# EXECUTIVE SUMMARY

## PROJECT PROPONENTS

| Code | Proponent Name | Extent |
|---|---|---|
| P-1 | Tvl.Gomuki Blue Metals L.L.P | 2.47.9Ha |
| P-2 | Thiru.K. Jayakumar | 1.62.5Ha |

**PACHAPALAYAM ROUGH STONE AND GRAVEL QUARRIES**

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

**CLUSTER EXTENT = 13.64.44 ha** (3 Proposed + 4 Existing Quarries)

**At**

**Pachapalayam Village, Sulur Taluk, Coimbatore District.**

Complied as per ToR obtained

**Lr No.SEIAA-TN/F.No.8581/ToR-1286/2022 Dated: 08.10.2022 for P-1**
**Lr No.SEIAA-TN/F.No.9192/ToR-1221/2022 Dated: 18.08.2022 for P-2**


**Environmental Consultant**

**GEO EXPLORATION AND MINING SOLUTIONS**

**Old No. 260-B, New No. 17,**
**Advaitha Ashram Road, Alagapuram,**
**Salem – 636 004, Tamil Nadu, India**
**Accredited for sector 1 Category 'A' 31 & 38 Category 'B'**
**Certificate No: NABET/EIA/2225/RA0276**
Phone: 0427-2431989,
Email: ifthiahmed@gmail.com, geothangam@gmail.com
**Web: www.gemssalem.com**

**Laboratory**

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


**Baseline Monitoring Period: March 2023 to May 2023**

**NOVEMBER 2023**

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

# 1. INTRODUCTION

Rough Stone and Gravel are the major requirements for construction industry. This EIA report is prepared by considering Cumulative load of proposed & existing quarries of Pachapalayam Rough Stone and Gravel Quarries consisting of three Proposed and four Existing Quarries with total extent of Cluster of 13.64.44Ha in Pachapalayam Village, Sulur Taluk, Coimbatore District and Tamil Nadu State, cluster area calculated as per MoEF & CC Notification S.O. 2269(E) Dated 1st July 2016.

This EIA Draft is prepared in compliance with ToR obtained vide:

| Code | Proponent Name | Extent | ToR obtained |
|---|---|---|---|
| **P-1** | Tvl.Gomuki Blue Metals L.L.P | 2.47.9Ha | Lr No.SEIAA-TN/F.No.8581/ToR-1286/2022 Dated: 08.10.2022 |
| **P-2** | Thiru.K.Jayakumar | 1.62.5Ha | Lr No.SEIAA-TN/F.No.9192/ToR-1221/2022 Dated: 18.08.2022 |

The Baseline Monitoring study has been carried out during summer season (March 2023 to May 2023) and the Cumulative Environmental Impact Assessment study is undertaken, which is followed by preparation of a detailed Environmental Management Plan (EMP) individually to minimize those adverse impacts.

**"Draft EIA report prepared on the basis of ToR Issued & Standard ToR for carrying out Public Hearing for the Grant of Environmental Clearance from SEIAA, - Tamil Nadu"**

## 1.1 DETAILS OF PROJECT PROPONENT –

| **PROPOSAL – P1** | |
|---|---|
| **Name of the Project Proponent** | **Tvl.Gomuki Blue Metals L.L.P,** Rough stone and Gravel Quarry |
| **Address** | S.F.No.238/2, Periyakuyili, Pachapalayam, Sulur Taluk, Coimbatore, Tamilnadu State. |
| **Mobile** | 98940 36376 |
| **Status** | Partnership Firm.( Thiru.S.Subramaniam, Thiru.S.Shanmuganand and Thiru.S.Moganraj are the Partners and Signing Authorization of the Firm |
| **PROPOSAL – P2** | |
| **Name of the Project Proponent** | **Thiru.K. Jayakumar,** Rough stone and Gravel quarry |
| **Address** | S/o. S. Kanthasamy, residing at No. 1/71, Palamara Thottam, Periyakuyilai Post, Chettipalayam Via, Coimbatore District – 641 201 |
| **Mobile** | +91 98422 36366 |
| **Status** | Individual |

Source: Approved Mining Plan of Respective Proposal

## 1.2 QUARRY DETAILS WITHIN 500 M RADIUS

| **PROPOSED QUARRIES** | | | | | |
|---|---|---|---|---|---|
| **CODE** | **Name of the Owner** | **Village** | **S.F. Nos** | **Extent in Ha** | **Status** |
| **P1** | **Tvl.Gomuki Blue Metals L.L.P** | Pachapalayam | 238/2 (P), 239/1B, 239/2B, 240/2B (P), 241/1 (P), 241/2 (P), 241/3 (P) & 241/4 (P) | 2.47.9 | **Lr No.SEIAA-TN/F.No.8581/ToR-1286/2022 Dated: 08.10.2022.** |
| **P2** | **Thiru.K.Jayakumar** | | 212/1A (P), 212/1B, 212/2A, 212/2B (P), 212/3A & 212/3B (P) | 1.62.5 | **Lr No.SEIAA-TN/F.No.9192/ToR-1221/2022 Dated: 18.08.2022.** |

| | | | | | |
|---|---|---|---|---|---|
| **P3** | **Thiru,P.Thilagaraj** | | 214/3B1 (P), 241/3B3 (P) & 213/3A(P) | 1.04.04 | Precise area communicated |
| | | | **TOTAL EXTENT** | **5.14.44** | |
| **EXISTING QUARRIES** | | | | | |
| **CODE** | **Name of the Owner** | **Village** | **S.F. Nos** | **Extent in Ha** | **Status** |
| E-1 | Thiru.R.S.Senthilkumar | Pachapalayam | 285/3, 286/2 | 3.15.0 | 11.11.2017 to 10.11.2022 |
| E-2 | Thiru.K.Chinnasamy | | 282/1A, 1B | 1.73.0 | 06.12.2017 to 05.12.2022 |
| E-3 | Thiru.T.Ragupathi | | 273/1B, 273/2B, 273/3E(P),274/1A & 274/2A | 2.62.0 | 03.01.2019 to 02.01.2024 |
| E-4 | Thiru.V.Shanmugam | | 238/1(P) | 1.00.0 | 25.01.2019 to 24.01.2024 |
| | | | **TOTAL EXTENT** | **8.50.0** | |
| **EXPIRED QUARRIES** | | | | | |
| Ex-1 | Thiru.V.Gopalakrishnan | Pachapalayam | 282/2A2 | 1.28.5 | 02.06.2014 to 01.06.2018 |
| Ex-2 | Thiru.B.Sakthivel | | 285/1B1 | 1.72.5 | 08.08.2012 to 07.08.2016 |
| Ex-3 | Thiru.V.Shanmugam | | 236/2A, 238/1,239/1A,2A 240/1,2A | 3.73.0 | 10.12.2009 to 09.12.2014 |
| | | | **TOTAL EXTENT** | **6.74.0** | |
| **ABANDONED QUARRIES** | | | | | |
| A-1 | Thiru.R.Devaraj | Pachapalayam | **205/3** | 1.21.51 | 19.04.1997 to 18.04.2002 |
| A-2 | Thiru.R.Devaraj | | **202/2C(P) & 204/2** | 3.43.0 | 28.05.2010 to 27.05.2015 |
| | | | **TOTAL EXTENT** | **4.64.51** | |
| | | | **TOTAL CLUSTER EXTENT** | **13.64.44** | |

