter.

Other parameters:

Chloride content is 69.5 mg/l. Nitrates is around 13.7 mg/l, while sulphates content is 25 mg/l.

Ground Water

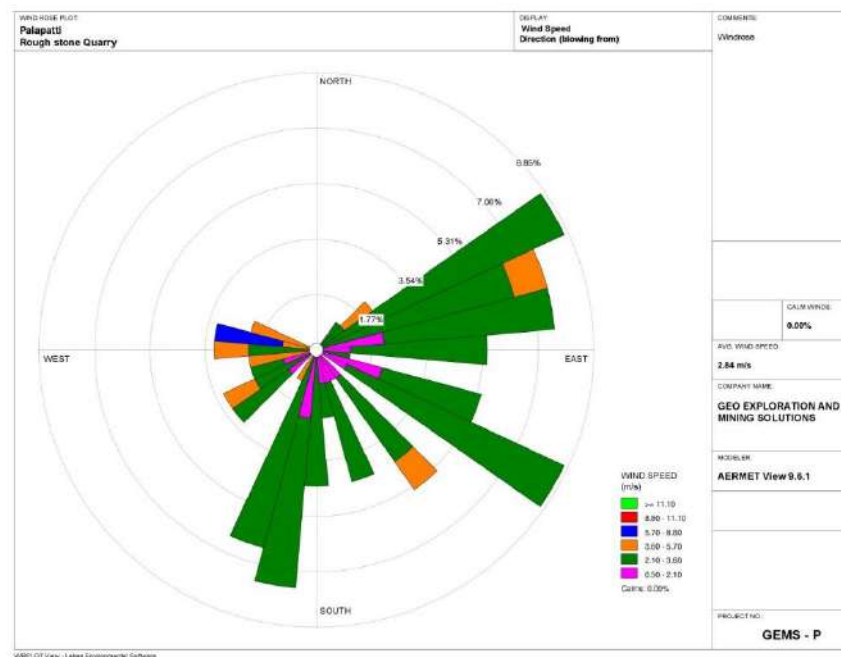
The pH of the water samples collected ranged from 7.10 to 7.60 and within the acceptable limit of 6.5 to 8.5. pH, Sulphates and Chlorides of water samples from all the sources are within the limits as per the Standard. On Turbidity, the water samples meet the requirement. The Total Dissolved Solids were found in the range of 276 to 428 mg/l in all samples. The Total hardness varied between 150 to 259 mg/l for all samples.

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

As per monitoring data, PM₁₀ ranges from 37.7 µg/m³ to 46.6 µg/m³, PM_{2.5} data ranges from 18.1 µg/m³ to 26.6 µg/m³, SO₂ ranges from 4.1 µg/m³ to 10.5 µg/m³ and NO₂ data ranges from 19.2 µg/m³ to 28.7 µg/m³. 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 is 41.8 dB (A) Leq and during night time is 36.8 dB (A) Leq. Noise levels recorded in buffer zone during day time were from 38.6 to 42.8 dB (A) Leq and during night time were from 35.2 to 36.6 dB (A) Leq.

Thus, the noise level for Industrial and Residential area meets the requirements of CPCB.

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 68 persons to the local people there by improving the indirect employment opportunity for 100 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 proposed mining lease 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 setting tank of 15 m x 10m x 3m to remove suspended solids if any. This collected water will be judiciously used for dust suppression 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

The following noise mitigation measures are proposed for control of Noise

- 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

PROPOSAL FOR P1 – Thiru. S.Dhanapal,				
Year	No. of trees proposed to be planted	Survial %	Area to be planted	Name of the species
I	It is proposed to plant 600 Nos of trees in the 1 st year	80%	Safety barrier, Unutilized areas and nearby village roads	Neem, Pungam,Sengondrai, Panai, Naval
PROPOSAL FOR P2 – Thiru.K.Venkatraman,				
I	It is proposed to plant 900Nos of trees in the 1 st year	80%	Safety barrier, Unutilized area's and nearby village roads	Neem, Pungam,Sengondrai, Panai, Naval
PROPOSAL FOR P3 – Tmt.S.Sumathi,				
I	It is proposed to plant 900 Nos of trees in the 1 st year	80%	Safety barrier, Unutilized area's and nearby village roads	Neem, Pungam,Sengondrai, Panai, Naval
PROPOSAL FOR P4 – Thiru.A.Rajarajacholan,				
I	It is proposed to plant 900 Nos of trees in the 1 st year	80%	Safety barrier, Unutilized area's and nearby village roads	Neem, Pungam,Sengondrai, Panai, Naval

4.7 SOCIO ECONOMIC ENVIRONMENT

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 Rough Stone quarry cluster 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.

1.6.3 Impact Evaluation:

Table 4.6.3 Impact Evaluation Impact evaluation is given in table below.

