

EXECUTIVE SUMMARY

Smt.NAMA UMADEVI MULTICOLOUR GRANITE QUARRY

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

CLUSTER EXTENT = 15.25.73 ha

CLUSTER CALCULATED AS PER – S.O. 2269(E) DATED: 01.07.2016
at

Alambadi Village, Gujiliamparai Taluk, Dindigul District
S.F.Nos. 118/1A1, 1B, 2, 4A, 119/1, 129/1B, 5 and 156/10
Extent: 2.35.73 ha

PROJECT PROPONENT

Smt.Nama Umadevi,

W/o. Nama Krishnaiah,
No.742/30, 12th Main,
Shubh Enclave, Harlur Road,
Sarjapur, Bengaluru, Karnataka – 560 102

Complied as per ToR obtained
Lr.No.SEIAA-TN/F.No.8165/SEAC/ToR-4865/2021 Dated: 30.10.2021

Environmental Consultant

GEO EXPLORATION AND MINING SOLUTIONS



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MAY 2022

1. INTRODUCTION

Rough Stone & Gravel is the major requirements for construction industry. This EIA report is prepared by considering Cumulative load of all proposed & existing quarries of Alambadi & K.Pitchampatti Granites Quarries Cluster consisting of 2 Proposed and 3 Existing Quarries with total extent of Cluster of 15.25.73 ha in Alambadi & K.Pitchampatti Village, Gujiliamparai & Karur Taluk, Dindigul & Karur District and Tamil Nadu State, cluster area calculated as per MoEF & CC Notification S.O. 2269(E) Dated 1st July 2016.

This EIA Report is prepared in compliance with ToR obtained vide Lr.No.SEIAA-TN/F.No.8165/SEAC/ToR-4865/2021 Dated: 30.10.2021

The Baseline Monitoring study has been carried out during the period of October 2020 - December 2001 and this EIA and EMP report is prepared for considering cumulative impacts arising out of these projects, 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

Name of the Project	Smt.Nama Umadevi
S.F. No.	118/1A1, 1B, 2, 4A, 119/1, 129/1B, 5 and 156/10
Extent	2.35.73 ha
Land Type	Patta Land
Village Taluk and District	Alambadi Village, Gujiliamparai Taluk, Dindigul District

1.2 QUARRY DETAILS WITHIN 500m RADIUS

CLUSTER QUARRIES					
Proposed Quarries					
Code	Name of the Owner	S.F.Nos & Village	Extent	Status	Remarks
P1	Smt.Nama Umadevi, No.742/30,12th Main Shubh Enclave, Harlur road, Sarjpur, Bangalore – 560 102.	118/2,1B, 4A, 1A1, 119/1,129/1B, 5 & 156/10,	2.35.73	ToR issued vide Letter No. SEIAA-TN/F.No.8165/SEAC/ToR-4865/2021 Dated:30.10.2021”	-
Public Hearing Conducted Project					
P2	Tmt.Nama Umadevi, No.742/30,12th Main Shubh Enclave, Harlur road, Sarjpur, Bangalore – 560 102.	441/4A	2.43.0	ToR issued vide Letter No. SEIAA-TN/F.No.7569/SEAC/TOR-741/2020 Dated:14.08.2020”	Public hearing conducted on 25.08.2021
TOTAL			4.78.73 ha		
CODE	Name of the Owner	S.F. Nos & Village	Extent	Status	Remarks
E1	Tvl.Madhucon Granites, 1/7-70 jublipura khamma Andharapradesh	424/2A 424/3A	1.38.5	05.12.2008 to 04.12.2028	-
E2	Thiru.R.Anupkumar Lohia, 2/467, 6 th Main Road, Gomathipuram, Madurai.	442/3(Part)	4.80.0	05.07.2012 to 04.07.2032	-
E3	Smt.Rajrani Lohia, W/o. Ravishankar Lohia, 2/467, 6 th Main Road, Gomathipuram, Madurai	460/A 460/B1 462/2	4.28.5	06.12.2018 to 05.12.2038	-
TOTAL			10.47.0ha		
TOTAL CLUSTER EXTENT			15.25.73ha		