**Note: -Cluster area is calculated as per MoEF & CC Notification – S.O. 2269 (E) Dated: 01.07.2016**

## 1.2 SALIENT FEATURES OF THE PROPOSAL

### DESCRIPTION OF THE PROJECT – P1

| | | |
|---|---|---|
| Name of the Project | **Tvl.Gomuki Blue Metals L.L.P,** Rough Stone & Gravel Quarry | |
| Land type | It is a Patta land (Barren land) which is not fit for vegetation/ Cultivation | |
| Land owner details | It is a Patta land, Registered in the name of the applicant Thiru.S.Moganraj (Tvl.Gomuki Blue Metals L.L.P.), vide Patta No.1438 (S.F.No.238/2) and Thiru.S.Shanmuganand, vide Patta No.1439 (S.F.No's.239/1B (P), 239/2B (P), 240/2B (P), 241/1 (P), 241/2 (P), 241/3 (P) & 241/4 (P)). The applicant has been obtain consent from the Pattadhar. | |
| Previous lease details | It is a fresh application. The lease area has been quarried in earlier. | |
| Toposheet No | 58 - F/01 | |
| Latitude between | **10°53'55.84"N to 10°54'02.25"N** | |
| Longitude between | **77°04'02.13"E to 77°04'07.94"E** | |
| Highest Elevation | 411m AMSL | |
| Mining Plan period | 5 years | |
| Existing Pit Depth | 15m Bgl | |
| Proposed Depth of Mining | 37m below ground level. | |
| Geological Resources | Rough Stone in $m^3$ | Gravel $m^3$ |
| | 8,60,510 | 49,172 |
| Mineable Reserves | Rough Stone in $m^3$ | Gravel $m^3$ |
| | 3,11,184 | 5,576 |
| Yearwise Production | Rough Stone in $m^3$ | Gravel $m^3$ |
| | 3,11,184 | 5,576 |

| | | |
|---|---|---|
| Existing Pit Dimension | Pit-1 104m (L) x 101.5m (W) x 2m(D) bgl<br>Pit-II 81m (L) x 68m (W) x 15m(D) bgl | |
| Ultimate Pit Dimension | 136m (L) x 154m (W) x 37m(D) bgl | |
| Water Level in the surrounding areas | 55– 50m bgl | |
| Method of Mining | Opencast Mechanized Mining Method involving small drilling and Controlled blasting using Slurry Explosives | |
| Topography | The lease applied area is exhibits plain terrain. The area has gentle sloping towards Southwestern side. The altitude of the area is 411m (Max) above Mean sea level. The area is covered by the Gravel which is about 2m thickness. Massive Charnockite is found after 2m (Gravel) which is clearly inferred from the existing quarry pits. | |
| Machinery proposed | Jack Hammer | 8 Nos |
| | Compressor | 2 Nos |
| | Excavator with Bucket and Rock Breaker | 2 No |
| | 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 | 33 Nos | |
| Project Cost | Rs. 57,75,792/- | |
| EMP Cost | Rs. 3,80,000/- | |
| Total Project cost | Rs. 61,55,792 | |
| CER Cost | Rs. 5,00,000,/- | |
| Nearby Water Bodies | Seasonal Odai | 260m West |
| | Seasonal Odai | 700m NE |
| | Odai | 2.8km SE |
| | Noyyal River | 9.8km North |
| | Pallapalayam Lake | 9.5km NE |
| Greenbelt Development Plan | As per Mining plan it is Proposed to plant 300 trees in the 7.5 m Safety Zone, approach road and panchayat roads. | |
| Proposed Water Requirement | 3.0 KLD | |
| Nearest Habitation | 320m – North East | |

## DESCRIPTION OF THE PROJECT – P2

| | |
|---|---|
| Name of the Project | **Thiru.K. Jayakumar,** Rough Stone & Gravel Quarry |
| Land type | It is a Patta land (Barren land) which is not fit for vegetation/ Cultivation |
| Land owner details | It is a Patta land, jointly registered in the name of the applicant (Thiru.K.Jayakumar) and Thiru.R.Easwaran, vide Patta Nos.1064, 1009, 1524 & 381 |
| Previous lease details | It is a fresh application but, The quarry lease was previously granted in the favour of Tmt.R.Naveena, over an extent of 5.35.0 hectares of Patta lands in S.F.Nos. 212/1A, 212/1B, 212/2A, 212/2B, 212/3A, 212/3B & 213/3C of Pachapalayam Village, Sulur Taluk, Coimbatore District vide Rc.No.320/2010/MM2, Dated: 04.11.2010.<br>The applicant has applied a quarry lease on 19.07.2021, over an extent of 1.62.5 hectares of Patta land in S.F.Nos.212/1A (P), 212/1B, 212/2A, 212/2B (P), 212/3A & 212/3B (P) of Pachapalayam Village, Sulur Taluk, Coimbatore District for the period of five years. |
| Toposheet No | 58 - F/01 |
| Latitude between | **10°54'07.08"N to 10°54'12.97"N** |
| Longitude between | **77°03'44.27"E to 77°03'49.53"E** |
| Highest Elevation | 404m AMSL |
| Mining Plan period | 5 years |
| Existing Pit Depth | 3.5m Bgl |
| Proposed Depth of Mining | 28.5m (1.5m Gravel + 2m Weathered Rock + 25m Rough Stone) below the ground level |

| | | | |
|---|---|---|---|
| Geological Resources | Rough Stone in $m^3$ | Weathered Rock $m^3$ | Gravel $m^3$ |
| | 5,13,165 | 25,318 | 16,918 |
| Mineable Reserves | Rough Stone in $m^3$ | Weathered Rock $m^3$ | Gravel $m^3$ |
| | 1,70,965 | 15,594 | 10,841 |
| Yearwise Production | Rough Stone in $m^3$ | Weathered Rock $m^3$ | Gravel $m^3$ |
| | 37,395 | 13,758 | 10,841 |
| Existing Pit Dimension (Max) | Pit-1 103m (L) x 60m (W) x 3.5m(D) bgl | | |
| Ultimate Pit Dimension | 148m (L) x 89m (W) x 28.5m(D) bgl | | |
| Water Level in the surrounding areas | 70 –65m bgl | | |
| Method of Mining | Opencast Mechanized Mining Method involving small drilling and Controlled blasting using Slurry Explosives | | |
| Topography | The lease applied area is exhibits Flat terrain. The area has gentle sloping towards Southern side. The altitude of the area is 404m above Mean Sea level. The area is covered by 1.5m thickness of Gravel formation and 2m Weathered Rock. Massive Charnockite which is clearly inferred from the existing quarry pits. | | |
| Machinery proposed | Jack Hammer | 1 Nos | |
| | Compressor | 1 Nos | |
| | Excavator with Bucket and Rock Breaker | 1 No | |
| | Tipper | 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 | 11Nos | | |
| Project Cost | Rs. 45,18,000/- | | |
| EMP Cost | Rs. 3,80,000/- | | |
| Total Project cost | Rs. 48,98,000/- | | |
| CER Cost | Rs. 5,00,000,/- | | |
| Nearby Water Bodies | Seasonal Odai | 120m SE | |
| | Seasonal Odai | 1km NE | |
| | Odai | 3.4km SE | |
| | Noyyal River | 9.3km North | |
| | Pallapalayam Lake | 9.5km NE | |
| Greenbelt Development Plan | As per Mining plan it is Proposed to plant 300 trees in the 7.5 m Safety Zone, approach road and panchayat roads. | | |
| Proposed Water Requirement | 2.0 KLD | | |
| Nearest Habitation | 320m – West | | |

Source: Approved Mining Plan

## 1.3 STATUTORY DETAILS

**SCREENING : P1**

- The proponent applied for Rough Stone and Gravel Quarry Lease Dated: 04.06.2018 and 19.12.2018
- Precise Area Communication Letter was issued by the District Collector, Coimbatore Rc. No 325/Mines/2018, Dated: 11.01.2019.
- The Mining Plan was prepared by Recognized Qualified Person and approved by Assistant Director, Geology and Mining, Coimbatore District, vide Rc. No 325/Mines/2018, Dated: 04.02.2019.
- 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/62942/2021. dated: 10.09.2022.

**SCOPING: P1**

- The proposal was placed in 312th SEAC meeting held on 16.09.2022 and the committee recommended for issue of ToR.
- The proposal was considered in 557th SEIAA meeting held on 08.10.2022 and issued ToR vide Lr No.SEIAA-TN/F.No.8581/ToR-1286/2022 Dated: 08.10.2022.

**SCREENING: P2**

- The proponent applied for Rough Stone and Gravel Quarry Lease Dated: 19.07.2021
- Precise Area Communication Letter was issued by the District Collector, Coimbatore Rc.No 896/Mines/2021, Dated: 11.11.2021.
- The Mining Plan was prepared by Recognized Qualified Person and approved by Assistant Director, Geology and Mining, Coimbatore District, vide Rc.No 896/Mines/2021, Dated: 08.03.2022.
- 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/75347/2022. dated: 16.04.2022.

**SCOPING:P2**

- The proposal was placed in 295th SEAC meeting held on 15.07.2022 and the committee recommended for issue of ToR.
- The proposal was considered in 540th SEIAA meeting held on 18.08.2022 and issued ToR vide Lr No.SEIAA-TN/F.No.9192/ToR-1221/2022 Dated: 18.08.2022

## 2. PROJECT DESCRIPTION

The proposed projects are site specific and there is no additional area required for this project. There is no effluent generation/discharge from the proposed quarries.

