

# DRAFT EIA / EMP REPORT

FOR

## ROUGHSTONE AND GRAVEL QUARRIES

### A. Project Proponent Details

Name	AK Blue Metals Pvt. Ltd.	Udhayam Mines and Minerals Pvt. Ltd.
Address	1A, Manikandan Nagar, Hasthinapuram Chennai – 600 064	

### B. Location Details

Extent	5.530 Ha	4.045 Ha
Survey No.	204/1,2,3, 205, 206/1,2,3 ,4,5,6, 7,8,9	172/2B, 172/2C, 172/2D and 172/7
Location	Periyavenmani Village Madhuranthakam Taluk of Chengalpattu District, Tamil Nadu	

### C. Production Details

Production	Roughstone 11,12,850m <sup>3</sup> , Gravel – 91518m <sup>3</sup>	Roughstone -5,33,830m <sup>3</sup> , Gravel – 63,584m <sup>3</sup>
Depth	52m	42m
Lease Period	10 years	10 years

### D. EIA/EMP details

ToR reference	TO24B0108TN5769905N dated 11.06.2024	TO24B0108TN5364690N dated 07.06.2024
Baseline Monitoring	Summer Season, March - May 2024	Summer Season, March - May 2024

### **CONSULTANT**

## **CREATIVE ENGINEERS & CONSULTANTS**

NABET ACCREDITED CONSULTANCY, NABL ACCREDITED TESTING LAB

9B/4, Bharathwajar Street, East Tambaram, Chennai-600059.

Ph: 044-22395170, Cell: 09444133619 Email : cecgiri@yahoo.com,



## SEPTEMBER 2024


PRO CODE:  
CEC/EMP/MI-221

**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.04.5 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

**REVISIONS OF EIA/EMP REPORT**

Revision number	Report Status	Date of submission
00/SEP/24	Draft EIA /EMP Report	03.09.2024

Environmental Impact Assessment & Environmental Management Plan Report for Rough stone and Gravel Quarries of M/s. AK Blue Metals Pvt. Ltd. (Over an area of 5.53 Ha) and M/s. Udhayam Mines and Minerals Pvt. Ltd. (Over an area of 4.045 Ha) in Periyavenmani Village, Madhuranthakam Taluk, Chengalpattu District, Tamil Nadu and authorized for submission by Mr. P.Giri, EIA Coordinator, CEO, of Creative Engineers & Consultants on 03.09.2024 after due review by the personnel and consultation with the project proponents. Current Revision number of the EIA/EMP report is 00/SEP/24, signifying as per the revision mentioned in the above table that this is a draft EIA/EMP report.

Signature: 

Date: 03.09.2024



## **PROJECT PROPONENT DECLARATION**

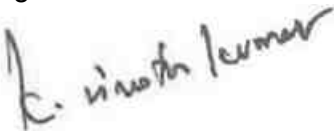
We, AK Blue Metals Private Limited received Terms of Reference under EIA Notification 2006 from SEIAA, Tamil Nadu vide their letter TO24B0108TN5769905N dated 11.06.2024 for Roughstone and Gravel Quarry of AK Blue Metals Pvt. Ltd. over an extent of 5.53.0 Ha at S.F.Nos. 204/1, 204/2, 204/3, 205, 206/1, 206/2, 206/3, 206/4, 206/5, 206/6, 206/7, 206/8 & 206/9 of Periyavenmani Village, Maduranthakam Taluk, Chengalpattu District, Tamil Nadu.

We have entrusted the EIA study to M/s. Creative Engineers & Consultants (CEC), Chennai who have been accredited by the National Accreditation Board for Education & Training (NABET), Quality Council of India with their accreditation valid upto 23.12.2026

The Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) have been prepared as per the generic structure proposed in the EIA notification 2006, ToR issued by SEIAA, Tamil Nadu. The prescribed ToR along with compliance is also incorporated in the EIA/EMP Report.

This report is prepared based on the information and data obtained from the Mining Plan and other records and the field study carried out by the consultant. The data given in the EIA/EMP report are factually correct to the best of my knowledge.

Signature:



**For AK Blue Metals Private Limited**

**Date:** 03.09.2024

## **PROJECT PROPONENT DECLARATION**

We, Udhayam Mines and Minerals Private Limited received Terms of Reference under EIA Notification 2006 from SEIAA, Tamil Nadu vide their letter TO24B0108TN5364690N dated 07.06.2024 for Roughstone and Gravel Quarry of Udhayam Mines and Minerals Private Limited. over an extent of 4.045 Ha at S.F.Nos. 172/2B, 172/2C, 172/2D & 172/7 of Periyavenmani Village, Maduranthakam Taluk, Chengalpattu District, Tamil Nadu.

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This report is prepared based on the information and data obtained from the Mining Plan and other records and the field study carried out by the consultant. The data given in the EIA/EMP report are factually correct to the best of my knowledge.

Signature:



**For Udhayam Mines and Minerals Private Limited**

**Date:** 03.09.2024



# CREATIVE ENGINEERS & CONSULTANTS

(NABET ACCREDITED, NABL ACCREDITED TESTING LABORATORY,  
DEPARTMENT OF INDUSTRIES AND COMMERCE REGISTERED COMPANY)

## EIA Consultant Undertaking

[In compliance with MoEF Office Memorandum No. J-11013/41/2006-IA.II (I) dated 04.08.2009]

**Creative Engineers & Consultants** (CEC) is an NABL accredited testing Laboratory, and also NABET accredited Category–A environment consultancy organization for preparing EIA/EMP reports for the sectors Mining of minerals, Thermal power plants, Mineral Beneficiation & Cement plants.

CEC has been accredited by the National Accreditation Board for Education & Training (NABET), Quality Council of India for empanelment of EIA Consultants with accreditation valid upto 23.12.2026.

AK Blue Metals Private Limited received Terms of Reference under EIA Notification 2006 from SEIAA, Tamil Nadu vide their letter TO24B0108TN5769905N dated 11.06.2024 for Roughstone and Gravel Quarry of AK Blue Metals Pvt. Ltd. over an extent of 5.53.0 Ha at S.F.Nos. 204/1, 204/2, 204/3, 205, 206/1, 206/2, 206/3, 206/4, 206/5, 206/6, 206/7, 206/8 & 206/9 of Periyavenmani Village, Maduranthakam Taluk, Chengalpattu District, Tamil Nadu.

Udhayam Mines and Minerals Private Limited received Terms of Reference under EIA Notification 2006 from SEIAA, Tamil Nadu vide their letter TO24B0108TN5364690N dated 07.06.2024 for Roughstone and Gravel Quarry of Udhayam Mines and Minerals Private Limited. over an extent of 4.045 Ha at S.F.Nos. 172/2B, 172/2C, 172/2D & 172/7 of Periyavenmani Village, Maduranthakam Taluk, Chengalpattu District, Tamil Nadu.

The prescribed TOR is complied with and incorporated in the EIA Report and submitted. This report is based on the information and data obtained from Approved Mining Plan, other records and data from the field study by CEC. The data generated and given in the EIA/EMP Report are factually correct. The sample analyses are carried out through CEC's laboratory.

(P. Giri)

Chief Executive & EIA Coordinator

**Creative Engineers & Consultants**

Date: 03.09.2024

9/4b, Bharathwajar Street, East Tambaram, Chennai – 600 059.

Ph : 22395170, 9444133619, fax : 91-44-22396643.

e-mail : cecgiri@yahoo.com, web : www.creativeengineers.co.in

Annexure – VII

**Declaration by Experts contributing to the EIA Report for**

**Combined EIA/EMP Report for Roughstone and Gravel Quarries of M/s. AK Blue Metals Pvt. Ltd. (over an area of 5.53 Ha) and M/s. Udhayam Mines and Minerals Pvt. Ltd. (Over an area of 4.045 Ha) in Periyavenmani Village, Madhurantakam Taluk, Chengalpattu District, Tamil Nadu.**

I, hereby, certify that I was a part of the EIA team in the following capacity that developed the above EIA.

EIA coordinator:

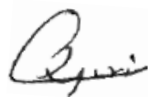
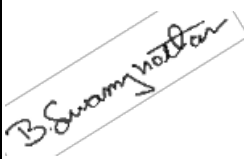
Name: **P.Giri**

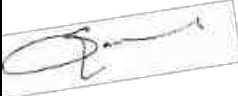
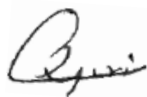



Signature and Date: 



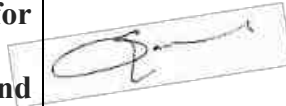

Period of involvement: **February 2024 onwards**

Contact information: **09444133619**


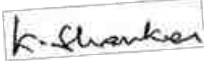
Functional area experts:

S. No.	Functional areas	Name of the expert/s	Involvement (period and task**)	Signature and date
1	AP*	P.Giri	<ul style="list-style-type: none"> <li>• Identification of baseline monitoring stations and study of the monitored data with respect to the applicable standards.</li> <li>• Identification of sources of air pollution comprising dust, gaseous emission due to mining &amp; other activities</li> <li>• Identification of Impacts &amp; suggestion of mitigation measures</li> </ul> <b>Period: February 2024 onwards</b>	
		B.Swamynathan	<ul style="list-style-type: none"> <li>• Data interpretation of Micro meteorological data for wind rose.</li> <li>• Identification of polluting source and suggestion of suitable mitigation measures.</li> </ul> <b>Period: March 2024 onwards</b>	

2	WP*	G.Sandhya	<ul style="list-style-type: none"> <li>• Study of the monitored data with respect to the applicable standards.</li> <li>• Identification of Water requirement &amp; Source</li> <li>• Preparation of water balance diagram</li> <li>• Identification of Water polluting sources</li> <li>• Impact of the project on the water quality, both surface and groundwater</li> <li>• Suggestion of Mitigation measures to control water pollution</li> </ul> <p>Period: March 2024 onwards</p>	
3	SHW*	P.Giri	<ul style="list-style-type: none"> <li>• Quantification of mineral &amp; waste from mining operation</li> <li>• Waste disposal method evaluation</li> <li>• Providing dump management plan</li> <li>• Providing Surface Runoff Management Structure Requirements.</li> <li>• Identification of Hazardous waste and its details of disposal</li> </ul> <p>Period: February 2024 onwards</p>	
4	SE*	R.Baburaj	<ul style="list-style-type: none"> <li>• Identification of villages in the study area and finalization of demographic profile of the villages within the study area.</li> <li>• Preparation of sections relevant to SE functional area in the EIA/EMP report</li> </ul> <p>Period: March 2024 onwards</p>	
5	EB*	B.Swamynathan	<ul style="list-style-type: none"> <li>• Perusal of existing data relevant to this project.</li> <li>• Studying the details of flora and fauna, separately for core, buffer zone and forest area based on primary field survey.</li> <li>• Identification of species , Indicating the Schedule of the fauna present in the study area</li> <li>• Assessment of impact on Biological environment and suggestion of mitigative measures</li> <li>• Collecting &amp; providing details of existing and proposed Green belt development /plantation in the core zone</li> </ul> <p>Period: March 2024 onwards</p>	
6	HG*	K.Shankar	<ul style="list-style-type: none"> <li>• Study of existing surface drainage arrangements in the core and buffer zone, impact due to mining on these drainage courses and suggestion of mitigative measures</li> </ul>	

			<ul style="list-style-type: none"> <li>• Perusal of site specific ground water table details for the core zone and the study area.</li> <li>• Studied the hydrological aspects of surface and groundwater in study area</li> <li>• Study about impact on the hydrology due to mining operation</li> <li>• Suggesting mitigative measures like RWH for enhancement of ground water level</li> </ul> <p>Period: March 2024 onwards</p>	
7	GEO*	K.Shankar	<ul style="list-style-type: none"> <li>• Study of geology of the ML area and the surrounding areas.</li> <li>• Provide details about Mineral composition</li> </ul> <p>Period: March 2024 onwards</p>	
8	SC*	B.Swamynathan	<ul style="list-style-type: none"> <li>• Study of soil profile</li> <li>• Assessment of Impact on soil and suggesting plantation scheme.</li> </ul> <p>Period: March 2024 onwards</p>	
9	AQ*	G.Sandhya	<ul style="list-style-type: none"> <li>• Quantification of emission particulars</li> <li>• Air quality modelling for post project impact on the air quality prediction of the study area.</li> </ul> <p>Analysis of the Isopleth generated</p> <ul style="list-style-type: none"> <li>• Arriving at the post project concentration at the AAQ monitoring locations</li> <li>• Preparation of meteorological data in suitable form for input into the model</li> <li>• Simulation of model for generation of Isopleth and data interpretation.</li> <li>• Studying the impact on AAQ monitoring locations due to the generated emissions.</li> <li>• Preparation of sections relevant to AQ functional area in the EIA/EMP report.</li> </ul> <p>Period: March 2024 onwards</p>	
10	NV*	P.Giri	<ul style="list-style-type: none"> <li>• Identification of baseline monitoring stations and study of the monitored data with respect to the applicable standards.</li> <li>• Predict the noise level and vibration level due to proposed mining operation based on scientific evaluation.</li> <li>• Suggesting the Mitigation measures to control noise pollution, Suggesting the Mitigation measures to</li> </ul>	



			<p><b>control ground vibration</b>  <b>Period: February 2024 onwards</b></p>	
11	LU	B.Swamynathan	<ul style="list-style-type: none"> <li>• Collection of Remote sensing satellite data to study the land use pattern.</li> <li>• Primary field survey and limited field verification</li> <li>• Preparation of Land use map using Satellite data of the project area separately for the core zone and the buffer zone and providing the land use pattern.</li> </ul> <p><b>Period: March 2024 onwards</b></p>	
12	RH*	K.Shankar	<ul style="list-style-type: none"> <li>• Identified Major risks involved in the project</li> <li>• Mitigation measures suggested to avoid risk.</li> <li>• Preparation of onsite and offsite emergency management plan</li> </ul> <p><b>Period: March 2024 onwards</b></p>	


\*One TM against each FAE may be shown

\*\*Please attach additional sheet if required

**Declaration by the Head of the accredited consultant organization/ authorized person**

I, **P.Giri** hereby, confirm that the above mentioned experts prepared the EIA report for **Combined EIA/EMP Report for Roughstone and Gravel Quarries of M/s. AK Blue Metals Pvt. Ltd. (over an area of 5.53 Ha) and M/s. Udhayam Mines and Minerals Pvt. Ltd. (Over an area of 4.045 Ha) in Periyavenmani Village, Madhurantakam Taluk, Chengalpattu District, Tamil Nadu.**

I also confirm that EIA Coordinator (EC) has gone through the report, and the consultant organization shall be fully accountable for any misleading information. It is certified that no unethical practices, plagiarism involved in carrying out the work and external data / text has not been used without proper acknowledgement while preparing this EIA report.

Signature: 

Name: **P.Giri**

Designation: **Chief Executive**

Name of the EIA consultant organization: **Creative Engineers & Consultants, Chennai – 59**

NABET Certificate No. & Issue Date: **No- NABET/EIA/23-26/RA 0331 & date 23.12.2026**



भारतीय गुणवत्ता परिषद्  
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## National Accreditation Board for Education and Training

# Certificate of Accreditation

### Creative Engineers and Consultants, Chennai

9B/4, Bharathwajar street, East Tambaram, Chennai, Tamil Nadu

The organization is accredited as **Category-A** under the QCI-NABET Scheme for Accreditation of EIA Consultant Organization, Version 3: for preparing EIA/EMP reports in the following Sectors-

S. No	Sector Description	Sector (as per)		Cat.
		NABET	MoEFCC	
1.	Mining of minerals- opencast mining only	1	1 (a) (i)	A
2.	Thermal power plants	4	1 (d)	A
3.	Mineral beneficiation	7	2 (b)	A
4.	Cement plants	9	3 (b)	A

Note: Names of approved EIA Coordinators and Functional Area Experts are mentioned in RAAC minutes dated May 03, 2024, posted on QCI-NABET website.

The Accreditation shall remain in force subject to continued compliance to the terms and conditions mentioned in QCI-NABET's letter of accreditation bearing no QCI/NABET/ENV/ACO/24/3250 dated May 24, 2024. The accreditation needs to be renewed before the expiry date by Creative Engineers and Consultants, Chennai following due process of assessment.

Issue Date  
May 24, 2024

Valid up to  
December 23, 2026



Mr. Ajay Kumar Jha  
(Sr. Director, NABET)

Certificate No.  
NABET/EIA/23-26/RA 0331

Prof (Dr) Varinder S Kanwar  
(CEO-NABET)

For the updated List of Accredited EIA Consultant Organizations with approved Sectors please refer to QCI-NABET website.

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# **TERMS OF REFERENCE & ITS COMPLIANCE**





सत्यमेव जयते

**File No: 10829**  
**Government of India**  
**Ministry of Environment, Forest and Climate Change**  
**(Issued by the State Environment Impact Assessment**  
**Authority(SEIAA), TAMIL NADU)**

\*\*\*



Dated 11/06/2024



To,

Vinoth Kumar  
AK BLUE METALS PRIVATE LIMITED  
1A, Manikandan Nagar, Hasthinapuram, Chennai-600064, CHENGALPATTU, TAMIL NADU,  
603311  
akbluemetalspvtltd@gmail.com

**Subject:** Grant of Terms of Reference with Public Hearing under the provision of the EIA Notification 2006-as amended regarding.

**Sir/Madam,**

This is in reference to your application for Grant of Terms of Reference under the provision of the EIA Notification 2006-regarding in respect of project Roughstone and Gravel Quarry of AK Blue Metals Pvt. Ltd. with Public Hearing Proposed Rough Stone & Gravel quarry over an extent of 5.53.0 Ha at S.F.Nos. 204/1, 204/2, 204/3, 205, 206/1, 206/2, 206/3, 206/4, 206/5, 206/6, 206/7, 206/8 & 206/9 of Periyavenmani Village, Maduranthakam Taluk, Chengalpattu District, submitted to SEIAA vide proposal number SIA/TN/MIN/470147/2024 dated 16/05/2024.

Ref:

1. Online Proposal No. SIA/TN/MIN/470147/2024, dated: 22.04.2024
2. Your application submitted for Terms of Reference dated: 29.04.2024

2. The particulars of the proposal are as below :

<b>(i) TOR Identification No.</b>	TO24B0108TN5769905N
<b>(ii) File No.</b>	10829
<b>(iii) Clearance Type</b>	TOR
<b>(iv) Category</b>	B1
<b>(v) Project/Activity Included Schedule No.</b>	1(a) Mining of minerals
<b>(vii) Name of Project</b>	Roughstone and Gravel Quarry of AK Blue Metals Pvt. Ltd.
<b>(viii) Name of Company/Organization</b>	AK BLUE METALS PRIVATE LIMITED
<b>(ix) Location of Project (District, State)</b>	CHENGALPATTU, TAMIL NADU
<b>(x) Issuing Authority</b>	SEIAA

<b>(xii) Applicability of General Conditions</b>	no
<b>(xiii) Applicability of Specific Conditions</b>	no

1. In view of the particulars given in the Para 1 above, the project proposal interalia including Form-1 (Part A and B) were submitted to the Ministry for an appraisal by the State Environment Impact Assessment Authority (SEIAA) under the provision of EIA notification 2006 and its subsequent amendments.

2. The above-mentioned proposal has been considered by State Environment Impact Assessment Authority (SEIAA) Appraisal Committee of SEIAA in the meeting held on 03/06/2024. The minutes of the meeting and all the Application and documents submitted [(viz. Form-1 Part A, Part B,)] are available on PARIVESH portal which can be accessed by scanning the QR Code above.

3. The State Expert Appraisal Committee (SEAC), based on the information & clarifications provided by the project proponent and after detailed deliberations recommended the proposal for grant of Terms of Reference under the provision of EIA Notification, 2006 and as amended thereof subject to the stipulation of specific and general conditions as detailed in Annexure (2).

4. The SEIAA has examined the proposal in accordance with the Environment Impact Assessment (EIA) Notification, 2006 & further amendments thereto and after accepting the recommendations of the SEAC hereby decided to grant Terms of Reference for instant proposal of Thiru . Vinoth Kumar under the provisions of EIA Notification, 2006 and as amended thereof.

5. The Ministry/SEIAA-TN reserves the right to stipulate additional conditions, if found necessary.

6. The Terms of Reference to the aforementioned project is under provisions of EIA Notification, 2006. It does not tantamount to approvals/consent/permissions etc. required to be obtained under any other Act/Rule/regulation. The Project Proponent is under obligation to obtain approvals /clearances under any other Acts/ Regulations or Statutes, as applicable, to the project.

7. This issues with the approval of the Competent Authority.

8. The TORs with public hearing prescribed shall be valid for a period of three years from the date of issue, for submission of the EIA/EMP report as per OMNo.J-11013/41/2006-IA-II(I)(part) dated 29th August, 2017.

#### **Copy To**

1. The Additional Chief Secretary to Government, Environment, Climate Change and Forests Department, Govt. of Tamil Nadu, Fort St. George, Chennai - 9.
2. The Chairman, Central Pollution Control Board, Parivesh Bhavan, CBD Cum-Office Complex, East Arjun Nagar, New Delhi - 110 032.
3. The Chairperson, Tamil Nadu Pollution Control Board, 76, Mount Salai, Guindy, Chennai - 600 032.
4. The APCCF (C), Regional Office, MoEF & CC (SZ), 34, HEPC Building, 1<sup>st</sup> & 2<sup>nd</sup> Floor, Cathedral Garden Road, Nungambakkam, Chennai - 34.
5. Monitoring Cell, IA Division, Ministry of Environment, Forests & CC, Paryavaran Bhavan, CGO Complex, New Delhi - 110 003.
6. The District Collector, Chengalpattu District.
7. Stock File.

#### **Annexure 1**

#### **Specific Terms of Reference for (Mining Of Minerals)**

#### **1. Seiaa Specific Conditions:**

<b>S. No</b>	<b>Terms of Reference</b>
<b>1.1</b>	After detailed discussions, the Authority accepts the recommendation of SEAC and decided to grant <b>Terms of Reference (ToR) for the production quantity should not exceed 11,12,850m<sup>3</sup> of</b>

S. No	Terms of Reference
	<p><b>rough stone &amp; 91,518m<sup>3</sup> of Gravel with an ultimate depth of mining is 52m BGL. The annual peak production is 1,61,130m<sup>3</sup> of rough stone &amp; 49,128m<sup>3</sup> of Gravel, along with Public Hearing</b> under cluster for undertaking the combined Environment Impact Assessment Study and preparation of separate Environment Management Plan subject to the conditions as recommended by SEAC with and the specific and standard conditions.</p> <ol style="list-style-type: none"> <li>1. The detailed studies on the Loss of Vegetation, Loss of Biodiversity shall be carried out and the action plan to prevent the same shall be included in the EIA report.</li> <li>2. The detailed studies on the Impact on water bodies and human health shall be carried out and the action plan to prevent the same shall be included in the EIA report.</li> <li>3. The PP shall carry out the scientific studies to assess the hydrogeological condition of the quarry by involving any one of the reputed Research and Academic Institution. A copy of such scientific study report shall be included in the EIA report.</li> <li>4. The PP shall carry out the scientific studies with prior permission from the DMS/Chennai Region, to design the controlled blast parameters for reducing the blast-induced ground/air-vibrations and eliminating the fly rock from the blasting operations carried out in the quarry, by involving anyone of these reputed Research and Academic Institution. A copy of such scientific study report shall be included in the EIA report.</li> <li>5. The PP shall carry out the scientific studies to assess the slope stability of the working benches and existing quarry wall by involving any one of the reputed Research and Academic Institutions. A copy of such scientific study report shall be included in the EIA report.</li> </ol>

## 2. Seac Conditions - Site Specific

S. No	Terms of Reference
2.1	1.The PP shall furnish the letter from panchayat office that existing cart track located within the lease area is not in use.

## 3. Seac Standard Conditions

S. No	Terms of Reference
3.1	<ol style="list-style-type: none"> <li>1. In the case of existing/operating mines, a letter obtained from the concerned AD (Mines) shall be submitted and it shall include the following: <ol style="list-style-type: none"> <li>(i) Original pit dimension</li> <li>(ii) Quantity achieved Vs EC Approved Quantity</li> <li>(iii) Balance Quantity as per Mineable Reserve calculated.</li> <li>(iv) Mined out Depth as on date Vs EC Permitted depth</li> <li>(v) Details of illegal/illicit mining</li> <li>(vi) Violation in the quarry during the past working.</li> <li>(vii) Quantity of material mined out outside the mine lease area</li> <li>(viii) Condition of Safety zone/benches</li> <li>(ix) Revised/Modified Mining Plan showing the benches of not exceeding 6 m height and ultimate depth of not exceeding 50m.</li> </ol> </li> <li>2. Details of habitations around the proposed mining area and latest VAO certificate regarding the location of habitations within 300m radius from the periphery of the site.</li> <li>3. The proponent is requested to carry out a survey and enumerate on the structures located within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m (v) 500m shall be enumerated with details such as dwelling houses with number of occupants, whether it belongs to the owner (or) not,</li> </ol>

S. No	Terms of Reference
	<p>places of worship, industries, factories, sheds, etc with indicating the owner of the building, nature of construction, age of the building, number of residents, their profession and income, etc.</p> <p>4. The PP shall submit a detailed hydrological report indicating the impact of proposed quarrying operations on the waterbodies like lake, water tanks, etc are located within 1 km of the proposed quarry.</p> <p>5. The Proponent shall carry out Bio diversity study through reputed Institution and the same shall be included in EIA Report.</p> <p>6. The DFO letter stating that the proximity distance of Reserve Forests, Protected Areas, Sanctuaries, Tiger reserve etc., up to a radius of 25 km from the proposed site.</p> <p>7. In the case of proposed lease in an existing (or old) quarry where the benches are not formed (or partially formed as per the approved Mining Plan, the Project Proponent (PP) shall the PP shall carry out the scientific studies to assess the slope stability of the working benches to be constructed and existing quarry wall, by involving any one of the reputed Research and Academic Institutions - CSIR-Central Institute of Mining &amp; Fuel Research / Dhanbad, NIRM/Bangalore, Division of Geotechnical Engineering-IIT-Madras, NIT-Dept of Mining Engg, Surathkal, and Anna University Chennai-CEG Campus. The PP shall submit a copy of the aforesaid report indicating the stability status of the quarry wall and possible mitigation measures during the time of appraisal for obtaining the EC.</p> <p>8. However, in case of the fresh/virgin quarries, the Proponent shall submit a conceptual 'Slope Stability Plan' for the proposed quarry during the appraisal while obtaining the EC, when the depth of the working is extended beyond 30 m below ground level.</p> <p>9. The PP shall furnish the affidavit stating that the blasting operation in the proposed quarry is carried out by the statutory competent person as per the MMR 1961 such as blaster, mining mate, mine foreman, II/ Class mines manager appointed by the proponent.</p> <p>10. The PP shall present a conceptual design for carrying out only controlled blasting operation involving line drilling and muffle blasting in the proposed quarry such that the blast-induced ground vibrations are controlled as well as no fly rock travel beyond 30 m from the blast site.</p> <p>11. The EIA Coordinators shall obtain and furnish the details of quarry/quarries operated by the proponent in the past, either in the same location or elsewhere in the State with video and photographic evidences.</p> <p>12. If the proponent has already carried out the mining activity in the proposed mining lease area after 15.01.2016, then the proponent shall furnish the following details from AD/DD, mines,</p> <p>13. What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?</p> <p>14. Quantity of minerals mined out.</p> <ul style="list-style-type: none"> <li>● Highest production achieved in any one year</li> <li>● Detail of approved depth of mining.</li> <li>● Actual depth of the mining achieved earlier.</li> <li>● Name of the person already mined in that leases area.</li> <li>● If EC and CTO already obtained, the copy of the same shall be submitted.</li> <li>● Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches.</li> </ul> <p>15. All corner coordinates of the mine lease area, superimposed on a High-Resolution Imagery/Topo sheet, topographic sheet, geomorphology, lithology and geology of the mining lease area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).</p> <p>16. The PP shall carry out Drone video survey covering the cluster, green belt, fencing, etc.,</p> <p>17. The proponent shall furnish photographs of adequate fencing, green belt along the periphery including replantation of existing trees &amp; safety distance between the adjacent quarries &amp; water bodies nearby provided as per the approved mining plan.</p> <p>18. The Project Proponent shall provide the details of mineral reserves and mineable reserves,</p>

S. No	Terms of Reference
	<p>planned production capacity, proposed working methodology with justifications, the anticipated impacts of the mining operations on the surrounding environment, and the remedial measures for the same.</p> <p>19. The Project Proponent shall provide the Organization chart indicating the appointment of various statutory officials and other competent persons to be appointed as per the provisions of the Mines Act'1952 and the MMR, 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the environment.</p> <p>20. The Project Proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of groundwater pumping &amp; open wells, and surface water bodies such as rivers, tanks, canals, ponds, etc. within 1 km (radius) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD / TWAD so as to assess the impacts on the wells due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided.</p> <p>21. The proponent shall furnish the baseline data for the environmental and ecological parameters with regard to surface water/ground water quality, air quality, soil quality &amp; flora/fauna including traffic/vehicular movement study.</p> <p>22. The Proponent shall carry out the Cumulative impact study due to mining operations carried out in the quarry specifically with reference to the specific environment in terms of soil health, biodiversity, air pollution, water pollution, climate change and flood control &amp; health impacts. Accordingly, the Environment Management plan should be prepared keeping the concerned quarry and the surrounding habitations in the mind.</p> <p>23. Rain water harvesting management with recharging details along with water balance (both monsoon &amp; non-monsoon) be submitted.</p> <p>24. Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.</p> <p>25. Details of the land for storage of Overburden/Waste Dumps (or) Rejects outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&amp;R issues, if any, should be provided.</p> <p>26. Proximity to Areas declared as 'Critically Polluted' (or) the Project areas which attracts the court restrictions for mining operations, should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the TNPCB (or) Dept. of Geology and Mining should be secured and furnished to the effect that the proposed mining activities could be considered.</p> <p>27. Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.</p> <p>28. Impact on local transport infrastructure due to the Project should be indicated.</p> <p>29. A tree survey study shall be carried out (nos., name of the species, age, diameter etc.,) both within the mining lease applied area &amp; 300m buffer zone and its management during mining activity.</p> <p>30. A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.</p> <p>31. As a part of the study of flora and fauna around the vicinity of the proposed site, the EIA coordinator shall strive to educate the local students on the importance of preserving local flora and fauna by involving them in the study, wherever possible.</p> <p>32. The purpose of Green belt around the project is to capture the fugitive emissions, carbon sequestration and to attenuate the noise generated, in addition to improving the aesthetics. A wide range of indigenous plant species should be planted as given in the appendix-I in consultation with the DFO, State Agriculture University. The plant species with dense/moderate canopy of native</p>

S. No	Terms of Reference
	<p>origin should be chosen. Species of small/medium/tall trees alternating with shrubs should be planted in a mixed manner.</p> <p>33. Taller/one year old Saplings raised in appropriate size of bags, preferably ecofriendly bags should be planted as per the advice of local forest authorities/botanist/Horticulturist with regard to site specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner</p> <p>34. A Disaster management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.</p> <p>35. A Risk Assessment and management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.</p> <p>36. Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.</p> <p>37. Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.</p> <p>38. The Socio-economic studies should be carried out within a 5 km buffer zone from the mining activity. Measures of socio-economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.</p> <p>39. Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.</p> <p>40. Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.</p> <p>41. If any quarrying operations were carried out in the proposed quarrying site for which now the EC is sought, the Project Proponent shall furnish the detailed compliance to EC conditions given in the previous EC with the site photographs which shall duly be certified by MoEF&amp;CC, Regional Office, Chennai (or) the concerned DEE/TNPCB.</p> <p>42. The PP shall prepare the EMP for the entire life of mine and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine</p> <p>43. Concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this Terms of Conditions besides attracting penal provisions in the Environment (Protection) Act, 1986.</p>

**4. Seiaa Standard Conditions:**

S. No	Terms of Reference
4.1	<p><b><u>Cluster Management Committee</u></b></p> <p>1. Cluster Management Committee shall be framed which must include all the proponents in the cluster as members including the existing as well as proposed quarry.</p> <p>2. The members must coordinate among themselves for the effective implementation of EMP as committed including Green Belt Development, Water sprinkling, tree plantation, blasting etc.,</p> <p>3. The List of members of the committee formed shall be submitted to AD/Mines before the execution of mining lease and the same shall be updated every year to the AD/Mines.</p> <p>4. Detailed Operational Plan must be submitted which must include the blasting frequency with respect to the nearby quarry situated in the cluster, the usage of haul roads by the individual quarry in the form of route map and network.</p> <p>5. The committee shall deliberate on risk management plan pertaining to the cluster in a holistic</p>

S. No	Terms of Reference
	<p>manner especially during natural calamities like intense rain and the mitigation measures considering the inundation of the cluster and evacuation plan.</p> <p>6. The Cluster Management Committee shall form Environmental Policy to practice sustainable mining in a scientific and systematic manner in accordance with the law. The role played by the committee in implementing the environmental policy devised shall be given in detail.</p> <p>7. The committee shall furnish action plan regarding the restoration strategy with respect to the individual quarry falling under the cluster in a holistic manner.</p> <p>8. The committee shall furnish the Emergency Management plan within the cluster.</p> <p>9. The committee shall deliberate on the health of the workers/staff involved in the mining as well as the health of the public.</p> <p>10. The committee shall furnish an action plan to achieve sustainable development goals with reference to water, sanitation &amp; safety.</p> <p>11. The committee shall furnish the fire safety and evacuation plan in the case of fire accidents.</p> <p><b><u>Impact study of mining</u></b></p> <p>12. Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area covering the entire mine lease period as per precise area communication order issued from reputed research institutions on the following</p> <ol style="list-style-type: none"> <li>a) Soil health &amp; soil biological, physical land chemical features .</li> <li>b) Climate change leading to Droughts, Floods etc.</li> <li>c) Pollution leading to release of Greenhouse gases (GHG), rise in Temperature, &amp; Livelihood of the local people.</li> <li>d) Possibilities of water contamination and impact on aquatic ecosystem health.</li> <li>e) Agriculture, Forestry &amp; Traditional practices.</li> <li>f) Hydrothermal/Geothermal effect due to destruction in the Environment.</li> <li>g) Bio-geochemical processes and its foot prints including environmental stress.</li> <li>h) Sediment geochemistry in the surface streams.</li> </ol> <p><b><u>Agriculture &amp; Agro-Biodiversity</u></b></p> <p>13. Impact on surrounding agricultural fields around the proposed mining Area.</p> <p>14. Impact on soil flora &amp; vegetation around the project site.</p> <p>15. Details of type of vegetations including no. of trees &amp; shrubs within the proposed mining area and. If so, transplantation of such vegetations all along the boundary of the proposed mining area shall committed mentioned in EMP.</p> <p>16. The Environmental Impact Assessment should study the biodiversity, the natural ecosystem, the soil micro flora, fauna and soil seed banks and suggest measures to maintain the natural Ecosystem.</p> <p>17. Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.</p> <p>18. The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock.</p> <p><b><u>Forests</u></b></p> <p>19. The project proponent shall detailed study on impact of mining on Reserve forests free ranging wildlife.</p> <p>20. The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.</p> <p>21. The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection.</p> <p>22. The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site.</p> <p><b><u>Water Environment</u></b></p> <p>23. Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping &amp; open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) so as to assess the impacts on the nearby waterbodies due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect</p>

S. No	Terms of Reference
	<p>groundwater. Necessary data and documentation in this regard may be provided, covering the entire mine lease period.</p> <p>24. Erosion Control measures.</p> <p>25. Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area on the nearby Villages, Water-bodies/ Rivers, &amp; any ecological fragile areas.</p> <p>26. The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.</p> <p>27. The project proponent shall study and furnish the details on potential fragmentation impact on natural environment, by the activities.</p> <p>28. The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site, and archaeological sites possible land form changes visual and aesthetic impacts.</p> <p>29. The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.</p> <p>30. The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.</p> <p><b><u>Energy</u></b></p> <p><b><u>Climate Change</u></b></p> <p>32. The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities.</p> <p>33. The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil &amp; below soil carbon stock.</p> <p><b><u>Mine Closure Plan</u></b></p> <p><b><u>EMP</u></b></p> <p>35. Detailed Environment Management Plan along with adaptation, mitigation &amp; remedial strategies covering the entire mine lease period as per precise area communication order issued.</p> <p>36. The Environmental Impact Assessment should hold detailed study on EMP with budget for Green belt development and mine closure plan including disaster management plan.</p> <p><b><u>Risk Assessment</u></b></p> <p><b><u>Disaster Management Plan</u></b></p> <p><b><u>Others</u></b></p> <p>39. The project proponent shall furnish VAO certificate with reference to 300m radius regard to approved habitations, schools, Archaeological sites, Structures, railway lines, roads, water bodies such as streams, odai, vaari, canal, channel, river, lake pond, tank etc.</p> <p>40. As per the MoEF&amp; CC office memorandum F.No.22-65/2017-IA.III dated: 30.09.2020 and 20.10.2020 the proponent shall address the concerns raised during the public consultation and all the activities proposed shall be part of the Environment Management Plan.</p> <p>41. The project proponent shall study and furnish the possible pollution due to plastic and microplastic on the environment. The ecological risks and impacts of plastic &amp; microplastics on aquatic environment and fresh water systems due to activities, contemplated during mining may be investigated and reported.</p>

**Standard Terms of Reference for (Mining of minerals)**

1.

S. No	Terms of Reference
1.1	An EIA-EMP Report shall be prepared for peak capacity (.....MTPA)operation in an ML/project area of.....ha based on the generic structure specified in Appendix III of the EIA Notification, 2006.



S. No	Terms of Reference
1.2	An EIA-EMP Report would be prepared for peak capacity operation to cover the impacts and environment management plan for the project specific activities on the environment of the region, and the environmental quality encompassing air, water, land, biotic community, etc. through collection of data and information, generation of data on impacts including prediction modeling for..... MTPA of mineral production based on approved project/Mining Plan for.....MTPA. Baseline data collection can be for any season (three months) except monsoon.
1.3	Propoer KML file with pin drop and coordinate of mine at 500-1000 m interval be provided
1.4	A Study area map of the core zone (project area) and 10 km area of the buffer zone (1: 50,000 scale) clearly delineating the major topographical features such as the land use, surface drainage pattern including rivers/streams/nullahs/canals, locations of human habitations, major constructions including railways, roads, pipelines, major industries, mines and other polluting sources. In case of ecologically sensitive areas such as Biosphere Reserves/National Parks/WL Sanctuaries/ Elephant Reserves, forests (Reserved/Protected), migratory corridors of fauna, and areas where endangered fauna and plants of medicinal and economic importance found in the 15 km study area should be given. The above details to be furnished in tabular form also
1.5	Map showing the core zone delineating the agricultural land (irrigated and un-irrigated, uncultivable land as defined in the revenue records, forest areas (as per records), along with other physical features such as water bodies, etc should be furnished.
1.6	A contour map showing the area drainage of the core zone and 25 km of the study area (where the water courses of the core zone ultimately join the major rivers/streams outside the lease/project area) should also be clearly indicated in the separate map.
1.7	Catchment area with its drainage map of 25 km area within and outside the mine shall be provided with names, details of rivers/ riverlet system and its respective order. The map should clearly indicate drainage pattern of the catchment area with basin of major rivers. Diversion of drains/ river need eloboration in form of lengthe, quantity and quality of water to be diverted
1.8	(Details of mineral reserves, geological status of the study area and the seams to be worked, ultimate working depth and progressive stage-wise working scheme until the end of mine life should be provided on the basis of the approved rated capacity and calendar plans of production from the approved Mining Plan. Geological maps and sections should be included. The Progressive mine development and Conceptual Final Mine Closure Plan should also be shown in figures. Details of mine plan and mine closure plan approval of Competent Authority should be furnished for green field and expansion projects.
1.9	Details of mining methods, technology, equipment to be used, etc., rationale for selection of specified technology and equipment proposed to be used vis-à-vis the potential impacts should be provided.
1.10	Impact of mining on hydrology, modification of natural drainage, diversion and channeling of the existing rivers/water courses flowing though the ML and adjoining the lease/project and the impact on the existing users and impacts of mining operations thereon.
1.11	A detailed Site plan of the mine showing the proposed break-up of the land for mining operations such as the quarry area, OB dumps, green belt, safety zone, buildings, infrastructure, Stockyard, township/colony (within and adjacent to the ML), undisturbed area -if any, and landscape features

S. No	Terms of Reference																																																
	such as existing roads, drains/natural water bodies to be left undisturbed along with any natural drainage adjoining the lease /project areas, and modification of thereof in terms of construction of embankments/bunds, proposed diversion/re-channelling of the water courses, etc., approach roads, major haul roads, etc should be indicated.																																																
1.12	<p>Original land use (agricultural land/forestland/grazing land/wasteland/water bodies) of the area should be provided as per the tables given below. Impacts of project, if any on the land use, in particular, agricultural land/forestland/grazing land/water bodies falling within the lease/project and acquired for mining operations should be analyzed. Extent of area under surface rights and under mining rights should be specified. Area under Surface Rights</p> <table border="1"> <thead> <tr> <th>S.N</th> <th>ML/Project Land use</th> <th>Area under Surface Rights(ha)</th> <th>Area Under Mining Rights(ha)</th> <th>Area under Both (ha)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Agricultural land</td> <td></td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>Forest Land</td> <td></td> <td></td> <td></td> </tr> <tr> <td>3</td> <td>Grazing Land</td> <td></td> <td></td> <td></td> </tr> <tr> <td>4</td> <td>Settlements</td> <td></td> <td></td> <td></td> </tr> <tr> <td>5</td> <td>Others (specify)</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>S.N.</th> <th>Details</th> <th>Area (ha)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Buildings</td> <td></td> </tr> <tr> <td>2</td> <td>Infrastructure</td> <td></td> </tr> <tr> <td>3</td> <td>Roads</td> <td></td> </tr> <tr> <td>4</td> <td>Others (specify)</td> <td></td> </tr> <tr> <td></td> <td>Total</td> <td></td> </tr> </tbody> </table>	S.N	ML/Project Land use	Area under Surface Rights(ha)	Area Under Mining Rights(ha)	Area under Both (ha)	1	Agricultural land				2	Forest Land				3	Grazing Land				4	Settlements				5	Others (specify)				S.N.	Details	Area (ha)	1	Buildings		2	Infrastructure		3	Roads		4	Others (specify)			Total	
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1.13	Study on the existing flora and fauna in the study area (10km) should be carried out by an institution of relevant discipline. The list of flora and fauna duly authenticated separately for the core and study area and a statement clearly specifying whether the study area forms a part of the migratory corridor of any endangered fauna should be given. If the study area has endangered flora and fauna, or if the area is occasionally visited or used as a habitat by Schedule-I species, or if the project falls within 15 km of an ecologically sensitive area, or used as a migratory corridor then a Comprehensive Conservation Plan along with the appropriate budgetary provision should be prepared and submitted with EIA-EMP Report; and comments/observation from the CWLW of the State Govt. should also be obtained and furnished.																																																
1.14	One-season (other than monsoon) primary baseline data on environmental quality - air (PM10, PM2.5, SOx, NOx and heavy metals such as Hg, Pb, Cr, As, etc), noise, water (surface and groundwater), soil - along with one-season met data coinciding with the same season for AAQ collection period should be provided. The detail of NABL/ MoEF&CC certification of the respective laboratory and NABET accreditation of the consultant to be provided.																																																
1.15	Map (1: 50, 000 scale) of the study area (core and buffer zone) showing the location of various sampling stations superimposed with location of habitats, other industries/mines, polluting sources, should be provided. The number and location of the sampling stations in both core and buffer zones should be selected on the basis of size of lease/project area, the proposed impacts in the downwind (air)/downstream (surface water)/groundwater regime (based on flow). One station should be in the upwind/upstream/non-impact/non-polluting area as a control station. The monitoring should be as																																																

S. No	Terms of Reference
	per CPCB guidelines and parameters for water testing for both ground water and surface water as per ISI standards and CPCB classification wherever applicable. Observed values should be provided along with the specified standards.
1.16	For proper baseline air quality assessment, Wind rose pattern in the area should be reviewed and accordingly location of AAMSQ shall be planned by the collection of air quality data by adequate monitoring stations in the downwind areas. Monitoring location for collecting baseline data should cover overall the 10 km buffer zone i.e. dispersed in 10 km buffer area. In case of expansion, the displayed data of CAAQMS and its comparison with the monitoring data to be provided
1.17	A detailed traffic study along with presence of habitation in 100 mts distance from both side of road, the impact on the air quality with its proper measures and plan of action with timeline for widening of road. The project will increase the no. of vehicle along the road which will indirectly contribute to carbon emission so what will be the compensatory action plan should be clearly spell out in EIA/ EMP report.
1.18	The socio-economic study to conducted with actual survey report and a comparative assessment to be provided from the census data should be provided in EIA/ EMP report also occupational status & economic status of the study area and what economically project will contribute should be clearly mention. The study should also include the status of infrastructural facilities and amenities present in the study area and a comparative assessment with census data to be provided and to link it with the initialization and quantification of need based survey for CSR activities to be followed.
1.19	The Ecology and biodiversity study should also indicate the likely impact of change in forest area for surface infrastructural development or mining activity in relation to the climate change of that area and what will be the compensatory measure to be adopted by PP to minimize the impact of forest diversion.
1.20	Baseline data on the health of the population in the impact zone and measures for occupational health and safety of the personnel and manpower for the mine should be submitted.
1.21	Impact of proposed project/activity on hydrological regime of the area shall be assessed and report be submitted. Hydrological studies as per GEC 2015 guidelines to be prepared and submitted
1.22	Impact of mining and water abstraction from the mine on the hydrogeology and groundwater regime within the core zone and 10 km buffer zone including long-term monitoring measures should be provided. Details of rainwater harvesting and measures for recharge of groundwater should be reflected in case there is a declining trend of groundwater availability and/or if the area falls within dark/grey zone.
1.23	Study on land subsidence including modeling for prediction, mitigation/prevention of subsidence, continuous monitoring measures, and safety issues should be carried out.
1.24	Detailed water balance should be provided. The break up of water requirement as per different activities in the mining operations, including use of water for sand stowing should be given separately. Source of water for use in mine, sanction of the Competent Authority in the State Govt. and impacts vis-à-vis the competing users should be provided.
1.25	PP shall submit design details of all Air Pollution control equipment (APCEs) to be implemented as part of Environment Management Plan vis-à-vis reduction in concentration of emission for each

S. No	Terms of Reference
	APCEs
1.26	PP shall propose to use LNG/CNG based mining machineries and trucks for mining operation and transportation of mineral. The measures adopted to conserve energy or use of renewable sources shall be explored
1.27	PP to evaluate the green house emission gases from the mine operation and corresponding carbon absorption plan.
1.28	Site specific Impact assessment with its mitigation measures, Risk Assessment and Disaster Preparedness and Management Plan should be provided.
1.29	Impact of choice of mining method, technology, selected use of machinery and impact on air quality, mineral transportation, handling & storage/stockyard, etc, Impact of blasting, noise and vibrations should be provided.
1.30	Impacts of mineral transportation within the mining area and outside the lease/project along with flow-chart indicating the specific areas generating fugitive emissions should be provided. Impacts of transportation, handling, transfer of mineral and waste on air quality, generation of effluents from workshop etc, management plan for maintenance of HEMM and other machinery/equipment should be given. Details of various facilities such as rest areas and canteen for workers and effluents/pollution load emanating from these activities should also be provided.
1.31	Details of various facilities to be provided to the workers in terms of parking, rest areas and canteen, and effluents/pollution load resulting from these activities should also be given.
1.32	The number and efficiency of mobile/static water jet, Fog cannon sprinkling system along the main mineral transportation road inside the mine, approach roads to the mine/stockyard/siding, and also the frequency of their use in impacting air quality should be provided.
1.33	Conceptual Final Mine Closure Plan and post mining land use and restoration of land/habitat to the pre- mining status should be provided. A Plan for the ecological restoration of the mined out area and post mining land use should be prepared with detailed cost provisions. Impact and management of wastes and issues of re-handling (wherever applicable) and backfilling and progressive mine closure and reclamation should be furnished.
1.34	Adequate greenbelt nearby areas, mineral stock yard and transportation area of mineral shall be provided with details of species selected and survival rate Greenbelt development should be undertaken particularly around the transport route.
1.35	Cost of EMP (capital and recurring) should be included in the project cost and for progressive and final mine closure plan.
1.36	Details of R&R. Detailed project specific R&R Plan with data on the existing socio- economic status of the population (including tribals, SC/ST, BPL families) found in the study area and broad plan for resettlement of the displaced population, site for the resettlement colony, alternate livelihood concerns/employment for the displaced people, civic and housing amenities being offered, etc and costs along with the schedule of the implementation of the R&R Plan should be given.

S. No	Terms of Reference																																								
1.37	CSR Plan along with details of villages and specific budgetary provisions (capital and recurring) for specific activities over the life of the project should be given.																																								
1.38	Corporate Environment Responsibility:																																								
1.39	a) The Company must have a well laid down Environment Policy approved by the Board of Directors.																																								
1.40	b) The Environment Policy must prescribe for standard operating process/procedures to bring into focus any infringements/deviation/violation of the environmental or forest norms/conditions.																																								
1.41	c) The hierarchical system or Administrative Order of the company to deal with environmental issues and for ensuring compliance with the environmental clearance conditions must be furnished.																																								
1.42	d) To have proper checks and balances, the company should have a well laid down system of reporting of non-compliances/violations of environmental norms to the Board of Directors of the company and/or shareholders or stakeholders at large.																																								
1.43	e) Environment Management Cell and its responsibilities to be clearly spelled out in EIA/ EMP report																																								
1.44	f) In built mechanism of self-monitoring of compliance of environmental regulations should be indicated.																																								
1.45	Status of any litigations/ court cases filed/pending on the project should be provided.																																								
1.46	PP shall submit clarification from DFO that mine does not falls under corridors of any National Park and Wildlife Sanctuary with certified map showing distance of nearest sanctuary.																																								
1.47	Copy of clearances/approvals such as Forestry clearances, Mining Plan Approval, mine closer plan approval. NOC from Flood and Irrigation Dept. (if req.), etc. wherever applicable.																																								
1.48	<p>Details on the Forest Clearance should be given as per the format given:</p> <table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;"></td> <td style="width: 15%;">Total ML Total</td> <td style="width: 15%;">Date</td> <td style="width: 15%;">Extent</td> <td style="width: 15%;">of</td> <td style="width: 15%;">Balance area for which</td> <td style="width: 15%;">Status of appl</td> <td style="width: 15%;">For</td> </tr> <tr> <td></td> <td>Project Area Forest</td> <td>of FC</td> <td>of Forest Land</td> <td>FC is yet to</td> <td>obtained</td> <td>be diversion of forest</td> <td>land</td> </tr> <tr> <td></td> <td>(ha)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>land (ha)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td colspan="7">If more than one provide details of each FC</td> </tr> </table>		Total ML Total	Date	Extent	of	Balance area for which	Status of appl	For		Project Area Forest	of FC	of Forest Land	FC is yet to	obtained	be diversion of forest	land		(ha)								land (ha)								If more than one provide details of each FC						
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	(ha)																																								
	land (ha)																																								
	If more than one provide details of each FC																																								
1.49	In case of expansion of the proposal, the status of the work done as per mining plan and approved mine closure plan shall be detailed in EIA/ EMP report																																								
1.50	Details on Public Hearing should cover the information relating to notices issued in the newspaper, proceedings/minutes of Public Hearing, the points raised by the general public and commitments made by the proponent and the time bound action proposed with budgets in suitable time frame. These details should be presented in a tabular form. If the Public Hearing is in the regional language, an authenticated English Translation of the same should be provided.																																								

S. No	Terms of Reference
1.51	PP shall carry out survey through drone highlighting the ground reality for atleast 10 minutes
1.52	Detailed Chronology of the project starting from the first lease deed allotted/Block allotment/ Land acquired to its No. of renewals, CTO /CTE with details of no. renewals, previous EC(s) granted details and its compliance details, NOC details from various Govt bodies like Forest NOC(s), CGWA permissions, Power permissions, etc as per the requisites respectively to be furnished in tabular form.
1.53	The first page of the EIA/ EMP report must mention the peak capacity production, area, detail of PP, Consultant (NABET accreditation) and Laboratory (NABL / MoEF & CC certification)
1.54	The compliances of ToR must be properly cited with respective chapter section and page no in tabular form and also mention sequence of the respective ToR complied within the EIA-EMP report in all the chapter,s section.





सत्यमेव जयते

**File No: 10832**  
**Government of India**  
**Ministry of Environment, Forest and Climate Change**  
**(Issued by the State Environment Impact Assessment**  
**Authority(SEIAA), TAMIL NADU)**

\*\*\*



Dated 07/06/2024



To,

Elangovan  
Udhayam mines and minerals private limited  
1A, Manikandan Nagar, Hasthinapuram, Chennai-600064, CHENGALPATTU, TAMIL NADU,  
603311  
udhayammminesandminerals@gmail.com

**Subject:** Grant of Terms of Reference with Public Hearing under the provision of the EIA Notification 2006-regarding.

**Sir/Madam,**

This is in reference to your application for Grant of Terms of Reference under the provision of the EIA Notification 2006-regarding in respect of project Udhayam Mines and Minerals Pvt. Ltd. Rough Stone and Gravel quarry over an extent of 4.04.5 Ha at SF.No. 172/2B, 172/2C, 172/2D & 172/7 of Periyavenmani Village, Madhuranthakam Taluk, Chengalpattu District, submitted to Ministry vide proposal number SIA/TN/MIN/470158/2024 dated 16/05/2024.

Ref:1. Online proposal No. SIA/TN/MIN/470158/2024, Dated:22.04.2024.

2. Your application submitted for Terms of Reference dated:30.04.2024.

2. The particulars of the proposal are as below :

(i) TOR Identification No.	TO24B0108TN5364690N
(ii) File No.	10832
(iii) Clearance Type	TOR
(iv) Category	B1
(v) Project/Activity Included Schedule No.	1(a) Mining of minerals
(vii) Name of Project	Roughstone and Gravel Quarry of Udhayam Mines and Minerals Pvt. Ltd.
(viii) Name of Company/Organization	Udhayam mines and minerals private limited
(ix) Location of Project (District, State)	CHENGALPATTU, TAMIL NADU
(x) Issuing Authority	SEIAA
(xii) Applicability of General Conditions	no
(xiii) Applicability of Specific Conditions	no

3. In view of the particulars given in the Para 1 above, the project proposal interalia including Form-1(Part A and B) were submitted to the Ministry for an appraisal by the State Environment Impact Assessment Authority (SEIAA) under the provision of EIA notification 2006 and its subsequent amendments.
4. The above-mentioned proposal has been considered by State Environment Impact Assessment Authority(SEIAA) Appraisal Committee of SEIAA in the meeting held on 03/06/2024. The minutes of the meeting and all the Application and documents submitted [(viz. Form-1 Part A, Part B,)] are available on PARIVESH portal which can be accessed by scanning the QR Code above.
5. The State Expert Appraisal Committee (SEAC), based on the information & clarifications provided by the project proponent and after detailed deliberations recommended the proposal for grant of Terms of Reference under the provision of EIA Notification, 2006 and as amended thereof subject to the stipulation of specific and general conditions as detailed in Annexure (2).
6. The SEIAA has examined the proposal in accordance with the Environment Impact Assessment (EIA) Notification, 2006 & further amendments thereto and after accepting the recommendations of the SEAC hereby decided to grant Terms of Reference for instant proposal of M/s.Elangovan under the provisions of EIA Notification, 2006 and as amended thereof.
7. The Ministry/SEIAA-TN reserves the right to stipulate additional conditions, if found necessary.
8. The Terms of Reference to the aforementioned project is under provisions of EIA Notification, 2006. It does not tantamount to approvals/consent/permissions etc. required to be obtained under any other Act/Rule/regulation. The Project Proponent is under obligation to obtain approvals /clearances under any other Acts/ Regulations or Statutes, as applicable, to the project.
9. This issues with the approval of the Competent Authority.
10. The TORs with public hearing prescribed shall be valid for a period of three years from the date of issue, for submission of the EIA/EMP report as per OMNo.J-11013/41/2006-IA-II(I)(part) dated 29th August, 2017.

#### **Copy To**

1. The Additional Chief Secretary to Government, Environment & Forests Department, Govt. of Tamil Nadu, Fort St. George, Chennai - 9
2. The Chairman, Central Pollution Control Board, Parivesh Bhavan, CBD Cum-Office Complex, East Arjun Nagar, New Delhi 110032.
3. The Member Secretary, Tamil Nadu Pollution Control Board, 76, Mount Salai, Guindy, Chennai-600 032.
4. The APCCF (C), Regional Office, MoEF & CC (SZ), 34, HEPC Building, 1<sup>st</sup> & 2<sup>nd</sup> Floor, Cathedral Garden Road, Nungambakkam, Chennai -34.
5. Monitoring Cell, IA Division, Ministry of Environment, Forests & CC, Paryavaran Bhavan, CGO Complex, New Delhi 110003
6. The District Collector, Chengalpattu District.
7. Stock File.

#### **Annexure 1**

#### **Specific Terms of Reference for (Mining Of Minerals)**

#### **1. Seac Conditions - Site Specific**

S. No	Terms of Reference
<b>1.1</b>	1. The structures within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m & upto 1km



S. No	Terms of Reference
	<p>shall be enumerated with details such as dwelling houses with number of occupants, whether it belongs to the owner (or) not, places of worship, industries, factories, sheds, etc.</p> <p>2. As there a cart track is seen to be passing through the proposed land, PP should furnish details including NoC from the authorities concerned.</p> <p>3. The proponent shall furnish photographs of adequate fencing, garland drain &amp; green belt along the periphery including replantation of existing trees &amp; safety distance between the adjacent quarries &amp; water bodies nearby provided as per the approved mining plan.</p> <p>4. The Proponent shall carry out Bio diversity study and the same shall be included in EIA Report.</p> <p>5. The PP shall prepare the EMP for the entire life of mine of <b>10 years</b> and also furnish the monitoring mechanism indicating to abide the EMP for the entire life of mine.</p> <p>6. The PP shall prepare the progressive Mine Closure Plan for the entire life of mine of <b>10 years</b> indicating various components to be implemented along with the budget allocated in the EMP for the entire life of mine.</p> <p>7. The PP shall prepare a conceptual working plan accommodating the remedial actions such as inclusion of haul road accessibility keeping the benches intact, based on the studies carried out to assess the slope stability of the working benches to be constructed and existing quarry wall apart from the proposed mining methodology.</p>

**2. Seiaa Standard Conditions:**

S. No	Terms of Reference
2.1	<p><b><u>Cluster Management Committee</u></b></p> <p>1. Cluster Management Committee shall be framed which must include all the proponents in the cluster as members including the existing as well as proposed quarry.</p> <p>2. The members must coordinate among themselves for the effective implementation of EMP as committed including Green Belt Development, Water sprinkling, tree plantation, blasting etc.,</p> <p>3. The List of members of the committee formed shall be submitted to AD/Mines before the execution of mining lease and the same shall be updated every year to the AD/Mines.</p> <p>4. Detailed Operational Plan must be submitted which must include the blasting frequency with respect to the nearby quarry situated in the cluster, the usage of haul roads by the individual quarry in the form of route map and network.</p> <p>5. The committee shall deliberate on risk management plan pertaining to the cluster in a holistic manner especially during natural calamities like intense rain and the mitigation measures considering the inundation of the cluster and evacuation plan.</p> <p>6. The Cluster Management Committee shall form Environmental Policy to practice sustainable mining in a scientific and systematic manner in accordance with the law. The role played by the committee in implementing the environmental policy devised shall be given in detail.</p> <p>7. The committee shall furnish action plan regarding the restoration strategy with respect to the individual quarry falling under the cluster in a holistic manner.</p> <p>8. The committee shall furnish the Emergency Management plan within the cluster.</p> <p>9. The committee shall deliberate on the health of the workers/staff involved in the mining as well as the health of the public.</p> <p>10. The committee shall furnish an action plan to achieve sustainable development goals with reference to water, sanitation &amp; safety.</p> <p>11. The committee shall furnish the fire safety and evacuation plan in the case of fire accidents.</p> <p><b><u>Impact study of mining</u></b></p> <p>12. Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area covering the entire mine lease period as per precise area communication order issued from reputed research institutions on the following</p> <p>a) Soil health &amp; soil biological, physical land chemical features .</p>

S. No	Terms of Reference
	<p>b) Climate change leading to Droughts, Floods etc.</p> <p>c) Pollution leading to release of Greenhouse gases (GHG), rise in Temperature, &amp; Livelihood of the local people.</p> <p>d) Possibilities of water contamination and impact on aquatic ecosystem health.</p> <p>e) Agriculture, Forestry &amp; Traditional practices.</p> <p>f) Hydrothermal/Geothermal effect due to destruction in the Environment.</p> <p>g) Bio-geochemical processes and its foot prints including environmental stress.</p> <p>h) Sediment geochemistry in the surface streams.</p> <p><b><u>Agriculture &amp; Agro-Biodiversity</u></b></p> <p>13. Impact on surrounding agricultural fields around the proposed mining Area.</p> <p>14. Impact on soil flora &amp; vegetation around the project site.</p> <p>15. Details of type of vegetations including no. of trees &amp; shrubs within the proposed mining area and. If so, transplantation of such vegetations all along the boundary of the proposed mining area shall committed mentioned in EMP.</p> <p>16. The Environmental Impact Assessment should study the biodiversity, the natural ecosystem, the soil micro flora, fauna and soil seed banks and suggest measures to maintain the natural Ecosystem.</p> <p>17. Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.</p> <p>18. The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock.</p> <p><b><u>Forests</u></b></p> <p>19. The project proponent shall detailed study on impact of mining on Reserve forests free ranging wildlife.</p> <p>20. The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.</p> <p>21. The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection.</p> <p>22. The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site.</p> <p><b><u>Water Environment</u></b></p> <p>23. Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping &amp; open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) so as to assess the impacts on the nearby waterbodies due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided, covering the entire mine lease period.</p> <p>24. Erosion Control measures.</p> <p>25. Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area on the nearby Villages, Water-bodies/ Rivers, &amp; any ecological fragile areas.</p> <p>26. The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.</p> <p>27. The project proponent shall study and furnish the details on potential fragmentation impact on natural environment, by the activities.</p> <p>28. The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site, and archaeological sites possible land form changes visual and aesthetic impacts.</p> <p>29. The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.</p> <p>30. The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.</p> <p><b><u>Energy</u></b></p> <p><b><u>Climate Change</u></b></p>

S. No	Terms of Reference
	<p>32. The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities.</p> <p>33. The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil &amp; below soil carbon stock.</p> <p><b><u>Mine Closure Plan</u></b>  <b><u>EMP</u></b></p> <p>35. Detailed Environment Management Plan along with adaptation, mitigation &amp; remedial strategies covering the entire mine lease period as per precise area communication order issued.</p> <p>36. The Environmental Impact Assessment should hold detailed study on EMP with budget for Green belt development and mine closure plan including disaster management plan.</p> <p><b><u>Risk Assessment</u></b>  <b><u>Disaster Management Plan</u></b>  <b><u>Others</u></b></p> <p>39. The project proponent shall furnish VAO certificate with reference to 300m radius regard to approved habitations, schools, Archaeological sites, Structures, railway lines, roads, water bodies such as streams, odai, vaari, canal, channel, river, lake pond, tank etc.</p> <p>40. As per the MoEF&amp; CC office memorandum F.No.22-65/2017-IA.III dated: 30.09.2020 and 20.10.2020 the proponent shall address the concerns raised during the public consultation and all the activities proposed shall be part of the Environment Management Plan.</p> <p>The project proponent shall study and furnish the possible pollution due to plastic and microplastic on the environment. The ecological risks and impacts of plastic &amp; microplastics</p>

### 3. Seac Standard Conditions

S. No	Terms of Reference
3.1	<p>1. In the case of existing/operating mines, a letter obtained from the concerned AD (Mines) shall be submitted and it shall include the following:</p> <ol style="list-style-type: none"> <li>(i) Original pit dimension</li> <li>(ii) Quantity achieved Vs EC Approved Quantity</li> <li>(iii) Balance Quantity as per Mineable Reserve calculated.</li> <li>(iv) Mined out Depth as on date Vs EC Permitted depth</li> <li>(v) Details of illegal/illicit mining</li> <li>(vi) Violation in the quarry during the past working.</li> <li>(vii) Quantity of material mined out outside the mine lease area</li> <li>(viii) Condition of Safety zone/benches</li> <li>(ix) Revised/Modified Mining Plan showing the benches of not exceeding 6 m height and ultimate depth of not exceeding 50m.</li> </ol> <p>2. Details of habitations around the proposed mining area and latest VAO certificate regarding the location of habitations within 300m radius from the periphery of the site.</p> <p>3. The proponent is requested to carry out a survey and enumerate on the structures located within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m (v) 500m shall be enumerated with details such as dwelling houses with number of occupants, whether it belongs to the owner (or) not, places of worship, industries, factories, sheds, etc with indicating the owner of the building, nature of construction, age of the building, number of residents, their profession and income, etc.</p> <p>4. The PP shall submit a detailed hydrological report indicating the impact of proposed quarrying operations on the waterbodies like lake, water tanks, etc are located within 1 km of the proposed quarry.</p> <p>5. The Proponent shall carry out Bio diversity study through reputed Institution and the same shall be included in EIA Report.</p>

S. No	Terms of Reference
	<p>6. The DFO letter stating that the proximity distance of Reserve Forests, Protected Areas, Sanctuaries, Tiger reserve etc., up to a radius of 25 km from the proposed site.</p> <p>7. In the case of proposed lease in an existing (or old) quarry where the benches are not formed (or) partially formed as per the approved Mining Plan, the Project Proponent (PP) shall the PP shall carry out the scientific studies to assess the slope stability of the working benches to be constructed and existing quarry wall, by involving any one of the reputed Research and Academic Institutions - CSIR-Central Institute of Mining &amp; Fuel Research / Dhanbad, NIRM/Bangalore, Division of Geotechnical Engineering-IIT-Madras, NIT-Dept of Mining Engg, Surathkal, and Anna University Chennai-CEG Campus. The PP shall submit a copy of the aforesaid report indicating the stability status of the quarry wall and possible mitigation measures during the time of appraisal for obtaining the EC.</p> <p>8. However, in case of the fresh/virgin quarries, the Proponent shall submit a conceptual 'Slope Stability Plan' for the proposed quarry during the appraisal while obtaining the EC, when the depth of the working is extended beyond 30 m below ground level.</p> <p>9. The PP shall furnish the affidavit stating that the blasting operation in the proposed quarry is carried out by the statutory competent person as per the MMR 1961 such as blaster, mining mate, mine foreman, II/I Class mines manager appointed by the proponent.</p> <p>10. The PP shall present a conceptual design for carrying out only controlled blasting operation involving line drilling and muffle blasting in the proposed quarry such that the blast-induced ground vibrations are controlled as well as no fly rock travel beyond 30 m from the blast site.</p> <p>11. The EIA Coordinators shall obtain and furnish the details of quarry/quarries operated by the proponent in the past, either in the same location or elsewhere in the State with video and photographic evidences.</p> <p>12. If the proponent has already carried out the mining activity in the proposed mining lease area after 15.01.2016, then the proponent shall furnish the following details from AD/DD, mines,</p> <p>13. What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?</p> <p>14. Quantity of minerals mined out.</p> <ul style="list-style-type: none"> <li>● Highest production achieved in any one year</li> <li>● Detail of approved depth of mining.</li> <li>● Actual depth of the mining achieved earlier.</li> <li>● Name of the person already mined in that leases area.</li> <li>● If EC and CTO already obtained, the copy of the same shall be submitted.</li> <li>● Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches.</li> </ul> <p>15. All corner coordinates of the mine lease area, superimposed on a High-Resolution Imagery/Topo sheet, topographic sheet, geomorphology, lithology and geology of the mining lease area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).</p> <p>16. The PP shall carry out Drone video survey covering the cluster, green belt, fencing, etc.,</p> <p>17. The proponent shall furnish photographs of adequate fencing, green belt along the periphery including replantation of existing trees &amp; safety distance between the adjacent quarries &amp; water bodies nearby provided as per the approved mining plan.</p> <p>18. The Project Proponent shall provide the details of mineral reserves and mineable reserves, planned production capacity, proposed working methodology with justifications, the anticipated impacts of the mining operations on the surrounding environment, and the remedial measures for the same.</p> <p>19. The Project Proponent shall provide the Organization chart indicating the appointment of various statutory officials and other competent persons to be appointed as per the provisions of the Mines Act'1952 and the MMR, 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the environment.</p>

S. No	Terms of Reference
	<p>20. The Project Proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of groundwater pumping &amp; open wells, and surface water bodies such as rivers, tanks, canals, ponds, etc. within 1 km (radius) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD / TWAD so as to assess the impacts on the wells due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided.</p> <p>21. The proponent shall furnish the baseline data for the environmental and ecological parameters with regard to surface water/ground water quality, air quality, soil quality &amp; flora/fauna including traffic/vehicular movement study.</p> <p>22. The Proponent shall carry out the Cumulative impact study due to mining operations carried out in the quarry specifically with reference to the specific environment in terms of soil health, biodiversity, air pollution, water pollution, climate change and flood control &amp; health impacts. Accordingly, the Environment Management plan should be prepared keeping the concerned quarry and the surrounding habitations in the mind.</p> <p>23. Rain water harvesting management with recharging details along with water balance (both monsoon &amp; non-monsoon) be submitted.</p> <p>24. Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.</p> <p>25. Details of the land for storage of Overburden/Waste Dumps (or) Rejects outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&amp;R issues, if any, should be provided.</p> <p>26. Proximity to Areas declared as 'Critically Polluted' (or) the Project areas which attracts the court restrictions for mining operations, should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the TNPCB (or) Dept. of Geology and Mining should be secured and furnished to the effect that the proposed mining activities could be considered.</p> <p>27. Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.</p> <p>28. Impact on local transport infrastructure due to the Project should be indicated.</p> <p>29. A tree survey study shall be carried out (nos., name of the species, age, diameter etc.,) both within the mining lease applied area &amp; 300m buffer zone and its management during mining activity.</p> <p>30. A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.</p> <p>31. As a part of the study of flora and fauna around the vicinity of the proposed site, the EIA coordinator shall strive to educate the local students on the importance of preserving local flora and fauna by involving them in the study, wherever possible.</p> <p>32. The purpose of Green belt around the project is to capture the fugitive emissions, carbon sequestration and to attenuate the noise generated, in addition to improving the aesthetics. A wide range of indigenous plant species should be planted as given in the appendix-I in consultation with the DFO, State Agriculture University. The plant species with dense/moderate canopy of native origin should be chosen. Species of small/medium/tall trees alternating with shrubs should be planted in a mixed manner.</p> <p>33. Taller/one year old Saplings raised in appropriate size of bags, preferably ecofriendly bags should be planted as per the advice of local forest authorities/botanist/Horticulturist with regard to site specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner</p>

S. No	Terms of Reference
	<p>34. A Disaster management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.</p> <p>35. A Risk Assessment and management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.</p> <p>36. Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.</p> <p>37. Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.</p> <p>38. The Socio-economic studies should be carried out within a 5 km buffer zone from the mining activity. Measures of socio-economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.</p> <p>39. Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.</p> <p>40. Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.</p> <p>41. If any quarrying operations were carried out in the proposed quarrying site for which now the EC is sought, the Project Proponent shall furnish the detailed compliance to EC conditions given in the previous EC with the site photographs which shall duly be certified by MoEF&amp;CC, Regional Office, Chennai (or) the concerned DEE/TNPCB.</p> <p>42. The PP shall prepare the EMP for the entire life of mine and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine</p> <p>43. Concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this Terms of Conditions besides attracting penal provisions in the Environment (Protection) Act, 1986.</p>

#### 4. Seiaa Specific Conditions

S. No	Terms of Reference
4.1	<p>After detailed discussions, the Authority accepts the recommendation of SEAC and decided to grant Terms of Reference (ToR) along with Public Hearing For the production should not exceed 5,33,830 m<sup>3</sup> of Rough stone &amp; 63,584 m<sup>3</sup> of Gravel. The annual peak production should not exceed 68,000 m<sup>3</sup> of Rough stone &amp; 30,116 m<sup>3</sup> of Gravel as per the mining plan ,The ultimate depth of mining is 42m BGL. This TOR is for cluster and for undertaking the combined Environment Impact Assessment Study and preparation of separate Environment Management Plan subject to the conditions as recommended by SEAC and with the specific and standard conditions.</p>

#### Standard Terms of Reference for (Mining of minerals)

##### 1.

S. No	Terms of Reference
1.1	<p>An EIA-EMP Report shall be prepared for peak capacity (.....MTPA)operation in an ML/project area of.....ha based on the generic structure specified in Appendix III of the EIA Notification, 2006.</p>

S. No	Terms of Reference
1.2	An EIA-EMP Report would be prepared for peak capacity operation to cover the impacts and environment management plan for the project specific activities on the environment of the region, and the environmental quality encompassing air, water, land, biotic community, etc. through collection of data and information, generation of data on impacts including prediction modeling for..... MTPA of mineral production based on approved project/Mining Plan for.....MTPA. Baseline data collection can be for any season (three months) except monsoon.
1.3	If the washery is located within the mine lease or near to the mine lease its location should be cited seperately also, providing pillar cordinates and site layout plan. Insuch cases cumulative impact of mine operation with washery to be assessd and EMP measure to be drawn to the worst scenario
1.4	Propoer KML file with pin drop and coordinate of mine at 500-1000 m interval be provided
1.5	A Study area map of the core zone (project area) and 10 km area of the buffer zone (1: 50,000 scale) clearly delineating the major topographical features such as the land use, surface drainage pattern including rivers/streams/nullahs/canals, locations of human habitations, major constructions including railways, roads, pipelines, major industries, mines and other polluting sources. In case of ecologically sensitive areas such as Biosphere Reserves/National Parks/WL Sanctuaries/ Elephant Reserves, forests (Reserved/Protected), migratory corridors of fauna, and areas where endangered fauna and plants of medicinal and economic importance found in the 15 km study area should be given. The above details to be furnished in tabular form also
1.6	Map showing the core zone delineating the agricultural land (irrigated and un-irrigated, uncultivable land as defined in the revenue records, forest areas (as per records), along with other physical features such as water bodies, etc should be furnished.
1.7	A contour map showing the area drainage of the core zone and 25 km of the study area (where the water courses of the core zone ultimately join the major rivers/streams outside the lease/project area) should also be clearly indicated in the separate map.
1.8	Catchment area with its drainage map of 25 km area within and outside the mine shall be provided with names, details of rivers/ riverlet system and its respective order. The map should clearly indicate drainage pattern of the catchment area with basin of major rivers. Diversion of drains/ river need eloboration in form of lengthe, quantity and quality of water to be diverted
1.9	(Details of mineral reserves, geological status of the study area and the seams to be worked, ultimate working depth and progressive stage-wise working scheme until the end of mine life should be provided on the basis of the approved rated capacity and calendar plans of production from the approved Mining Plan. Geological maps and sections should be included. The Progressive mine development and Conceptual Final Mine Closure Plan should also be shown in figures. Details of mine plan and mine closure plan approval of Competent Authority should be furnished for green field and expansion projects.
1.10	Details of mining methods, technology, equipment to be used, etc., rationale for selection of specified technology and equipment proposed to be used vis-à-vis the potential impacts should be provided.
1.11	Impact of mining on hydrology, modification of natural drainage, diversion and channeling of the existing rivers/water courses flowing though the ML and adjoining the lease/project and the impact on the existing users and impacts of mining operations thereon.