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

SALIENT FEATURES OF THE PROPOSAL

Name of the Project	Smt.Nama Umadevi Multicolour Granite Quarry	
Toposheet No	58-J/01	
Latitude between	10 ⁰ 46'09.91" N to 10 ⁰ 46'17.37" N	
Longitude between	78 ⁰ 03'08.58" E to 78 ⁰ 03'17.74" E	
Highest Elevation	202m AMSL	
Proposed Depth of Mining	29m bgl (2m Topsoil + 2m Weathered rock + 25m Granite)	
Geological Resources	ROM in m ³	Granite @ 60% in m ³
	4,23,650	2,54,190
Mineable Reserves	ROM in m ³	Granite @ 60% in m ³
	84,720	50,832
Yearwise production recommended in ToR	ROM in m ³	Granite @ 60% in m ³
	50,000	30,000
Ultimate Pit Dimension	Pit-I: 197m (L) x 98m (W) x 29m (D)	
Water Level measured in the surrounding area	55-60m bgl	
Topography	The lease applied area is exhibits plain terrain. The area has gentle sloping towards Northeast side. The altitude of the area is 202m (max) above mean sea level. The area is covered by 2m thickness of Topsoil and 2m Thickness of weathered rock Formation. Granite is found after 4m (overburden) which is clearly inferred from the nearby existing quarrying pit.	
Machinery proposed	Jack Hammer	10 Nos
	Compressor	3 Nos
	Diamond wire saw	2 Nos
	Diesel Generator	1 No
	Crawler Crane	1 No
	Excavator	2 Nos
	Tippers	2 Nos
Blasting method and type of Explosives proposed	Controlled blasting using Small dia slurry explosives only for overburden and weathered rock removal	
Proposed Manpower Deployment	49 Nos	
Project Cost	Rs.3,04,99,000/-	
CER Cost @ 2% of Project Cost	Rs.6,16,000/-	
Nearby Water Bodies	Kodaganar River	8.0km Northwest
	Konedutta Manikam Lake	1.2km SW
	Edayapatti Land	3.7 km - SW
Greenbelt Development Plan	As per Mining plan it is Proposed to plant 250 trees in 2,390 Sq.m area in the 7.5 m Safety Zone. The proponent is proposed to plant totally 100 Nos of trees in the approach road and panchayat roads	
Proposed Water Requirement	3.8 KLD	
Nearest Habitation	780m west	

Source: Approved Mining Plan

1.3 STATUTORY DETAILS

- The proponent applied for Granite Quarry Lease Dated: 31.12.2018
- Precise Area Communication Letter was issued by the Principal Secretary, Chennai Rc.No.4026/MMB.2/2020-1, Dated: 13.07.2020
- The Mining Plan was prepared by Recognized Qualified Person and approved by Director, Department of Geology and Mining, Guindy, Chennai, vide Rc.No.419/MM2/2020, Dated: 13.10.2020
- 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/65947/2021 Date: 23.07.2021

2. PROJECT DESCRIPTION

The area is fresh land, no mining activities carried out before, Topography of the area is plain terrain with gentle gradient towards Northeast side. No major vegetation or trees within the project area, the project is site specific and there is no additional area required for this project. There is no effluent generation/discharge from the proposed quarry.

Multi-Colour Granite is proposed to quarry by opencast mechanized method involving Eco-friendly Diamond Wire Saw Cutting. Heavy earth moving machineries like Excavators Trucks will be deployed in this quarrying operation for Granite exploitation. Shot hole drilling with controlled blasting using slurry explosives for removal of overburden and Weathered portions during initial stage of quarry.

2.1 SITE CONNECTIVITY TO THE PROJECT AREA

Nearest Roadway	The Nearest National Highway (NH-44) Salem – Madurai – 12.0Km - NW The State Highway (SH-74) Dindigul – Karur – 8.0Km -NE
Nearest Village	Chikkarampalayam – 1.0 Km South West
Nearest Town	Kollapatti – 1.0 km – SW
Nearest Railway Station	Palayam – 10.0 km – SE
Nearest Airport	Trichy –71.0 km – East
Seaport	Thoothukudi- 220 km – South

2.2 LAND USE PATTERN OF THE LEASE APPLIED AREA

Description	Present area in (ha)	Area at the end of life of quarry (ha)
Area under quarry	Nil	1.21.10
Waste dump	Nil	Backfilled
Infrastructure	Nil	0.01.00
Roads	Nil	0.04.00
Green Belt	Nil	0.77.55
Unutilized area	2.35.73	0.32.08
Grand Total	2.35.73	2.35.73

Source: Approved Mining Plan

2.3 OPERATIONAL DETAILS OF LEASE APPLIED AREA

Description	ROM in m ³	Granite Recovery @ 60 % in m ³	Granite Waste @ 40 % in m ³	Side Burden in m ³	Weathered rock in m ³	Topsoil in m ³
Geological Resources	4,23,650	2,54,190	1,69,460	1,63,075	46,938	46,938
Mineable Reserves	84,720	50,832	33,888	-	18,090	22,506
Year-wise Production	50,000	30,000	20,000	-	18,090	22,506
Number of Working Days	300 Days					
Production per day	33	20	13	-	20	25
No of Lorry loads (6m ³ per load)	6	3	2	-	3	4

2.4 YEAR-WISE PRODUCTION PLAN

Year	ROM in m ³	Granite Recovery @ 60 % in m ³	Granite Waste @ 40 % in m ³	Weathered rock in m ³	Topsoil in m ³
I	9,950	5,970	3,980	9,774	13,434
II	9,900	5,940	3,960	4,752	5,184
III	10,125	6,075	4,050	3,564	3,888
IV	10,000	6,000	4,000	-	-
V	10,025	6,015	4,010	-	-
TOTAL	50,000	30,000	20,000	18,090	22,506