Method is mining is common for all the quarries in the cluster. Rough Stone is proposed to be excavated by opencast mechanized method involving splitting of rock mass of considerable volume from the parent rock mass by jackhammer drilling and blasting, hydraulic excavators are used for loading the Rough Stone from pithead to the needy crushers and rock breakers to avoid secondary blasting.

### 2.1 SITE CONNECTIVITY TO THE PROJECT AREA

| | |
|---|---|
| Nearest Roadway | NH83- Coimbatore – Dindigul Road -7.0km-NW<br>SH19- Palladam– Pollachi Road-8.0km-E |
| Nearest Village | Pachapalayam – 310m- E |
| Nearest Town | Coimbatore – 10kmNW |
| Nearest Railway Station | Chettipalayam – 3.3km-NW |
| Nearest Airport | Coimbatore – 14.0km – NW |
| Seaport | Kochi- 139 km – South West |

### 2.2 LAND USE PATTERN OF THE LEASE APPLIED AREA

**LAND USE PATTERN OF THE PROPOSED PROJECTS-P1**

| Description | Present area in (ha) | Area at the end of this quarrying period (ha) |
|---|---|---|
| Area Under Quarrying | 1.52.2 | 1.90.0 |
| Infrastructure | Nil | Nil |
| Roads | 0.01.0 | 0.02.0 |
| Green Belt | Nil | 0.25.9 |

| | | |
|---|---|---|
| Unutilized Area | 0.94.7 | 0.30.0 |
| **Grand Total** | **2.47.9** | **2.47.9** |

**LAND USE PATTERN OF THE PROPOSED PROJECTS-P2**

| Description | Present area (Ha) | Area at the end of this quarrying period (Ha) |
|---|---|---|
| Quarrying Pit | 0.59.0 | 1.24.0 |
| Infrastructure | Nil | 0.01.0 |
| Roads | 0.02.0 | 0.02.0 |
| Green Belt | Nil | 0.10.0 |
| Unutilized Area | 1.01.5 | 0.25.5 |
| **Grand Total** | **1.62.5** | **1.62.5** |

Source: Approved Mining Plans of respective Proposals

## 2.3 OPERATIONAL DETAILS OF LEASE APPLIED AREA

**OPERATIONAL DETAILS FOR PROPOSED PROJECTS-P1-P2**

| PROJECT – P1 | | |
|---|---|---|
| **PARTICULARS** | **DETAILS** | |
| | **Rough Stone (5Year Plan period)** | **Gravel in $m^3$** |
| Geological Resources | 8,60,510 | 49,172 |
| Mineable Reserves | 3,11,184 | 5,576 |
| Production year wise plan period | 3,11,184 | 5,576 |
| Mining Plan Period / Lease Applied Period | 5 Years | |
| Number of Working Days | 300 Days | |
| Production per day | 207 | 19 |
| No of Lorry loads ($6m^3$ per load) | 35 | 3 |
| Total Depth of Mining | 37m below ground level | |

Source: Respective proposed quarries Approved mining plan * Gravel 1 years as per plan.

| PROJECT – P2 | | | |
|---|---|---|---|
| **PARTICULARS** | **DETAILS** | | |
| | **Rough Stone (5Year Plan period)** | ***Weathered Rock $m^3$** | ***Gravel in $m^3$** |
| Geological Resources | 5,13,165 | 25,318 | 16,918 |
| Mineable Reserves | 1,70,965 | 15,594 | 10,841 |
| Production year wise plan period | 37,395 | 13,758 | 10,841 |
| Mining Plan Period / Lease Applied Period | 5 Years | | |
| Number of Working Days | 300 Days | | |
| Production per day | 25 | 15 | 12 |
| No of Lorry loads ($6m^3$ per load) | 4 | 3 | 2 |
| Total Depth of Mining | 28.5m (1.5m Gravel + 2m Weathered Rock + 25m Rough Stone) below the ground level | | |

Source: Respective proposed quarries Approved mining plan * Weathered Rock *Gravel 3 years as per plan.

## 2.4 YEAR-WISE PRODUCTION PLAN

**TABLE 2.6: AVAILABLE GEOLOGICAL RESOURCES OF PROPOSED PROJECT-P1**

| PROPOSAL – P1 | | |
|---|---|---|
| | Rough Stone **$m^3$** | Gravel **$m^3$** |
| Geological Resource in $m^3$ | 8,60,510 | 49,172 |
| Mineable Resource in $m^3$ | 3,11,184 | 5,576 |
| Year wise production for five-year plan period | 3,11,184 | 5,576 |

Source: Approved Mining Plan

**YEAR-WISE PRODUCTION PLAN-P1**

| PROPOSAL – P1 | | |
|---|---|---|
| **YEAR** | **ROUGH STONE ($m^3$)** | **GRAVEL ($m^3$)** |
| I | 57205 | 5576 |
| II | 63564 | - |
| III | 62325 | - |
| IV | 63125 | - |
| V | 64965 | - |
| **TOTAL** | **3,11,184** | **5,576** |

Source: Approved Mining Plan

**AVAILABLE GEOLOGICAL RESOURCES OF PROPOSED PROJECT-P2**

| PROPOSAL – P2 | | | |
|---|---|---|---|
| | **Rough Stone $m^3$** | **Weathered Rock $m^3$** | **Gravel $m^3$** |
| Geological Resource in $m^3$ | 5,13,165 | 25,318 | 16,918 |
| Mineable Resource in $m^3$ | 1,70,965 | 15,594 | 10,841 |
| Year wise production for five-year plan period | 37,395 | 13,758 | 10,841 |

Source: Approved Mining Plan

**YEAR-WISE PRODUCTION PLAN-P2**

| PROPOSAL – P2 | | | |
|---|---|---|---|
| **YEAR** | **ROUGH STONE ($m^3$)** | **WEATHERED ROCK $m^3$** | **GRAVEL ($m^3$)** |
| I | 9125 | 2646 | 1769 |
| II | 7250 | 3132 | 2523 |
| III | 3480 | 7980 | 6549 |
| IV | 9860 | - | - |
| V | 7680 | - | - |
| **TOTAL** | **37395** | **13758** | **10841** |