S. No	Terms of Reference																																																
1.12	<p>A detailed Site plan of the mine showing the proposed break-up of the land for mining operations such as the quarry area, OB dumps, green belt, safety zone, buildings, infrastructure, Stockyard, township/colony (within and adjacent to the ML), undisturbed area -if any, and landscape features such as existing roads, drains/natural water bodies to be left undisturbed along with any natural drainage adjoining the lease /project areas, and modification of thereof in terms of construction of embankments/bunds, proposed diversion/re-channelling of the water courses, etc., approach roads, major haul roads, etc should be indicated.</p>																																																
1.13	<p>Original land use (agricultural land/forestland/grazing land/wasteland/water bodies) of the area should be provided as per the tables given below. Impacts of project, if any on the land use, in particular, agricultural land/forestland/grazing land/water bodies falling within the lease/project and acquired for mining operations should be analyzed. Extent of area under surface rights and under mining rights should be specified. Area under Surface Rights</p> <table border="1"> <thead> <tr> <th>S.N</th> <th>ML/Project Land use</th> <th>Area under Surface Rights(ha)</th> <th>Area Under Mining Rights(ha)</th> <th>Area under Both (ha)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Agricultural land</td> <td></td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>Forest Land</td> <td></td> <td></td> <td></td> </tr> <tr> <td>3</td> <td>Grazing Land</td> <td></td> <td></td> <td></td> </tr> <tr> <td>4</td> <td>Settlements</td> <td></td> <td></td> <td></td> </tr> <tr> <td>5</td> <td>Others (specify)</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>S.N.</th> <th>Details</th> <th>Area (ha)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Buildings</td> <td></td> </tr> <tr> <td>2</td> <td>Infrastructure</td> <td></td> </tr> <tr> <td>3</td> <td>Roads</td> <td></td> </tr> <tr> <td>4</td> <td>Others (specify)</td> <td></td> </tr> <tr> <td></td> <td>Total</td> <td></td> </tr> </tbody> </table>	S.N	ML/Project Land use	Area under Surface Rights(ha)	Area Under Mining Rights(ha)	Area under Both (ha)	1	Agricultural land				2	Forest Land				3	Grazing Land				4	Settlements				5	Others (specify)				S.N.	Details	Area (ha)	1	Buildings		2	Infrastructure		3	Roads		4	Others (specify)			Total	
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1.14	<p>Study on the existing flora and fauna in the study area (10km) should be carried out by an institution of relevant discipline. The list of flora and fauna duly authenticated separately for the core and study area and a statement clearly specifying whether the study area forms a part of the migratory corridor of any endangered fauna should be given. If the study area has endangered flora and fauna, or if the area is occasionally visited or used as a habitat by Schedule-I species, or if the project falls within 15 km of an ecologically sensitive area, or used as a migratory corridor then a Comprehensive Conservation Plan along with the appropriate budgetary provision should be prepared and submitted with EIA-EMP Report; and comments/observation from the CWLW of the State Govt. should also be obtained and furnished.</p>																																																
1.15	<p>One-season (other than monsoon) primary baseline data on environmental quality - air (PM10, PM2.5, SO<sub>x</sub>, NO<sub>x</sub> and heavy metals such as Hg, Pb, Cr, As, etc), noise, water (surface and groundwater), soil - along with one-season met data coinciding with the same season for AAQ collection period should be provided. The detail of NABL/ MoEF&amp;CC certification of the respective laboratory and NABET accreditation of the consultant to be provided.</p>																																																
1.16	<p>Map (1: 50, 000 scale) of the study area (core and buffer zone) showing the location of various sampling stations superimposed with location of habitats, other industries/mines, polluting sources, should be provided. The number and location of the sampling stations in both core and buffer zones</p>																																																

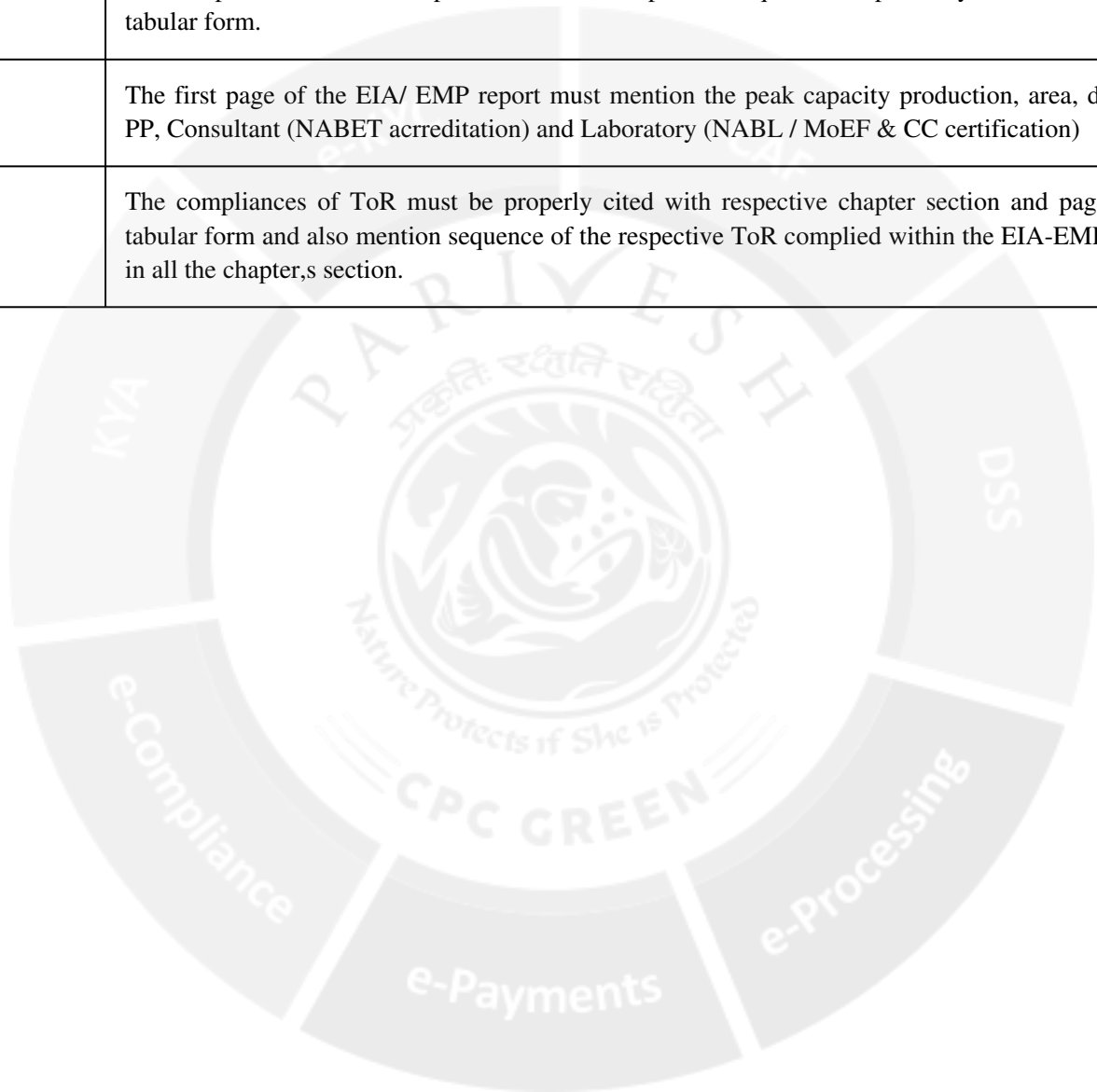


S. No	Terms of Reference
	should be selected on the basis of size of lease/project area, the proposed impacts in the downwind (air)/downstream (surface water)/groundwater regime (based on flow). One station should be in the upwind/upstream/non-impact/non-polluting area as a control station. The monitoring should be as per CPCB guidelines and parameters for water testing for both ground water and surface water as per ISI standards and CPCB classification wherever applicable. Observed values should be provided along with the specified standards.
1.17	For proper baseline air quality assessment, Wind rose pattern in the area should be reviewed and accordingly location of AAMSQ shall be planned by the collection of air quality data by adequate monitoring stations in the downwind areas. Monitoring location for collecting baseline data should cover overall the 10 km buffer zone i.e. dispersed in 10 km buffer area. In case of expansion, the displayed data of CAAQMS and its comparison with the monitoring data to be provided
1.18	A detailed traffic study along with presence of habitation in 100 mts distance from both side of road, the impact on the air quality with its proper measures and plan of action with timeline for widening of road. The project will increase the no. of vehicle along the road which will indirectly contribute to carbon emission so what will be the compensatory action plan should be clearly spell out in EIA/ EMP report.
1.19	The socio-economic study to conducted with actual survey report and a comparative assessment to be provided from the census data should be provided in EIA/ EMP report also occupational status & economic status of the study area and what economically project will contribute should be clearly mention. The study should also include the status of infrastructural facilities and amenities present in the study area and a comparative assessment with census data to be provided and to link it with the initialization and quantification of need based survey for CSR activities to be followed.
1.20	The Ecology and biodiversity study should also indicate the likely impact of change in forest area for surface infrastructural development or mining activity in relation to the climate change of that area and what will be the compensatory measure to be adopted by PP to minimize the impact of forest diversion.
1.21	Baseline data on the health of the population in the impact zone and measures for occupational health and safety of the personnel and manpower for the mine should be submitted.
1.22	Impact of proposed project/activity on hydrological regime of the area shall be assessed and report be submitted. Hydrological studies as per GEC 2015 guidelines to be prepared and submitted
1.23	Impact of mining and water abstraction from the mine on the hydrogeology and groundwater regime within the core zone and 10 km buffer zone including long-term monitoring measures should be provided. Details of rainwater harvesting and measures for recharge of groundwater should be reflected in case there is a declining trend of groundwater availability and/or if the area falls within dark/grey zone.
1.24	Study on land subsidence including modeling for prediction, mitigation/prevention of subsidence, continuous monitoring measures, and safety issues should be carried out.
1.25	Detailed water balance should be provided. The break up of water requirement as per different activities in the mining operations, including use of water for sand stowing should be given separately. Source of water for use in mine, sanction of the Competent Authority in the State Govt. and impacts vis-à-vis the competing users should be provided.

S. No	Terms of Reference
1.26	PP shall submit design details of all Air Pollution control equipment (APCEs) to be implemented as part of Environment Management Plan vis-à-vis reduction in concentration of emission for each APCEs
1.27	PP shall propose to use LNG/CNG based mining machineries and trucks for mining operation and transportation of mineral. The measures adopted to conserve energy or use of renewable sources shall be explored
1.28	PP to evaluate the green house emission gases from the mine operation/ washery plant and corresponding carbon absorption plan.
1.29	Site specific Impact assessment with its mitigation measures, Risk Assessment and Disaster Preparedness and Management Plan should be provided.
1.30	Impact of choice of mining method, technology, selected use of machinery and impact on air quality, mineral transportation, handling & storage/stockyard, etc, Impact of blasting, noise and vibrations should be provided.
1.31	Impacts of mineral transportation within the mining area and outside the lease/project along with flow-chart indicating the specific areas generating fugitive emissions should be provided. Impacts of transportation, handling, transfer of mineral and waste on air quality, generation of effluents from workshop etc, management plan for maintenance of HEMM and other machinery/equipment should be given. Details of various facilities such as rest areas and canteen for workers and effluents/pollution load emanating from these activities should also be provided.
1.32	Details of various facilities to be provided to the workers in terms of parking, rest areas and canteen, and effluents/pollution load resulting from these activities should also be given.
1.33	The number and efficiency of mobile/static water jet, Fog cannon sprinkling system along the main mineral transportation road inside the mine, approach roads to the mine/stockyard/siding, and also the frequency of their use in impacting air quality should be provided.
1.34	Conceptual Final Mine Closure Plan and post mining land use and restoration of land/habitat to the pre- mining status should be provided. A Plan for the ecological restoration of the mined out area and post mining land use should be prepared with detailed cost provisions. Impact and management of wastes and issues of re-handling (wherever applicable) and backfilling and progressive mine closure and reclamation should be furnished.
1.35	Adequate greenbelt nearby areas, mineral stock yard and transportation area of mineral shall be provided with details of species selected and survival rate Greenbelt development should be undertaken particularly around the transport route.
1.36	Cost of EMP (capital and recurring) should be included in the project cost and for progressive and final mine closure plan.
1.37	Details of R&R. Detailed project specific R&R Plan with data on the existing socio- economic status of the population (including tribals, SC/ST, BPL families) found in the study area and broad plan for resettlement of the displaced population, site for the resettlement colony, alternate livelihood concerns/employment for the displaced people, civic and housing amenities being offered, etc and costs along with the schedule of the implementation of the R&R Plan should be

S. No	Terms of Reference																												
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1.38	CSR Plan along with details of villages and specific budgetary provisions (capital and recurring) for specific activities over the life of the project should be given.																												
1.39	Corporate Environment Responsibility:																												
1.40	a) The Company must have a well laid down Environment Policy approved by the Board of Directors.																												
1.41	b) The Environment Policy must prescribe for standard operating process/procedures to bring into focus any infringements/deviation/violation of the environmental or forest norms/conditions.																												
1.42	c) The hierarchical system or Administrative Order of the company to deal with environmental issues and for ensuring compliance with the environmental clearance conditions must be furnished.																												
1.43	d) To have proper checks and balances, the company should have a well laid down system of reporting of non-compliances/violations of environmental norms to the Board of Directors of the company and/or shareholders or stakeholders at large.																												
1.44	e) Environment Management Cell and its responsibilities to be clearly spelled out in EIA/ EMP report																												
1.45	f) In built mechanism of self-monitoring of compliance of environmental regulations should be indicated.																												
1.46	Status of any litigations/ court cases filed/pending on the project should be provided.																												
1.47	PP shall submit clarification from DFO that mine does not fall under corridors of any National Park and Wildlife Sanctuary with certified map showing distance of nearest sanctuary.																												
1.48	Copy of clearances/approvals such as Forestry clearances, Mining Plan Approval, mine closure plan approval. NOC from Flood and Irrigation Dept. (if req.), etc. wherever applicable.																												
1.49	<p>Details on the Forest Clearance should be given as per the format given:</p> <table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;"></td> <td style="width: 15%;">Total ML Total</td> <td style="width: 15%;">Date</td> <td style="width: 15%;">Extent of</td> <td style="width: 15%;">Balance area for which</td> <td style="width: 15%;">Status of appl</td> <td style="width: 15%;">For</td> </tr> <tr> <td>Project Area Forest</td> <td>of FC</td> <td>of FC</td> <td>Forest Land</td> <td>FC is yet to be</td> <td>diversion of forest</td> <td>land</td> </tr> <tr> <td>(ha)</td> <td>land (ha)</td> <td></td> <td></td> <td>obtained</td> <td></td> <td></td> </tr> <tr> <td></td> <td colspan="6">If more than one provide details of each FC</td> </tr> </table>		Total ML Total	Date	Extent of	Balance area for which	Status of appl	For	Project Area Forest	of FC	of FC	Forest Land	FC is yet to be	diversion of forest	land	(ha)	land (ha)			obtained				If more than one provide details of each FC					
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1.50	In case of expansion of the proposal, the status of the work done as per mining plan and approved mine closure plan shall be detailed in EIA/ EMP report																												
1.51	Details on Public Hearing should cover the information relating to notices issued in the newspaper, proceedings/minutes of Public Hearing, the points raised by the general public and commitments made by the proponent and the time bound action proposed with budgets in suitable time frame.																												

S. No	Terms of Reference
	These details should be presented in a tabular form. If the Public Hearing is in the regional language, an authenticated English Translation of the same should be provided.
1.52	PP shall carry out survey through drone highlighting the ground reality for atleast 10 minutes
1.53	Detailed Chronology of the project starting from the first lease deed allotted/Block allotment/ Land acquired to its No. of renewals, CTO /CTE with details of no. renewals, previous EC(s) granted details and its compliance details, NOC details from various Govt bodies like Forest NOC(s), CGWA permissions, Power permissions, etc as per the requisites respectively to be furnished in tabular form.
1.54	The first page of the EIA/ EMP report must mention the peak capacity production, area, detail of PP, Consultant (NABET accreditation) and Laboratory (NABL / MoEF & CC certification)
1.55	The compliances of ToR must be properly cited with respective chapter section and page no in tabular form and also mention sequence of the respective ToR complied within the EIA-EMP report in all the chapter,s section.



**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.04.5 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

**TOR COMPLIANCE**

**1. Terms of Reference issued for Roughstone and Gravel Quarry of M/s. AK Blue Metals Private Limited vide TOR Identification No. TO24B0108TN5769905N dated 11.06.2024**

S.No	ToR Points	Reply	Pg. No
<b>1.SEIAA Specific Conditions</b>			
1.1	After detailed discussions, the Authority accepts the recommendation of SEAC and decided to grant Terms of Reference (ToR) for the production quantity should not exceed 11,12,850m <sup>3</sup> of rough stone & 91,518m <sup>3</sup> of Gravel with an ultimate depth of mining is 52m BGL. The annual peak production is 1,61,130m <sup>3</sup> of rough stone & 49,128m <sup>3</sup> of Gravel, along with Public Hearing under cluster for undertaking the combined Environment Impact Assessment Study and preparation of separate Environment Management Plan subject to the conditions as recommended by SEAC with and the specific and standard conditions.		
1.	The detailed studies on the Loss of Vegetation, Loss of Biodiversity shall be carried out and the action plan to prevent the same shall be included in the EIA report.	<ul style="list-style-type: none"> <li>• Since the lease area is part of a rocky dyke area no major vegetation is observed.</li> <li>• Apart from clearing of few stunted eucalyptus trees in AK blue metal lease, no clearance of major vegetation is involved.</li> <li>• About 2800 trees will be planted in and around the lease area.</li> <li>• The details of proposed plantation has been provided in <b>Table 4.18, Chapter-IV.</b></li> </ul>	<b>4-19</b>
2.	The detailed studies on the Impact on water bodies and human health shall be carried out and the action plan to prevent the same shall be included in the EIA report.	<ul style="list-style-type: none"> <li>• There are no perineal water courses in the lease area. There is an Eri located a distance of 110m on the south eastern side of Roughstone and Gravel Quarry of AK Blue metals. It is dry, covered with silt, bushes and not interconnected from the upstream side.</li> <li>• Due to scanty rainfall the eri and the drainage channel remains dry for most of the year. It is also proposed to clean &amp; desilt the unused eri and</li> </ul>	<b>4-15</b>  <b>4-10</b>



**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.04.5 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

		<p>strengthen its peripheral bund in consultation with the authorities which will augment the water storage and ground water table.</p> <ul style="list-style-type: none"> <li>The ultimate pit depth of mining is 52m. The ground water table in this area is below this level. Hence, ground water intersection in not envisaged and ground water will not be affected appreciably due to the quarrying operation.</li> </ul>	
3.	The PP shall carry out the scientific studies to assess the hydrogeological condition of the quarry by involving any one of the reputed Research and Academic Institution. A copy of such scientific study report shall be included in the EIA report.	Hydrogeological Study is detailed under Section 3.6, Chapter-III.	3-39
4.	The PP shall carry out the scientific studies with prior permission from the DMS/Chennai Region, to design the controlled blast parameters for reducing the blast-induced ground/air vibrations and eliminating the fly rock from the blasting operations carried out in the quarry, by involving anyone of these reputed Research and Academic Institution. A copy of such scientific study report shall be included in the EIA report.	<ul style="list-style-type: none"> <li>Controlled blasting will be adopted in this project and details of the same has been provided in Section 4.4.2, Chapter-IV.</li> <li>Besides, necessary permission will be obtained from DGMS prior to commencing the mining operations.</li> </ul>	4-20
5.	The PP shall carry out the scientific studies to assess the slope stability of the working benches and existing quarry wall by involving any one of the reputed Research and Academic Institutions. A copy of such scientific study report shall be included in the EIA report.	Pit slope stability plan has been provided under Section 7.7, Chapter-VII.	7-7
<b>2. SEAC Conditions - Site Specific</b>			
2.1	The PP shall furnish the letter from panchayat office that existing cart track located within the lease area is not in use.	Entire lease area is private patta land owned by the PP. The cart track is shown in their own land in the FMB and is not in use or connected. As mentioned in the precise area condition subsequent to Revenue officials visit, diversion if necessary outside the lease	



**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.04.5 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

		will be provided as per need.	
<b>3. SEAC Standard Conditions</b>			
1.	In the case of existing/operating mines, a letter obtained from the concerned AD (Mines) shall be submitted and it shall include the following: a) Original pit dimension b) Quantity achieved Vs EC Approved Quantity c) Balance Quantity as per Mineable Reserve calculated. d) Mined out Depth as on date Vs EC Permitted depth e) Details of illegal/illicit mining f) Violation in the quarry during the past working. g) Quantity of material mined out outside the mine lease area h) Condition of Safety zone/benches i) Revised/Modified Mining Plan showing the benches of not exceeding 6 m height and ultimate depth of not exceeding 50m.	This is a proposed quarry. As such no mining activities have been carried out in this lease area.	<b>2-18</b>
2	Details of habitations around the proposed mining area and latest VAO certificate regarding the location of habitations within 300m radius from the periphery of the site.	Letter from VAO is obtained and given as Annexure – 3A.	<b>A-15</b>
3	The proponent is requested to carry out a survey and enumerate on the structures located within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m (v) 500m shall be enumerated with details such as dwelling houses with number of occupants, whether it belongs to the owner (or) not, places of worship, industries, factories, sheds, etc with indicating the owner of the building, nature of construction, age of the building, number of residents, their profession and income, etc.	Details of the features produced within 500m radius are provided in Figure 2.2, Chapter-II.	<b>2-11</b>
4	The PP shall submit a detailed hydrological report indicating the impact of proposed quarrying operations on the waterbodies like lake, water tanks, etc are located within 1 km of the proposed quarry.	Hydrogeological Study is detailed under Section 3.6, Chapter-III.	<b>3-39</b>



**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.04.5 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

5	The Proponent shall carry out Bio diversity study through reputed Institution and the same shall be included in EIA Report.	A detailed study of flora and fauna composition in the core and buffer zone of the project has been made through primary field surveys. The details are furnished in para 3.5, Chapter III.	3-33
6	The DFO letter stating that the proximity distance of Reserve Forests, Protected Areas, Sanctuaries, Tiger reserve etc., up to a radius of 25 km from the proposed site.	Sittarkadu RF, Palavur RF, Kollattanallur RF are located more than 6km from the lease area. There area no Protected Areas, Sanctuaries, Tiger reserve etc., within 10km Radius. Vedanthangal Bird Sanctuary – 18.35 Kms	3-2
7	In the case of proposed lease in an existing (or old) quarry where the benches are not formed (or) partially formed as per the approved Mining Plan, the Project Proponent (PP) shall the PP shall carry out the scientific studies to assess the slope stability of the working benches to be constructed and existing quarry wall, by involving any one of the reputed Research and Academic Institutions - CSIR-Central Institute of Mining & Fuel Research / Dhanbad, NIRM/Bangalore, Division of Geotechnical Engineering-IIT-Madras, NIT-Dept of Mining Engg, Surathkal, and Anna University Chennai-CEG Campus. The PP shall submit a copy of the aforesaid report indicating the stability status of the quarry wall and possible mitigation measures during the time of appraisal for obtaining the EC.	This is a proposed quarry. As such no mining activities have been carried out in this lease area.	2-18
8	However, in case of the fresh/virgin quarries, the Proponent shall submit a conceptual 'Slope Stability Plan' for the proposed quarry during the appraisal while obtaining the EC, when the depth of the working is extended beyond 30 m below ground level.	Pit slope stability plan has been provided under Section 7.7, Chapter-VII	7-7
9	The PP shall furnish the affidavit stating that the blasting operation in the proposed quarry is carried out by the statutory competent person as per the MMR 1961 such as blaster,	Will be submitted along with the final report	--





**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.04.5 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

	mining mate, mine foreman, II/I Class mines manager appointed by the proponent.		
10	The PP shall present a conceptual design for carrying out only controlled blasting operation involving line drilling and muffle blasting in the proposed quarry such that the blast-induced ground vibrations are controlled as well as no fly rock travel beyond 30 m from the blast site.	Controlled blasting will be adopted in this project and details of the same has been provided in Section 4.4.2, Chapter-IV	4-14
11	The EIA Coordinators shall obtain and furnish the details of quarry/quarries operated by the proponent in the past, either in the same location or elsewhere in the State with video and photographic evidences.	Agreed	--
12	If the proponent has already carried out the mining activity in the proposed mining lease area after 15.01.2016, then the proponent shall furnish the following details from AD/DD, mines,	This is a proposed quarry. No mining activities have been carried out in this lease area.	2-18
13	What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?	Replied above in point no.12	--
14	Quantity of minerals mined out. •Highest production achieved in any one year •Detail of approved depth of mining. •Actual depth of the mining achieved earlier. •Name of the person already mined in that leases area. •If EC and CTO already obtained, the copy of the same shall be submitted. •Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches.	Replied above in point no.12	--
15	All corner coordinates of the mine lease area, superimposed on a High-Resolution Imagery/Topo sheet, topographic sheet, geomorphology, lithology and geology of the mining lease area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).	<ul style="list-style-type: none"> <li>• Satellite imagery with corner coordinates of the project area is provided in Figure 2.5, Chapter-II.</li> <li>• Toposheet of the lease area and buffer zone is provided in Figure 3.1, Chapter-III.</li> <li>• Geology, Geomorphology map of the lease area and buffer zone is provided</li> </ul>	<p>2-7</p> <p>3-2</p> <p>3-44</p>



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		in Figure 3.21 and 22, Chapter-III.	
16	The PP shall carry out Drone video survey covering the cluster, Green belt, fencing etc.,	Agreed	--
17	The proponent shall furnish photographs of adequate fencing, green belt along the periphery including replantation of existing trees & safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan.	Site photographs have been provided in Chapter-II.	2-8
18	The Project Proponent shall provide the details of mineral reserves and mineable reserves, planned production capacity, proposed working methodology with justifications, the anticipated impacts of the mining operations on the surrounding environment and the remedial measures for the same.	<ul style="list-style-type: none"> <li>• The details of geological and mineable reserves are provided in Table 2.5, Chapter-II. <span style="float: right;">2-17</span></li> <li>• The production schedule during the plan period is provided in Table 2.8, Chapter-II. <span style="float: right;">2-19</span></li> <li>• The working methodology is detailed under Section 2.8, Chapter-II. <span style="float: right;">2-18</span></li> <li>• Anticipated impacts of mining operations on surrounding environment is provided under Chapter-IV. <span style="float: right;">4-1</span></li> </ul>	
19	The Project Proponent shall provide the Organization chart indicating the appointment of various statutory officials and other competent persons to be appointed as per the provisions of Mines Act 1952 and the MMR, 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the environment.	<ul style="list-style-type: none"> <li>• The organization chart is provided as Figure No.10.1, Chapter-X. <span style="float: right;">10-1</span></li> </ul>	
20	The Project Proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of groundwater pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds, etc. within 1 km (radius) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD / TWAD so as to assess the impacts on the wells due to	Hydrogeological Study is detailed under Section 3.6, Chapter-III.	3-42



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	mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided.		
21	The proponent shall furnish the baseline data for the environmental and ecological parameters with regard to surface water/ground water quality, air quality, soil quality & flora/fauna including traffic/vehicular movement study.	The baseline data on micro-meteorology, ambient air quality, Water quality, noise level, soil and flora & fauna are collected during Summer Season (March – May 2023) and detailed in Section 3.3 to 3.5 of Chapter-III. The details of Traffic Study is provided under Section 4.9, Chapter-IV.	3-14
22	The Proponent shall carry out the Cumulative impact study due to mining operations carried out in the quarry specifically with reference to the specific environment in terms of air pollution, water pollution, & health impacts. Accordingly, the Environment Management plan should be prepared keeping the concerned quarry and the surrounding habitations in the mind.	<ul style="list-style-type: none"> <li>• The details of the quarries located within the 500m radius of the project is given vide Annexure-4A.</li> <li>• A cumulative impact study has been carried out and furnished in Para 7.6, Chapter-VII.</li> <li>• Environmental Management Plan is provided under Chapter-X.</li> </ul>	<p>A-19</p> <p>7-5</p> <p>10-1</p>
23	Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted.	<ul style="list-style-type: none"> <li>• The rain water falling in the quarries will be harvested in the sump at the lowest level of the respective quarry. This sump will act as a settling pond to prevent solids escaping along with discharge, before outlet. etc.</li> <li>• Towards surface runoff management, garland drain will be constructed which will be connected to settling ponds with silt traps.</li> <li>• Water requirement for this project is 8 KLD. The required water will be procured initially from outside agencies. Later Rain water harvested in the mine sump can also be used.</li> </ul>	<p>4-8</p> <p>4-7</p>
24	Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and	<ul style="list-style-type: none"> <li>• The land use of the study area was studied to demarcate various LULC categories and its details are provided under section 3.4, Chapter-III.</li> </ul>	3-31



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	other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.	<ul style="list-style-type: none"> <li>The land use pattern at present and at the end of the quarrying period has been provided under section 4.5.1, Chapter-IV.</li> <li>The post mining land use has been provided in Table No. 4.15.</li> </ul>	<b>4-16</b>
25	Details of the land for storage of Overburden/Waste Dumps (or) Rejects outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be provided.	There is no waste generation anticipated in this quarry. As such there are no OB dumps involved.	--
26	Proximity to Areas declared as 'Critically Polluted' (or) the Project areas which attracts the court restrictions for mining operations, should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the TNPCB (or) Dept. of Geology and Mining should be secured and furnished to the effect that the proposed mining activities could be considered.	Not applicable	--
27	Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.	<ul style="list-style-type: none"> <li>The rain water falling in the quarry will be harvested in the sump at the lowest level of the quarry. This sump will act as a settling pond to prevent solids escaping along with discharge, before outlet. etc.</li> <li>Towards surface runoff management, garland drain will be constructed around the quarry and will be connected to a settling pond with silt traps. The supernatant clear water from the settling pond will be flow to the downstream users. The surface runoff management structures diagram is given in Figure No 4.4, Chapter-IV.</li> <li>Details of rainwater harvesting are provided under Section 4.3.4.2, Chapter-IV.</li> </ul>	<b>4-8</b>
28	Impact on local transport infrastructure due to the Project should be indicated.	<ul style="list-style-type: none"> <li>From this proposed quarry the entire output will be transported to the crusher units for producing stone</li> </ul>	<b>4-23</b>



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		<p>aggregates of different sizes or construction of roads, bridges, buildings and other buyers etc.</p> <ul style="list-style-type: none"> <li>About 7 trips per hour of transport is envisaged. The existing road can absorb this traffic due to this project. The details of various mitigative measures towards logistical system is elaborated under Section 4.9, Chapter-IV.</li> </ul>	
29	A tree survey study shall be carried out (nos., name of the species, age, diameter etc.,) both within the mining lease applied area & 300m buffer zone and its management during mining activity.	An ecological survey of the study area was conducted with reference to listing of species and assessment of the existing baseline ecological conditions. Details are provided under section 3.5.1, Chapter-III.	3-33
30	A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.	Details of Mine Closure Plan is provided under section 7.5, Chapter-VII.	7-4
31	As a part of the study of flora and fauna around the vicinity of the proposed site, the EIA coordinator shall strive to educate the local students on the importance of preserving local flora and fauna by involving them in the study, wherever possible.	An ecological survey of the study area was conducted with reference to listing of species and assessment of the existing baseline ecological conditions. Details are provided under section 3.5.1, Chapter-III.	3-33
32	The purpose of green belt around the project is to capture the fugitive emissions, carbon sequestration and to attenuate the noise generated, in addition to improving the aesthetics. A wide range of indigenous plant species should be planted as given in the appendix-I in consultation with the DFO, State Agriculture University. The plant species with dense/moderate canopy of native origin should be chosen. Species of small/medium/tall trees alternating with shrubs should be planted in a mixed manner.	Agreed	--
33	Taller/one year old Saplings raised in appropriate size of bags, preferably eco-friendly bags should be planted as per the advice of local forest authorities/botanist/Horticulturist with regard to site specific choices. The proponent shall	Agreed	--



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	earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner		
34	A Disaster management Plan shall be prepared and included in the, EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.	The disaster management plan has been provided under section 7.3.1, Chapter-VII.	7-3
35	A Risk Assessment and management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.	Various risks likely to arise due to mining activities are detailed under section 7.3, Chapter-VII.	7-2
36	Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.	Details of occupational health and safety aspects are given under the subsections of Para 4.8, Chapter-IV.	4-21
37	Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.	<ul style="list-style-type: none"> <li>• Details of the socio-economic survey conducted in the buffer zone has been provided in Para 3.2.4, Chapter-III.</li> <li>• Public health facilities will be further aimed to be developed through CER activities wherein periodic health checkups, medical camps for the locals will be conducted.</li> </ul>	3-8
38	The Socio-economic studies should be carried out within a 5 km buffer zone from the mining activity. Measures of socio-economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.	Nearby villages were visited for conducting study to know about socio-economic conditions, including aspirations and requirements of the people for a better living and collected relevant data. The details are provided under section 3.2.4, Chapter-III.	3-8
39	Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.	There is no litigation pending against the project.	--



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40	Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.	<ul style="list-style-type: none"> <li>The Roughstone and Gravel Quarry will benefit this region in the fields of employment opportunities, improved per capita income for local people, improved social welfare facilities in respect of education, health, infrastructural etc.</li> <li>Direct employment to about 16 people and indirect employment to scores of people.</li> <li>By means of carrying out the socio-economic development activities, local community development is expected. Towards the same, the proponent has planned to allocate Rs.5 Lakhs for various activities under CER for all the three projects together. From the CER activities allocated for various social welfare activities, the villages near the lease area will be benefited.</li> </ul>	8-1
41	If any quarrying operations were carried out in the proposed quarrying site for which now the EC is sought, the Project Proponent shall furnish the detailed compliance to EC conditions given in the previous EC with the site photographs which shall duly be certified by MoEF&CC, Regional office, Chennai (or) the concerned DEE/TNPCB.	<ul style="list-style-type: none"> <li>This is a proposed quarry. As such no mining activities have been carried out in this lease area.</li> </ul>	2-12
42	The PP shall prepare the EMP for the entire life of mine and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine.	EMP is prepared for the entire life of the mine. Affidavit will be provided along with the final EIA/ EMP report.	--
43	Concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this Terms of Conditions besides attracting penal provisions in the Environment (Protection) Act, 1986.	Agreed	--
<b>4. SEIAA Standard Conditions</b>			
1	Cluster Management Committee shall be framed which must include all the proponents in the cluster as members including the existing as well as proposed	Details of the cluster management committee is provided under Section 10.2.2, Chapter-X.	10-4



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	quarry.		
2	The members must coordinate among themselves for the effective implementation of EMP as committed including Green Belt Development, water sprinkling, tree plantation, blasting etc.,	Agreed	-
3	The List of members of the committee formed shall be submitted to AD/Mines before the execution of mining lease and the same shall be updated every year to the AD/Mines.	Agreed	-
4	Detailed Operational Plan must be submitted which must include the blasting frequency with respect to the nearby quarry situated in the cluster, the usage of haul roads by the individual quarry in the form of route map and network.	Agreed	-
5	The committee shall deliberate on risk management plan pertaining to the cluster in a holistic manner especially during natural calamities like intense rain and the mitigation measures considering the inundation of the cluster and evacuation plan.	Agreed	-
6	The Cluster Management Committee shall form Environmental Policy to practice sustainable mining in a scientific and systematic manner in accordance with the law. The role played by the committee in implementing the environmental policy devised shall be given in detail.	Agreed	-
7	The committee shall furnish action plan regarding the restoration strategy with respect to the individual quarry falling under the cluster in a holistic manner.	Agreed	-
8	The committee shall furnish the Emergency Management plan within the cluster.	Agreed	-
9	The committee shall deliberate on the health of the workers/staff involved in the mining as	Agreed	-





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	well as the health of the public.		
10	The committee shall furnish an action plan to achieve sustainable development goals with reference to water, sanitation & safety.	Agreed	-
11	The committee shall furnish the fire safety and evacuation plan in the case of fire accidents.	Agreed	-
<b>Impact Study of Mining</b>			
12	<p>Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area covering the entire mine lease period as per precise area communication order issued from reputed research institutions on the following:</p> <p>a) Soil health &amp; soil biological, physical land chemical features</p> <p>b) Climate change leading to Droughts, Floods etc.</p> <p>c) Pollution leading to release of Greenhouse gases (GHG), rise in Temperature, &amp; Livelihood of the local people.</p> <p>d) Possibilities of water contamination and impact on aquatic ecosystem health</p> <p>e) Agriculture, Forestry &amp; Traditional practices.</p> <p>f) Hydrothermal/Geothermal effect due to destruction in the Environment.</p> <p>g) Bio-geochemical processes and its loot prints including environmental stress</p> <p>h) Sediment geochemistry in the surface streams</p>	<ul style="list-style-type: none"> <li>• No adverse impact on the surrounding environment is envisaged since the number of equipments to be used to achieve this production is very less and the magnitude of operation is of very small level.</li> <li>• Besides, as is it a mining project, no adverse generation of heat is envisaged.</li> <li>• Certified vehicles with low carbon emissions will only be used. These equipments will be properly and regularly maintained. Besides, regular vehicular emission tests will be done for the transport vehicles to ensure minimal impact due to carbon emissions. To further mediate the carbon emissions, a good greenbelt and plantation plan has been planned.</li> <li>• Geologically the area in and around the lease area contains charnokite type rock formation containing mostly fallow land. As such there no major vegetation or agricultural activities are observed.</li> <li>• There are no Protected or Eco-Sensitive Zone or forest land nearby wherein it can have an impact.</li> <li>• It will be ensured that mining will be carried out adhering to all the statutory rules and regulations and maintaining the environmental quality within the prescribed standards by effective implementation of varioius mitigative</li> </ul>	4-18



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		<p>measures.</p> <ul style="list-style-type: none"> <li>• These mitigative measures will be continued for the entire lease period ensuring no impact on the environment.</li> <li>• As such release of Greenhouse gases (GHG), rise in temperature, affecting livelihood of the local people ,loss of Agriculture, Forestry and Traditional Practices is not envisaged. Such a limited scope will not induce any climatic change leading to droughts, floods etc.</li> </ul>	
<b>Agriculture &amp; Agro-Biodiversity</b>			
<b>13</b>	<b>Impact on surrounding agricultural fields around the proposed mining Area.</b>	<p>Since the lease area forms part of a vast tract of dyke like rocky formation , no agricultural activities are possible and practiced in the lease and its nearby areas. Agricultural activities are carried out far away lands irrigated by tanks and wells during monsoon rainfall.</p> <p>By adoption of systematic mining adhering to all the environmental mitigation measures as explained earlier, no adverse impact on the far away agricultural or surrounding environs envisaged.</p>	<b>4-17</b>
<b>14</b>	<b>Impact on soil flora &amp; vegetation around the project site.</b>	The impact of mining on biological environment is provided under Table 4.15, Chapter-IV.	<b>4-17</b>
<b>15</b>	<b>Details of type of vegetations including no. of trees &amp; shrubs within the proposed mining area and. If so, transplantation of such vegetations all along the boundary of the proposed mining area shall committed mentioned in EMP.</b>	The details of flora in the core zone is provided in Table 3.24, Chapter-III. There is no major clearance of vegetation or transplantation involved.	<b>3-35</b>
<b>16</b>	<b>The Environmental Impact Assessment should study the biodiversity, the natural ecosystem, the soil micro flora, fauna and soil seed banks and suggest measures to</b>	An ecological survey of the study area was conducted with reference to listing of species and assessment of the existing baseline ecological conditions.	<b>3-35</b>



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	maintain the natural Ecosystem.	Details are provided under Section 3.5.1, Chapter-III.	
17	Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.	The post mining land use has been provided in Table No. 4.14.	4-16
18	The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock.	Replied in sl no 13 above.	4-18
<b>Forests</b>			
19	The project proponent shall detailed study on impact of mining on Reserve forests free ranging wildlife.	The nearest reserve Sittarkadu RF which is located at a distance of 6.5Km (S). As such no adverse impact is envisaged on this forest due to mining operations.	3-2
20	The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.	An ecological survey of the study area was conducted with reference to listing of species and assessment of the existing baseline ecological conditions. Details are provided under Section 3.5.1, Chapter-III.	3-35
21	The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection.	Replied in point 20. Above	--
22	The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks. Corridors and Wildlife pathways. near project sire.	There are no national parks or corridors in the 10k radius. There are no reserve forest in the proximity of the lease area	3-2
<b>Water Environment</b>			
23	Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) so as to assess the impacts on the nearby waterbodies due to mining activity. Based on actual monitored data, it may	Details of hydrogeological scenario of this project is provided under section 3.6, Chapter-III.	3-42



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	clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided, covering the entire mine lease period.		
24	<b>Erosion Control Measures</b>	<ul style="list-style-type: none"> <li>• Since the entire material from the quarry face will be directly dispatched to the consumers, there will not be any stockpiles. There are no waste dumps in this quarry. As such there will not be any wash out due to stock pile or waste dumps.</li> <li>• Towards surface runoff management, garland drain will be constructed around the quarry and will be connected to a settling pond with silt traps.</li> </ul>	4-8
25	<b>Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area on the nearby Villages, Water-bodies/ Rivers, &amp; any ecological fragile areas.</b>	There are no perennial water courses in either lease area. There is a tank located a distance of 110m on the south eastern side of the lease area. Due to scanty rainfall the eri remains dry for most of the year. There is no proposal to discharge any effluent into either of these water bodies. No major impact is envisaged on the nearby water bodies due to project operations.	4-14
26	<b>The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.</b>	There is no major perennial waterbody in close proximity of the lease area.	3-3
27	<b>The project proponent shall study and furnish the details on potential fragmentation impact on natural environment, by the activities.</b>	The post mining land use has been provided in Table No. 4.14.	4-16
28	<b>The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site, and archaeological sites possible land form changes visual and</b>	An ecological survey of the study area was conducted with reference to listing of species and assessment of the existing baseline ecological conditions. Details are provided under Section 3.5.1, Chapter-III.	3-34



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	aesthetic impacts.		
29	The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.	Soil samples were collected in 4 locations in the core and buffer zone to analyse the physiochemical characteristics of the soil in the area. The soil quality data is provided in Table No.3.18, Chapter-III.	3-27
30	The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.	<ul style="list-style-type: none"> <li>• The nearest major water bodies is provided in Table No.3.1, Chapter-III.</li> <li>• There are no perennial water courses in both the lease areas. There is an Eri located a distance of 110m on the south eastern side of Roughstone and Gravel Quarry of AK Blue metals. It is dry, covered with silt, bushes and not interconnected from the upstream side.</li> <li>• As per village map there is an odai on the south eastern side of the lease area of Udhayam Mines and Minerals Private Limited. Physically it is not present in the field no such course is visible. A safety distance of 10m has been left for this seasonal drainage channel. Due to scanty rainfall the eri and the drainage channel remains dry for most of the year. Earthen bund will be formed within the lease area of Udhayam Mines and Minerals in the south eastern and eastern side in the safety zone. Besides, the intervening land will also be fenced and developed with green belt.</li> <li>• It is also proposed to clean &amp; desilt the unused eri and strengthen its peripheral bund in consultation with the authorities which will augment the water storage and ground water table.</li> <li>• The mining area consists of hard compact rock, hence no major water seepage within the mine is expected from the periphery. The ground water table in this area is below the ultimate pit level. Hence, ground water intersection is not envisaged and</li> </ul>	3-2



**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.04.5 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

		ground water will not be affected appreciably due to the quarrying operation.	
<b>Energy</b>			
31	The measures taken to control Noise, Air, Water, Dust Control and steps adopted to efficiently utilize the Energy shall be furnished.	The dust control measures are listed under Table 4.1, Water pollution control measures under Section 4.3.2, and noise pollution control measures under Section 4.4.1.2, Chapter-IV. Besides, energy consumption in this project will be optimum and as per requirement.	4-2
<b>Climate Change</b>			
32	The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities.	Certified vehicles with low carbon emissions will only be used. These equipments will be properly and regularly maintained. Besides, regular vehicular emission tests will be done for the transport vehicles to ensure minimal impact due to carbon emissions. To further mediate the carbon emissions, a good greenbelt and plantation plan has been planned.	4-3
33	The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock.	Replied in point no.32	--
<b>Mine Closure Plan</b>			
34	Detailed Mine Closure Plan covering the entire mine lease period as per precise area communication order issued.	Details of Mine Closure Plan is provided under section 7.6, Chapter-VII.	7-4
<b>EMP</b>			
35	Detailed Environment Management Plan along with adaptation, mitigation & remedial strategies covering the entire mine lease period as per precise area communication order issued.	Detailed environmental management plan is provided under Chapter-X.	10-1
36	The Environmental Impact Assessment should hold detailed study on EMP with budget for Green belt development and mine closure plan including disaster management	Detailed environmental management plan is provided under Chapter-X.	10-1



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	plan.		
<b>Risk Assessment</b>			
37	To furnish risk assessment and management plan including anticipated vulnerabilities during operational and post operational phases of Mining.	Various risks likely to arise due to mining activities are detailed under Section 7.3, Chapter-VII.	7-2
<b>Disaster Management Plan</b>			
38	To furnish disaster management plan and disaster mitigation measures in regard to all aspects to avoid/reduce vulnerability to hazards & to cope with disaster/untoward accidents in & around the proposed mine lease area due to the proposed method of mining activity & its related activities covering the entire mine lease period as per precise area communication order issued.	The disaster management plan has been provided under Section 7.4.1, Chapter-VII.	7-3
<b>Others</b>			
39	The project proponent shall furnish VAO certificate with reference to 300m radius regard to approved habitations, schools, Archaeological sites. Structures, railway lines, roads, water bodies such as streams, odai, vaari, canal, channel. river, lake pond, tank etc.	VAO Letter has been provided as Annexure-3A.	A-15
40	As per the MoEF& cc office memorandum F.No.22-65/2017-IA.III dated: 30.09.2020 and 20.10.2020 the proponent shall address the concerns raised during the public consultation and all the activities proposed shall be part of the Environment Management plan.	Will be provided in the Final EIA/EMP Report after completion of public hearing.	--
41	The project proponent shall study and furnish the possible pollution due to plastic and microplastic on the environment. The ecological risks and impacts of plastic & microplastics on aquatic environment and fresh water systems due to activities, contemplated during mining may be	Single use plastics/ use and throwaway plastics will be banned in the site as directed by the Tamil Nadu Government vide GO(Ms)No.84 regarding ban on use of plastic products. The employees will be encouraged to use compostable material or reusable material.	4-24



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	investigated and reported.		
<b>Standard Terms of Reference for Mining of Minerals</b>			
1.1	An EIA-EMP Report shall be prepared for peak capacity (.....MTPA)operation in an ML/project area of.....ha based on the generic structure specified in Appendix III of the EIA Notification, 2006.	This EIA-EMP report is prepared for the annual peak production capacity of 1,61,130m <sup>3</sup> of roughstone and 49,128m <sup>3</sup> of gravel based on generic structure specified in EIA Notification, 2006.	1-1
1.2	An EIA-EMP Report would be prepared for peak capacity operation to cover the impacts and environment management plan for the project specific activities on the environment of the region, and the environmental quality encompassing air, water, land, biotic community, etc. through collection of data and information, generation of data on impacts including prediction modeling for..... MTPA of mineral production based on approved project/Mining Plan for.....MTPA. Baseline data collection can be for any season (three months) except monsoon.	<ul style="list-style-type: none"> <li>• The anticipated environmental impacts and mitigation measures are provided in Chapter-IV.</li> <li>• Environmental Management Plan is provided in Chapter-X along with the budget for the same.</li> <li>• Baseline monitoring was carried out during Summer Season (March – May 2024) and details of the same has been provided under Section 3.3, Chapter-III.</li> </ul>	4-1 10-1 3-15
1.3	Proper KML file with pin drop and coordinate of mine at 500-1000 m interval be provided	Satellite Imagery showing corner coordinates of the lease area area is provided in Figure 2.5, Chapter-II.	2-7
1.4	A Study area map of the core zone (project area) and 10 km area of the buffer zone (1: 50,000 scale) clearly delineating the major topographical features such as the land use, surface drainage pattern including rivers/streams/nullahs/canals, locations of human habitations, major constructions including railways, roads, pipelines, major industries, mines and other polluting sources. In case of ecologically sensitive areas such as Biosphere Reserves/National Parks/WL Sanctuaries/ Elephant Reserves, forests (Reserved/Protected), migratory corridors of fauna, and areas where endangered fauna and plants of medicinal and economic importance found in the 15 km study area should be given. The above	The study area map showing the 10Km radius of the lease area is provided as <b>Figure 3.1, Chapter-III</b> . These features are also provided in <b>Table 3.2, Chapter-III</b> .	3-2





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	details to be furnished in tabular form also.		
1.5	Map showing the core zone delineating the agricultural land (irrigated and un-irrigated, uncultivable land as defined in the revenue records, forest areas (as per records), along with other physical features such as water bodies, etc should be furnished	The land use of the study area was studied to demarcate various LULC categories and its details are provided under section 3.4, Chapter-III.	3-29
1.6	A contour map showing the area drainage of the core zone and 25 km of the study area (where the water courses of the core zone ultimately join the major rivers/streams outside the lease/project area) should also be clearly indicated in the separate map.	Drainage map of the study area is given vide Figure 3.20.	3-40
1.7	Catchment area with its drainage map of 25 km area within and outside the mine shall be provided with names, details of rivers/ rivulet system and its respective order. The map should clearly indicate drainage pattern of the catchment area with basin of major rivers. Diversion of drains/ river need elaboration in form of length, quantity and quality of water to be diverted	Since the lease and its proximate areas are plain land, it does not form any major catchment area. The drainage of the area is controlled by only few first order streams that too located far away from the lease area ( Please refer Figure 3.20) draining towards SE side. There are no river in the study area. It is proposed to form garland drain around the periphery of the lease area to collect rainwater falling in the surrounding area and connect it to the settling pond . Clear water overflow from the settling pond will be connected to the downstream users and ensured its flow .	3-40
1.8	Details of mineral reserves, geological status of the study area and the seams to be worked, ultimate working depth and progressive stage-wise working scheme until the end of mine life should be provided on the basis of the approved rated capacity and calendar plans of production from the approved Mining Plan. Geological maps and sections should be included. The Progressive mine development and Conceptual Final Mine Closure Plan should also be shown in figures. Details of mine plan and mine closure plan approval of Competent Authority	<ul style="list-style-type: none"> <li>• The details of geological and mineable reserves are provided in Table 2.5, Chapter-II.</li> <li>• Ultimate pit dimensions are provided in Table 2.11, Chapter-II.</li> <li>• Yearwise production schedule is provided in Table 2.10 and the production schedule during conceptual period is provided in Table 2.12, Chapter-II.</li> <li>• Geological Plan and Sections are</li> </ul>	<p>2-17</p> <p>2-22</p> <p>2-23</p> <p>2-14</p>



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	should be furnished for green field and expansion projects.	<p>provided in Figure No.2.10, 2.11, Chapter-II.</p> <ul style="list-style-type: none"> <li>• Yearwise Plan and Yearwise Cross Section is provided in Figure 2.15, 2.17, Chapter-II.</li> <li>• Conceptual Plan and Cross Section is provided in Figure 2.19, 2.20, Chapter-II.</li> <li>• Details of Mine Closure Plan is provided under section 7.5, Chapter-VII.</li> </ul>	<p><b>2-20</b></p> <p><b>2-24</b></p> <p><b>7-4</b></p>
1.9	Details of mining methods, technology, equipment to be used, etc., rationale for selection of specified technology and equipment proposed to be used vis-à-vis the potential impacts should be provided.	<ul style="list-style-type: none"> <li>• Opencast mechanized mining using jackhammer drilling, blasting, excavation through excavator &amp; mineral transport through tippers will be carried out. The top gravel is soft and can be directly excavated. The rough stone below will be blasted and then excavated. Bench height of 5.0m &amp; 5m width is considered.</li> <li>• Details of equipments to be used are provided in Table 2.6, Chapter-II.</li> </ul>	<b>2-17</b>
1.10	Impact of mining on hydrology, modification of natural drainage, diversion and channeling of the existing rivers/water courses flowing through the ML and adjoining the lease/project and the impact on the existing users and impacts of mining operations thereon.	Hydrogeological Study is detailed under Section 3.6, Chapter-III.	<b>3-39</b>
1.11	A detailed Site plan of the mine showing the proposed break-up of the land for mining operations such as the quarry area, OB dumps, green belt, safety zone, buildings, infrastructure, Stockyard, township/colony (within and adjacent to the ML), undisturbed area -if any, and landscape features such as existing roads, drains/natural water bodies to be left undisturbed along with any natural	The landuse pattern showing the existing, proposed and conceptual land use has been provided in Table 2.14, Chapter-II.	<b>2-26</b>



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	drainage adjoining the lease /project areas, and modification of thereof in terms of construction of embankments/ bunds, proposed diversion/re- channelling of the water courses, etc., approach roads, major haul roads, etc should be indicated.																																																		
1.12	<p>Original land use (agricultural land/forestland/grazing land/ wasteland /water bodies) of the area should be provided as per the tables given below. Impacts of project, if any on the land use, in particular, agricultural land/forestland/grazing land/water bodies falling within the lease/project and acquired for mining operations should be analyzed. Extent of area under surface rights and under mining rights should be specified. Area under Surface Rights</p> <table border="1"> <thead> <tr> <th>S. No</th> <th>Project Land Use</th> <th>Area under surface rights (Ha)</th> <th>Area under mining rights (Ha)</th> <th>Area under both (Ha)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Agricultural Land</td> <td></td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>Forest Land</td> <td></td> <td></td> <td></td> </tr> <tr> <td>3</td> <td>Grazing Land</td> <td></td> <td></td> <td></td> </tr> <tr> <td>4</td> <td>Settlements</td> <td></td> <td></td> <td></td> </tr> <tr> <td>5</td> <td>Others (Specify)</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>S.No</th> <th>Details</th> <th>Area (Ha)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Buildings</td> <td></td> </tr> <tr> <td>2</td> <td>Infrastructure</td> <td></td> </tr> <tr> <td>3</td> <td>Roads</td> <td></td> </tr> <tr> <td>4</td> <td>Others (Specify)</td> <td></td> </tr> <tr> <td></td> <td>Total</td> <td></td> </tr> </tbody> </table>	S. No	Project Land Use	Area under surface rights (Ha)	Area under mining rights (Ha)	Area under both (Ha)	1	Agricultural Land				2	Forest Land				3	Grazing Land				4	Settlements				5	Others (Specify)				S.No	Details	Area (Ha)	1	Buildings		2	Infrastructure		3	Roads		4	Others (Specify)			Total		<p>The entire lease area is private patta land in the PPs name. The landuse pattern showing the existing, proposed and conceptual land use has been provided in Table 2.14, Chapter-II.</p>	2-26
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1.13	<p>Study on the existing flora and fauna in the study area (10km) should be carried out by an institution of relevant discipline. The list of flora and fauna <b>duly authenticated</b> separately for the core and study area and a statement clearly specifying whether the study area forms a part of the migratory corridor of any endangered fauna should be given. If the study area has endangered flora and fauna, or if the area is occasionally visited or used as a habitat by Schedule-I species, or if the project falls within 15 km of an ecologically</p>	<p>A detailed study of flora and fauna composition in the core and buffer zone of the project has been made through primary field surveys by NABET accredited expert. The details are furnished in para 3.5, Chapter III.</p>	3-36																																																



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	sensitive area, or used as a migratory corridor then a Comprehensive Conservation Plan along with the appropriate budgetary provision should be prepared and submitted with EIA-EMP Report; and comments/observation from the CWLW of the State Govt. should also be obtained and furnished.		
1.14	One-season (other than monsoon) primary baseline data on environmental quality - air (PM10, PM2.5, SOx, NOx and heavy metals such as Hg, Pb, Cr, As, etc), noise, water (surface and groundwater), soil - along with one-season met data coinciding with the same season for AAQ collection period should be provided. The detail of NABL/MoEF&CC certification of the respective laboratory and NABET accreditation of the consultant to be provided.	The baseline data on micro-meteorology, ambient air quality, Water quality, noise level, soil are carried out through NABL accredited laboratory during Summer Season (March 2023 to May 2023) and detailed in para 3.3 to 3.5 of Chapter-III.  Copy of NABL Certificate of the Laboratory is Enclosed as Annexure 13.  Copy of NABET Certificate is enclosed as Annexure-14.	3-11
1.15	Map (1: 50, 000 scale) of the study area (core and buffer zone) showing the location of various sampling stations superimposed with location of habitats, other industries/mines, polluting sources, should be provided. The number and location of the sampling stations in both core and buffer zones should be selected on the basis of size of lease/project area, the proposed impacts in the downwind (air)/downstream (surface water)/groundwater regime (based on flow). One station should be in the upwind/upstream/non-impact/non-polluting area as a control station. The monitoring should be as per CPCB guidelines and parameters for water testing for both ground water and surface water as per ISI standards and CPCB classification wherever applicable. Observed values should be provided along with the specified standards.	<ul style="list-style-type: none"> <li>• The monitoring locations for air, water, noise and soil are provided in Figures 3.8 – 3.13, Chapter-III.</li> <li>• Monitoring stations were selected taking into account various CPCB guidelines.</li> <li>• The results of the observed values along with standards are provided in Tables 3.12 – 3.18, Chapter-III.</li> </ul>	3-17
1.16	For proper baseline air quality assessment, Wind rose pattern in the area should be	Replied in S.No 13 above.	--



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	reviewed and accordingly location of AAMSQ shall be planned by the collection of air quality data by adequate monitoring stations in the downwind areas. Monitoring location for collecting baseline data should cover overall the 10 km buffer zone i.e. dispersed in 10 km buffer area. In case of expansion, the displayed data of CAAQMS and its comparison with the monitoring data to be provided		
1.17	A detailed traffic study along with presence of habitation in 100 mts distance from both side of road, the impact on the air quality with its proper measures and plan of action with timeline for widening of road. The project will increase the no. of vehicle along the road which will indirectly contribute to carbon emission so what will be the compensatory action plan should be clearly spell out in EIA/EMP report.	The lease area can be approached through a separate public unused localized road free from any habitation without regular use which is connected to Venmari – Onampakkam road on the eastern side of the lease area which joins SH-115 at a distance of 1.9Km on the southern side of the lease area.	4-30
1.18	The socio-economic study to conducted with actual survey report and a comparative assessment to be provided from the census data should be provided in EIA/ EMP report also occupational status & economic status of the study area and what economically project will contribute should be clearly mention. The study should also include the status of infrastructural facilities and amenities present in the study area and a comparative assessment with census data to be provided and to link it with the initialization and quantification of need based survey for CSR activities to be followed.	Details are given in Para 3.2.4, Chapter – III.	3-7
1.19	The Ecology and biodiversity study should also indicate the likely impact of change in forest area for surface infrastructural development or mining activity in relation to the climate change of that area and what will be the compensatory measure to be adopted by PP to minimize the impact of forest	An ecological survey of the study area was conducted with reference to listing of species and assessment of the existing baseline ecological conditions. Details are provided under Section 3.5.1, Chapter-III.	3-34



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	diversion.		
1.20	Baseline data on the health of the population in the impact zone and measures for occupational health and safety of the personnel and manpower for the mine should be submitted.	Details of occupational health and safety aspects are given under the subsections of Para 4.8, Chapter-IV.	4-21
1.21	Impact of proposed project/activity on hydrological regime of the area shall be assessed and report be submitted. Hydrological studies as per GEC 2015 guidelines to be prepared and submitted	Details of hydrogeological scenario of this project is provided under section 3.6, Chapter-III.	3-39
1.22	Impact of mining and water abstraction from the mine on the hydrogeology and groundwater regime within the core zone and 10 km buffer zone including long-term monitoring measures should be provided. Details of rainwater harvesting and measures for recharge of groundwater should be reflected in case there is a declining trend of groundwater availability and/or if the area falls within dark/grey zone.	<ul style="list-style-type: none"> <li>• Hydrogeological Study is detailed under Section 3.6, Chapter-III.</li> <li>• There are no perrinieal water courses in either lease area. There is a tank located a distance of 110m on the south eastern side of the lease area. Due to scanty rainfall the eri remains dry for most of the year. There is no proposal to discharge any effluent into either of these water bodies. No major impact is envisaged on the nearby water bodies due to project operations.</li> <li>• The mining area consists of hard compact rock, hence no major water seepage within the mine is expected from the periphery. The ground water table in this area is below the ultimate pit level. Hence, ground water intersection in not envisaged and ground water will not be affected appreciably due to the quarrying operation.</li> </ul>	3-39
1.23	Study on land subsidence including modeling for prediction, mitigation/prevention of subsidence, continuous monitoring measures, and safety issues should be carried out.	This being an opencast mine, subsidence is not applicable.	--
1.24	Detailed water balance should be provided. The breakup of water requirement as per	Water requirement for this project is 8 KLD. The required water will be	4-7



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	different activities in the mining operations, including use of water for sand stowing should be given separately. Source of water for use in mine, sanction of the Competent Authority in the State Govt. and impacts vis-à-vis the competing users should be provided.	procured initially from outside agencies. Later Rain water harvested in the mine sump can also be used. Water Balance diagram is provided in Figure 4.3, Chapter-IV.	
1.25	PP shall submit design details of all Air Pollution control equipment (APCEs) to be implemented as part of Environment Management Plan vis à-vis reduction in concentration of emission for each APCEs	Towards dust suppressing, water sprinkling will be carried out by a 8KL water tanker and additionally, Wheel washing system will also be provided near the gate of the quarry. The environmental control cost has been provided in Table 10.1, Chapter-X.	10-10
1.26	PP shall propose to use LNG/CNG based mining machineries and trucks for mining operation and transportation of mineral. The measures adopted to conserve energy or use of renewable sources shall be explored	Since the number of equipments to be used is less, all efforts will be made to explore and materialize the same.	--
1.27	PP to evaluate the greenhouse emission gases from the mine operation and corresponding carbon absorption plan	Details are given in Table 4.21, Chapter – IV.	4-62
1.28	Site specific Impact assessment with its mitigation measures, Risk Assessment and Disaster Preparedness and Management Plan should be provided.	<ul style="list-style-type: none"> <li>• Impact assessment and mitigation measures are provided in detail in Chapter-IV.</li> <li>• Risk assessment is provided under Section 7.3, Chapter-VII.</li> <li>• Disaster Management Plan is provided under Section 7.3.1, Chapter-VII.</li> </ul>	4-1 7-2 7-3
1.29	Impact of choice of mining method, technology, selected use of machinery and impact on air quality, mineral transportation, handling & storage/stockyard, etc, Impact of blasting, noise and vibrations should be provided.	<ul style="list-style-type: none"> <li>• Opencast mechanized mining using jackhammer drilling, blasting, excavation through excavator &amp; mineral transport through tippers will be carried out. The top gravel is soft and can be directly excavated. The rough stone below will be blasted and then excavated. Bench height of 5.0m &amp; 5m width is considered.</li> </ul>	2-17



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		<ul style="list-style-type: none"> <li>• Details of equipments are provided in Table 2.6, Chapter-II.</li> <li>• Impact on air quality is provided under Section 4.2, Chapter-IV.</li> <li>• Impact of mining on mineral transportation has been provided under Section 4.9, Chapter-IV.</li> <li>• The ground vibration effects due to blasting has been provided under section 4.4.2, Chapter-IV.</li> </ul>	<p align="center"><b>4-2</b></p> <p align="center"><b>4-23</b></p> <p align="center"><b>4-14</b></p>
1.30	<p>Impacts of mineral transportation within the mining area and outside the lease/project along with flow-chart indicating the specific areas generating fugitive emissions should be provided. Impacts of transportation, handling, transfer of mineral and waste on air quality, generation of effluents from workshop etc, management plan for maintenance of HEMM and other machinery/equipment should be given. Details of various facilities such as rest areas and canteen for workers and effluents/pollution load emanating from these activities should also be provided.</p>	<ul style="list-style-type: none"> <li>• Impact of mining on mineral transportation has been provided under Section 4.9, Chapter-IV.</li> <li>• Schematic diagram of mining activities and its associated impacts are provided in Figure 2.23, Chapter-II.</li> <li>• Impact of mining operations on air quality is assessed by means of Air Quality Impact Prediction. The incremental concentration considering Mining operations and hauling are determined and provided under Section 4.2.2, Chapter-IV.</li> <li>• This is a proposed project. Site services like mine office, first aid room, rest shelters, toilets etc. will be provided as semi-permanent structures.Considering the minimum manpower, no major pollution is expected from this front.</li> </ul>	<p align="center"><b>4-23</b></p> <p align="center"><b>2-27</b></p> <p align="center"><b>4-3</b></p> <p align="center"><b>2-27</b></p>
1.31	<p>Details of various facilities to be provided to the workers in terms of parking, rest areas and canteen, and effluents/pollution load resulting from these activities should also be given.</p>	<ul style="list-style-type: none"> <li>• This is a proposed project. Site services like mine office, first aid room, rest shelters, toilets etc. will be provided as semi-permanent structures.Considering the minimum manpower, as such no major pollution is expected from this front.</li> </ul>	<b>2-27</b>
1.32	<p>The number and efficiency of mobile/static water jet, Fog cannon sprinkling system along the main mineral transportation road inside the mine, approach roads to the mine/stockyard/siding, and also the frequency of their use in impacting air quality</p>	<p>Towards dust suppressing, water sprinkling for at least 2 to 3 times in a day will be carried out by a mobile water sprinkler and additionally, Wheel washing system will also be provided near the gate of the quarry. The</p>	<b>10-10</b>







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1.37	CSR Plan along with details of villages and specific budgetary provisions (capital and recurring) for specific activities over the life of the project should be given.	Towards socio economic development of the surrounding area, the proponent has earmarked an amount of Rs.5 Lakhs which will be implemented in a phased manner in the nearby Government School.	4-21
1.38	Corporate Environment Responsibility	Towards socio economic development of the surrounding area, the proponent has earmarked an amount of Rs.5 Lakhs which will be implemented in a phased manner in the nearby Government School.	4-21
1.39	a) The Company must have a well laid down Environment Policy approved by the Board of Directors.	The details of Environmental Policy is provided in Section 10.2.1, Chapter-X.	10-1
1.40	b) The Environment Policy must prescribe for standard operating process/procedures to bring into focus any infringements/ deviation /violation of the environmental or forest norms/conditions.	The details of Environmental Policy is provided in Section 10.2.1, Chapter-X.	10-1
1.41	c) The hierarchical system or Administrative Order of the company to deal with environmental issues and for ensuring compliance with the environmental clearance conditions must be furnished.	The details of the environmental management cell is provided under Section 10.2.2, Chapter-X.	10-2
1.42	d) To have proper checks and balances, the company should have a well laid down system of reporting of non-compliances/violations of environmental norms to the Board of Directors of the company and/or shareholders or stakeholders at large.	The details of Environmental Policy is provided in Section 10.2.1, Chapter-X.	10-1
1.43	e) Environment Management Cell and its responsibilities to be clearly spell out in EIA/ EMP report	The details of the environmental management cell is provided under Section 10.2.2, Chapter-X.	10-2
1.44	f) In built mechanism of self-monitoring of compliance of environmental regulations should be indicated.	The details of Environmental Policy is provided in Section 10.2.1, Chapter-X.	10-1



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1.45	Status of any litigations/ court cases filed/pending on the project should be provided.	The proponent has informed that there are no litigations pending against the project.	--												
1.46	PP shall submit clarification from DFO that mine does not falls under corridors of any National Park and Wildlife Sanctuary with certified map showing distance of nearest sanctuary.	There are no sanctuaries or biospheres within the study area.	--												
1.47	Copy of clearances/approvals such as Forestry clearances, Mining Plan Approval, mine closer plan approval. NOC from Flood and Irrigation Dept. (if req.), etc. wherever applicable.	Copy of all clearances obtained from the Government with regards to Environmnetal Clearance are enclosed as Annexures to the EIA/EMP Report	--												
1.48	<p>Details on the Forest Clearance should be given as per the format given:</p> <table border="1"> <thead> <tr> <th>Total ML Project Area (Ha)</th> <th>Total Forest Land (Ha)</th> <th>Date of FC</th> <th>Extent of Forest Land</th> <th>Balance area for which FC is yet to obtained</th> <th>Status of appl for diversion of forest land</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	Total ML Project Area (Ha)	Total Forest Land (Ha)	Date of FC	Extent of Forest Land	Balance area for which FC is yet to obtained	Status of appl for diversion of forest land							There is no forest clearance involved in this project	--
Total ML Project Area (Ha)	Total Forest Land (Ha)	Date of FC	Extent of Forest Land	Balance area for which FC is yet to obtained	Status of appl for diversion of forest land										
1.49	In case of expansion of the proposal, the status of the work done as per mining plan and approved mine closure plan shall be detailed in EIA/ EMP report	This is a greenfield project and does not involve any expansion.	--												
1.50	Details on Public Hearing should cover the information relating to notices issued in the newspaper, proceedings/minutes of Public Hearing, the points raised by the general public and commitments made by the proponent and the time bound action proposed with budgets in suitable time frame. These details should be presented in a tabular form. If the Public Hearing is in the regional language, an authenticated English Translation of the same should be provided.	This draft EIA/EMP report will be submitted for Public Hearing as per mandatory procedures through the District Collector and State Pollution Control Board officials after giving 30 days advance notice in two local newspapers about the scheduled date and time for conduct of the public hearing procedures. The opinions, concerns and objections of stakeholders will be recorded during the public hearing. All the public queries and the replies to the query by the project proponent and officials concerned will be recorded and incorporated in the EIA/EMP report for approval by SEIAA, Tamil Nadu.	7-1												



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1.51	PP shall carry out survey through drone highlighting the ground reality for at least 10 minutes	Agreed	
1.52	Detailed Chronology of the project starting from the first lease deed allotted/Block allotment/ Land acquired to its No. of renewals, CTO /CTE with details of no. renewals, previous EC(s) granted details and its compliance details, NOC details from various Govt bodies like Forest NOC(s), CGWA permissions, Power permissions, etc as per the requisites respectively to be furnished in tabular form.	The chronology of various statutory clearances obtained for this project are provided in Table 1.3, Chapter-I.	1-3
1.53	The first page of the EIA/ EMP report must mention the peak capacity production, area, detail of PP, Consultant (NABET accreditation) and Laboratory (NABL / MoEF & CC certification)	The details are mentioned in the First Page of the EIA/EMP Report	--
1.54	The compliances of ToR must be properly cited with respective chapter section and page no in tabular form and also mention sequence of the respective ToR complied within the EIA-EMP report in all the chapters section.	Complied	---

**2. Terms of Reference issued for Roughstone and Gravel Quarry of M/s. Udhayam Mines and Minerals Private Limited vide TOR Identification No. TO24B0108TN5364690N dated 07.06.2024**

S.No	ToR Points	Reply	Pg. No
<b>1.SEAC Conditions – Site Specific</b>			
1.	The structures within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m & upto 1km shall be enumerated with details such as dwelling houses with number of occupants, whether it belongs to the owner (or) not, places of worship, industries, factories, sheds, etc.	Details of features within 500m radius of the project has been provided in Table 2.2, Chapter-II.	2-11



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2.	As there a cart track is seen to be passing through the proposed land, PP should furnish details including NoC from the authorities concerned.	Will be submitted	--
3.	The proponent shall furnish photographs of adequate fencing, garland drain & green belt along the periphery including replantation of existing trees & safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan.	Site photographs showing fencing and plantation are provided in Chapter-II.	2-8
4.	The Proponent shall carry out Bio diversity study and the same shall be included in EIA Report.	An ecological survey of the study area was conducted with reference to listing of species and assessment of the existing baseline ecological conditions. Details are provided under section 3.5.1, Chapter-III.	3-34
5.	The PP shall prepare the EMP for the entire life of mine of 10 years and also furnish the monitoring mechanism indicating to abide the EMP for the entire life of mine.	The capital and recurring cost of Environmental Management is provided in Table 10.1, Chapter-X.	10-10
6.	The PP shall prepare the progressive Mine Closure Plan for the entire life of mine of 10 years indicating various components to be implemented along with the budget allocated in the EMP for the entire life of mine.	Details of Mine Closure Plan is provided under section 7.5, Chapter-VII.	7-4
7.	The PP shall prepare a conceptual working plan accommodating the remedial actions such as inclusion of haul road accessibility keeping the benches intact, based on the studies carried out to assess the slope stability of the working benches to be constructed and existing quarry wall apart from the proposed mining methodology.	The details regarding the same are provided under Section 4.5.1, Chapter-IV.	4-23
<b>2. SEIAA Standard Conditions</b>			
1	Cluster Management Committee shall be framed which must include all the proponents in the cluster as members including the existing as well as proposed quarry.	Details of the cluster management committee is provided under Section 10.2.2, Chapter-X.	10-4
2	The members must coordinate among themselves for the effective implementation	Details of the cluster management committee is provided under Section	10-4



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	of EMP as committed including Green Belt Development, water sprinkling, tree plantation, blasting etc.,	10.2.2, Chapter-X.	
3	The List of members of the committee formed shall be submitted to AD/Mines before the execution of mining lease and the same shall be updated every year to the AD/Mines.	Details of the cluster management committee is provided under Section 10.2.2, Chapter-X.	10-4
4	Detailed Operational Plan must be submitted which must include the blasting frequency with respect to the nearby quarry situated in the cluster, the usage of haul roads by the individual quarry in the form of route map and network.	Details of the cluster management committee is provided under Section 10.2.2, Chapter-X.	10-4
5	The committee shall deliberate on risk management plan pertaining to the cluster in a holistic manner especially during natural calamities like intense rain and the mitigation measures considering the inundation of the cluster and evacuation plan.	Details of the cluster management committee is provided under Section 10.2.2, Chapter-X.	10-4
6	The Cluster Management Committee shall form Environmental Policy to practice sustainable mining in a scientific and systematic manner in accordance with the law. The role played by the committee in implementing the environmental policy devised shall be given in detail.	Details of the cluster management committee is provided under Section 10.2.2, Chapter-X.	10-4
7	The committee shall furnish action plan regarding the restoration strategy with respect to the individual quarry falling under the cluster in a holistic manner.	Details of the cluster management committee is provided under Section 10.2.2, Chapter-X.	10-4
8	The committee shall furnish the Emergency Management plan within the cluster.	Details of the cluster management committee is provided under Section 10.2.2, Chapter-X.	10-4
9	The committee shall deliberate on the health of the workers/staff involved in the mining as well as the health of the public.	Details of the cluster management committee is provided under Section 10.2.2, Chapter-X.	10-4
10	The committee shall furnish an action plan to	Details of the cluster management	10-4



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	achieve sustainable development goals with reference to water, sanitation & safety.	committee is provided under Section 10.2.2, Chapter-X.	
11	The committee shall furnish the fire safety and evacuation plan in the case of fire accidents.	Details of the cluster management committee is provided under Section 10.2.2, Chapter-X.	10-4

**Impact Study of Mining**

12	<p>Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area covering the entire mine lease period as per precise area communication order issued from reputed research institutions on the following:</p> <p>a) Soil health &amp; soil biological, physical land chemical features</p> <p>b) Climate change leading to Droughts, Floods etc.</p> <p>c) Pollution leading to release of Greenhouse gases (GHG), rise in Temperature, &amp; Livelihood of the local people.</p> <p>d) Possibilities of water contamination and impact on aquatic ecosystem health</p> <p>e) Agriculture, Forestry &amp; Traditional practices.</p> <p>f) Hydrothermal/Geothermal effect due to destruction in the Environment.</p> <p>g) Bio-geochemical processes and its loot prints including environmental stress</p> <p>h) Sediment geochemistry in the surface streams</p>	<ul style="list-style-type: none"> <li>• As such the production from this lease is very low to cause any appreciable impact.</li> <li>• No adverse impact on the surrounding environment is envisaged since the number of equipments to be used to achieve this small production is very less and the magnitude of operation is of very small level.</li> <li>• Besides, as is it a mining project, no adverse generation of heat is envisaged.</li> <li>• Certified vehicles with low carbon emissions will only be used. These equipments will be properly and regularly maintained. Besides, regular vehicular emission tests will be done for the transport vehicles to ensure minimal impact due to carbon emissions. To further mediate the carbon emissions, a good greenbelt and plantation plan has been planned.</li> <li>• Geologically the area in and around the lease area contains charnokite type rock formation containing mostly fallow land. As such there no major vegetation or agricultural activities are observed.</li> <li>• There are no Protected or Eco-Sensitive Zone or forest land nearby wherein it can have an impact.</li> <li>• It will be ensured that mining will be carried out adhering to all the statutory rules and regulations and maintaining the environmental quality within the prescribed standards by effective implementation of various mitigative</li> </ul>	4-18
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		<p>measures.</p> <ul style="list-style-type: none"> <li>• These mitigative measures will be continued for the entire lease period ensuring no impact on the environment.</li> <li>• As such release of Greenhouse gases (GHG), rise in temperature, affecting livelihood of the local people ,loss of Agriculture, Forestry and Traditional Practices is not envisaged. Such a limited scope will not induce any climatic change leading to droughts, floods etc.</li> </ul>	
<b>Agriculture &amp; Agro-Biodiversity</b>			
13	<b>Impact on surrounding agricultural fields around the proposed mining Area.</b>	Most of the study area remain uncultivated and only in patches of land away from the lease area, agricultural activities are carried during monsoon rainfall. Since the lease and its surrounding area consist of rocky stony waste material, the soil quality is poor and not fit for agriculture purpose.	4-17
14	<b>Impact on soil flora &amp; vegetation around the project site.</b>	The impact of mining on biological environment is provided under Table 4.15, Chapter-IV.	4-17
15	<b>Details of type of vegetations including no. of trees &amp; shrubs within the proposed mining area and. If so, transplantation of such vegetations all along the boundary of the proposed mining area shall committed mentioned in EMP.</b>	The details of flora in the core zone is provided in Table 3.24, Chapter-III. There is no major clearance of vegetation or transplantation involved.	3-34
16	<b>The Environmental Impact Assessment should study the biodiversity, the natural ecosystem, the soil micro flora, fauna and soil seed banks and suggest measures to maintain the natural Ecosystem.</b>	An ecological survey of the study area was conducted with reference to listing of species and assessment of the existing baseline ecological conditions. Details are provided under Section 3.5.1, Chapter-III.	3-34
17	<b>Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.</b>	The post mining land use has been provided in Table No. 4.15.	4-16





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18	The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock.	Most of the study area remain uncultivated and only in patches of land away from the lease area, agricultural activities are carried during monsoon rainfall. Since the lease and its surrounding area consist of rocky stony waste material, the soil quality is poor and not fit for agriculture purpose.	4-18
<b>Forests</b>			
19	The project proponent shall detailed study on impact of mining on Reserve forests free ranging wildlife.	Sittarkadu RF, Palavur RF, Kollattanallur RF are located more than 6km from the lease area. There area no Protected Areas, Sanctuaries, Tiger reserve etc., within 10km Radius. Vedanthangal Bird Sanctuary lies at a distance of 18.35 Kms	3-2
20	The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.	An ecological survey of the study area was conducted with reference to listing of species and assessment of the existing baseline ecological conditions. Details are provided under Section 3.5.1, Chapter-III.	3-34
21	The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection.	Replied in point 20. Above	--
22	The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks. Corridors and Wildlife pathways. near project sire.	There are no national parks or corridors in the 10k radius. There are no reserve forest in the proximity of the lease area	3-2
<b>Water Environment</b>			
23	Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) so as to assess the impacts on the nearby waterbodies due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be	Details of hydrogeological scenario of this project is provided under section 3.6, Chapter-III.	3-39



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	provided, covering the entire mine lease period.		
24	<b>Erosion Control Measures</b>	<ul style="list-style-type: none"> <li>• Since the entire material from the quarry face will be directly dispatched to the consumers, there will not be any stockpiles. There are no waste dumps in this quarry. As such there will not be any wash out due to stock pile or waste dumps.</li> <li>• Towards surface runoff management, garland drain will be constructed around the quarry and will be connected to a settling pond with silt traps.</li> </ul>	4-8
25	Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area on the nearby Villages, Water-bodies/ Rivers, & any ecological fragile areas.	<ul style="list-style-type: none"> <li>• There are no perennial water courses in either lease area. There is an oadi on the south eastern side of the lease area. A safety distance of 10m has been left for this seasonal drainage channel. Due to scanty rainfall the drainage channel remains dry for most of the year. Earthen bund will be formed within the lease area on the south eastern and eastern side. There is no proposal to discharge any effluent into either of these water bodies. No major impact is envisaged on the nearby water bodies due to project operations</li> </ul>	4-9
26	The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.	There is no major perennial waterbody in close proximity of the lease area.	3-3
27	The project proponent shall study and furnish the details on potential fragmentation impact on natural environment, by the activities.	The post mining land use has been provided in Table No. 4.15.	4-16
28	The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site, and archaeological sites possible land form changes visual and	An ecological survey of the study area was conducted with reference to listing of species and assessment of the existing baseline ecological conditions. Details are provided under Section 3.5.1, Chapter-III.	3-34



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	aesthetic impacts.		
29	The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.	Soil samples were collected in 4 locations in the core and buffer zone to analyse the physiochemical characteristics of the soil in the area. The soil quality data is provided in Table No.3.18, Chapter-III.	3-28
30	The Environmental Impact Assessment should study on wetlands, water bodies, rivers steams, lakes and farmer sites.	<ul style="list-style-type: none"> <li>• The nearest major water bodies is provided in Table No.3.1, Chapter-III.</li> <li>• There are no perrinieal water courses in either lease area. There is an odai on the south eastern side of the lease area A safety distance of 10m has been left for this seasonal drainage channel. Due to scanty rainfall the drainage channel remains dry for most of the year. Earthen bund will be formed within the lease area on the south eastern and eastern side. There is no proposal to discharge any effluent into either of these water bodies. No major impact is envisaged on the nearby water bodies due to project operations</li> <li>• The mining area consists of hard compact rock, hence no major water seepage within the mine is expected from the periphery. The ground water table in this area is below the ultimate pit level. Hence, ground water intersection in not envisaged and ground water will not be affected appreciably due to the quarrying operation.</li> </ul>	3-2
<b>Energy</b>			
31	The measures taken to control Noise, Air, Water, Dust Control and steps adopted to efficiently utilize the Energy shall be furnished.	The dust control measures are listed under Table 4.1, Water pollution control measures under Section 4.3.2, and noise pollution control measures under Section 4.4.1.2, Chapter-IV. Besides, energy consumption in this project will be optimum and as per requirement.	4-2
<b>Climate Change</b>			



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32	The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities.	Certified vehicles with low carbon emissions will only be used. These equipments will be properly and regularly maintained. Besides, regular vehicular emission tests will be done for the transport vehicles to ensure minimal impact due to carbon emissions. To further mediate the carbon emissions, a good greenbelt and plantation plan has been planned.	4-3
33	The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock.	Replied in point no.32	--
<b>Mine Closure Plan</b>			
34	Detailed Mine Closure Plan covering the entire mine lease period as per precise area communication order issued.	Details of Mine Closure Plan is provided under section 7.6, Chapter-VII.	7-4
<b>EMP</b>			
35	Detailed Environment Management Plan along with adaptation, mitigation & remedial strategies covering the entire mine lease period as per precise area communication order issued.	Detailed environmental management plan is provided under Chapter-X.	10-1
36	The Environmental Impact Assessment should hold detailed study on EMP with budget for Green belt development and mine closure plan including disaster management plan.	Detailed environmental management plan is provided under Chapter-X.	10-1
<b>Risk Assessment</b>			
37	To furnish risk assessment and management plan including anticipated vulnerabilities during operational and post operational phases of Mining.	Various risks likely to arise due to mining activities are detailed under Section 7.3, Chapter-VII.	7-2
<b>Disaster Management Plan</b>			
38	To furnish disaster management plan and disaster mitigation measures in regard to all aspects to avoid/reduce vulnerability to hazards & to cope with disaster/untoward accidents in & around the proposed mine	The disaster management plan has been provided under Section 7.4.1, Chapter-VII.	7-3



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	lease area due to the proposed method of mining activity & its related activities covering the entire mine lease period as per precise area communication order issued.		
<b>Others</b>			
39	The project proponent shall furnish VAO certificate with reference to 300m radius regard to approved habitations, schools, Archaeological sites. Structures, railway lines, roads, water bodies such as streams, odai, vaari, canal, channel. river, lake pond, tank etc.	Will be submitted	--
40	As per the MoEF& cc office memorandum F.No.22-65/2017-IA.III dated: 30.09.2020 and 20.10.2020 the proponent shall address the concerns raised during the public consultation and all the activities proposed shall be part of the Environment Management plan.	Will be provided in the Final EIA/EMP Report	--
41	The project proponent shall study and furnish the possible pollution due to plastic and microplastic on the environment. The ecological risks and impacts of plastic & microplastics on aquatic environment and fresh water systems due to activities, contemplated during mining may be investigated and reported.	Single use plastics/ use and throwaway plastics will be banned in the site as directed by the Tamil Nadu Government vide GO(Ms)No.84 regarding ban on use of plastic products. The employees will be encouraged to use compostable material or reusable material.	4-24
<b>3. SEAC Standard Conditions</b>			
1.	In the case of existing/operating mines, a letter obtained from the concerned AD (Mines) shall be submitted and it shall include the following: a) Original pit dimension b) Quantity achieved Vs EC Approved Quantity c) Balance Quantity as per Mineable Reserve calculated. d) Mined out Depth as on date Vs EC Permitted depth e) Details of illegal/illicit mining	This is a proposed quarry. As such no mining activities have been carried out in this lease area.	2-18



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	<p>f) Violation in the quarry during the past working.</p> <p>g) Quantity of material mined out outside the mine lease area</p> <p>h) Condition of Safety zone/benches</p> <p>i) Revised/Modified Mining Plan showing the benches of not exceeding 6 m height and ultimate depth of not exceeding 50m.</p>		
2	Details of habitations around the proposed mining area and latest VAO certificate regarding the location of habitations within 300m radius from the periphery of the site.	Enclosed as Annexure-3B.	--
3	The proponent is requested to carry out a survey and enumerate on the structures located within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m (v) 500m shall be enumerated with details such as dwelling houses with number of occupants, whether it belongs to the owner (or) not, places of worship, industries, factories, sheds, etc with indicating the owner of the building, nature of construction, age of the building, number of residents, their profession and income, etc.	Details of the features produced within 500m radius are provided in Figure 2.2, Chapter-II.	2-11
4	The PP shall submit a detailed hydrological report indicating the impact of proposed quarrying operations on the waterbodies like lake, water tanks, etc are located within 1 km of the proposed quarry.	Hydrogeological Study is detailed under Section 3.6, Chapter-III.	3-40
5	The Proponent shall carry out Bio diversity study through reputed Institution and the same shall be included in EIA Report.	A detailed study of flora and fauna composition in the core and buffer zone of the project has been made through primary field surveys. The details are furnished in para 3.5, Chapter III.	3-36
6	The DFO letter stating that the proximity distance of Reserve Forests, Protected Areas, Sanctuaries, Tiger reserve etc., up to a radius of 25 km from the proposed site.	Sittarkadu RF, Palavur RF, Kollattanallur RF are located more than 6km from the lease area. There are no Protected Areas, Sanctuaries, Tiger reserve etc., within 10km Radius. Vedanthangal Bird Sanctuary – 18.35 Kms	3-2
7	In the case of proposed lease in an existing	This is a proposed quarry. As such no	2-18



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	(or old) quarry where the benches are not formed (or) partially formed as per the approved Mining Plan, the Project Proponent (PP) shall the PP shall carry out the scientific studies to assess the slope stability of the working benches to be constructed and existing quarry wall, by involving any one of the reputed Research and Academic Institutions - CSIR-Central Institute of Mining & Fuel Research / Dhanbad, NIRM/Bangalore, Division of Geotechnical Engineering-IIT-Madras, NIT-Dept of Mining Engg, Surathkal, and Anna University Chennai-CEG Campus. The PP shall submit a copy of the aforesaid report indicating the stability status of the quarry wall and possible mitigation measures during the time of appraisal for obtaining the EC.	mining activities have been carried out in this lease area.	
8	However, in case of the fresh/virgin quarries, the Proponent shall submit a conceptual 'Slope Stability Plan' for the proposed quarry during the appraisal while obtaining the EC, when the depth of the working is extended beyond 30 m below ground level.	Pit slope stability plan has been provided under Section 7.7, Chapter-VII	7-7
9	The PP shall furnish the affidavit stating that the blasting operation in the proposed quarry is carried out by the statutory competent person as per the MMR 1961 such as blaster, mining mate, mine foreman, II/I Class mines manager appointed by the proponent.	Will be submitted	--
10	The PP shall present a conceptual design for carrying out only controlled blasting operation involving line drilling and muffle blasting in the proposed quarry such that the blast-induced ground vibrations are controlled as well as no fly rock travel beyond 30 m from the blast site.	Controlled blasting will be adopted in this project and details of the same has been provided in Section 4.4.2, Chapter-IV	4-14
11	The EIA Coordinators shall obtain and furnish the details of quarry/quarries operated by the proponent in the past, either in the same location or elsewhere in the State with video and photographic evidences.	Agreed	--
12	If the proponent has already carried out the	This is a proposed quarry. As such no	2-18



**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.04.5 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

	mining activity in the proposed mining lease area after 15.01.2016, then the proponent shall furnish the following details from AD/DD, mines,	mining activities have been carried out in this lease area.	
13	What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?	Replied above in point no.12	--
14	Quantity of minerals mined out. •Highest production achieved in any one year •Detail of approved depth of mining. •Actual depth of the mining achieved earlier. •Name of the person already mined in that leases area. •If EC and CTO already obtained, the copy of the same shall be submitted. •Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches.	Replied above in point no.12	--
15	All corner coordinates of the mine lease area, superimposed on a High-Resolution Imagery/Topo sheet, topographic sheet, geomorphology, lithology and geology of the mining lease area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).	<ul style="list-style-type: none"> <li>• Satellite imagery with corner coordinates of the project area is provided in Figure 2.5, Chapter-II.</li> <li>• Toposheet of the lease area and buffer zone is provided in Figure 3.1, Chapter-III.</li> <li>• Geology, Geomorphology, Lithology map of the lease area and buffer zone is provided in Figure 3.18, 3.19 and 3.20, Chapter-III.</li> </ul>	<p align="right">2-7</p> <p align="right">3-2</p> <p align="right">3-42</p>

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# CHAPTER - I

## INTRODUCTION

## **CHAPTER 1**

### **INTRODUCTION**

#### **1.1 PURPOSE OF THE REPORT:**

**AK Blue Metals Private Limited and Udhayam Mines and Minerals Private Limited** propose to operate Rough Stone and Gravel Quarry in the same Periyavenmani Village, Maduranthakam Taluk, Chengalpattu District, Tamil Nadu and has initiated action towards obtaining environmental clearance. Its details are as follows:

- 1) Roughstone and Gravel Quarry of AK Blue Metals Private Limited** over an area of 5.53 Ha in S.F.Nos. 204/1, 204/2, 204/3, 205, 206/1, 206/2, 206/3, 206/4, 206/5, 206/6, 206/7, 206/8 & 206/9 of Periyavenmani Village, Maduranthakam Taluk, Chengalpattu District, Tamil Nadu.
- 2) Roughstone and Gravel Quarry of Udhayam Mines and Minerals Private Limited** over an extent of 4.04.5 Ha at SF.No. 172/2B, 172/2C, 172/2D & 172/7 of Periyavenmani Village, Madhuranthakam Taluk, Chengalpattu District, Tamil Nadu.