Impact Evaluation Element	Impact on socio economics due to the applied for Palapatti Rough Stone cluster quarries over an extent of 5.50.0 ha of Government Poramboke land of Palapatti Village, Vazhappadi Taluk, Salem District, Tamil Nadu State.			
Potential Effect/ Concern	Proposed 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 upliftment of socio-economic status of the area.			
Characteristics of Impacts				
Nature	Positive		Negative	Neutral
	✓			
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

			✓	
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5. ANALYSIS OF ALTERNATIVES (TECHNOLOGY AND SITE)

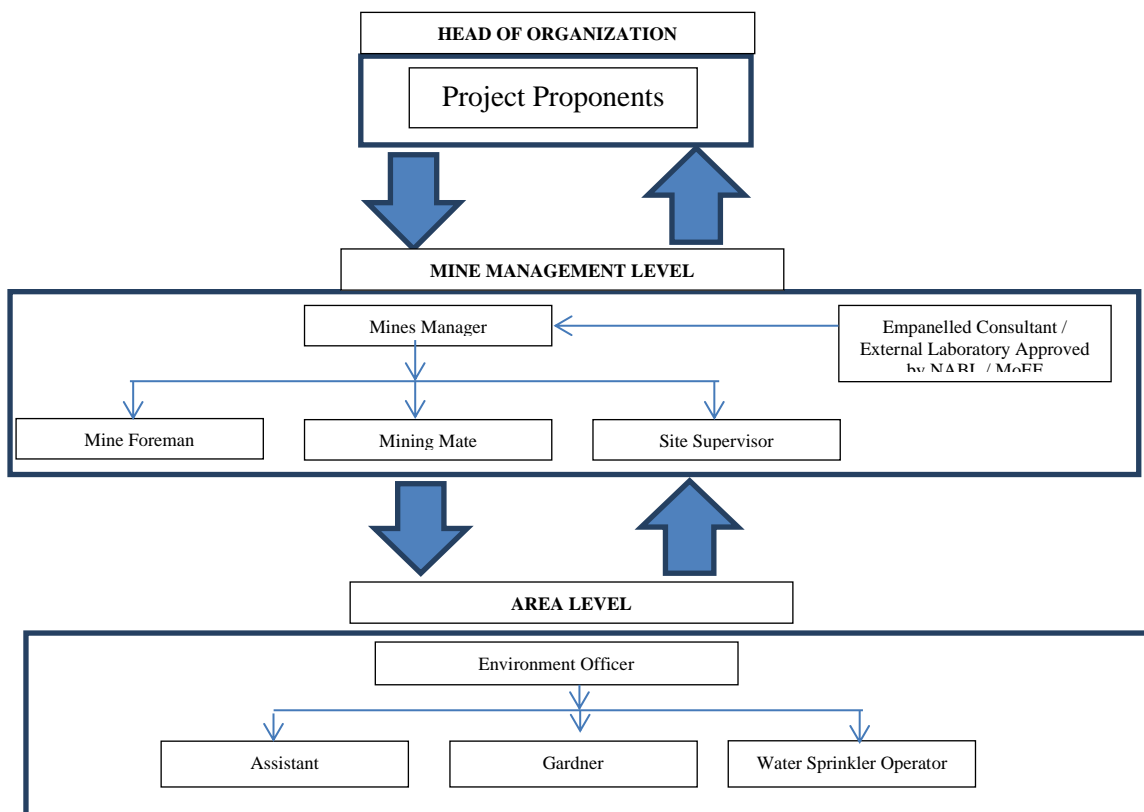
No alternatives are suggested as all the mine sites are mineral specific.

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 _{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 II. 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 ROUGH STONE IN CLUSTER

Quarry	PROPOSED PRODUCTION DETAILS			
	5 Years in m ³	Per Year in m ³	Per Day in m ³	Number of Lorry Load Per Day
P1	83,425	16,685	56	9
P2	3,02,716	60,543	202	34
P3	3,09,617	61,923	206	34
P4	3,00,650	60,130	200	33
Grand Total	9,96,408	1,99,281	664	110

CUMULATIVE PRODUCTION LOAD OF TOP SOIL IN CLUSTER

Quarry	PROPOSED PRODUCTION DETAILS			
	1 - 3 Years in m ³	Per Year in m ³	Per Day in m ³	Number of Lorry Load Per Day
P1	6,372	6,372	21	4
P2	11,700	11,700	39	7
P3	13,000	13,000	43	7
P4	11,700	11,700	39	7
Grand Total	42,772	42,772	142	25

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	41.1	43.7	44.6	55
Habitation Near P2	39.3	46.1	46.7	
Habitation Near P3	38.9	49.0	49.2	
Habitation Near P4	38.1	50.0	50.3	

SOCIO ECONOMIC BENEFITS

Location ID	Project Cost	CER
P1	Rs.44,71,000/-	Rs.5,00,000
P2	Rs.74,40,000/-	Rs.5,00,000
P3	Rs.74,27,000/-	Rs.5,00,000
P4	Rs.74,40,000/-	Rs.5,00,000
Grand Total	Rs.2,67,78,000/-	Rs.20,00,000

A total of 86 people will get employment due to 4 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

This Proposed Project for Quarrying Rough Stone cluster quarries at Palapatti Village aims to produce cumulatively 9,96,408m³ Rough Stone and 42,722m³ Topsoil over a period of 5 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.