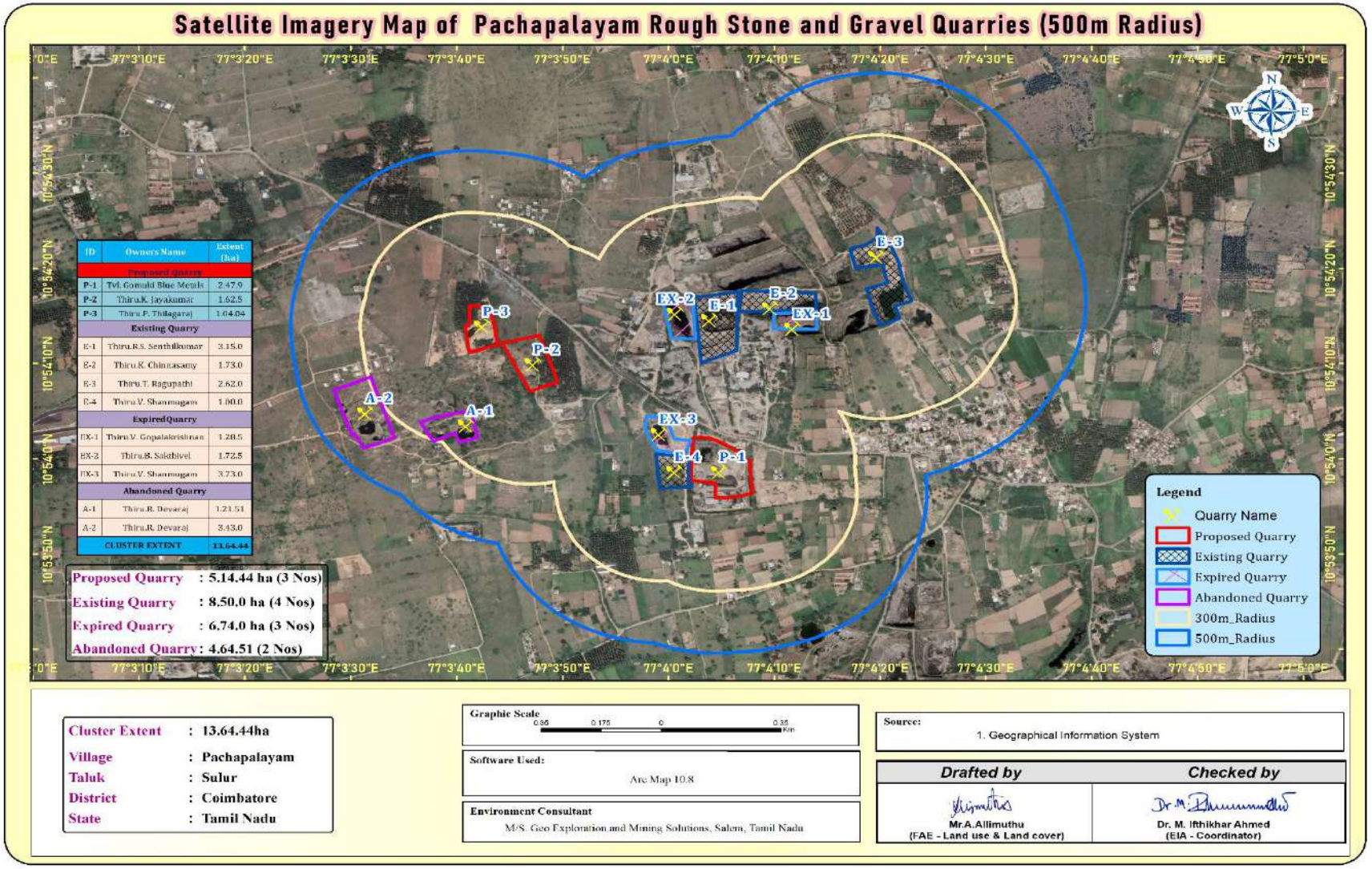
Source: Approved Mining Plan

## FIGURE – 1: GOOGLE IMAGE SHOWING APPLIED QUARRY LEASE AREA – P1

## FIGURE – 1: GOOGLE IMAGE SHOWING APPLIED QUARRY LEASE AREA – P2

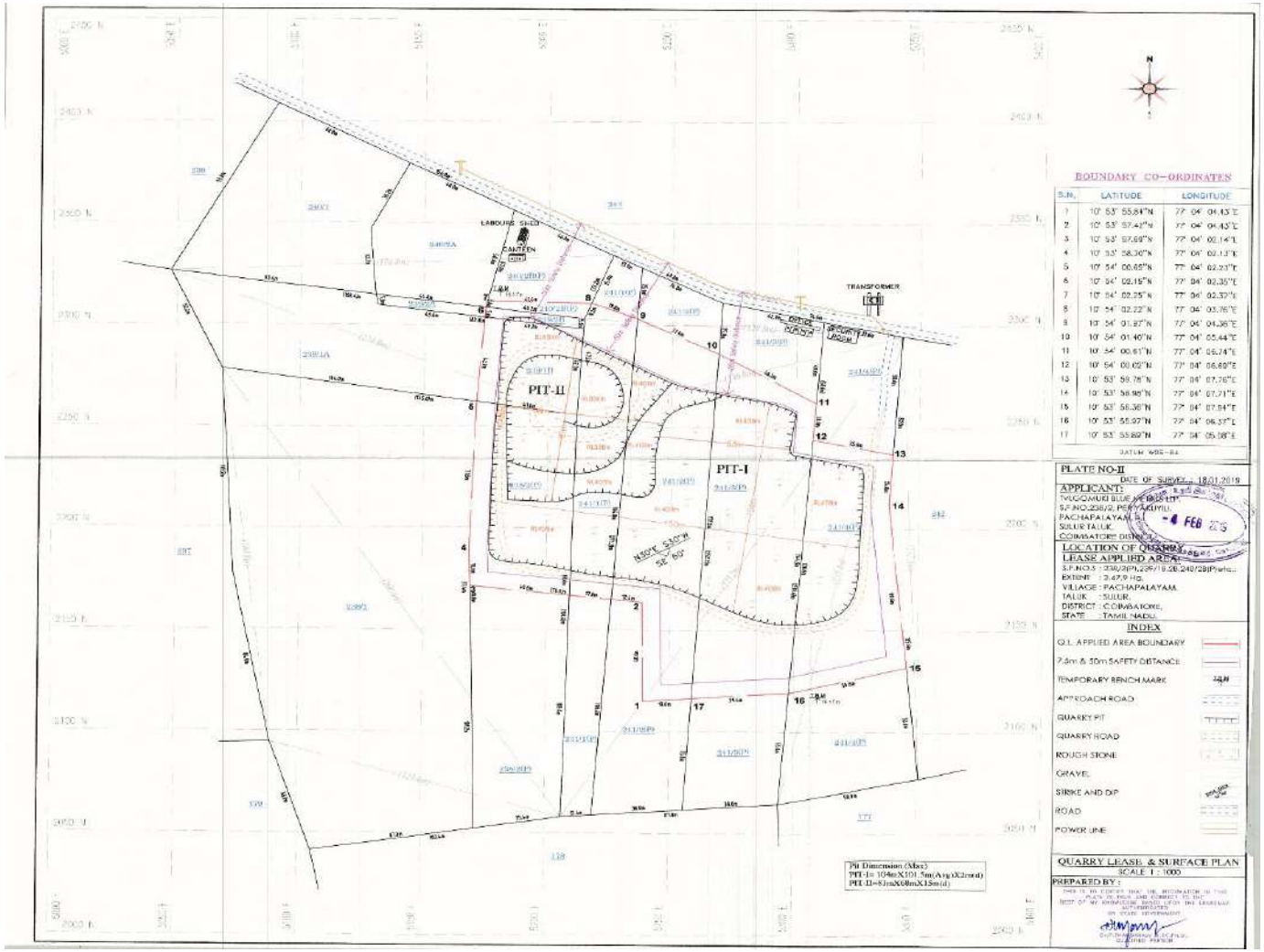

Source: Google Earth Imagery

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

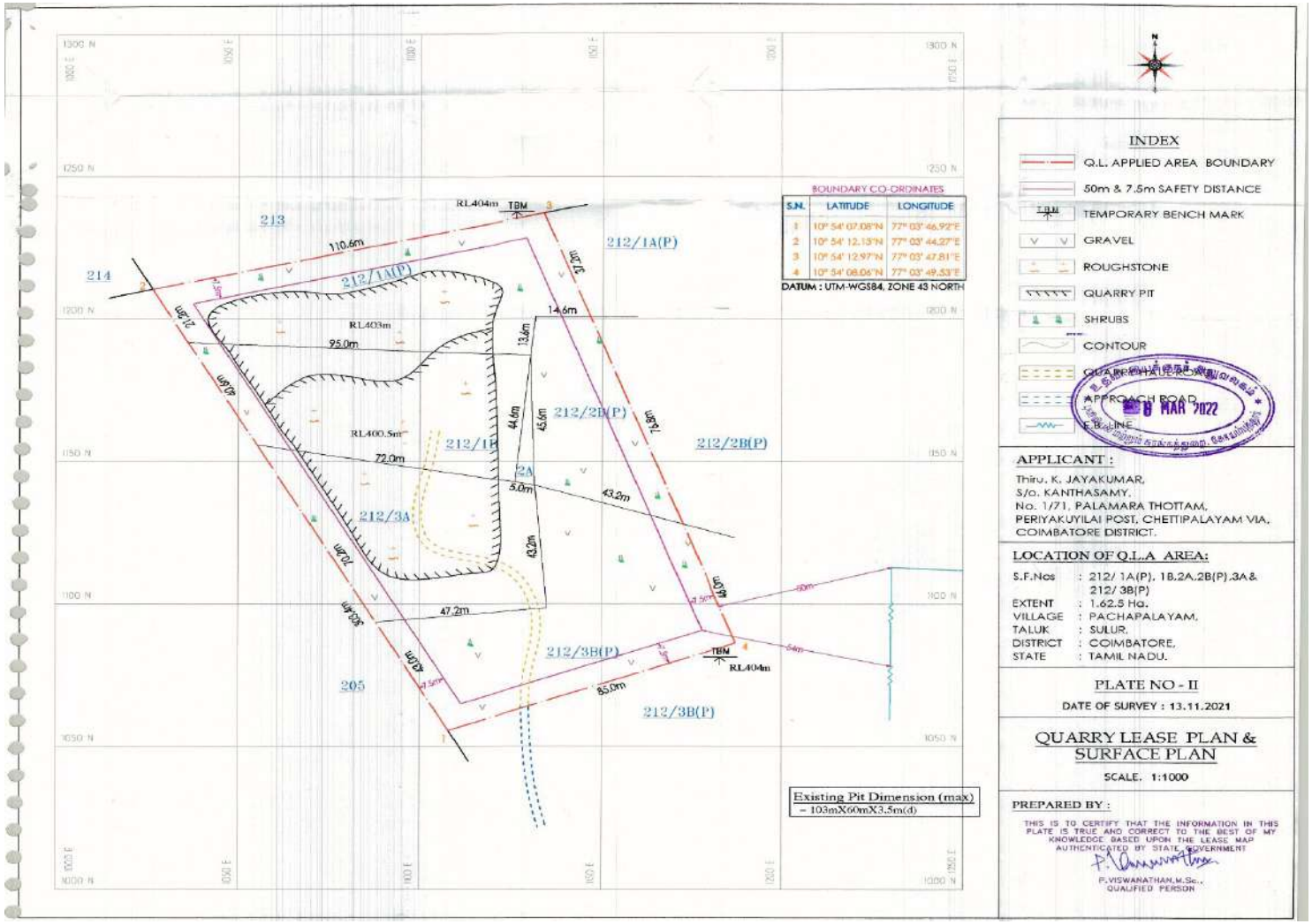



| ID | Owners Name | Extent (ha) |
|---|---|---|
| Proposed Quarry | | |
| P-1 | Tvl. Gomuld Blue Metals | 2.47.9 |
| P-2 | Thiru.K. Jayakumar | 1.62.5 |
| P-3 | Thiru.P. Thilagaraj | 1.04.04 |
| Existing Quarry | | |
| E-1 | Thiru.R.S. Senthilkumar | 3.15.0 |
| E-2 | Thiru.K. Chinnasamy | 1.73.0 |
| E-3 | Thiru.T. Ragupathi | 2.62.0 |
| E-4 | Thiru.V. Shanmugam | 1.00.0 |
| Expired Quarry | | |
| EX-1 | Thiru.V. Gopalakrishnan | 1.28.5 |
| EX-2 | Thiru.S. Sakthivel | 1.72.5 |
| EX-3 | Thiru.V. Shanmugam | 3.73.0 |
| Abandoned Quarry | | |
| A-1 | Thiru.R. Devaraj | 1.21.51 |
| A-2 | Thiru.R. Devaraj | 3.43.0 |
| CLUSTER EXTENT | | 13.64.44 |

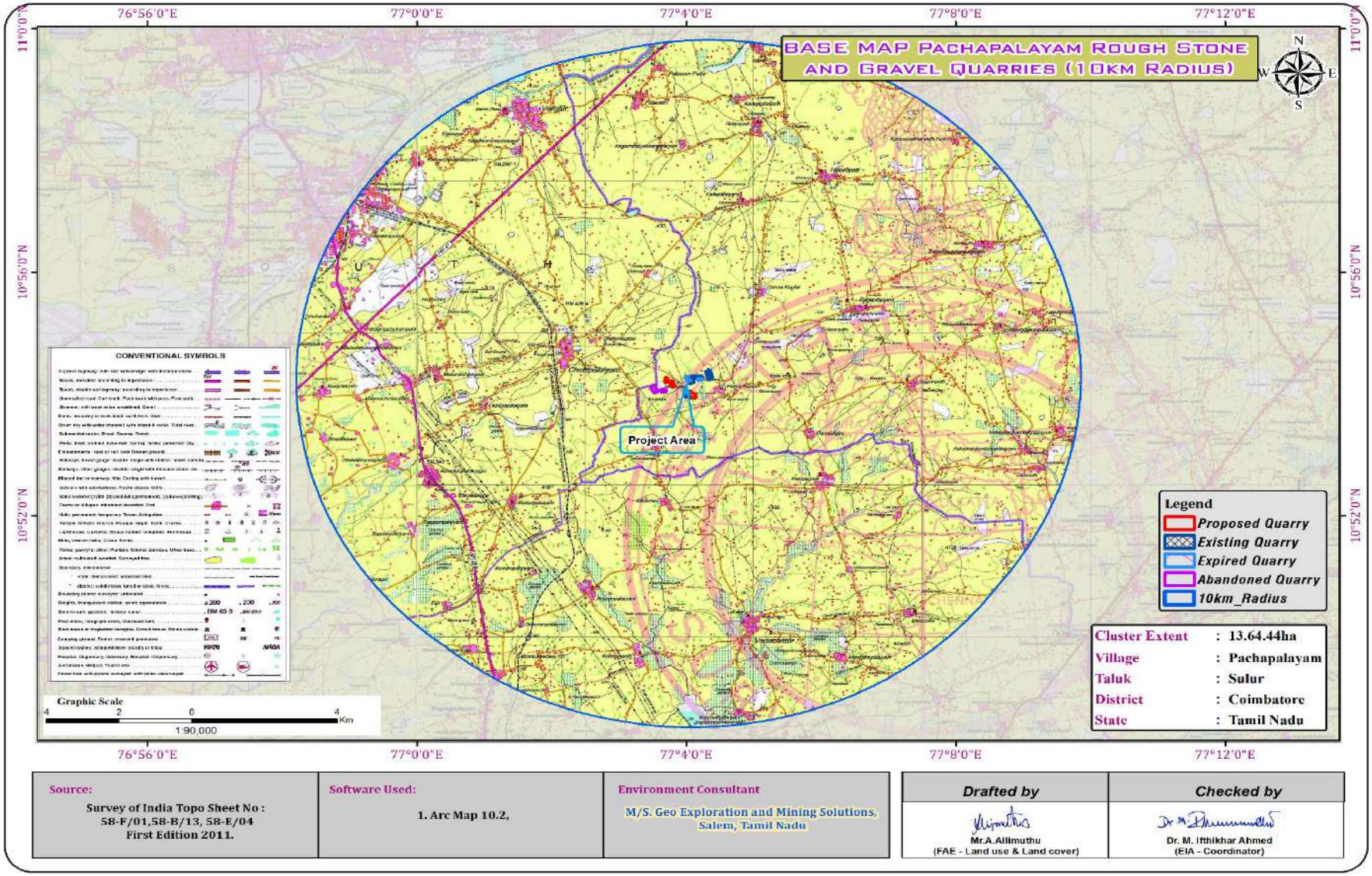
## FIGURE 3: QUARRY LEASE PLAN / SURFACE PLAN – P1



## FIGURE 4: QUARRY LEASE PLAN / SURFACE PLAN – P2



## FIGURE – 4: TOPOSHEET MAP COVERING 10 KM RADIUS



## 2.5 METHOD OF MINING

Proposed Method of Mining is common for all the Proposed Projects – The method of mining is 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 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.

## 2.6 PROPOSED MACHINERY DEPLOYMENT-P1-P2

| PROPOSAL – P1 | | | | |