Although the individual lease area of each project is less than 5 Ha, the other existing and proposed quarries within the 500m radius cluster along with this subject project works out to >5 Ha. Hence, this proposal is considered under Category – B1 and as per MoEF & CC notification necessitates preparation of EIA/EMP report and public hearing.

As such this combined draft EIA report with separate EMP measures is prepared for the above two mentioned projects based on standard and additional Terms of Reference issued by SEIAA, Tamil Nadu and is in conformance of the generic structure prescribed by MOEF&CC in their notification of September 2006 and the approved mining plan.

#### **1.2 IDENTIFICATION OF PROJECT & PROJECT PROPONENT:**

##### **1.2.1 IDENTIFICATION OF THE PROJECT:**

Roughstone and Gravel Quarries of M/s. AK Blue Metals Private Limited and M/s. Udhayam Mines and Minerals Private Limited are located in Periyavenmani Village, Madhuranthakam Taluk, Chengalpattu District, Tamil Nadu.



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**Table 1.1: Details of the project**

Project Name	Survey No.	Area	Land Type
Roughstone and Gravel Quarry of AK Blue Metals Private Limited	204/1, 204/2, 204/3, 205, 206/1, 206/2, 206/3, 206/4, 206/5, 206/6, 206/7, 206/8 & 206/9	5.53 Ha	Patta Land in the name of AK Blue Metals
Roughstone and Gravel Quarry of Udhayam Mines and Minerals Private Limited	172/2B, 172/2C, 172/2D & 172/7	4.045 Ha	Patta Land in the name of Udhayam Mines and Minerals Private Limited

Site vicinity map has been described in Figure 1.1. The rough stone and gravel will be excavated and loaded into tipper to the required buyers for producing crusher aggregates, M Sand.

**Figure 1.1: Site Vicinity Map**



Source: Google Earth



**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.04.5 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

**Table 1.2 Identification of project**

<b>Project Name</b>	Roughstone and Gravel Quarry of AK Blue Metals Private Limited	Roughstone and Gravel Quarry of Udhayam Mines and Minerals Private Limited
<b>Extent</b>	5.53 Ha	4.045 Ha
<b>Total Production</b>	11,12,850m <sup>3</sup> of Roughstone and 91,518 m <sup>3</sup> of Gravel for 10 years	5,33,830m <sup>3</sup> of Roughstone and 63,584 m <sup>3</sup> of Gravel for 10 years period
<b>Peak Production</b>	Annual peak production capacity of 1,61,130m <sup>3</sup> of Roughstone and 49,128m <sup>3</sup> of Gravel.	Annual peak production capacity of 68,000m <sup>3</sup> of Roughstone and 30,116m <sup>3</sup> of Gravel.
<b>Ultimate Depth</b>	52m	42m

Source: Approved Mining Plan

**Table 1.3: Statutory Clearances – AK Blue Metals Pvt. Ltd.**

Name	Issuing Authority	Status	Letter number	Date	Reference
Precise Area Communication	Department of Geology & Mining	Received	Lr.No.408/Mines/2023	23.02.2024	<b>Annexure-1A</b>
Mining Plan Approval	Deputy Director, Geology & Mining	Approved	Rc.No.408/Mines/2023	18.03.2024	<b>Annexure-2A</b>
VAO Letter	VAO	Obtained	--	--	<b>Annexure-3A</b>
Details of quarry within 500m radius	Deputy Director, Geology & Mining	Approved	Rc.No.408/Mines/2023	18.03.2024	<b>Annexure-4A</b>

**Table 1.4: Statutory Clearances – Udhayam Mines and Minerals Pvt. Ltd.**

Name	Issuing Authority	Status	Letter number	Date	Reference
Precise Area Communication	Department of Geology & Mining	Received	Lr.No.407/Mines/2023	23.02.2024	<b>Annexure-1B</b>
Mining Plan Approval	Deputy Director, Geology & Mining	Approved	Rc.No.407/Mines/2023	08.04.2024	<b>Annexure-2B</b>
VAO Letter	VAO	Obtained	--	--	<b>Annexure-3B</b>
Details of quarry within 500m radius	Deputy Director, Geology & Mining	Approved	Rc.No.407/Mines/2023	08.04.2024	<b>Annexure-4B</b>

**1.2.2 IDENTIFICATION OF THE PROJECT PROPONENT:**

**Table 1.5: Identification of Project PropONENT**

<b>Applicant Name</b>	M/s.AK Blue Metals Pvt. Ltd.	M/s.Udhayam Mines and Minerals Pvt. Ltd.
<b>Address</b>	1A, Manikandan Nagar, Hasthinapuram Chennai – 600 064	1A, Manikandan Nagar, Hasthinapuram Chennai – 600 064
<b>Contact Number</b>	9789901214	9942984534
<b>Email-ID</b>	akbluemetalspvtltd@gmail.com	udhayamminesandminerals@gmail.com



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**1.3 BRIEF DESCRIPTION OF NATURE, SIZE, LOCATION & PROJECT IMPORTANCE**

**Table 1.6: Brief Description of Nature of project**

<b>Sector</b>	1(a), Non-Coal Mining
<b>Type</b>	Greenfield Project
<b>Category</b>	B1
<b>Mineral to be mined</b>	Roughstone, Gravel
<b>Major/Minor Mineral</b>	Minor
<b>Mining Method</b>	Opencast semi mechanized method of mining with jackhammer drilling, blasting, excavator, transportation by tippers.

**Table 1.7: Location of the project**

S.No	Particulars	M/s.AK Blue Metals Pvt. Ltd.	M/Udhayam Mines and Minerals Pvt. Ltd.
1	Corner Coordinates	Latitude: 12°23'55. 1445"N " to 12°24'3. 3676"N & Longitude: 79°58'19.8839"E to 79°58'33.9085 E	Latitude - 12°24' 10.167"N" to 12°24' 19.9271"N& Longitude - 79°58' 6.8521"E to 79°58' 16.7887"E
2	Toposheet Number	57 P-15 and 66D-3	57 P-15 and 66D-3
3.	Survey No.	204/1, 204/2, 204/3, 205, 206/1, 206/2 , 206/3, 206/4, 206/5, 206/6, 206/7, 206/8 and 206/9	172/2B, 172/2C, 172/2D & 172/7

Location details are elaborated in Para **2.3, Chapter-II**.

**1.3.1 IMPORTANCE TO THE COUNTRY AND REGION:**

Rough stone and Gravel from these quarries will meet the domestic demand. The production and method of mining is planned considering the geological factors, availability of proven technology, demand for the material etc. Safety barriers as per State Government order is left in the planning stage itself. Systematic and scientific mining will be carried out. This project will provide employment opportunities to many people. The proponent will carry out CER activities which will help the surrounding villages to derive socio economic benefits. The activities will be customized based on local needs and prioritized. Hence, livelihood development and employment will arise due to this project.

**1.4 SCOPE OF THE STUDY:**

Particulars	M/s.AK Blue Metals Pvt. Ltd.	M/s.Udhayam Mines and Minerals Pvt. Ltd.
<b>Proposal no</b>	SIA/TN/MIN/470147/2024, dated: 22.04.2024	SIA/TN/MIN/470158/2024, Dated:22.04.2024
<b>File no</b>	10829	10832



**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.04.5 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

<b>Terms of Reference</b>	TO24B0108TN5769905N dated 11.06.2024	TO24B0108TN5364690N dated 07.06.2024
<b>Baseline Data Collection</b>	Carried out by Creative Engineers & Consultants , Chennai for Winter Season (March – May 2024)	Carried out by Creative Engineers & Consultants , Chennai for Winter Season (March – May 2024)

Based on the terms of reference, data collection, the Environmental Impact Assessment was carried out for the project area (core zone and the buffer zone (10km radius from the core zone) and the following studies were covered:

- Collection of primary and secondary data relevant to the project.
- One-Season baseline monitoring for environmental parameters such as air, water, noise, soil, flora & fauna, etc. Analysis of parameters in in-house laboratory.
- Documentation of EIA/EMP report with inclusion of relevant studies conducted by other bodies into the EIA/EMP report.
- Identification of significant environmental parameters that are prone to get affected due to pollution. Namely, Air, Water, Noise, Soil, Biological and Land Environment.
- Evaluation and determination of suitable mitigation measures to reduce and control the said pollution.
- Prediction of post project concentration (baseline + incremental) with respect to air environment for core zone and buffer zone.
- Formulation of an Environmental Management plan including administrative aspects for proposed implementation of mitigative measures in time.

This draft EIA/EMP report will be submitted for public consultation, as per rules and procedures in this respect, as per the EIA notification 2006. The opinions, concerns and objections, if any, of the surrounding public and other stake holders connected, will be taken into consideration and compliance report thereon will be submitted to SEIAA, Tamil Nadu in the final EIA/EMP report.

\* \* \* \* \*



# CHAPTER - II



**PROJECT  
DESCRIPTION**

## **CHAPTER 2**

### **PROJECT DESCRIPTION**

#### **2.1 TYPE OF PROJECT:**

This proposal involves 2 separate leases for quarrying of Roughstone and Gravel by AK Blue Metals Private Limited and Udhayam Mines and Minerals Private Limited using mechanized opencast method for the lease period of 10 years.

#### **2.2 NEED & JUSTIFICATION FOR THE PROJECT:**

There is a huge demand for construction material and the entire material produced from this quarry will be used in the local construction / infrastructure sector. Considering the following favorable factors it is practically possible to achieve the proposal within the planned period and this proposal is fully justified.

- Availability of good quality proved reserves
- Techno economic viability of the scheme
- Better approachability to the project, availability of logistic facility in proximity to the site
- Economic and Socio Economic Benefits to the region

#### **2.3 LOCATION:**

A brief description of the mining area, along with the location, coordinates, accessibility, etc. has been details below in Table No.2.1.

**Table 2.1: Mine site description**

<b>Project Name</b>	<b>Roughstone and Gravel Quarry of AK Blue Metals Private Limited</b>	<b>Roughstone and Gravel Quarry of Udhayam Mines and Minerals Private Limited</b>
<b>Location</b>	Periyavenmani Village, Madhuranthakam Taluk, Chengalpattu District, Tamil Nadu	Periyavenmani Village, Madhuranthakam Taluk, Chengalpattu District, Tamil Nadu
<b>Survey No.</b>	204/1, 204/2, 204/3, 205, 206/1, 206/2, 206/3, 206/4, 206/5, 206/6, 206/7, 206/8 & 206/9	172/2B, 172/2C, 172/2D & 172/7





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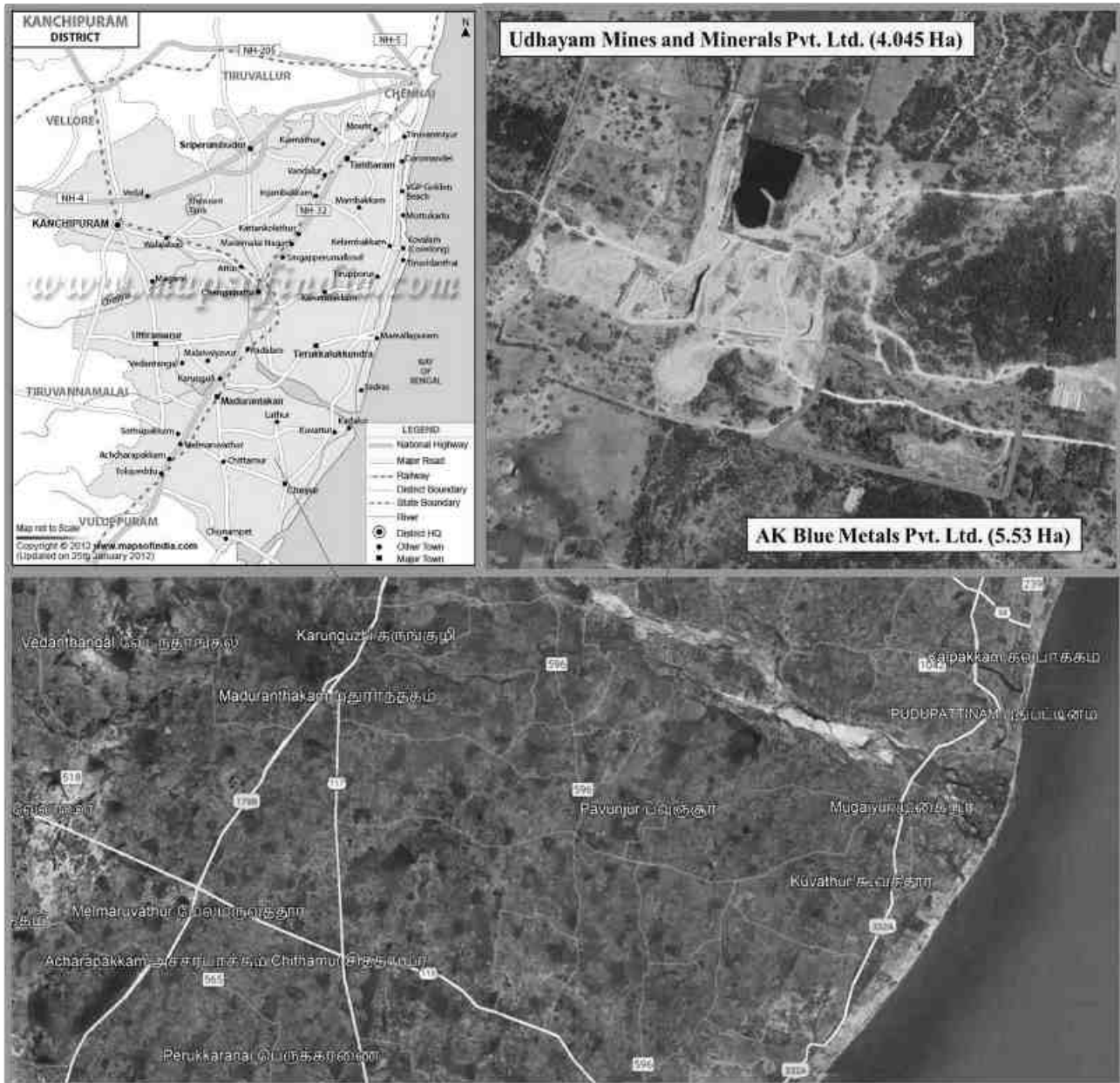
<b>Coordinates</b>	Latitude: 12°23'55. 1445"N " to 12°24'3. 3676"N Longitude: 79°58'19.8839"E to 79°58'33.9085 E	Latitude - 12°24' 10.167"N" to 12°24' 19.9271"N  Longitude - 79°58' 6.8521"E to 79°58' 16.7887"E
<b>Nearest Village</b>	Venmani – 840m (NE)	Onambakkam – 800m SW
<b>Nearest Town</b>	Cheyyar – 5.7Km (SE)	Cheyyar – 6.4Km (SE)
<b>Nearest Highway</b>	SH-115 – 1.9Km	SH-115 – 2.2Km
<b>Nearest Railway Station</b>	Madurantakam Railway Station – 14Km	Madurantakam Railway Station – 14Km
<b>Nearest Airport</b>	Chennai – 67.0 km- (NE)	Chennai – 67.0 km- (NE)
<b>Accessibility</b>	The lease area can be approached through Venmari – Onampakkam road on the eastern side of the lease area which joins SH-115 at a distance of 1.9Km on the southern side of the lease area.	The lease area can be approached through Venmari – Onampakkam road on the eastern side of the lease area which joins SH-115 at a distance of 2.2Km on the southern side of the lease area.
<b>Topography</b>	The applied lease area is exhibits almost Plain topography with few outcrops of charnockite. The elevation of the applied lease area is 30 mRL.	The applied lease area is exhibits almost Plain topography with few outcrops of charnockite. The elevation of the applied lease area is 28 mRL.

Location map is provided in **Figure No.2.1**. The approachability map is provided in **Figure No.2.2**. Corner co-ordinates of the lease area and satellite imagery are shown in **Figure No. 2.3 & 2.4** respectively. Village map for 500m radius from the lease is shown in **Figure No. 2.5**.



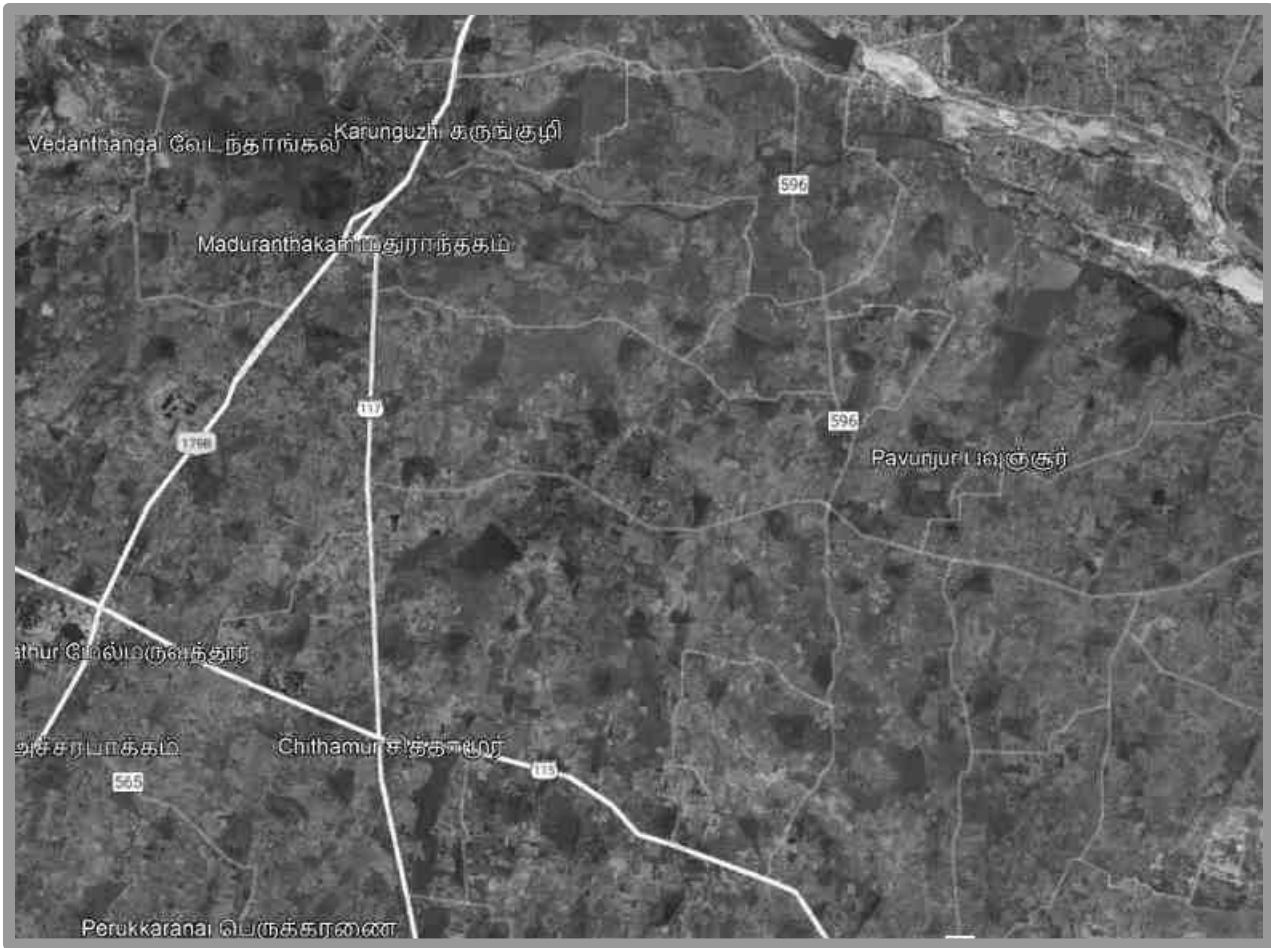
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**Figure 2.1: Location Map**



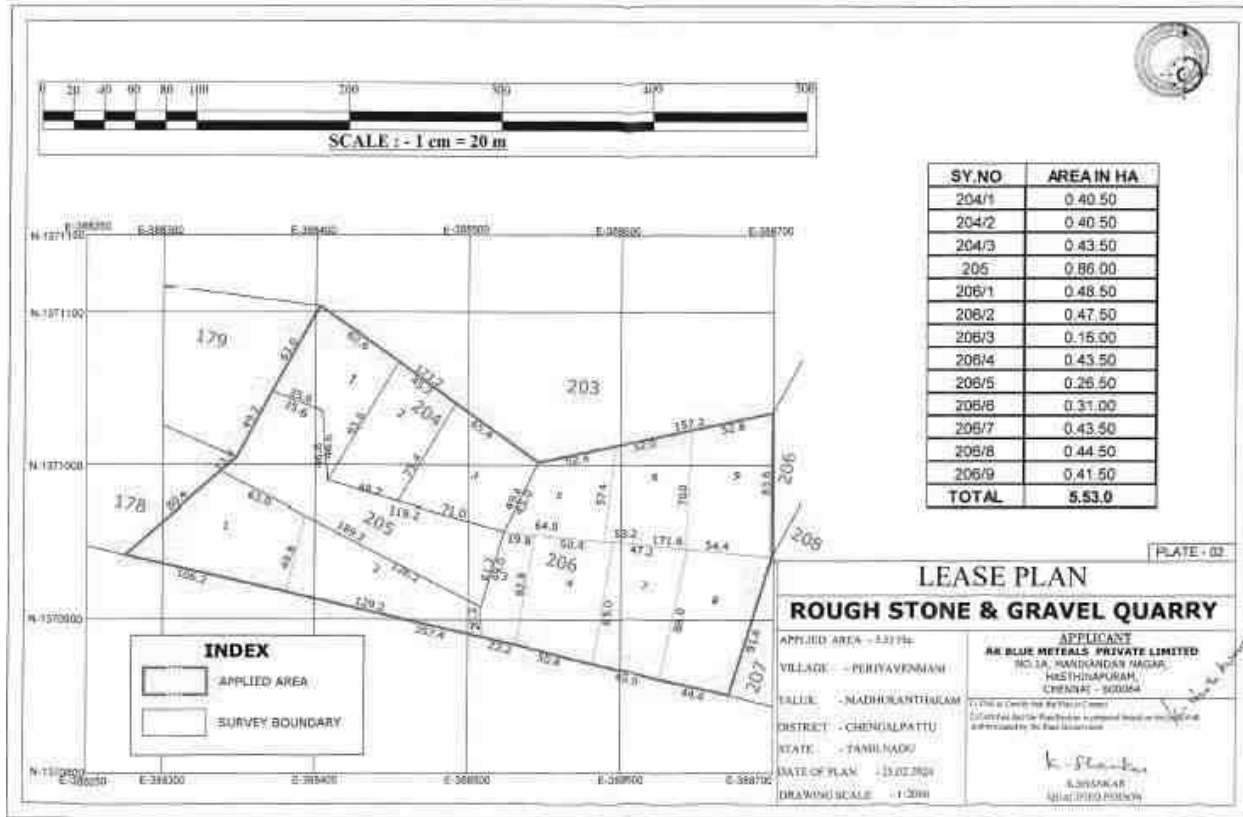
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**Figure 2.2: Approachability Map**



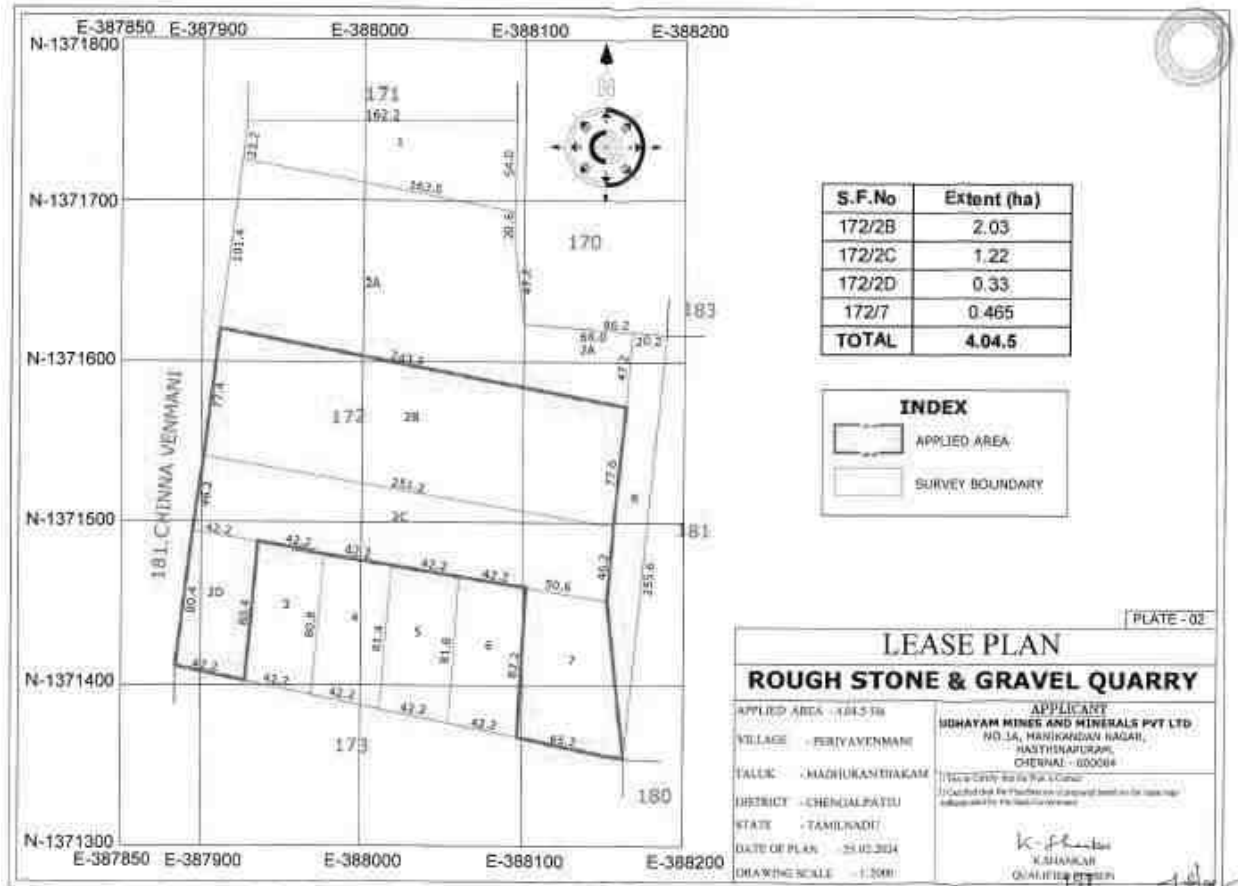
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**Figure 2.3: Lease Plan – AK Blue Metals Pvt. Ltd.**



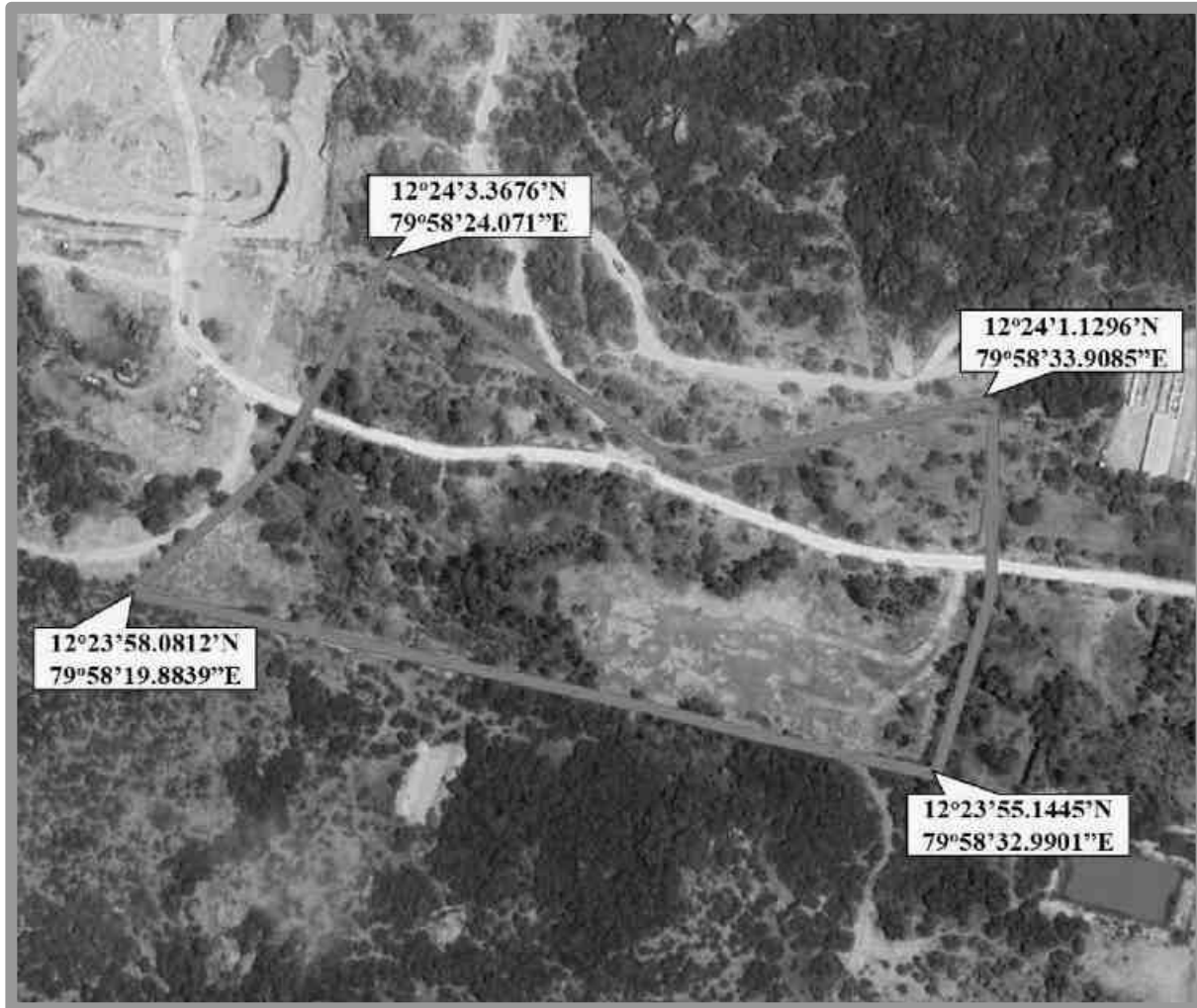
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**Figure 2.4: Lease Plan – Udhayam Mines and Minerals Private Limited**



**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.04.5 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

**Figure 2.5: Satellite Imagery Showing Corner Co-ordinates – AK Blue Metals Pvt. Ltd.**



**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.04.5 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

**Figure 2.6: Satellite Imagery Showing Corner Co-ordinates – Udhayam Mines and Minerals Pvt. Ltd.**





**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.04.5 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

**SITE PHOTOGRAPHS- AK BLUE METALS PVT. LTD.**



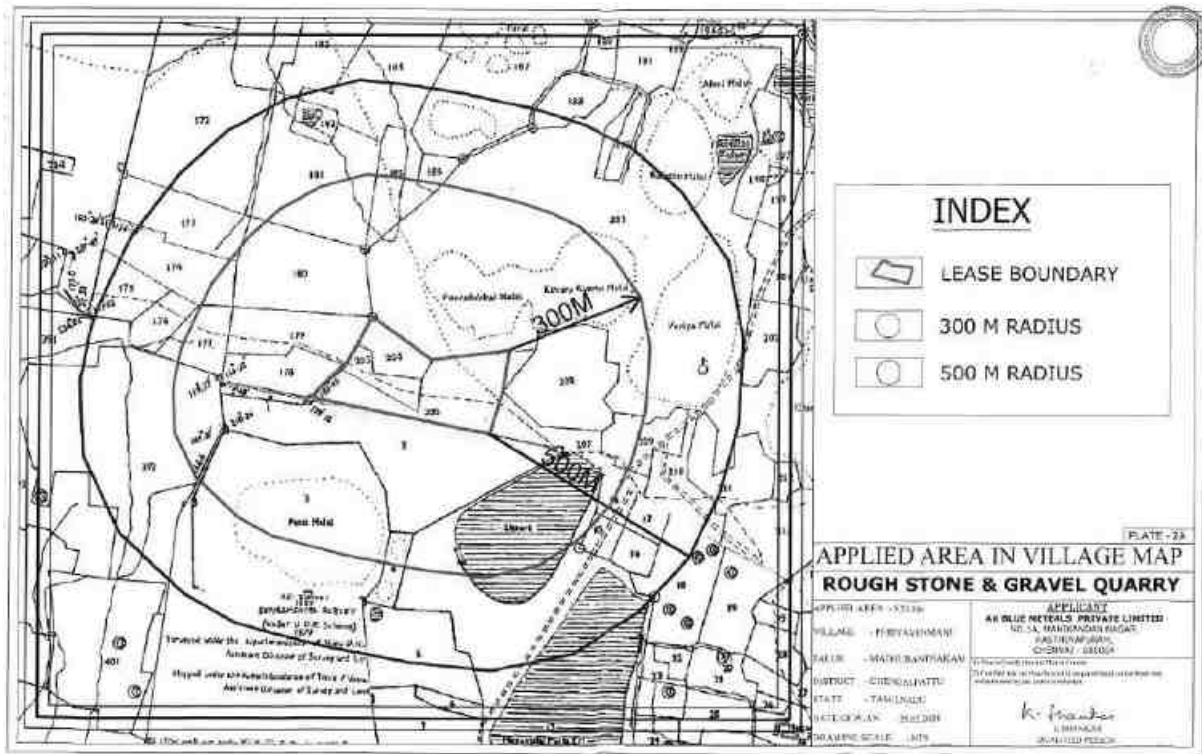
**SITE PHOTOGRAPHS- UDHAYAM MINES AND MINERALS PVT TLD.**





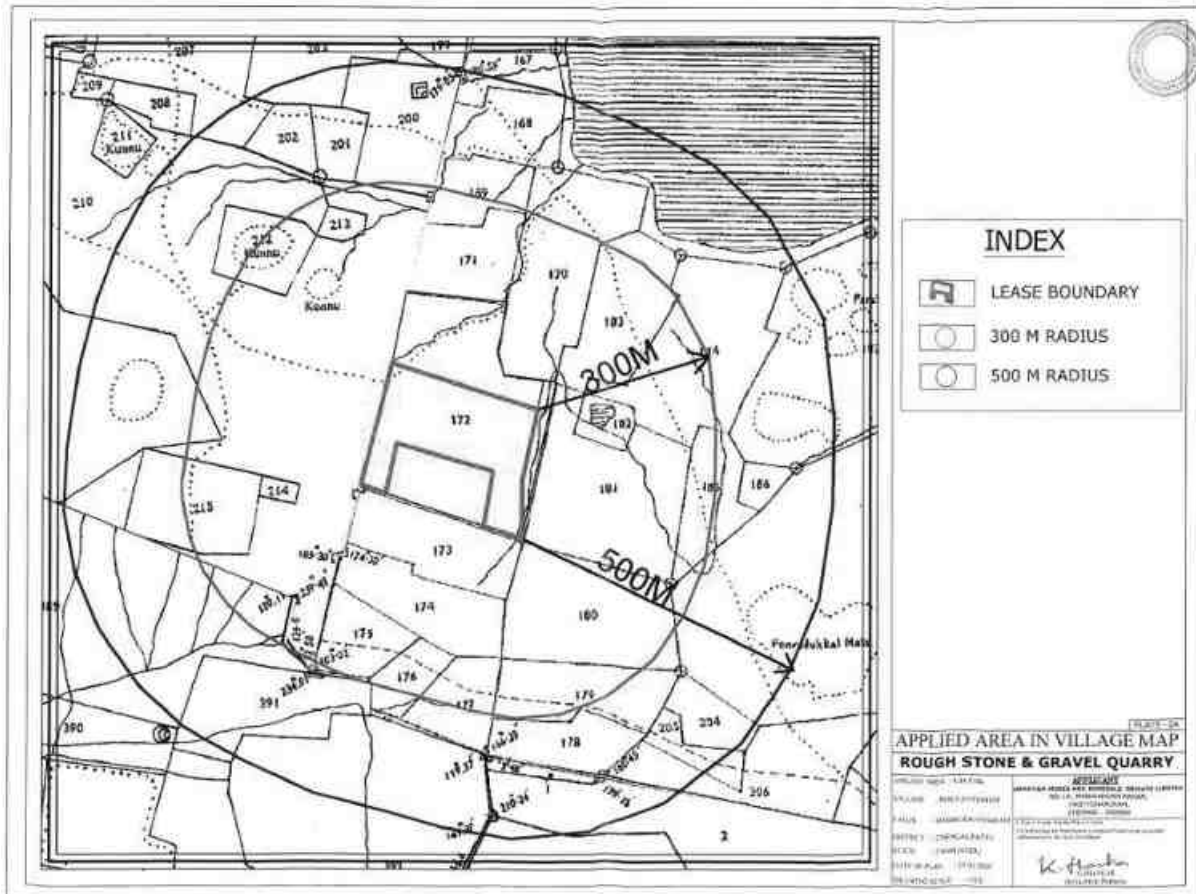
**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.045 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

**Figure 2.7: Village Map - AK Blue Metals Pvt. Ltd.**



**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.04.5 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

**Figure 2.8: Village Map – Udhayam Mines and Minerals Pvt. Ltd.**



**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.04.5 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

**Figure 2.9: Details of features within 500m radius**



As per the conditions of the Terms of Reference, the details of structures located within the 100m, 200m, 300m and 500m radius are provided below.

**Table 2.2: Features within 500m radius**

S.No	Features	AK Blue Metals	Udhayam Mines	Photographs
1	Crusher Building	70m-E	675m-E	



**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.04.5 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

2	Eri	110m - SE	400m-N	
3	Global Crusher	240m – N	280m-E	
4	PCS Crusher	330m - E	990m - E	



**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.045 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

**2.4 LAND CLASSIFICATION:**

The lease area of Roughstone and Gravel Quarry of AK Blue Metals Private Limited is a patta land in the name of A.K Blue Metals Private Limited vide Patta No.1118 and the details of the same has been provided below:

**Table 2.3: Survey Number wise Area Breakup – AK Blue Metals Pvt. Ltd.**

<b>Survey No</b>	<b>Area (Ha)</b>
204/1	0.405
204/2	0.405
204/3	0.435
205	0.860
206/1	0.485
206/2	0.475
206/3	0.160
206/4	0.435
206/5	0.265
206/6	0.310
206/7	0.435
206/8	0.445
206/9	0.415
<b>Total</b>	<b>5.530</b>

The lease area of Roughstone and Gravel Quarry of Udhayam Mines and Minerals Private Limited is a patta land in the name of M/s.Udhayam Mines and Minerals Pvt. Ltd. vide Patta No.1119 and the details of the same has been provided below:

**Table 2.4: Survey Number wise Area Breakup – Udhayam Mines and Minerals Pvt. Ltd.**

<b>Survey No</b>	<b>Area (Ha)</b>
172/2B	2.030
172/2C	1.220
172/2D	0.330
172/7	0.465
<b>Total</b>	<b>4.045</b>

**2.5 GEOLOGY:**

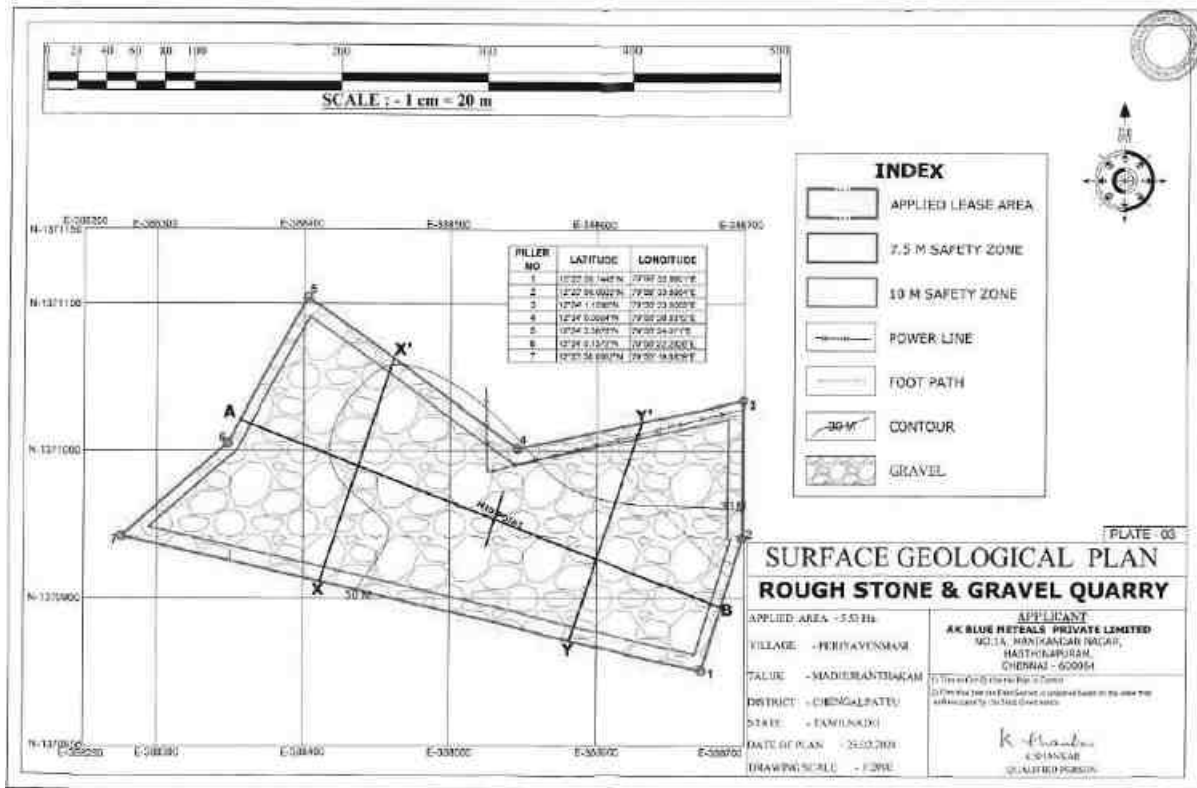
The area is a host of wide range of metamorphic rocks in peninsular gneissic complex. These rocks are extensively weathered and overlain by the recent valley fills and alluvium at places. The geological formations found in the district are Archaean rocks like Gneisses, Granites, Charnockite, granulites and calc-gneisses. The younger formations are Quartz veins and



**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.045 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

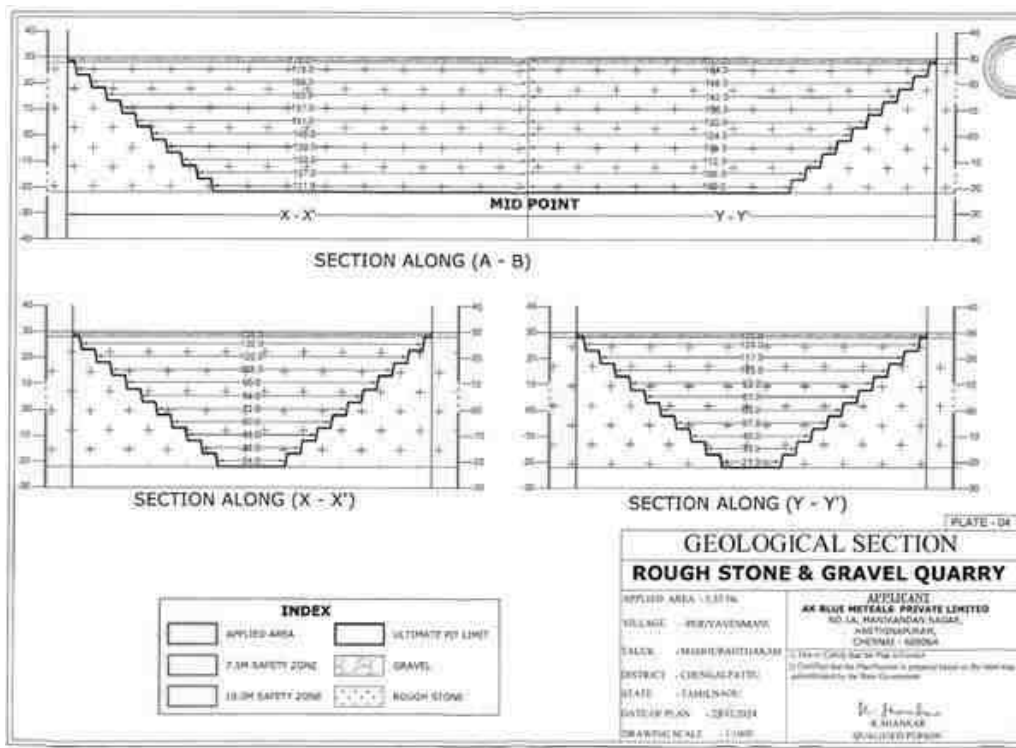
pegmatite. The rock type noticed in the applied lease area is Charnockite which contains mostly Quartz and Feldspar with some ferromagnesian minerals. The Charnockite is part of peninsular Gneisses and is subjected to higher level of metamorphism. The strike of the Charnockite formation in North -South with dipping towards East at 45°.

**Figure 2.10: Surface Geological Plan– AK Blue Metals Pvt. Ltd.**

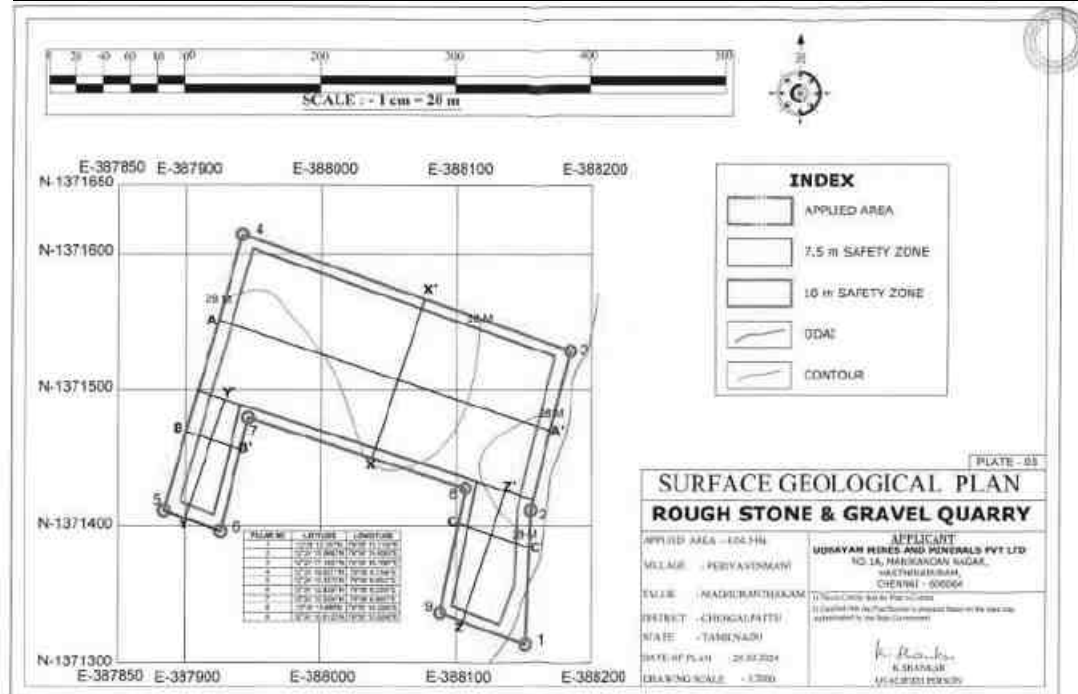


**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.045 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

**Figure 2.11: Surface Geological Cross Section – AK Blue Metals Pvt. Ltd.**

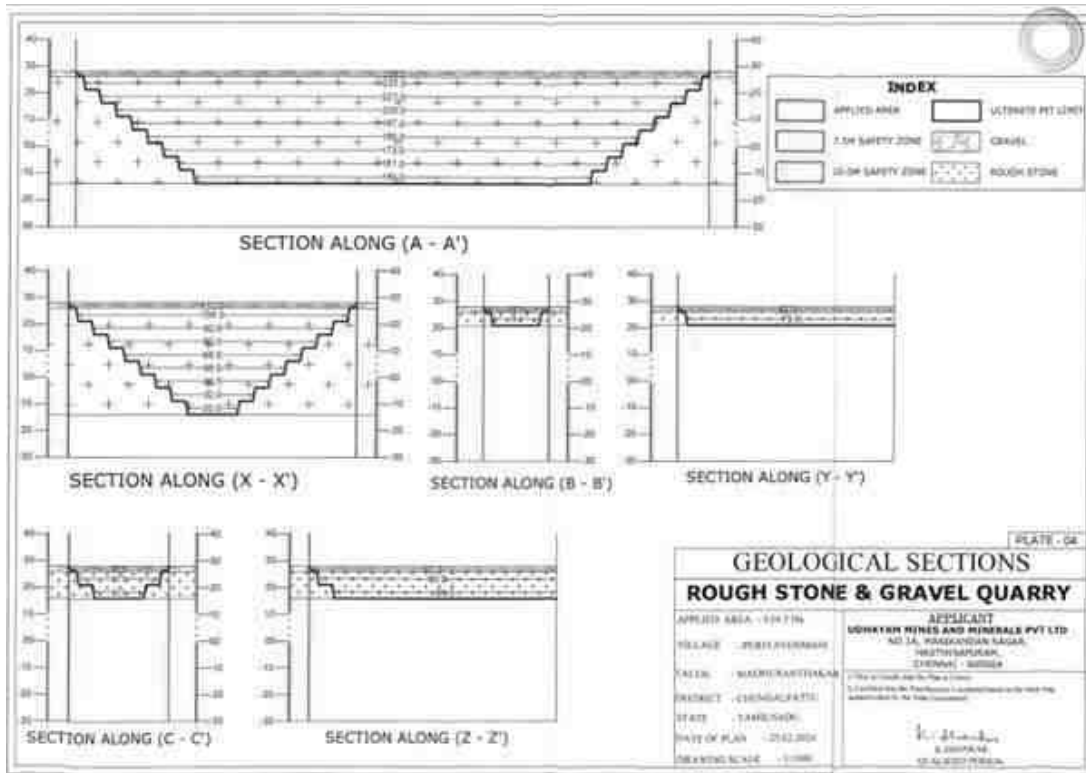


**Figure 2.12: Surface Geological Plan– Udhayam Mines and Minerals Pvt. Ltd.**



**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.045 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

**Figure 2.13: Surface Geological Cross Section - Udhayam Mines and Minerals Pvt. Ltd.**



**2.6 SIZE AND MAGNITUDE OF THE OPERATION:**

- The proposed mining will be done by open cast semi mechanized mining method.
- Life of mine will be 10 years.
- For Roughstone and Gravel Quarry of AK Blue Metals Private Limited, during the plan period of 5 years it is proposed to mine out 7,87,650m<sup>3</sup> of Roughstone and 91,518m<sup>3</sup> of gravel upto a depth of 27m. Overall, 11,12,850m<sup>3</sup> of Roughstone and 91,518m<sup>3</sup> of Gravel will be mined out during the 10 years period with the peak production capacity of 1,61,130m<sup>3</sup> of roughstone and 49,128m<sup>3</sup> of gravel.
- For Roughstone and Gravel Quarry of Udhayam Mines and Minerals Private Limited, during the plan period of 5 years it is proposed to mine out 3,20,730m<sup>3</sup> of Roughstone and 63,584m<sup>3</sup> of gravel upto a depth of 17m. Overall, 5,33,830m<sup>3</sup> of Roughstone and 63,584m<sup>3</sup> of Gravel will be mined out during the 10 years period with the peak production capacity of 68,000m<sup>3</sup> of roughstone and 30,116m<sup>3</sup> of gravel.





**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.04.5 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

- There is no waste generation anticipated in this quarry operation since the entire excavated material will be transported to buyers.

**2.6.1 RESERVES:**

**Table 2.5: Geological and Mineable Reserves**

Type of reserves	Roughstone and Gravel Quarry of AK Blue Metals Pvt. Ltd.		Roughstone and Gravel Quarry of Udhayam Mines and Minerals Pvt. Ltd.	
	Rough stone (m <sup>3</sup> )	Gravel(m <sup>3</sup> )	Rough stone (m <sup>3</sup> )	Gravel(m <sup>3</sup> )
Geological Resources	27,65,700	1,10,628	13,34,910	80,916
Mineable reserves	11,12,850	91,518	5,33,830	63,584

The mineable reserves is arrived after considering the safety distance as per the Precise area letter.

**2.6.2 MINING METHOD:**

Opencast mechanized mining using jackhammer drilling, blasting, excavation through excavator & mineral transport through tippers will be carried out. The top gravel is soft and can be directly excavated. The rough stone below will be blasted and then excavated. Bench height of 5.0m & 5m width is considered.

**Table 2.6: Details of Equipments**

EQUIPMENT	CAPACITY	Roughstone and Gravel Quarry of AK Blue Metals Pvt. Ltd.	Roughstone and Gravel Quarry of Udhayam Mines and Minerals Pvt. Ltd.
		REQUIREMENT	REQUIREMENT
Jack Hammer	32mm Dia Hole	6	6
Compressor	400psi	2	2
Excavator	100m <sup>3</sup> /hr	1	1
Tippers	10/20Tons	4	4

**2.7 PROPOSED SCHEDULE FOR APPROVAL AND IMPLEMENTATION:**

The proponents propose to implement the production immediately after obtaining all the statutory approvals such as CTE, CTO, etc. The proponent will comply with the environmental clearance conditions during mining operations. The schedule of project implementation envisaged for this project is provided below. This is a tentative schedule subject to various factor, hence unforeseen variations may occur.



**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.04.5 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

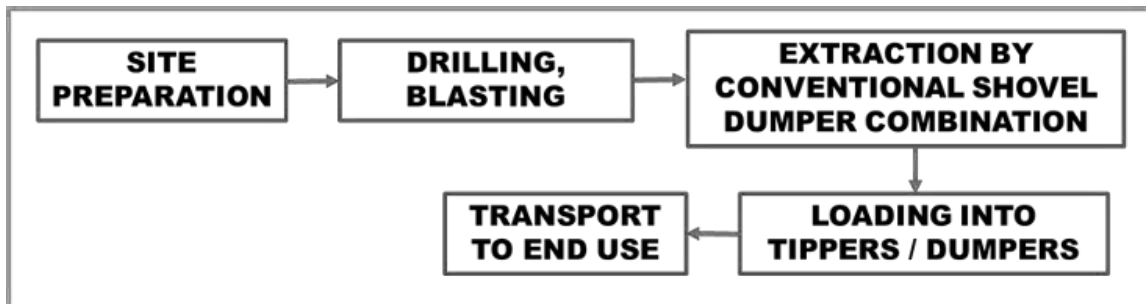
**Table 2.7: Proposed Schedule of Implementation**

Activities	Months					
	Zero Date	1	2	3	4	5
Obtaining Environmental Clearance						
Obtaining Consent from State Pollution Control Board						
Lease Execution						
Equipment mobilization and Commencement of Mining activity after following all the Statutory Requirements						

**2.8 TECHNOLOGY AND PROCESS DESCRIPTION:**

The quarry operations involve drilling, blasting, excavation, loading and transportation of Roughstone to buyers. The production of Roughstone in this quarry involves jackhammer drilling and blasting. The primary boulders are removed from the pits by excavators and further made to smaller sizes by rock breakers attached in excavators. It is a conventional opencast semi mechanized method of mining. The process flow diagram of this project is provided below.

**Figure 2.14: Process Flow Diagram**



**2.9 PROJECT DESCRIPTION:**

**2.9.1 PAST PRODUCTION:**

Both these quarries are proposed. As such, no mining activities have been carried out in either of the lease areas.

**2.9.2 PLAN PERIOD:**

In the Roughstone and Gravel Quarry of AK Blue Metals Private Limited, during the plan period of 5 years it is proposed to mine out 7,87,650m<sup>3</sup> of Roughstone and 91,518m<sup>3</sup> of gravel upto a depth of 27m. The yearwise production for both projects has been provided below:



**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.04.5 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

**Table 2.8: Production Schedule During Plan Period– AK Blue Metals Pvt. Ltd.**

Year	Roughstone (m3)	Gravel (m3)
1	157500	49128
2	158730	42390
3	161130	-
4	151260	-
5	159030	-
<b>Total</b>	<b>7,87,650</b>	<b>91,518</b>

In the Roughstone and Gravel Quarry of Udhayam Mines and Minerals Pvt. Ltd., during the plan period of 5 years it is proposed to mine out 3,20,730m<sup>3</sup> of Roughstone and 63,584m<sup>3</sup> of gravel upto a depth of 17m.

**Table 2.9: Production Schedule During Plan Period– Udhayam Mines and Minerals Pvt. Ltd**

Year	Roughstone (m3)	Gravel (m3)
1	62400	26400
2	65870	30116
3	64200	7068
4	60260	0
5	68000	0
<b>Total</b>	<b>320730</b>	<b>63584</b>

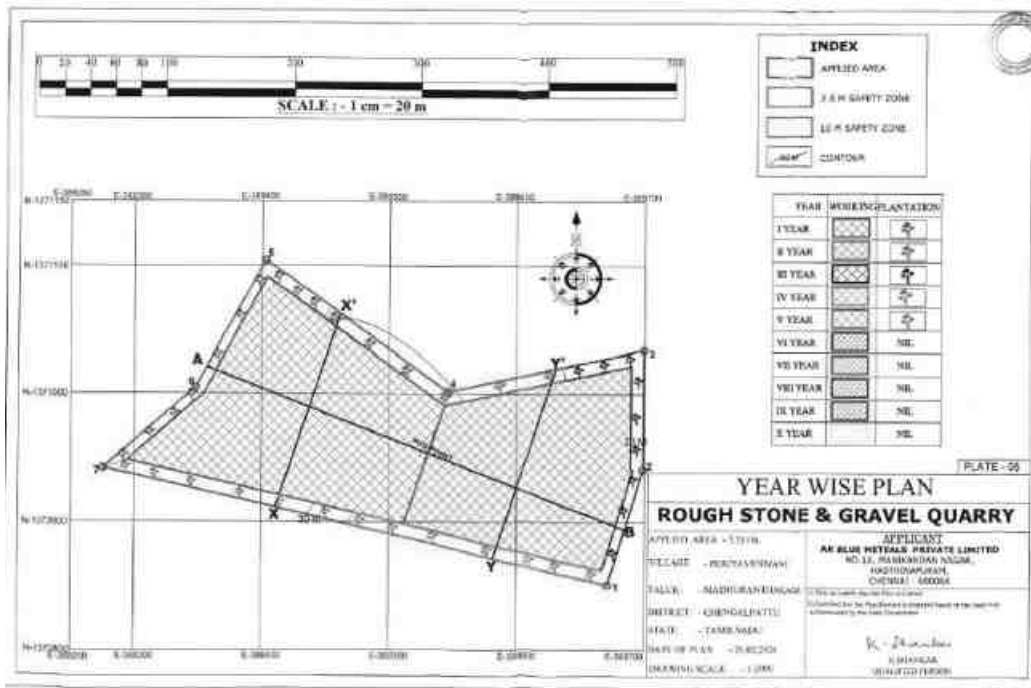
**Waste Disposal during Plan Period:**

There is no waste generation anticipated in these quarries since the entire excavated material will be utilized. The top overburden in the form of Gravel and weathered rock will be loaded into tipper and marketed to needy customers on payment of necessary Fees to Government. The excavated rough stone will be excavated and loaded into tipper to the needy buyers for producing crusher aggregates, M Sand.