Source: Approved Mining Plan

FIGURE – 1: GOOGLE IMAGE SHOWING APPLIED QUARRY LEASE AREA

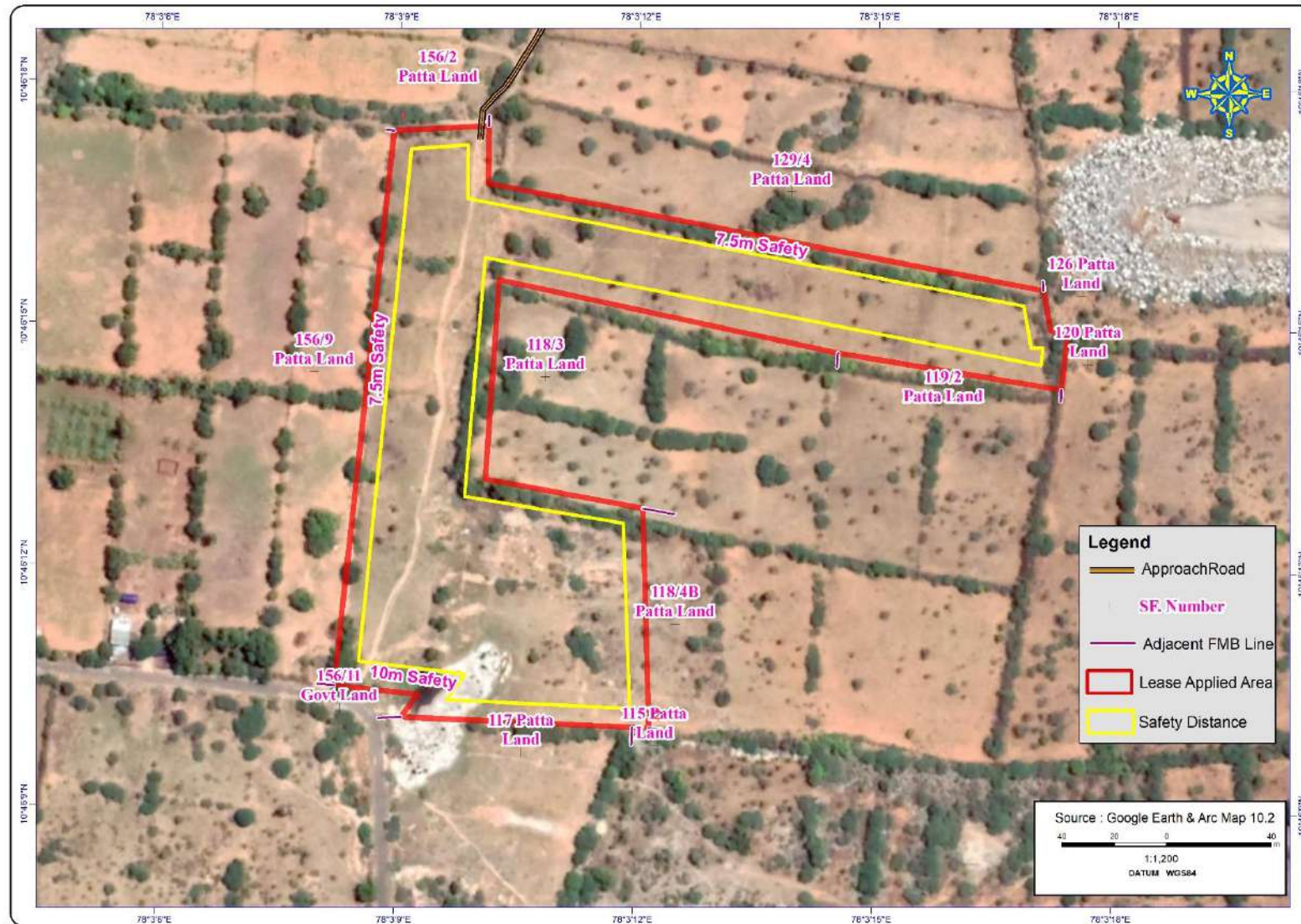


FIGURE – 2: GOOGLE IMAGE SHOWING CLUSTER (500 m QUARRIES)