|---|---|---|---|---|
| **S.NO.** | **TYPE** | **NOS** | **SIZE/CAPACITY** | **MOTIVE POWER** |
| 1 | Jack hammers | 8 | 1.2m to 2.0m | Compressed air |
| 2 | Compressor | 2 | 400psi | Diesel Drive |
| 3 | Excavator with Bucket and Rock Breaker | 2 | 300 HP | Diesel Drive |
| 4 | Tippers | 4 | 20 Tonnes | Diesel Drive |
| **PROPOSAL – P2** | | | | |
| **S.NO.** | **TYPE** | **NOS** | **SIZE/CAPACITY** | **MOTIVE POWER** |
| 1 | Jack hammers | 1 | 1.2m to 2.0m | Compressed air |
| 2 | Compressor | 1 | 400psi | Diesel Drive |
| 3 | Excavator with Bucket and Rock Breaker | 1 | 300 HP | Diesel Drive |
| 4 | Tippers | 1 | 20 Tonnes | Diesel Drive |

Source: Approved Mining Plans

## 2.7 CONCEPTUAL MINING PLAN/ FINAL MINE CLOSURE PLAN

- At the end of life of mine, the excavated mine pit / void will act as artificial reservoir for collecting rain water and helps to meet out the demand or crises during drought season.
- After mine closure the greenbelt developed along the safety barrier and top benches and temporary water reservoir will enhance the ecosystem
- Mine Closure is a process of returning a disturbed site to its natural state or which prepares it for other productive uses that prevents or minimizes any adverse effects on the environment or threats to human health and safety.
- The principle closure objectives are for rehabilitated mines to be physically safe to humans and animals, geo-technically stable, geo-chemically non-polluting/ non-contaminating, and capable of sustaining an agreed post-mining land use.