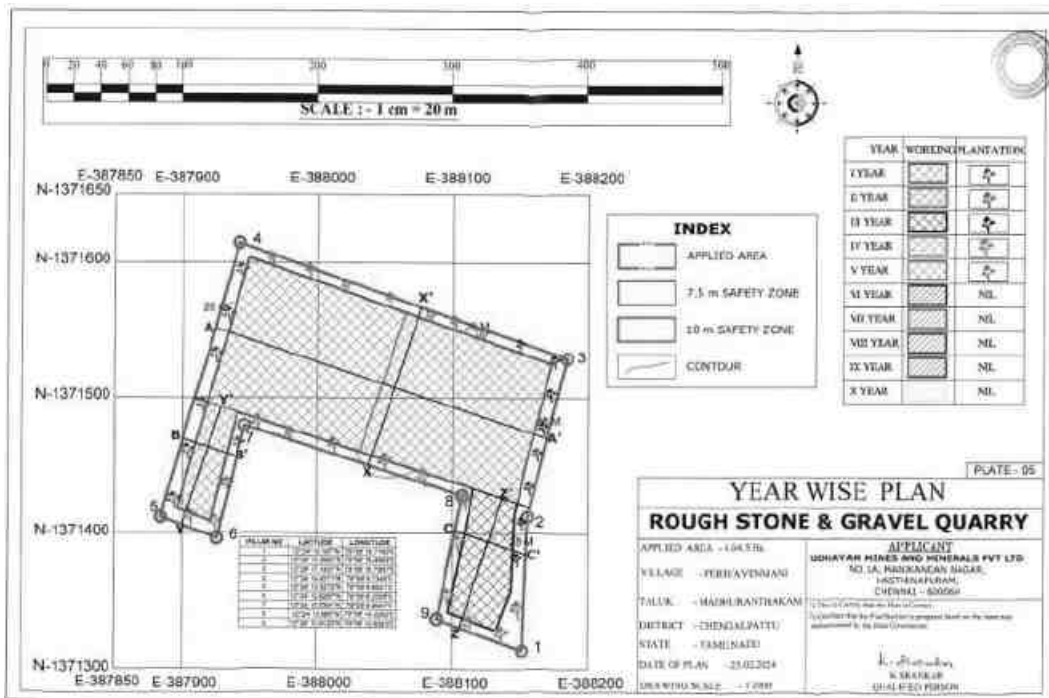


**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.045 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

**Figure 2.15: Year wise Plan - AK Blue Metals Pvt. Ltd.**

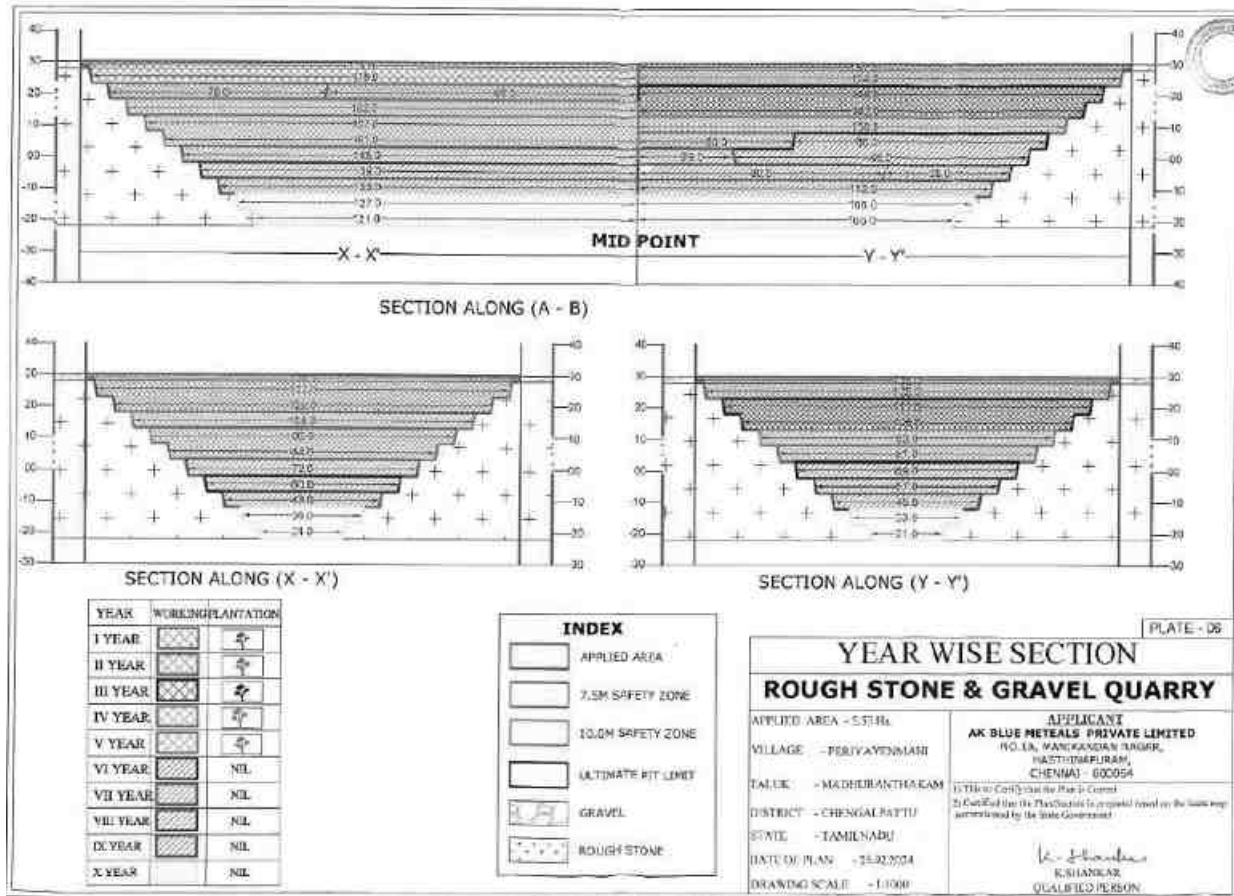


**Figure 2.16: Year wise Plan - Udhayam Mines and Minerals Pvt. Ltd**



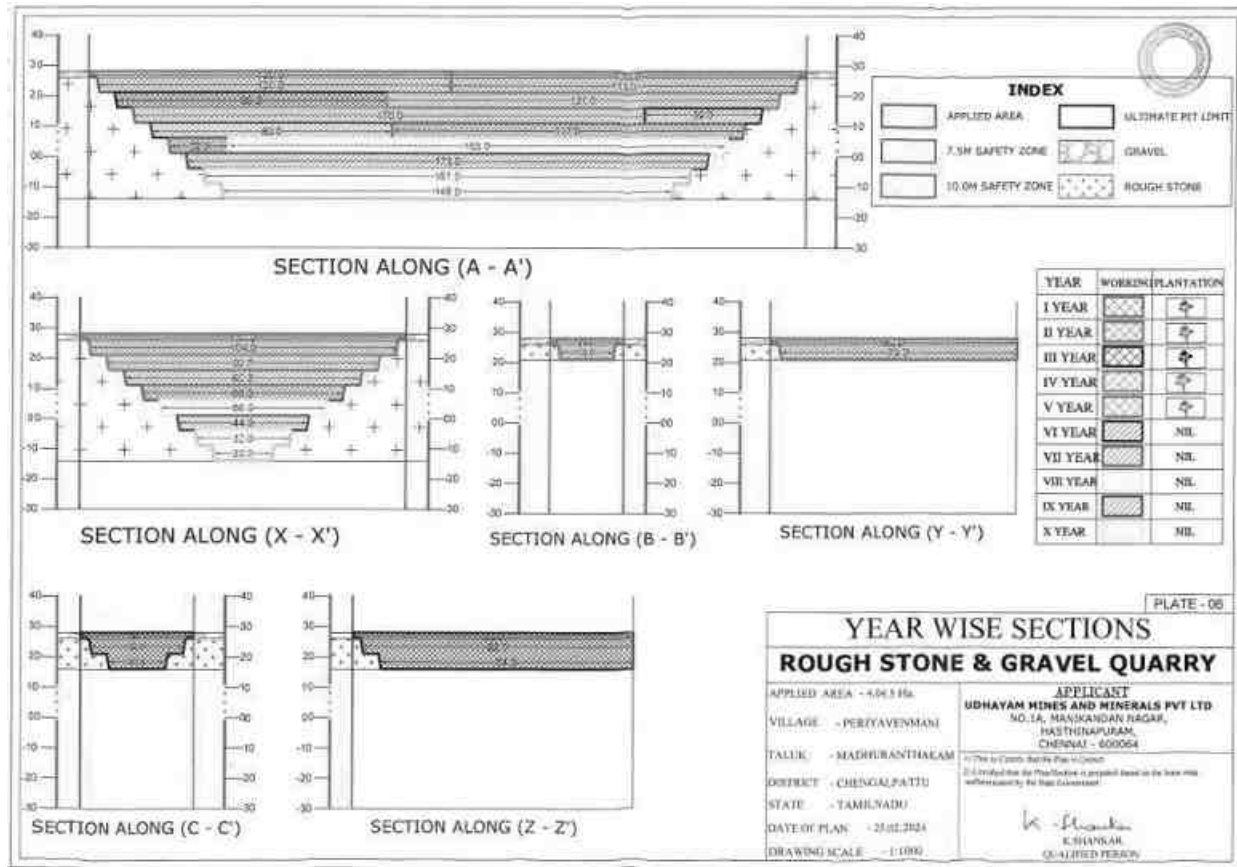
**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.045 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

**Figure 2.17: Yearwise Cross Section - AK Blue Metals Pvt. Ltd.**



**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.04.5 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

**Figure 2.18: Yearwise Cross Section - Udhayam Mines and Minerals Pvt. Ltd**



**2.9.3 CONCEPTUAL PERIOD:**

In the Roughstone and Gravel Quarry of AK Blue Metals Private Limited, overall 11,12,850m<sup>3</sup> of Roughstone and 91,518m<sup>3</sup> of Gravel will be mined out during the 10 years period. The production schedule during the conceptual period is provided below:

**Table 2.10: Production Schedule during Conceptual Period - AK Blue Metals Pvt. Ltd.**

Year	Roughstone (m <sup>3</sup> )	Gravel (m <sup>3</sup> )
6	65175	--
7	62205	--
8	64500	--
9	67950	--
10	65370	--
<b>Total</b>	<b>3,25,200</b>	<b>--</b>



**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.04.5 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

**Table 2.11: Ultimate Pit Dimensions- AK Blue Metals Pvt. Ltd.**

Length (m)	Width (m)	Depth (m)
335	157	52

In the Roughstone and Gravel Quarry of Udhayam Mines and Minerals Private Limited, overall 5,33,830m<sup>3</sup> of Roughstone and 63,584m<sup>3</sup> of Gravel will be mined out during the 10 years period. The production schedule during the conceptual period is provided below:

**Table 2.12: Production Schedule during Conceptual Period - Udhayam Mines and Minerals Pvt. Ltd**

Year	Roughstone (m <sup>3</sup> )	Gravel (m <sup>3</sup> )
6	42800	--
7	45380	--
8	46200	--
9	38060	--
10	40660	--
<b>Total</b>	<b>213100</b>	<b>--</b>

**Table 2.13: Ultimate Pit Dimensions- Udhayam Mines and Minerals Pvt. Ltd**

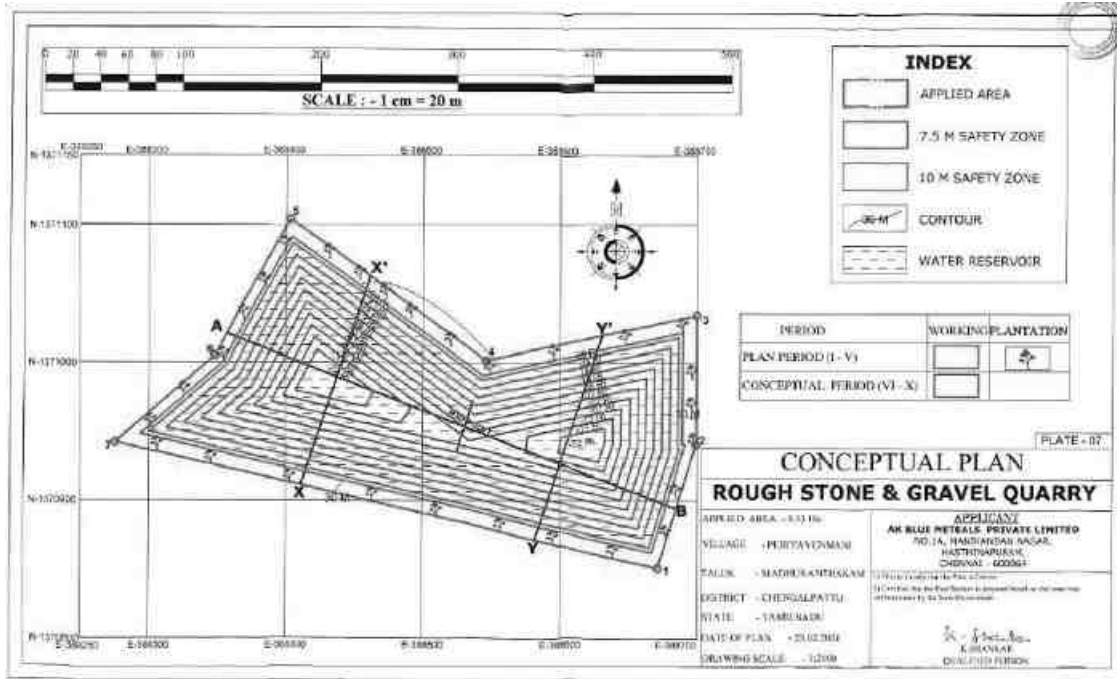
Length (m)	Width (m)	Depth (m)
239	130 (Ave)	42

The ground water table on the surface in this area is quite deeper. Hence, ground water intersection in not envisaged. The Conceptual Plan & Cross section are shown below:

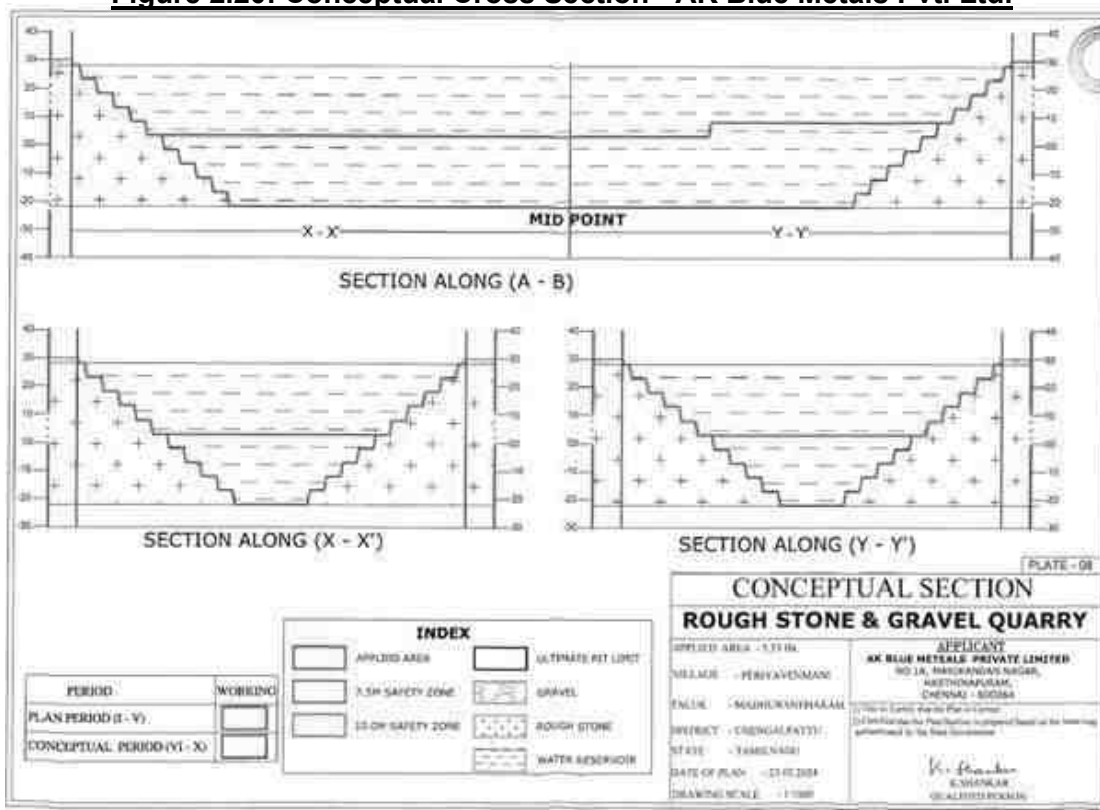


**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.045 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

**Figure 2.19: Conceptual Plan - AK Blue Metals Pvt. Ltd.**



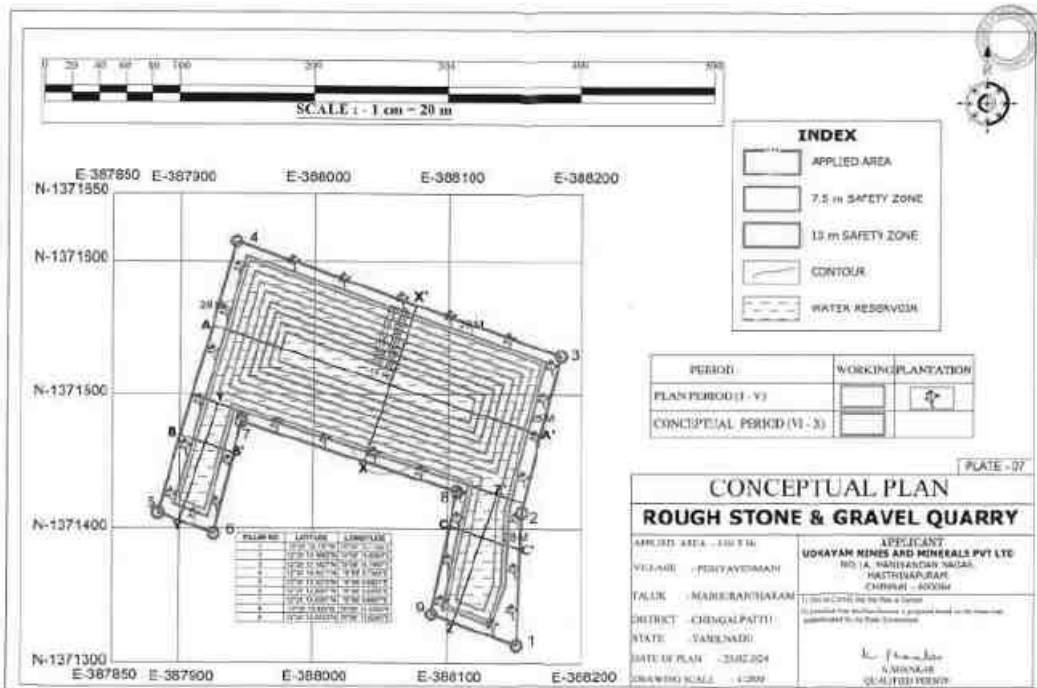
**Figure 2.20: Conceptual Cross Section - AK Blue Metals Pvt. Ltd.**



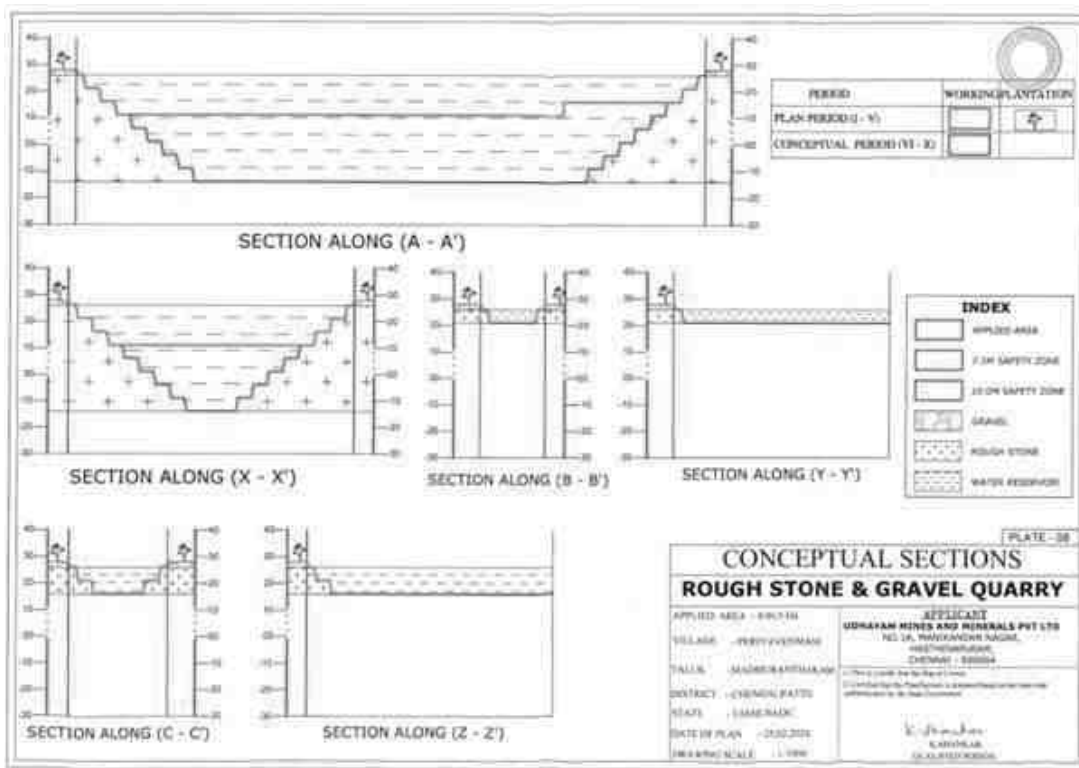


**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.045 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

**Figure 2.21: Conceptual Plan - Udhayam Mines and Minerals Pvt. Ltd**



**Figure 2.22: Conceptual Cross Section- Udhayam Mines and Minerals Pvt. Ltd**



**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.045 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

**2.9.4 LAND DEGRADATION/UTILIZATION:**

The land use pattern at present and at the end of the quarrying period has been provided below.

**Table 2.14: Land Use - AK Blue Metals Pvt. Ltd.**

S.No	Land Use	Present (Ha)	At the end of plan period (Ha)	Conceptual Period (Ha)
1	Quarrying Pit	--	4.50	4.50
2	Green Belt	--	1.03	1.03
3	Unutilized	5.53	--	--
	<b>Total</b>	<b>5.53</b>	<b>5.53</b>	<b>5.53</b>

At the end of the lease period, 4.50Ha of mined out area will be left as water body and 1.03 Ha will be greenbelt area.

**Table 2.15: Land Use - Udhayam Mines and Minerals Pvt. Ltd**

S.No	Land Use	Present (Ha)	At the end of plan period (Ha)	Conceptual Period (Ha)
1	Quarrying Pit	--	3.100	3.100
2	Green Belt	--	0.945	0.945
3	Unutilized	4.045	--	--
	<b>Total</b>	<b>4.045</b>	<b>4.045</b>	<b>4.045</b>

At the end of the lease period, 3.100Ha of mined out area will be left as water body and 0.945 Ha will be greenbelt area.

**2.9.5 PROJECT REQUIREMENTS:**

**Table 2.16: Project Requirements**

Project Name	Roughstone and Gravel Quarry of AK Blue Metals Private Limited	Roughstone and Gravel Quarry of Udhayam Mines and Minerals Pvt. Ltd
<b>Manpower</b>	12 persons directly and 50 people indirectly.	12 persons directly and 50 people indirectly.
<b>Water Requirement and Source</b>	<b>Water Requirement: 8 KLD</b>	
	<b>Details</b>	<b>Quantity (KLD)</b>
	Drinking water and Domestic Use	1.0 KLD
	Dust Suppression	5.0 KLD
	Green belt	2.0 KLD
	<b>Total</b>	<b>8.0KLD</b>
	<b>Water Requirement: 8 KLD</b>	
	<b>Details</b>	<b>Quantity (KLD)</b>
	Drinking water and Domestic Use	1.0 KLD
	Dust Suppression	5.0 KLD
	Green belt	2.0 KLD
	<b>Total</b>	<b>8.0KLD</b>



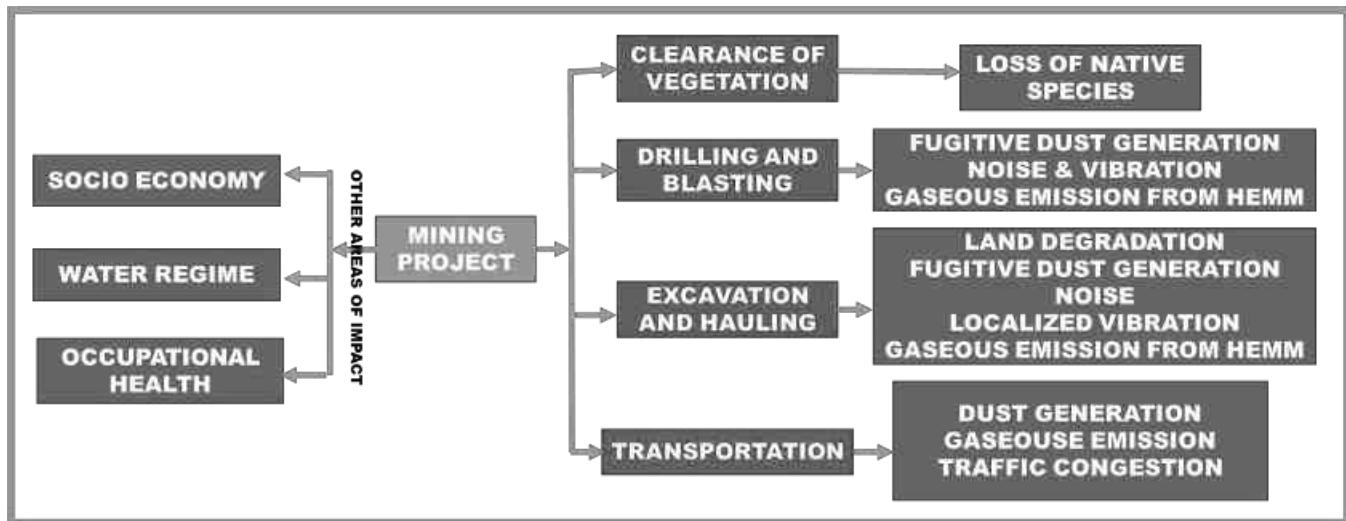
**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.04.5 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

	<b>Source:</b> The required water will be procured initially from outside agencies. Later Rain water harvested in the mine sump can also be used.	<b>Source:</b> The required water will be procured initially from outside agencies. Later Rain water harvested in the mine sump can also be used.
<b>Power Requirement</b>	No electricity needed for mining operation. The minimum power requirement for office, etc will be met from state grid.	No electricity needed for mining operation. The minimum power requirement for office, etc will be met from state grid.
<b>Site Services</b>	This is a proposed project. Site services like mine office, first aid room, rest shelters, toilets etc. will be provided as semi-permanent structures.	This is a proposed project. Site services like mine office, first aid room, rest shelters, toilets etc. will be provided as semi-permanent structures.
<b>Project Cost</b>	Rs.267.40 Lakhs	Rs.247.33 Lakhs
<b>Funds allocated for socio-economic development</b>	Rs.5.0 Lakhs is allocated under CER budget.	Rs.5.0 Lakhs is allocated under CER budget.

**2.10 DESCRIPTION OF MITIGATION MEASURES:**

Scientific and systematic development of mines will be carried out by the project authorities for preserving as well as improving the environmental conditions in and around the mining lease area. Elaborate analysis on impacts and mitigation measures to be adopted on implementation of this project and the same has been dealt in Chapter- IV.

**Figure 2.23: Schematic Diagram of mining activities and associated impacts**



**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.04.5 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

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**2.11 ASSESSMENT OF NEW & UNTESTED TECHNOLOGY:**

There is no new technology that is being implemented. Opencast method of mining which is the proposed method of mining is a proven technology which is technologically and economically viable. . No major technological failures are anticipated. A disaster management plan shall be put into place to take care of any unforeseen situation.

**2.12 CONCLUSION:**

As good environmental preservation is one of the prime motive of the project proponent. It is expected that the project activity will not have any major impact on environmental equilibrium in the study area.

\* \* \* \* \*



*Creating Possibilities*

# **CHAPTER - III**

## **DESCRIPTION OF ENVIRONMENT**

**CHAPTER 3**

**DESCRIPTION OF ENVIRONMENT**

**3.1 GENERAL:**

The existing environmental baseline data for the various environmental components were collected in the study area for the purpose of assessing the impact on present environment due to the project activities.

Monitoring was carried out systematically and meticulously as per relevant IS codes, CPCB, MoEF&CC guidelines during **Summer Season (March to May 2024)** The details of the study are given in this chapter.

For the purposes of this study, the area has been divided into two zones, namely, core and buffer zones. The combined lease area is considered to be the core zone while the buffer zone encompasses a 10km radius from the periphery of the core zone. The details of villages falling in the study area and other features are given in Index Plan in **Figure No - 3.1**

The primary data collection was done by means of field monitoring and the secondary data collection was obtained from published sources and Government documents. The details of the baseline data collection which has been elaborated through the course of this chapter has been concised below:

**Table 3.1: Type of Baseline Data**

S.No	Studies	Parameters / Study	Location
1	Socio Economy	Demographic Data from Census 2011	Core and Buffer Zone
		Sample Survey	Buffer Zone
2	Micro Meteorology	Rainfall Data from IMD, chengalpattu	Chengalpattu
		Temperature, Humidity, Wind Speed, Wind Direction	1 Representative Location
3	Ambient Air Quality	PM10, PM2.5, SO2, NOx, CO	1 Core Zone, 4 Buffer Zone
4	Water Quality	Physical and Chemical Parameters	4 Buffer Zone
5	Noise Levels	Ambient Noise	1 Core Zone, 4 Buffer Zone
6	Soil Quality	Physical and Chemical Parameters	2 Core Zone, 3 Buffer Zone
7	Land Use and Land Cover	Land use pattern within 10km study area using RS Satellite	Buffer Zone
		Land use based on Census 2011	Core and Buffer Zone
8	Biological Environment	Flora and Fauna	Core Zone and Buffer Zone
9	Hydrology & Hydro Geology	Hydrogeological profile of the area	Core Zone and Buffer Zone



**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.045 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

**Figure 3.1: Study Area Map**



**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.04.5 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

**Table 3.2: Environmental Setting of the Study Area**

S.No	Particulars	Details	AK Blue Metals		Udhayam Mines and Minerals	
			Distance	Direction	Distance	Direction
<b>I</b>	<b>Connectivity</b>					
1.	Highway	SH-115	2.1Km	SW	2.2Km	SW
		SH-117	8.7Km	W	8.4Km	W
2.	Railway Station	Madhuranthakam	14 Km	NW	14 Km	NW
3.	Airport	Chennai	67Km	NE	67Km	NE
4.	Village	Nagamalai	0.80Km	SE	1.50Km	SE
		Venmari	0.7Km	SW	0.8Km	SW
		Periyavenmani	0.8Km	NE	1.3Km	NE
		Chinnavelikadu	0.7Km	NW	1.3Km	NW
5.	Town/City	Cheyyur	5.7Km	SE	6.4Km	SE
<b>II</b>	<b>Environmental Features</b>					
6.	Water Bodies	Madurantakam High Level Channel	6.2Km	NE	6.3Km	NE
7.	Reserve Forests	Sittarkadu RF	6.5Km	S	6.9Km	S
		Palavur RF	7.7Km	W	7.4Km	W
		Kollattanallur RF	7.9Km	SW	7.9Km	SW
<b>III</b>	<b>Sensitive Areas</b>					
8.	Notified Archaeologically important places, Monuments	Nil within 10km radius	--	--	--	--
9.	Local Places of Historical and Tourism Interest	Jain Caves	1.2 Km	SE	1.8Km	SE
10.	Environmental sensitive areas, Protected areas as per Wildlife Protection Act, 1972*	Nil within 10km radius	--	--	--	--
11.	Defense Installations	Nil within 10km radius	--	--	--	--
12.	Other industries	Other than crushers, Roughstone quarries, no other major industries are located in the study area.	--	--	--	--

\*Tiger reserve, Elephant reserve, Biospheres, National parks, Wildlife sanctuaries, community reserves and conservation reserves





**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.04.5 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

**3.2 SOCIO-ECONOMIC CONFIGURATIONS OF THE AREA:**

**3.2.1 GENERAL:**

The Socio-Economic details of the study area are collected through:

- Identification of villages falling from the study area map with combined Taluk map.
- Collection of primary data through sample survey, village meetings and focused group discussion.
- Collection of the demographic pattern of villages falling in the area through NIC 2011 census data.
- Occupational structure of villages falling in the study area through NIC 2011 census data.
- Details of the amenities available in villages falling in the study area through NIC 2011 census data. The findings of the study are illustrated below:

**3.2.2 SECONDARY DATA DESCRIPTION:**

The proposed quarries are located in in Periyavenmani Village, Madhuranthakam Taluk, Chengalpattu District. Based on 2011 census data, in the 10km radius there are 64 Rural villages from Two Taluks namely Maduranthakam & Cheyyur Taluk, (Kanchipuram)Chengalpattu District. The demographic profile of the study area is given below:

**Table 3.3: Social, Economic and Demographic Profile of the Study Area**

Details	Population	Percentage
<b>A. Gender-wise distribution</b>		
Male Population	43679	50.02
Female Population	43652	49.98
<b>Total</b>	<b>87331</b>	<b>100</b>
<b>B. Caste-wise population distribution</b>		
Scheduled Caste	47611	54.52
Scheduled Tribes	946	1.08
Other	38774	44.40
<b>Total</b>	<b>87331</b>	<b>100</b>
<b>C. Literate and Illiterate population</b>		
Literate Males	11725	<b>13.43</b>
Literate Females	17450	<b>19.98</b>
<b>Total Literate Population</b>	<b>29175</b>	<b>33.41</b>



**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.04.5 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

Details	Population	Percentage
Others Males	31954	36.59
Others Females	26202	30.00
<b>Others Population</b>	<b>58156</b>	<b>66.59</b>
<b>Total</b>	<b>87331</b>	<b>100</b>
<b>D. Occupational structure</b>		
Main workers	27098	31.00
Marginal workers	17877	20.50
<b>Total Workers</b>	<b>44975</b>	<b>51.50</b>
<b>Total Non-workers</b>	<b>42356</b>	<b>48.50</b>
<b>Total</b>	<b>87331</b>	<b>100</b>

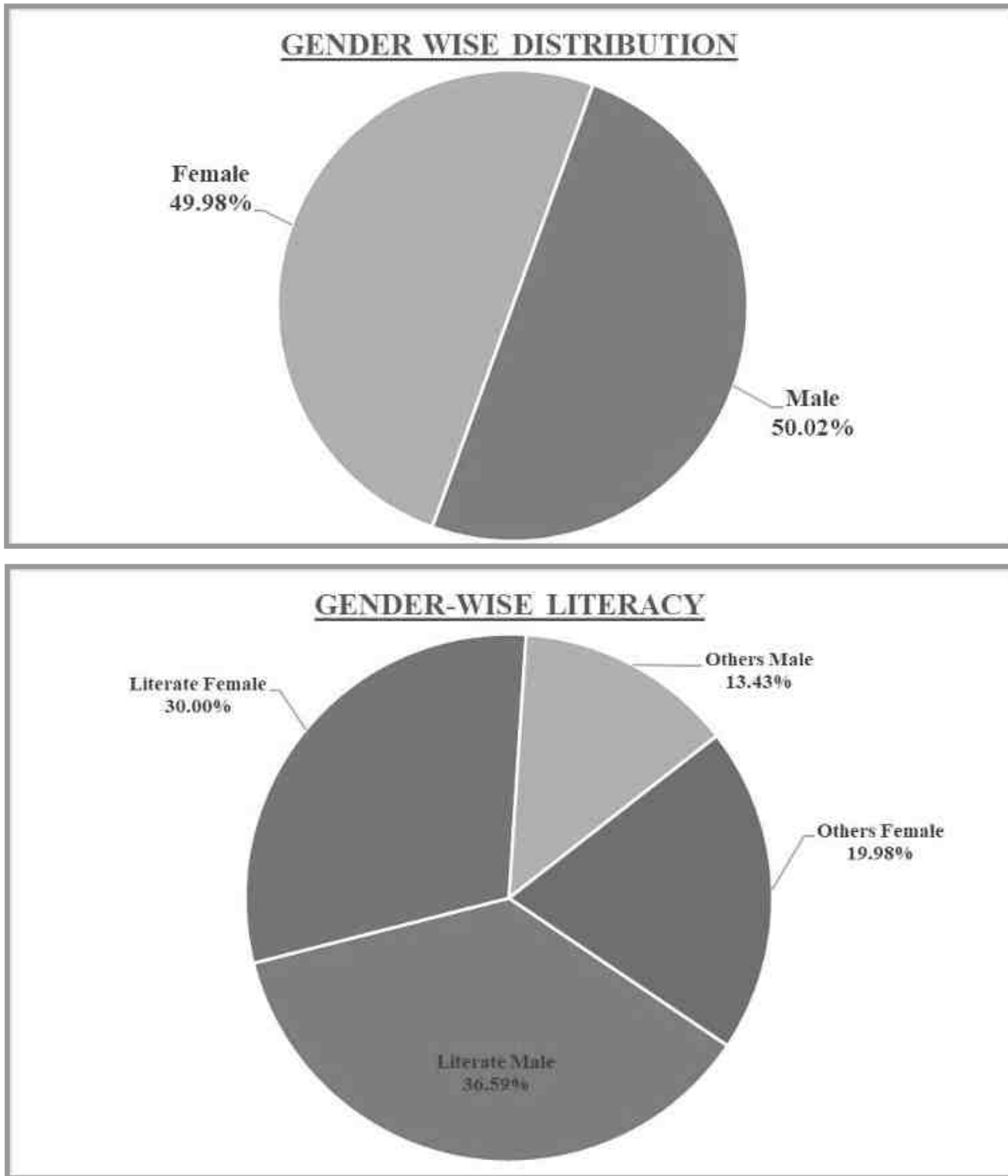
The total population of these 64 rural villages is 87331 in which the male population is 43679 (50.02%) and the female population is 43652 (49.98%). This shows that the male and female population ratio is almost equal. Among the total population 1.08% belong to Scheduled Tribes, 54.52 % are Scheduled Caste and the balance 44.40 % people belong to other castes. Among the total population, 66.59% of the people are literate.

Among the total population, 36.59% are literate males and 30.0% are literate females. This shows that the male literates are slightly more than the female literates.

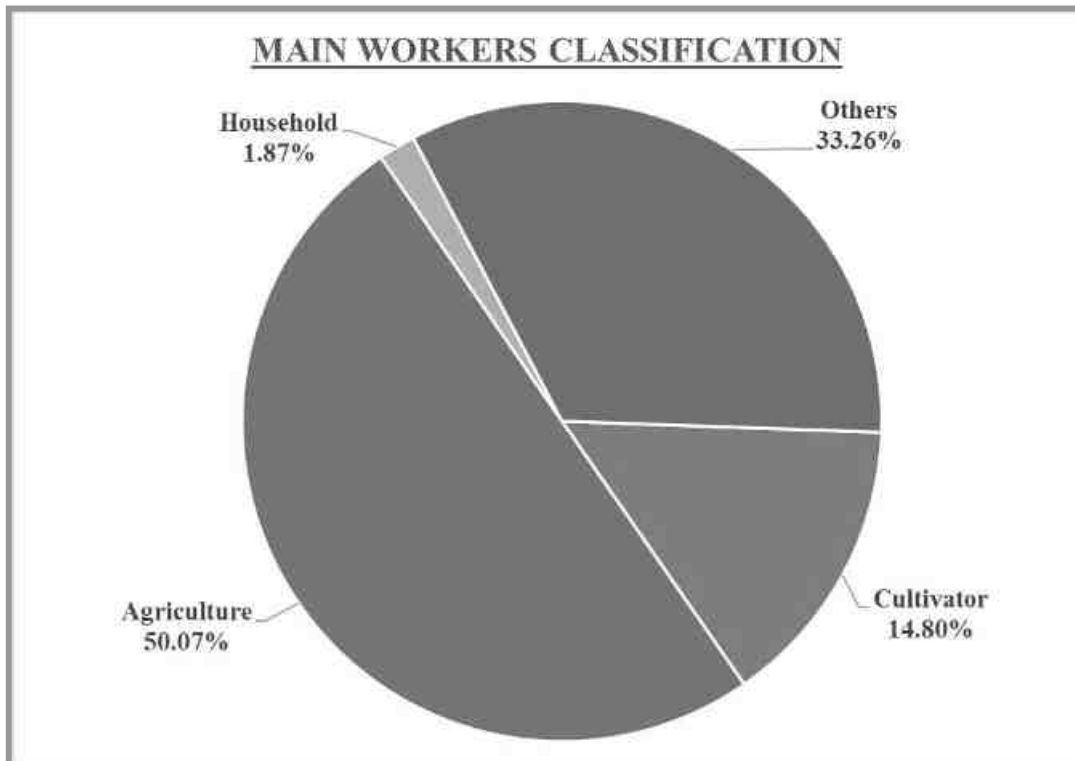
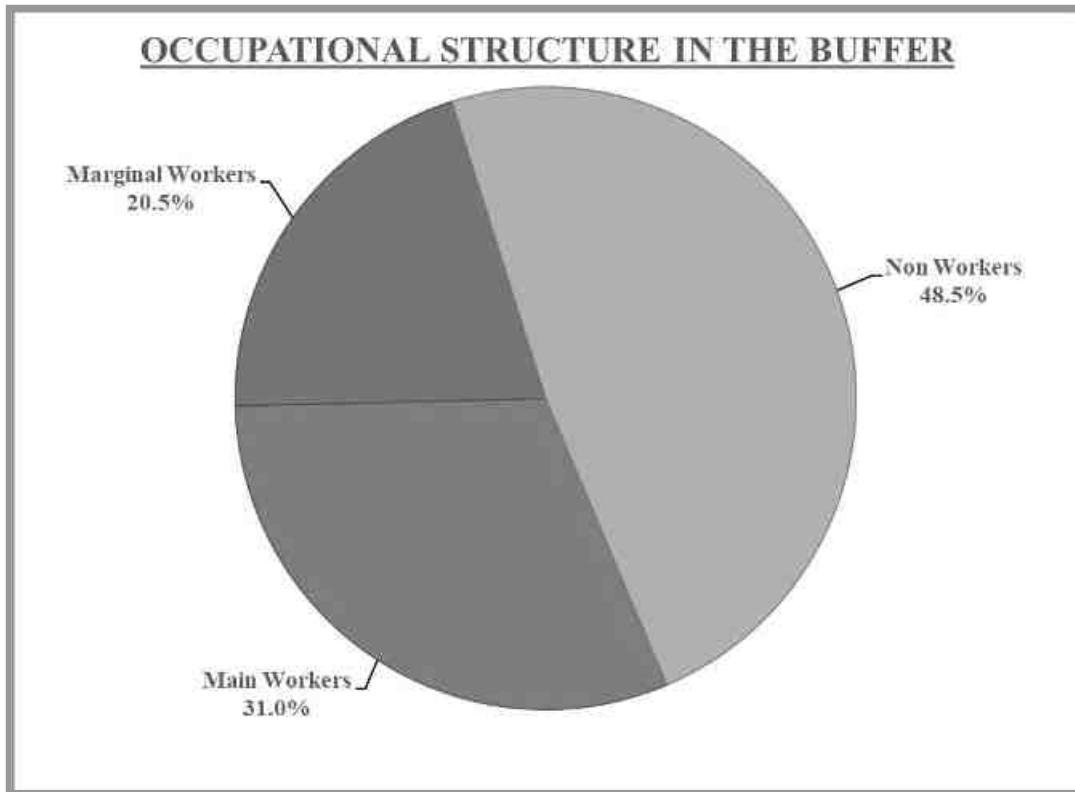
The village wise population, literacy levels and occupational structure details area given in **Annexures 5 and 6**. The demographic structure within the buffer zone is shown diagrammatically in **Figure No – 3.2**.



**Figure 3.2: Demographic Structure in Buffer Zone**



**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.04.5 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**



**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.04.5 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

**3.2.3 DETAILS OF AMENITIES:**

Based on 2011 census data, regarding the educational facilities, 64 rural villages out of 64 rural villages have educational facilities. There are totally 77 Primary Schools functioning in these 64 rural villages. Among them 40 villages have one primary school, 6 villages have 2 primary schools, 5 villages have 3 primary schools, 1 villages have 4 primary schools, 1 villages has 6 primary schools.

**Table 3.4: Primary Schools in the Buffer Zone Rural Villages**

S.No	No of Rural Villages	Number of primary schools	Total
1	11	0	0
2	40	1	40
3	6	2	12
4	5	3	15
5	1	4	4
6	0	5	0
7	1	6	6
<b>Total</b>	<b>64</b>		<b>77</b>

**Table 3.5: Education Facility Availability**

Particulars	Available in village
Govt Primary School	53
Govt Middle School	23
Govt Secondary School	7
Govt Senior Secondary School	4

With regards to educational facilities, from Primary School level to Senior Secondary School level, there is availability of some schools in the area.

**Table 3.6: Healthcare Amenities Availability**

Particulars	Available in village
Community Health Centre	2
Primary Health Centre	5
Primary Health Sub Centre	14
Maternity And Child Welfare Centre	7
TB Clinic	5
Hospital Allopathic	0
Hospital Alternative Medicine	0
Dispensary	5
Veterinary Hospital	4
Mobile Health Clinic	0
Family Welfare Centre	5



**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.04.5 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

Out of 64 villages, 24 villages have primary health sub centers. Better medical facilities are available in the nearby larger towns.

**Table 3.7: Infrastructure Facilities**

Particulars	Available in village
Tap Water-Treated	57
Covered Well	28
Hand Pump	20
Tube Wells/Borehole	23
Post office	3
Bus services	33
Railway station	0
Commercial Bank	2
Cooperative bank	11

The details of the educational, medical and infrastructural facilities available in the buffer zone is provided in **Annexures- 7-9**. Further developments in this area with respect to these various facilities has occurred over the years.

### 3.2.4 SAMPLE SURVEY:

Study of the nearby villages to know about socio-economic conditions, including aspirations and requirements of the people show the following:

- Entire study area is well developed with reasonably good amenities like approach road bus facility, electricity, mobile phone connectivity, public distribution system, banks etc.
- Majority of the people are small farmers; land labourers and others are working in companies. Other occupations include construction workers, vendors, etc.
- Agriculture is predominantly rainfed, tank fed and largely dependent on the rain water.
- Dominant agricultural activities area observed proximate to the available irrigation source.
- Due to inconsistent rainfall, non availability of adequate labours, poor economics and other issues agricultural activities have declined.
- Other allied activities livestock rearing and poultry farming are also found.
- Well, Bore well are the main source for drinking water. There are OHT's, Ground level tanks, public taps are available .



**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.045 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

**3.2.4.3 IDENTIFIED CER ACTIVITIES:**

The following activities are identified based on the survey, which will be modified and implemented based on the needs and requirements of the local people:

- Desilting of nearby eri and its strengthening
- Improvements in facilities in nearby schools



**NAGAMALAI VILLAGE – PRIMARY SCHOOL**



**CHINNA VENMANI VILLAGE**



**PERIYAVENMANI VILLAGE, HEALTH CENTRE**



**ARIYANUR VILLAGE, PRIMARY SCHOOL**



**ALAMPATTU VILLAGE, WATER TANK**



**ALAMPATTU VILLAGE, PRIMARY SCHOOL**



### **3.3 EXISTING ENVIRONMENTAL QUALITY**

#### **3.3.1 MICRO-METEOROLOGY**

##### **3.3.1.1 General:**

The meteorological conditions in an area regulate the dispersion of air pollutants being released into the atmosphere. The principal variables are horizontal convective transport i.e. wind speed and direction and vertical convective transport, i.e. mixing height, stability class and topography of the area.

##### **3.3.1.2 Historical Meteorological Data:**

###### **A. Cyclones And Depressions**

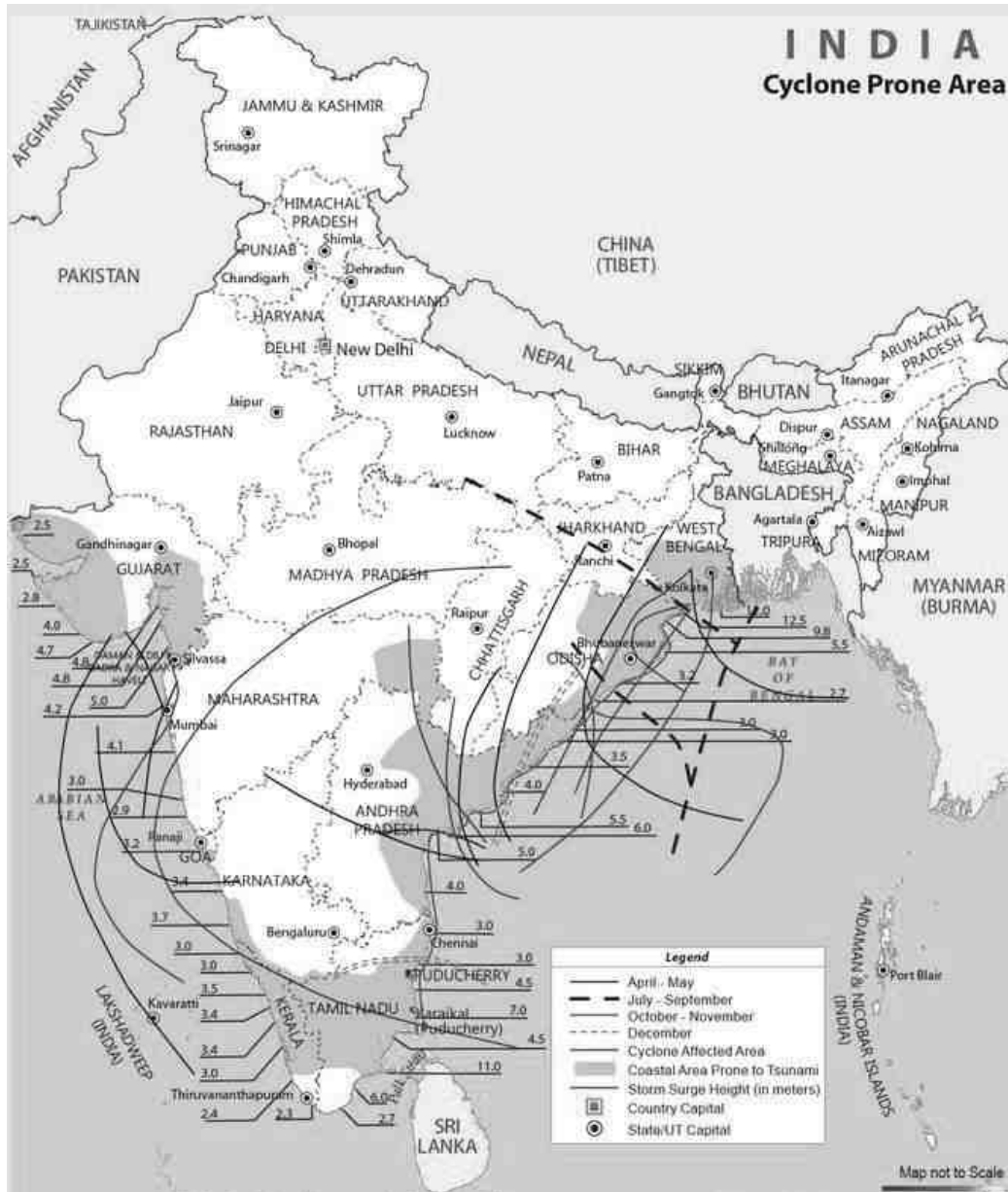
Cyclonic storms and depressions in Bay of Bengal affect the East Coast of India. Isolated ones, forming in January to March in the South Bay of Bengal move West-North-westwards and hit Tamil Nadu coast. In April and May, cyclonic storms and depressions form in the South and adjoining Central Bay and move initially to the Northwest, then North and then recurve to the Northeast striking the Arakan coasts in April and Andhra Pradesh (AP)-Orissa-West Bengal (WB) – Bangladesh coasts in May. Most of the monsoon (June – September) storms develop in the central and in the north bay and move west – north - westwards affecting AP – Orissa – WB coasts. Post monsoon (October – December) storms form mostly in the south and central Bay, recurve between 15° and 18° N affecting Tamil Nadu – AP – Orissa – WB – Bangladesh coasts. **Figure No - 3.3** depicts the history of cyclonic storms, which have struck the Indian coast during the months of October, November and December during the last 75 years. (**Source: Vulnerability Atlas of India series, above figure accessed from [www.maps of india.com](http://www.maps of india.com)**). East coast is prone to cyclonic storms round the year but mostly these occur prior to SW i.e., in May and after SW monsoon i.e., in October and November.





**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.04.5 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

**Figure 3.3: Cyclone Prone Areas**

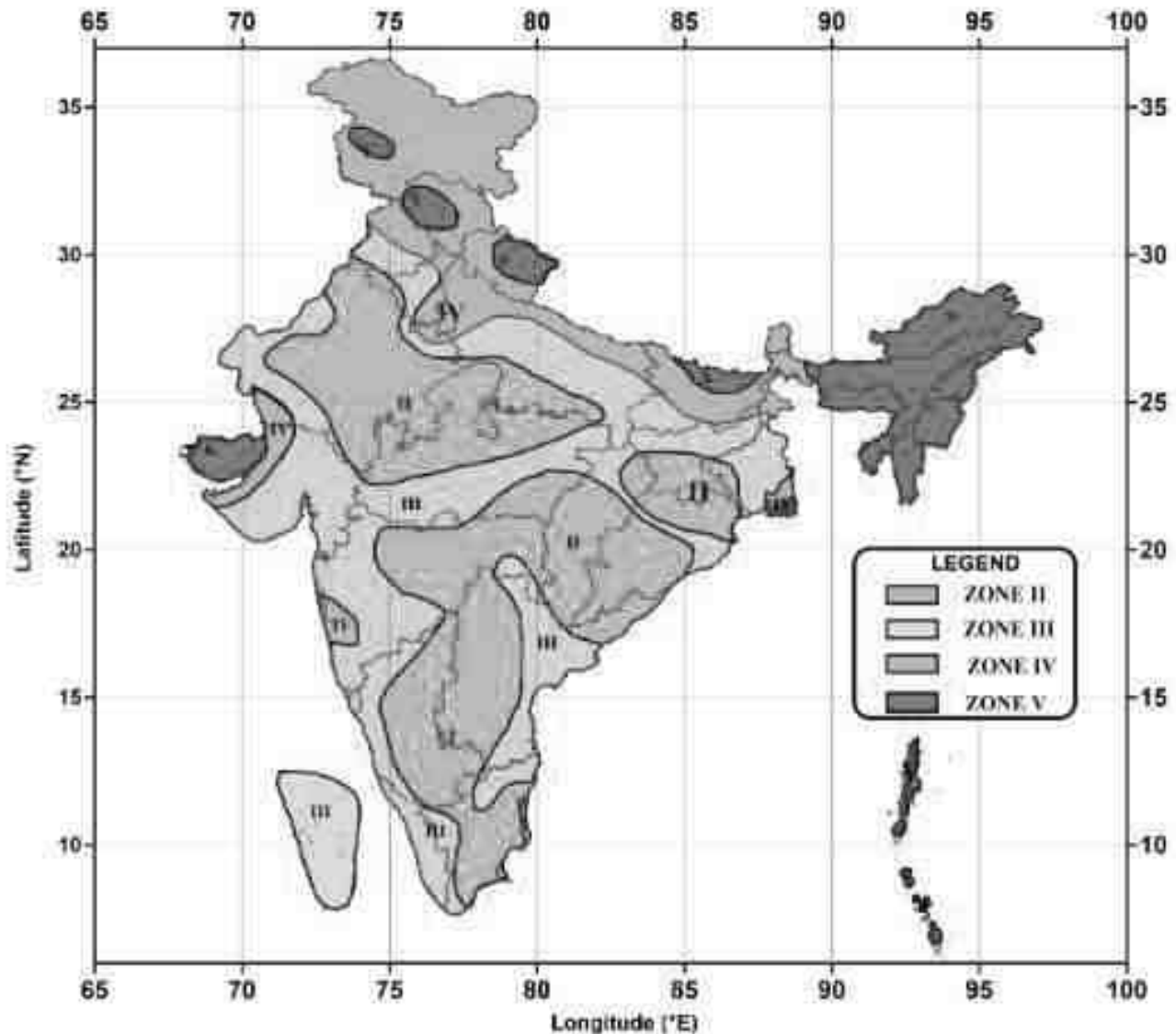


**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.04.5 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

**B. SEISMIC DATA**

From the seismic zone map of India as depicted in the **Figure No - 3.4**, it can be seen that the project site and study area falls in the Zone – II and is described as least active zone.

**Figure 3.4: Seismic Zone Map of India**



**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.04.5 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

**C. Climate and Rainfall Data:**

**Rainfall**

Kancheepuram district generally experiences hot and humid climatic conditions. The district receives the rain under the influence of both southeast and northeast monsoons. Most of the precipitation occurs in the form of cyclonic storm caused due to the depressions in Bay of Bengal chiefly during northeast monsoon period. The southwest monsoon rainfall is highly erratic and summer rains are negligible. The normal annual rainfall over the district varies from 1105 mm to 1214mm.

**Temperature**

High relative humidities between 58 and 84% prevail throughout the year. Relative humidity is maximum in the morning and minimum in the evening. The minimum and maximum temperature are 20°C & 37°C. The daytime heat is oppressive and the temperature is as high as 43°C. Rainfall data collected by kanchipuram Rain gauge station for the period of 2011 to 2023 is given in below Table:

**Table 3.8: Average Annual Rainfall Data (2011 – 2020)**

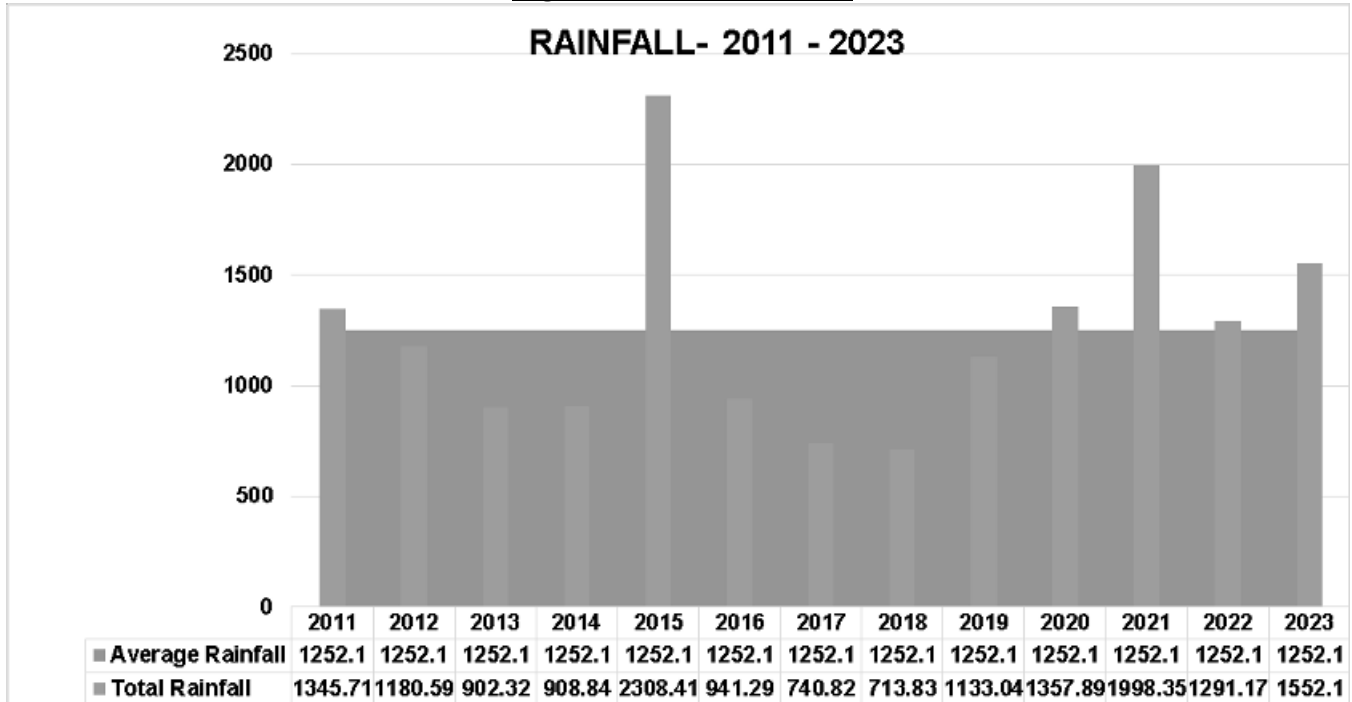
Year	Jan Actual (mm)	Feb Actual (mm)	Mar Actual (mm)	Apr Actual (mm)	May Actual (mm)	Jun Actual (mm)	Jul Actual (mm)	Aug Actual (mm)	Sep Actual (mm)	Oct Actual (mm)	Nov Actual (mm)	Dec Actual (mm)	Cumulative Actual (mm)
2011	6.37	51.44	0	42.51	23.82	57.75	167.88	231.13	116.9	196.37	320.6	130.94	1346
2012	4.31	0	1.8	46.05	7.7	63.62	118.63	144.5	129.86	255.19	190.05	218.88	1181
2013	0.05	28.82	13.56	0.17	19.56	68.68	132.87	139.29	160.92	141.1	126.66	70.64	902.3
2014	0.7	7.09	0	0	37.88	98.12	52.85	113.97	129.27	204.08	141.35	123.53	908.8
2015	1.03	0	0.09	54	39.83	28.01	95.28	123.29	65.75	177.14	1098.4	625.56	2308
2016	0.22	0	0	0	188.74	60.8	65.2	130.95	215.02	24.61	26.64	229.11	941.3
2017	4.87	0	0.01	0	1.85	35.26	79.09	137.3	44.71	141.31	232.8	63.62	740.8
2018	1.21	0.47	3.98	0.71	0.44	41.11	35.06	162.62	53.53	142.18	228.08	44.44	713.8
2019	0.01	0.24	0.01	0.34	3.05	34.86	140.4	127.11	93.13	317.81	204.02	212.06	1133
2020	51.19	0.45	0	9.54	1.03	32.61	197.65	67.54	90.82	153.66	496.96	256.44	1358
2021	179.77	12.09	0	17.25	32.48	34.4	145.04	140.28	111.76	259.83	950.87	114.58	1998
2022	39.98	0	4.05	0.93	43.17	70.67	110.88	133.81	74.36	187.99	400.5	224.83	1291
2023	3.05	0.37	27.86	5.87	72.49	131.44	108.69	141.33	298.11	54.23	362.54	346.12	1552
Normal	22.4	9.7	4.7	14.2	41.2	56.6	116.1	157.9	132.1	247.5	317.4	132.3	1252.1

Source – IMD GRID – Kanchipuram Report

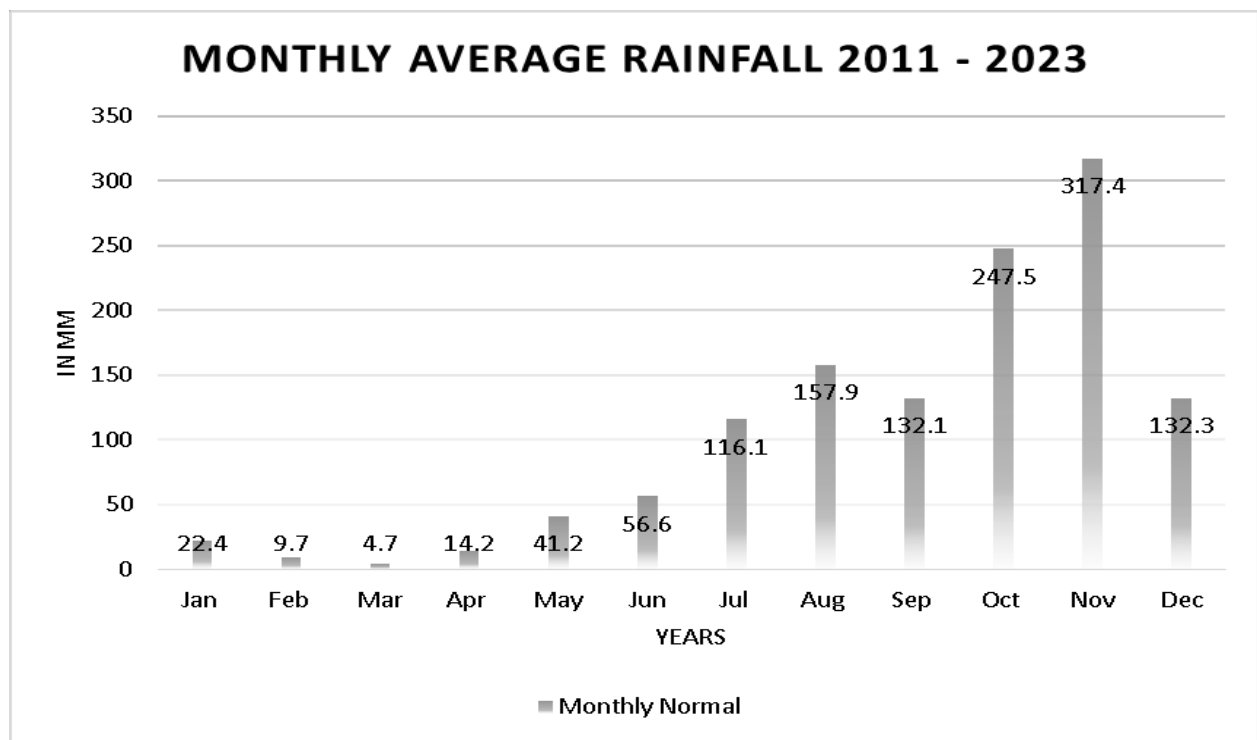


**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.04.5 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

**Figure 3.5: Total Rainfall**



**Figure 3.6: Average Monthly Rainfall**



**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.04.5 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

**3.3.1.3 SITE SPECIFIC METEOROLOGICAL DATA:**

Micrometeorology and microclimatic parameters were recorded by installing a weather monitoring station near mine lease area. Data of wind velocity, wind direction, ambient temperature, relative humidity, were recorded throughout the monitoring period.

**DATA ANALYSIS:**

The temperature in the area during the study period ranged from 23.8°C to 40.0°C while the relative humidity varied between 35.0 – 94.3%. The wind speed during the study period ranged from <1.8 to 29.5 Km/hr. The predominant wind direction is from south east. The meteorological data are presented in **Table no – 3.9**. The average wind rose is depicted in **Figure No - 3.7**.

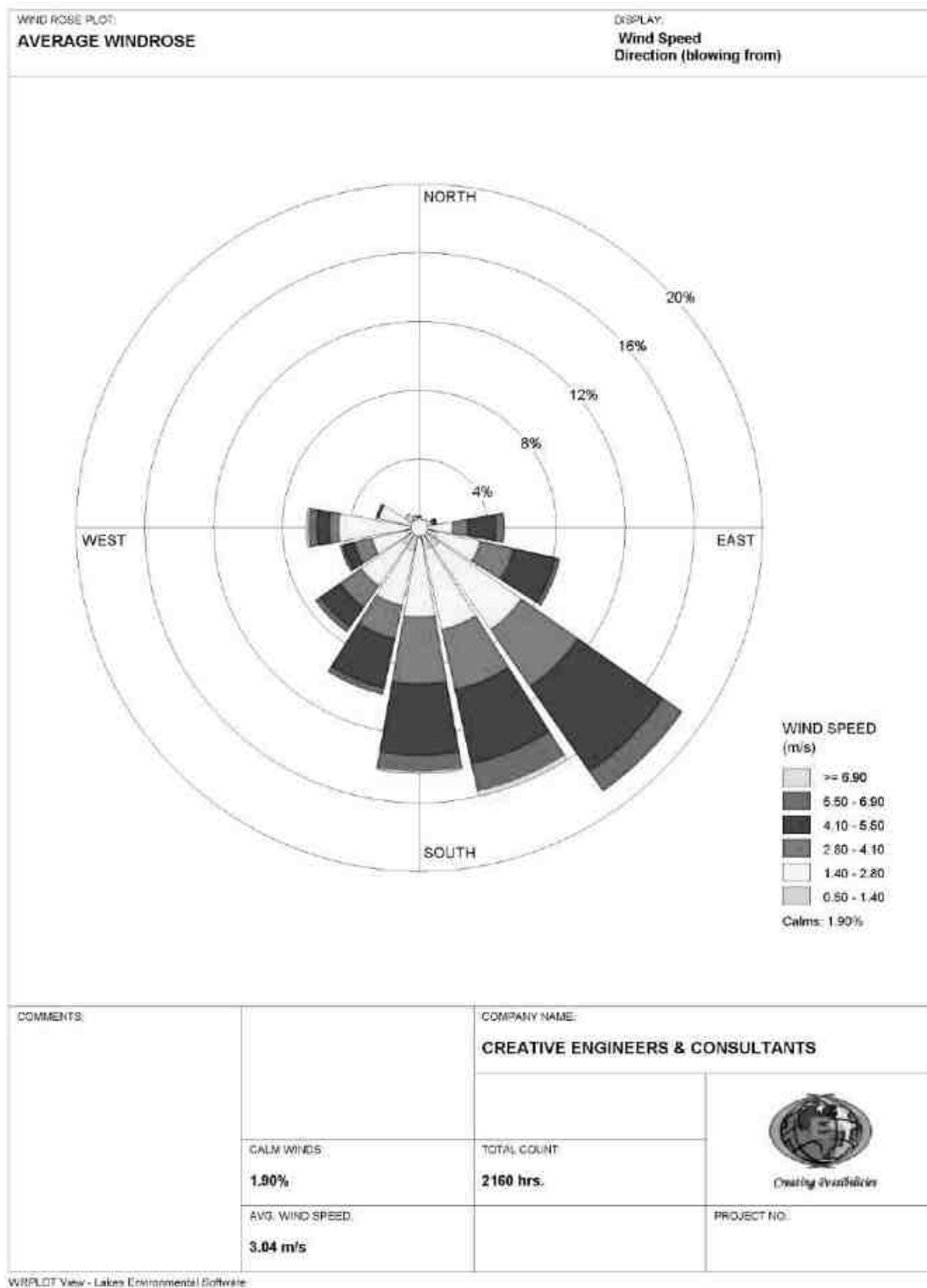
**Table 3.9: Meteorological Data**

<b>Season: Winter Season, Mar 2024 to May 2024)</b>			
<b>S.NO</b>	<b>PARAMETERS</b>	<b>MIN</b>	<b>MAX</b>
1	Temperature In °c	23.8	40.0
2	Humidity in %	35.0	94.3
3	Wind speed in km/hr	<1.8	29.5
4	Predominant wind direction from	SE	



**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.04.5 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

**Figure 3.7: Average Wind Rose**



**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.04.5 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

**3.3.2 AMBIENT AIR QUALITY (AAQ):**

Ambient Air quality has been assessed through a network of 5 ambient air quality stations. The following methodology has been considered for design of ambient air quality monitoring network in the area. Based on these criteria, 5 numbers of air sampling stations were selected in the area as shown below in Table No.3.10.

- ❖ Topography / terrain of study area.
- ❖ Populated areas within study area.
- ❖ Residential /sensitive areas within study area.
- ❖ Magnitude of surrounding industries.
- ❖ Representation of regional background levels.
- ❖ Representation of cross sectional distribution in down wind direction.
- ❖ Predominant wind direction and wind pattern.

**Table 3.10: Air Quality Monitoring**

1.	<b>Monitoring Period</b>	Summer Season ( March 2024 – May 2024)
2.	<b>Monitoring Location</b>	The location map showing Ambient Air Quality study stations are shown in <b>Figure No- 3.8.</b>
3.	<b>Methodology</b>	
	<b>Parameter</b>	<b>Protocol</b>
	a. Particulate Matter (PM10)	Gravimetric (IS 5182: Part 23:2017)
	b. Particulate Matter PM2.5	Gravimetric ( IS 5182: Part 24:2019)
	c. Sulphur Dioxide	Colorimetric (West & Gaeke Method) (IS 5182: Part 02: 2017)
	d. Nitrogen Dioxide	Colorimetric(Modified Jacob & Hocheiser Method) (IS 5182: Part 06:2017)
	e. Carbon Monoxide	CO Monitor
	f. Silica	Colorimetric (Molybdate Method) NIOSH 7601 -2003
4.	<b>Monitoring Frequency</b>	2 days in a week, 4 weeks in a month for 3 months in a season.

**Table 3.11: Air Quality Monitoring Locations**

S.NO	LOCATION CODE	LOCATION	DISTANCE FROM CORE ZONE (KM)	DIRECTION
1	A1	Near Lease Area	-	-
2	A2	Chinnavelikadu Village	1.0km	NW
3	A3	Periya Venmani Village	1.1km	NE
4	A4	Venmari Village	1.0Km	SW
5	A5	Nagamalai Village	0.95Km	SE



**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.045 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

**Figure 3.8: Ambient Air Quality Study Stations**





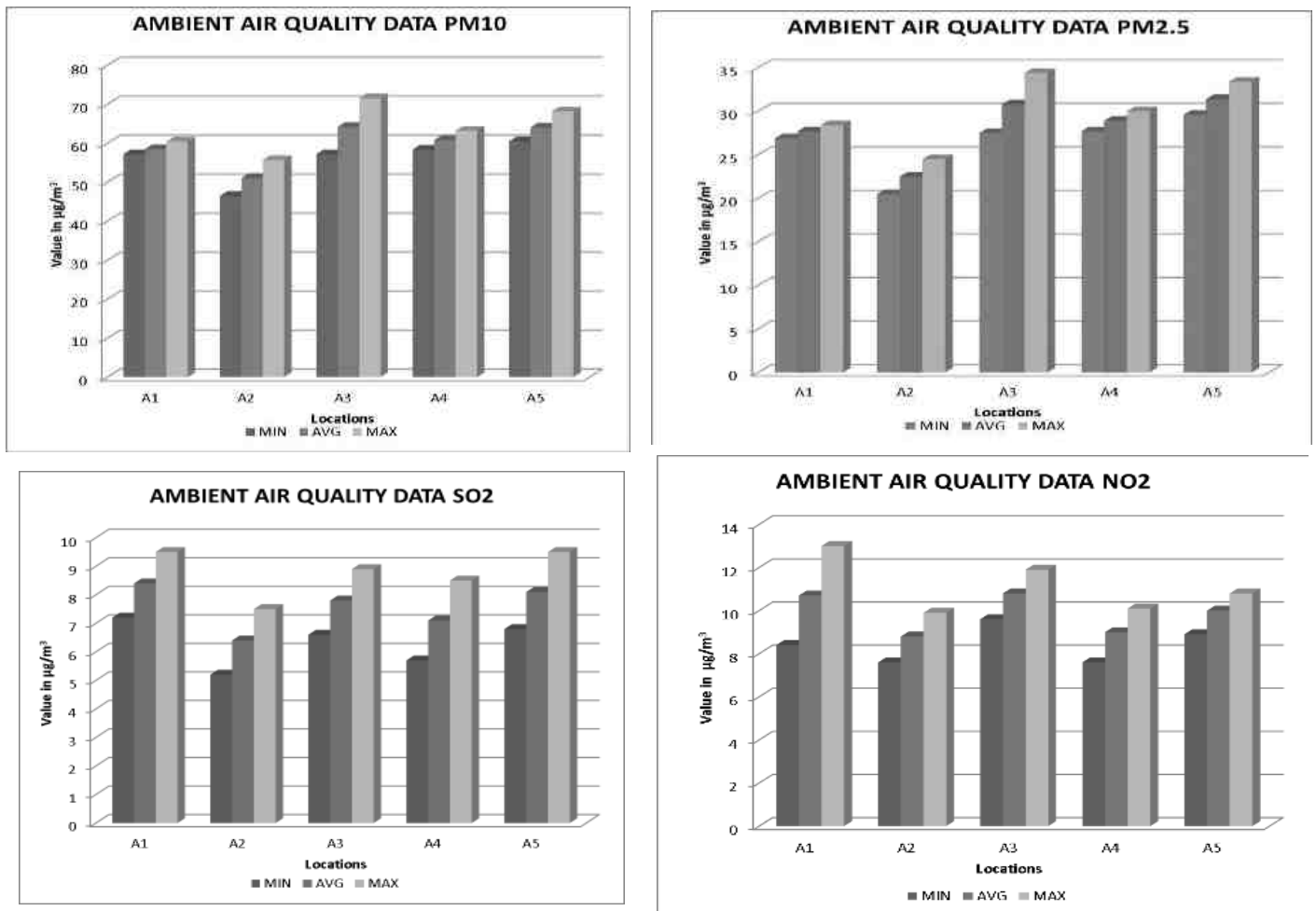
**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.04.5 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

**Table 3.12: Ambient Air Quality Data**

PARAMETERS LOCATIONS	Cat.*	All Value in $\mu\text{g}/\text{m}^3$											
		PM <sub>10</sub>			PM <sub>2.5</sub>			SO <sub>2</sub>			NO <sub>2</sub>		
		MIN	AVG	MAX	MIN	AVG	MAX	MIN	AVG	MAX	MIN	AVG	MAX
A1- Near Lease Area	I	57.2	58.5	60.4	26.9	27.7	28.4	7.2	8.4	9.5	8.4	10.7	13
A2-Chinnavelikadu Village	R	46.5	51.1	55.7	20.5	22.5	24.5	5.2	6.4	7.5	7.6	8.8	9.9
A3-Periya Venmani Village	R	57.2	64.2	71.6	27.5	30.8	34.4	6.6	7.8	8.9	9.6	10.8	11.9
A4-Venmari Village	R	58.4	60.8	63.2	27.7	28.9	30.0	5.7	7.1	8.5	7.6	9.0	10.1
A5-Nagamalai Village	R	60.5	64.1	68.2	29.6	31.4	33.4	6.8	8.1	9.5	8.9	10.0	10.8
NAAQ Limits		PM <sub>10</sub>			PM <sub>2.5</sub>			SO <sub>2</sub>			NO <sub>2</sub>		
	*	100			60			80			80		
	**	100			60			80			80		

**\*Note:** Category: \* - Industrial, Residential, Rural and other area, \*\* – Ecologically Sensitive Area (notified by Central Government)

**Figure 3.9: Ambient Air Quality Data**



**3.3.2.1 Results and Discussion:**



**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.04.5 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

The AAQ monitored data for all locations for above parameters are shown in **Table No - 3.12** and in **Figure No - 3.10**. Ambient Air Quality data during the study period is given in **Annexure-10**. From the table it is seen that, in the ambient air, the PM<sub>10</sub> values were in the range of 46.5-71.6 µg/m<sup>3</sup>. PM<sub>2.5</sub> values were in the range of 20.5-34.4 µg/m<sup>3</sup>. SO<sub>2</sub> levels were ranging from 5.2– 9.5 µg/m<sup>3</sup>. NO<sub>2</sub> levels were ranging from 6.4-11.9 µg/m<sup>3</sup>.

The existing Ambient Air Quality levels for PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub> and NO<sub>2</sub>, are within the NAAQ standards prescribed CPCB limits of 100 µg/m<sup>3</sup>, 60 µg/m<sup>3</sup>, 80 µg/m<sup>3</sup> & 80 µg/m<sup>3</sup>. The CO values in all the locations were found to be below detectable limit. Silica values in the study area are found to be below detectable limit. (Detection limit – 0.05 mg/m<sup>3</sup>)

**3.3.3 WATER ENVIRONMENT:**

Assessment of baseline data on water environment includes Identification of water resources, Collection of water samples and Analyzing water samples collected for physico-chemical parameters as per standards. The water sampling was carried out for 4 locations. Details of the same has been provided below:

**Table 3.13: Water Quality Monitoring**

1.	<b>Monitoring Period</b>	Summer Season ( March 2024 – May 2024)			
2.	<b>Monitoring Location</b>	The location map showing water sampling locations are given in <b>Figure No.3.11</b> .			
	<b>Code</b>	<b>Location</b>	<b>Sample Type</b>	<b>Distance</b>	<b>Direction</b>
	<b>W1</b>	Periya Venmani Village	Bore well	1.1km	NE
	<b>W2</b>	Venmari Village	Bore well	1.0km	NE
	<b>W3</b>	Nagamalai Village	Bore well	0.95km	SE
	<b>W4</b>	Chinnavelikadu Village	Bore well	1.0km	NW
3.	<b>Methodology</b>	Sampling - IS 3025 Part - I			
		Analysis – IS 3025 relevant parts / APHA 23rd Edition			



**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.045 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

**Figure 3.10: Location of Water Sampling Stations**



**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.04.5 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

**Table 3.14: Summary of Water Quality Data**

Season	( March 2024 – May 2024)	
Monitoring Locations	4 locations	
Parameters	Range of values	Limits*
pH at 25 °C	7.26 – 7.59	<b>6.5-8.5</b>
Total Dissolved Solids, mg/L	78 – 912	<b>2000</b>
Chloride as Cl-, mg/L	120 – 310	<b>1000</b>
Total Hardness (as CaCO <sub>3</sub> ), mg/L	230 – 392	<b>600</b>
Total Alkalinity (as CaCO <sub>3</sub> ), mg/L	196– 390	<b>600</b>
Sulphates as SO <sub>4</sub> <sup>2-</sup> , mg/L	104 – 270	<b>400</b>
Iron as Fe, mg/L	0.03 – 0.06	<b>0.3</b>
Nitrate as NO <sub>3</sub> , mg/L	1.64 – 3.21	<b>45</b>
Fluoride as F, mg/L	0.24 – 0.41	<b>1.5</b>

**3.3.3.1 Results and Discussion:**

The results of the water sample analysis are shown in **Table No - 3.14**. The pH values of bore well water were ranging in between 7.26 – 7.59, TDS values were in the range of 78 – 912mg/L. Chloride values were ranging from 120 – 310mg/L. Iron content was found to be in the range 0.03 – 0.06mg/L. The water quality of ground water is found to be within the prescribed Permissible limits of IS: 10500 Norms in the absence of an alternative source as per Drinking Water Specifications. The water quality data is provided in **Annexure-11**.

**3.3.4 NOISE ENVIRONMENT:**

Opearional phase of this project may lead to increase noise levels from the existing levels at least in and around the project area. As noise level beyond permissible limits will cause adverse impacts on the environment, it has become imperative to assess the noise levels in and around the mine area. Noise level measurements were taken at the 5 locations during the monitoring period. Details of the same are provided below:



**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.04.5 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

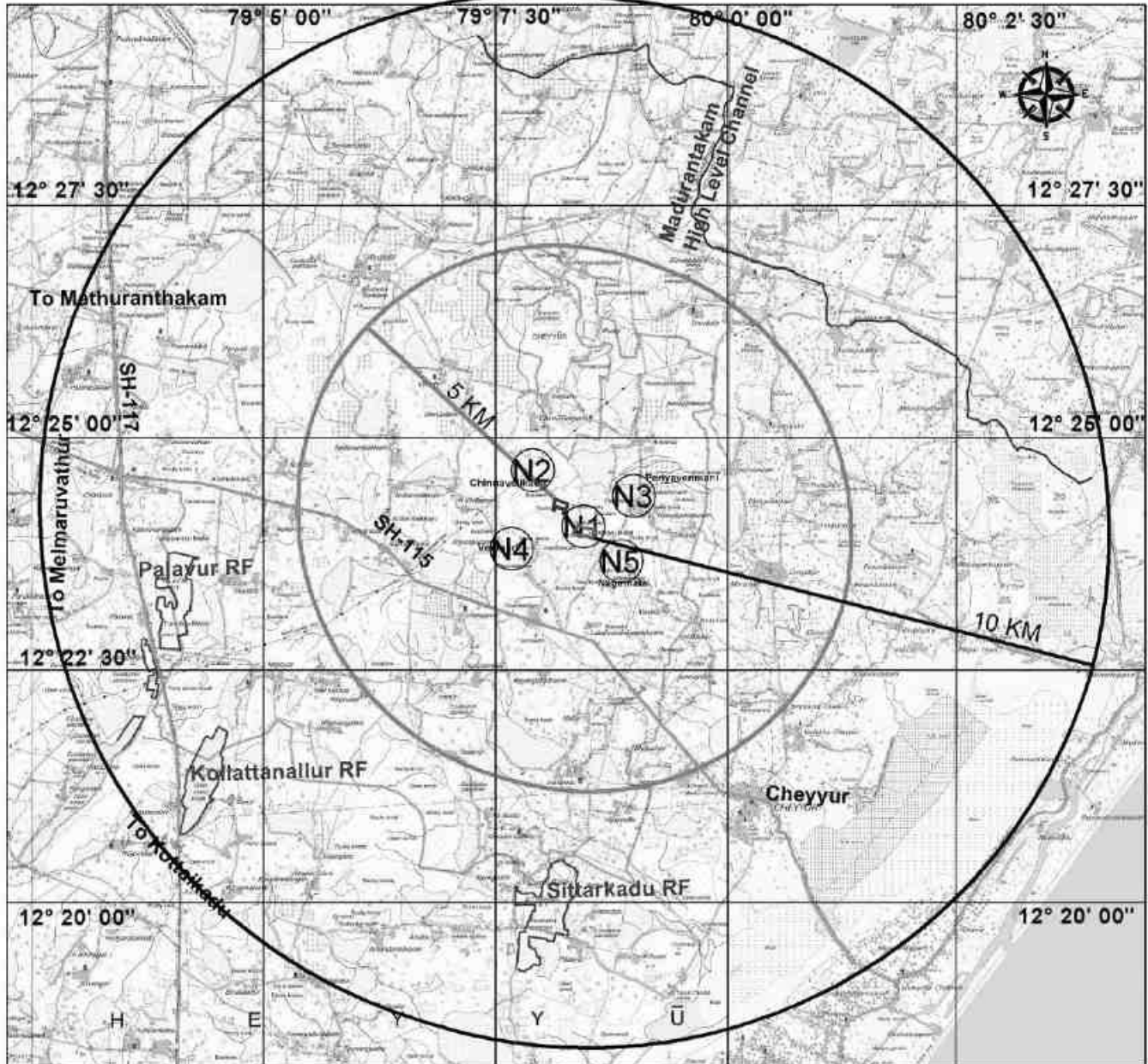
**Table 3.15: Noise Level Monitoring**

1.	<b>Monitoring Period</b>	Summer Season ( March 2024 – May 2024)		
2.	<b>Monitoring Location</b>	The location map showing noise monitoring locations are given in <b>Figure No.3.11</b> .		
	<b>Code</b>	<b>Location</b>	<b>Distance</b>	<b>Direction</b>
	<b>N1</b>	Near Lease Area	-	-
	<b>N2</b>	Chinnavelikadu Village	1.0km	NW
	<b>N3</b>	Periya Venmani Village	1.1km	NE
	<b>N4</b>	Venmari Village	1.0Km	SW
	<b>N5</b>	Nagamalai Village	0.95Km	SE
3.	<b>Methodology</b>	Noise levels were measured using sound level meter manufactured by (Model No - SL- 4001, Make - Lutron). Sound Pressure Level (SPL) measurements were measured at all locations where ambient air quality monitored; one reading for every hour was taken for 24 hours.		
4.	<b>Monitoring Frequency</b>	Once during monitoring period		



**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.045 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

**Figure 3.11: Location of Noise Sampling Stations**



<b>LEGEND</b> CORE ZONE AREA HUTMENTS ROAD RIVER FOREST	<b>LOCATION OF NOISE SAMPLING STATIONS</b> N1- Near Lease Area N2- Chinnavelikadu Village N3- Periya Venmani Village N4- Venmari Village N5- Nagamalai Village	TOPO SHEET NO - 57P-15 & 66D-3 <b>LOCATION OF NOISE SAMPLING STATIONS</b> ROUGH STONE & GRAVEL QUARRY OF AK BLUE METALS PVT LTD(5.53Ha) & UDHAYAM MINES AND MINERALS PVT LTD (4.04.5Ha) PERIYAVENMANI VILLAGE, MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, STATE - TAMILNADU <b>STUDY AREA WITH IN 10KM RADIUS</b>
	 <b>CREATIVE ENGINEERS &amp; CONSULTANTS</b> 584, 586B BOTTINGAR STREET, EAST TAMBARAM, CHENNAI 600 074 PH: 9840110119	

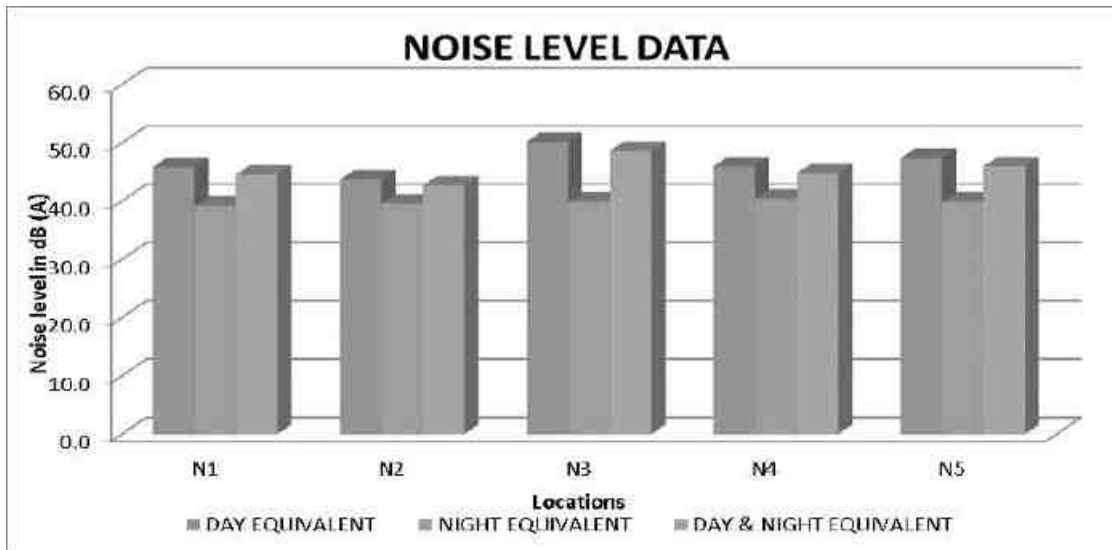


**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.04.5 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

**Table 3.16: Ambient Noise Level in dB (A)**

Date and time of monitoring	N1	N2	N3	N4	N5
Day Equivalent	45.8	43.6	50.2	46.0	47.4
Night Equivalent	39.2	39.6	39.9	40.4	39.9
Day & Night Equivalent	44.5	42.7	48.6	44.8	46.0
Limits: As per CPCB: Work zone Exposure in 8 hr - 90 dB(A) As per MoEF&CC: Residential: Day equivalent - 55 dB(A); Night equivalent - 45 dB(A)					

**Figure 3.12: Noise Level Data**



**3.3.4.1 Results and Discussion:**

The results of noise levels for all locations are given in **Table No-3.16**. The noise values for all above locations are shown in a comparative chart given in **Figure No - 3.12**. Day Equivalent Noise (Leq-d) noise levels were ranging from 43.6 dB(A) to 50.2 dB(A) and night Equivalent Noise (Leq-d) levels ranged between 39.2 dB(A) to 40.4 dB(A). While comparing with the MOEF&CC Norm of 55 dB(A) for day time and 45 dB(A) for night time, the monitored ambient noise levels were within the limit values for Residential areas.