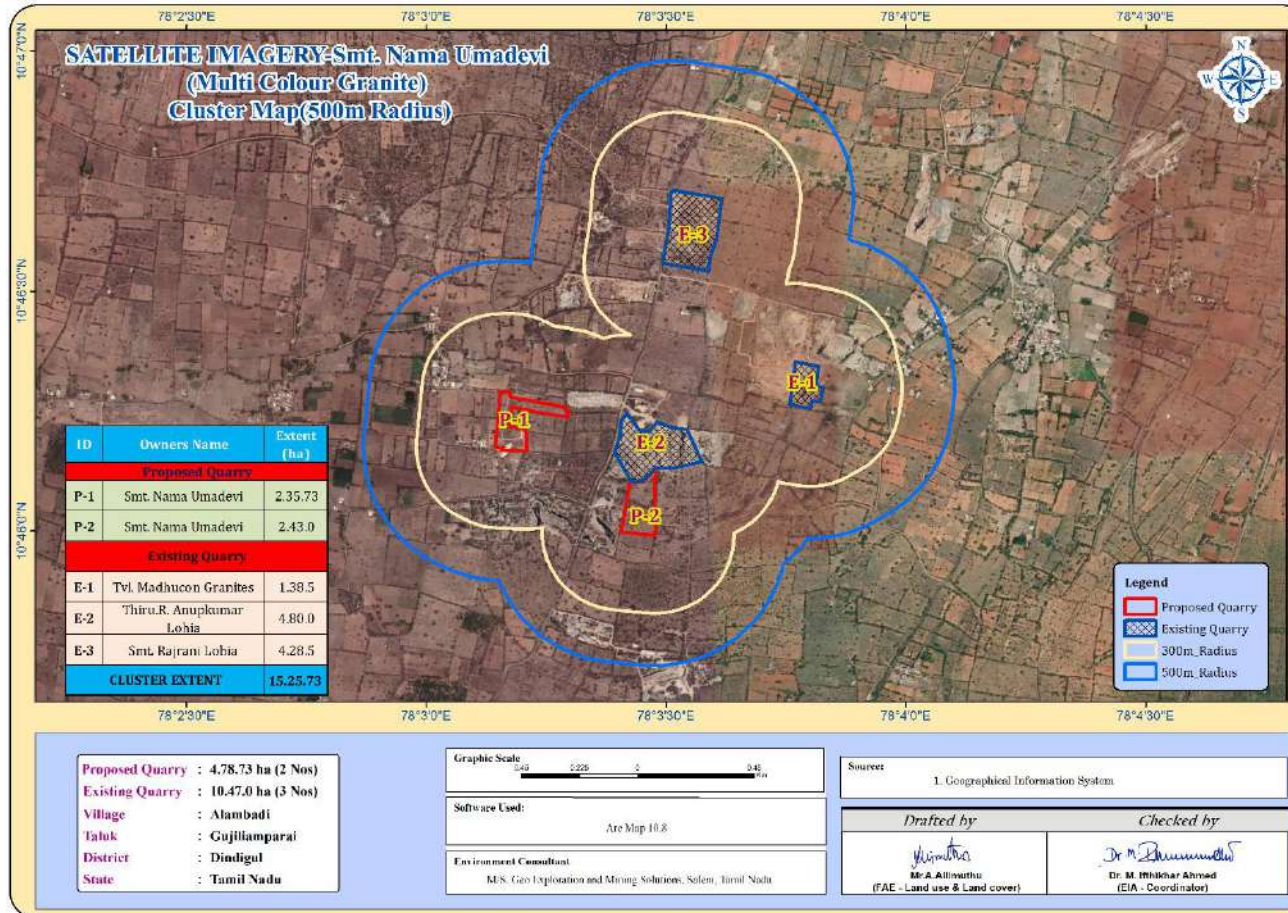
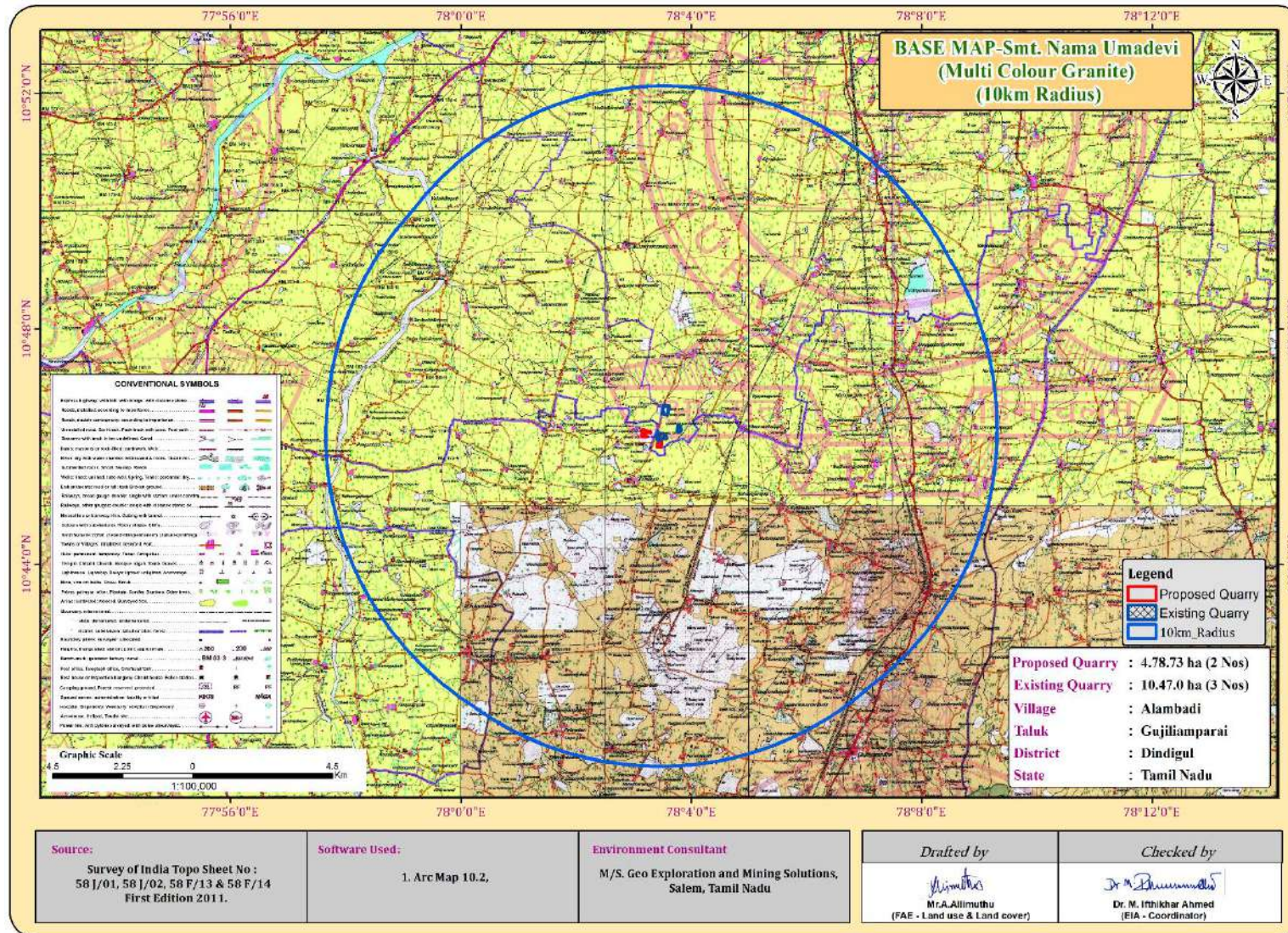