## 2.8 ULTIMATE PIT DIMENSION P1-P2

| PROPOSAL – P1 | | | |
|---|---|---|---|
| **Pit** | **Length (Max) (m)** | **Width (Max) (m)** | **Depth (Max)** |
| **I** | 136 | 154 | 37m bgl |
| **PROPOSAL – P2** | | | |
| **Pit** | **Length (Max) (m)** | **Width (Max) (m)** | **Depth (Max)** |
| **I** | 148 | 89 | 28.5m bgl |

Source: Approved Mining Plan

# 3. DESCRIPTION OF THE ENVIRONMENT

Field monitoring studies to evaluate the base line status of the project site were carried out during March 2023 to May 2023 as per CPCB guidelines. Environmental Monitoring data has been collected with reference to proposed mine by EHS 360 LABS PRIVATE LIMITED, – An accredited by (NABL).

## 3.1 ENVIRONMENT MONITORING ATTRIBUTES

| Sl.No. | Attributes | Parameters | Source and Frequency |
|---|---|---|---|
| 1 | Ambient Air Quality | $PM_{10}$, $PM_{2.5}$, $SO_2$, $NO_2$ | Continuous 24-hourly samples twice a week for three months at 8 locations (2 Core & 6 Buffer) |
| 2 | Meteorology | Wind speed and direction, temperature, relative humidity and rainfall | Near project site continuous for three months with hourly recording and from secondary sources of IMD station |
| 3 | Water quality | Physical, Chemical and Bacteriological parameters | Grab samples were collected at 6 locations – 4 ground water and 2 surface water samples; once during study period. |
| 4 | Ecology | Existing terrestrial and aquatic flora and fauna within 10 km radius circle. | Limited primary survey and secondary data was collected from the Forest department. |
| 5 | Noise levels | Noise levels in dB(A) | 8 locations (2Core & 6 Buffer)– data monitored once for 24 hours during EIA study |
| 6 | Soil Characteristics | Physical and Chemical Parameters | Once at 6 locations during study period (2 Core & 4 Buffer) |
| 7 | Land use | Existing land use for different categories | Based on Survey of India topographical sheet and satellite imagery and primary survey. |
| 8 | Socio-Economic Aspects | Socio-economic and demographic characteristics, worker characteristics | Based on primary survey and secondary sources data like census of India 2011. |
| 9 | Hydrology | Drainage pattern of the area, nature of streams, aquifer characteristics, recharge and discharge areas | Based on data collected from secondary sources as well as hydro-geology study report prepared. |
| 10 | Risk assessment and Disaster Management Plan | Identify areas where disaster can occur by fires and explosions and release of toxic substances | Based on the findings of Risk analysis done for the risk associated with mining. |

Source: Onsite Monitoring Data/Sampling by EHS 360 LABS PRIVATE LIMITED, The data has been collected as per the requirement of the ToR issued by SEIAA – TN.

## 3.2 LAND ENVIRONMENT

| S.No | CLASSIFICATION | AREA_HA | AREA_% |
|---|---|---|---|
| | **BUILTUP** | | |
| 1 | URBAN | 646.18 | 2.03 |
| 2 | RURAL | 1207.34 | 3.79 |
| 3 | MINING | 544.10 | 1.71 |
| | **AGRICULTURAL LAND** | | |
| 4 | CROP LAND | 24599.52787 | 77.20 |
| 5 | PLANTATION | 3508.36 | 11.01 |
| | **BARREN/WASTE LANDS** | | |
| 6 | SCRUB LAND | 1225.24 | 3.85 |
| | **WETLANDS/ WATER BODIES** | | |
| 7 | WATER BODIES/LAKE/RIVER | 132.10 | 0.41 |
| **TOTAL** | | 31862.85 | 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 and fallow land (includes crop land) 77.20% followed by Built-up Lands – 5.82%, Scrub land – 3.85%, and Water bodies 0.41%.

The total mining area within the study area is 544.10 ha i.e., 1.71%. The cluster area of 12.01.20 ha contributes about 0.02% 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

**Physical Characteristics –**

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 (27.5 % 31.5 %) to Sandy Loam Soil and Bulk Density of Soils in the study area varied between 0.99– 1.22 g/cc. The Water Holding Capacity and Porosity of the soil samples is found to be medium i.e. ranging from 40.0 – 44.8 %. and 40.2-43.5 %.

**Chemical Characteristics –**

- The nature of soil is slightly alkaline to strongly alkaline with pH range 7.85 to 8.25
- The available Nitrogen content range between 256 to 638 mg/kg
- The available Phosphorus content range between 1.65 to 3.2 mg/kg
- The available Potassium range between 16.5 mg/kg to 105 mg/kg

## 3.4 WATER ENVIRONMENT

**Surface Water**

**Ph:**

The pH varied from 7.31 to 7.58 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 570 to 571mg/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 88.0 – 108mg/l. Nitrates varied from 6.8 to 8.4 mg/l, while sulphates varied from 29.6 to 39.6 mg/l.

**Ground Water**

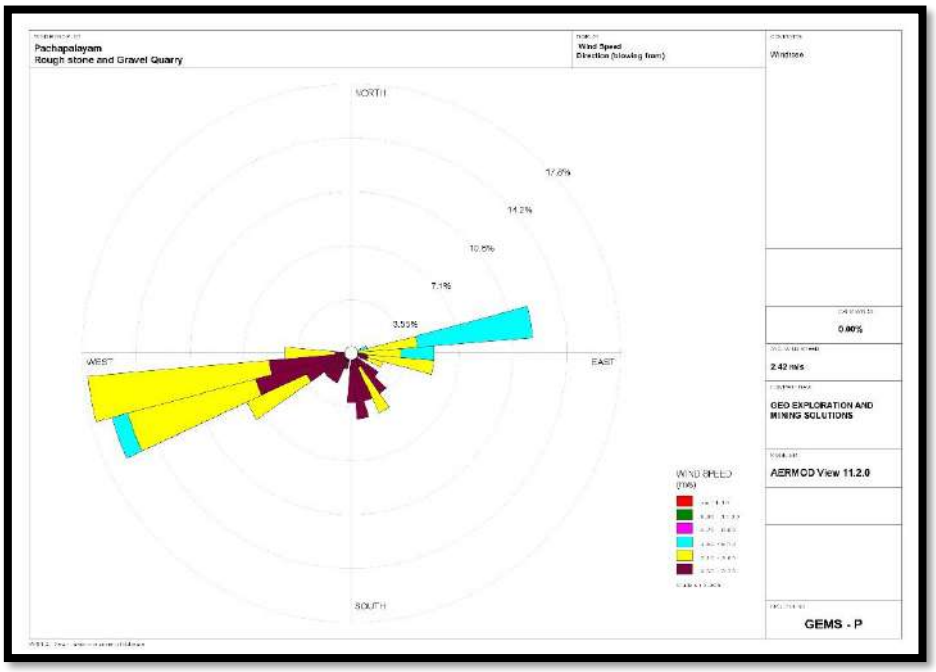
The pH of the water samples collected ranged from 7.36 to 7.68 and within the acceptable limit of 6.5 to 8.5. pH, Sulphates and Chlorides of water samples from all the sources are within the limits as per the Standard. On Turbidity, the water samples meet the requirement. Total Dissolved Solids were found in the range of 658– 789mg/l in all samples. Total hardness varied between 127– 166mg/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.