**3.3.5 SOIL CHARACTERISTICS:**

Soil samples were collected in 5 locations in the core and buffer zone to analyse the physiochemical characteristics of the soil in the area. Elaborate details of the same has been provided below.



**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.04.5 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

**Table 3.17: Soil Quality Monitoring**

1.	<b>Monitoring Period</b>	Summer Season ( March 2024 – May 2024)		
2.	<b>Monitoring Location</b>	The location map showing soil sampling locations are given in <b>Figure No.3.13.</b>		
	<b>Code</b>	<b>Location</b>	<b>Distance</b>	<b>Direction</b>
	AS1	Lease area – AK Blue metals	-	-
	US1	Lease area – Udhayam Mines		
	S2	Chinnavelikadu Village	1.0km	NW
	S3	Nagamalai Village	0.95Km	SE
	S4	Venmani Village	1.0Km	SW
3.	<b>Methodology</b>	Composite soil samples using sampling augers and field capacity apparatus.		
4.	<b>Monitoring Frequency</b>	Once during monitoring period		





**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.045 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

**Figure 3.13: Location of Soil Sampling Stations**



**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.04.5 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

**Table 3.18: Soil Quality Data**

S.No	Parameters	Unit	AS1	US1	S2	S3	S4
1	pH at 25°C	-	6.32	6.57	7.26	7.51	7.94
2	Electrical Conductivity	(µmhos /cm)	83.60	90.43	49.87	110.60	109.20
3	Dry matter content	%	95.19	93.27	93.65	87.89	91.62
4	Water Content	%	4.81	6.73	6.35	12.11	8.38
5	Organic Matter	%	0.62	0.77	0.76	1.32	0.21
6	Soil texture	-	CLAY LOAM	CLAY LOAM	CLAY	CLAY	SILTY CLAY
7	Grain Size Distribution i. Sand	%	30.59	31.22	4.01	5.00	5.41
8	ii. Silt	%	33.11	33.94	33.64	67.05	49.39
9	iii. Clay	%	36.30	34.84	62.35	27.96	45.21
10	Phosphorous	µg/g	0.56	0.62	0.74	0.99	0.49
11	Sodium	mg/kg	840	860	965	1045	825
12	Potassium	mg/kg	390	410	1250	2160	339
13	Total Nitrogen	mg/kg	220	234	276	290	192
14	Total Sulphur	%	BDL(D.L.0.02)	BDL(D.L.0.02)	BDL(D.L.0.02)	BDL(D.L.0.02)	BDL(D.L.0.02)
15	Water Holding Capacity	%	38	40	40	46	42
16	Porosity	%	14.60	14.30	13.3	13.6	14.10

**3.3.5.1 Results and Discussion:**

Results of the soil samples show that the pH values were ranging between 6.32 to 7.94 and Electrical Conductivity values were ranging between 49.87 – 110.60 µmhos/cm. Soils are generally Clay Loam type. Organic matter values were ranging between 0.62 – 1.32 %. Total Nitrogen values were ranging between 192 - 290mg/kg. Phosphorus values were ranging between 0.49– 0.99 µg/g. Potassium values were ranging between 339.0 -2160 mg/kg. Sodium values were ranging between 825- 1045 mg/kg. Total Sulphur values were observed to be BDL. The soil quality data for the 5 samples collected and analyzed are provided in **Table No – 3.18.**

**3.4 LAND ENVIRONMENT - LANDUSE & LAND COVER**

For preparing an impact statement, aspects of the land conditions are covered under land use. An industrial project / mine can cause changes in land use, soil process in different intensities depending upon the size of the project and distance involved between the industries and the area. Here, land use status for a radius of 10 km has been studied.

**3.4.1 DATA USED AND METHODOLOGY**

For the present study on land use pattern of buffer area around the proposed stone and gravel quarry, an archived historical data of Landsat 8 data shas been used as base data (Figure No.3.15) has been used to generate the require landuse map showing their spatial pattern



**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.04.5 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

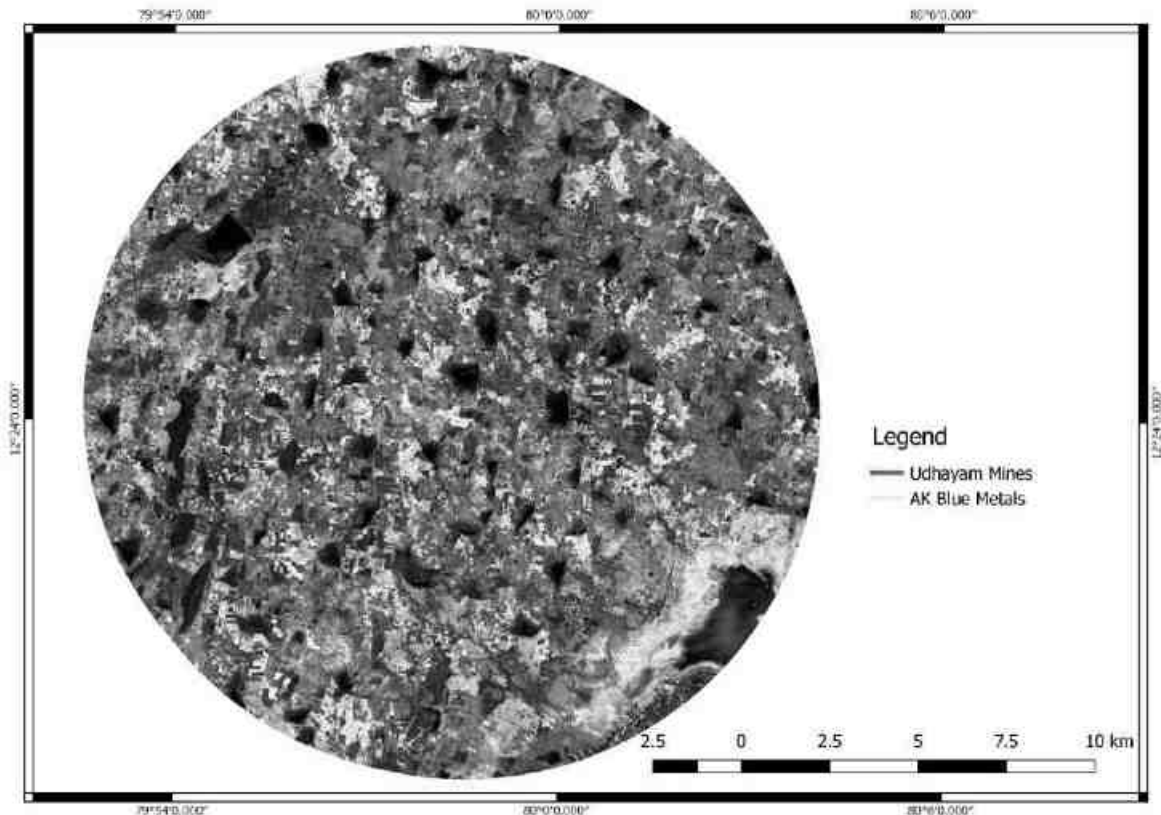
within the buffer area. The table showing data used for generation of information on landuse and subsequent GIS analysis is given below

**Table 3.19: RS satellite image used for the present study**

S.No	Type of Data	Date	Generated Map
1.	Landsat 8	April-2024	Landuse (LU) Map showing 10 Km buffer zone

Interpretation of satellite image requires understanding of relationship between image elements and their respective terrain elements. Since, in the present study, the landuse information is obtained using visual interpretation, an interpretation key is generated. The image elements such as color, tone, texture, size, shape and associated elements have been used to delineate various landuse categories. The landuse categorization and nomenclature used in the present study is based on the national level landuse classification system, which is adopted for the entire country as recommended by National Remote Sensing Centre (NRSC), Department of Space, Government of India.

**Figure 3.14 : Landsat 8 Satellite Data of the Study Area**



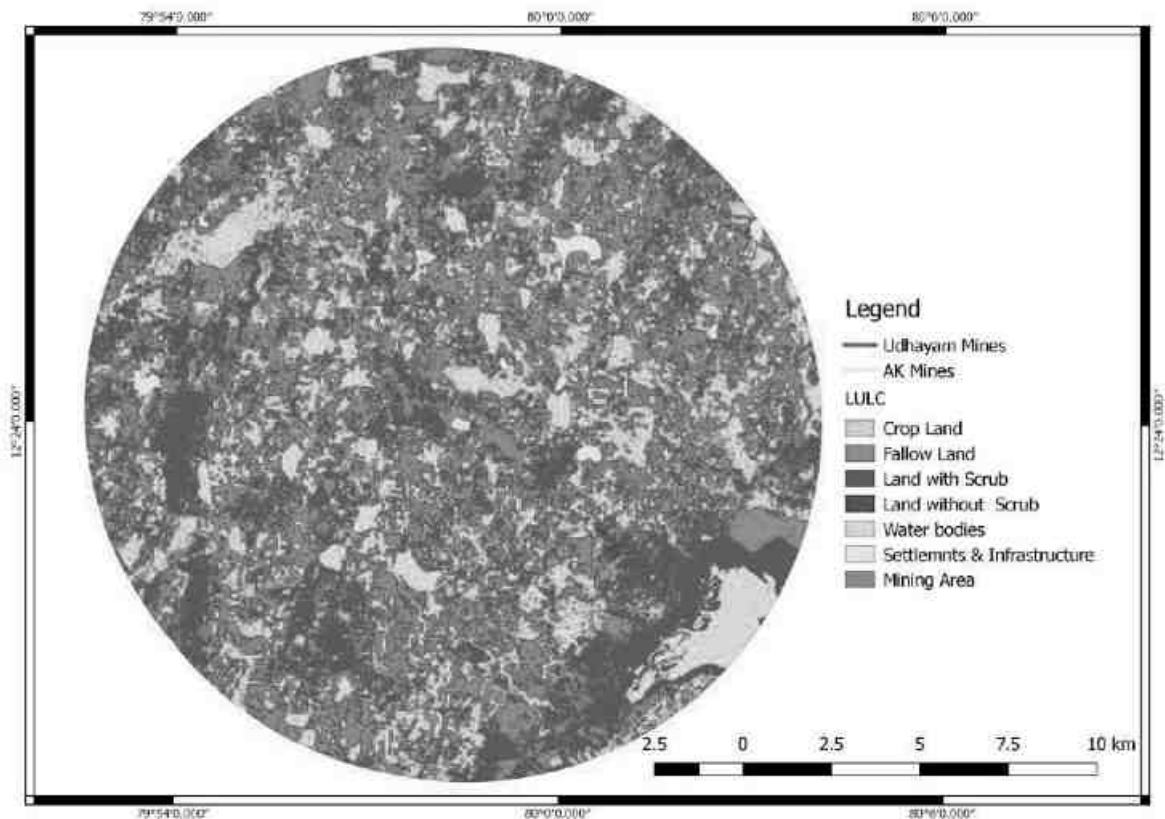
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**Table 3.20: Major Landuse Units of the Study Area**

S.No	Major Category	Landuse unit
1	Built-Up Land	Village, Town, Industrial / Vacant Area
2	Agricultural Land	Crop Land Fallow Land Plantation Farm Land
3	Forest Land	Open Scrub Forest
4	Waste Land Mining Area	Land With Scrub/ Land Without Scrub Barren Rocky/ Stony Waste Quarries / Abandoned Quarries
5	Waterbodies	Tanks/ Rivers / Streams

Such LandUse and Land cover (LULC) categories have been verified using field check and identified sample sites within the buffer area, verified on field and transferred into gis geo-coordinates using observation coordinates received from hand held GPS (global positioning system) instrument. Thus, an interpreted final landuse map has been generated (Figure No. 3.16) using above such elaborate procedure and transformed into GIS environment for its spatial distribution and area estimation. Spatial nature and extent of various landuse categories within the buffer area is discussed is given below:

**Figure 3.15: Map Showing Land Use Categories around 10km Buffer**



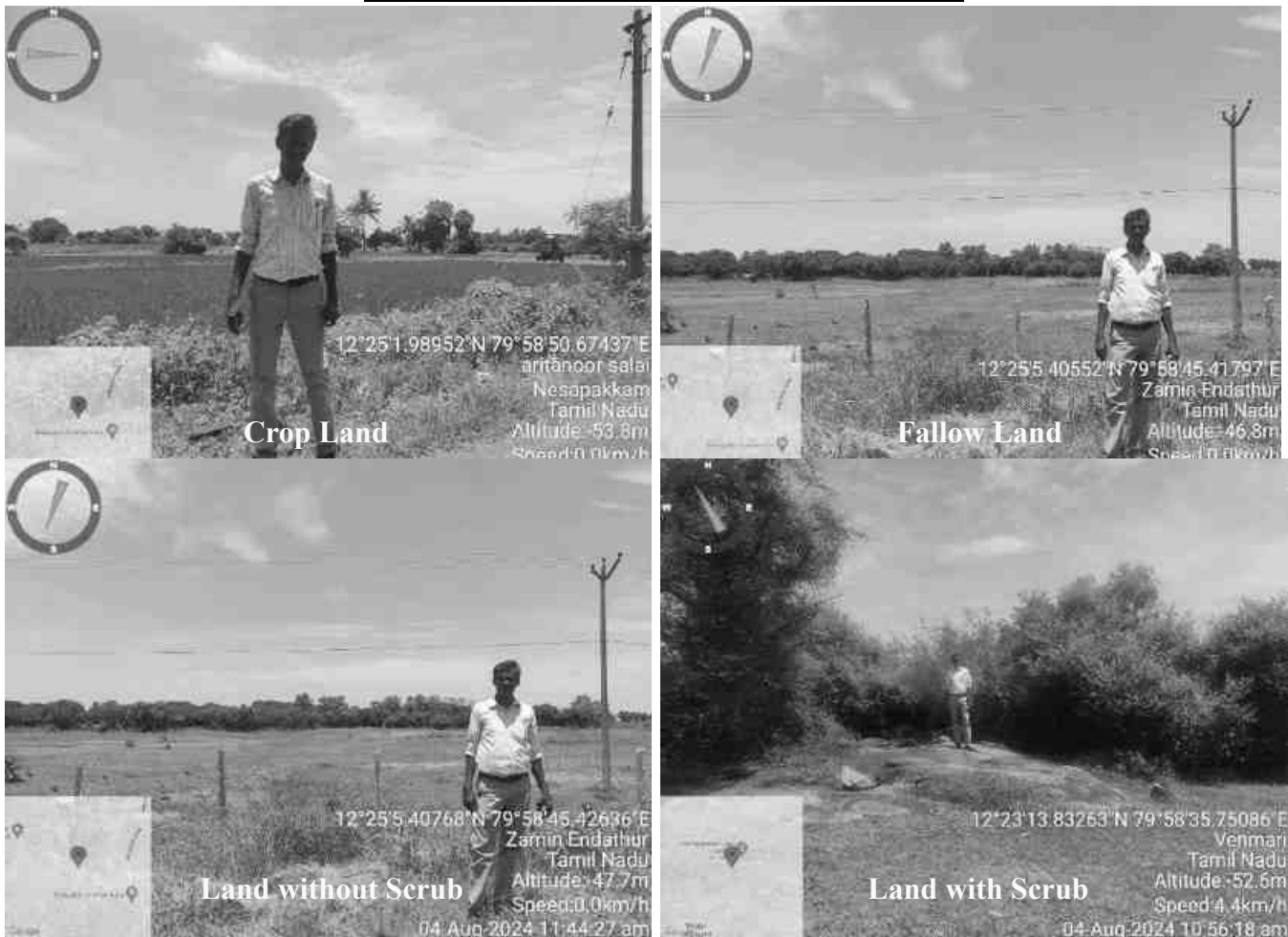
**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.04.5 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

**Table 3.21: Area Estimation of Landuse Categories in Buffer Zone**

S.No	Landuse Feature	Area (Sq.Km)	Percentage
1	Agriculture/ Plantation	77.9124	23.04
2	Fallow Land	108.4468	32.07
3	Land With Scrub	121.5222	35.94
4	Land Without Scrub	0.5006	0.15
5	Water bodies	20.3683	6.02
6	Settlement / Infrastructure	7.523	2.22
7	Mining / Infrastructure	1.8774	0.56
	<b>Total</b>	<b>338.1507</b>	<b>100.00</b>

From the above table it is seen that 23.04 % of the buffer area is classified under the Agriculture/ Plantation followed by 32.07 % of fallow land, 35.94 % constitutes land with out scrub and the balance 8.95 % falls under other land use categories.

**Photograph showing Land use In Buffer Zone**



**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.04.5 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

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**3.4.2 LAND USED BASED ON REVENUE RECORDS:**

The lease area falls in Periyavenmani Village, Maduranthakam Taluk, Chengalpattu District, Tamil Nadu state and the study area for the land use pattern (10 km radius) has been divided into four zones viz. Zone-I (0-2 km), Zone-II (2-5 km), Zone-III (5-10 km) and Zone-IV (0-10 km) respectively. The land use pattern of the study area falling within 10 km radius around the proposed project area is presented in Table no - 3.22. Village wise land use pattern is provided in **Annexure-12**.

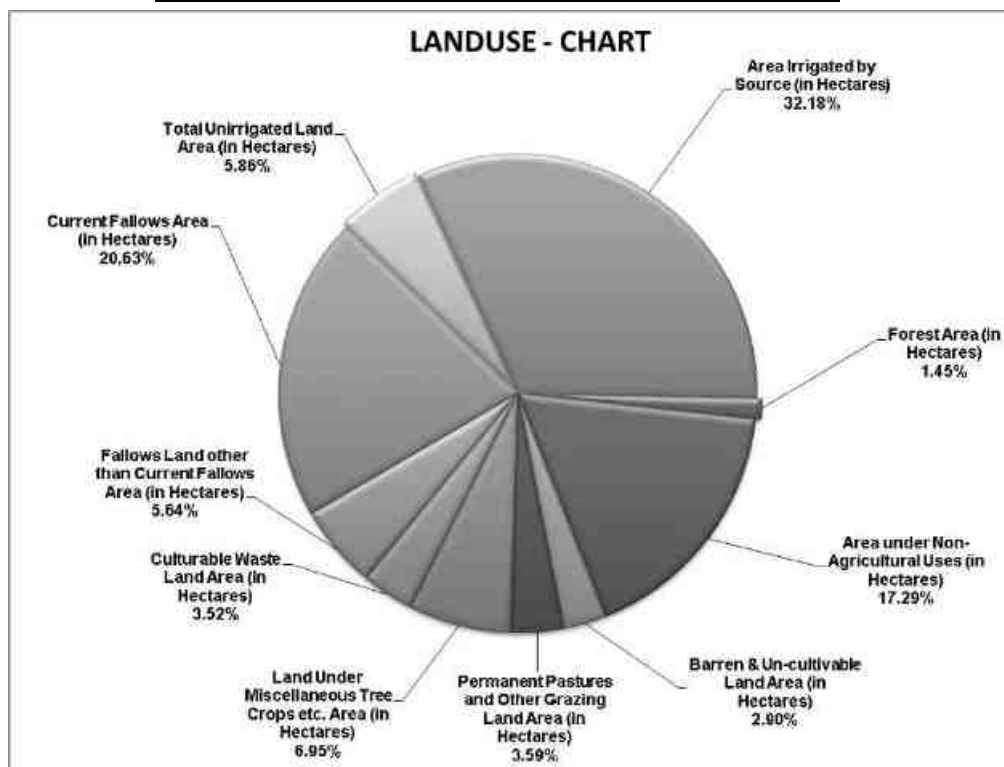


**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.04.5 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

**Table 3.22: Land Use Pattern of the Study Area Falling Within 10 Km Area in (Ha)**

Distance	Total Geographical Area	Forest Area	Area under Non-Agricultural Uses	Barren & Un-cultivable Land Area	Permanent Pastures and Other Grazing Land Area	Land Under Miscellaneous Tree Crops etc. Area	Culturable Waste Land Area	Fallows Land other than Current Fallows Area	Current Fallows Area	Total Un irrigated Land Area	Area Irrigated by Source
0- 2 KM	2279.65	0	332.94	72.24	135.39	369.09	17.82	13.15	459.64	1.13	878.25
2 - 5 KM	7684.67	63.06	1790.07	217.4	363.75	354.57	186.34	183.31	1002.66	300.76	3222.75
5-10 KM	22019.82	399.17	3406.14	637.28	647.53	1500.36	921.81	1606.42	5137.17	1573.84	6190.1
0-10 KM	31984.14	462.23	5529.15	926.92	1146.67	2224.02	1125.97	1802.88	6599.47	1875.73	10291.1

**Figure 3.16: Landuse within the Buffer Zone Area**



**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.04.5 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

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### **3.5 BIOLOGICAL ENVIRONMENT:**

Study of the biological environment of any area comprises of well-planned ecological survey for the floristic and faunal composition of the areas through various scientifically planned techniques.

#### **3.5.1 FLORA:**

An ecological survey of the study area was conducted with reference to listing of species and assessment of the existing baseline ecological conditions. The objective of the survey is as follows:

- ❖ Generate existing data from field observations of various terrestrial floristic occurrences.
- ❖ Collect secondary data from Government records as well as through discussion with Forest officials, knowledgeable public etc.,
- ❖ Compare the data with authentic past records to identify changes, if any.
- ❖ Identify the impact of project operations on the biological aspects.

To accomplish the above objectives, a general ecological survey covering an area of 10 km radius was conducted. The locations were identified for phyto-sociological aspects to assess the current status.

#### **A.CORE ZONE:**

The lease area of both AK blue metals and udayam mines is part of peninsula gneissic complex of archean age comprising predominantly charnockite, granites, grannulites & calc-gnesis & pegmatites. The lease area falls within dyke like rocky formation following a general strike of NW- SE for a length of 3 to 3.5 km and a width of 500m to 800m. The entire area is covered with rocky exposures devoid of vegetation except for stunted eucalyptus trees, bushes , shrubs / cactus varieties sp. Because of the rocky exposures with very litte soil cover, the area is not suitable for agriculture / commercial crops and as such off late used for quarrying purpose. The dyke like formation with charnockite rock stretch is shown below:





**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.045 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**



**Table 3.23: List of Flora in the Core Zone – AK Blue Metals Pvt. Ltd.**

Sl.No	Species Name	Common Name	Family
<b>Trees</b>			
1	<i>Eucalyptus grandis</i>	Gum tree	Myrtaceae
2.	<i>Prosopis juliflora</i>	Cimaikkaruvel	Fabaceae
3	<i>Acacia catechu</i>	Karanagalli	Fabaceae
4	<i>Acacia auriculiformis</i>	<i>Pencile tree</i>	<i>Fabaceae</i>
5	<i>Azadirachta indica</i>	Veppai	Meliaceae
6	<i>Acacia leucophloea</i>	Valvelam	Fabaceae
<b>Shrubs</b>			
1	<i>Dodonaea viscosa</i>	Viraali	Sapindaceae
2	<i>Lantana camara L.</i>	Unni chedi	Verbenaceae
3	<i>Ziziphus oenoplia</i>	Elanthai	Rhamnaceae
4	<i>Calotropis gigantea (L.) R. Br.</i>	Yerukku	Asclepiadaceae
5	<i>Agave americana</i>	Kittanara	Asparagaceae
<b>Herbs</b>			
1	<i>Phyllanthus niruri</i>	Keelanelli	Phyllanthaceae
2	<i>Mimosa pudica</i>	Thottaccurungi	Mimosaceae
3	<i>Solanum xanthocarpum</i>	Kantankattiri	Solanaceae
4	<i>Achyranthes aspera L.</i>	Nayuruvi	Amaranthaceae
5	<i>Abutilon indicum (L.) Sweet</i>	Thuththi	Malvaceae
6	<i>Cassia tora</i>	Senavu	Caesalpinaceae
7	<i>Sida acuta</i>	Palambasi	Malvaceae

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**Table 3.24: List of Flora in the Core Zone – Udhayam Mines and Minerals Pvt. Ltd.**

Sl.No	Species Name	Common Name	Family
<b>Trees</b>			
1	<i>Azadirachta indica</i>	Veppai	Meliaceae
2.	<i>Acacia auriculiformis</i>	<i>Pencile tree</i>	<i>Fabaceae</i>
3	<i>Prosopis juliflora</i>	Cimaikkaruvel	Fabaceae
4	<i>Acacia leucophloea</i>	Valvelam	Fabaceae
<b>Shrubs</b>			
1	<i>Ziziphus oenoplia</i>	Elanthai	Rhamnaceae
2	<i>Lantana camara L.</i>	Unni chedi	Verbenaceae
3	<i>Dodonaea viscosa</i>	viraali	Sapindaceae
4	<i>Calotropis gigantea (L.) R. Br.</i>	Yerukku	Asclepiadaceae
<b>Herbs</b>			
1	<i>Abutilon indicum</i>	Thuththi	Malvaceae
2	<i>Sida acuta</i>	Palambasi	Malvaceae
3	<i>Solanum xanthocarpum</i>	Kantankattiri	Solanaceae
4	<i>Achyranthes aspera</i>	Nayuruvi	Amaranthaceae
5	<i>Phyllanthus niruri</i>	Keelanelli	Phyllanthaceae

**PHOTOS OF CORE ZONE IN AK BLUE METALS PRIVATE LIMITED**



**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.04.5 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

**PHOTOS OF CORE ZONE IN UDHAYAM MINES AND MINERALS PRIVATE LIMITED**



**C.BUFFER ZONE:**

Buffer Zone comprise of agricultural land, rocky waste land, barren land and mined out pits. Agriculture is predominantly rainfed, tank fed and largely dependent on the rain water. Dominant agricultural activities area observed proximate to the available irrigation source. Crops like Rice, vegetables, watermelon, ground nut, banana etc. are cultivated in the lands with better water source & soil condition. Due to inconsistent rainfall, non availability of adequate labours, poor economics and other issues agricultural activities have declined. In the rocky waste land cactus species like *Opuntia dillenii* and *Prosopis juliflora*, *Acacia catechu* & *Acacia nilotica* are observed.



**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.04.5 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

The Dominated species in the study area are Morinda tinctoria, Delonix elata, Azadirachta indica, Pongamia pinnata, Prosopis juliflora, Acacia auriculiformis etc. The detailed list of plants found in the buffer zone is given below:

**Table 3.25: List of Floristic Species in the Buffer Zone**

Sl. No.	Botanical name	Family	Local Name
<b>Trees</b>			
1	Bauhinia racemosa	Fabaceae	Tataki
2	Acacia auriculiformis	Fabaceae	Pencile tree
3	Moringa oleifera	Moringaceae	Murungai
4	Musa paradisiaca	Musaceae	Valzhlai
5	Morinda tinctoria	Rubiaceae	Manchanari
6	Ficus religiosa	Moraceae	Arasa Maram
7	Prosopis juliflora	Fabaceae	Velikathan
8	Tamarindus indica	Fabaceae	Puli
9	Cocos nucifera	Arecaceae	Tennai
10	Acacia leucophloea	Fabaceae	Valvelam
11	Syzygium cumini	Myrtaceae	Naval
12	Eucalyptus grandis	Myrtaceae	Gum tree
13	Terminalia chebula	Combretaceae	Kadukkai
14	Pongamia pinnata	Fabaceae	Pungai
15	Thespesia lampas	Malvaceae	Puvarasu
16	Ficus benghalensis	Moraceae	Alai Maram
17	Carica papaya	Caricaceae	Pappali
18	Peltophorum pterocarpum	Fabaceae	Perunkonrai
19	Acacia catechu	Fabaceae	Karanagalli
20	Acacia nilotica	Fabaceae	Karuveali
21	Polyalthia longifolia	Annonaceae	Nietilingam
22	Delonix regia	Fabaceae	Mayil konrai
23	Borassus flabelliformis	Arecaceae	Panna-maram
24	Cassia siamea	Caesalpinaceae	Manjal konrai
25	Ziziphus mauritiana	Rhamanaceae	Elandhai
26	Albizia odoratissima	Fabaceae	karu-vakai
27	Mangifera indica	Anacardiaceae	Ma Maram
28	Cassia fistula	Fabaceae	Konrai
29	Tectona grandis	Lamiaceae	Tekku
30	Bambusa vulgaris	Poaceae	Bamboo
31	Acacia horrida	Fabaceae	Karuvelai
32	Casuarina equisetifolia	Casuarinaceae	Savukku
33	Azadirachta indica	Meliaceae	Veppai
34	Delonix elata	Fabaceae	
35	Albizza amara	Fabaceae	Vagai
36	Murraya koenigii	Rutaceae	Curry leaf
37	Citrus limon	Rutaceae	Lemon
38	Atalantia monophylla	Rutaceae	Kattu Elumeachi
<b>Shrubs</b>			
1	Streblus asper	Moraceae	Parai maram



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Sl. No.	Botanical name	Family	Local Name
2	Opuntia dillenii	Cactaceae	Cappattukkalli
3	Carissa carandas	Apocynaceae	Kalakkai
4	Cassia auriculata	Fabaceae	Avarai
5	Agave americana	Asparagaceae	kittanara
6	Hibiscus rosa-sinensis	Malvaceae	Chemparutti
7	Jatropha gossypifolia	Euphorbiaceae	Seemayavanakku
8	Nerium oleander	Apocynaceae	Arali
9	Ziziphus oenoplia	Rhamnaceae	Elanthai
10	Strychnos nuxvomica	Loganiaceae	kagodi
11	Solanum xanthocarpum	Solanaceae	Kantankattiri
12	Opuntia elatior	Cactaceae	Cappattukkalli
13	Adhatoda vasica	Acanthaceae	Adhatoda
14	Carissa carandas	Apocynaceae	Kalakkai
15	Vitex negundo	Verbenaceae	Nochchi
16	Calotropis gigantea	Asclepiadaceae	Erukku
17	Dodonaea viscosa	Sapindaceae	viraali
18	Euphorbia tirucalli	Euphorbiaceae	kalli
19	Grewia abutilifolia	Tiliaceae	Pampukonta
20	Lantana camara	Verbenaceae	Unnchedi
21	Canthium didymum	Rutaceae	Nanjul
<b>Climber</b>			
1	Asparagus racemosus	Asparagaceae	Tannir-vittan
2	Coccinia indica	Cucurbitaceae	Kovaikkai
3	Cissus quadrangularis	Vitaceae	Pirandai
<b>Herbs</b>			
1	Leucas aspera	Lamiaceae	Thumbai
2	Acalypha indica	Euphorbiaceae	Kuppaimeni
3	Sida cordifolia	Malvaceae	Kurunthotti
4	Mimosa pudica	Mimosaceae	Thottaccurungi
5	Achyranthes aspera	Amaranthaceae	Nayuruvi
6	Cassia tora	Caesalpinaceae	Senavu
7	Phyllanthus niruri	Phyllanthaceae	Keelanelli
8	Tridax procumbens	Asteraceae	Kenathuppoнду
9	Sida acuta	Malvaceae	Palambasi
10	Lepidagathis cristata	Acanthaceae	Karappanpoнду
11	Cleome viscosa	Cleomaceae	Kaattu kadugu
12	Parthenium spp	Asteraceae	Tiruvottukkay
13	Ocimum sanctum	Lamiaceae	Thulasi
<b>Grasses</b>			
1	Cyperus sp	Poaceae	Korai
2	Cynodon dactylon	Poaceae	Arugampillu
3	Cenchrus ciliaris	Poaceae	Kollukattai

The study area is observed to be not ecologically sensitive and no endangered or endemic species as per IUCN red list is observed.



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**3.5.2 FAUNA:**

There is no Wild Life Sanctuary or National Park within the study area of 10 km. Domesticated animals like Cows, Buffalos, Dogs, Cats etc., are commonly found. The lease and 10 Km buffer zone does not fall in the Western Ghats ESA boundary. No wild mammalian species was directly sighted during the field survey. The list of fauna within the study area is given below:

**Table 3.26: List of Fauna in the Buffer Zone**

SI.No	Common name	Scientific Name	Family	IUCN/WPA Schedule
<b>A. Mammals</b>				
1	Boar	<i>Sus scrofa</i>	Suidae	LC /IV
2	Squirrel	<i>Funambulus palmarum</i>	Sciuridae	LC /III
3	Cat	<i>Felis catus</i>	Felidae	LC /III
4	Rat	<i>Rattus rattus</i>	Muridae	LC /IV
<b>B. Reptiles</b>				
1	Lizard	<i>Calotes versicolor</i>	Agamidae	LC / VII
2	Krait	<i>Bungarus caeruleus</i>	Elapidae	LC / IV
<b>C. Birds</b>				
1	Cattle egret	<i>Bubulcus ibis</i>	Ardeidae	LC
2	Indian tree pie	<i>Dendrocitta vagabunda</i>	Corvidae	LC
3	Small blue kingfisher	<i>Alcedo atthis</i>	Alcedinidae	LC
4	Spotted owlet	<i>Athene brama</i>	Strigidae	LC
5	Crow	<i>Corvus splendens</i>	Corvidae	LC
6	Black drongo	<i>Dicrurus macrocercus</i>	Dicruridae	LC
7	Little egret	<i>Egretta garzetta</i>	Ardeidae	LC
8	Rose ringed parakeet	<i>Psittacula krameri</i>	Psittacidae	LC
9	House sparrow	<i>Passer domesticus</i>	Passeridae	LC
	Spotted dove	<i>Streptopelia chinensis</i>	Columbidae	LC

LC - Least Concern

From the study it observed that the area in general consists of species of least concern only. No threatened or endemic or endangered species are observed. The area does not form the migratory path of the birds also.

**3.6 HYDROGEOLOGICAL STUDY:**

This section delves into the study of the hydrogeological scenario of the study area to evaluate the impact of mining activities on the nearby areas. The study area is considered to understand the nature of the general hydrogeological conditions of the area.

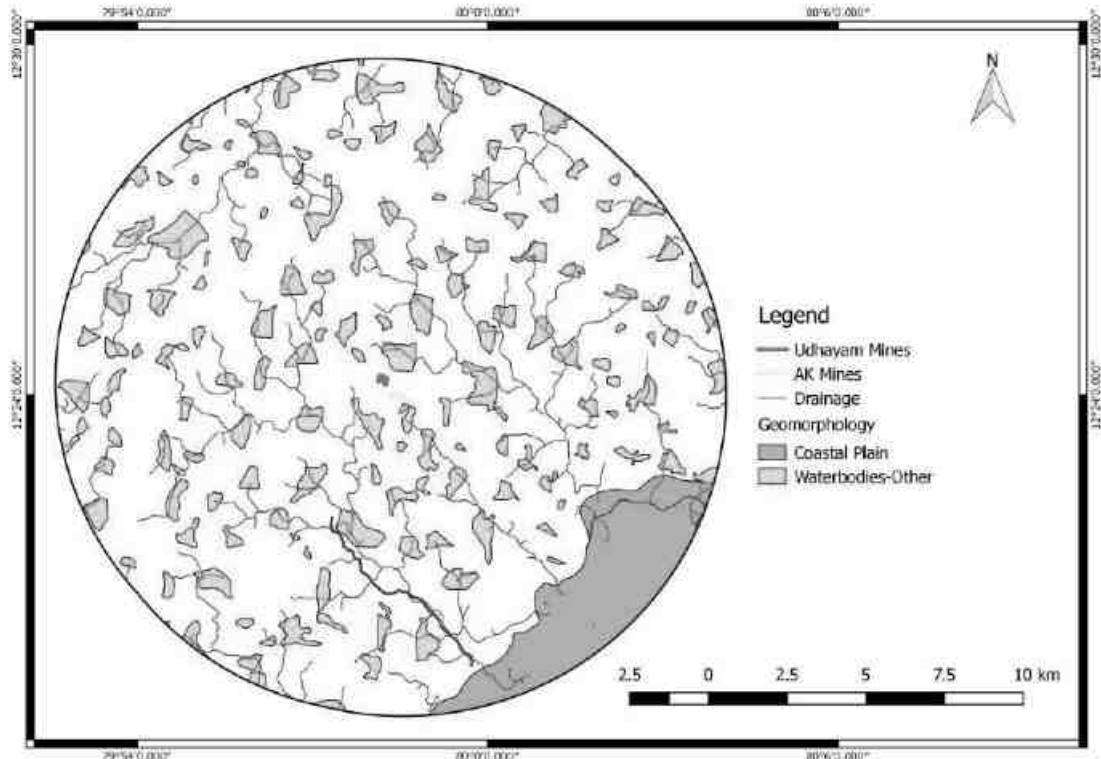
**3.6.1 PHYSIOGRAPHY AND DRAINAGE:**

The applied lease area is exhibits almost Plain topography with few outcrops of charnockite. The elevation of the applied lease area is 28 to 30 mRL. The drainage map of the buffer zone is given below in Figure No. 3.20.



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**Figure 3.17: Drainage Map**



Since the lease and its proximate areas are plain land, it does not form any major catchment area. The drainage of the area is controlled by only few first order streams that too located far away from the lease area ( Please refer Figure 3.20) draining towards SE side. There are no river in the study area. It is proposed to form garland drain around the periphery of the lease area to collect rainwater falling in the surrounding area and connect it to the settling pond . Clear water overflow from the settling pond will be connected to the downstream users and ensured its flow.

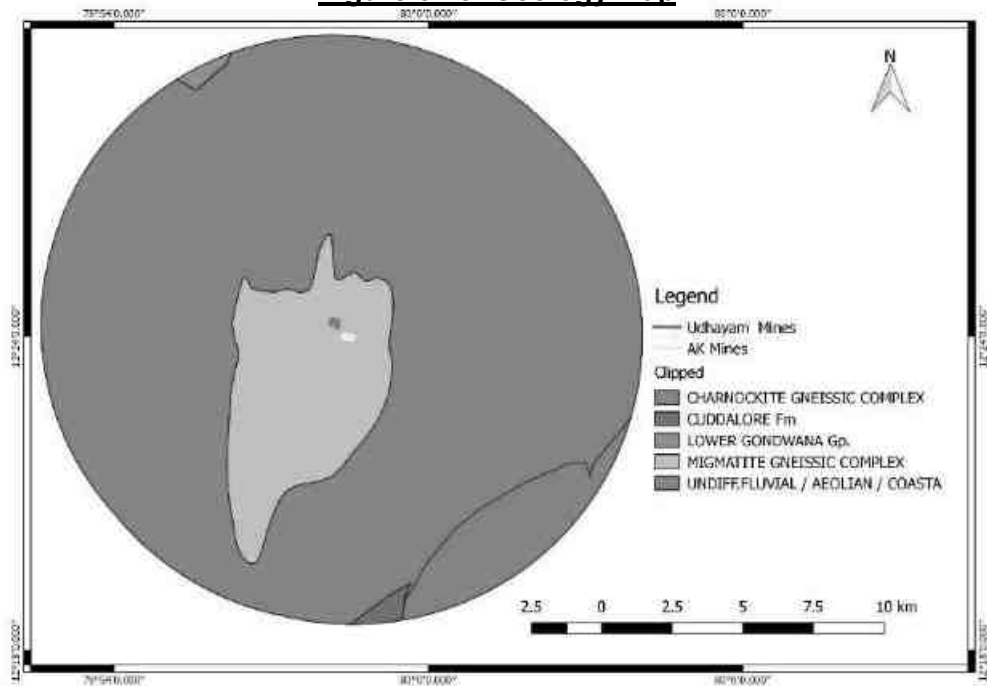
### **3.6.2 GEOLOGY AND GEOMORPHOLOGY**

**Geology:** The type of rock formation in the core is composed of Migmatite Gneissic complex and buffer zone composed Charnockite Gneissic complex and Undiffluvial category. The geological map is provided below in Figure No.3.21.



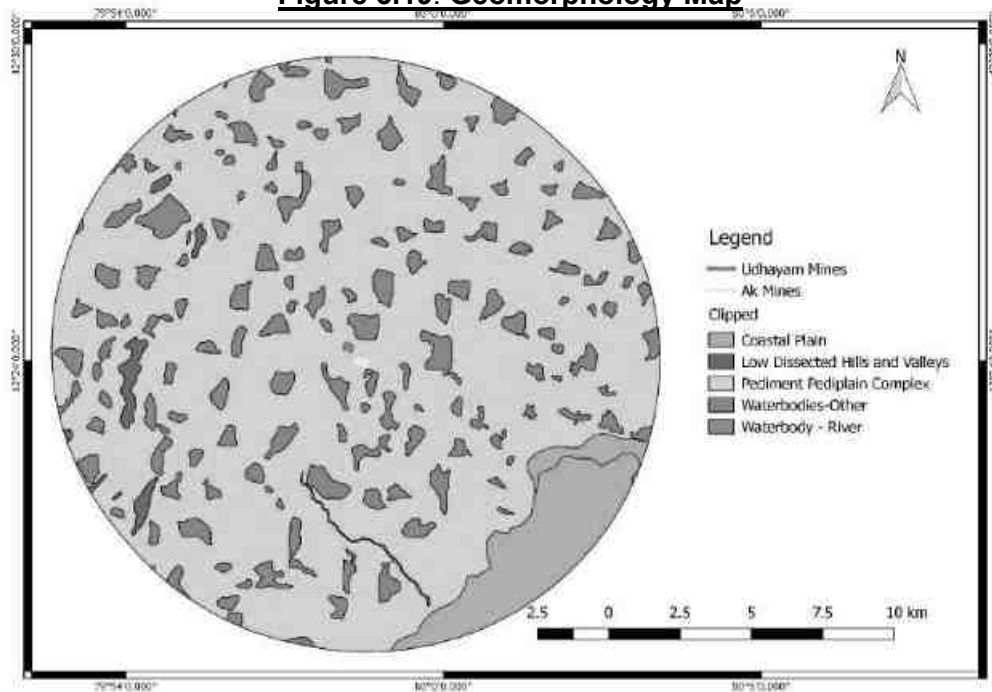
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**Figure 3.18: Geology Map**



**Geomorphology:** Pediment Pediplain complex is dominate the study area, while the lease area also falls in the Pediment Pediplain complex.

**Figure 3.19: Geomorphology Map**

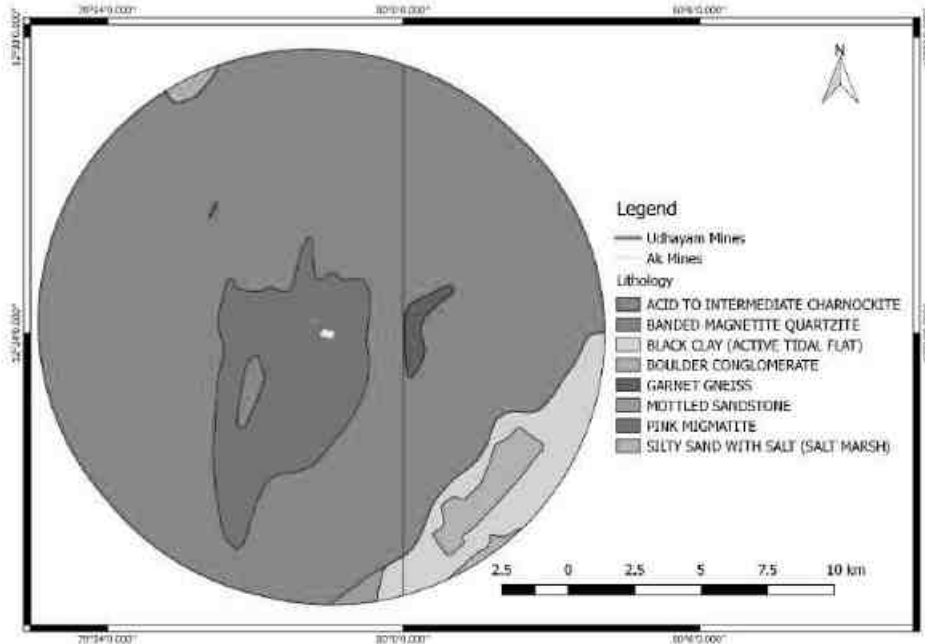




**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.045 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

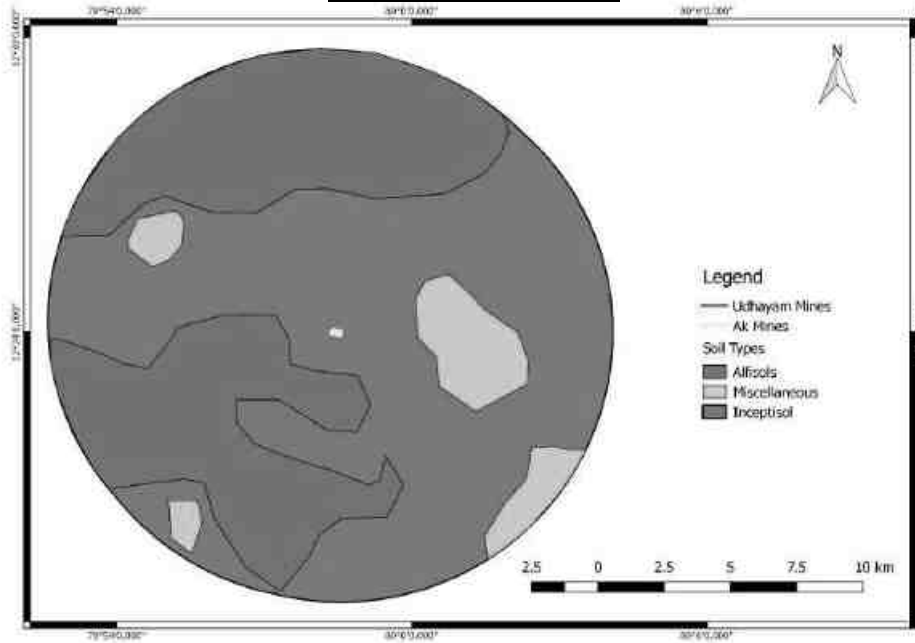
**Lithology:** The study area is mainly dominated by Acid to Intermediate Charnockite.

**Figure 3.20: Lithology Map**



**Soil:** The study area is characterized by Inceptisol and Alfisols (Figure No. 3.24), the project area is dominated with Inceptisol.

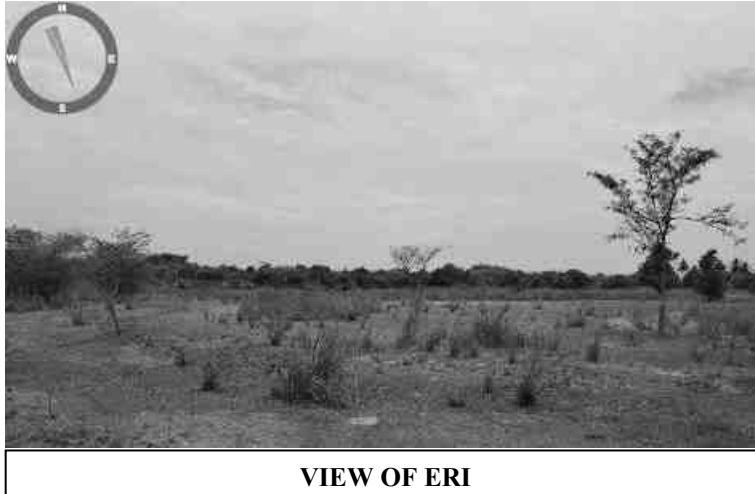
**Figure 3.21: Soil Map**



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**3.6.3 HYDROLOGICAL SCENARIO OF THE STUDY AREA:**

There are no perennial water courses in both the lease areas. There is an Eri located a distance of 110m on the south eastern side of Roughstone and Gravel Quarry of AK Blue metals. It is dry, covered with silt, bushes and not interconnected from the upstreamside.



As per village map there is an odai on the south eastern side of the lease area of Udhayam Mines and Minerals Private Limited. Physically it is not present in the field no such course is visible. A safety distance of 10m has been left for this seasonal drainage channel.

Due to scanty rainfall the eri and the drainage channel remains dry for most of the year. Earthen bund will be formed within the lease area of Udhayam Mines and Minerals on the south eastern and eastern side. There is no proposal to discharge any effluent into either of these water bodies. No major impact is envisaged on the nearby water bodies due to project operations. The rock type noticed in the lease area is Charnockite type. The Charnockite is part of peninsular Gneisses, a high grade metamorphic rock. The hydrological regime of the area is studied through various published documents, study of well and borewells in the area and discussion with the locals. From the study the following are observed:

**Well inventory:**

Due to rocky dyke like formation for a major stretch of land in and around the lease area, the ground water potential is very poor. However at far away plains, depth to water table in the that the wells are as deep as 8 ft to 40 ft. Water level after good monsoon reaches almost near the surface level whereas it lowers down substantially during summer season. Bore wells are 250-350 ft deep, give better yield post monsoon whereas the yield becomes very less later.



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In the study area, the shallow aquifer is developed through dug wells and deeper aquifer through tube wells. The groundwater has revealed that potential fractures are encountered at deeper levels. The occurrence of groundwater mainly in the porous soil are weathered layers, very negligible amount of groundwater percolated through the poorly fractured layer, after that there is no existence of groundwater. Besides, the mining area consists of hard compact rock, no major water seepage within the mine is expected. The working nearby mines validates the same.

\*\*\*\*\*



# **CHAPTER - IV**

## **ANTICIPATED ENVIRONMENTAL IMPACTS & MITIGATION MEASURES**

## **CHAPTER 4**

### **ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES**

#### **4.1 GENERAL**

In these projects Mechanized Open Cast mining will be carried out to quarry out Rough Stone & Gravel. The identified impacts due to this mine during mining and associated activities have been studied in relation to various environmental components like Air, water, noise, vibration, land, transport etc., and the details of the same are elaborated in this chapter.

#### **4.2 AIR ENVIRONMENT:**

##### **4.2.1 IMPACTS DUE TO PROJECT OPERATION:**

The existing ambient air quality in the area has been described in Chapter-III. The proposed mining and allied operations may cause deterioration of air quality due to pollution arising from the project operation if prompt care is not taken. The principal sources of air pollution in general due to mining and allied activities will be:

- ❖ Excavation of material.
- ❖ Movement of HEMM such as Excavators, tippers etc.
- ❖ Loading and unloading operation
- ❖ Transportation

Besides, Gas emission will occur as a result of operation of diesel driven mining equipment, compressors, transporting vehicles, etc.

Particulate matter smaller than 10 microns, referred to as PM<sub>10</sub>, can settle in the bronchi and lungs and cause health problems like Bronchitis, Emphysema, Bronchial Asthma, Irritation of mucus membranes of eyes, etc. Particles smaller than 2.5 micrometers (PM<sub>2.5</sub>), tend to penetrate into the lungs and very small particles (<100 nanometers) may pass through the lungs to affect other organs.

Besides the above mentioned fugitive dust emissions, atmospheric pollution can occur as a result of emission of SO<sub>2</sub>, NO<sub>x</sub>, CO etc., from diesel driven mining equipment, generator sets, etc. Larger suspended particles are generally filtered in the nose and throat and do not cause problems. Higher concentration of SO<sub>2</sub>, NO<sub>x</sub>, CO may cause some health effect on the human



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beings exposed to it. In case of this mine, the following measures will be adopted in both these quarries to control impact on the air quality due to mining operations in the lease area:

**Table 4.1: Impact and Mitigation Measures – Air Environment**

S.No	Activity	Consequence	Mitigation Measures
1	Drilling	Dust Emanation	Usage of Drill bits in good condition
			Covering of drill holes with wet cloth
			Usage of sharp drill bits for drilling of holes.
			Provision of dust filters / mask to workers working at highly dust prone and affected areas.
2	Blasting	Instantaneous dust emanation	Well-designed blasting parameter, effective stemming to achieve optimum breakage occurs without generating fines.
			Use of appropriate explosives for blasting and avoiding overcharging of blast holes.
			Avoiding blasting during high wind periods where the fine dust is carried out away easily affecting the ambient air quality.
			Use of controlled blasting techniques with Nonel to keep the dust generation, noise as well as vibration level within the prescribed limits.
3	Excavation and Loading	Dust emanation, Gaseous Emission	HEMM will be operated as per the manufacturer's guidelines
			Enclosures for operator cabin.
			Imparting sufficient training to operators on safety and environmental parameters.
			Proper maintenance of hauling equipments.
4	Transportation	Dust emanation, Gaseous Emission	Avoiding overloading of dumpers.
			Regular wetting of transport road using mobile water tanker.
			Proper maintenance of haul road and other roads
			Setting up of tyre wash facility in the transport road.
			Avoiding overloading of tippers
			Covering of loaded tippers with tarpaulins during transportation
5	Others	Dust emanation, Gaseous Emission	Vehicular emissions will be controlled through regular and proper preventive maintenance schedules and emissions tests are done with diesel smoke meter equipment to ensure emission values.
			Development of greenbelt / barriers around mine in the safety zone and carrying out plantation within the lease area.
			Fencing with green net as necessary will be carried out around the lease periphery on all sides.



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Due to adoption of all these measures, no major impact on air quality is envisaged due to this proposed opencast mining operation.

The impact on air quality due to the proposed project is estimated using AERMOD View Gaussian Plume Air Dispersion Model developed by Lakes Environmental Software which is based on steady state Gaussian plume dispersion. Details of the modeling study / estimation including the modeling technique and post project air quality values are elaborated in the following paras.

#### **4.2.2 AIR QUALITY IMPACT PREDICTION:**

The model simulations are done for the air pollutant arising from the mining operations, namely, PM<sub>10</sub>, PM<sub>2.5</sub>. **Ground Level Concentration (GLC)** have been computed using hourly meteorological data.

**Table 4.2: Emission Sources**

<b>ACTIVITY</b>	<b>SOURCE TYPE</b>
A. Mining operations	Open pit
B. Transportation	Line

##### **4.2.2.1 Emission Factors**

Quantification of particulate emissions has been carried out by the emission factor technique. Emission factor is a statistical average of the rate at which a pollutant is released during an activity. This factor when multiplied by the level of that activity in a given situation will give the overall effect. Fugitive emissions have been predicted by using standard equations given and suggested by AP-42, USEPA(1998), Coal S&T Project and for mining & allied activities and other factors. The modeling is done for the peak production to know the worst case scenario. The details of the emission factors used for the same is provided below:

**Table 4.3: Emission Factors**

<b>S.No</b>	<b>Activity</b>	<b>PM10</b>	<b>PM2.5</b>	<b>Unit</b>
1	Ore Loading	1.5 x 10 <sup>-3</sup>	2.1 x 10 <sup>-4</sup>	Kg/T
2	OB Loading	1.4 x 10 <sup>-4</sup>	1.5 x 10 <sup>-5</sup>	Kg/T
3	Hauling inside lease area	0.19	0.019	g/VKT
4	Drilling	0.1	0.04	Kg/hole



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**4.2.2.2 Emission Rates:**

Based on the emission factors, after adopting necessary control measures like dust suppression, Proper maintenance of HEMM, using better quality diesel, using latest equipment, proper maintenance of roads, etc. the expected emission rate due to various operations in this project is calculated and is given below:

**Table 4.4: Emission Rate**

ACTIVITIES	AK Blue Metals		Udhayam Mines and Minerals	
	PM <sub>10</sub> (g/sec)	PM <sub>2.5</sub> (g/sec)	PM <sub>10</sub> (g/sec)	PM <sub>2.5</sub> (g/sec)
Excavation	0.09	0.01	0.03	0.00
Drilling	0.38	0.15	0.13	0.05
Hauling	0.38	0.05	0.13	0.02
<b>Total</b>	<b>0.84</b>	<b>0.22</b>	<b>0.28</b>	<b>0.07</b>

- A. Emission Source Coordinates:** The center of mine was assumed (0, 0) in the mathematical modeling.
- B. Meteorological Conditions Used In Predictions:** The hourly meteorological data has been generated for the monitoring period and the same has been used in the predictions.

**4.2.2.3 Results and Discussions**

**Table 4.5: Peak Incremental Concentration**

S.No	Parameters	Peak incremental concentration µg/m <sup>3</sup>	
		AK Blue Metals	Udhayam Mines and Minerals
1	PM <sub>10</sub>	3.01	1.63
2	PM <sub>2.5</sub>	1.75	0.54

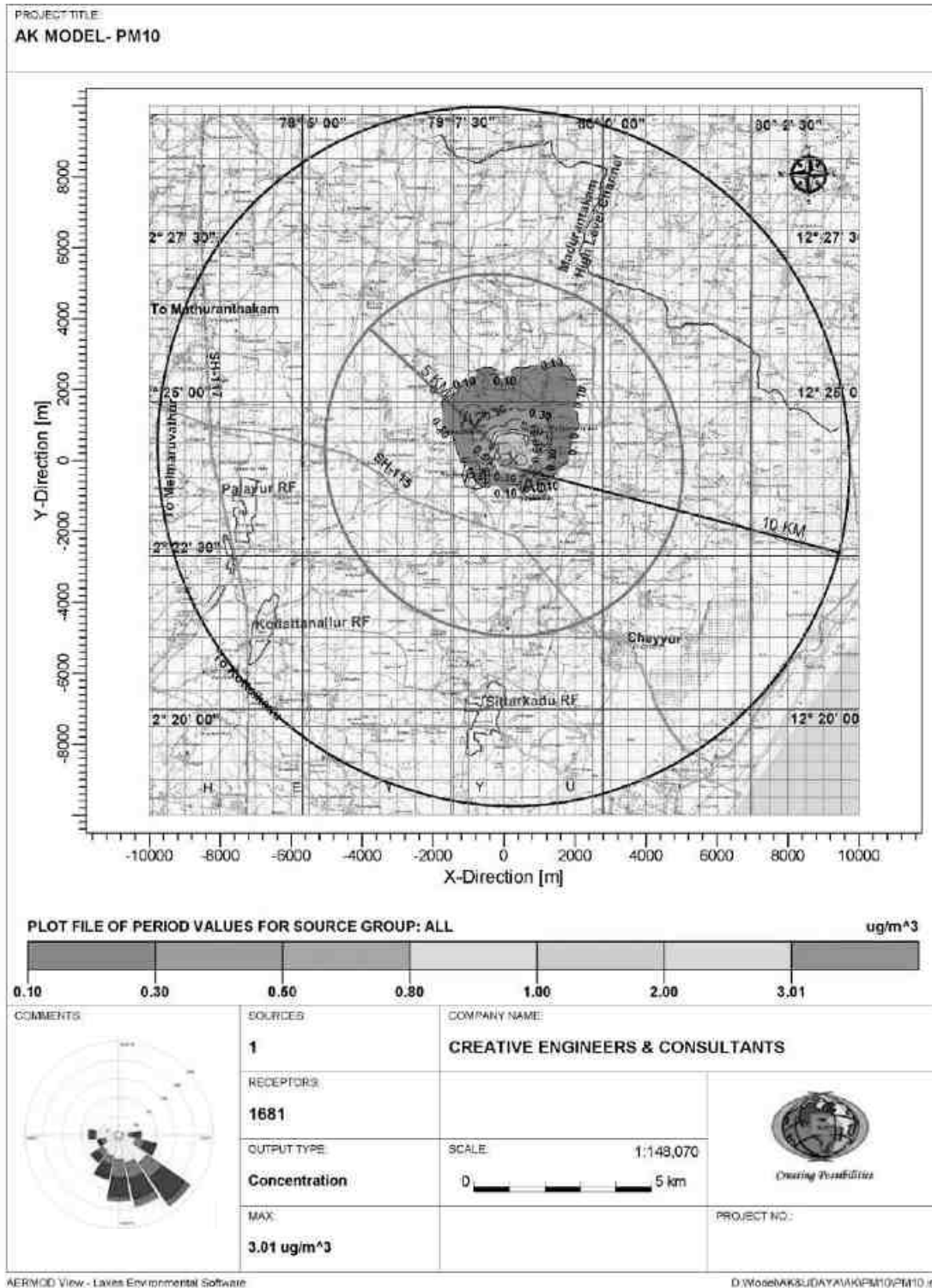
It is observed that the peak incremental concentration for PM<sub>10</sub>, PM<sub>2.5</sub> occurring very near the source. At away from the source the values are getting reduced due to dispersion effects. The Isopleths of PM<sub>10</sub>, PM<sub>2.5</sub> concentrations with control measures scenario have also been drawn and these are given in **Figure No.4.1 and 4.2**. The incremental and predicted concentrations at the locations of ambient air quality have been discussed in the following section.





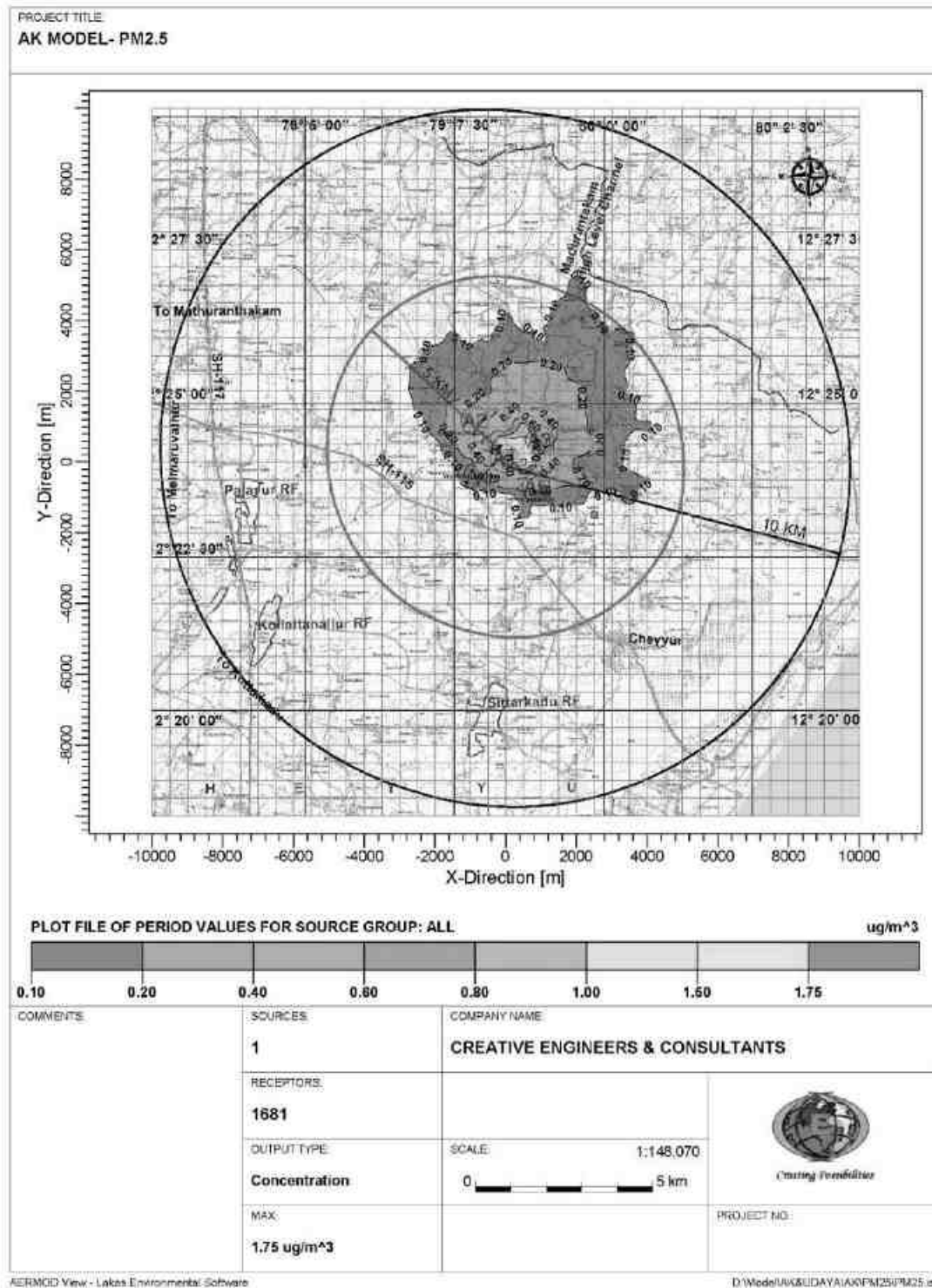
**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.045 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

**Figure 4.1: Isopleth of GLC prediction – PM<sub>10</sub> – AK Blue Metals**



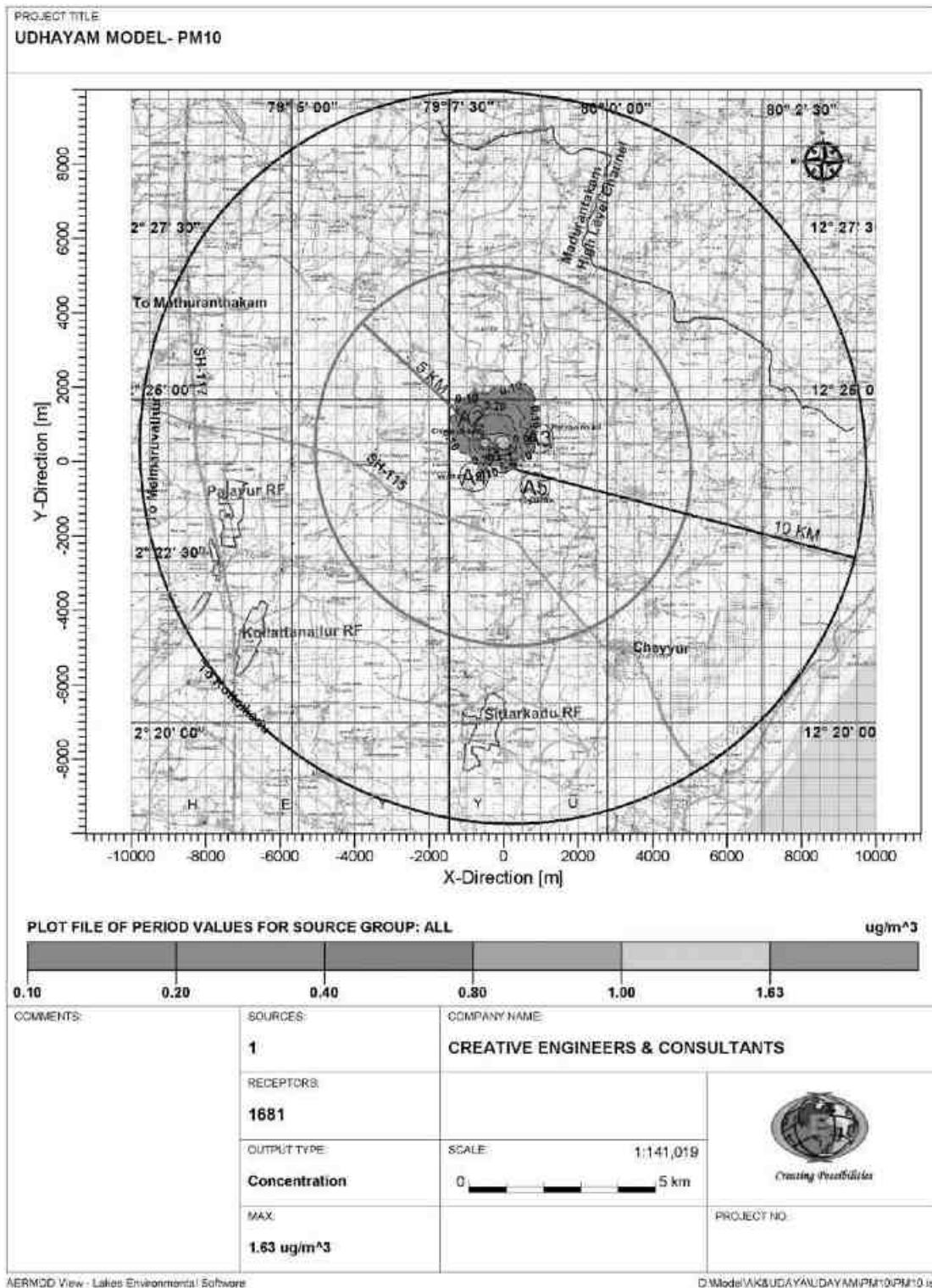
**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.04.5 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

**Figure 4.2: Isopleth of GLC prediction – PM<sub>2.5</sub> – AK Blue Metals**



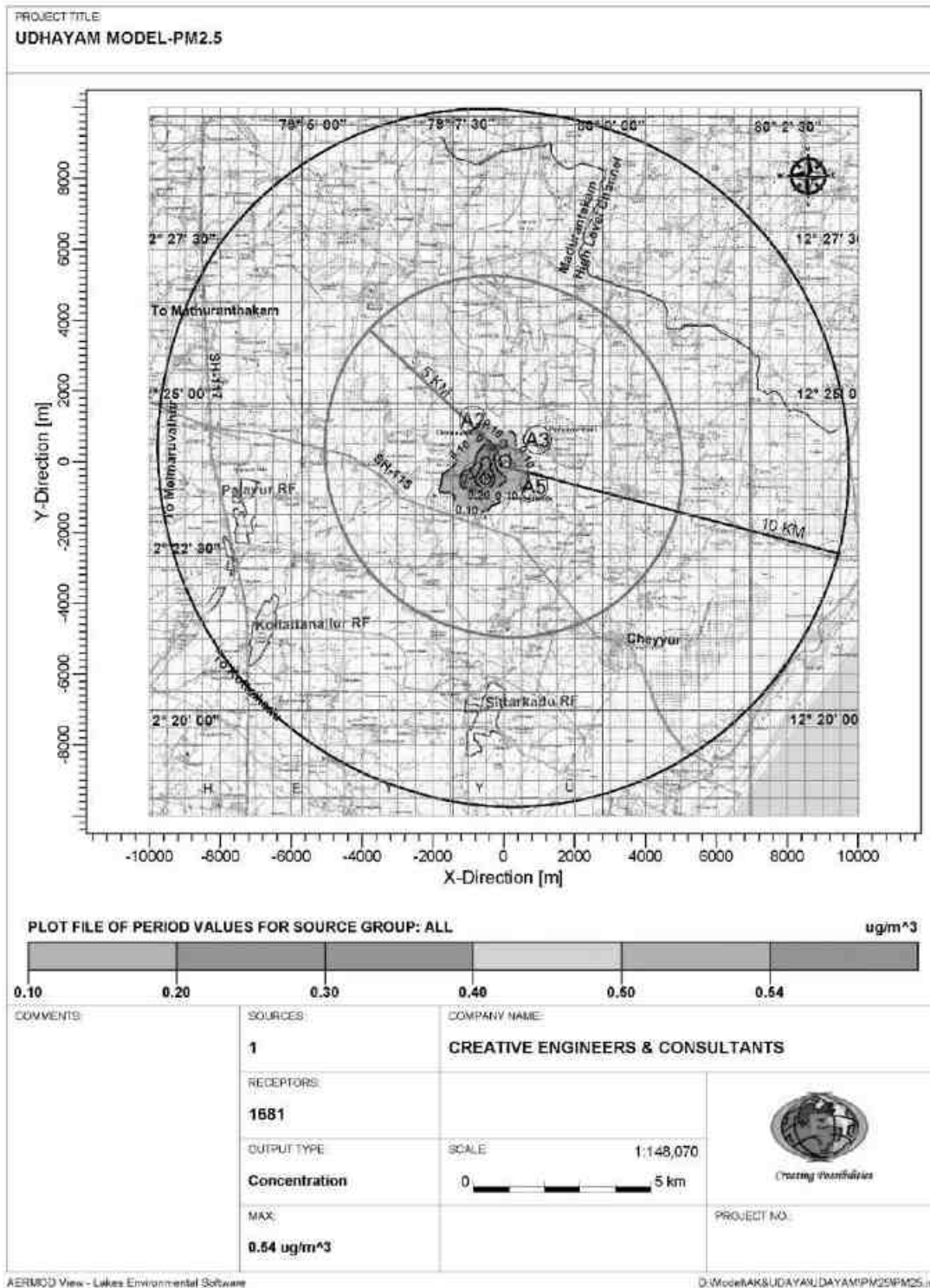
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**Figure 4.3: Isopleth of GLC prediction – PM<sub>10</sub>– Udhayam Mines and Minerals**



**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.045 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

**Figure 4.4: Isopleth of GLC prediction – PM<sub>2.5</sub>– Udhayam Mines and Minerals**



**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.04.5 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

**Predicted Ambient Air Quality:**

**Table 4.6: Concentrations Of PM<sub>10</sub> after Project Implementation**

S. No	Location	Background Concentration	Values in $\mu\text{g}/\text{m}^3$				Statutory Limits
			AK Blue Metals		Udhayam Mines and Minerals		
			Incremental Conc	Post Project Conc	Incremental Conc	Post Project Conc	
1	A1- Near Lease Area	60.4	3.0	63.4	1.6	61.3	-
2	A2-Chinnavelikadu	55.7	<1.0	56.7	<1.0	56.7	100
3	A3-Periya Venmani	71.6	<1.0	72.6	<1.0	72.6	
4	A4-Venmari	63.2	<1.0	64.2	<1.0	64.2	
5	A5-Nagamalai	68.2	<1.0	69.2	<1.0	69.2	

**Table 4.7: Concentrations Of PM<sub>2.5</sub> after Project Implementation**

S. No	Location	Background Concentration	Values in $\mu\text{g}/\text{m}^3$				Statutory Limits
			AK Blue Metals		Udhayam Mines and Minerals		
			Incremental Conc	Post Project Conc	Incremental Conc	Post Project Conc	
1	A1- Near Lease Area	28.4	1.8	30.2	<1.0	29.4	-
2	A2-Chinnavelikadu	24.5	<1.0	25.5	<1.0	25.5	60
3	A3-Periya Venmani	34.4	<1.0	35.4	<1.0	35.4	
4	A4-Venmari	30.0	<1.0	31.0	<1.0	31.0	
5	A5-Nagamalai	33.4	<1.0	33.4	<1.0	33.4	

It can be seen that the resultant added concentrations with baseline figures even at worst scenario, show that the values of ambient air quality with respect to PM<sub>10</sub> are within the stipulated statutory limits for both the projects.