FIGURE – 3: TOPOSHEET MAP COVERING 10 KM RADIUS



2.5 METHOD OF MINING

The method of mining is Opencast mechanized method

- Eco-friendly dimensional wire saw cutting for liberation and splitting up of blocks from parent sheet rocks
- Splitting of rock body of considerable volume from the parent rock formation by carefully avoiding visibly seen defects such as patches veins, etc., is done by adopting the method of “Diamond wire cutting” along the horizontal as well as two vertical sides on the front face of the formation
- Jackhammer drilling with 32mm dia, this huge portion is further split into several blocks of required dimensions, only slurry explosives are used for secondary fragmentation and handling of waste.
- Hydraulic Excavator coupled with tippers is deployed for the formation of benches and loading
- There is no mineral processing or ore beneficiation proposed
- Proposed bench height is 5m and 5m width with 90⁰slope
- The waste material generated during quarrying activity includes rock fragments of different sizes, and waste chips during dressing of the blocks. The waste materials are taken in tippers and proposed to be dumped in the respective approved places ear-marked for the purpose and the same will be utilized for backfilling in the northern side of the lease area during conceptual stage.

2.6 PROPOSED MACHINERY DEPLOYMENT

S.NO.	TYPE	NOS	SIZE/CAPACITY	MOTIVE POWER
1	Jack hammer	10	1.2m to 2.0m	Compressed air
2	Compressor	3	140cfm/400psi	Diesel Drive
3	Diamond wire saw	2	20m ³ /day	Diesel Generator
4	Diesel generator	1	125kva	Diesel
5	Crawler Crane	1	855	Diesel Drive
6	Excavator	2	300	Diesel Drive
7	Tippers	2	20 Tonnes	Diesel Drive

Source: Approved Mining Plan

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

Length (Max) (m)	Width (Max) (m)	Depth (Max)
197	98	29m 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 October 2020 to December 2020 as per CPCB guidelines. Environmental Monitoring data has been collected with reference to proposed mine by OMEGAA LABORATORIES ISO 9001: 2008, OHSAS 18001: 2007 Certified & MoEF Notified Laboratory

3.1 ENVIRONMENT MONITORING ATTRIBUTES

Sl.No.	Attributes	Parameters	Source and Frequency
1	Ambient Air Quality	PM10, PM 2.5, SO2, NO2	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 4 ground water and 4 surface water locations 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
5	Noise levels	Noise levels in dB(A)	8 locations – data monitored once for 24 hours during EIA study
6	Soil Characteristics	Physical and Chemical Parameters	Once at 6 locations during study period
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: [Field Monitoring Data/Onsite Monitoring Data/Sampling by OMEGAA Laboratories](#)

The data has been collected as per the requirement of the ToR issued by SEIAA – TN.

3.2 LAND ENVIRONMENT

Land use pattern of the area was studied through LISS III imagery of Bhuvan (ISRO). The 10 km radius map of study area was taken for analysis of Land use cover. The main objective of this section is to provide a baseline status of the study area covering 10 km radius around the mine site so that temporal changes due to the mining activities on the surroundings can be assessed in future.