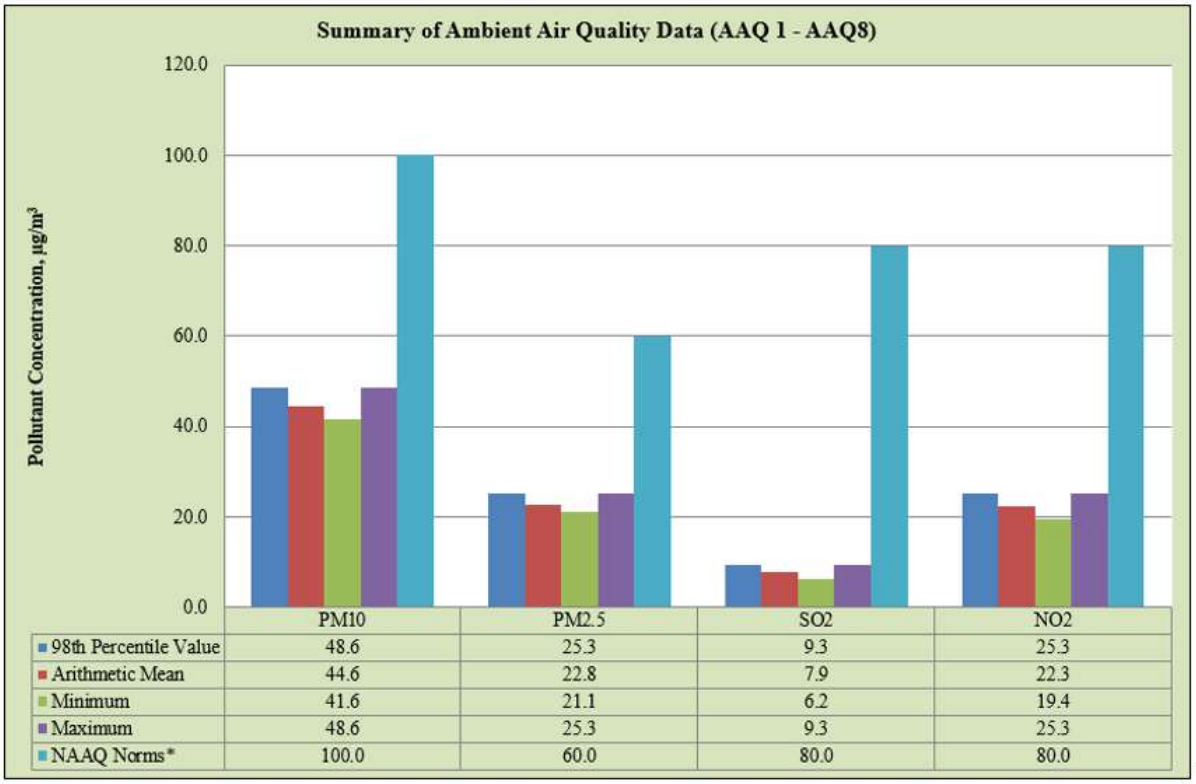
## 3.5 AIR ENVIRONMENT

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 – 5: WIND ROSE DIAGRAM




## FIGURE – 6. SUMMARY OF AMBIENT AIR QUALITY DATA




| | PM10 | PM2.5 | SO2 | NO2 |
|---|---|---|---|---|
| 98th Percentile Value | 48.6 | 25.3 | 9.3 | 25.3 |
| Arithmetic Mean | 44.6 | 22.8 | 7.9 | 22.3 |
| Minimum | 41.6 | 21.1 | 6.2 | 19.4 |
| Maximum | 48.6 | 25.3 | 9.3 | 25.3 |
| NAAQ Norms* | 100.0 | 60.0 | 80.0 | 80.0 |

The results of ambient air quality monitoring for the period (Mar 2023 to May 2023) are presented in the report. Data has been complied for three months.

**Interpretations & Conclusion**

As per monitoring data, $PM_{10}$ ranges from 39.9 µg/m$^3$ to 49.2 µg/m$^3$, $PM_{2.5}$ data ranges from 20.1 µg/m$^3$ to 26.3 µg/m$^3$, $SO_2$ ranges from 5.2µg/m$^3$ to 9.8 µg/m$^3$ and $NO_2$ data ranges from 17.8 µg/m$^3$ to 27.6 µg/m$^3$. The concentration levels of the above criteria pollutants were observed to be well within the limits of NAAQS prescribed by CPCB.

## 3.6 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 42.1 dB (A) Leq and during night time were from 35.1 dB (A) Leq. Noise levels recorded in buffer zone during day time were from 38.5 to 39.7 dB (A) Leq and during night time were from 36.2 to 38.9 dB (A) Leq.

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

## 3.7 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.

## 3.8 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 projects will aim to provide preferential employment to the local people there by improving the employment opportunity in the area 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 soil 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 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 drains, settling tank will be constructed along the individual mining leases. The Garland drains of the individual leases will be connected to settling tank and after settling the 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 onwards and such sites where dust likely to be generated and for developing green belt. The proponent will collect and judicially utilize the rainwater as part of rainwater harvesting
- 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 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 and analysing the quality of water in open well, bore wells and surface water.

## 4.3 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 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.

## 4.4 NOISE ENVIRONMENT

## ANTICIPATED IMPACT

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

## MITIGATION MEASURES

- Usage of sharp drill bits while drilling which will help in reducing noise;
- Secondary blasting will be totally avoided and hydraulic rock breaker will be used for breaking boulders;
- Controlled blasting with proper spacing, burden, stemming and optimum charge/delay will be maintained;
- The blasting will be carried out during favourable atmospheric condition and less human activity timings by using nonelectrical initiation system;
- Proper maintenance, oiling and greasing of machines will be done every week to reduce generation of noise;
- Provision of sound insulated chambers for the workers working on machines (HEMM) producing higher levels of noise;
- Silencers / mufflers will be installed in all machineries;
- Green Belt/Plantation will be developed around the project area and along the haul roads. The plantation minimizes propagation of noise;
- Personal Protective Equipment (PPE) like ear muffs/ear plugs will be provided to the operators of HEMM and persons working near HEMM and their use will be ensured though training and awareness.
- Regular medical check–up and proper training to personnel to create awareness about adverse noise level effects.

## 4.5 BIOLOGICAL ENVIRONMENT

## ANTICIPATED IMPACT

There are no National Park and Archaeological monuments within project area. There are no migratory corridors, migratory avian-fauna, rare endemic and endangered species. There are no wild animals in the area. No breeding and nesting site were identified in project site. No National Park and Wildlife Sanctuary found within 10km radius. The dumps / bunds around the mine itself act as a good barrier for entry of stray animals. In the post mining stage, barbed wire fencing is proposed all around the mined-out void to prevent fall of animals in the mine pits.

## MITIGATION MEASURES

To reduce the adverse effects on natural flora/fauna status of the area due to deposition of dust generated from mining operations, water sprinkling and water spraying systems will be ensured in all dust prone areas to arrest dust generation. Methodical and well-planned plantation scheme will be carried out.

### 4.5.1 GREENBELT DEVELOPMENT PLAN P1-P2

| PROPOSAL – P1 | | | | | |
|---|---|---|---|---|---|
| Year | No. of tress proposed to be planted | Area to be covered in m2 | Name of the species | Survival rate expected in % | No. of trees expected to be grown |
| I | 1240 | The safety zone along the boundary barrier has been identified to be utilized for Greenbelt development. | Neem, Pongamia Pinnata, Casuarina etc., | 80 | 990 |
| **PROPOSAL – P2** | | | | | |
| Year | No. of tress proposed to be planted | Area to be covered in m2 | Name of the species | Survival rate expected in % | No. of trees expected to be grown |
| I | 810 | The safety zone along the boundary barrier has been identified to be utilized for Greenbelt development. | Neem, Pongamia Pinnata, Casuarina etc., | 80 | 650 |

## 4.6 SOCIO ECONOMIC ENVIRONMENT

### ANTICIPATED IMPACT

Employment generation due to the project will provide direct employment for about 18 persons.

### MITIGATION MEASURES

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

## 5. ANALYSIS OF ALTERNATIVES (TECHNOLOGY AND SITE)

The site has been selected based on geological investigation and exploration as below:

- Occurrence of minerals at the specific site.
- Transportation facility for materials & manpower.
- Overall impact on environment and mitigation feasibility
- Socio – economic background.

The mineral deposits are site specific in nature; hence question of seeking alternate site does not arise for this project.