Additionally, cumulative impact on air quality is assessed, and the details regarding the same has been provided below:

**Table 4.8: Emission Rate - Cumulative**

Activities	PM <sub>10</sub> (g/sec)	PM <sub>2.5</sub> (g/sec)
Excavation	0.12	0.02
Drilling	0.55	0.22
Hauling	0.55	0.08
<b>Total</b>	<b>1.23</b>	<b>0.32</b>

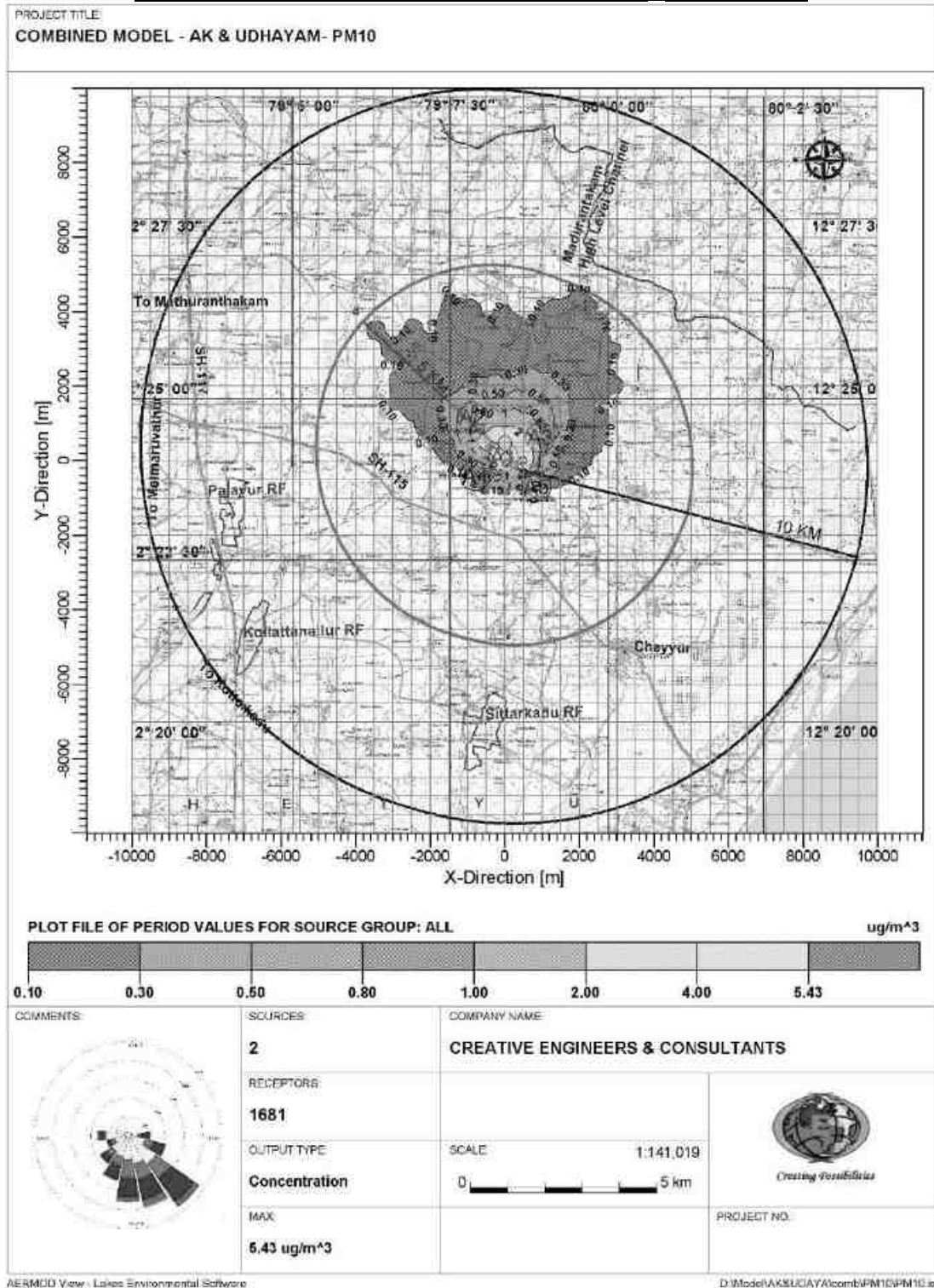
**Table 4.9: Peak Incremental Concentration- Cumulative**

Parameters	Peak incremental concentration $\mu\text{g}/\text{m}^3$
PM <sub>10</sub>	5.43
PM <sub>2.5</sub>	3.30



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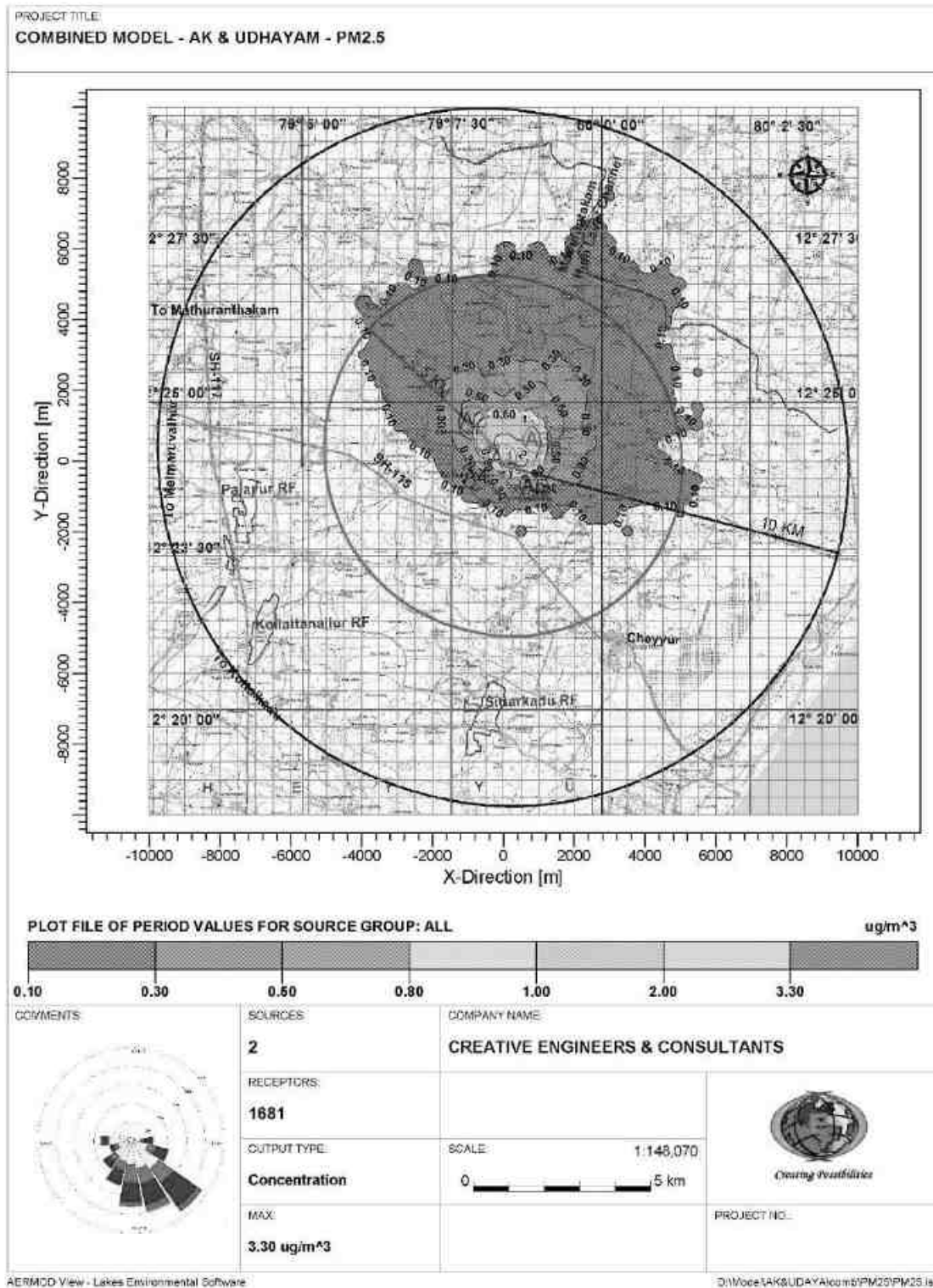
**Figure 4.5: Isopleth of GLC prediction – PM<sub>10</sub>– Combined**





**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.045 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

**Figure 4.6: Isopleth of GLC prediction – PM<sub>2.5</sub>– Combined**



**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.04.5 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

The post project concentrations of PM10, PM2.5, (GLC) (base line + incremental) after adopting necessary control measures is provided below:

**Table 4.10: Post Project Concentrations Of PM<sub>10</sub> -Cumulative**

Values in  $\mu\text{g}/\text{m}^3$

S. No	Location	Background Concentration	Incremental Conc	Post Project Conc	Statutory Limits
1	A1- Near Lease Area	60.4	5.4	65.8	-
2	A2-Chinnavelikadu	55.7	<1.0	56.7	100
3	A3-Periya Venmani	71.6	<1.0	72.6	
4	A4-Venmari	63.2	<1.0	64.2	
5	A5-Nagamalai	68.2	<1.0	69.2	

**Table 4.11: Post Project Concentrations Of PM<sub>2.5</sub> -Cumulative**

Values in  $\mu\text{g}/\text{m}^3$

S. No	Location	Background Concentration	Incremental Conc	Post Project Conc	Statutory Limits
1	A1- Near Lease Area	28.4	3.3	31.7	-
2	A2-Chinnavelikadu	24.5	<1.0	25.5	60
3	A3-Periya Venmani	34.4	<1.0	35.4	
4	A4-Venmari	30.0	<1.0	31.0	
5	A5-Nagamalai	33.4	<1.0	33.4	

The cumulative post project concentration with respect to PM10 is in the range of 56.7  $\mu\text{g}/\text{m}^3$  to 72.6  $\mu\text{g}/\text{m}^3$  and with respect to PM2.5 are in the range of 25.5  $\mu\text{g}/\text{m}^3$  to 35.4  $\mu\text{g}/\text{m}^3$  which are within the statutory limits in each case. For preservation of environment in this mine strict enforcement of management schemes and regular air quality monitoring will be undertaken for taking corrective actions, as needed. By adopting the effective implementation of all the mitigative measures, no adverse impact on Air quality due to the mining operation in this lease area is expected.

#### 4.3 WATER ENVIRONMENT:

##### 4.3.1 WATER REQUIREMENT:

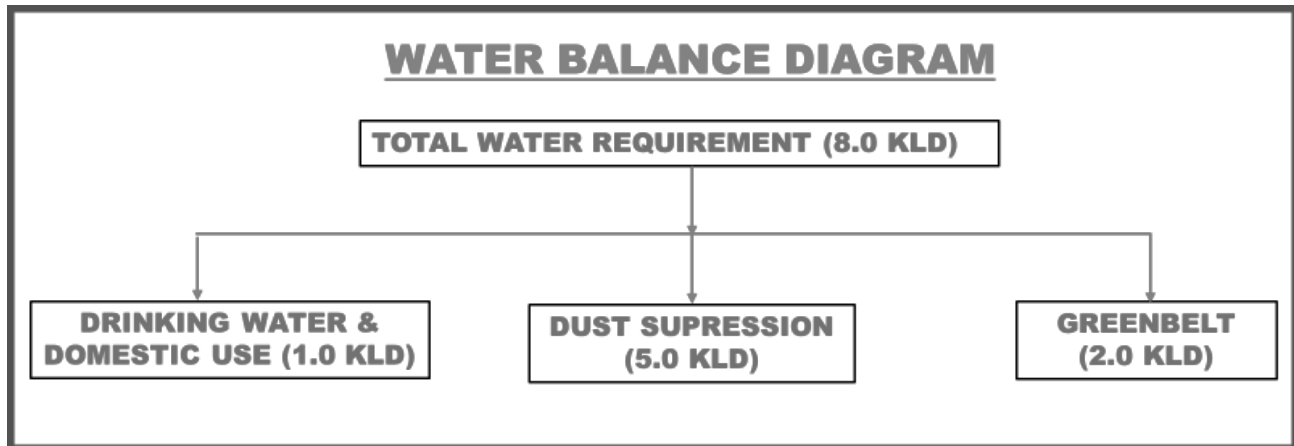
The water requirement for each of these two projects are 8 KLD comprising 1.0 KLD for drinking water and domestic use, 5.0 KLD for dust suppression and 2.0 KLD for greenbelt. The water will be sourced initially from outside agencies. Later the rainwater collected in the respective mine





pit sump will be used for this purpose. The water balance diagram for the same is shown in Figure No 4.3.

**Figure 4.7: Water Balance Diagram**



#### **4.3.2 SOURCES OF WATER POLLUTION:**

The existing water environment showing water quality at different sampling stations in the area has been described in Chapter-III.

Direct impact on human beings due to poor water quality consequent to mining operation can lead to various water borne diseases like diarrhea, jaundice, dysentery, typhoid, etc. Besides, the polluted water may not be useful for animal or human consumption, vegetation and may affect aquatic life, if effluents are not properly treated to remove the harmful pollutants. The major sources of water pollution normally associated due to mining and allied operations are:

- a. Domestic effluent.
- b. Washouts from stockpile if any.
- c. Disturbance to drainage course in the project area
- d. Generation of mine pit water pumped out from deeper workings if any.

#### **4.3.3 TREATMENT SCHEME:**

##### **A. Generation of domestic effluent:**

The domestic sewage to be generated from the projects will be collected in respective septic tank with soak pits.

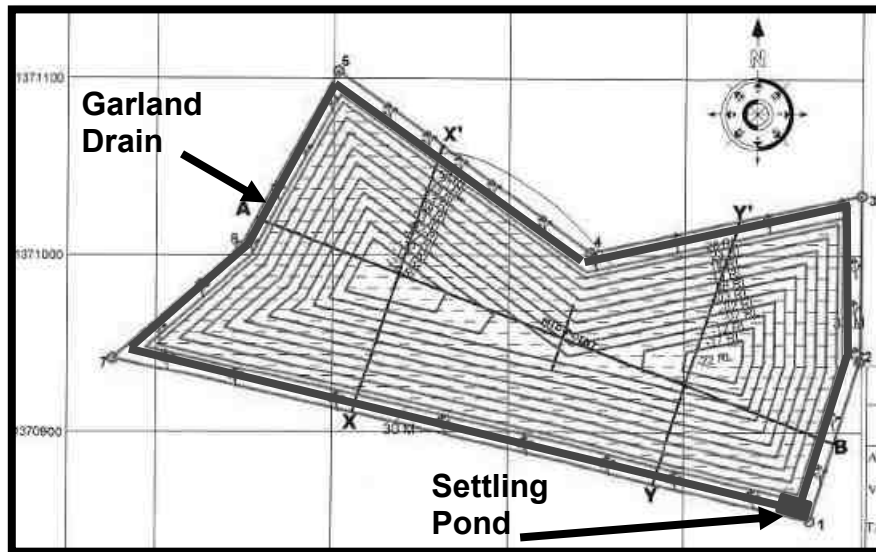
**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.04.5 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

**B. Washouts from overburden, ore stockpile, etc.**

Since the entire material from the quarry faces will be directly dispatched to the consumers, there will not be any stockpiles. There are no waste dumps in both quarries. As such there will not be any wash out due to stock pile or waste dumps.

The rain water falling in the quarries will be harvested in the sump at the lowest level of the respective quarry. This sump will act as a settling pond to prevent solids escaping along with discharge, before outlet. etc. Towards surface runoff management, a garland drain of length 1100m for Roughstone and Gravel Quarry of AK Blue Metals Private Limited and 1050m for Roughstone and Gravel Quarry of Udhayam Mines and Minerals Private Limited will be constructed and will be connected to settling ponds with silt traps. The supernatant clear water from the settling pond will be flow to the downstream users. The surface runoff management structures diagram is given in **Figure No 4.4.**

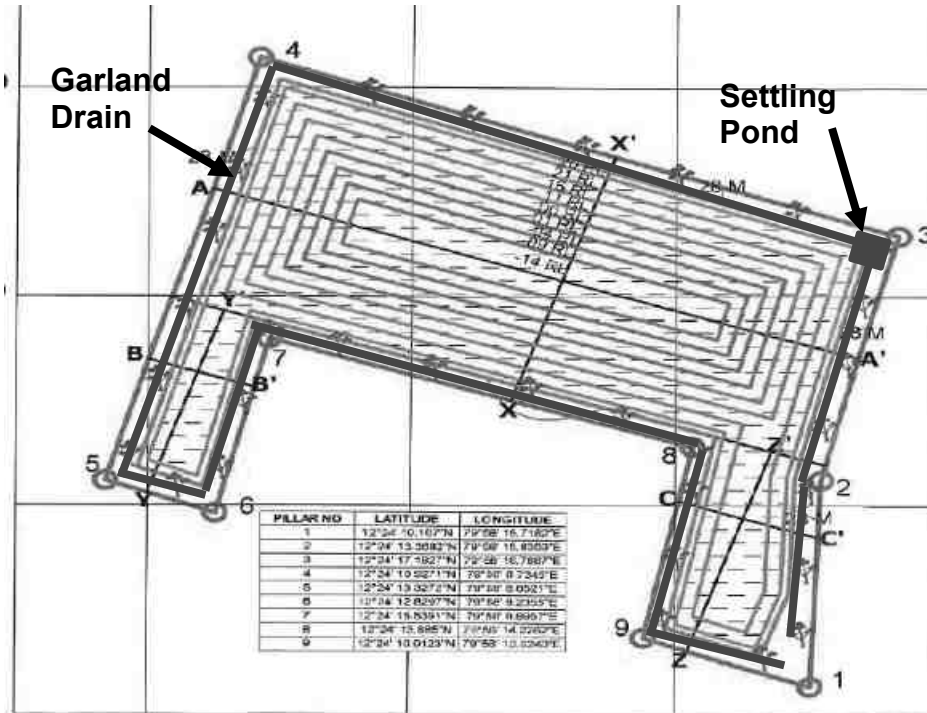
**Figure 4.8: Surface Runoff Management Structures – AK Blue Metals Private Limited**



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**Figure 4.9: Surface Runoff Management Structures – Udhayam Mines and Minerals**

**Private Limited**



**C. Disturbance to drainage courses**

There are no perennial water courses in both the lease areas. There is an Eri located a distance of 110m on the south eastern side of Roughstone and Gravel Quarry of AK Blue metals. It is dry, covered with silt, bushes and not interconnected. As per village map there is an odai on the south eastern side of the lease area of Udhayam Mines and Minerals Private Limited. Physically it is not present in the field no such course is visible. A safety distance of 10m has been left for this seasonal drainage channel. Due to scanty rainfall the eri and the drainage channel remains dry for most of the year. Earthen bund will be formed within the lease area of Udhayam Mines and Minerals in the south eastern and eastern side in the safety zone. Besides, the intervening land will also be fenced and developed with green belt. There is no proposal to discharge any effluent into either of these water bodies. No major impact is envisaged on the nearby water bodies due to project operations. It is also proposed to clean & desilt the unused eri and strengthen its peripheral bund in consultation with the authorities which will augment the water storage and ground water table.



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**D. Generation of mine pit water pumped out from deeper workings if any.**

The occurrence and movement of groundwater in hard rock formations are restricted to the porous zones of weathered formations and the open systems of fractures, fissures and joints. Generally, in hard rock regions, occurrence of weathered thickness is discontinuous both in space and depth. Hence recharge of groundwater in hard rock formations is influenced by the intensity and depth of weathering. As already mentioned, the lease area is part of a huge dyke like compact rock formation with less intergranular porosity and fractures leading to less permeability and transmissivity values and as such the ground water level in this area is deep from surface. As such hence no major water seepage within the mines is expected from the periphery. The ultimate pit depth of mining is 52m for Rough stone and Gravel Quarry of AK Blue Metals Pvt. Ltd. and 42m for Udhayam Mines and Minerals Pvt. Ltd.. The ground water table in this area is below this level. Hence, ground water intersection in not envisaged and ground water will not be affected appreciably due to the quarrying operation. As mentioned earlier, the rainfall will be collected in the mine floor sump and advantageously used. Excess water if any in the sump will be pumped to settling pond for downstream users.

**4.3.3.1 STAGE OF GROUNDWATER DEVELOPMENT**

Details of hydrological scenario of the study area were given in para 3.6, Chapter – III. The groundwater resource data of Kancheepuram district was obtained from the data provided in the technical report of the National Water Mission – Notes on Kancheepuram District.

**Table 4.12: Ground Water Resources Estimation– Madhurantakam Taluk (Ha-m)**

Net Groundwater Availability	Existing Gross Draft for Irrigation	Existing Gross Draft for Domestic and industrial water supply	Existing Gross Draft for all uses	Stage of Ground water Development (%)	Category of Block
1569.86	893.48	41.86	935.33	59.6	Safe

From the table it is seen that the stage of groundwater development of Aruppukottai where the study area falls is 60%. In view of this, this area can be categorized as 'Safe' from ground water development point of view. Thus there is scope for further ground water development.

**4.3.4 REDUCING WATER CONSUMPTION OVER THE YEARS:**

**4.3.4.1 GENERAL METHODS:**

Use of water will be monitored and used to the minimum required. Awareness will be spread to



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the employees about the importance of water conservation. Tap and showers will be turned off immediately after use and any leaks will be monitored and immediately controlled. Water requirement for greenbelt and dust suppression can be reduced by choosing the native plants/trees species with low water requirement and which can sustain in such conditions for greenbelt/ plantation and also optimum usage to the required minimum. While the dust suppression itself is an important method of pollution control for air pollution due to dust, the water consumption will be monitored strictly. The water tanker will be examined for any sources of leaks and if found will be immediately sealed so that water can be utilized for dust suppression effectively without loss.

#### **4.3.4.2 RAINWATER HARVESTING PLAN**

Since the lease proximate areas are hard rocky formations with less water potential and the rainwater is the major source for replenishment of ground water, effective rainwater harvesting and other water augmentation measures are proposed in this project.

- a) Development of garland drain around the quarry connected to settling tank.
- b) Cleaning of drain periodically to prevent siltation
- c) The supernatant clear water from the settling pond will drain into the nearby drainage on the western side of the lease.
- d) Utilizing the rainwater harvested in the mine pit to meet the water requirement of the project.
- e) Excess water, if any in consultation with local villagers and in line with government practices shall be provided to the downstream users.
- f) Desilting and maintenance of Eri east of the lease area in consultation with the authorities.

#### **4.4 NOISE AND VIBRATION:**

##### **4.4.1 NOISE ENVIRONMENT:**

The ambient noise levels in the study area have been discussed in Chapter - III. The data shows that the existing noise levels are within statutory tolerable limits. The impact prediction



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and control measure for noise environment due to mining and allied activities is described below:

**4.4.1.1 IMPACT PREDICTION DUE TO NOISE:**

Noise is one of the inevitable causes of pollution in mining operations, largely due to the extensive mechanization adopted. Besides, other operations such as drilling, blasting, movement of vehicles, etc., also produce noise of considerable magnitude in mining operations. The main sources of noise and expected levels are given below in **Table no – 4.9.**

**Table 4.13: Main Sources of Noise**

Sl. No.	Source	Inside Cabin	Noise level at dB(A) 10 m. from source
1	Shovel	84-91	59-68
2.	Dumpers/Tippers	87-96	75-85
3.	Drill	88- 95	75-83

Prolonged exposure to a high noise level is harmful to the human auditory system and can create mental fatigue, rebellious attitude, annoyance and carelessness, which may lead to neglect of work and also result in accidents. The impact of noise level as per World Health Organization’s 1986 notification is given below in **Table No - 4.10.**

**Table 4.14: Impact of Noise Levels**

NOISE LEVELS	ADVERSE EFFECTS
90-115 dB	Partial deafness and nervous irritability
> 115 dB	Permanent deafness
Impulsive noise (>90dB)	Frightens livestock grazing in the nearby areas

OSHA (Occupational Safety and Health Administration), USA and other similar organisations stipulate that noise level up to 90 dB(A) is acceptable for eight hours exposure Leq (Equivalent sound level) (8hrs) per day. The Directorate General of Mines Safety, in circular No. DG (Tech)/18 of 1975, has prescribed the noise level in mining occupations (TLV) for workers, in an 8 hour shift period with unprotected ear as 90 dB(A) or less.

The noise will be felt only near the active sources. There will be considerable reduction in the noise level due to the absorption factor, environmental surroundings and other attenuation factors. As far as absorption factor is concerned, If the ground cover is vegetated or has a soft texture, sound will decrease at the rate of 4.5 dB(A) every time the distance between the source and the observer is doubled. Besides, there will be shielding factor, which takes into account the



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environmental surroundings. With every 30m of dense land scape vegetation, 5 dB(A) of additional attenuation can be obtained up to a maximum of 10 dB(A). As such at away places the effect of noise will not be felt.

Anticipated noise levels resulting from operation of the various machineries like excavator, tippers, drill have been computed using point source model. Computation of cumulative noise levels at the nearby villages is made based on the assumption that there are no attenuation paths between the source and the boundary. Noise modeling is carried out using the following formula:

$Lp2 = Lp1 - 20 \log R2/R1$ , Where,  $Lp1$  and  $Lp2$  are sound pressure levels at points located at distances  $R1$  and  $R2$  respectively from the source. The study results are as follows:

**Table 4.15: Post Project Noise Levels**

SI.No	Location	Baseline Day Eq.in dB(A)	Post project noise Eq in dB(A)	Limit dB(A) as per MoEF&CC
1.	Near Lease Area	45.8	46.4	90
2.	Chinnavelikadu Village	43.6	43.8	55
3	Periya Venmani Village	50.2	50.6	55
4	Venmari Village	46.0	46.2	55
5	Nagamalai Village	47.4	47.7	55

From the studies, it is found that the predicted Noise Levels due to mining operations at the periphery of the mine lease itself will be less even without considering any attenuation factor. However, practically there will be attenuation due to vegetation etc., and as such there will not be any adverse noise propagation outside the lease boundary. Since the habitations are also away the effect of noise due to mining operations will not be felt at all in the surrounding villages.

**4.4.1.2 CONTROL MEASURES FOR NOISE ENVIRONMENT:**

Hence, by following mitigative measures for noise control, the impact on noise levels will be insignificant:

- Planting rows of native trees along roads, around mine area and other noise generating centers to act as acoustic barriers.
- Sound proof operator’s cabin for equipments like shovel, tippers, etc.



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- Proper and regular maintenance of equipments may lead to less noise generation.
- Providing in-built mechanism for reducing sound emissions.
- Providing earplugs to workers exposed to higher noise level.
- Conducting regular health check-up of workers including Audiometry test for the workers engaged in noise prone area.
- Displaying the noise level status of operational machinery on the machines to know the extent of noise level and to control the time to which the worker is exposed to higher noise levels.

Further green belt and afforestation will be planned and executed to abate noise and dust propagation in the area.

#### **4.4.2 GROUND VIBRATION DUE TO BLASTING EFFECTS:**

Vibrations due to blasting may cause damage to nearby structures, if appropriate control measures are not adopted. Flyrock is another possible damage causing outcome of blasting. There are many factors, which influence these, like long explosive column with little stemming column, improper burden, loose material or pebbles near holes and long water columns in the holes.

The following control measures will be planned in both the projects to reduce ground vibratory conditions to sustainable statutory limits:

- 1) Carrying out controlled blasting using Nonel delay detonator.
- 2) Optimum design for burden and spacing.
- 3) Reducing explosive charge per delay to minimum.
- 4) The peak particle velocity (PPV) of ground vibration will be kept very low through optimally controlled blasting techniques, after necessary field trials.
- 5) To contain fly rocks, stemming column to be less than burden of the hole. Blasting area will also be muffled, if necessary, to stop fly rocks propagation.
- 6) Blasting will not be carried out when strong winds are. Blasting will be done during midday time.





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- 7) Controlled blasting to avoid tension cracks which may endanger the stability of bench slopes in the mine.
- 8) Proper care and supervision during blasting by a competent and experienced person to be carried out.

By adoption of above measures, it will be ensured that the ground level vibration due to blasting are maintained within the limits prescribed by DGMS, Dhanbad at the mining areas vide Circular No. 7 dated 29 -08-1997 as given below:

**Table 4.16: Permissible Peak Particle Velocity (PPV) In Mining Areas**

Type of structure	Dominant excitation frequency Hz		
	<8 Hz	8-25 Hz	>25 Hz
In mm/sec			
<b>A. Buildings/structures not belonging to owner</b>			
Domestic houses /structures (Kuchha brick and cement)	5	10	15
Industrial buildings (RCC and framed structures)	10	20	25
Objects of historical importance and sensitive structures.	2	5	10
<b>B. Building belonging to owner with limited span of life</b>			
Domestic houses/structures (Kuchha brick and cement)	10	15	25
Industrial buildings (RCC and framed structures)	15	25	50

Besides, different blasting time for the projects in the vicinity is suggested and the timing is to be mentioned in the display board in the respective mines entrance.

#### 4.5 LAND ENVIRONMENT:

Both the projects are patta lands in the name of the respective applicant companies. The present land use pattern, and the post mining land use pattern is shown below:

**Table 4.17: Land Use - AK Blue Metals Pvt. Ltd.**

S.No	Land Use	Present (Ha)	At the end of plan period (Ha)	Conceptual Period (Ha)
1	Quarrying Pit	--	4.50	4.50
2	Green Belt	--	1.03	1.03
3	Unutilized	5.53	--	--
	<b>Total</b>	<b>5.53</b>	<b>5.53</b>	<b>5.53</b>



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**Table 4.18: Land Use - Udhayam Mines and Minerals Pvt. Ltd**

S.No	Land Use	Present (Ha)	At the end of plan period (Ha)	Conceptual Period (Ha)
1	Quarrying Pit	--	3.100	3.100
2	Green Belt	--	0.945	0.945
3	Unutilized	4.045	--	--
	<b>Total</b>	<b>4.045</b>	<b>4.045</b>	<b>4.045</b>

**4.5.1 LAND RECLAMATION:**

There is no waste generation anticipated in this quarry operation since the entire excavated material will be utilized. Hence, there is no external overburden dump involved. In the post mining stage, mined out area will be left as water body and the rest will be covered with vegetation.

**Table 4.19: Land Use During Post Operational Period- AK Blue Metals Pvt. Ltd.**

S.No	Description	Land use (Ha.)			
		Plantation	Water body	Others	Total
1	Quarrying Pit	-	4.50	-	4.50
3	Green Belt	1.03	-	-	1.03
5	Unutilized	--	-	-	--
	<b>TOTAL</b>	<b>1.03</b>	<b>4.50</b>	<b>-</b>	<b>5.53</b>

**Table 4.20: Land Use During Post Operational Period- Udhayam Mines and Minerals Pvt. Ltd**

S.No	Description	Land use (Ha.)			
		Plantation	Water body	Others	Total
1	Quarrying Pit	-	3.100	-	3.100
3	Green Belt	0.945	-	-	0.945
5	Unutilized	--	-	-	--
	<b>TOTAL</b>	<b>0.945</b>	<b>3.100</b>	<b>-</b>	<b>4.045</b>

Entire mined out area will be properly fenced to prevent inadvertent entry of men and animals. In the post mining stage the entire mined out area shall be used as a rainwater harvesting pond.

**Mine closure :**

At the end of the life of the mine, the following points will be ensured:

- The mine benches will be properly dressed, loose material in the face if any and the mine site will also be cleared.



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- Mine Closure activities will be carried out progressively by way of fencing, laying of garland drain around the lease periphery & plantation.
- The peripheral barbed wire fencing, will be strengthened to prevent inadvertent entry of public and animal. surface runoff management arrangements will be improved so as not to disturb the hydrological cycle of the area post mining.
- Besides, to prevent any access to the mined out void, entrance will be secured with tall gate and a blockage bund across the access road.
- No entry / safety board will be erected all around the lease area.
- Benches will be kept intact and haul road accessibility will be maintained.
- Regular checking to prevent inherent entry in to the lease area post mining will be done.
- PP will ensure effective post closure monitoring.

**4.6 BIOLOGICAL ENVIRONMENT:**

**4.6.1 EXISTING FLORA AND FAUNA:**

The core zone area is barren with grasses and bushes. Details of flora/fauna pattern in core and buffer zones have been described in chapter - III.

**4.6.2 IMPACT OF MINING ON BIOLOGICAL ENVIRONMENT:**

The significance of impact on biological environment due to mining and allied activities on various fronts is described below:

**Table 4.21: Impact on Biological Environment**

<b>S.No</b>	<b>ISSUES</b>	<b>OBSERVATIONS</b>
<b>1</b>	Clearance of vegetation due to mining and allied activities	Apart from clearing of few stunted eucalyptus trees in AK blue metal lease, no clearance of major vegetation is involved in both the leases.
<b>2</b>	Retardation of tree growth, tip burning, etc, due to deposition of dust and the Particulate matter generated from the mining operation.	Necessary mitigative measures like dust suppression, proper maintenance of equipment's, roads will be carried out to prevent dust generation.
<b>3</b>	Proximity to national park/ wildlife sanctuary/reserve	The mining lease areas and the 10 km buffer zone from the periphery of the core zone is devoid of declared ecologically



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	forest/mangroves/Coastline/estuary/ sea	sensitive features like national parks, biospheres, sanctuaries, etc.
4	Release of effluents into water body that also supplies water to wildlife	There is no proposal to discharge any effluent into nearby water bodies.
5	Proposed project could increase siltation that would affect nearby biodiversity area	Surface runoff management structures like garland drain, settling pond etc. as explained above will be constructed and as such there will not be any appreciable impact on surface water quality which in turn can affect the bio diversity of the area.
6	Activities of the project affects the breeding/nesting sites of birds and animals	In the present ML area, there is no wetland. A migratory bird needs sufficient wetlands with sufficient food, shelter, roosting places and nesting places which is not possible here.
7	Located near an area populated by rare or endangered species	There are no Schedule 1 animals
8	Risk of fall/slip or cause death to wild animals due to project activities	In the post mining stage, barbed wire fencing is proposed all around the mined-out void to prevent falling of animals in the mine pits.
9	Project affects the forest-based livelihood/any specific forest product on which local livelihood depends	Not applicable
10	Project likely to affect migration routes	No migration routes are in the area.
11	Project likely to affect flora of an area, which have medicinal value	No such significantly important medicinal value species within the ML area and its nearby region.
12	The project likely to affect wetlands, fish breeding grounds, marine ecology	There are no any wetlands, fish breeding grounds, marine ecology nearby the ML area which will be affected due to this project.
13	Project affects the Agriculture, Forestry and Traditional Practices	Since the lease area forms part of a vast tract of dyke like rocky formation , no agricultural activities are possible and practiced in the lease and its nearby areas. Agricultural activities are carried out far away lands irrigated by tanks and wells during monsoon rainfall. By adoption of systematic mining adhering to all the environmental mitigation measures as explained earlier, no adverse impact on the far away agricultural or surrounding environs envisaged.
14	Impact on soil health and biodiversity	The lease area is rocky type with very little and poor soil cover. (Photograph of the site attached in Chapter-II). Besides, there is no waste generation, disposal or stacking involved in this project. As such no loss of soil health and Bio-diversity is expected.
15	Climate change leading to droughts, floods,etc.	<ul style="list-style-type: none"> <li>•No adverse impact on the surrounding environment is envisaged since the number of equipments to be used to achieve this production is less and the magnitude of operation is of very small level.</li> <li>•Besides, as is it a mining project, no adverse generation of</li> </ul>
16	Pollution leading to release of greenhouse gases (GHG) rise in temperature	



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	<p>(Hydrothermal/Geothermal effect due to destruction in environment, Bio-geochemical processes and its foot prints including environmental stress) and livelihood of local people.</p>	<p>heat is envisaged.</p> <ul style="list-style-type: none"> <li>• Certified vehicles with low carbon emissions will only be used. These equipments will be properly and regularly maintained. Besides, regular vehicular emission tests will be done for the transport vehicles to ensure minimal impact due to carbon emissions. To further mediate the carbon emissions, a good greenbelt and plantation plan has been planned.</li> <li>• Geologically the area in and around the lease area contains charnokite type rock formation containing mostly fallow land. As such there no major vegetation or agricultural activities are observed.</li> <li>• There are no Protected or Eco-Sensitive Zone or forest land nearby wherein it can have an impact.</li> <li>• It will be ensured that mining will be carried out adhering to all the statutory rules and regulations and maintaining the environmental quality within the prescribed standards by effective implementation of various mitigative measures.</li> <li>• These mitigative measures will be continued for the entire lease period ensuring no impact on the environment.</li> <li>• As such release of Greenhouse gases (GHG), rise in temperature, affecting livelihood of the local people, loss of Agriculture, Forestry and Traditional Practices is not envisaged. Such a limited scope will not induce any climatic change leading to droughts, floods etc.</li> <li>• Extensive plantation @ 500 sapling per ha of the lease area will be developed in and around the lease area for carbon absorption.</li> </ul>
<p align="center">17</p>	<p>Possibilities of water contamination and impact on aquatic ecosystem health and impact on Sediment geochemistry in the surface streams</p>	<ul style="list-style-type: none"> <li>• This being a mining project no process effluent will be generated.</li> <li>• Water generation is expected to be due to             <ul style="list-style-type: none"> <li>✓ Direct rainfall falling within the pit</li> <li>✓ Rain water draining near the lease area.</li> </ul> </li> <li>• Direct rain fall will be collected in the mine floor sump. Water from sump will be pumped to settling pond for downstream users.</li> <li>• Rainwater from the mine periphery will be collected through peripheral garland drain. Garland drain will be connected to a settling pond. Supernatant clear water from settling pond conforming to applicable limits will be let out to downstream users for agricultural or other purposes.</li> <li>• Due to above mentioned reasons and absence of perennial water bodies nearby where in any marine ecosystem is observed, no effect on this front is expected.</li> </ul>



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There are no migratory corridors, migratory avian-fauna, rare endemic and endangered species. Therefore there shall be no impacts due to mining activity on them. Even though there are no adverse impact on bio diversity and flora/fauna status due to project operations, positive impacts will arise due to well-planned reclamation measures for restoration of land status in the area ultimately to productive land category with elaborately planned green belt development activities.

**4.6.3 CONTROL MEASURES FOR BIOLOGICAL ASPECTS:**

To reduce the adverse effects on flora/fauna status of the area due to deposition of dust generated from mining operations, mobile water tanker systems will be ensured in all dust prone areas to arrest dust generation. Methodical and well-planned plantation scheme will be carried out depending upon the immediate need, priority and availability of land. The plantation will be done along the lease boundary in a phased manner.

**4.6.4 GREEN BELT & PLANTATION:**

In the lease area, safety barrier 7.5m around the periphery and 10m safety zone. In the Roughstone and Gravel Quarry of AK Blue Metals Pvt. Ltd., about 2800 trees will be planted in and around the lease area. In the Roughstone and Gravel Quarry of Udhayam Mines and Minerals Pvt. Ltd., about 2050 trees will be planted in and around the lease area.

**Table 4.22: Proposed Plantation**

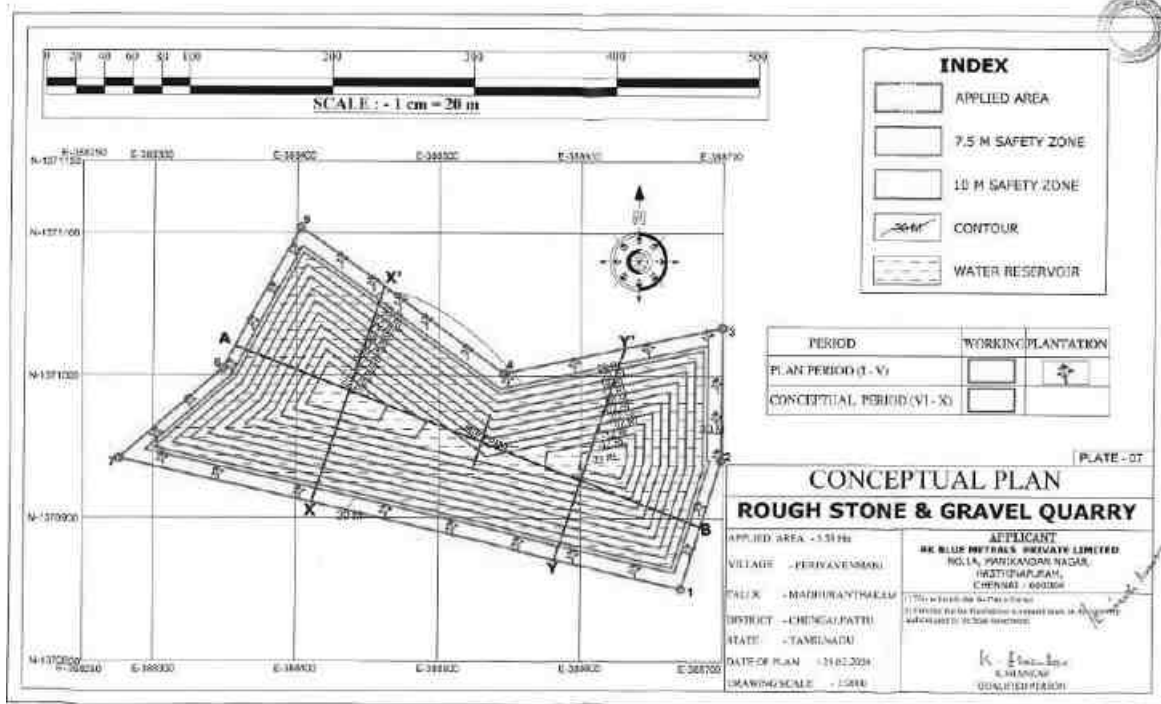
Year	Proposed Plantation – AK Blue Metals	Proposed Plantation – Udhayam Mines	Name of the species
I	560	410	Pungai, Vagai, Vembu, Manjal konrai, Naval, Puvarasu, etc.,
II	560	410	
III	560	410	
IV	560	410	
V	560	410	
<b>Total</b>	<b>2800</b>	<b>2050</b>	

In the post mining stage, in the Roughstone and Gravel Quarry of AK Blue Metals, 4.50Ha of mined out area will be left as water body and 1.03 Ha will be greenbelt area and in the Roughstone and Gravel Quarry, 3.100Ha of mined out area will be left as water body and 0.945 Ha will be greenbelt area.

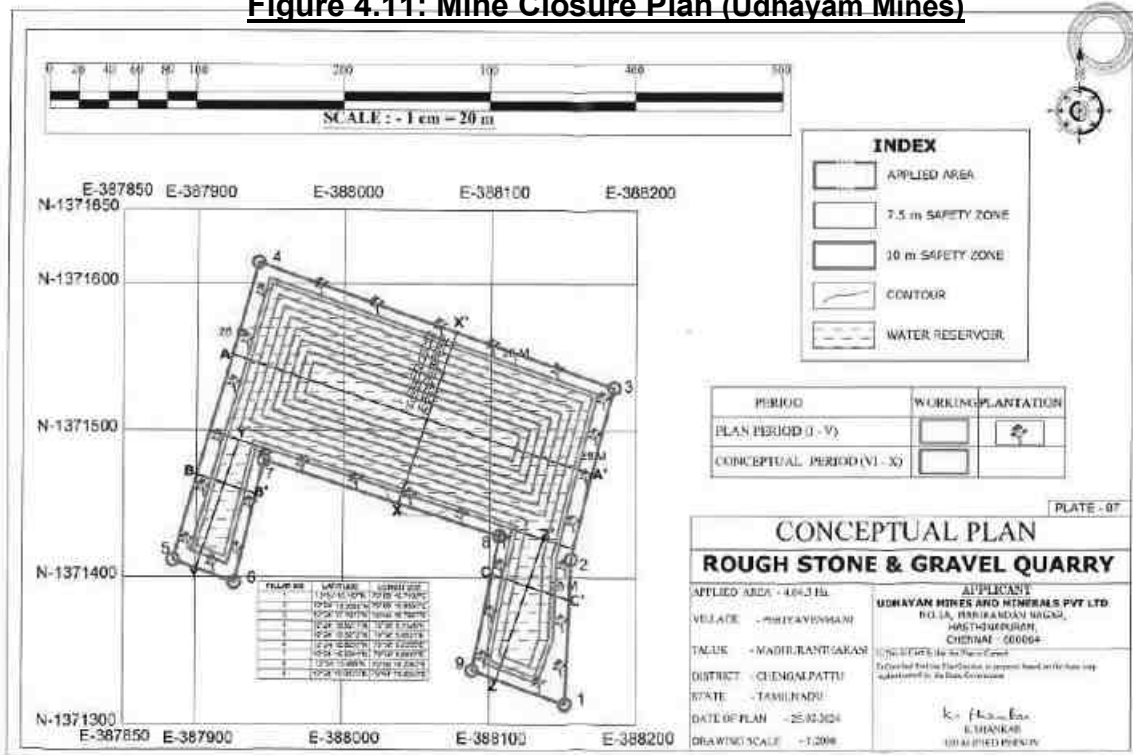


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**Figure 4.10: Mine Closure Plan (AK Blue Metals)**



**Figure 4.11: Mine Closure Plan (Udhayam Mines)**



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**4.7 SOCIO ECONOMIC ENVIRONMENT:**

Both the lease areas are in the respective proponent’s possession. Hence, there are no habitations or hutments in the core zone area and no rehabilitation or resettlement problems will arise here.

The mining operations in the proposed mines will each employ about 12 persons directly and about 50 persons on indirect basis through allied opportunities in logistics, trading, repairing works etc. good employment potential will arise in this area, which will provide raising income levels and standards of living in the area through various service related activities connected with the project operations as shown under.

- Project related logistical operations for transport of Rough Stone, etc,
- Various trading services for consumer goods, spare parts, sundry items, etc.
- Contractual services connected with the project.
- Green belt and horticultural works in the project.
- Casual labor needs for various activities.

Besides, there will be improvement in the following aspects due to project operation:

- ❖ Improvement in infrastructural facilities, providing education aids etc. in nearby schools
- ❖ Betterment of drinking water facilities.
- ❖ Benefit to the State and the Central governments through financial revenues by way of royalty, tax, duties, etc from this project directly and also indirectly.

From above details, it is clear that the project operations will have highly beneficial positive impact in the area.

**Table 4.23: CER Cost**

Project Name	Roughstone and Gravel Quarry of AK Blue Metals Private Limited	Roughstone and Gravel Quarry of Udhayam Mines and Minerals Pvt. Ltd
Project Cost (Rs.)	Rs.267.40 Lakhs	Rs.247.33 Lakhs
CER Cost Requirement (2% of the Project Cost) (Rs.)	Rs. 5.35 Lakhs	Rs.4.94 Lakhs
Revised CER cost allocated (Rs.)	Rs. 5.5 Lakhs	Rs. 5.0 Lakhs





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However, towards the socio-economic development of the surrounding area, AK Blue Metals have allocated Rs.5.5 Lakhs and Udhayam Mines and Minerals have allocated Rs.5 Lakhs. The activities identified under CER will be implemented in a phased manner in provision of facilities in nearby Government School.

#### **4.8 OCCUPATIONAL HEALTH AND SAFETY:**

##### **4.8.1 BASELINE STATUS:**

Primary data collection through field survey conducted in the study area reveals that there is no reported incident of any occupational diseases in the area. Hazardous jobs like blasting, loading, etc. are planned to be executed safely and with all precautionary measures as prescribed in Metalliferrous Mines Regulations of 1961, so as to minimize hazards and incidences of health problems.

##### **4.8.2 IMPACTS ON OCCUPATIONAL HEALTH DUE TO PROJECT OPERATIONS:**

Anticipated occupational illness sequel to mining activities can be as follows:

- Dust related pneumonia
- Tuberculosis
- Rheumatic arthritis
- Segmental vibration
- Miner's Nystagamus

##### **4.8.3 MITIGATIVE MEASURES FOR OCCUPATIONAL HEALTH:**

To reduce pollution emanation from the project, following measures are being and will be taken:

- Water sprinkling on haul roads etc.
- Green belt creation to arrest dust and reduce noise propagation.
- Acceptance of good control measures for reducing air pollution, as mentioned earlier in the chapter.
- Control of noise levels through good preventive maintenance of machineries, green belt creation, provision of ear plug to workers, etc.



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- In addition to above measures, the following remedial steps are being and will be enforced to ensure minimization of occupational health and safety problems.
- Medical examination of workers by qualified doctors, as per DGMS circulars.
- Regular awareness campaigns amongst staff and workers
- Staff will be provided with PPE to guard against excess noise levels, Dust generation and inhalation, etc., as per standards prescribed by DGMS.

**4.8.4 MITIGATIVE MEASURES FOR SAFETY ASPECTS:**

The following safety gadgets will be provided to the staff and workers based on their area of operation and work & requirement:

SI No	Safety Equipments
1.	Helmets
2.	Shoes
3.	Goggles
4.	Dust Mask
5.	Hand Gloves
6.	Reflective Jackets
7.	Ear Muffs
8.	Signal Lights/Flags

**4.9 LOGISTICAL SYSTEM:**

From these proposed quarries the entire output will be transported to the crusher units for producing stone aggregates of different sizes or construction of roads, bridges, buildings and other buyers etc.

The lease area can be approached through a separate public unused localized road without regular use and absence of habitations which is connected to Venmari – Onampakkam road on the eastern side of the lease area which joins SH-115 at a distance of 1.9Km on the southern side of the lease area. The expected peak transport will be as follows:

**Table 4.24: Details of Transportation**

Sl.no	Particulars of activity	Roughstone and Gravel Quarry of AK Blue Metals Private Limited	Roughstone and Gravel Quarry of Udhayam Mines and Minerals Pvt. Ltd
A	Maximum Roughstone Transported (m3/year)	2,06,628	88,800
B	No of days in a year	300	300



**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.04.5 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

C	Transport hours per day	8	8
D	Truck capacity in T	25	25
	Trips per hour	7 Trips/Hr	3 Trips/Hr

From the above table it is seen that there will be about 10 trips per hour cumulatively. The existing road can absorb this traffic due to this project. However, the following mitigative measures are suggested:

- ❖ Water sprinkling on material in the transport vehicles before transporting, so that no dust nuisance during transport will arise.
- ❖ Plantation on either side of the transport road in consultation with the concerned department.
- ❖ Proper maintenance of transport roads
- ❖ Proper maintenance of transport vehicles.
- ❖ Avoiding overloading of material
- ❖ Covering of loaded vehicles with tarpaulins sheet if warranted.
- ❖ Keeping traffic regulators at vulnerable locations.
- ❖ Distribution of transport vehicles for avoiding choking of roads
- ❖ Limiting of speed
- ❖ Installation of barriers at vulnerable locations
- ❖ Provision of tyre washing facility at the mine outlet

#### **4.10 WASTE MANAGEMENT:**

**Solid Waste:** Since the entire mined out material will be used there will not be any solid waste generation from these projects.

**Liquid waste:** There is no process effluent generation from these mines. Hence no liquid waste is generated.

**Hazardous waste management:** In these projects the following management practices will be followed:

- Ensuring availability of different colour bins for collection of different types of waste.



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- Storing of Hazardous waste material in a separate storage area with impervious containers for waste oil, oil contaminated clothes, used lead acid batteries, scraps, tyre storage etc.
- Ensure that there are no leakages/spillages of hazardous wastes.
- Ensuring that the fire extinguisher system is available at hazardous material storage area.

The hazardous waste if any will be disposed through authorized recyclers or re-processors periodically. The hazardous wastes will be transported in accordance with the provisions of rules. By effective implementation of above said mitigation measures no major impact due to Hazardous waste is expected.

**Plastic waste:** Single use plastics/ use and throwaway plastics will be banned in the site as directed by the Tamil Nadu Government vide GO(Ms)No.84 regarding ban on use of plastic products. The employees will be encouraged to use compostable material or reusable material.

\* \* \* \* \*



# **CHAPTER - V**

## **ANALYSIS OF ALTERNATIVES (TECHNOLOGY & SITE)**

## **CHAPTER 5**

### **ANALYSIS OF ALTERNATIVES**

#### **5.1 ALTERNATE TECHNOLOGY:**

These are proposed Rough Stone and Gravel Quarries in which Mechanized Open Cast mining will be carried out. It involves jack hammer drilling, blasting, excavation, loading and transportation of Rough stone to the crushing units. As this method is techno economically proven, consideration of an alternate technology is not warranted.

#### **5.2 ALTERNATE SITE:**

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

\* \* \* \* \*



# **CHAPTER - VI**

## **ENVIRONMENTAL MONITORING PROGRAMME**

## **CHAPTER 6**

### **ENVIRONMENTAL MONITORING PROGRAMME**

#### **6.1 GENERAL**

In these projects, appropriate environmental monitoring programme are framed. Regular, systematic and sustained programme schedules for implementation and monitoring of various control measures are devised with clear cut guidelines of various concerned plans for keeping a continuous surveillance on the various environmental quality parameters in the area.

The monitoring schedules are planned to aim at regular and systematic study of various pollution levels with respect to air and water quality, noise levels etc., to ensure that they conform to the standards laid down by the Environment Protection Act, 1986 and various Central and State Pollution Control Board Limits.

The various methodologies and frequency of studies of all environmental quality parameters will be as per prescribed norms laid down by MOEF&CC and State Pollution Control Board. This being a small quarry operation, the Mines in-charge will take care of all the environmental related works also.

Environmental control measures include components like air, water and soil quality, noise levels, afforestation measures, etc. For monitoring of environment over the life of the mine, a set of stations for study of quality parameters are fixed as per the actual requirements and prevailing conditions of environmental factors, as dictated from time to time, depending on the prevailing pollution levels.

#### **6.2 MONITORING SCHEDULES FOR VARIOUS PARAMETERS**

The monitoring schedules are planned for systematic study of various pollution levels with respect to air and water qualities, noise levels, etc. to ensure that they conform to the standards laid down by Environmental Protection Act and various statutory Limits. The monitoring schedules to be adopted in both these quarries given below. However, based on the need and priority it may be suitably modified / improved in consultation with local authorities.

Since there are 2 separate leases within the cluster, it is proposed to form a cluster management committee (CMC) and its details are provided under Section 10.2.2, Chapter-X.





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**Table 6.1: Environmental Monitoring Schedule**

S.No	Environmental Parameters	Parameters to be monitored	Monitoring area coverage /locations	Frequency of monitoring
1	Air Quality	Sulphur dioxide (SO <sub>2</sub> ), Oxides of Nitrogen (NO <sub>2</sub> ), Respirable Particulate Matter (PM <sub>2.5</sub> and PM <sub>10</sub> ).	2 locations in the buffer zone and 1 work zone locations.	Once in a year in each location.
2	Water Quality	General, Physical, and chemical parameters	Ground Water samples (around the project area) and Mine Pit water samples	Once in a year
3	Water Table Fluctuations	Water Levels	Nearby wells and Borewells	On yearly basis pre and post monsoon level
4	Noise	Leq. Lmax Lmin, Leq Day & Leq Night dB(A)	Work zone locations and buffer zone villages	Once in a year
5	Vibration	Peak Particle Velocity	Mine periphery	Once to arrive at optimum blasting parameters
6	Socio Economic Environment	Socio Economic Survey, Review of implementation of CER activities proposed	Buffer Zone	Yearly basis
7	Occupational Health	Occupational health survey to detect early incidence of diseases, Audiometry Test for workers in noise prone area and review of safety matters.	Staff and Workers involved in the project	Once in a year
8	Greenbelt	Maintenance	Within the lease area	Regularly

**6.3 LEGISLATIVE AND REGULATORY FRAME WORK:**

The project will have environmental policy declaring its responsibility and commitment to protect the environment and to ensure public safety. The existing policy will be available with all concerned officials of the plant. The following environmental standards as per methodologies prescribed, by MOEF/CPCB/TNPCB will be enforced in this project:

**Table 6.2: Environmental Standards**

Standards	Issued By	Reference
National Ambient Air Quality Standards	Central Pollution Control Board	Table No. 6.3
Water quality standards per IS 10500:2012	Bureau of Indian Standards	Table No.6.4
Noise Standards	CPCB / MoEF&CC	Table No.6.5
Permissible Peak Particle Velocity	DGMS, Dhanbad	Table No.6.6



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**Table 6.3: National Ambient Air Quality Standards**

[ MPF III ] - [ 4 ]

3

NATIONAL AMBIENT AIR QUALITY STANDARDS  
CENTRAL POLLUTION CONTROL BOARD  
NOTIFICATION  
New Delhi, the 18th November, 2009

No. B-2901620/90/PCI-4.—In exercise of the powers conferred by Sub-section (2) (b) of section 16 of the Air (Prevention and Control of Pollution) Act, 1981 (Act No.14 of 1981), and in supersession of the Notification No(s). S.O. 384(E), dated 11<sup>th</sup> April, 1994 and S.O. 935(E), dated 14<sup>th</sup> October, 1998, the Central Pollution Control Board hereby notify the National Ambient Air Quality Standards with immediate effect, namely:-

NATIONAL AMBIENT AIR QUALITY STANDARDS

S. No.	Pollutant	Time Weighted Average	Concentration in Ambient Air		
			Industrial, Residential, Rural and Other Areas	Ecologically Sensitive Areas (notified by Central Government)	Methods of Measurement
(1)	(2)	(3)	(4)	(5)	(6)
1	Sulphur Dioxide (SO <sub>2</sub> ), µg/m <sup>3</sup>	Annual* 24 hours**	50 80	20 30	- Improved West and Gaeke - Ultraviolet fluorescence
2	Nitrogen Dioxide (NO <sub>2</sub> ), µg/m <sup>3</sup>	Annual* 24 hours**	40 80	30 60	- Modified Jacob & Hochheiser (Na-Arsenite) - Chemiluminescence
3	Particulate Matter (size less than 10µm) or PM <sub>10</sub> µg/m <sup>3</sup>	Annual* 24 hours**	60 100	60 100	- Gravimetric - TOEM - Beta attenuation
4	Particulate Matter (size less than 2.5µm) or PM <sub>2.5</sub> µg/m <sup>3</sup>	Annual* 24 hours**	40 60	40 60	- Gravimetric - TOEM - Beta attenuation
5	Ozone (O <sub>3</sub> ) µg/m <sup>3</sup>	8 hours** 1 hour**	100 180	100 180	- UV photometric - Chemiluminescence - Chemical Method
6	Lead (Pb) µg/m <sup>3</sup>	Annual* 24 hours**	0.50 1.0	0.50 1.0	- AAS /ICP method after sampling on EM 2000 or equivalent filter paper - ED-XRF using Teflon filter
7	Carbon Monoxide (CO) mg/m <sup>3</sup>	8 hours** 1 hour**	02 04	02 04	- Non Dispersive Infra Red (NDIR) spectroscopy
8	Ammonia (NH <sub>3</sub> ) µg/m <sup>3</sup>	Annual* 24 hours**	100 400	100 400	- Chemiluminescence - Indophenol blue method



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4 THE GAZETTE OF INDIA : EXTRAORDINARY [PART III—Sec. 4]

(1)	(2)	(3)	(4)	(5)	(6)
9	Benzene (C <sub>6</sub> H <sub>6</sub> ) µg/m <sup>3</sup>	Annual*	05	05	- Gas chromatography based continuous analyzer - Adsorption and Desorption followed by GC analysis
10	Benzo(a)Pyrene (BaP) - particulate phase only, ng/m <sup>3</sup>	Annual*	01	01	- Solvent extraction followed by HPLC/GC analysis
11	Arsenic (As), ng/m <sup>3</sup>	Annual*	06	06	- AAS /ICP method after sampling on EPM 2000 or equivalent filter paper
12	Nickel (Ni), ng/m <sup>3</sup>	Annual*	20	20	- AAS /ICP method after sampling on EPM 2000 or equivalent filter paper

\* Annual arithmetic mean of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform intervals.

\*\* 24 hourly or 08 hourly or 01 hourly monitored values, as applicable, shall be complied with 98% of the time in a year. 2% of the time, they may exceed the limits but not on two consecutive days of monitoring.

Note. — Whenever and wherever monitoring results on two consecutive days of monitoring exceed the limits specified above for the respective category, it shall be considered adequate reason to institute regular or continuous monitoring and further investigation.

SANT PRASAD GAUTAM, Chairman  
[ADVT-III/4/18409/Exy.]

Note: The notifications on National Ambient Air Quality Standards were published by the Central Pollution Control Board in the Gazette of India, Extraordinary vide notification No(s). S.O. 384(E), dated 11<sup>th</sup> April, 1994 and S.O. 935(E), dated 14<sup>th</sup> October, 1998.



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**CHAPTER-6 : ENVIRONMENTAL**  
**MONITORING PROGRAM**

PRO CODE: CEC/EMP/MI-221

REV NO : 00/SEP/24

6-4

**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.04.5 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

**Table 6.4: IS – 10500 :2012 Standards**

**Table 1 Organoleptic and Physical Parameters**  
(Foreword and Clause 4)

Sl No.	Characteristic	Requirement (Acceptable Limit)	Permissible Limit in the Absence of Alternate Source	Method of Test, Ref to Part of IS 3025	Remarks
(1)	(2)	(3)	(4)	(5)	(6)
i)	Colour, Hazen units, <i>Max</i>	5	15	Part 4	Extended to 15 only, if toxic substances are not suspected in absence of alternate sources
ii)	Odour	Agreeable	Agreeable	Part 5	a) Test cold and when heated b) Test at several dilutions
iii)	pH value	6.5-8.5	No relaxation	Part 11	—
iv)	Taste	Agreeable	Agreeable	Parts 7 and 8	Test to be conducted only after safety has been established
v)	Turbidity, NTU, <i>Max</i>	1	5	Part 10	—
vi)	Total dissolved solids, mg/l, <i>Max</i>	500	2 000	Part 16	—

NOTE — It is recommended that the acceptable limit is to be implemented. Values in excess of those mentioned under 'acceptable' render the water not suitable, but still may be tolerated in the absence of an alternative source but up to the limits indicated under 'permissible limit in the absence of alternate source' in col 4, above which the sources will have to be rejected.



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Table 2 General Parameters Concerning Substances Undesirable in Excessive Amounts  
(Foreword and Clause 4)

Sl No.	Characteristic	Requirement (Acceptable Limit)	Permissible Limit in the Absence of Alternate Source	Method of Test, Ref to	Remarks
(1)	(2)	(3)	(4)	(5)	(6)
i)	Aluminium (as Al), mg/l, Max	0.03	0.2	IS 3025 (Part 55)	—
ii)	Ammonia (as total ammonia-N), mg/l, Max	0.5	No relaxation	IS 3025 (Part 34)	—
iii)	Anionic detergents (as MBAS) mg/l, Max	0.2	1.0	Annex K of IS 13428	—
iv)	Barium (as Ba), mg/l, Max	0.7	No relaxation	Annex F of IS 13428* or IS 15302	—
v)	Boron (as B), mg/l, Max	0.5	1.0	IS 3025 (Part 57)	—
vi)	Calcium (as Ca), mg/l, Max	75	200	IS 3025 (Part 40)	—
vii)	Chloramines (as Cl <sub>2</sub> ), mg/l, Max	4.0	No relaxation	IS 3025 (Part 26)* or APHA 4500-Cl G	—
viii)	Chloride (as Cl), mg/l, Max	250	1 000	IS 3025 (Part 32)	—
ix)	Copper (as Cu), mg/l, Max	0.05	1.5	IS 3025 (Part 42)	—
x)	Fluoride (as F) mg/l, Max	1.0	1.5	IS 3025 (Part 60)	—
xi)	Free residual chlorine, mg/l, Min	0.2	1	IS 3025 (Part 26)	To be applicable only when water is chlorinated. Tested at consumer end. When protection against viral infection is required, it should be minimum 0.5 mg/l
xii)	Iron (as Fe), mg/l, Max	0.3	No relaxation	IS 3025 (Part 53)	Total concentration of manganese (as Mn) and iron (as Fe) shall not exceed 0.3 mg/l
xiii)	Magnesium (as Mg), mg/l, Max	30	100	IS 3025 (Part 46)	—
xiv)	Manganese (as Mn), mg/l, Max	0.1	0.3	IS 3025 (Part 59)	Total concentration of manganese (as Mn) and iron (as Fe) shall not exceed 0.3 mg/l
xv)	Mineral oil, mg/l, Max	0.5	No relaxation	Clause 6 of IS 3025 (Part 39) Infrared partition method	—
xvi)	Nitrate (as NO <sub>3</sub> ), mg/l, Max	45	No relaxation	IS 3025 (Part 34)	—
xvii)	Phenolic compounds (as C <sub>6</sub> H <sub>5</sub> OH), mg/l, Max	0.001	0.002	IS 3025 (Part 43)	—
xviii)	Selenium (as Se), mg/l, Max	0.01	No relaxation	IS 3025 (Part 56) or IS 15303*	—
xix)	Silver (as Ag), mg/l, Max	0.1	No relaxation	Annex J of IS 13428	—
xx)	Sulphate (as SO <sub>4</sub> ) mg/l, Max	200	400	IS 3025 (Part 24)	May be extended to 400 provided that Magnesium does not exceed 30
xxi)	Sulphide (as H <sub>2</sub> S), mg/l, Max	0.05	No relaxation	IS 3025 (Part 29)	—
xxii)	Total alkalinity as calcium carbonate, mg/l, Max	200	600	IS 3025 (Part 23)	—
xxiii)	Total hardness (as CaCO <sub>3</sub> ), mg/l, Max	200	600	IS 3025 (Part 21)	—
xxiv)	Zinc (as Zn), mg/l, Max	5	15	IS 3025 (Part 49)	—

**NOTES**

1 In case of dispute, the method indicated by '\*' shall be the referee method.

2 It is recommended that the acceptable limit is to be implemented. Values in excess of those mentioned under 'acceptable' render the water not suitable, but still may be tolerated in the absence of an alternative source but up to the limits indicated under 'permissible limit in the absence of alternate source' in col 4, above which the sources will have to be rejected.



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**Table 6.5: Noise Level Standards**

Area Code	Category of Area	Limits in dB(A) Leq	
		Day Time	Night Time
(A)	Industrial area	75	70
(B)	Commercial area	65	55
(C)	Residential area	55	45
(D)	Silence Zone	50	40

**Note :**

1. Day time shall mean from 6 a.m. and 10.0 p.m.
2. Night time shall mean from 10.0 p.m. and 6 a.m.
3. Silence zone is an area comprising not less than 100 meters around hospitals, educational institutions, courts, religious places or any other area which is declared as such by the competent authority.
4. Mixed categories of areas may be average as one of the four above mentioned categories by the competent authority.

\* dB(A) Leq denotes the time weighted average of the level of sound in decibels on scale A which is relatable to human hearing.

A “decibel” is a unit in which noise is measured.

“A”, in dB(A) Leq, denotes the frequency weighting in the measurement of noise and corresponds to frequency response characteristics of the human ear.

Leq: It is energy mean of the noise level over a specified period.

**Table 6.6: Permissible Noise For Industrial Workers As Laid Down By CPCB**

Exposure time (in hr. per day)	Limit in dB(A)
8	90
4	93
2	96
1	99
1/2	102
1/4	105
1/8	108
1/16	111
1/32	114



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**Table 6.7: Permissible Peak Particle Velocity (PPV) In Mining Areas**

In mm/sec.

Type of structure	Dominant excitation frequency Hz		
	<8 Hz	8-25 Hz	>25 Hz
<b>A. Buildings/structures not belonging to owner</b>			
Domestic houses /structures (Kuchha brick and cement)	5	10	15
Industrial buildings (RCC and framed structures)	10	20	25
Objects of historical importance and sensitive structures.	2	5	10
<b>B. Building belonging to owner with limited span of life</b>			
Domestic houses/structures (Kuchha brick and cement)	10	15	25
Industrial buildings (RCC and framed structures)	15	25	50

The above said monitoring location and the frequency of monitoring shall be suitably modified in consultation with the nodal agency as per the actual requirements and prevailing conditions of the mine and environmental factors, as dictated from time to time, depending on the prevailing pollution levels, if required.

**6.4 ENVIRONMENTAL MONITORING COST:**

Towards environmental monitoring it is proposed to allocate a budget of Rs. 50,000 per annum for each project. Further details of the capital and recurring cost of environmental management has been provided in in Table No. 10.2, Chapter-X.

\* \* \* \* \*



# CHAPTER - VII

**ADDITIONAL STUDIES**



## **CHAPTER 7 ADDITIONAL STUDIES**

### **7.1 GENERAL:**

The additional studies covered for this EIA / EMP report are:

1. Public consultation of the project as per MoEF&CC mandates.
2. Risk Assessment
3. Cumulative Impact Study
4. R&R Plan
5. Mine closure planning

### **7.2 PUBLIC CONSULTATION:**

This draft EIA/EMP report will be submitted for Public Hearing as per mandatory procedures through the District Collector and State Pollution Control Board officials after giving 30 days advance notice in two local newspapers about the scheduled date and time for conduct of the public hearing procedures. The opinions, concerns and objections of stakeholders will be recorded during the public hearing. All the public queries and the replies to the query by the project proponent and officials concerned will be recorded and incorporated in the EIA/EMP report for approval by SEIAA, Tamil Nadu.

### **7.3 RISK ASSESSMENT:**

For the various risks, likely to arise, detailed analysis of causes and control measures is given in below:

<b>S.No</b>	<b>Factors</b>	<b>Causes of risks</b>	<b>Control measures</b>
1.	Removal of material	a) Bench may slide due to its unconsolidated nature. b) Vibration due to movement of vehicles in the benches.	Overall bench slope angle will be maintained optimally as per DGMS requirement. Working bench width will be more than bench height.
2.	Drilling	a) Due to high pressure of compressed air hoses may	• Periodical preventative maintenance and replacement of worn out accessories in the



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S.No	Factors	Causes of risks	Control measures
		burst. b) Down the hole drill rod may break due to improper maintenance of rod.	compressor and drill equipment. • As per manufacturers recommendation rod to be replaced and bits will be changed.
3.	Blasting	a)Fly rock, ground vibration, noise etc. b) Improper charging of explosives	• Burden and spacing will be kept optimum on trial basis. • Explosive charge per delay will be minimized. • Controlled blasting with Nonel will be used.
4.	Excavation	a)Hauling and loading equipment are in such proximity while excavation b)Swinging of bucket over the body of tipper c) Driving of unauthorized person	• Operator shall not operate the machine when person & vehicles are in such proximity. • Shall not swing the bucket over the cab and operator leaves the machine after ensuring the bucket is on ground. • Shall not allow any unauthorized person to operate the machine by effective supervision.
5.	Transportation	a)Operating the vehicle "nose to tail" b) Overloading of material c) While reversal & overtaking of vehicle d) Operator of truck leaving his cabin when it is loaded	• It will be ensured that all these causes will be nullified by giving training to the operators. • No over loading will be done. • Audio visual reverse horn will be provided. • Proper training will be given.
6.	Fire due to electricity and Oil	a)Due to the short circuit of cables & other electrical parts b) Due to the leakage of inflammable liquid like diesel, oil etc.	• Electrical parts shall be cleaned frequently with the help of dry air blower • All fastening parts and places will be tightening. Suitable fire suppression equipment shall be provided.
7.	Natural calamities	Unexpected happenings	The mine management is capable to deal with the situation.

These being small rough stone projects that too working in a safe area, no major disaster is expected.

**7.3.1. DISASTER MANAGEMENT PLAN:**

In General, following natural/industrial hazards may occur during normal operation.

- Inundation of mine pit due to flood/excessive rains :



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- Slope failure of the pit and waste dumps
- Accident due to heavy mining equipment and
- Blasting and use of Explosives

Mining operation in these 2 leases will be carried out under the management control and direction of a qualified mine manager. The DGMS have been issuing a number of standing orders, model standing orders and circulars to be followed by the mine management in case of disaster. All these orders statutory rules and regulations will be followed. Seismically project site and study area falls in the Zone – II and is described as least active zone. There are no perennial water body near the lease area to cause any flooding. As such no disaster due to this project is envisaged.

In order to take care of above hazard / disasters the following control measures have been adopted.

- Checking and regular maintenance of garland drains and earthen bunds to avoid any inflow of surface water in the mine pit.
- Avoiding mining during heavy monsoon period and marching of all the HEMM to the top benches during rainy period.
- Provision of high capacity standby pumps with generator sets with sufficient quantity of diesel for emergency pumping especially during monsoon.
- All safety precautions and provisions of regulations will be strictly followed during all mining operations
- Prohibiting entry of unauthorized persons.
- Provision of Firefighting and first-aid provisions in the mines.
- Provisions of all the safety appliances such as safety boot, helmets, goggles, dust masks, ear plugs and ear muffs etc. are made available to the employees for their use.
- Training and refresher courses for all the employees working in hazardous premises



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- Observance of all safety precautions for blasting and storage of explosives as per MMR 1961.
- Working of mine, as per approved plans and regularly updating the mine plans
- Cleaning of mine faces regularly
- Proper storage, usage of explosives through competent persons.
- Regular maintenance and testing of all mining equipment as per manufacturers guidelines
- Suppression of dust on the haulage roads with frequent water sprinkling, etc.
- Increasing the awareness of safety and disaster through competitions, posters and annual safety weeks and environmental weeks, encouraged through suitable rewards and other similar drives.

The management and the EMC will be able to deal with the situations efficiently keeping in view of the likely sources of dangers in the mine.

#### **7.4 REHABILITATION AND RESETTLEMENT (R & R) PLAN:**

The mining activities will be carried out within the mine lease areas only. Both mine lease areas are Patta lands. There is no population within the ML area. Hence, the question of R& R does not arise.

#### **7.5 MINE CLOSURE PLAN:**

In the mine closure stage all necessary measures will be taken as per Act & Rules, There is no proposal for back filling, reclamation and rehabilitation. The quarried pits after the end of life of mine will be properly fenced all around to prevent inherent entry of public and cattle and all the statutory requirements will be fulfilled. As already explained, in the post mining stage the rainwater harvested in the mined out void shall be utilized for irrigation and domestic needs locally. The mine closure plan is provided in **Figure 4.5**.



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**7.6 CUMULATIVE IMPACT STUDY:**

The lease area is located in Periyavenmani Village, Madhurantakam Taluk, Chengalpattu District, Tamil Nadu. The details of the other quarries located within the 500m radius of the project considered for cumulative impact study now (**Annexure-3A and 3B**) has been provided below:

**Table 7.1: Details of quarries within 500m radius**

S.No.	Name	Village	S.F.No.	Extent (Ha)	GO.No./Proc & Date	Lease Period
<b>1. Existing Quarry</b>						
1	Thiru Ravisundar, S/o.Sandhiyagu, No.1,1178-A, 1 <sup>st</sup> Street, Bethel Nagar, Injambakkam, Chennai-115.	Periya Venmani Madurantakam	174/5, 174/6, 180/12	1.37.50	Rc.No.621/Q2/207 dated 13.01.2023	13.01.2023 to 23.09.2027
2	Thiru S.Dharmaraj, S/o.Sitrambala Reddiyar, No.2A, South Street, Medudalapuram, Ondipulinayakkanur, Virudhunagar – 626119	Periya Venmani Madurantakam	180/1, 180/2, 180/3	2.08.50	Rc.No.622/Q2/2017 dated 13.01.2023	13.01.2023 to 23.09.2027
3	S.Raju S/o.Sivaji, No.17/7, Tholkappiyam Street, Chitlapakkam, Kancheepuram – 600064.	Periya Venmani Madurantakam	180/4, 180/5, 180/8, 180/9, 180/10,180/11	2.50.00	Rc.No.269/Q2/2017 dated 13.03.2023	13.01.2023 to 23.09.2027
<b>2. Abandoned / Old Quarries</b>						
1.	A.Jeevanandam, No.25, 6 <sup>th</sup> Street,Asthinapuram, Chennai- 600064.	Periya Venmani Madurantakam	172/3,172/4, 172/5,172/6, 173/1,173/2, 173/3,173/4, 173/5,173/6, 180/1,180/2, 180/3,180/4, 180/5,180/8, 180/9,180/10, 180/ 11	7.52.5	Rc.430/2007/ Q1 Dated21.05.2007	25.05.2007 to 24.05.2012.
2.	S.Gnanasekaran, No.20, Alagesan Street. Tambaram West, Chennai-45.	Periya Venmani Madurantakam	181/2	2.03.0	Rc.335/ 2011/Q3 dated 02.01.2012	02.01.2012 to 01.01.2017
3.	O.Ganesan, No.2, Lakshmpuram Extn. Mudichur, Chennai-45	Periya Venmani Madurantakam	174/1,174/2, 174/3,174/4, 175/1	2.07.5	Rc.336/2011/ Q3 dated 02.01.2012	02.01.2012 to 01.01.2017
<b>3. Proposed Quarries</b>						
1.	M/s. AK Blue Metals Private Limited, No.1A, Manikandan Nagar, Hasthinapuram,	Periya Venmani Madurantakam	204/1, 204/2, 204/3, 205, 206/1, 206/2,	5.53.0	--	--



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	Chennai - 600064.		206/3, 206/4, 206/5, 206/6, 206/7, 206/8, 206/9			
2.	Udhayam Mines and Minerals Pvt.Ltd.	Periya Venmani Madurantakam	172/2B,172/2C, 172/2D,172/7	4.04.5	--	--

From that above it is seen that, the other existing and proposed quarries within the 500m radius along with this subject project works out to >5 Ha. As such cluster situation applicable and this EMP is prepared. A map showing the existing and proposed quarries located near the lease area is provided Figure No.7.1 given below:

**Figure 7.1: Vicinity Map**



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The baseline monitoring carried out for this project reflects the cumulative impact of these existing quarries. The cumulative impacts of the Roughstone and Gravel Quarries of AK Blue Metals and Udhayam Mines and Minerals are provided in detail in Chapter-IV of the EIA/EMP Report.

## **7.7 PIT SLOPE STABILITY PLAN**

- Factors affecting slope stability of the mines are
  - Geological structure comprising dip, intervening shear zone formation, clay intrusion, joints / discontinuities, faults etc.,
  - Lithology of formation
  - slope geometry
  - Ground water availability which may cause increased thrust on the faces
- Site specific analysis
  - Since the formation is of homogeneous rock type probability of slope failure is low and can be avoided if proper measures are adopted.
  - There will be a 7.5m wide barrier zone which will form a ridge which can also take care of the top section and as such no risk is envisaged on this front.
  - During future workings the following measures will be ensured:
    - Regular inspection of the mine faces to be carried out by mines manager for ensuring absence of any structural features like faults, joints, dyke, intrusive material in the rock strata which may affect the slope stability and cleared.
    - No loose material or boulders is to be stacked on the mine top or pit benches.
    - Height of the benches should be 5m. Working bench width should be at least 2.5 times the bench height. Ultimate pit bench width will be 5m & slope is kept at 45° to ensure slope stability.
    - Haul road formation will be at 1 in 16 slope with adequate road width.
    - There will be no ground water table intersection.



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- No seepage is expected due to formation. Adequate drainage management system comprising peripheral garland drain, settling pond to regulate monsoon water will be created to prevent saturation of compact layers, apparent drainage over the bench slope to avert damages to quarry face and manage the water flow.

The above will ensure safe and stable mine prospects. Slope stability study is site specific and largely dependent on the geological formation of the local strata. As such , carrying out such special studies after commencement of mining operation with exposed rock of sufficient quantity , depth only is expected to deliver the desired results. Besides, during mining , such study will provide to arrive at the optimum bench slope parameters design. As such , scientific study through involving reputed institution will be carried out during the course of mining.

**CONCLUSION:**

No adverse impact on the surrounding environment is envisaged from these projects due to enforcing all the mitigative measures during mining.

Certified vehicles with low carbon emissions will only be used. These equipment's will be properly and regularly maintained. Besides, regular vehicular emission tests will be done for the transport vehicles to ensure minimal impact due to carbon emissions. To further mediate the carbon emissions, a good greenbelt and plantation plan has been planned.