The majority of the land in the study area is Fallow and Crop land 89.87%. The total mining area within the study area is 2.15 ha i.e., 0.09 %. The cluster area of 12.90.0 ha contributes about 16.37 % of the total mining area within the study area. This percentage of Mining Activities shall not have any significant impact on the environment.

The project area is situated a plain terrain and the topography of the area is plain terrain with gradient towards Northeast and the altitude of the area is ranges from 202m AMSL

There is no Wildlife Sanctuaries, National Park and Archaeological monuments within project area. Therefore, there will be no need to acquisition/diversion of forest land.

3.3 SOIL ENVIRONMENT

- ✚ Variation in pH of the soil in the study area was found to be moderately alkaline to strongly alkaline in nature (7.89-8.55).
- ✚ Mostly the soils collected from different location in the study area are Clay loam in texture.
- ✚ The bulk density of the soil in the study area ranged between 1.02 – 1.29 g/cc.
- ✚ The available Nitrogen content range between 141 to 174.2 kg/ha
- ✚ The available Phosphorus content range between 1.05 to 1.40 kg/ha
- ✚ The available Potassium range between 21.2 to 40.1mg/kg

3.4 WATER ENVIRONMENT

There are no major surface water bodies within the study area apart from Kumittipathi River on the South side of applied area and 50m Safety Provided; Walayar Lake at 7.5 km South West and Sengulam at 9.5 North West.

Surface Water

SW1 – Kandedutha Manikkam Lake– The analysis results indicate that the pH is 7.63, which is well within the specified standard of 6.5 to 8.5. Total hardness was observed to be 132.1 mg/l. The Total Dissolved Solids (TDS) concentrations were found to be 451 mg/l.

Chloride and fluoride concentrations are found to be 155 mg/l respectively. Nitrates were observed to be 5.5 mg/l. Bacteriological studies reveal that coli form bacteria are not present in the samples. The heavy metal content is below detectable limits.

Ground Water

The analysis results indicate that the pH ranges in between 6.89 to 7.92, which is well within the specified standard of 6.5 to 8.5. Total hardness was observed to be ranging from 110.9 to 199.5 mg/l. The incidence of high total hardness is attributed to the composition of litho units constituting the aquifers in the district. The Total Dissolved Solids (TDS) concentrations were found to be ranging in between 347 to 624 mg/l.

Chlorides at all the locations were within the permissible limit, ranging in between 112.5 – 202.1 mg/l. Fluorides are ranging in between 0.17 to 0.5 mg/l and are found to be within the permissible limit. Nitrates were found to be in the range of from 3.3 mg/l to 6.2 mg/l. Bacteriological studies reveal that coliform bacteria is not present in the samples. The heavy metal content is below detectable 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 – 14: WIND ROSE DIAGRAM

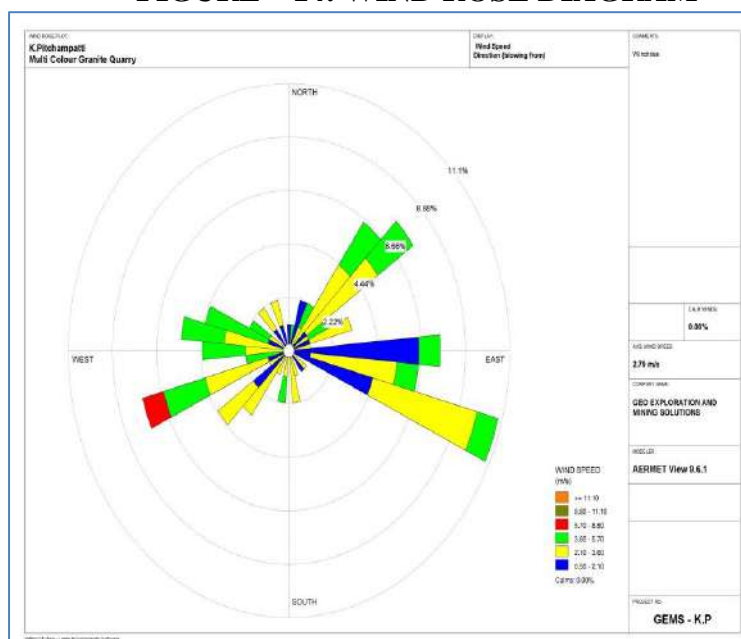
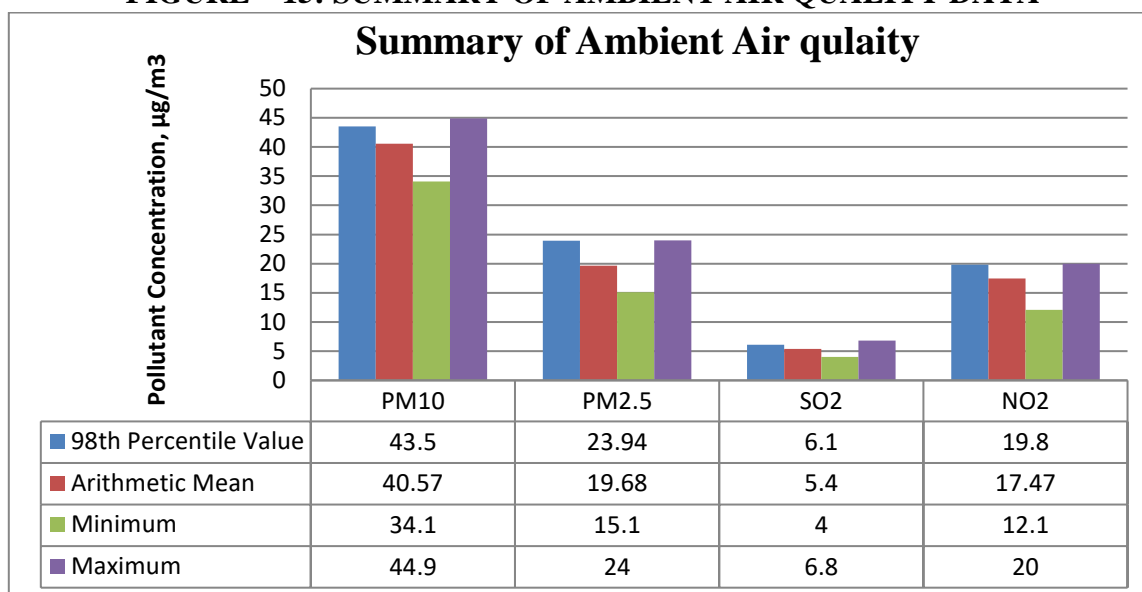