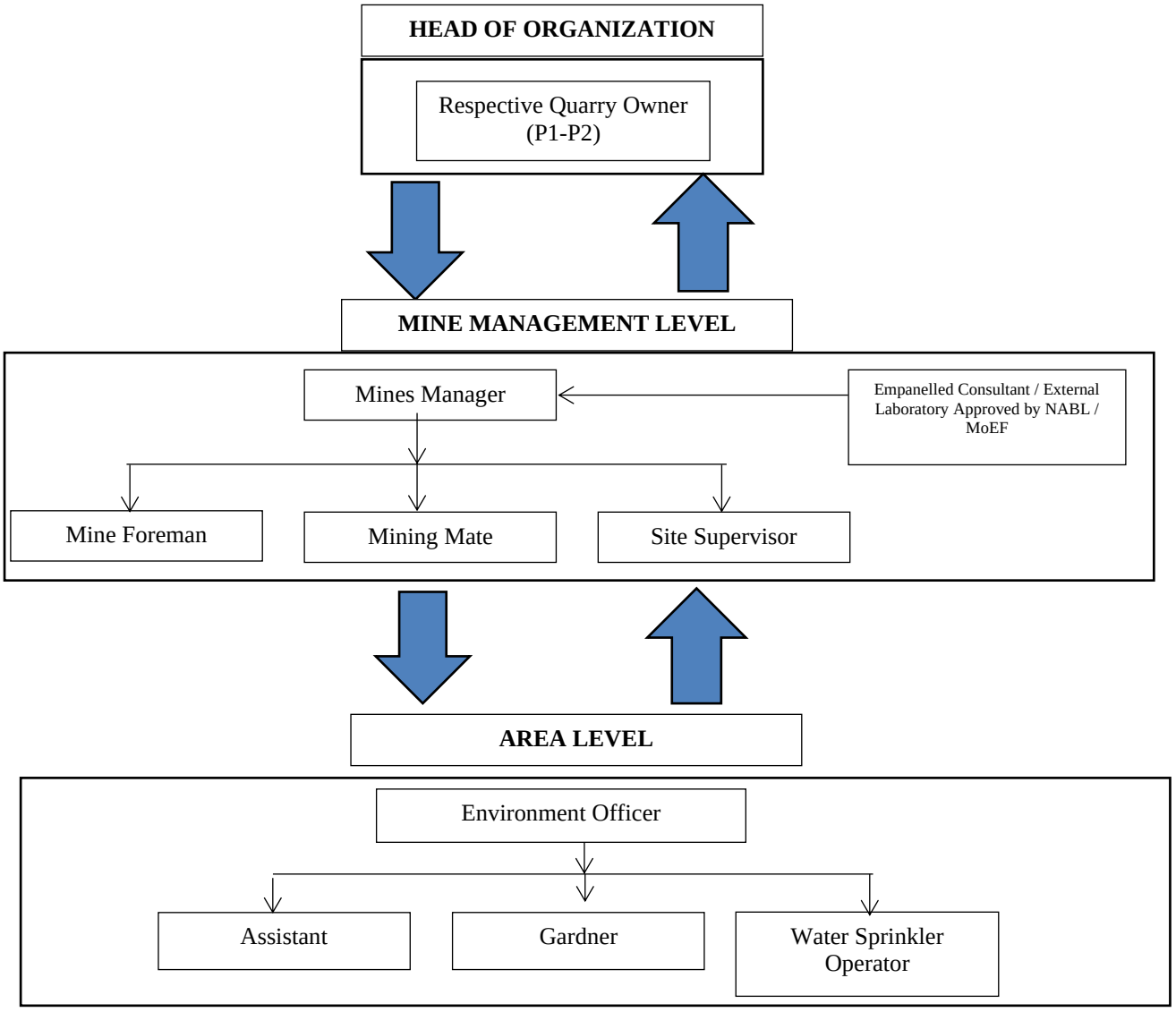
# 6. ENVIRONMENT MONITORING PROGRAM

Usually, an impact assessment study is carried over short period of time and the data cannot bring out all variations induced by natural or human activities. Hence regular monitoring program of Environmental parameters is essential to take into account the changes in the Environment.

The Objective of Monitoring -

- To check or assess the efficiency of the controlling measures;
- To establish a data base for future impact assessment studies.

## 6.1 ENVIRONMENTAL MONITORING CELL



## 6.2 POST ENVIRONMENTAL CLEARANCE MONITORING SCHEDULE P1-P2

| P1-P2 | | | | | |
|---|---|---|---|---|---|
| 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. Risk Assessment is all about prevention of accidents and to take necessary steps to prevent it from happening.

## 7.2 DISASTER MANAGEMENT PLAN

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

| Quarry | Production for five-year plan period | Per Year Production in $m^3$ | Per Day Production in $m^3$ | Number of Lorry Load Per Day |
|---|---|---|---|---|
| P1 | 3,11,184 | 62,237 | 207 | 35 |
| P2 | 37,395 | 7,479 | 25 | 4 |
| P3 | 98,650 | 19,730 | 66 | 11 |
| **Total** | **4,47,229** | **89,446** | **298** | **50** |
| E1 | 1,12,850 | 22,570 | 75 | 13 |
| E2 | 90,310 | 18,062 | 60 | 10 |
| E3 | 65,435 | 13,087 | 44 | 7 |
| E4 | 90,055 | 18,011 | 60 | 10 |
| **Total** | **3,58,650** | **71,730** | **239** | **40** |
| **Grand Total** | **8,05,879** | **1,61,176** | **537** | **90** |

### CUMULATIVE PRODUCTION LOAD OF GRAVEL

| Quarry | Production for five-year plan period | Per Year Production in $m^3$ | Per Day Production in $m^3$ | Number of Lorry Load Per Day |
|---|---|---|---|---|
| P1 | 5,576 | 5,432 | 18 | 3 |
| P2 | 10,841 | 3,288 | 12 | 2 |
| P3 | 7,332 | 2,444 | 8 | 1 |
| **Total** | **23,749** | **11,164** | **38** | **6** |
| **PROPOSED PRODUCTION OF TOPSOIL** | | | | |
| E1 | - | - | - | - |
| E2 | 5,037 | 2,519 | 8 | 1 |
| E3 | 15,742 | 5,247 | 17 | 3 |
| E4 | 13,706 | 4,569 | 15 | 3 |
| **Total** | **34,485** | **12,335** | **40** | **7** |

### CUMULATIVE PRODUCTION LOAD OF WEATHERED ROCK

| Quarry | Production during five-year plan period | Per Year Production in $m^3$ | Per Day Production in $m^3$ | Number of Lorry Load Per Day |
|---|---|---|---|---|
| **P-2** | 13,758 | 4,586 | 15 | 3 |
| **P-3** | 7,232 | 2,411 | 8 | 1 |
| **Total** | **20,990** | **6,997** | **23** | **4** |

### SOCIO ECONOMIC BENEFITS FROM CLUSTER

| Location ID | Project Cost | CER |
|---|---|---|
| P1 | Rs. 61,55,792 | Rs.5,00,000 |
| P2 | Rs. 48,98,000/- | Rs.5,00,000 |
| P3 | Rs. 43,06,000/- | Rs.5,00,000 |
| **Total** | **Rs. 1,53,59,792/-** | **Rs.15,00,000** |

| | | |
|---|---|---|
| E1 | Rs.29,74,000/- | Rs.5,00,000 |
| E2 | Rs.73,37,500/- | Rs.5,00,000 |
| E3 | Rs.58,73,000/- | Rs.5,00,000 |
| E4 | Rs.48,75,500/- | Rs.5,00,000 |
| **Total** | **Rs.2,10,60,000/-** | **Rs.20,00,000** |
| **Grand Total** | **Rs. 3,64,19,792/-** | **Rs.35,00,000/-** |

## EMPLOYMENT BENEFITS FROM CLUSTER

| Description | Employment |
|---|---|
| P1 | 33 |
| P2 | 11 |
| P3 | 18 |
| **Total** | **62** |
| E1 | 31 |
| E2 | 14 |
| E3 | 14 |
| E4 | 17 |
| **Total** | **76** |
| **Grand Total** | **138** |

## GREENBELT DEVELOPMENT BENEFITS FROM CLUSTER

| CODE | No of Trees proposed to be planted | Survival % | Area Covered Sq.m | Name of the Species | No. of Trees expected to be grown |
|---|---|---|---|---|---|
| P1 | 1240 | 80% | 2,590 | Neem, Casuarina | 990 |
| P2 | 810 | 80% | 1000 | Neem, Casuarina | 650 |
| P3 | 520 | 80% | 1650 | Neem, Casuarina | 420 |
| **Total** | **2,570** | **80%** | **5,240** | | **2,060** |
| E1 | 1575 | 80% | 400 | Neem, Casuarina | 1260 |
| E2 | 865 | 80% | 500 | Neem, Casuarina | 690 |
| E3 | 1310 | 80% | 1000 | Neem, Casuarina | 1050 |
| E4 | 500 | 80% | 1600 | Neem, Casuarina | 400 |
| **Total** | **4,250** | **80%** | **3,500** | | **3,400** |
| **G.Total** | **6,820** | | **8,740** | | **5,460** |

## 8. PROJECT BENEFITS

The Proposed Projects for Quarrying Rough Stone and gravel at Pachapalayam Village aims to produce 3,48,579$m^3$ Rough Stone over a period of 5 Years and Weathered rock 13,758 $m^3$ and Gravel 16,417$m^3$ for period of 3 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 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

It can be concluded from overall assessment of the impacts, in terms of positive and negative effects on various environmental components, that the mining activities will not have any adverse effect on the surrounding environment.

To mitigate any impacts due to the mining activities, a well-planned EMP and a detailed post project monitoring system is provided for regular monitoring and immediate rectification at site. Due to the cluster quarrying activities, socio economic conditions in and around the project site will be improved substantially. Hence, the Prior Environmental Clearance shall be granted at the earliest.

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