Geologically the area in and around the lease area contains charnokite type rock formation containing mostly fallow land. As such there no major vegetation or agricultural activities are observed. There are no Protected or Eco-Sensitive Zone or forest land nearby wherein it can have an impact.

It will be ensured that mining will be carried out adhering to all the statutory rules and regulations, appointing statutory personnel's like qualified mines manager, blaster, informing DGMS before commencement of mining operations and maintaining the environmental quality within the prescribed standards by effective implementation of various mitigative measures.

As such release of Greenhouse gases (GHG), rise in temperature, affecting livelihood of the local people, loss of Agriculture, Forestry and Traditional Practices is not envisaged. Such a





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limited scope will not induce any climatic change leading to droughts, floods etc.

Mine closure plan is prepared for the lease period and already included in the approved mine plan.

Due to absence of perennial water bodies nearby where in any marine ecosystem is observed, no effect on this front is also expected. Hydrological investigation carried out and as given in Para 3.6 of Chapter III & para 4.3 Chapter – IV shows that the all-time ground water table in this area is much below the mining level. Hence, ground water intersection is not envisaged for the entire life of the mine and ground water will not be affected due to the quarrying operation. As such there will not be any adverse impact on the ground water regime. Besides, this being a mining project, there will be not be any process effluent. As mentioned earlier, the rainfall will be collected in the mine floor sump and gainfully used as per CGWA requirement. Excess water if any in the sump will be pumped to settling pond and supernatant clear water let out for downstream users.

It will be ensured that mining will be carried out adhering to all the statutory rules and regulations, appointing statutory personnel's like qualified mines manager, blaster, informing DGMS before commencement of mining operations and maintaining the environmental quality within the prescribed standards by effective implementation of various mitigative measures for the entire lease period.

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# **CHAPTER - VIII**

## **PROJECT BENEFITS**

## **CHAPTER 8 PROJECT BENEFITS**

The proposed Roughstone and Gravel Quarries of AK Blue Metals Private Limited and Udhayam Mines and Minerals Private Limited will improve physical and social infrastructures in the area like:

- Direct employment.
- Indirect employment to scores of people.
- Financial gains for the governments, through collection of various taxes like royalty, GST, etc.,
- Increase in General Awareness of the People.
- Continual improvements of the local amenities for the local society
- Improvement of the General Living Standard of the People in the Vicinity
- Overall Improvement in HDI (Human Development Index)
- Growth of Allied Industries in the Area.
- Improvement in Per Capita Income.
- Providing certain facilities for the local schools and panchyats

In short, the proposed Rough Stone Quarries will benefit this region in the fields of employment opportunities, improved per capita income for local people, improved social welfare facilities in respect of education, medical systems, infrastructural build-up, etc in its own way.

By means of carrying out the socio-economic development activities, local community development is expected. Towards the same, the proponents have planned to allocate Rs.5.5 Lakhs for AK Blue Metals Private Limited and Rs.5 Lakhs for Udhayam Mines and Minerals Private Limited each for various activities under CER. From the CER activities allocated for various social welfare activities, the villages near the lease area will be benefited.

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# **CHAPTER - IX**

## **ENVIRONMENTAL COST BENEFIT ANALYSIS**

## **CHAPTER 9**

### **ENVIRONMENTAL COST BENEFIT ANALYSIS**

Appendix-III of the MoEF notification S.O. 1533 dated 14.09.2006, which describes the generic structure of Environmental Impact Assessment document, states that the chapter ' Environmental cost benefit analysis' is applicable if it is recommended during scoping stage.

ToR for Roughstone and Gravel Quarry of AK Blue Metals Private Limited was granted by SEIAA vide TO24B0108TN5769905N dated 11.06.2024. ToR for Roughstone and Gravel Quarry of Udhayam Mines and Minerals Private Limited was granted by SEIAA vide TO24B0108TN5364690N dated 07.06.2024. Environmental cost benefit analysis is not prescribed in the terms of reference. Hence, it is not applicable.

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# **CHAPTER - X**

## **ENVIRONMENTAL MANAGEMENT PLAN**

## **CHAPTER 10**

### **ENVIRONMENTAL MANAGEMENT PLAN**

#### **10.1 INTRODUCTION:**

This chapter describes the implementation strategies of the environmental management measures described through the course of this EIA/EMP report for the purpose of mitigating significant impacts due to the proposed mining operations.

#### **10.2 COMPONENTS OF THE ENVIRONMENTAL MANAGEMENT PLAN:**

The environmental management plan comprises identification of the major impacts due to project operations and their suitable mitigative measures. (Provided in an elaborate manner in Chapter-IV) Based on the environmental policy of the company, the environmental management cell will oversee the implementation of these mitigative measures. The details of the proponent's environmental policy, environmental management cell and also the budgetary allocation towards various environmental management measures has been elaborated in this chapter.

##### **10.2.1 ENVIRONMENTAL POLICY:**

The proponents will frame a well-planned environmental policy. The salient features of this policy will be.

- ❖ Ensuring risk-free and safe mining operations by following all rules and conditions prescribed in the Indian mines Act, metalliferous mining regulation, mineral conservation and development rules, etc,
- ❖ Ensuring environmental preservation by adoption of remedial measures for control of air, water quality, noise status, biological improvements, green belt creation, etc,.
- ❖ Extending CER activities to cater to the needs of local community for various benefits like improvement of physical and social infrastructures for the welfare of local community.



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- ❖ Ensuring that all mining operations such as deployment of HEMM, conduct of drilling and blasting operations, etc are strictly conducted keeping with regulatory standards & maintaining safe working environment in the area.
- ❖ Providing periodical training on safety, Health, & Environment to all employers.
- ❖ Any infringement / violation of any rule or unsafe mining operations should be reported mines manager, should be reported by the foremen/ blaster mate etc, who will take immediate corrective measures for avoiding major disasters. The report will ultimately reach the owner through upwardly hierarchical communicative channels from the lowest level to superior levels in a quick time bound duration.
- ❖ The mines manager will exercise overall control over entire mining and connected operations and all infringements / violations on any count pertaining to unsafe operations, environmental degradation, etc, should be brought to the notice of the owner of the quarry. Remedial measures for such violations and deviations should be taken care by the mines manager to avoid any hazards or disasters in the mine and nearby areas. The persons responsible for such violations will be punished through appropriate disciplinarily penal actions.
- ❖ The EC conditions and stipulations will be strictly observed by Mines manager of the mine in various issues like prescribed environmental monitoring schedules conducting of vibratory studies due to blasting, creation of green belt, management of mined area, occupational health review, etc.
- ❖ Penalty actions will be taken by the proponent in cases of continuous negligence resulting in violations deviations in this respect.
- ❖ A time schedule of once in 90 days for review of all operational factors as mentioned above is to be enforced, for proper and quick corrective actions needed in the matter.

#### **10.2.2 ENVIRONMENTAL MANAGEMENT CELL:**

The Mines Manager/Mine Incharge of the respective mines will undertake effective monitoring and implementation of various environmental control measures promptly and effectively and to oversee various environmental management schemes for air quality control, water quality





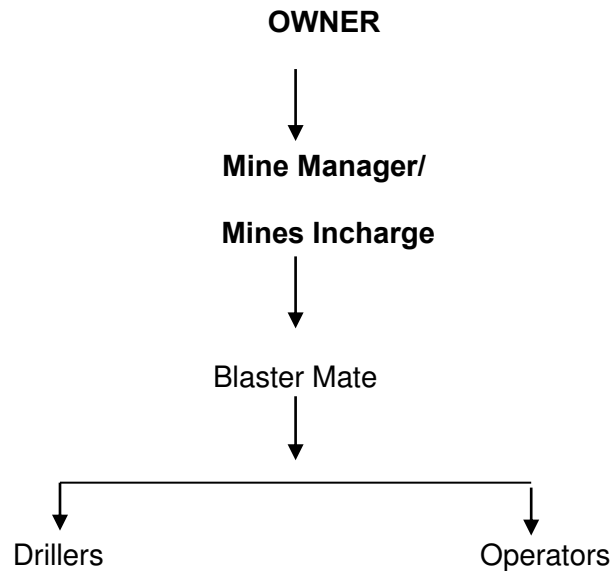
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status, noise level control, plantation programme, social development schemes, etc in the mine.

The organizational chart for the same has been provided below:

**Figure 10.1: Organization Chart**



The Mines Manager/Mines Incharge in the mine project site will be directly responsible for various environmental activities in the mine. The owner will correlate and oversee the environmental activities and their effective implementation in consonance with the guidelines in the EMP. The Mines Manager/Mines Incharge will oversee the environmental administration at the mine and he will directly supervise all activities of environmental administration on environmental issues. Necessary assistance from sub ordinates, external consultants and laboratories shall be taken.

Environmental control measures will span various factors like land degradation, air, water and soil quality, noise levels, effective land reclamation for excavated areas, afforestation measures, etc. The administrative functions are given below.

- ❖ To observe the implementation of environmental control measures.
- ❖ To study the effects of project activities on the environment.
- ❖ To ensure implementation of Plantation Programme. Regular monitoring of survival rate of plants is carried out to achieve the desired result.



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- ❖ To keep records of monitoring etc., in a systematic way, so as to facilitate easy access, when needed by statutory agencies, etc. Also send prescribed returns to statutory authorities.
- ❖ To ensure that adequate fencing and plantation is carried out in the safety zones.
- ❖ Conducting environmental studies and reporting to SPCB.
- ❖ To interact and liaise with Government Departments.
- ❖ To evaluate the performance of existing pollution control equipment and systems periodically and take timely action to keep the equipment at its optimum performance condition.
- ❖ To take immediate preventive action in case of some unforeseen environmental pollution attributable to the project.
- ❖ Conducting safety audits and programmes to create safety awareness in workers/ staff.
- ❖ Conducting annual health audits to detect any health problems promptly in the workers/staff. This will reduce occupational health problems.
- ❖ Imparting training on safety and conduct safety drills to educate employees. Firefighting equipment and system has to be kept in 'ready-to-fight' condition.
- ❖ Carrying out socio economic study in the surrounding areas to find out the benefits derived by the society due to the project and also to fulfill the deficiency, if any, immediately.
- ❖ Ensuring proper mine closure arrangements

Considering the other mines in the cluster, the Environmental Management Cell of these projects will also act as a Cluster Management Committee. The various activities undertaken to be undertaken by this committee are detailed below:

- Effective implementation of the environmental management measures in a holistic manner



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- Devising an operation plan for mining and transportation activities.
- Various natural calamities like rain, flooding, evacuation plans etc. will also be deliberated by this committee to form risk management and emergency management plan pertaining to the cluster.
- The environmental policy of the company will be implemented and proper sustainable mining in accordance with statutory regulations will be enforced for the quarries in the cluster.
- Furnishing action plan regarding restoration strategy
- Deliberate on the health of the workers involved in the mining and also the health of the public
- Carrying out detailed study on the impact of mining on:
  - Soil health & biodiversity
  - Climate change leading to droughts, floods, etc.
  - Pollution leading to release of greenhouse gases (GHG) rise in temperature and livelihood of local people
  - Possibilities of water contamination and impact on aquatic ecosystem health.
  - Agriculture, Forestry & Traditional practices.
  - Hydro geothermal /Geothermal effect due to destruction in the Environment.
  - Bio-geochemical process and its footprints including environmental stress.
  - Sediment geochemistry
- Furnishing action plan to achieve sustainable development gals with regards to water, sanitation and safety.
- Furnishing fire safety and evacuation plans in case of fire accidents.
- Implementation of steps to effectively utilize energy.



### **10.2.3 ENVIRONMENTAL MANAGEMENT PLAN:**

#### **10.2.3.1 General:**

Systematic monitoring systems and well-conceived and efficient Environment Management Plan will ensure that during both the project operations, the various environmental parameters, are well within the statutorily sustainable limits. The environmental control measures proposed to keep various environmental parameters of the project in terms of air, water, noise, land, biological environment, etc. has been described below.

#### **10.2.3.2 Air Quality:**

With regards to air quality, to mitigate the fugitive and gaseous emission resulting from mining and allied activities, the following control measures are proposed to be undertaken in both quarries:

- Regular water sprinkling in the transport roads using mobile tankers for dust suppression.
- Controlled blasting techniques with NONEL.
- Provision of dust filters / mask to workers working at highly dust prone and affected areas.
- Covering of drill holes with wet cloth, using sharp drill bits
- Avoiding blasting during high wind periods where the fine dust is carried out away easily affecting the ambient air quality.
- Proper maintenance of haul roads, HEMM and dumpers.
- Covering of loaded tippers with tarpaulins during transportation
- Vehicular emissions will be controlled through regular and proper preventive maintenance schedules and emissions tests are done with diesel smoke meter equipment to ensure emission values.
- Besides, there will be good green belt cover will be developed around mine periphery and in safety zone.



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- Green netting will be carried out around the lease periphery on all sides.

**10.2.3.3 Water Environment:**

There will be no process effluent generated from either project. The domestic sewage to be generated will be collected in septic tank with soak pit arrangements. Besides, there will be no waste dumps or stockpiles within the lease areas as the entire material will be directly despatched to the consumers.

Surface runoff management structures such as garland drain connected to a settling pond will be constructed around the quarries to collect the rain water. The supernatant clear water from the settling pond will be provided to nearby downstream users. Towards rainwater harvesting, the rainwater harvested in the mine will be used to meet the water requirements during mining and excess water in consultation with villagers and in line with government practices will be out in to the nearby stream or shall be distributed to the nearby villages as per their need.

There are no perineal water courses in either lease area. There is a tank located a distance of 110m on the south eastern side of Roughstone and Gravel Quarry of AK Blue metals. There is an odai on the south eastern side of the lease area of Udhayam Mines and Minerals Private Limited. A safety distance of 10m has been left for this seasonal drainage channel. Due to scanty rainfall the eri and the drainage channel remains dry for most of the year. Earthen bund will be formed within the lease area of Udhayam Mines and Minerals on the south eastern and eastern side. There is no proposal to discharge any effluent into either of these water bodies. No major impact is envisaged on the nearby water bodies due to project operations

**10.2.3.4 Noise Environment:**

During both the project operations, various control measures as listed below will be carried out to mitigate adverse impact due to the noise generated due to mining and allied activities:

- Good plantation will be carried out in the safety zone areas
- Noise protectors, insulation of operator cabins, installation of silencers in machineries, etc.
- Proper and regular maintenance of equipments



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- Providing earplugs to workers exposed to higher noise level.
- Providing in-built mechanism for reducing sound emissions.
- Conducting regular health check-up of workers including Audiometry test for the workers engaged in noise prone area.
- Displaying the noise level status of operational machinery on the machines to know the extent of noise level and to control the time to which the worker is exposed to higher noise levels.

#### **10.2.3.5 Ground Vibration**

During the project operations, various control measures as listed below will be carried out to mitigate adverse impact due to the ground vibration caused due to blasting activities:

- ❖ Controlled blasting techniques to maintain the peak particle velocity (PPV) below DGMS prescribed levels.
- ❖ Ideally formulating drilling and charging pattern and ensuring using less charge per delay.
- ❖ To contain fly rocks, stemming column will not be less than burden of the hole. Blasting area will also be muffled, if necessary, to stop fly rocks propagation.
- ❖ Blasting will not be carried out when strong winds are blowing towards the inhabited areas. Blasting will be done during midday time and never at night.
- ❖ Proper care and supervision during blasting by a competent and experienced person.
- ❖ Besides, different blasting time for the projects in the vicinity is suggested and the timing is to be mentioned in the display board in the respective mines entrance.

Further details regarding the same has been provided under section 4.4.2, Chapter-IV.

#### **10.2.2.6 Biological Environment:**

The mining lease area and 10km buffer zone are devoid of declared ecologically sensitive features such as national parks, sanctuaries etc. Besides, no Schedule-I animals are observed



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in the core and buffer zone. There will be no major clearance of vegetation involved in this project. However, good greenbelt and plantation programmes are planned within the lease area.

In the lease area, safety barrier 7.5m around the periphery and 10m safety zone. In the Roughstone and Gravel Quarry of AK Blue Metals Pvt. Ltd., about 2800 trees will be planted in and around the lease area. In the Roughstone and Gravel Quarry of Udhayam Mines and Minerals Pvt. Ltd., about 2050 trees will be planted in and around the lease area.

**10.2.2.7 Socio-Economic Environment:**

The proposed project operations will provide positive impacts in the region on the employment area as well as on physical and social infrastructural status. Many other tangible benefits will be gained by the local people in the surrounding areas due to ancillary units, trading operations, contractual needs, casual labor, green belt development, etc. Towards the socio-economic development of the surrounding area, the proponents have earmarked an amount of Rs.5.0 Lakhs each under Corporate Environmental Responsibility. The activities identified under CER will be implemented in a phased manner.

**10.3 ENVIRONMENTAL POLLUTION CONTROL COST:**

In this proposed quarry Implementation of environmental control measures as stated above involves capital as well as recurring expenses. The probable capital and recurring environmental control cost are calculated and given below

**Table 10.1: Environmental Control Cost – AK Blue Metals Private Limited**

S. No	Mitigation Measure	Capital cost	Recurring Cost /Annum
<b>Air Environment</b>			
1	Water sprinkling	8.00	0.50
2	Installing wheel wash system near gate of quarry	0.50	0.20
3	Muffle blasting – To control fly rocks during blasting	0.00	0.05
4	Wet Drilling with dust extraction	0.25	0.03
5	Environmental Monitoring	0.00	0.50
6	Transport Trucks -Monitoring exhaust fumes, covering with tarpaulin, monitoring manually with security guard to avoid overloading and installation of speed governors, Parking area with flaggers for traffic management	3.52	0.85
7	Road Maintenance - Haul road maintenancem Regular sweeping and maintenance of approach road	0.00	1.11
<b>Sub-Total (A)</b>		<b>12.27</b>	<b>3.23</b>



**COMBINED DRAFT EIA/EMP REPORT FOR ROUGHSTONE AND GRAVEL QUARRIES OF M/s. AK BLUE METALS PVT. LTD. (OVER AN AREA OF 5.53 Ha) AND M/s. UDHAYAM MINES AND MINERALS PVT. LTD. (OVER AN AREA OF 4.04.5 Ha) IN PERIYAVENMANI VILLAGE MADHURANTHAKAM TALUK, CHENGALPATTU DISTRICT, TAMILNADU**

<b>Noise Environment</b>			
8	Controlled Blasting using NONEL, provision of blaster shed	0.50	20.16
<b>Sub-Total (B)</b>		<b>0.50</b>	<b>20.16</b>
<b>Water Environment</b>			
9	Surface Runoff Management Structures	0.55	0.05
<b>Sub-Total (C)</b>		<b>0.55</b>	<b>0.05</b>
<b>Implementation of EC, Mining Plan &amp; DGMS Condition</b>			
10	Waste Management - Collection and Disposal	0.30	0.22
11	Fencing and Green Net Provision	11.06	0.10
12	Health and Safety - Provision of PPEs, IME, PME, First aid facility	0.48	0.46
13	Sign Boards -safety precaution signages, EC Conditions display board	0.20	0.03
16	Installation of CCTV cameras	0.30	0.05
17	Remuneration of statutory persons	0.00	7.80
<b>Sub-Total (D)</b>		<b>12.34</b>	<b>8.66</b>
<b>Green Belt Development</b>			
34	Plantation Inside the lease area(550 Nos.)	1.10	0.17
35	Plantation Outside the lease area (2250 Nos.)	6.75	0.68
<b>Sub-Total (E)</b>		<b>7.85</b>	<b>0.84</b>
<b>Grand Total</b>		<b>33.51</b>	<b>32.95</b>

**Table 10.2: Environmental Control Cost – Udhayam Mines and Minerals Pvt. Ltd.**

<b>S. No</b>	<b>Mitigation Measure</b>	<b>Capital cost</b>	<b>Recurring Cost /Annum</b>
<b>Air Environment</b>			
1	Water sprinkling	8.00	0.50
2	Installing wheel wash system near gate of quarry	0.50	0.20
3	Muffle blasting – To control fly rocks during blasting	0.00	0.05
4	Wet Drilling with dust extraction	0.25	0.03
5	Environmental Monitoring	0.00	0.50
6	Transport Trucks -Monitoring exhaust fumes, covering with tarpaulin, monitoring manually with security guard to avoid overloading and installation of speed governors, Parking area with flaggers for traffic management	2.63	0.70
7	Road Maintenance - Haul road maintenancem Regular sweeping and maintenance of approach road	0.00	0.81
<b>Sub-Total (A)</b>		<b>11.38</b>	<b>2.79</b>
<b>Noise Environment</b>			
8	Controlled Blasting using NONEL, provision of blaster shed	0.50	5.80
<b>Sub-Total (B)</b>		<b>0.50</b>	<b>5.80</b>
<b>Water Environment</b>			
9	Surface Runoff Management Structures	0.40	0.05
<b>Sub-Total (C)</b>		<b>0.40</b>	<b>0.05</b>
<b>Implementation of EC, Mining Plan &amp; DGMS Condition</b>			
10	Waste Management - Collection and Disposal	0.30	0.22
11	Fencing and Green Net Provision	8.09	0.10
12	Health and Safety - Provision of PPEs, IME, PME, First aid facility	0.48	0.40
13	Sign Boards -safety precaution signages, EC Conditions display	0.20	0.03





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	board		
16	Installation of CCTV cameras	0.30	0.05
17	Remuneration of statutory persons	0.00	7.80
<b>Sub-Total (D)</b>		<b>9.37</b>	<b>8.60</b>
<b>Green Belt Development</b>			
34	Plantation Inside the lease area(500 Nos.)	1.00	0.15
35	Plantation Outside the lease area (1550 Nos.)	4.65	0.47
<b>Sub-Total (E)</b>		<b>5.65</b>	<b>0.62</b>
<b>Grand Total</b>		<b>27.30</b>	<b>17.85</b>

Towards EMP measures, Rs.33.51 Lakhs is allocated under capital cost and Rs.32.95 Lakhs per annum will be spent under recurring cost for Roughstone and Gravel Quarry of AK Blue Metals Private Limited. Rs.27.30 Lakhs is allocated under capital cost and Rs.17.85 Lakhs per annum will be spent under recurring cost for Roughstone and Gravel Quarry of Udhayam Mines and Minerals Private Limited. All the recurring cost of maintenance of pollution control measures, environmental monitoring etc., will be met from revenue and will be spent for the entire lease period.

#### **10.4 CONCLUSION:**

A meticulously well planned Environmental Management Plan, with various programme schedules and timely execution objectives, as above, will ensure that the future environmental quality in the area will be maintained within statutory limits. The environmental management strategy as explained above will prove that industrial growth, if properly planned with all environmental concerns and appropriate remedial measures can go a long way to improve life pattern and living conditions of the local community around the project.

\* \* \* \* \*



# **CHAPTER-XI**



**SUMMARY AND  
CONCLUSION**

## **CHAPTER 11**

### **SUMMARY & CONCLUSION**

#### **11.1 INTRODUCTION:**

AK Blue Metals Private Limited and Udhayam Mines and Minerals Private Limited propose to operate Rough Stone and Gravel Quarry in the same Periyavenmani Village, Maduranthakam Taluk, Chengalpattu District, Tamil Nadu and have initiated action towards obtaining environmental clearance. Its details are as follows:

**Table 11.1: Basic details of the project**

1	<b>Project Name</b>	Roughstone and Gravel Quarry of AK Blue Metals Private Limited	Roughstone and Gravel Quarry of Udhayam Mines and Minerals Private Limited
2	<b>Survey No.</b>	204/1, 204/2, 204/3, 205, 206/1, 206/2, 206/3, 206/4, 206/5, 206/6, 206/7, 206/8 & 206/9	172/2B, 172/2C, 172/2D & 172/7
3	<b>Extent</b>	5.53 Ha	4.045 Ha
4	<b>Production</b>	11,12,850m <sup>3</sup> of Roughstone and 91,518 m <sup>3</sup> of Gravel for 10 years with the peak production capacity of 1,61,130m <sup>3</sup> of roughstone and 49,128m <sup>3</sup> of gravel.	5,33,830m <sup>3</sup> of Roughstone and 63,584 m <sup>3</sup> of Gravel for 10 years with the peak production capacity of 68,000m <sup>3</sup> of roughstone and 30,116m <sup>3</sup> of gravel.

Although the individual lease area of each project is less than 5 Ha, the other existing and proposed quarries within the 500m radius cluster along with this subject project works out to >5 Ha. Hence, this proposal is considered under Category – B1 and as per MoEF & CC notification necessitates preparation of EIA/EMP report and public hearing.

As such this combined draft EIA report with separate EMP measures is prepared for the above two mentioned projects based on standard and additional Terms of Reference issued by SEIAA, Tamil Nadu and is in conformance of the generic structure prescribed by MOEF&CC in their notification of September 2006 and the approved mining plan.



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**Table 11.2: Salient details of the project**

Details	AK Blue Metals Private Limited	Udhayam Mines and Minerals Private Limited
<b>A. Statutory Clearances</b>		
<b>Precise Area Communication</b>	Issued by Department of Geology & Mining vide Lr.No.408/Mines/2023 dated 23.02.2024 ( <b>Annexure-1A</b> )	Issued by Department of Geology & Mining vide Lr.No.407/Mines/2023 dated 23.02.2024 ( <b>Annexure-1B</b> )
<b>Mining Plan Approval</b>	Approved by Deputy Director, Geology & Mining vide Lr.No. Rc.No.408/Mines/2023 dated 18.03.2024 ( <b>Annexure-2A</b> )	Approved by Deputy Director, Geology & Mining vide Lr.No. Rc.No.407/Mines/2023 dated 08.04.2024 ( <b>Annexure-2B</b> )
<b>Details of Quarries within 500m radius</b>	Obtained from Deputy Director, Geology & Mining vide Rc.No.408/Mines/2023 dated 18.03.2024. ( <b>Annexure-3A</b> )	Obtained from Deputy Director, Geology & Mining vide Rc.No.407/Mines/2023 dated 08.04.2024. ( <b>Annexure-3B</b> )
<b>B. Application for Environmental Clearance</b>		
<b>Terms of Reference</b>	TO24B0108TN5769905N dated 11.06.2024	TO24B0108TN5364690N dated 07.06.2024
<b>Baseline Data Collection</b>	Carried out by Creative Engineers & Consultants , Chennai for Winter Season (March – May 2024)	Carried out by Creative Engineers & Consultants , Chennai for Winter Season (March – May 2024)
<b>C. Site Details</b>		
<b>Location</b>	Periyavenmani Village, Madurantakam Taluk, Chengalpattu District, Tamil Nadu	Periyavenmani Village, Madurantakam Taluk, Chengalpattu District, Tamil Nadu
<b>Coordinates</b>	12°23'55. 1445"N" to 12°24'3. 3676"N 79°58'19.8839"E to 79°58'33.9085 E	12°24' 10.167"N" to 12°24' 19.9271"N 79°58' 6.8521"E to 79°58' 16.7887"E
<b>Nearest Village</b>	Venmani – 840m (NE)	Onambakkam – 800m SW
<b>Nearest Town</b>	Cheyyur – 5.7Km (SE)	Cheyyar – 6.4Km (SE)
<b>Nearest Highway</b>	SH-115 – 1.9Km	SH-115 – 2.2Km
<b>Nearest Railway Station</b>	Madurantakam Railway Station – 14Km	Madurantakam Railway Station – 14Km
<b>Nearest Airport</b>	Chennai – 67.0 km- (NE)	Chennai – 67.0 km- (NE)
<b>Accessibility</b>	The lease area can be approached through Venmari – Onampakkam road on the eastern side of the lease area which joins SH-115 at a distance of 1.9Km on the southern side of the lease area.	The lease area can be approached through Venmari – Onampakkam road on the eastern side of the lease area which joins SH-115 at a distance of 2.2Km on the southern side of the lease area.
<b>Topography</b>	The applied lease area is exhibits almost Plain topography with few outcrops of charnockite. The elevation of the applied lease area is 30mRL.	The applied lease area is exhibits almost Plain topography with few outcrops of charnockite. The elevation of the applied lease area is 28mRL.
<b>D. Environmental Setting of the Study Area</b>		
<b>Nearest Water Bodies</b>	Madurantakam High Level Channel – 6.2Km (NE)	Madurantakam High Level Channel – 6.3Km (NE)
<b>Nearest Reserve Forests</b>	Sittarkadu RF – 6.5Km (S) Palavur RF – 7.7Km (W)	Sittarkadu RF – 6.9Km (S) Palavur RF – 7.4Km (W)



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	Kollattanallur RF – 7.9Km (SW)	Kollattanallur RF – 7.9Km (SW)				
<b>Notified Archaeologically important places, Monuments</b>	Nil within 10km radius	Nil within 10km radius				
<b>Local Places of Historical and Tourism Interest</b>	Jain Caves – 1.2Km (SE)	Jain Caves – 1.8Km (SE)				
<b>Environmental sensitive areas, Protected areas as per Wildlife Protection Act, 1972*</b>	Nil within 10km radius	Nil within 10km radius				
<b>Other industries</b>	Other than crushers, Roughstone quarries, no other major industries are located in the study area.	Other than crushers, Roughstone quarries, no other major industries are located in the study area.				
<b>E. Technical Description</b>						
<b>Geological Reserves</b>	Roughstone - 27,65,700m3 Gravel - 1,10,628 m3	Roughstone - 13,34,910m3 Gravel - 80,916 m3				
<b>Mineable Reserves</b>	Roughstone - 11,12,850m3 Gravel - 91,518m3	Roughstone - 5,33,830 m3 Gravel - 63,584m3				
<b>Mining Method</b>	Opencast mechanized mining using jackhammer drilling, blasting, excavation through excavator & mineral transport through tippers will be carried out.	Opencast mechanized mining using jackhammer drilling, blasting, excavation through excavator & mineral transport through tippers will be carried out.				
<b>Production</b>	<b>Year</b>	<b>Roughstone (m3)</b>	<b>Gravel (m3)</b>	<b>Year</b>	<b>Roughstone (m3)</b>	<b>Gravel (m3)</b>
	1 - 5	7,87,650	91,518	1 - 5	3,20,730	63,584
	6 – 10	3,25,200	--	6 -10	2,13,100	--
	<b>Total</b>	<b>11,12,850</b>	<b>91,518</b>	<b>Total</b>	<b>5,33,830</b>	<b>63,584</b>
<b>Waste Generation and Management</b>	There is no waste generation anticipated in these quarries since the entire excavated material will be utilized.	There is no waste generation anticipated in these quarries since the entire excavated material will be utilized.				
<b>Ultimate Depth</b>	52m	42m				
<b>F. Project Requirements</b>						
<b>Manpower</b>	12 persons directly and 50 people indirectly.	12 persons directly and 50 people indirectly.				
<b>Water Requirement and Source</b>	Water Requirement: 8 KLD Source: The required water will be procured initially from outside agencies. Later Rain water harvested in the mine sump can also be used.	Water Requirement: 8 KLD Source: The required water will be procured initially from outside agencies. Later Rain water harvested in the mine sump can also be used.				
<b>Power Requirement</b>	No electricity needed for mining operation. The minimum power requirement for office, etc will be met from state grid.	No electricity needed for mining operation. The minimum power requirement for office, etc will be met from state grid.				



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<b>Site Services</b>	This is a proposed project. Site services like mine office, first aid room, rest shelters, toilets etc. will be provided as semi-permanent structures.	This is a proposed project. Site services like mine office, first aid room, rest shelters, toilets etc. will be provided as semi-permanent structures.
<b>Project Cost</b>	Rs.267.40 Lakhs	Rs.247.33 Lakhs

**11.2 EXISTING ENVIRONMENTAL SCENARIO:**

**11.3.1 GENERAL:**

The studies and data collection have been carried out systematically and meticulously as per relevant IS codes, CPCB and MoEF&CC guidelines and as per approved ToR during **Summer Season (March to May 2024)** For the purpose of this study, the area has been divided into two zones, namely, core and buffer zones. The combined lease area is considered to be the core zone while the buffer zone encompasses a 10km radius from the periphery of the core zone.

**11.3.2 SOCIO-ECONOMIC STATUS:**

The proposed quarries are located in in Periyavenmani Village, Madhuranthakam Taluk, Chengalpattu District. Based on 2011 census data, in the 10km radius there are 64 Rural villages from Two Taluks namely Maduranthakam & Cheyyur Taluk, (Kanchipuram)Chengalpattu District. The demographic profile of the study area is given below:

**Table 11.3: Social, Economic And Demographic Profile of the Study Area**

Details	Population	Percentage
<b>A. Gender-wise distribution</b>		
Male Population	43679	50.02
Female Population	43652	49.98
<b>Total</b>	<b>87331</b>	<b>100</b>
<b>B. Caste-wise population distribution</b>		
Scheduled Caste	47611	54.52
Scheduled Tribes	946	1.08
Other	38774	44.40
<b>Total</b>	<b>87331</b>	<b>100</b>
<b>C. Literate and Illiterate population</b>		
Literate Males	11725	<b>13.43</b>
Literate Females	17450	<b>19.98</b>
<b>Total Literate Population</b>	<b>29175</b>	<b>33.41</b>
Others Males	31954	<b>36.59</b>
Others Females	26202	<b>30.00</b>
<b>Others Population</b>	<b>58156</b>	<b>66.59</b>
<b>Total</b>	<b>87331</b>	<b>100</b>
<b>D. Occupational structure</b>		



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Details	Population	Percentage
Main workers	27098	31.00
Marginal workers	17877	20.50
<b>Total Workers</b>	<b>44975</b>	<b>51.50</b>
<b>Total Non-workers</b>	<b>42356</b>	<b>48.50</b>
<b>Total</b>	<b>87331</b>	<b>100</b>

**11.3.2.1 SAMPLE SURVEY:**

Nearby villages were visited for conducting sample Village survey on all socio-economic aspects and requirements of the people. The existing socio-economic scenario is studied and CER activities are also suggested to the proponent. The study details are given in **Para 3.2.4, Chapter – III.**

**11.3.3 EXISTING ENVIRONMENTAL QUALITY:**

**Table 11.4: Baseline Data**

<b>A. Meteorological Data</b>			
Parameters	Minimum	Maximum	
Temperature In °c	23.8	40.0	
Humidity in %	35.0	94.3	
Wind speed in km/hr	<1.8	29.5	
Predominant wind direction from	SE		
<b>B. Ambient Air Quality Data – 5 Locations</b>			
Parameters	Core Zone	Buffer Zone	Limits
Particulate Matter (Size <10 µm)	57.2 – 60.4	46.5 – 71.6	100
Particulate Matter (Size <2.5 µm)	26.9 – 28.4	20.5 – 34.4	60
Sulphur Dioxide (as SO <sub>2</sub> )	7.2 – 9.5	5.2 – 9.5	80
Nitrogen Dioxide (as NO <sub>2</sub> )	8.4 – 13	6.4 – 11.9	80
Conclusion: The existing Ambient Air Quality levels for PM10, PM2.5, SO2 and NO2, are within the NAAQ standards prescribed CPCB limits. The CO values in all the locations were found to be below detectable limit. Silica values in the study area are found to be below detectable limit. (Detection limit – 0.05 mg/m3)			
<b>C. Water Quality – 4 Locations</b>			
pH at 25 °C	7.26 – 7.59	<b>6.5-8.5</b>	
Total Dissolved Solids, mg/L	78 – 912	<b>2000</b>	
Chloride as Cl <sup>-</sup> , mg/L	120 – 310	<b>1000</b>	
Total Hardness (as CaCO <sub>3</sub> ), mg/L	230 – 392	<b>600</b>	
Total Alkalinity (as CaCO <sub>3</sub> ), mg/L	196– 390	<b>600</b>	
Sulphates as SO <sub>4</sub> <sup>2-</sup> , mg/L	104 – 270	<b>400</b>	
Iron as Fe, mg/L	0.03 – 0.06	<b>0.3</b>	
Nitrate as NO <sub>3</sub> , mg/L	1.64 – 3.21	<b>45</b>	



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Fluoride as F, mg/L	0.24 – 0.41	<b>1.5</b>	
<b>Conclusion:</b> The water quality of ground water is found to be within the prescribed Permissible limits of IS: 10500 Norms in the absence of an alternative source as per Drinking Water Specifications.			
<b>D. Noise Levels – 5 Locations</b>			
<b>Parameter</b>	<b>Core Zone</b>	<b>Buffer Zone</b>	<b>Limit</b>
<b>Day Equivalent</b>	45.8	43.6 – 50.2	55
<b>Night Equivalent</b>	39.2	39.6 – 40.4	45
Comparing with the MOEF&CC Norm of 55 dB(A) for day time and 45 dB(A) for night time, the monitored ambient noise levels were within the limit values for Residential areas.			
<b>E. Soil Quality – 4 Locations</b>			
<b>Parameter</b>	<b>Core Zone</b>	<b>Buffer Zone</b>	
pH	6.32 – 6.57	7.26 – 7.51	
Electrical Conductivity (µmho/cm)	83.60 – 90.43	49.87 – 110.60	
Organic matter (%)	0.62 – 0.77	0.21 – 1.32	
Total Nitrogen (mg/kg)	220 – 234	192 – 290	
Phosphorus (mg/kg)	0.56 – 0.62	0.49 – 0.99	
Sodium (mg/kg)	840 – 860	825 – 1045	
Potassium (mg/kg)	390 – 410	339 – 2160	
Soil is of clay loam type.			

**F. Land Environment:**

For the present study on land use pattern in the study area, remote sensing satellite data have been used. The area estimated of land use categories around the 10km buffer zone is provided below:

**Table 11.5: Land Use in 10Km Buffer Zone**

S.No	Landuse Feature	Area (Sq.Km)	Percentage
1	Agriculture/ Plantation	77.9124	23.04
2	Fallow Land	108.4468	32.07
3	Land With Scrub	121.5222	35.94
4	Land Without Scrub	0.5006	0.15
5	Water bodies	20.3683	6.02
6	Settlement / Infracture	7.523	2.22
7	Mining / Infrastructure	1.8774	0.56
	<b>Total</b>	<b>338.1507</b>	<b>100.00</b>

From the above table it is seen that 23.04 % of the buffer area is classified under the Agriculture/ Plantation followed by 32.07 % of fallow land, 35.94 % constitutes land with out scrub and the balance 8.95 % falls under other land use categories.





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**G. Biological Environment:**

**Flora:** The lease area falls within dyke like rocky formation following a general strike of NW- SE for a length of 3 to 3.5 km and a width of 500m to 800m. The entire area is covered with rocky exposures devoid of vegetation except for stunted eucalyptus trees, bushes , shrubs / cactus varieties sp.. Because of the rocky exposures with very little soil cover, the area is not suitable for agriculture / commercial crops and as such off late used for quarrying purpose.

Buffer Zone comprise of agricultural land, rocky waste land, barren land and mined out pits. Agriculture is predominantly rainfed, tank fed and largely dependent on the rain water. Dominant agricultural activities area observed proximate to the available irrigation source. Crops like Rice, vegetables, watermelon, ground nut, banana etc. are cultivated in the lands with better water source & soil condition. Due to inconsistent rainfall, non availability of adequate labours, poor economics and other issues agricultural activities have declined. In the rocky waste land cactus species like *Opuntia dillenii* and *Prosopis juliflora*, *Acacia catechu* & *Acacia nilotica* are observed.

The Dominated species in the study area are *Morinda tinctoria*, *Delonix elata*, *Azadirachta indica*, *Pongamia pinnata*, *Prosopis juliflora*, *Acacia auriculiformis* etc. The list of flora in the core and buffer zone is provided in Table No.3.24 and 25, Chapter-III.

**Fauna:** There is no Wild Life Sanctuary or National Park within the study area of 10 km. Domesticated animals like Cows, Buffalos, Dogs, Cats etc., are commonly found. The lease and 10 Km buffer zone does not fall in the Western Ghats ESA boundary. From the study it observed that the area in general consists of species of least concern only. No threatened or endemic or endangered species are observed. The area does not form the migratory path of the birds also. List of fauna within the study area is given in Table No – 3.26, Chapter-III.

**H) HYDROLOGICAL STUDY:**

There are no perineal water courses in both the lease areas. There is an Eri located a distance of 110m on the south eastern side of Roughstone and Gravel Quarry of AK Blue metals. It is dry, covered with silt, bushes and not interconnected. As per village map there is an odai on the south eastern side of the lease area of Udhayam Mines and Minerals Private Limited. Physically it is not present in the field no such course is visible. A safety distance of 10m has been left for this seasonal drainage channel.



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Due to scanty rainfall the eri and the drainage channel remains dry for most of the year. Earthen bund will be formed within the lease area of Udhayam Mines and Minerals on the south eastern and eastern side. There is no proposal to discharge any effluent into either of these water bodies. No major impact is envisaged on the nearby water bodies due to project operations.

In the study area, the shallow aquifer is developed through dug wells and deeper aquifer through tube wells. The groundwater has revealed that potential fractures are encountered at deeper levels.

Due to rocky dyke like formation for a major stretch of land in and around the lease area, the ground water potential is very poor. However at far away plains, depth to water table in the that the wells are as deep as 8 ft to 40 ft. Water level after good monsoon reaches almost near the surface level whereas it lowers down substantially during summer season. Bore wells are 250-350 ft deep, give better yield post monsoon whereas the yield becomes very less later.

The occurrence of groundwater mainly in the porous soil are weathered layers, very negligible amount of groundwater percolated through the poorly fractured layer, after that there is no existence of groundwater. Besides, the mining area consists of hard compact rock, no major water seepage within the mine is expected. The working nearby mines validates the same.

### **11.3 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES:**

#### **11.4.1 GENERAL:**

The identified impacts due to these mines during mining and associated activities have been studied in relation to various environmental components like Air, water, noise, vibration, land, transport etc.

#### **11.4.2 AIR ENVIRONMENT:**

The principal sources of air pollution in the area due to mining and allied activities are dust generation in the mine due to various activities such as excavation of material, movement of HEMM, loading, unloading and transportation operations.. Besides, Gas emission also occur as a result of emission of SO<sub>2</sub>, NO<sub>x</sub>, CO etc., from diesel driven mining equipment, compressors, generator sets, etc. The following measures will be adopted to control impact on the air quality due to mining operations in the lease area:



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**Table 11.6: Mitigation Measures – Air Environment**

S.No	Activity	Mitigation Measures
1	Drilling	Usage of Drill bits in good condition
		Covering of drill holes with wet cloth
		Usage of sharp drill bits for drilling of holes.
		Provision of dust filters / mask to workers working at highly dust prone and affected areas.
2	Blasting	Well-designed blasting parameter, effective stemming to achieve optimum breakage occurs without generating fines.
		Use of appropriate explosives for blasting and avoiding overcharging of blast holes.
		Avoiding blasting during high wind periods where the fine dust is carried out away easily affecting the ambient air quality.
		Use of controlled blasting techniques with Nonel to keep the dust generation, noise as well as vibration level within the prescribed limits.
3	Excavation and Loading	Proper maintenance of HEMM
		Enclosures for operator cabin.
		Imparting sufficient training to operators on safety and environmental parameters.
		Proper maintenance of hauling equipments.
		Avoiding overloading of dumpers.
4	Transportation	Regular wetting of transport road using mobile water tanker.
		Proper maintenance of haul road and other roads
		Setting up of tyre wash facility in the transport road.
		Avoiding overloading of tippers
		Covering of loaded tippers with tarpaulins during transportation
		Vehicular emissions will be controlled through regular and proper preventive maintenance schedules and emissions tests are done with diesel smoke meter equipment to ensure emission values.
5	Others	Development of greenbelt / barriers around mine in the safety zone and carrying out plantation within the lease area.
		Green netting will be carried out around the lease periphery on all sides.

Due to adoption of all these measures, no major impact on air quality is envisaged due to this proposed opencast mining operation.



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The impact on air quality due to the proposed project is estimated using AERMOD View Gaussian Plume Air Dispersion Model developed by Lakes Environmental Software which is based on steady state Gaussian plume dispersion. Ground Level Concentration (GLC).

The cumulative post project concentration with respect to PM10 is in the range of 56.7 µg/m<sup>3</sup> to 72.6 µg/m<sup>3</sup> and with respect to PM2.5 are in the range of 25.5µg/m<sup>3</sup> to 35.4 µg/m<sup>3</sup> which are within the statutory limits in each case.

For preservation of environment in this mine strict enforcement of management schemes will be undertaken for taking corrective actions, as needed. By adopting the effective implementation of all the mitigative measures, no adverse impact on Air quality due to the mining operation in this lease area is expected.

**11.4.3 WATER ENVIRONMENT:**

The water requirement for each of these two projects are 8 KLD comprising 1.0 KLD for drinking water and domestic use, 5.0 KLD for dust suppression and 2.0 KLD for greenbelt. The water will be sourced initially from outside agencies. Later the rainwater collected in the respective mine pit sump will be used for this purpose.

The activity / source of pollution, its impact / consequence, proposed control measures are explained below:

**Table 11.7: Mitigation Measures – Water Pollution**

S.No	Source	Consequence	Mitigation Measures
A	Domestic use	Generation of waste water	The domestic sewage to be generated from the project will be collected in septic tank with soak pits.
B	Rainfall	Runoff from waste dump and stack	Towards surface runoff management, a garland drain of length 1100m for Roughstone and Gravel Quarry of AK Blue Metals Private Limited and 1050m for Roughstone and Gravel Quarry of Udhayam Mines and Minerals Private Limited will be constructed and will be connected to settling ponds with silt traps. The supernatant clear water from the settling pond will be flow to the downstream users.
		Rainwater Harvesting	The rain water falling in the quarry will be harvested in the sump at the lowest level of the quarries. This sump will act as a settling pond to prevent solids escaping along with discharge, before outlet. etc.



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C	Drainage Course	Disturbance to drainage course	<ul style="list-style-type: none"> <li>• There are no perineal water courses in both the lease areas. There is an Eri located a distance of 110m on the south eastern side of Roughstone and Gravel Quarry of AK Blue metals. It is dry, covered with silt, bushes and not interconnected.</li> <li>• As per village map there is an odai on the south eastern side of the lease area of Udhayam Mines and Minerals Private Limited.</li> <li>• Physically it is not present in the field no such course is visible. A safety distance of 10m has been left for this seasonal drainage channel. Due to scanty rainfall the eri and the drainage channel remains dry for most of the year. Earthen bund will be formed within the lease area of Udhayam Mines and Minerals in the south eastern and eastern side in the safety zone. Besides, the intervening land will also be fenced and developed with green belt.</li> <li>• It is also proposed to clean &amp; desilt the unused eri and strengthen its peripheral bund in consultation with the authorities which will augment the water storage and ground water table.</li> </ul>
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- **Stage of Groundwater Development:** The groundwater resource data of Kancheepuram district was obtained from the data provided in the technical report of the National Water Mission – Notes on Kancheepuram District it is seen that this area can be categorized as ‘Safe’ from ground water development point of view.
- **Generation of mine pit water:** The lease area is part of a huge dyke like compact rock formation with less intergranular porosity and fractures leading to less permeability and transmissivity values and as such the ground water level in this area is deep from surface. As such hence no major water seepage within the mines is expected from the periphery. The ultimate pit depth of mining is 52m for Rough stone and Gravel Quarry of AK Blue Metals Pvt. Ltd. and 42m for Udhayam Mines and Minerals Pvt. Ltd.. The ground water table in this area is below this level. Hence, ground water intersection in not envisaged and ground water will not be affected appreciably due to the quarrying operation.

**11.4.4 NOISE ENVIRONMENT:**

Anticipated noise levels resulting from operation of the various machineries like excavator, tippers, drill have been computed using point source model. Computation of cumulative noise levels at the nearby villages is made based on the assumption that there are no attenuation paths between the source and the boundary. From the studies, it is found that the predicted Noise Levels



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due to mining operations at the periphery of the mine lease itself will be less even without considering any attenuation factor. However, practically there will be attenuation due to vegetation etc., and as such there will not be any adverse noise propagation outside the lease boundary. Since the habitations are also away the effect of noise due to mining operations will not be felt at all in the surrounding village. Hence, by implementing the following mitigative measures for noise control, the impact on noise levels will continue to be insignificant:

- Planting rows of native trees along roads, around mine area and other noise generating centres to act as acoustic barriers.
- Sound proof operator's cabin for equipments like shovel, tippers, etc.
- Proper and regular maintenance of equipments may lead to less noise generation.
- Providing in-built mechanism for reducing sound emissions.
- Providing earplugs to workers exposed to higher noise level.
- Conducting regular health check-up of workers including Audiometry test for the workers engaged in noise prone area.
- Displaying the noise level status of operational machinery on the machines to know the extent of noise level and to control the time to which the worker is exposed to higher noise levels.
- Provision of green net in lease periphery

Further green belt and afforestation will be planned and executed to abate noise and dust propagation in the area.

#### **11.4.5. VIBRATION:**

To reduce ground vibratory conditions, various control measures will be implemented such as keeping PPV below 10mm/s for 8-25hz frequency range, formulating drilling and charging pattern with less explosive charge, initiating sequence and using NONEL, carrying out blasting with minimum charge per delay, avoiding blasting during strong winds etc. By adoption of above measures, it will be ensured that the ground level vibration due to blasting are maintained within the limits prescribed by DGMS, Dhanbad at the mining areas vide Circular No. 7 dated 29 -08-



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1997. Besides, different blasting time for the projects in the vicinity is suggested and the timing is to be mentioned in the display board in the respective mines entrance. Elaborate details regarding the same are provided under section 4.4.2, Chapter-IV.

#### **11.4.6 IMPACT ON LAND ENVIRONMENT:**

There is no waste generation anticipated in these quarry operations since the entire excavated material will be utilized. Hence, there is no external overburden dump involved. Plantation will be carried out in this safety zone area. In the post mining stage, in the quarry of AK Blue Metals Pvt. Ltd., 4.50Ha of mined out area will be left as water body and 1.03 Ha will be greenbelt area. In the quarry of Udhayam Mines and Minerals Pvt. Ltd., at the end of the lease period, 3.100Ha of mined out area will be left as water body and 0.945 Ha will be greenbelt area. Entire mined out area will be properly fenced to prevent inadvertent entry of men and animals. In the post mining stage the rainwater harvested in the mined out void shall be utilized.

#### **11.4.7 BIOLOGICAL ENVIRONMENT:**

Necessary mitigative measures like dust suppression, proper maintenance of equipment's, greenbelt and plantation etc., will be carried out to prevent dust generation & any further impact on the vegetation. In the lease area, safety barrier 7.5m around the periphery is left. In the Roughstone and Gravel Quarry of AK Blue Metals Pvt. Ltd., about 2800 trees will be planted in and around the lease area. In the Roughstone and Gravel Quarry of Udhayam Mines and Minerals Pvt. Ltd., about 2050 trees will be planted in and around the lease area.

#### **11.4.8 SOCIO ECONOMIC ENVIRONMENT:**

The entire lease area is a private patta land. Hence, there are no habitations or hutments in the core zone area and no rehabilitation or resettlement problems will arise here. The mining operations in the proposed mines will each employ about 12 persons directly and about 50 persons. Besides through allied opportunities in logistics, trading, repairing works etc. good employment potential will arise in this area, which will provide raising income levels and standards of living in the area through various service-related activities connected with the project operations.



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Towards the socio-economic development of the surrounding area, AK Blue Metals have allocated Rs.5.5 Lakhs and Udhayam Mines and Minerals have allocated Rs.5 Lakhs. The activities identified will be implemented in a phased manner. In consultation with the locals based on the need & priority it will be implemented.

**11.4.9 OCCUPATIONAL HEALTH AND SAFETY ASPECTS:**

In order to ensure minimisation of occupational health and safety problems in the project operation, the following preventive remedial measures will be effectively exercised in the project operations, so as to comply with applicable standards.

- Medical examination of workers at pre-entry level stage of workers, etc., by qualified doctors, with periodical examination of all workers/staff at least once a year, as per DGMS circulars.
- Regular awareness campaigns amongst staff and workers
- Staff will be provided with PPE to guard against excess noise levels, Dust generation and inhalation, etc., as per standards prescribed by DGMS.

**11.4.10 IMPACT ON LOCAL LOGISTICAL SYSTEM DUE TO PROJECT:**

The lease area can be approached through a separate public unused localized road without regular use and absence of habitations which is connected to Venmari – Onampakkam road on the eastern side of the lease area which joins SH-115 at a distance of 1.9Km on the southern side of the lease area. There will be about 10 trips per hour cumulatively. The existing road can absorb this traffic due to this project. The following mitigative measures are suggested for mitigation of adverse impacts on the logistical aspect of the project:

- ❖ Water sprinkling on material in the transport vehicles before transporting, so that no dust nuisance during transport will arise.
- ❖ Plantation on either side of the transport road in consultation with the concerned department.
- ❖ Proper maintenance of transport roads and vehicles
- ❖ Avoiding overloading of material





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- ❖ Covering of loaded vehicles with tarpaulins sheet if warranted.
- ❖ Installation of barriers at vulnerable locations
- ❖ Provision of tyre washing facility at the mine outlet

**11.4.11 WASTE MANAGEMENT:**

Since the entire mined out material will be used there will not be any solid waste generation from this project. There is no process effluent generation from both mines. Hence no liquid waste is generated.

The hazardous waste generated will be stored in a separate storage area with impervious containers for waste oil, oil contaminated clothes, used lead acid batteries, scraps, tyre storage etc. It will be disposed through authorized recyclers or re-processors periodically. The hazardous wastes will be transported in accordance with the provisions of rules. By effective implementation of above said mitigation measures no major impact due to Hazardous waste is expected.

Single use plastics/ use and throwaway plastics will be banned in the site as directed by the Tamil Nadu Government vide GO(Ms)No.84 regarding ban on use of plastic products. The employees will be encouraged to use compostable material or reusable material.

**11.4 ENVIRONMENTAL MONITORING PROGRAMME:**

The monitoring schedules are planned for systematic study of various pollution levels with respect to air and water qualities, noise levels, etc. to ensure that they conform to the standards laid down by Environmental Protection Act and various statutory Limits.

Monitoring location and the frequency of monitoring shall be suitably modified in consultation with the nodal agency as per the actual requirements and prevailing conditions of the mine and environmental factors, as dictated from time to time, depending on the prevailing pollution levels, if required.

Towards EMP measures, Rs.33.51 Lakhs is allocated under capital cost and Rs.32.95 Lakhs per annum will be spent under recurring cost for Roughstone and Gravel Quarry of AK Blue Metals Private Limited. Rs.27.30 Lakhs is allocated under capital cost and Rs.17.85 Lakhs per annum will be spent under recurring cost for Roughstone and Gravel Quarry of Udhayam Mines and



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Minerals Private Limited. Further details of the capital and recurring cost of environmental management have been provided in in Table No. 10.2, Chapter-X.

**11.5 ADDITIONAL STUDIES:**

This draft EIA/EMP report will be submitted for public hearing as per mandatory procedures through the District Collector and State Pollution Control Board officials after giving 30 days advance notice in two local newspapers about the scheduled date and time for conduct of the public hearing procedures. The opinions, concerns and objections of stakeholders will be recorded during the public hearing. All the public queries and the replies to the query by the project proponent and officials concerned will be recorded and incorporated in the EIA/EMP report for approval by SEIAA, Tamil Nadu. Elaborate description in respect of Risk Assessment and Mine closure plan are given in **Chapter - VII**.

Although the individual lease area of this project is less than 5 Ha, the other existing and proposed quarries within the 500m radius along with this subject project works out to >5 Ha. The baseline monitoring carried out for this project reflects the cumulative impact of the existing quarries.

**11.6 CONCLUSION:**

By systematic and scientific mining adhering to all the statutory norms and enforcing and strictly implementing the above said mitigation measures mentioned in this report, no adverse impact is envisaged. The proposed mining project will benefit this region in the fields of potential employment opportunities, improved per capita income for local people, improved social welfare facilities in respect of education, medical healthcare systems, etc. in its own way and also revenue to Government through royalty, taxes etc. Besides, it will meet the raw material requirement of the construction industry also.

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# **CHAPTER - XII**

## **DISCLOSURE OF CONSULTANTS ENGAGED**

**CHAPTER 12**

**DISCLOSURE OF CONSULTANTS ENGAGED**

**Creative Engineers & Consultants**, Chennai is an **NABL** accredited testing laboratory and **NABET** accredited EIA consultancy. Established over 25 years ago, this company has steadily made good strides in the environmental impact assessment fields, and is also one of the first companies to get accredited by NABET as an Accredited Consultant Organization as early as 2011. Creative Engineers & Consultants has to its credit, successful completion of numerous EIA/EMP reports, grant of environmental clearances and periodic environmental monitoring works. Presently, the company has been accredited by NABET as a 'Category-A' organization for the sectors of Mining of Minerals (opencast only), Thermal Power Plants, Mineral Beneficiation and Cement Plants with the accreditation valid upto 23.12.2026. The team of experienced professionals that are a part of this organization has been detailed below.

**Figure 12.1: Disclosure of consultants engaged**

<b>EXPERT NAME</b>	<b>QUALIFICATION</b>	<b>POSITION</b>	<b>EXPERIENCE</b>
Mr. P. Giri	AMIE (Mining)	EIA Coordinator & Functional area Expert (AP,NV,HW),	Over 30 years of experience in EIA/EMP report, mine plan preparation, including modeling
Mr. K. Shankar	M.Sc (Geology). PGMEMG	Functional area Expert (GEO, HG, SHW, RH) & IBM approved RQP.	Over 25 years of experience in EIA/EMP report, Mine plan, hydrological report preparation
Dr. N. Radhakrishnan	M.Sc., M.Tech., Ph.D	Functional area Expert (Land use)	Over 25 years of experience in using the advanced spatial analysis techniques in GIS environment. Specialized in Spatial Information Technology and Applications (remote sensing, GIS)
Mr.S.S.Rajendran	M.Sc. (Pharmaceutical Chemistry)	Lab head	More than 9 years of experience in Environmental



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EXPERT NAME	QUALIFICATION	POSITION	EXPERIENCE
			laboratory.
Mr. R. Babu raj	M.A (Sociology), B.Com(Y.L&Cost), ITI, Advance Diploma in Computer application	Functional Area Expert (Socio Economy)	Over 13 years of experience in dispersion modeling, computer applications. Specialized in CAD and computer software, applications. 5years experience in the field of socio economy and its allied report preparation.
Mr. B. Govindaraman	B.Sc.	Field technician	Over 20 years of field monitoring & data collection experience
Dr.B.Swamynathan	M.Sc (Ecology & Environmental Sciences), M.Phill (Botany), Ph.D (Ecology & Environmental Sciences)	EIA Coordinator & Functional Area Expert (EB,SC,LU&AP)	More than 12 years of experience in Environment and allied fields.
Ms. G. Sandhya	B. Tech Chemical Engineering M.Tech Environmental Engineering	EIA Coordinator & Functional Area Expert (AQ&WP)	Over 6 years experience in preparation of EIA/EMP reports

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# **ANNEXURES**

ANNEXURE-1



நக.எண்.408/கனிமம்/2023  
நாள். 23.02.2024.

துணை இயக்குநர் (கூ.பொ) அலுவலகம்,  
புலியியல் மற்றும் சுரங்கத்துறை,  
செங்கல்பட்டு.

**குறிப்பாணை**

**பொருள்:-** கனிமங்களும் குவாரிகளும் - சிறுகனிமம் - சாதாரண கற்கள் - செங்கல்பட்டு மாவட்டம் - மதுராந்தகம் வட்டம் - பெரியவெண்மணி கிராமம் பட்டா புல எண்கள்.204/1, 204/2, 204/3, 205, 206/1, 206/2, 206/3, 206/4, 206/5, 206/6, 206/7, 206/8 மற்றும் 206/9 - மொத்த பரப்பு 5.53.00 ஹெக்டேர் பரப்பில் சாதாரண கற்கள் மற்றும் கிராவல் குவாரி தி/ள். ஏ.கே. புளுமெட்டல்ஸ் பிரைவேட் லிமிடெட் என்ற நிறுவனத்தினர் 10 ஆண்டுகளுக்கு அனுமதிக்கோரி விண்ணப்பம் செய்தது - கள அலுவலர்களின் அறிக்கைகள் வரப்பெற்றது - புலத்தணிக்கை செய்யப்பட்டது - புல எண்கள். 204/1, 204/2, 204/3, 205, 206/1, 206/2, 206/3, 206/4, 206/5, 206/6, 206/7, 206/8 மற்றும் 206/9 - மொத்த பரப்பு 5.53.00 ஹெக்டேர் பரப்பில் மட்டும் தகுதியான நிலப்பரப்பாக கருதி 10 ஆண்டுகளுக்கு உரிமம் வழங்க வேண்டி ஏற்பளிக்கப்பட்ட சுரங்கதிட்டம் மற்றும் சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணைய தடையின்மை சான்று பெற்று சமர்ப்பிக்க கோருதல் தொடர்பாக.

- பார்வை:-**
1. தி/ள்.ஏ.கே. புளுமெட்டல்ஸ் பிரைவேட் லிமிடெட், எண்.1ஏ, மணிகண்டன் நகர், அஸ்தீனாபுரம், சென்னை - 600 064 என்ற நிறுவனத்தினர் விண்ணப்பம் நாள் 08.12.2023.
  2. இவ்வலுவலக நக.எண்.408/கனிமம்/2023, நாள் 11.12.2023.
  3. மதுராந்தகம், வட்டாட்சியர் அவர்களின் கடித நக.எண்.7527/2023/அ1 நாள்.08.01.2024.
  4. மதுராந்தகம் வருவாய் கோட்ட அலுவலர் அவர்களின் கடித நக. எண்.6988/2023/ஆ, நாள் 01.02.2024.
  5. உதவி இயக்குநர், புலியியல் மற்றும் சுரங்கத்துறை, செங்கல்பட்டு அவர்களின் புலத்தணிக்கை அறிக்கை நாள்.19.02.2024.
  6. மற்றும் உரிய ஆவணங்கள்.

பார்வையில் காணும் கடிதங்களின்பால் கனிவான கவனம் வேண்டப்படுகிறது.

*K. Vinith Kumar*

2. செங்கல்பட்டு மாவட்டம், மதுராந்தகம் வட்டம், பெரியவெண்மணி கிராமம் பட்டா புல எண்கள். 204/1 (0.40.50), 204/2(0.40.50), 204/3 (0.43.50), 205 (0.86.00), 206/1(0.48.50), 206/2(0.47.50), 206/3(0.16.00), 206/4 (0.43.50), 206/5 (0.26.50), 206/6 (0.31.00), 206/7 (0.43.50), 206/8 (0.44.50) மற்றும் 206/9 (0.41.50) மொத்த பரப்பு 5.53.00 ஹெக்டேர் பரப்பில் சாதாரண கற்கள் மற்றும் கிராவல் குவாரி செய்ய பத்து ஆண்டுகளுக்கு குத்தகை உரிமம் வழங்கக்கோரி தி/ள். ஏ.கே. புளுமெட்டல்ஸ் பிரைவேட் லிமிடெட் என்ற நிறுவனத்தினர் 08.12.2023 அன்று விண்ணப்பத்தினை உரிய ஆவணங்களுடன் சமர்ப்பித்துள்ளனர்.

3. மேற்கண்ட விண்ணப்பம் தொடர்பாக வட்டாட்சியர், மதுராந்தகம் வருவாய் கோட்ட அலுவலர், மதுராந்தகம் மற்றும் உதவி இயக்குநர் (கனிமம்) செங்கல்பட்டு ஆகியோர் புலத்தணிக்கை மேற்கொண்டு செங்கல்பட்டு மாவட்டம், மதுராந்தகம் வட்டம், பெரியவெண்மணி கிராமம் பட்டா புல எண்கள். 204/1 (0.40.50), 204/2 (0.40.50), 204/3 (0.43.50), 205 (0.86.00), 206/1 (0.48.50), 206/2 (0.47.50), 206/3 (0.16.00), 206/4 (0.43.50), 206/5 (0.26.50), 206/6 (0.31.00), 206/7(0.43.50), 206/8 (0.44.50) மற்றும் 206/9 (0.41.50) மொத்த பரப்பு 5.53.00 ஹெக்டேர் பரப்பில் மட்டும் சாதாரண கற்கள் மற்றும் கிராவல் வெட்டியெடுக்க தி/ள். ஏ.கே. புளுமெட்டல்ஸ் பிரைவேட் லிமிடெட் என்ற நிறுவனத்திற்கு உரிமம் வழங்க விண்ணப்பித்த புலம் ஏற்கனவே குவாரி பணி செய்யாத புலம் என்பதால் 10 ஆண்டு காலத்திற்கு கீழ்க்கண்ட நிபந்தனைகளுக்கு உட்பட்டு அனுமதி வழங்கலாம் என பரிந்துரை செய்துள்ளனர்.

#### நிபந்தனைகள்

- (i) 1959-ம் வருடத்திய தமிழ்நாடு சிறு கனிம சலுகை விதிகள், அட்டவணை II-ல் கண்டுள்ளபடி குவாரி செய்யப்படும் கனிமங்களுக்கு சீனியரேஜ் தொகை அவ்வப்போது செலுத்தி கனிமம் கொண்டு செல்லப்பட வேண்டும்.
- (ii) அருகிலுள்ள பட்டா நிலங்களுக்கு 7.5 மீட்டர் பாதுகாப்பு இடைவெளிவிட்டு குவாரிப் பணி மேற்கொள்ளப்பட வேண்டும்.
- (iii) குத்தகை உரிமம் கோரியுள்ள புலங்களுக்கு கிழக்கில் புல எண்.206/10-ல் தரிசு அரசு புறம்போக்கு நிலத்திற்கு 10 மீட்டர் பாதுகாப்பு இடைவெளி விட்டு குவாரிப் பணி செய்ய வேண்டும் .
- (iv) குத்தகை உரிமம் கோரியுள்ள புலங்களுக்கு வடக்கு பகுதியில் புல எண்.203-ல் மேய்க்கால் அரசு புறம்போக்கு நிலத்திற்கு 10 மீட்டர் பாதுகாப்பு இடைவெளி விட்டு குவாரிப் பணி மேற்கொள்ள வேண்டும்.





- (v) உரிமம் கோரியுள்ள புலங்களுக்கு தெற்கே உள்ள புல எண்.2 (விராலூர்) மேய்க்கால் புறம்போக்கு நிலத்திற்கு 10 மீட்டர் பாதுகாப்பு இடைவெளிவிட்டு குவாரிப் பணி செய்ய வேண்டும்.
- (vi) கூட்டு வரைபடத்தில் குறிப்பிடப்பட்டுள்ள நிலவியல் கால்பாதை (பயன்பாட்டில் இல்லை) போன்ற அமைப்பினை உரிமம் கோரும் புலத்திற்கு கிழக்கு மற்றும் வடக்கு பகுதிகளில் தேவைப்படும் மாற்றி அமைத்திடல் வேண்டும்.
- (vii) மனுதாரர் நிறுவனத்தினர் அனுமதி கோரும் புலங்களின் கிழக்கு மற்றும் வடக்கு பகுதியில் அமைந்துள்ள மின் அழுத்த கம்பிகளை குத்தகை ஒப்பந்தப்பத்திரம் நிறைவேற்றுவதற்கு முன்பு 50 மீட்டர் தொலைவிற்கு அப்பால் மின்வாரியத்தின் அனுமதி பெற்று மாற்றியமைக்கப்பட வேண்டும்.
- (viii) அனுபவம் வாய்ந்த வெடிபொருள் பயன்படுத்துவோர் மூலம் குறைந்த அளவு சக்தி கொண்ட வெடிபொருட்களை பயன்படுத்தி அருகிலுள்ள பட்டா தாரர்களுக்கு எவ்வித இடையூறுமின்றி / அருகிலுள்ள பட்டா மற்றும் அரசு புலங்களில் எவ்வித ஆக்கிரமிப்பும் இன்றி குவாரிப் பணி மேற்கொள்ள வேண்டும்.
- (ix) விதிகளின்படி ஏற்பளிக்கப்பட்ட சுரங்கத்திட்டத்தினை உரிய காலத்திற்குள் சமர்ப்பிக்க வேண்டும்.
- (x) குவாரி உரிமம் வழங்க உள்ள பகுதிக்கு சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையத்தின் தடையின்மை சான்று பெற்று சமர்ப்பிக்கும் பட்சத்தில் மட்டுமே குவாரி உரிமம் வழங்கப்படும்.

4. இயக்குநர், புனியியல் மற்றும் சுரங்கத்துறை, சென்னை அவர்களின் 10.08.2020 நாளிட்ட கடிதத்துடன் இணைத்து வரப்பெற்ற அரசாணை எண்.169 தொழில் துறை (எம்.எம்.சி-1) நாள் 04.08.2020-ன்படி பட்டா புலங்களில் கிராவல், சாதாரண வகை கற்கள் ஆகிய சிறுகணிம உரிமம் வழங்கும் நேர்வுகளில் நடவடிக்கை எடுக்க விதி 19 மற்றும் 33-ல் மாவட்ட ஆட்சியருக்கு வழங்கப்பட்ட அதிகாரம் தற்போது சம்மந்தப்பட்ட உதவி/துணை இயக்குநர் அவர்களுக்கு மாற்றி வழங்க உத்திரவிடப்பட்டுள்ளது.

5. எனவே, வட்டாட்சியர் மதுராந்தகம், வருவாய் கோட்ட அலுவலர், மதுராந்தகம் மற்றும் உதவி இயக்குநர் (கனிமம்) செங்கல்பட்டு ஆகியோரின் பரிந்துரை மற்றும் நிபந்தனைகளின் அடிப்படையில்

*/C. Vinay Kumar*

செங்கல்பட்டு மாவட்டம், மதுராந்தகம் வட்டம், பெரியவெண்மணி கிராமம் பட்டா புல எண்கள். 204/1 (0.40.50), 204/2 (0.40.50), 204/3 (0.43.50), 205 (0.86.00), 206/1 (0.48.50), 206/2 (0.47.50), 206/3 (0.16.00), 206/4 (0.43.50), 206/5 (0.26.50), 206/6 (0.31.00), 206/7 (0.43.50), 206/8 (0.44.50) மற்றும் 206/9 (0.41.50) மொத்த பரப்பு 5.53.00 ஹெக்டேர் பரப்பில் மட்டும் சாதாரண கற்கள் மற்றும் கிராவல் வெட்டியெடுக்க 1959-ம் வருட தமிழ்நாடு சிறுகனிம விதிகள், விதி எண்.19-ன்படி மேற்கண்ட நிபந்தனைகளுக்குட்பட்டு 10 (பத்து) வருட காலத்திற்கு தி/ள். ஏ.கே. புளுமெட்டல்ஸ் பிரைவேட் லிமிடெட் என்ற நிறுவனத்திற்கு சாதாரண கற்கள் மற்றும் கிராவல் குவாரி உரிமம் வழங்குவதற்குரிய தகுதியான நிலப்பரப்பாக கருதப்படுகிறது.

6. மேலும், தமிழ்நாடு சிறுகனிம சலுகை விதிகள் -1959 விதி எண்.41-ன்படி குவாரிப் பணி மேற்கொள்வது தொடர்பாக வரைவு சுரங்க திட்டத்தினை 90 தினங்களுக்குள் சமர்ப்பிக்குமாறு மனுதாரரைக் கேட்டுக் கொள்ளப்படுகிறது. மேலும் ஏற்பளிக்கப்பட்ட சுரங்கத்திட்டத்தின் தொடர்ச்சியாக 1959-ம் வருடத்திய தமிழ்நாடு சிறு கனிம சலுகை விதிகள், விதி எண்.42-ன்படி சுற்றுச் சூழல் தாக்க மதிப்பீட்டு ஆணையத்தின் தடையின்மை சான்று பெற்று சமர்ப்பிக்கும் பட்சத்தில் மட்டுமே குவாரி உரிமம் வழங்கப்படும் என இதன் மூலம் தெரிவிக்கப்படுகிறது.

*S. Senthil*  
23.02.24  
துணை இயக்குநர் (சு.பொ),  
புவியியல் மற்றும் சுரங்கத்துறை,  
செங்கல்பட்டு.

**பெறுநர்**

- S. Senthil*  
23-02-2024
1. தி/ள். ஏ.கே. புளுமெட்டல்ஸ் பிரைவேட் லிமிடெட்,  
எண்.1ஏ, மணிகண்டன் நகர்,  
அஸ்தீனாபுரம், சென்னை - 600 064.

**நகல்:-**

1. தலைவர், மாநில சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையம்,  
சென்னை.
2. ஆணையர், புவியியல் மற்றும் சுரங்கத்துறை, சென்னை-32.

*/c vishu Kumar*

## ANNEXURE - 1



நக.எண்.407/கனிமம்/2024  
நாள்.23.02.2024.

துணை இயக்குநர் (உ.பொ) அலுவலகம்.  
புவியியல் மற்றும் சுரங்கத்துறை.  
செங்கல்பட்டு.

## குறிப்பாணை

பொருள்:- கனிமங்களும் சுரங்கங்களும் - சிறுகனிமம் - சாதாரண கற்கள் - செங்கல்பட்டு மாவட்டம் - மதுராந்தகம் வட்டம் - பெரிய வெண்மணி கிராமம் பட்டா புல எண்கள். 172/2B (2.03.0), 172/2C (1.22.0), 172/2D (0.33.0) and 172/7 (0.46.5) - மொத்த பரப்பு 4.04.50 ஹெக்டேர்ஸ் பரப்பில் மட்டும் சாதாரண கற்கள் மற்றும் கிராவல் குவாரி தி/ள்.உதயம் மைன்ஸ் அண்டு மினரல்ஸ் பிரைவேட் லிட் என்ற நிறுவனத்தினர் 10 ஆண்டுகளுக்கு அனுமதிக்கேரி விண்ணப்பம் செய்தது - அறிக்கைகள் வரப்பெற்றது - புலத்தணிக்கை செய்யப்பட்டது - தகுதியான நிலப்பரப்பாக கருதி 10 ஆண்டுகளுக்கு உரிமம் வழங்க வேண்டி ஏற்பளிக்கப்பட்ட சுரங்கத்திட்டம் மற்றும் சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணைய தடையின்மை சான்று பெற்று சமர்ப்பிக்க கோருதல் தொடர்பாக.

- பார்வை:-
1. தி/ள்.உதயம் மைன்ஸ் அண்டு மினரல்ஸ் பிரைவேட் லிட், எண்.1ஏ.மணிகண்டன் நகர், அஸ்திணாபுரம், சென்னை-600064 என்ற நிறுவனத்தினரின் விண்ணப்பம் பெறப்பட்ட நாள் 08.12.2023.
  2. இவ்வலுவலக நக.எண்.407/கனிமம்/2023 நாள் 11.12.2023 .
  3. மதுராந்தகம், வட்டாட்சியர் அவர்களின் கடித நக.7527/2023/அ1 நாள்.08.01.2024.
  4. மதுராந்தகம் வருவாய் கோட்டாட்சியர் அவர்களின் கடித நக.எண்.6988/2023/ஆ நாள் 01.02.2024.
  5. உதவி இயக்குநர், (கனிமம்) செங்கல்பட்டு அவர்களின் புலத்தணிக்கை அறிக்கை நாள் 19.02.2024.
  6. மற்றும் உரிய ஆவணங்கள்.

பார்வையில் காணும் கடிதங்களின்பால் கனிவான கவனம் வேண்டப்படுகிறது.

2. செங்கல்பட்டு மாவட்டம், மதுராந்தகம் வட்டம், பெரிய வெண்மணி கிராமம் பட்டா புல எண்கள். 172/2B (2.03.0), 172/2C (1.22.0), 172/2D (0.33.0) and 172/7 (0.46.5) மொத்த பரப்பு 4.05.50 ஹெக்டேர் பரப்பில் மட்டும் சாதாரண கற்கள் / கிராவல் மண் குவாரி செய்ய பத்து ஆண்டுகளுக்கு குத்தகை உரிமம் வழங்கக்கோரி தி/ள்.உதயம் மைன்ஸ் அண்டு மிரைல்ஸ் பிரைவேட் லிட் என்ற நிறுவனத்தினர் 08.12.2023 நாளில் அளித்த விண்ணப்பித்தினை உரிய ஆவணங்களுடன் சமர்ப்பித்துள்ளனர்.

3. மேற்கண்ட விண்ணப்பம் தொடர்பாக வட்டாட்சியர், மதுராந்தகம் வருவாய் கோட்டாட்சியர், மதுராந்தகம் மற்றும் உதவி இயக்குநர் (கனிமம்) செங்கல்பட்டு ஆகியோர் புலத்தணிக்கை மேற்கொண்டு செங்கல்பட்டு மாவட்டம், மதுராந்தகம் வட்டம், பெரிய வெண்மணி கிராமம் பட்டா புல எண்கள்.172/2B (2.03.0), 172/2C (1.22.0), 172/2D (0.33.0) and 172/7 (0.46.5) மொத்த பரப்பு 4.05.50 ஹெக்டேர்ஸ் பரப்பில் மட்டும் சாதாரண கற்கள் மற்றும் கிராவல் வெட்டியெடுக்க தி/ள்.உதயம் மைன்ஸ் அண்டு மிரைல்ஸ் பிரைவேட் லிட் என்ற நிறுவனத்திற்கு உரிமம் வழங்க விண்ணப்பித்த புலம் ஏற்கனவே குவாரி பணி செய்யாத புலம் என்பதால் 10 ஆண்டு காலத்திற்கு கீழ்க்கண்ட நிபந்தனைகளுக்கு உட்பட்டு அனுமதி வழங்கலாம் என பரிந்துரை செய்துள்ளனர்.

#### நிபந்தனைகள்

- 1 1959-ம் வருடத்திய தமிழ்நாடு சிறு கனிம சலுகை விதிகள் , அட்டவணை II-ல் கண்டுள்ளபடி குவாரி செய்யப்படும் கனிமங்களுக்கு சீனியரேஜ் தொகை அவ்வப்போது செலுத்தி கனிமம் கொண்டு செல்லப்பட வேண்டும்.
- 2 அருகிலுள்ள பட்டா நிலங்களுக்கு 7.5 மீட்டர் பாதுகாப்பு இடைவெளிவிட்டு குவாரிப் பணி மேற்கொள்ளப்பட வேண்டும்.
- 3 குத்தகை உரிமம் கோரியுள்ள புல எண்.172/2B பட்டா நிலத்திற்கு வடமேற்கு திசையின் மூலையில் கூட்டு வரைபடத்தில் குறிப்பிட்டு செய்யப்பட்டுள்ள நடைபாதை போன்ற அமைப்பிற்கு 10 மீட்டர் பாதுகாப்பு இடைவெளி விட வேண்டும் .
- 4 குத்தகை உரிமம் கோரியுள்ள புலங்களுக்கு கிழக்கில் புல எண்.172/8-ல் அமைந்துள்ள தரிசு அரக புறம்போக்கு நிலத்திற்கு 10 மீட்டர் பாதுகாப்பு இடைவெளிவிட்டு குவாரிப் பணி செய்ய வேண்டும்.
- 5 குத்தகை உரிமம் கோரியுள்ள புலங்களுக்கு மேற்கு பகுதியின் எல்லையில் புல எண்.210-ல் அமைந்துள்ள மேயக்கால் அரக புறம்போக்கு நிலத்திற்கு 10 மீட்டர் பாதுகாப்பு இடைவெளிவிட்டு குவாரிப் பணி மேற்கொள்ள வேண்டும்.