FIGURE – 15: SUMMARY OF AMBIENT AIR QUALITY DATA



As per monitoring data, PM10 ranges from 34.1 $\mu\text{g}/\text{m}^3$ to 44.9 $\mu\text{g}/\text{m}^3$, PM2.5 data ranges from 15.1 $\mu\text{g}/\text{m}^3$ to 24 $\mu\text{g}/\text{m}^3$, SO2 ranges from 4.0 $\mu\text{g}/\text{m}^3$ to 6.8 $\mu\text{g}/\text{m}^3$ and NO2 data ranges from 12.00 $\mu\text{g}/\text{m}^3$ to 20.00 $\mu\text{g}/\text{m}^3$.

From the above data, the concentration of main criteria pollutants has been observed that maximum concentration of PM10 is 44.9 $\mu\text{g}/\text{m}^3$ recorded at Vasanthakathirpalayam Village and minimum is 34.1 $\mu\text{g}/\text{m}^3$ recorded at Nochipatti. The concentration of PM2.5 varies from 15.1 – 24 $\mu\text{g}/\text{m}^3$. Minimum concentration was recorded at Chatrapatti and Maximum concentration of PM2.5 recorded at Near Crusher area Kalapatti. SO2 concentration level ranged from 4.0 – 6.8 $\mu\text{g}/\text{m}^3$ and NO2 concentration ranged from 12.1 – 20.00 $\mu\text{g}/\text{m}^3$ in the study area. The concentration levels of the above criteria pollutants were observed to be well within the limits of NAAQS prescribed by CPCB.

3.6 NOISE ENVIRONMENT

level and assess the impact of the total noise expected to be generated during the project operations around the project site.

Ambient noise levels were measured at 7 (Seven) locations around the proposed project area. Noise levels recorded in core zone during day time were from 49.0 – 49.5 dB (A) Leq and during night time were from 42.0 – 43.7 dB (A) Leq. Noise levels recorded in buffer zone during day time were from 48.1 – 50.2 dB (A) Leq and during night time were from 42.9 – 44.7 dB (A) Leq.

The values of noise observed in some of the areas are primarily owing to quarrying activities due to cluster of quarries within 500m radius, movement of vehicles and other anthropogenic activities. Noise monitoring results reveal that the maximum & minimum noise levels at day time were recorded in the range of 40.5 dB(A) in core zone and 38.1 dB(A) in K. Pitchampatti village and 37.2 dB(A) in Chatrapatti Village & 36.2 dB(A) in Vasanthakathirpalayam village at night time. 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 project 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., 7.5m 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**

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 judiciously 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 include 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

4.4 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 through 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 is no Forest land, National Parks, Eco sensitive areas, Wild life sanctuaries within the radius of 10km.

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.

GREENBELT DEVELOPMENT PLAN

Year	No of Trees proposed to be planted	Survival %	Area to be covered	Name of the species	No of trees expected to be grown
I	50	80%	478	Neem, Pongamia etc.	40
II	50	80%	478	Neem, Pongamia etc	40
III	50	80%	478	Neem, Pongamiaetc	40
IV	50	80%	478	Neem, Pongamia etc	40
V	50	80%	478	Neem, Pongamia etc	40

4.6 SOCIO ECONOMIC ENVIRONMENT

ANTICIPATED IMPACT

Employment generation due to the project will provide direct employment for about 49 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.

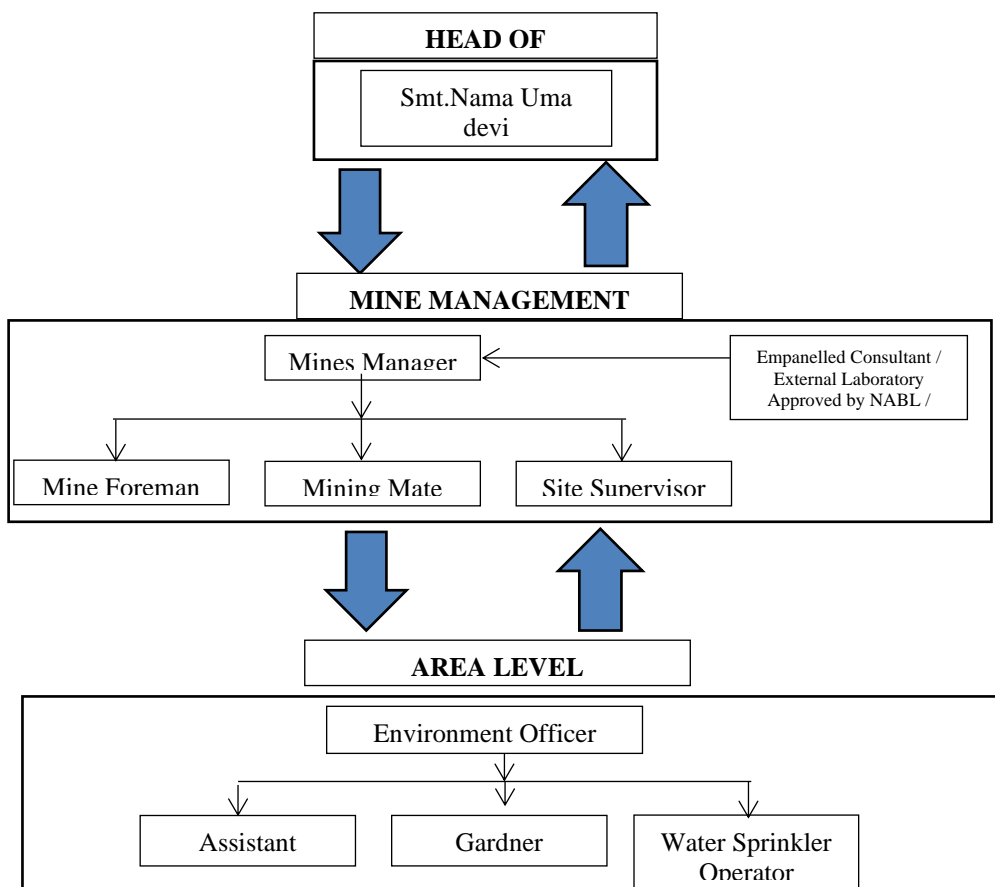
6. ENVIRONMENT MONITORING PROGRAM

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

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 MULTI COLOUR GRANITE

Location ID	Mineable Reserves ROM in m ³	Mineable Reserves of Granite	Proposed production for five-year period	Production of ROM Per Day	Production of Granite Per day in m ³	Number of Lorry loads per Week
P1	50,000	30,000	20,000	33	20	22
P2	1,73,510	1,04,106	42,070	28	17	18
E1	86,969	50,442	47,528	79	46	48
E2	2,83,895	1,13,558	87,625	58	23	24
E3	2,28,950	91,580	45,655	30	12	12
Total	8,23,324	3,89,686	2,42,878	228	118	124

PREDICTED NOISE INCREMENTAL VALUES IN 500m RADIUS QUARRIES

Location ID	Background Value (Day) dB(A)	Incremental Value dB(A)	Total Predicted dB(A)	Residential Area Standards dB(A)
Habitation Near P1	43.8	43.0	46.4	55
Habitation Near P2	44.2	42.0	46.3	
Habitation Near E1	40.2	41.0	43.6	
Habitation Near E2	41.8	40.1	44.0	
Habitation Near E3	39.5	30.0	40.1	

SOCIO ECONOMIC BENEFITS FROM 5 MINES

Location code	Employment	Project Cost	CER @ 2%
P1	49	Rs.3,07,99,000/-	Rs.6,16,000/-
P2	31	Rs.2,40,65,000/-	Rs.4,81,300/-
E1	30	Rs.30,55,000/-	Rs.61,100/-
E2	40	Rs.62,65,000/-	Rs.1,25,300/-
E3	38	Rs.3,15,08,500/-	Rs.6,30,170/-
Total	188	Rs.9,56,92,500/-	Rs.19,13,870/-

8.0 PROJECT BENEFITS

Multi Colour Granite Quarry of Smt.Nama Umadevi 30,000m³ of Granite @ 60% recovery (ROM 50,000m³ for the entire period- Life of the mine) for Life of Mine of 20 Years. This will enhance the socio-economic activities in the adjoining areas and will result in the following benefits

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

9.0 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.

10.0 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.