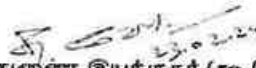
6. குத்தகை உரிமம் கோரியுள்ள புல எண்.172/2D பட்டா நிலத்திற்கு தென்மேற்கு எல்லையில் வடக்கு-தெற்காக கூட்டு வரைபடத்தில் குறியீடு செய்யப்பட்டுள்ள நடைபாதை போன்ற அமைப்பிற்கு 10 மீட்டர் பாதுகாப்பு இடைவெளிவிட்டு குவாரி பணி மேற்கொள்ள வேண்டும்.
7. விண்ணப்ப பகுதியின் தென் கிழக்கு மூலையில் கூட்டு வரைபடத்தில் குறியீடு செய்யப்பட்டுள்ள ஓடை போன்ற அமைப்பிற்கு 10 மீட்டர் பாதுகாப்பு இடைவெளி விட்டு குவாரி பணி மேற்கொள்ள வேண்டும்.
8. அனுபவம் வாய்ந்த வெடிபொருள் பயன்படுத்துவோர் மூலம் குறைந்த அளவு சக்தி கொண்ட வெடிபொருட்களை பயன்படுத்தி அருகிலுள்ள பட்டா தாரர்களுக்கு எவ்வித இடையூறுமின்றி / அருகிலுள்ள பட்டா மற்றும் அரசு புலங்களில் எவ்வித ஆக்கிரமிப்பும் இன்றி குவாரிப் பணி மேற்கொள்ள வேண்டும்.
9. விதிகளின்படி ஏற்பளிக்கப்பட்ட சுரங்கத்திட்டத்தினை உரிய காலத்திற்குள் சமர்ப்பிக்க வேண்டும்.
10. குவாரி உரிமம் வழங்க உள்ள பகுதிக்கு சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையத்தின் தடையின்மை சான்று பெற்று சமர்ப்பிக்கும் பட்சத்தில் மட்டுமே குவாரி உரிமம் வழங்கப்படும்.

4) இயக்குநர், புவியியல் மற்றும் சுரங்கத்துறை, சென்னை அவர்களின் 10.08.2020 நாளிட்ட கடிதத்துடன் இணைத்து வரப்பெற்ற அரசாணை எண்.169 தொழில் துறை (எம்.எம்.சி-1) நாள் 04.08.2020-ன்படி பட்டா புலங்களில் கிராவல், சாதாரண வகை கற்கள் ஆகிய சிறுகனிம உரிமம் வழங்கும் நேர்வுகளில் நடவடிக்கை எடுக்க விதி 19 மற்றும் 33-ல் மாவட்ட ஆட்சியருக்கு வழங்கப்பட்ட அதிகாரம் தற்போது சம்மந்தப்பட்ட உதவி/துணை இயக்குநர் அவர்களுக்கு மாற்றி வழங்க உத்திரவிடப்பட்டுள்ளது.


5. எனவே, வட்டாட்சியர் மதுராந்தகம், வருவாய் கோட்டாட்சியர், மதுராந்தகம் மற்றும் உதவி இயக்குநர், (கனிமம்) செங்கல்பட்டு ஆகியோரின் பரிந்துரை மற்றும் நிபந்தனைகளின் அடிப்படையில் செங்கல்பட்டு மாவட்டம், மதுராந்தகம் வட்டம், பெரிய வெண்மணி கிராமம் பட்டா புல எண்கள். 172/2B (2.03.0), 172/2C (1.22.0), 172/2D (0.33.0) and 172/7 (0.46.5) மொத்த பரப்பு 4.05.50 ஹெக்டேர்ஸ் பரப்பில் மட்டும் 1959-ம் வருட தமிழ்நாடு சிறுகனிம விதிகள், விதி எண்.19-ன்படி மேற்கண்ட நிபந்தனைகளுக்குட்பட்டு 10 (பத்து) வருட காலத்திற்கு

தி/ள்.உதயம் மைன்ஸ் அண்டு மினரல்ஸ் பிரைவேட் லிட் என்ற நிறுவனத்திற்கு சாதாரண கற்கள் மற்றும் கிராவல் குவாரி உரிமம் வழங்குவதற்குரிய தகுதியான நிலப்பரப்பாக கருதப்படுகிறது.

6. மேலும், தமிழ்நாடு சிறுகனிம சலுகை விதிகள் -1959 விதி எண்.41-ன்படி குவாரிப் பணி மேற்கொள்வது தொடர்பாக மேற்கூறிய நிபந்தனைகளுக்கு உட்பட்டு வரைவு சுரங்க திட்டத்தினை 90 தினங்களுக்குள் சமர்ப்பிக்குமாறு மனுதாரரைக் கேட்டுக் கொள்ளப்படுகிறது. மேலும் ஏற்பளிக்கப்பட்ட சுரங்கத்திட்டத்தின் தொடர்ச்சியாக 1959-ம் வருடத்திய தமிழ்நாடு சிறு கனிம சலுகை விதிகள், விதி எண்.42-ன்படி சுற்றுச் சூழல் தாக்க மதிப்பீட்டு ஆணையத்தின் தடையின்மை சான்று பெற்று சமர்ப்பிக்கும் பட்சத்தில் மட்டுமே குவாரி உரிமம் வழங்கப்படும் என இதன் மூலம் தெரிவிக்கப்படுகிறது.

  
துணை இயக்குநர் (சவ.பொ),  
புவியியல் மற்றும் சுரங்கத்துறை,  
செங்கல்பட்டு.

**பெறுநர்**

  
23-02-2024

தி/ள்.உதயம் மைன்ஸ் அண்டு மினரல்ஸ்  
பிரைவேட் லிட்.

எண்.1ஏ, மணிகண்டன் நகர்,

அஸ்திநாயகம், சென்னை-600 064

**நகல்.**

1. தலைவர், மாநில சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையம், சென்னை
2. ஆணையர் , புவியியல் மற்றும் சுரங்கத்துறை, சென்னை-32.

**From**

Dr.S.Vediappan,M.Sc.,Ph.D.,  
Deputy Director, (Addl.Charge)  
Dept of Geology and Mining,  
Chengalpattu.

**To**

Tvl.A.K.Blue Metals Pvt.Ltd,  
No.1A, Manikandan Nagar,  
Hasthinapuram,  
Chennai-600 064.

**Rc.No. 408/Mines/2023, Dated: 18.03.2024.**

**Sir,**

**Sub:** Mines and Minerals – Minor Mineral - Rough Stone and Gravel – Chengalpattu District – Madurantakam Taluk – Periya Venmani Village-Patta land in S.F.Nos.204/1, 204/2, 204/3, 205, 206/1, 206/2, 206/3, 206/4, 206/5, 206/6, 206/7, 206/8 & 206/9 Over an extent of 5.53.00 Hects - Application preferred by Tvl.A.K.Blue Metals Pvt.Ltd - Precise area communicated - Draft Mining Plan submitted - Approved - reg.

**Ref:** 1 Application prepared by Tvl.A.K.Blue Metals Pvt.Ltd, No.1A, Manikandan Nagar, Hasthinapuram, Chennai-600 064 application dated 08.12.2023.  
2 This Office Memorandum Letter No.408/Mines/ 2023 dated 23.02.2024.  
3 Draft Mining plan submitted by Tvl.A.K.Blue Metals Pvt.Ltd dated: 01.03.2024.

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Kind attention is invited to the references cited above.

2. Tvl.A.K.Blue Metals Pvt.Ltd has preferred an application for quarrying Rough stone and Gravel over an extent of 5.53.00 Hects of patta land in S.F.Nos. 204/1 (0.40.50), 204/2(0.40.50), 204/3 (0.43.50), 205 (0.86.00), 206/1(0.48.50), 206/2(0.47.50), 206/3(0.16.00), 206/4 (0.43.50), 206/5 (0.26.50), 206/6 (0.31.00), 206/7 (0.43.50), 206/8 (0.44.50) & 206/9 (0.41.50) in Periyavenmani Village, Madurantakam Taluk, Chengalpattu District for a period of 10 year under the provisions of Rule 19 (1) of Tamil Nadu Minor Mineral Concession Rules, 1959. In this regard, the precise area communication has been issued vide letter dated. 23.02.2024 with a direction to submit approved mining plan and Environment Clearance.

3. Accordingly, Tvl.A.K.Blue Metals Pvt.Ltd had submitted three copies of draft Mining Plan vide letter dated: 01.03.2024 and the same has been examined in details and it is found correct.

4. The RQP has furnished year wise production for the first five year and also for the second five year period of lease.

5. Hence, as per the power delegated under Rule 41 of TNMMCR, 1959 and as per the guidelines/instructions issued by the Commissioner of Geology and Mining, vide letter Rc.No.3868/LC/2012 dated 19.11.2012, the said mining plan submitted by the lessee is hereby approved subject to the following conditions.

i) That the mining plan is approved without prejudice to any other law applicable to the quarry lease from time to time whether such laws are made by the Central Government, State Government or any other authority.

ii) This approval of the mining plan does not in any way imply the approval of the Government in terms of any other provisions of Mines and Minerals Development and Regulation) Act 1957, or any other connected laws including Forest (Conservation) Act 1957, or any other connected Laws industry Forest (Conservation) Act 1980, Forest Conservation Rules 1981 Environment protection Act 1980, Indian Explosive Act 1884 (Central Act IV of 1884) and the rules made there under, Minor Mineral Conservation and Development Rules, and The Tamil Nadu Minor Mineral Concession rules, 1959.

iii) That the mining plan is approved without prejudice to any other order or directions from any court of competent jurisdiction.

iv) All the conditions mentioned in the precise area letter should be followed during quarry operation as per rules.



v) The applicant should get prior Environmental clearance from the appropriate authority and same has to be submit to the District Collector, Kancheepuram.

vi) Every Mining Plan duly approved under rule 41(9) of TNMMCR, 1959 shall be valid for a period of five years. Further, the applicant shall submit modification in the mining plan if any, review the mining plan and submit scheme of mining plan for the next five years of the lease if any as per TNMMCR 1959.

vii) The mineable reserves of Rough stone & Gravel after leaving safety distance is arrived in the Mining Plan as **11,12,850 M<sup>3</sup>** of Rough stone and **91,518 M<sup>3</sup>** of Gravel for **Ten years** upto a depth of 52 meter below the ground level.

*[Signature]*  
18.03.24  
Deputy Director, (Addl.Charge)  
Geology and Mining,  
Chengalpattu

*[Signature]*  
18/03/24  
**Copy submitted to** The Commissloner,  
Dept of Geology and Mining,  
Guindy, Chennai -32.

**From**

Dr.S.Vediappan,M.Sc.,Ph.D.,  
Deputy Director, (Addl.Charge)  
Dept of Geology and Mining,  
Chengalpattu.

**To**

Tvl.Udhayam Mines and Minerals  
Private Ltd.,  
No.1A, Manikandan Nagar,  
Asthinapuram, Chennai-600 064.

**Rc.No. 407/Mines/2023, Dated: 08.04.2024.**

**Sir,**

**Sub:** Mines and Minerals – Minor Mineral - Rough Stone and Gravel – Chengalpattu District – Madurantakam Taluk – Periya Venmani Village-Patta land in S.F.Nos.172/2B, 172/2C, 172/2D & 172/7 Over an extent of 4.04.50 Hects - Application preferred by Tvl.Udhayam Mines and Minerals Private Ltd - Precise area communicated - Draft Mining Plan submitted - Approved - reg.

- Ref:**
- 1 Application prepared by Tvl.Udhayam Mines and Minerals Private Ltd, No.1A, Manikandan Nagar, Hasthinapuram, Chennai-600 064 application dated 08.12.2023.
  - 2 This Office Memorandum Letter No.407/ Mines/ 2023 dated 23.02.2024.
  - 3 Draft Mining plan submitted by Tvl. Udhayam Mines and Minerals Private Ltd dated: 04.04.2024.

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Kind attention is invited to the references cited above.

2. Tvl. Udhayam Mines and Minerals Private Ltd has preferred an application for quarrying Rough stone and Gravel over an extent of 4.04.50 Hects of patta land in S.F.Nos.172/2B (2.03.0), 172/2C (1.22.0), 172/2D (0.33.0) and 172/7 (0.46.5) in Periyavenmani Village, Madurantakam Taluk, Chengalpattu District for a period of 10 year under the provisions of Rule 19 (1) of Tamil Nadu Minor Mineral Concession Rules, 1959. In this regard, the precise area communication has been issued vide letter dated. 23.02.2024 with a direction to submit approved mining plan and Environment Clearance.

3. Accordingly, Tvl. Udhayam Mines and Minerals Private Ltd had submitted three copies of draft Mining Plan vide letter dated: 04.04.2024 and the same has been examined in details and it is found correct.

4. The RQP has furnished year wise production for the first five year and also for the second five year period of lease.

5. Hence, as per the power delegated under Rule 41 of TNMMCR, 1959 and as per the guidelines/instructions issued by the Commissioner of Geology and Mining, vide letter Rc.No.3868/LC/2012 dated 19.11.2012, the said mining plan submitted by the lessee is hereby approved subject to the following conditions.

i) That the mining plan is approved without prejudice to any other law applicable to the quarry lease from time to time whether such laws are made by the Central Government, State Government or any other authority.

ii) This approval of the mining plan does not in any way imply the approval of the Government in terms of any other provisions of Mines and Minerals Development and Regulation) Act 1957, or any other connected laws including Forest (Conservation) Act 1957, or any other connected Laws industry Forest (Conservation) Act 1980, Forest Conservation Rules 1981 Environment protection Act 1980, Indian Explosive Act 1884 (Central Act IV of 1884) and the rules made there under, Minor Mineral Conservation and Development Rules, and The Tamil Nadu Minor Mineral Concession rules, 1959.

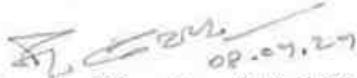
iii) That the mining plan is approved without prejudice to any other order or directions from any court of competent jurisdiction.

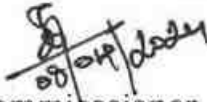
iv) All the conditions mentioned in the precise area letter should be followed during quarry operation as per rules.

v) The applicant should get prior Environmental clearance from the appropriate authority and same has to be submit to the District Collector, Kancheepuram.

vi) Every Mining Plan duly approved under rule 41(9) of TNMMCR, 1959 shall be valid for a period of five years. Further, the applicant shall submit modification in the mining plan if any, review the mining plan and submit scheme of mining plan for the next five years of the lease if any as per TNMMCR 1959.

vii) The mineable reserves of Rough stone & Gravel after leaving safety distance is arrived in the Mining Plan as **5,33,830 M<sup>3</sup>** of Rough stone and **63,584 M<sup>3</sup>** of Gravel for **Ten years** upto a depth of 42 meter below the ground level.

  
Deputy Director, (Addl.Charge)  
Geology and Mining,  
Chengalpattu

  
**Copy submitted to** The Commissioner,  
Dept of Geology and Mining,  
Guindy, Chennai -32.

## MINES LAND PHOTO



செங்கல்பட்டு மாவட்டம், மதுராந்தகம் வட்டம், பெரியவெண்மணி கிராமம், புல எண்கள். 204/1, 0-40.50 ஹெக்டேர், 204/2, 0-40.50 ஹெக்டேர் 204/3, 0-43.50 ஹெக்டேர், 205/-, 0-86.00 ஹெக்டேர் 206/1, 0-48.50 ஹெக்டேர் 206/2, 0-47.50 ஹெக்டேர் 206/3, 0-16.00 ஹெக்டேர் 206/4, 0-43.50 ஹெக்டேர் 206/5, 0-26.50 ஹெக்டேர் 206/6, 0-31.00 ஹெக்டேர் 206/7, 0-43.50 ஹெக்டேர் 206/8, 0-44.50 ஹெக்டேர் 206/9, 0-41.50 ஹெக்டேர் ஆக மொத்தம் 5-53.00 ஹெக்டேர் ஹெக்டேர் பரப்பளவில் பத்து வருடங்களுக்கு செங்கல்பட்டு மாவட்ட ஆட்சித்தலைவர்/ துணை இயக்குனர், புவியியல் மற்றும் சுரங்கத்துறை அவர்களின் செயல்முறை ஆணை எண். RC.No: 3868/LC/2012 Dated: 19.11.2012-ன்படி A.K. BLUEMETALS PVT LTD-ன் நிறுவனத்தின் மேலாளர் திரு. K. வினோத்குமார் அவர்கள் கல்குவாரி உரிமம் கோரி மனு செய்துள்ளார். மேற்படி உடைகல் இடம் மற்றும் கிராவல் வெட்டி எடுப்பதற்கு அங்கீகரிக்கப்பட்ட இடம் என்பதை இதன் மூலம் சான்றளிக்கின்றேன். மேற்படி இடத்திற்கு செல்வதற்கு அணுகுபாதை வசதி உள்ளது என்றும் சான்று அளிக்கிறேன்.

இடம்: 184. பெரியவெண்மணி

நாள்: 07.09.24

ப. சி. சிவசுப்ரமணியன்  
கிராம நிர்வாக அலுவலர்  
184 பெரியவெண்மணி  
மதுராந்தகம் வட்டம்

கிராம நிர்வாக அலுவலர் கையொப்பம்

## கிராம நிர்வாக அலுவலரின் சான்று

செங்கல்பட்டு மாவட்டம், மதுராந்தகம் வட்டம், பெரியவெண்மணி கிராமம் புல எண்கள். 204/1, 0-40.50 ஹெக்டேர், 204/2, 0-40.50 ஹெக்டேர் 204/3, 0-43.50 ஹெக்டேர், 205/-, 0-86.00 ஹெக்டேர் 206/1, 0-48.50 ஹெக்டேர் 206/2, 0-47.50 ஹெக்டேர் 206/3, 0-16.00 ஹெக்டேர் 206/4, 0-43.50 ஹெக்டேர் 206/5, 0-26.50 ஹெக்டேர் 206/6, 0-31.00 ஹெக்டேர் 206/7, 0-43.50 ஹெக்டேர் 206/8, 0-44.50 ஹெக்டேர் 206/9, 0-41.50 ஹெக்டேர் ஆக மொத்தம் 5-53.00 ஹெக்டேர் பரப்பளவில் பத்து வருடங்களுக்கு செங்கல்பட்டு மாவட்ட ஆட்சித்தலைவர்/துணை இயக்குநர், புவியியல் மற்றும் சுரங்கத்துறை அவர்களின் செயல்முறை ஆணை எண். RC.No: 3868/LC/2012 Dated: 19.11.2012-ன்படி A.K. BLUEMETALS PVT LTD -ன் நிறுவனத்தின் மேலாளர் திரு. K. வினோத்குமார் அவர்கள் கல்குவாரி கோரி உரிமம் மனு செய்துள்ளார். மேற்படி இடம் உடைகல் மற்றும் கிராவல் வெட்டி எடுப்பதற்கு அங்கீகரிக்கப்பட்ட இடம் என்பதை இதன் மூலம் சான்றளிக்கிறேன். மேற்படி இடத்திற்கு செல்வதற்கு அணுகுப்பாதை வசதி உள்ளது என்றும், மேலும் குவாரி அமைய உள்ள புலத்தின் எல்லையில் இருந்து 300 மீட்டர் சுற்றளவில் குடியிருப்புகள், கோயில்கள், பள்ளிக்கூடம் புராதான சின்னங்கள் ஏதும் இல்லை. மேற்படி புல எண்கள் கிராம கணக்கு தடையாணை புத்தகத்தில் இடம் பெறவில்லை. மேலும் 10 கிலோமீட்டர் சுற்றளவில் பிற மாநில எல்லையோ இடம்பெறவில்லை. மேற்படி சான்று கனிம வளத்துறை அளிக்கும் வகைக்காக வழங்கப்படுகிறது.

இடம்: 184. பெரியவெண்மணி

நாள்: 3.7.24

யா. வி. சிவசுப்பிரமணியன்  
கிராம நிர்வாக அலுவலர்  
பெரியவெண்மணி

கிராம நிர்வாக அலுவலர் கையொப்பம்

## MINES LAND PHOTO



செங்கல்பட்டு மாவட்டம், மதுராந்தகம் வட்டம், பெரியவெண்மணி கிராமம், புல எண்கள். 172/2B, 2-03.00 ஹெக்டேர் 172/2C, 1-22.00 ஹெக்டேர் 172/2D, 0-33.00 ஹெக்டேர் 172/7 0-46.50 ஹெக்டேர் ஆக மொத்தம் 4-4.50 ஹெக்டேர் பரப்பளவில் பத்து வருடங்களுக்கு செங்கல்பட்டு மாவட்ட ஆட்சித்தலைவர்/ துணை இயக்குனர், புவியியல் மற்றும் சுரங்கத்துறை அவர்களின் செயல்முறை ஆணை எண். RC.No: 3868/LC/2012 Dated: 19.11.2012-ன்படி UDHAYAM MINES AND MINERALS PVT LTD -ன் நிறுவனத்தின் மேலாளர் திரு. M. இளங்கோவன் அவர்கள் கல்குவாரி உரிமம் கோரி மனு செய்துள்ளார். மேற்படி உடைகல் இடம் மற்றும் கிராவல் வெட்டி எடுப்பதற்கு அங்கீகரிக்கப்பட்ட இடம் என்பதை இதன் மூலம் சான்றளிக்கின்றேன். மேற்படி இடத்திற்கு செல்வதற்கு அணுகுபாதை வசதி உள்ளது என்றும் சான்று அளிக்கிறேன்.

இடம்: 184, பெரியவெண்மணி

நாள்: 3.7.24

மா. அ. அலுவலர்  
சுரங்க நிர்வாக அலுவலர்  
184, பெரியவெண்மணி  
மதுராந்தகம் வட்டம்

கிராம நிர்வாக அலுவலர் கையொப்பம்



## கிராம நிர்வாக அலுவலரின் சான்று

செங்கல்பட்டு மாவட்டம், மதுராந்தகம் வட்டம், பெரியவெண்மணி கிராமம், புல எண்கள். 172/2B, 2-03.00 ஹெக்டேர் 172/2C, 1-22.00 ஹெக்டேர் 172/2D, 0-33.00 ஹெக்டேர் 172/7 0-46.50 ஹெக்டேர் ஆக மொத்தம் 4-4.50 ஹெக்டேர் பரப்பளவில் பத்து வருடங்களுக்கு செங்கல்பட்டு மாவட்ட ஆட்சித்தலைவர்/துணை இயக்குநர், புவியியல் மற்றும் சுரங்கத்துறை அவர்களின் செயல்முறை ஆணை எண். RC.No: 3868/LC/2012 Dated: 19.11.2012-ன்படி UDHAYAM MINES AND MINERALS PVT LTD -ன் நிறுவனத்தின் மேலாளர் திரு. M. இளங்கோவன் அவர்கள் கல்குவாரி உரிமம் கோரி மனு செய்துள்ளார். மேற்படி இடம் உடைகல் மற்றும் கிராவல் வெட்டி எடுப்பதற்கு அங்கீகரிக்கப்பட்ட இடம் என்பதை இதன் மூலம் சான்றளிக்கிறேன். மேற்படி இடத்திற்கு செல்வதற்கு அணுகுப்பாதை வசதி உள்ளது என்றும், மேலும் குவாரி அமைய உள்ள புலத்தின் எல்லையில் இருந்து 300 மீட்டர் சுற்றளவில் குடியிருப்புகள், கோயில்கள், பள்ளிக்கூடம் புராதான சின்னங்கள் ஏதும் இல்லை. மேற்படி புல எண்கள் கிராம கணக்கு தடையானை புத்தகத்தில் இடம் பெறவில்லை. மேலும் 10 கிலோமீட்டர் சுற்றளவில் பிற மாநில எல்லையோ இடம்பெறவில்லை. மேற்படி சான்று கனிம வளத்துறை அளிக்கும் வகைக்காக வழங்கப்படுகிறது.

இடம்: 184 பெரியவெண்மணி

நாள்: 3.7.24.

ப. சி. சுவாமி  
கிராம நிர்வாக அலுவலர்  
184 பெரியவெண்மணி  
மதுராந்தகம் வட்டம்  
கிராம நிர்வாக அலுவலர் கையொப்பம்



**From**

Dr.S.Vediappan,M.Sc.,Ph.D.,  
Deputy Director, (Addl.Charge)  
Dept of Geology and Mining,  
Chengalpattu.

**To**

Tvl.A.K.Blue Metals Pvt.Ltd,  
No.1A, Manikandan Nagar,  
Hasthinapuram,  
Chennai-600 064.

**Roc.No.408/Mines/2023 Dated: 18.03.2024**

Sir,

**Sub:** Mines and Minerals – Minor Mineral - Rough Stone and Gravel – Chengalpattu District – Madurantakam Taluk – Periya Venmani Village-Patta land in S.F.Nos.204/1, 204/2, 204/3, 205, 206/1, 206/2, 206/3, 206/4, 206/5, 206/6, 206/7, 206/8 & 206/9 Over an extent of 5.53.00 Hects - Application preferred by Tvl.A.K.Blue Metals Pvt.Ltd – Precise area granted - Mining Plan approved - Existing / Proposed / abandoned quarries details furnished - reg.

- Ref:**
- 1 Application prepared by Tvl.A.K.Blue Metals Pvt.Ltd, No.1A, Manikandan Nagar, Hasthinapuram, Chennai-600 064 application dated 08.12.2023.
  - 2 This Office Memorandum Letter No.408/ Mines/ 2023 dated 23.02.2024.
  - 3 Draft Mining plan submitted by Tvl.A.K.Blue Metals Pvt.Ltd dated: 01.03.2024.
  - 4 Mining plan approved by the Deputy Director (Addl.Charge) of Geology and Mining, Kancheepuram vide Letter.No.408/Mines/2023 dated. 18.3.2024.

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Kind attention is invited to the references cited above.

2. Tvl.A.K.Blue Metals Pvt.Ltd has preferred an application for quarrying Rough stone and Gravel over an extent of 5.53.00 Hects of patta land in S.F.Nos.204/1(0.40.50),204/2(0.40.50),204/3 (0.43.50), 205(0.86.00), 206/1(0.48.50), 206/2 (0.47.50), 206/3 (0.16.00), 206/4 (0.43.50), 206/5 (0.26.50), 206/6 (0.31.00), 206/7 (0.43.50), 206/8 (0.44.50)

*lc wash kmr*

& 206/9 (0.41.50) in Periyavenmani Village, Madurantakam Taluk, Chengalpattu District for a period of 10 year under the provisions of Rule 19 (1) of Tamil Nadu Minor Mineral Concession Rules, 1959. In this regard, the precise area communication has been issued vide letter dated. 23.02.2024. In this regard, the precise area communication has been issued vide letter dated. 23.02.2024 with a direction to submit approved mining plan and Environment Clearance.

3. Accordingly, Tvl.A.K.Blue Metals Pvt.Ltd has submitted three copies of draft Mining Plan vide letter dated: 01.03.2024 and the same has been examined in detail and approved by Deputy Director of Geology and Mining, Kancheepuram vide Letter.No.408/Mines/2023 dated.18.03.2024.

4) Further, the details of existing, proposed, abandoned quarries situated within 500 mts from the applied area furnished as follows:-

**I. Details of Existing quarries.**

Sl. No	Name of the Lessee	Village	SF.No	Extent in Hect	GO.No./Proc. & Date	Lease Period
1	Thiru.S.Ravisundar, S/o.Sandhiyagu, No.1,1178-A, Ist Street, Bethel Nagar, Injambakkam, Chennai-115.	Periya Venmani, Madurantakam	174/5, 174/6, 180/12	1.37.50	Rc.No. 621/Q2/201 7, dated 13.01.2023	13.01.2023 to 23.09.2027
2.	Thiru.S.Dharmaraj, S/o.Sitrambala Reddiyar, No.2A, South Street, Medudalapuram, Ondipulinayakkanur, Virdudhunagar 626 119	Periya Venmani, Madurantakam	180/1, 180/2, 180/3	2.08.50	Rc.No. 622/Q2/2017, dated 13.01.2023	13.01.2023 to 23.09.2007

*K. Vinod Kumar*

3.	S.Raju, S/o.Sivaji, No.17/7, Tholkappiyam Street, Chitlapakkam, Kancheepuram-600 064.	Periya Venmani Madurantakam	180/4, 180/5, 180/8, 180/9, 180/10, 180/11	2.50.00	Rc.No. 269/Q2/2017, dated 13.03.2023	13.03.2023 to 12.03.2028
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## II. Details of abandoned/Old quarries.

Sl. No.	Name of the lessee	ROC.NO. dated	Village & Taluk	S.F Nos.	Exten t in Het	Lease period.
1.	A.Jeevanandam, No.25, 6th Street, Asthinapuram, Chennai-64	Rc.430/2007/Q1 Dated21.05.2007	Periyavenmani, Madurantakam	172/3, 172/4, 172/5, 172/6, 173/1, 173/2, 173/3, 173/4, 173/5, 173/6, 180/1, 180/2, 180/3, 180/4, 180/5, 180/8, 180/9, 180/10, 180/11	7.52.5	25.05.2007 to 24.05.2012.
2.	S.Gnanasekaran, No.20, Alagesan Street. Tambaram West, Chennai-45.	Rc.335/2011/Q3 dated 02.01.2012	Periyavenmani, Madurantakam	181/2	2.03.0	02.01.2012 to 01.01.2017
3.	O.Ganesan, No.2, Lakshmipuram Extn. Mudichur, Chennai-45	Rc.336/2011/Q3 dated 02.01.2012	Periyavenmani, Madurantakam	174/1, 174/2, 174/3, 174/4, 175/1	2.07.5	02.01.2012 to 01.01.2017

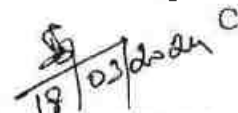
*K. inish kumar*

### III. Details of other Proposed/applied quarries

Sl. No.	Name of the lessee	Name of the Mineral	Village & Taluk	S.F No.	Extent in Het	Lease period.
2.	M/s. AK Blue Metals Private Limited, No.1A, Manikandan Nagar, Hasthinapuram, Chennai - 600064.	Rough stone/ Gravel	Periyavenmani Madurantakam	204/1, 204/2, 204/3, 205, 206/1, 206/2, 206/3, 206/4, 206/5, 206/6, 206/7, 206/8, 206/9	5.53.00	Instant lease.
2	Udhayam Mines and Minerals Pvt.Ltd.	Rough stone/ Gravel	Periyavenmani Madurantakam	172/2B, 172/2C, 172/2D, 172/7	4.04.50	applied lease.

  
 12.03.24  
 Deputy Director, (Addl.Charge)  
 Dept of Geology and Mining,  
 Chengalpattu.

Copy to :-

  
 The Chairman, Tamil Nadu State Environment  
 Impact Assessment Authority,  
 3<sup>rd</sup> Floor, Panakal Maligai,  
 No. 1 Jeenes Road, Saidapet, Chennai -15.

*K. Vinith Kumar*

**From**

Dr.S.Vediappan,M.Sc.,Ph.D.,  
Deputy Director, (Addl.Charge)  
Dept of Geology and Mining,  
Chengalpattu.

**To**

Tvl.Udhayam Mines and Minerals  
Private Ltd.,  
No.1A, Manikandan Nagar,  
Asthinapuram, Chennai-600 064.

**Roc.No.407/Mines/2023 Dated: 08.04.2024****Sir,**

**Sub:** Mines and Minerals - Minor Mineral - Rough Stone and Gravel - Chengalpattu District - Madurantakam Taluk - Periya Venmani Village-Patta land in S.F.Nos.172/2B, 172/2C, 172/2D & 172/7 Over an extent of 4.04.50 Hects - Application preferred by Tvl.Udhayam Mines and Minerals Private Ltd - Precise area communicated - Mining Plan approved - Existing / Proposed / Abandoned quarries details furnished - reg.

- Ref:**
- 1 Application prepared by Tvl.Udhayam Mines and Minerals Private Ltd, No.1A, Manikandan Nagar, Hasthinapuram, Chennai-600 064 application dated 08.12.2023.
  - 2 This Office Memorandum Letter No.407/ Mines/ 2023 dated 23.02.2024.
  - 3 Draft Mining plan submitted by Tvl. Udhayam Mines and Minerals Private Ltd dated: 04.04.2024.
  - 4 Mining plan approved by the Deputy Director (Addl.Charge) of Geology and Mining, Kancheepuram vide Letter.No.407/Mines/2023 dated.08.04.2024.

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Kind attention is invited to the references cited above.

2. Tvl.Udhayam Mines and Minerals Private Ltd has preferred an application for quarrying Rough stone and Gravel over an extent of 4.04.50 Hects of patta land in S.F.Nos.172/2B (2.03.0), 172/2C (1.22.0), 172/2D (0.33.0) and 172/7 (0.46.5) in Periyavenmani Village, Madurantakam Taluk, Chengalpattu District for a period of

10 year under the provisions of Rule 19 (1) of Tamil Nadu Minor Mineral Concession Rules, 1959. In this regard, the precise area communication has been issued vide letter dated. 23.02.2024 with a direction to submit approved mining plan and Environment Clearance.

3. Accordingly, Tvl.Udhayam Mines and Minerals Private Ltd has submitted three copies of draft Mining Plan vide letter dated: 04.04.2024 and the same has been examined in detail and approved by Deputy Director of Geology and Mining, Kancheepuram vide Letter.No.407/Mines/2023 dated. 08.04.2024

Further, the details of existing, proposed, abandoned quarries situated within 500 mts from the applied area furnished as follows:-

**I. Details of Existing quarries.**

Sl. No	Name of the Lessee	Village	SF.No	Extent in Hect	GO.No./Proc. & Date	Lease Period
1	Thiru.S.Ravisundar, S/o.Sandhiyagu, No.1,1178-A, Ist Street, Bethel Nagar, Injambakkam, Chennai-115.	Periya Venmani, Madurantakam	174/5, 174/6, 180/12	1.37.50	Rc.No. 621/Q2/2017, dated 13.01.2023	13.01.2023 to 23.09.2027
2.	Thiru.S.Dharmaraj, S/o.Sitrambala Reddiyar, No.2A, South Street, Medudalapuram, Ondipulinayakkanur, Virdudhunagar 626119	Periya Venmani, Madurantakam	180/1, 180/2, 180/3	2.08.50	Rc.No. 622/Q2/2017, dated 13.01.2023	13.01.2023 to 23.09.2007
3.	S.Raju, S/o.Sivaji, No.17/7, Tholkappiyam Street, Chitlapakkam, Kancheepuram-600 064.	Periya Venmani Madurantakam	180/4, 180/5, 180/8, 180/9, 180/10, 180/11	2.50.00	Rc.No. 269/Q2/2017, dated 13.03.2023	13.03.2023 to 12.03.2028

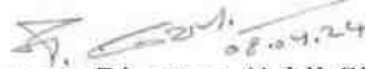
## II. Details of abandoned/Old quarries.

Sl. No.	Name of the lessee	ROC.NO. dated	Village & Taluk	S.F Nos.	Extent in Het	Lease period.
1.	A.Jeevanandam, No.25, 6th Street, Asthinapuram, Chennai-64	Rc.430/2007/Q1 Dated21.05.2007	Periyavenmani, Madurantakam	172/3, 172/4, 172/5, 172/6, 173/1, 173/2, 173/3, 173/4, 173/5, 173/6, 180/1, 180/2, 180/3, 180/4, 180/5, 180/8, 180/9, 180/10, 180/11	7.52.5	25.05.2007 to 24.05.2012.
2.	S.Gnanasekaran, No.20, Alagesan Street. Tambaram West, Chennai-45.	Rc.335/2011/Q3 dated 02.01.2012	Periyavenmani, Madurantakam	181/2	2.03.0	02.01.2012 to 01.01.2017
3.	O.Ganesan, No.2, Lakshmipuram Extn. Mudichur, Chennai-45	Rc.336/2011/Q3 dated 02.01.2012	Periyavenmani, Madurantakam	174/1, 174/2, 174/3, 174/4, 175/1	2.07.5	02.01.2012 to 01.01.2017

## III. Details of other Proposed/applied quarries

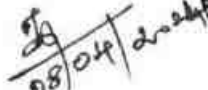
Sl. No.	Name of the lessee	Name of the Mineral	Village & Taluk	S.F No.	Extent in Het	Lease period.
1	Udhayam Mines and Minerals Pvt.Ltd.	Rough stone/ Gravel	Periyavenmani Madurantakam	172/2B, 172/2C, 172/2D, 172/7	4.04.50	Instant application

2.	M/s. AK Blue Metals Private Limited, No.1A, Manikandan Nagar, Hasthinapuram, Chennai - 600064.	Rough stone/ Gravel	Periyavenmani Madurantakam	204/1, 204/2, 204/3, 205, 206/1, 206/2, 206/3, 206/4, 206/5, 206/6, 206/7, 206/8, 206/9	5.53.00	applied lease.
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 Deputy Director, (Addl.Charge)  
 Dept of Geology and Mining,  
 Chengalpattu.

**Copy to :-**

The Chairman, Tamil Nadu State Environment  
 Impact Assessment Authority,  
 3<sup>rd</sup> Floor, Panakal Maligai,  
 No. 1 Jeenes Road, Saidapet, Chennai -15.

  
 08/04/2024



**POPULATION BREAKUP & LITERACY LEVEL IN THE BUFFER ZONE**

Sl.No	No. of Villages	Name of village	Rural / urban	HOUSE HOLDS	POPULATION			POPULATION BELOW 6 AGE GROUP			SCHEDULE CASTE			SCHEDULE TRIBE			LITERATES			ILLITERATES		
					TOTAL	MAL E	F.MAL E	TOTAL	MAL E	F.MAL E	TOTAL	MAL E	F.MAL E	TOTAL	MAL E	F.MAL E	TOTAL	MAL E	F.MAL E	TOTAL	MAL E	F.MAL E
<b>0-2 km, Maduranthakam Sub-District, Kancheepuram District</b>																						
1	1	Chinnavenmani	Rural	207	794	388	406	66	33	33	385	183	202	15	5	10	549	291	258	245	97	148
2	2	Chitamur	Rural	67	315	166	149	25	10	15	211	117	94	0	0	0	189	120	69	126	46	80
3	3	Kattudevadur	Rural	891	3398	1700	1698	373	194	179	1419	717	702	0	0	0	2074	1152	922	1324	548	776
4	4	Viralur	Rural	118	467	231	236	47	23	24	255	124	131	22	13	9	268	149	119	199	82	117
5	5	Poondi	Rural	4	12	7	5	2	2	0	0	0	0	0	0	0	10	5	5	2	2	0
6	6	Devanur	Rural	56	204	102	102	15	5	10	82	41	41	0	0	0	126	73	53	78	29	49
		<b>total (A)</b>		<b>1343</b>	<b>5190</b>	<b>2594</b>	<b>2596</b>	<b>528</b>	<b>267</b>	<b>261</b>	<b>2352</b>	<b>1182</b>	<b>1170</b>	<b>37</b>	<b>18</b>	<b>19</b>	<b>3216</b>	<b>1790</b>	<b>1426</b>	<b>1974</b>	<b>804</b>	<b>1170</b>
<b>2-5 km, Maduranthakam Sub-District, Kancheepuram District</b>																						
7	1	Dharmapuram	Rural	136	526	243	283	55	28	27	291	133	158	26	12	14	293	153	140	233	90	143
8	2	Nesapakkam	Rural	185	671	348	323	68	41	27	436	230	206	0	0	0	400	236	164	271	112	159
9	3	Ariyanur	Rural	171	669	340	329	61	33	28	382	201	181	0	0	0	398	223	175	271	117	154
10	4	Venmari	Rural	304	1215	625	590	121	64	57	761	393	368	12	7	5	691	394	297	524	231	293
11	5	Ozhavetti	Rural	265	1104	561	543	126	68	58	936	479	457	32	16	16	703	400	303	401	161	240
12	6	Netrambakkam	Rural	424	1666	831	835	185	82	103	846	415	431	0	0	0	1120	617	503	546	214	332
13	7	Nallamur Keelakaranai	Rural	743	3122	1545	1577	303	166	137	2540	1246	1294	4	2	2	2148	1136	1012	974	409	565
14	8	Vellarai	Rural	56	236	121	115	21	10	11	174	87	87	0	0	0	174	97	77	62	24	38
15	9	Nallur	Rural	161	625	309	316	81	47	34	356	168	188	9	5	4	425	236	189	200	73	127
16	10	Erumbedu	Rural	660	2614	1299	1315	225	111	114	2246	1110	1136	15	11	4	1905	1056	849	709	243	466
17	11	Z.Budur	Rural	788	2873	1422	1451	283	145	138	1243	604	639	0	0	0	1985	1086	899	888	336	552
<b>Cheyur Sub-District, Kancheepuram District</b>																						
18	1	Thiruvadur	Rural	462	1887	949	938	200	112	88	929	457	472	16	12	4	1193	660	533	694	289	405
19	2	Pudupattu	Rural	123	443	220	223	42	24	18	381	190	191	0	0	0	275	149	126	168	71	97
20	3	Iranyasidhi	Rural	189	712	368	344	75	41	34	285	153	132	0	0	0	419	252	167	293	116	177
21	4	Nemanadam	Rural	153	538	267	271	50	26	24	37	17	20	0	0	0	312	189	123	226	78	148
22	5	Pakkavancheri	Rural	87	357	181	176	31	16	15	59	28	31	0	0	0	211	122	89	146	59	87
23	6	Sengattur	Rural	412	1745	875	870	154	77	77	888	436	452	0	0	0	1322	727	595	423	148	275
24	7	Thirupurakoil	Rural	42	211	112	99	19	10	9	0	0	0	0	0	0	153	86	67	58	26	32
25	8	Ammanur	Rural	589	2334	1167	1167	219	104	115	940	449	491	10	7	3	1622	915	707	712	252	460
26	9	Maruderi	Rural	42	152	74	78	13	7	6	0	0	0	0	0	0	109	62	47	43	12	31
		<b>total (B)</b>		<b>5992</b>	<b>23700</b>	<b>11857</b>	<b>11843</b>	<b>2332</b>	<b>1212</b>	<b>1120</b>	<b>13730</b>	<b>6796</b>	<b>6934</b>	<b>124</b>	<b>72</b>	<b>52</b>	<b>15858</b>	<b>8796</b>	<b>7062</b>	<b>7842</b>	<b>3061</b>	<b>4781</b>
<b>5-10km, Maduranthakam Sub-District, Kancheepuram District</b>																						
27	1	Kavadur	Rural	256	1033	528	505	121	69	52	675	346	329	57	27	30	604	341	263	429	187	242
28	2	Murukkambakkam	Rural	259	942	482	460	79	43	36	690	345	345	39	22	17	609	350	259	333	132	201
29	3	Mariputhur	Rural	230	901	470	431	61	31	30	393	202	191	0	0	0	665	373	292	236	97	139
30	4	Avirimedu	Rural	146	562	285	277	67	34	33	170	83	87	11	6	5	315	194	121	247	91	156
31	5	Chitravadi	Rural	198	828	411	417	83	39	44	379	198	181	20	10	10	551	299	252	277	112	165
32	6	Puliyaranankottai	Rural	185	701	356	345	67	34	33	348	181	167	5	3	2	481	264	217	220	92	128

33	7	Z.Endathur	Rural	726	3014	1539	1475	270	134	136	1552	803	749	69	35	34	1882	1049	833	1132	490	642
34	8	Melakandai	Rural	195	812	408	404	88	42	46	472	236	236	12	5	7	507	281	226	305	127	178
35	9	Athivakkam	Rural	279	1088	551	537	103	61	42	845	426	419	27	11	16	621	361	260	467	190	277
36	10	Peruveli	Rural	858	3381	1671	1710	342	183	159	2175	1075	1100	5	2	3	2414	1286	1128	967	385	582
37	11	Kilvasalai	Rural	343	1351	686	665	126	59	67	1147	589	558	7	4	3	898	506	392	453	180	273
38	12	Neerpair	Rural	530	2090	1024	1066	236	123	113	1096	545	551	31	18	13	1285	699	586	805	325	480
<b>Cheyyur Sub-District, Kancheepuram District</b>																						
39	1	Seevadi	Rural	284	1205	602	603	116	59	57	781	389	392	0	0	0	734	395	339	471	207	264
40	2	Punnamai	Rural	130	528	273	255	40	17	23	46	21	25	0	0	0	357	214	143	171	59	112
41	3	Lathur	Rural	333	1273	662	611	148	78	70	980	504	476	0	0	0	775	431	344	498	231	267
42	4	Pachambakkam	Rural	224	950	475	475	89	47	42	513	248	265	8	3	5	617	340	277	333	135	198
43	5	Pavunjur	Rural	351	1409	729	680	145	78	67	395	209	186	8	4	4	966	541	425	443	188	255
44	6	Uludamangalam	Rural	329	1380	687	693	154	66	88	635	320	315	0	0	0	981	522	459	399	165	234
45	7	Periavelikadu	Rural	198	802	410	392	107	57	50	540	266	274	0	0	0	533	282	251	269	128	141
46	8	Kadugupattu	Rural	450	1765	874	891	196	105	91	908	459	449	0	0	0	1022	561	461	743	313	430
47	9	Palur	Rural	204	840	449	391	99	60	39	468	256	212	29	17	12	493	288	205	347	161	186
48	10	Nelvoypalayam	Rural	116	454	224	230	41	20	21	257	127	130	11	5	6	278	151	127	176	73	103
49	11	Perumalcheri	Rural	88	413	211	202	40	20	20	138	69	69	0	0	0	248	138	110	165	73	92
50	12	Malrajakuppam	Rural	3	8	5	3	1	1	0	0	0	0	0	0	0	6	4	2	2	1	1
51	13	Madayambakkam	Rural	309	1193	586	607	120	57	63	696	351	345	11	5	6	831	447	384	362	139	223
52	14	Paramankeni	Rural	847	3325	1615	1710	349	172	177	1154	584	570	23	14	9	1943	1081	862	1382	534	848
53	15	Pakkur	Rural	326	1229	599	630	111	56	55	636	300	336	15	9	6	760	423	337	469	176	293
54	16	Cheyyur	Rural	2626	10664	5274	5390	1024	535	489	5188	2549	2639	131	65	66	7936	4190	3746	2728	1084	1644
55	17	Chitharkadu	Rural	450	1859	887	972	189	87	102	1407	678	729	0	0	0	1148	607	541	711	280	431
56	18	Kokkaranthangal	Rural	705	2846	1433	1413	262	134	128	1657	830	827	48	20	28	2176	1171	1005	670	262	408
57	19	Vilangadu	Rural	135	554	292	262	75	46	29	473	251	222	0	0	0	343	200	143	211	92	119
58	20	Porur	Rural	305	1191	584	607	95	53	42	720	362	358	0	0	0	799	431	368	392	153	239
59	21	Poongunam	Rural	552	2212	1096	1116	291	143	148	1264	637	627	10	4	6	1568	848	720	644	248	396
60	22	Puorimpakkam	Rural	218	901	460	441	92	45	47	578	291	287	10	4	6	605	345	260	296	115	181
61	23	Kannimangalam	Rural	229	983	501	482	115	61	54	616	313	303	175	92	83	602	336	266	381	165	216
62	24	Chithamur	Rural	123	445	224	221	48	29	19	34	16	18	0	0	0	359	189	170	86	35	51
63	25	Polambakkam	Rural	570	2242	1117	1125	240	125	115	1073	533	540	23	12	11	1409	791	618	833	326	507
64	26	Magundagiri	Rural	274	1067	548	519	122	69	53	430	221	209	0	0	0	761	439	322	306	109	197
		<b>total (C)</b>		<b>14584</b>	<b>58441</b>	<b>29228</b>	<b>29213</b>	<b>5952</b>	<b>3072</b>	<b>2880</b>	<b>31529</b>	<b>15813</b>	<b>15716</b>	<b>785</b>	<b>397</b>	<b>388</b>	<b>39082</b>	<b>21368</b>	<b>17714</b>	<b>19359</b>	<b>7860</b>	<b>11499</b>
		<b>Grand Total (A+B+C)</b>		<b>21919</b>	<b>87331</b>	<b>43679</b>	<b>43652</b>	<b>8812</b>	<b>4551</b>	<b>4261</b>	<b>47611</b>	<b>23791</b>	<b>23820</b>	<b>946</b>	<b>487</b>	<b>459</b>	<b>58156</b>	<b>31954</b>	<b>26202</b>	<b>29175</b>	<b>11725</b>	<b>17450</b>

\*Source: District Primary Census Abstract, Kancheepuram District of Tamilnadu State-2011

**OCCUPATIONAL STRUCTURE IN THE BUFFER ZONE**

Sl.No	No. of Villages	Name of village	Rural / urban	MAIN WORKERS		CULTIVATORS		AGRI LABOURS		HOUSE HOLD		OTHERS		MARGINAL WORKERS		NON WORKERS	
				MALE	F.MALE	MALE	F.MALE	MALE	F.MALE	MALE	F.MALE	MALE	F.MALE	MALE	F.MALE	MALE	F.MALE
<b>0-2 km, Maduranthakam Sub-District, Kancheepuram District</b>																	
1	1	Chinnavenmani	Rural	268	250	81	15	104	200	0	0	83	35	1	1	119	155
2	2	Chitamur	Rural	112	63	8	3	96	59	4	0	4	1	0	0	54	86
3	3	Kattudevadur	Rural	807	550	42	14	572	501	8	0	185	35	172	146	721	1002
4	4	Viralur	Rural	39	11	19	7	4	1	6	1	10	2	98	115	94	110
5	5	Poondi	Rural	4	2	4	2	0	0	0	0	0	0	1	2	2	1
6	6	Devanur	Rural	47	13	24	3	13	3	0	0	10	7	13	13	42	76
		<b>total (A)</b>		<b>1277</b>	<b>889</b>	<b>178</b>	<b>44</b>	<b>789</b>	<b>764</b>	<b>18</b>	<b>1</b>	<b>292</b>	<b>80</b>	<b>285</b>	<b>277</b>	<b>1032</b>	<b>1430</b>
<b>2-5 km, Maduranthakam Sub-District, Kancheepuram District</b>																	
7	1	Dharmapuram	Rural	58	36	6	3	6	4	1	0	45	29	93	78	92	169
8	2	Nesapakkam	Rural	224	217	97	78	115	125	4	5	8	9	5	5	119	101
9	3	Ariyanur	Rural	200	105	19	2	129	92	8	1	44	10	4	0	136	224
10	4	Venmari	Rural	354	173	72	18	226	128	8	1	48	26	47	100	224	317
11	5	Ozhavetti	Rural	217	127	16	1	149	102	0	0	52	24	127	120	217	296
12	6	Netrambakkam	Rural	179	12	19	1	104	2	2	1	54	8	364	427	288	396
13	7	Nallamur Keelakaranai	Rural	488	232	188	26	171	182	1	1	128	23	423	465	634	880
14	8	Vellarai	Rural	35	1	16	0	4	0	0	0	15	1	29	19	57	95
15	9	Nallur	Rural	33	15	4	1	3	0	0	0	26	14	147	104	129	197
16	10	Erumbedu	Rural	505	358	54	35	263	269	2	4	186	50	137	117	657	840
17	11	Z.Budur	Rural	793	416	148	54	430	276	5	11	210	75	125	146	504	889
<b>Cheyyur Sub-District, Kancheepuram District</b>																	
18	1	Thiruvadur	Rural	393	77	4	2	160	20	4	0	225	55	180	218	376	643
19	2	Pudupattu	Rural	113	74	26	9	67	52	0	2	20	11	36	44	71	105
20	3	Iranyasidhi	Rural	163	17	17	1	71	3	8	1	67	12	62	170	143	157
21	4	Nemanadam	Rural	138	107	45	38	83	57	1	3	9	9	31	45	98	119
22	5	Pakkavancheri	Rural	9	2	0	1	0	0	1	1	8	0	114	79	58	95
23	6	Sengattur	Rural	383	222	61	20	129	126	30	26	163	50	216	264	276	384
24	7	Thirupurakoil	Rural	64	38	17	13	44	21	0	1	3	3	14	20	34	41
25	8	Ammanur	Rural	445	185	122	16	166	143	1	1	156	25	309	401	413	581
26	9	Maruderi	Rural	24	0	7	0	6	0	1	0	10	0	18	7	32	71
		<b>total (B)</b>		<b>4818</b>	<b>2414</b>	<b>938</b>	<b>319</b>	<b>2326</b>	<b>1602</b>	<b>77</b>	<b>59</b>	<b>1477</b>	<b>434</b>	<b>2481</b>	<b>2829</b>	<b>4558</b>	<b>6600</b>
<b>5-10km, Maduranthakam Sub-District, Kancheepuram District</b>																	
27	1	Kavadur	Rural	172	37	38	7	30	2	0	2	104	26	144	151	212	317
28	2	Murukkambakkam	Rural	183	157	67	28	47	104	3	1	66	24	114	98	185	205
29	3	Mariputhur	Rural	255	130	46	5	197	120	1	2	11	3	14	54	201	247
30	4	Avirimedu	Rural	119	31	47	0	12	12	4	2	56	17	90	161	76	85
31	5	Chitravadi	Rural	123	18	39	3	47	2	0	0	37	13	135	202	153	197
32	6	Puliyaranankottai	Rural	47	20	6	3	1	0	0	1	40	16	198	215	111	110

33	7	Z.Endathur	Rural	861	435	65	16	531	337	10	4	255	78	79	137	599	903
34	8	Melakandai	Rural	245	102	9	3	41	27	7	1	188	71	0	0	163	302
35	9	Athivakkam	Rural	152	79	53	12	24	30	1	0	74	37	202	221	197	237
36	10	Peruveli	Rural	861	301	82	12	317	144	13	14	449	131	64	343	746	1066
37	11	Kilvasalai	Rural	278	83	139	21	11	2	5	1	123	59	117	88	291	494
38	12	Neerpair	Rural	90	25	2	1	4	2	3	1	81	21	543	359	391	682
<b>Cheyyur Sub-District, Kancheepuram District</b>																	
39	1	Seevadi	Rural	361	319	19	13	226	241	1	2	115	63	7	10	234	274
40	2	Punnamai	Rural	156	86	33	0	92	77	2	0	29	9	0	2	117	167
41	3	Lathur	Rural	290	45	119	5	72	25	3	2	96	13	115	270	257	296
42	4	Pachambakkam	Rural	259	51	22	7	210	32	6	2	21	10	31	141	185	283
43	5	Pavunjur	Rural	325	157	26	5	94	113	20	2	185	37	101	66	303	457
44	6	Uludamangalam	Rural	367	65	175	26	34	2	10	1	148	36	43	57	277	571
45	7	Periavelikadu	Rural	73	55	11	5	15	11	4	1	43	38	182	191	155	146
46	8	Kadugupattu	Rural	485	394	49	31	302	314	0	3	134	46	63	49	326	448
47	9	Palur	Rural	261	46	46	5	128	29	1	0	86	12	20	24	168	321
48	10	Nelvoypalayam	Rural	54	15	29	11	1	0	1	2	23	2	67	63	103	152
49	11	Perumalcheri	Rural	80	7	25	1	48	5	0	0	7	1	49	47	82	148
50	12	Malrajakuppam	Rural	0	0	0	0	0	0	0	0	0	0	2	0	3	3
51	13	Madayambakkam	Rural	67	58	10	8	30	28	2	1	25	21	358	380	161	169
52	14	Paramankeni	Rural	625	115	95	3	70	8	12	23	448	81	315	445	675	1150
53	15	Pakkur	Rural	192	81	54	4	85	67	5	0	48	10	153	156	254	393
54	16	Cheyyur	Rural	1711	672	170	39	313	158	65	36	1163	439	1314	913	2249	3805
55	17	Chitharkadu	Rural	518	351	130	38	179	187	6	2	203	124	81	225	288	396
56	18	Kokkaranthangal	Rural	745	447	218	52	404	350	3	0	120	45	225	332	463	634
57	19	Vilangadu	Rural	162	152	1	0	130	138	0	1	31	13	5	15	125	95
58	20	Porur	Rural	258	118	65	16	123	72	10	4	60	26	99	109	227	380
59	21	Poongunam	Rural	425	323	14	17	244	241	1	2	166	63	303	311	368	482
60	22	Puoriampakkam	Rural	302	231	58	47	185	165	1	2	58	17	0	0	158	210
61	23	Kannimangalam	Rural	157	49	13	5	74	31	2	0	68	13	136	164	208	269
62	24	Chithamur	Rural	126	26	16	1	4	0	2	0	104	25	3	13	95	182
63	25	Polambakkam	Rural	538	303	60	14	290	263	22	3	166	23	125	119	454	703
64	26	Magundagiri	Rural	119	74	10	6	77	56	4	3	28	9	225	152	204	293
		<b>total (C)</b>		<b>12042</b>	<b>5658</b>	<b>2061</b>	<b>470</b>	<b>4692</b>	<b>3395</b>	<b>230</b>	<b>121</b>	<b>5059</b>	<b>1672</b>	<b>5722</b>	<b>6283</b>	<b>11464</b>	<b>17272</b>
		<b>Grand Total (A+B+C)</b>		<b>18137</b>	<b>8961</b>	<b>3177</b>	<b>833</b>	<b>7807</b>	<b>5761</b>	<b>325</b>	<b>181</b>	<b>6828</b>	<b>2186</b>	<b>8488</b>	<b>9389</b>	<b>17054</b>	<b>25302</b>

\*Source: District Primary Census Abstract, Kancheepuram District of Tamilnadu State-2011

**EDUCATIONAL FACILITIES IN THE STUDY AREA**

Sl.No	No. of Villages	Name of village	Educational Facilities (A(1)/ NA(2))	Govt Pre - Primary School (Nursery/LKG/UKG) (Numbers)	Govt Primary School (Numbers)	Govt Middle School (Numbers)	Govt Secondary School (Numbers)	Govt Senior Secondary School (Numbers)	Govt Arts and Science Degree College (Numbers)	Govt Engineering College (Numbers)	Govt Medicine College (Numbers)	Govt Management Institute (Numbers)	Govt Polytechnic (Numbers)	Govt Vocational Training School/ITI (Numbers)	Government Non Formal Training Centre (Numbers)	Government School For Disabled (Numbers)
<b>0-2 km, Maduranthakam Sub-District, Kancheepuram District</b>																
1	1	Chinnavenmani	1	1	1	0	0	0	0	0	0	0	0	0	1	0
2	2	Chitamur	1	1	1	0	0	0	0	0	0	0	0	0	1	0
3	3	Kattudevadur	1	2	2	1	1	0	0	0	0	0	0	0	1	0
4	4	Viralur	1	1	2	0	0	0	0	0	0	0	0	0	1	0
5	5	Poondi	2	0	0	0	0	0	0	0	0	0	0	0	0	0
6	6	Devanur	1	1	1	0	0	0	0	0	0	0	0	0	1	0
		<b>total (A)</b>		<b>6</b>	<b>7</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>0</b>
<b>2-5 km, Maduranthakam Sub-District, Kancheepuram District</b>																
7	1	Dharmapuram	1	1	1	1	0	0	0	0	0	0	0	0	1	0
8	2	Nesapakkam	1	1	1	0	0	0	0	0	0	0	0	0	1	0
9	3	Ariyanur	1	1	1	0	0	0	0	0	0	0	0	0	1	0
10	4	Venmari	1	2	1	1	0	0	0	0	0	0	0	0	1	0
11	5	Ozhavetti	1	1	1	0	0	0	0	0	0	0	0	0	1	0
12	6	Netrambakkam	1	1	1	0	0	0	0	0	0	0	0	0	1	0
13	7	Nallamur Keelakaranai	1	1	1	1	0	0	0	0	0	0	0	0	1	0
14	8	Vellarai	2	0	0	0	0	0	0	0	0	0	0	0	0	0
15	9	Nallur	1	1	1	0	0	0	0	0	0	0	0	0	1	0
16	10	Erumbedu	1	2	3	1	1	0	0	0	0	0	0	0	1	0
17	11	Z.Budur	1	3	4	1	0	0	0	0	0	0	0	0	1	0
<b>Cheyur Sub-District, Kancheepuram District</b>																
18	1	Thiruvadur	1	3	1	1	1	1	0	0	0	0	0	0	1	0
19	2	Pudupattu	1	1	0	0	0	0	0	0	0	0	0	0	0	0
20	3	Iranyasidhi	1	1	1	0	0	0	0	0	0	0	0	0	1	0
21	4	Nemanadam	1	1	1	0	0	0	0	0	0	0	0	0	1	0
22	5	Pakkavancheri	1	1	0	0	0	0	0	0	0	0	0	0	0	0
23	6	Sengattur	1	3	2	1	0	0	0	0	0	0	0	0	1	0
24	7	Thirupurakoil	2	0	0	0	0	0	0	0	0	0	0	0	0	0
25	8	Ammanur	1	4	3	0	0	0	0	0	0	0	0	0	1	0
26	9	Maruderi		0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>total (B)</b>		<b>28</b>	<b>23</b>	<b>7</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>15</b>	<b>0</b>
<b>5-10km, Maduranthakam Sub-District, Kancheepuram District</b>																
27	1	Kavadur	1	1	1	1	0	0	0	0	0	0	0	0	1	0
28	2	Murukkambakkam	1	1	1	0	0	0	0	0	0	0	0	0	1	0
29	3	Mariputhur	1	1	1	0	0	0	0	0	0	0	0	0	1	0
30	4	Avirimedu	1	1	1	0	0	0	0	0	0	0	0	0	1	0
31	5	Chitravadi	1	1	0	0	0	0	0	0	0	0	0	0	0	0
32	6	Puliyaranankottai	1	1	1	0	0	0	0	0	0	0	0	0	1	0
33	7	Z.Endathur	1	1	1	1	1	0	0	0	0	0	0	0	1	0
34	8	Melakandai	1	1	1	0	0	0	0	0	0	0	0	0	1	0
35	9	Athivakkam	1	1	3	1	0	0	0	0	0	0	0	0	1	0
36	10	Peruveli	1	3	2	1	0	0	0	0	0	0	0	0	1	0
37	11	Kilvasalai	1	2	3	0	0	0	0	0	0	0	0	0	1	0
38	12	Neerpair	1	2	2	1	1	1	0	0	0	0	0	0	1	0
<b>Cheyur Sub-District, Kancheepuram District</b>																
39	1	Seevadi	1	2	1	1	0	0	0	0	0	0	0	0	1	0

40	2	Punnamai	1	1	1	0	0	0	0	0	0	0	0	0	1	0
41	3	Lathur	1	1	1	1	0	0	0	0	0	0	0	0	1	0
42	4	Pachambakkam	1	1	1	0	0	0	0	0	0	0	0	0	1	0
43	5	Pavunjur	1	1	1	0	0	0	0	0	0	0	0	0	1	0
44	6	Uludamangalam	1	2	1	0	0	0	0	0	0	0	0	0	1	0
45	7	Periavelikadu	1	1	1	1	0	0	0	0	0	0	0	0	1	0
46	8	Kadugupattu	1	3	1	1	0	0	0	0	0	0	0	0	1	0
47	9	Palur	1	1	1	0	0	0	0	0	0	0	0	0	1	0
48	10	Nelvoypalayam	1	2	1	0	0	0	0	0	0	0	0	0	1	0
49	11	Perumalcheri	1	1	0	0	0	0	0	0	0	0	0	0	0	0
50	12	Malrajakuppam	2	0	0	0	0	0	0	0	0	0	0	0	0	0
51	13	Madayambakkam	1	1	1	1	0	0	0	0	0	0	0	0	1	0
52	14	Paramankeni	1	3	1	0	0	0	0	0	0	0	0	0	1	0
53	15	Pakkur	1	2	0	0	0	0	0	0	0	0	0	0	0	0
54	16	Cheyur	1	10	6	4	4	2	0	0	0	0	0	0	1	0
55	17	Chitharkadu	1	3	2	2	0	0	0	0	0	0	0	0	1	0
56	18	Kokkaranthangal	1	3	3	1	0	0	0	0	0	0	0	0	1	0
57	19	Vilangadu	1	1	1	0	0	0	0	0	0	0	0	0	1	0
58	20	Porur	1	1	1	0	0	0	0	0	0	0	0	0	1	0
59	21	Poongunam	1	2	1	1	0	0	0	0	0	0	0	0	1	0
60	22	Puoriampakkam	1	1	1	0	0	0	0	0	0	0	0	0	1	0
61	23	Kannimangalam	1	1	0	0	0	0	0	0	0	0	0	0	0	0
62	24	Chithamur	1	1	1	0	0	0	0	0	0	0	0	0	1	0
63	25	Polambakkam	1	2	1	1	1	1	0	0	0	0	0	0	1	0
64	26	Magundagiri	1	1	1	0	0	0	0	0	0	0	0	0	1	0
		<b>total (C)</b>		<b>64</b>	<b>47</b>	<b>19</b>	<b>7</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>33</b>	<b>0</b>
		<b>Grand Total (A+B+C)</b>		<b>98</b>	<b>77</b>	<b>27</b>	<b>10</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>53</b>	<b>0</b>

\*Source: District Primary Census Abstract, Kancheepuram District of Tamilnadu State-2011

**MEDICAL FACILITIES WITHIN THE STUDY AREA**

Sl.No	No. of Villages	Name of village	Medical Facilities (A(1)/NA(2))	Community Health Centre (Numbers)	Primary Health Centre (Numbers)	Primary Health Sub Centre (Numbers)	Maternity And Child Welfare Centre (Numbers)	TB Clinic (Numbers)	Hospital Allopathic (Numbers)	Hospital Alternative Medicine (Numbers)	Dispensary (Numbers)	Veterinary Hospital (Numbers)	Mobile Health Clinic (Numbers)	Family Welfare Centre (Numbers)
<b>0-2 km, Maduranthakam Sub-District, Kancheepuram District</b>														
1	1	Chinnavenmani	2	0	0	0	0	0	0	0	0	0	0	0
2	2	Chitamur	2	0	0	0	0	0	0	0	0	0	0	0
3	3	Kattudevadur	1	0	0	2	0	0	0	0	0	1	0	0
4	4	Viralur	2	0	0	0	0	0	0	0	0	0	0	0
5	5	Poondi	2	0	0	0	0	0	0	0	0	0	0	0
6	6	Devanur	2	0	0	0	0	0	0	0	0	0	0	0
		<b>total (A)</b>		<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>
<b>2-5 km, Maduranthakam Sub-District, Kancheepuram District</b>														
7	1	Dharmapuram	2	0	0	0	0	0	0	0	0	0	0	0
8	2	Nesapakkam	2	0	0	0	0	0	0	0	0	0	0	0
9	3	Ariyanur	2	0	0	0	0	0	0	0	0	0	0	0
10	4	Venmari	1	0	0	1	1	0	0	0	0	0	0	0
11	5	Ozhavetti	1	0	0	0	0	0	0	0	0	1	0	0
12	6	Netrambakkam	2	0	0	0	0	0	0	0	0	0	0	0
13	7	Nallamur Keelakaranai	1	0	0	1	0	0	0	0	0	0	0	0
14	8	Vellarai	2	0	0	0	0	0	0	0	0	0	0	0
15	9	Nallur	2	0	0	0	0	0	0	0	0	0	0	0
16	10	Erumbedu	1	0	1	1	1	1	0	0	1	0	0	1
17	11	Z.Budur	1	0	0	1	0	0	0	0	0	0	0	0
<b>Cheyyur Sub-District, Kancheepuram District</b>														
18	1	Thiruvadur	1	0	0	1	1	0	0	0	0	1	0	0
19	2	Pudupattu	2	0	0	0	0	0	0	0	0	0	0	0
20	3	Iranyasidhi	1	0	0	1	0	0	0	0	0	0	0	0
21	4	Nemanadam	2	0	0	0	0	0	0	0	0	0	0	0
22	5	Pakkavancheri	2	0	0	0	0	0	0	0	0	0	0	0
23	6	Sengattur	1	0	0	1	0	0	0	0	0	0	0	0
24	7	Thirupurakoil	2	0	0	0	0	0	0	0	0	0	0	0
25	8	Ammanur	1	0	0	1	0	0	0	0	0	0	0	0
26	9	Maruderi	2	0	0	0	0	0	0	0	0	0	0	0
		<b>total (B)</b>		<b>0</b>	<b>1</b>	<b>8</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>1</b>
<b>5-10km, Maduranthakam Sub-District, Kancheepuram District</b>														
27	1	Kavadur	2	0	0	0	0	0	0	0	0	0	0	0
28	2	Murukkambakkam	1	0	0	1	0	0	0	0	0	0	0	0
29	3	Mariputhur	2	0	0	0	0	0	0	0	0	0	0	0
30	4	Avirimedu	2	0	0	0	0	0	0	0	0	0	0	0
31	5	Chitravadi	2	0	0	0	0	0	0	0	0	0	0	0

32	6	Puliyaranankottai	2	0	0	0	0	0	0	0	0	0	0	0
33	7	Z.Endathur	1	1	1	1	1	1	0	0	1	0	0	1
34	8	Melakandai	1	0	0	1	0	0	0	0	0	0	0	0
35	9	Athivakkam	2	0	0	0	0	0	0	0	0	0	0	0
36	10	Peruveli	1	0	0	1	0	0	0	0	0	0	0	0
37	11	Kilvasalai	2	0	0	0	0	0	0	0	0	0	0	0
38	12	Neerpair		0	0	0	0	0	0	0	0	0	0	0
<b>Cheyur Sub-District, Kancheepuram District</b>														
39	1	Seevadi	1	0	0	1	0	0	0	0	0	0	0	0
40	2	Punnamai	2	0	0	0	0	0	0	0	0	0	0	0
41	3	Lathur	2	0	0	0	0	0	0	0	0	0	0	0
42	4	Pachambakkam	2	0	0	0	0	0	0	0	0	0	0	0
43	5	Pavunjur	1	1	1	1	1	1	0	0	1	0	0	1
44	6	Uludamangalam	2	0	0	0	0	0	0	0	0	0	0	0
45	7	Periavelikadu	1	0	0	1	0	0	0	0	0	0	0	0
46	8	Kadugupattu	1	0	0	1	0	0	0	0	0	0	0	0
47	9	Palur	2	0	0	0	0	0	0	0	0	0	0	0
48	10	Nelvoypalayam	1	0	0	1	0	0	0	0	0	0	0	0
49	11	Perumalcheri	2	0	0	0	0	0	0	0	0	0	0	0
50	12	Malrajakuppam	2	0	0	0	0	0	0	0	0	0	0	0
51	13	Madayambakkam	2	0	0	0	0	0	0	0	0	0	0	0
52	14	Paramankeni	1	0	0	1	0	0	0	0	0	0	0	0
53	15	Pakkur	2	0	0	0	0	0	0	0	0	0	0	0
54	16	Cheyur	1	0	2	8	2	2	0	0	2	1	0	2
55	17	Chitharkadu	2	0	0	0	0	0	0	0	0	0	0	0
56	18	Kokkaranthangal	1	0	0	1	0	0	0	0	0	0	0	0
57	19	Vilangadu	2	0	0	0	0	0	0	0	0	0	0	0
58	20	Porur	2	0	0	0	0	0	0	0	0	0	0	0
59	21	Poongunam	2	0	0	0	0	0	0	0	0	0	0	0
60	22	Puoriampakkam	2	0	0	0	0	0	0	0	0	0	0	0
61	23	Kannimangalam	2	0	0	0	0	0	0	0	0	0	0	0
62	24	Chithamur	1	0	0	1	0	0	0	0	0	0	0	0
63	25	Polambakkam	1	0	1	1	1	1	0	0	1	0	0	1
64	26	Magundagiri	1	0	0	1	0	0	0	0	0	0	0	0
		<b>total (C)</b>		<b>2</b>	<b>5</b>	<b>22</b>	<b>5</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>1</b>	<b>0</b>	<b>5</b>
		<b>Grand Total (A+B+C)</b>		<b>2</b>	<b>6</b>	<b>32</b>	<b>8</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>4</b>	<b>0</b>	<b>6</b>

\*Source: District Primary Census Abstract, Kancheepuram District of Tamilnadu State-2011

Note : A: Available, NA- Not Available



**INFRASTRUCTURAL FACILITIES IN THE STUDY AREA**

Sl. No	No. of Villages	Name of village	Tap Water-Treated (Status A(1)/NA(2))	Covered Well (Status A(1)/NA(2))	Hand Pump (Status A(1)/NA(2))	Tube Wells/Bore hole (Status A(1)/NA(2))	Spring (Status A(1)/NA(2))	River/Canal (Status A(1)/NA(2))	Tank/Pond/Lake (Status A(1)/NA(2))	Post Office (Status A(1)/NA(2))	Sub Post Office (Status A(1)/NA(2))	Post And Telegraph Office (Status A(1)/NA(2))	Telephone (landlines) (Status A(1)/NA(2))	Mobile Phone Coverage (Status A(1)/NA(2))	Public Bus Service (Status A(1)/NA(2))	Railway Station (Status A(1)/NA(2))	Commercial Bank (Status A(1)/NA(2))	Cooperative Bank (Status A(1)/NA(2))	Agricultural Credit Societies (Status A(1)/NA(2))
<b>0-2 km, Maduranthakam Sub-District, Kancheepuram District</b>																			
1	1	Chinnavenmani	1	2	2	2	2	2	2	2	2	2	1	1	2	2	2	2	2
2	2	Chitamur	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2
3	3	Kattudevadur	1	1	2	1	2	2	1	2	1	2	1	1	1	2	2	2	2
4	4	Viralur	1	1	1	2	2	2	2	2	2	2	1	2	2	2	2	2	2
5	5	Poondi	2	2	2	1	2	2	2	2	2	2	1	2	2	2	2	2	2
6	6	Devanur	1	2	2	2	2	2	2	2	2	2	1	1	2	2	2	2	2
<b>2-5 km, Maduranthakam Sub-District, Kancheepuram District</b>																			
7	1	Dharmapuram	1	2	2	2	2	2	2	2	2	2	1	1	2	2	2	2	2
8	2	Nesapakkam	1	2	2	2	2	2	2	2	2	2	1	1	2	2	2	2	2
9	3	Ariyanur	1	2	2	2	2	2	2	2	1	2	1	1	2	2	2	2	2
10	4	Venmari	1	1	1	2	2	2	1	2	1	2	1	1	2	2	2	2	2
11	5	Ozhavetti	1	1	1	2	2	2	2	2	1	2	1	1	1	2	2	2	2
12	6	Netrambakkam	1	1	2	2	1	2	2	2	2	2	1	1	2	2	2	2	2
13	7	Nallamur Keelakaranai	1	2	1	1	2	2	2	2	2	2	1	1	2	2	2	2	2
14	8	Vellarai	1	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2
15	9	Nallur	1	2	2	2	2	2	2	2	2	2	1	1	2	2	2	2	2
16	10	Erumbedu	1	2	1	2	2	2	2	2	1	2	1	1	1	2	2	2	2
17	11	Z.Budur	1	2	2	1	2	2	2	2	1	2	1	1	1	2	2	2	2
<b>Cheyur Sub-District, Kancheepuram District</b>																			
18	1	Thiruvadur	1	2	1	1	2	2	2	2	2	2	1	1	2	2	2	1	1
19	2	Pudupattu	2	2	2	2	2	2	2	2	2	2	1	1	1	2	2	2	2
20	3	Iranyasidhi	1	2	2	2	2	2	2	2	1	2	1	1	2	2	2	2	2
21	4	Nemanadam	1	1	2	2	2	2	2	2	2	2	1	1	2	2	2	2	2
22	5	Pakkavancheri	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2
23	6	Sengattur	1	1	2	2	2	2	2	2	2	2	1	1	1	2	2	2	2
24	7	Thirupurakoil	1	1	1	1	2	2	1	2	2	2	2	2	1	2	2	2	2
25	8	Ammanur	1	1	1	2	2	2	2	2	2	2	1	1	1	2	2	2	2
26	9	Maruderi	1	2	2	2	2	2	2	2	2	2	2	1	1	2	2	2	2
<b>5-10km, Maduranthakam Sub-District, Kancheepuram District</b>																			
27	1	Kavadur	1	2	2	2	2	1	2	2	2	2	1	1	1	2	2	2	2
28	2	Murukkambakkam	1	2	2	2	2	2	2	2	1	2	2	1	1	2	2	2	2
29	3	Mariputhur	1	2	2	2	2	2	2	2	2	2	1	1	2	2	2	2	2
30	4	Avirimedu	1	2	2	1	2	2	2	2	2	2	1	1	2	2	2	2	2
31	5	Chitravadi	1	2	1	2	2	2	2	2	2	2	1	1	1	2	2	2	1
32	6	Puliyaranankottai	1	1	1	2	2	2	2	2	2	2	1	1	1	2	2	1	2

33	7	Z.Endathur	1	1	1	1	1	2	1	1	2	1	1	1	1	2	2	1	1
34	8	Melakandai	1	2	1	2	2	2	2	2	2	2	1	1	1	2	2	2	2
35	9	Athivakkam	1	1	2	2	2	2	1	2	2	2	1	1	2	2	2	2	2
36	10	Peruveli	1	1	1	2	2	2	2	2	1	2	1	1	1	2	2	2	1
37	11	Kilvasalai	1	2	2	2	2	2	2	2	2	2	1	1	2	2	2	2	2
38	12	Neerpair	1	2	2	2	2	2	2	2	1	2	1	1	1	2	2	1	2
<b>Cheyyur Sub-District, Kancheepuram District</b>																			
39	1	Seevadi	1	2	2	2	2	2	2	2	1	2	1	1	1	2	2	2	1
40	2	Punnamai	1	1	1	2	2	2	2	2	2	2	1	1	1	2	2	2	2
41	3	Lathur	1	1	1	1	1	2	2	2	1	2	1	1	1	2	2	2	2
42	4	Pachambakkam	1	1	2	1	2	2	2	2	2	2	1	1	1	2	2	2	2
43	5	Pavunjur	1	1	2	1	1	2	2	1	2	1	1	1	1	2	2	2	2
44	6	Uludamangalam	1	2	2	2	2	2	2	2	2	2	1	1	1	2	2	2	2
45	7	Periavelikadu	1	1	1	1	2	2	2	2	2	2	1	1	1	2	2	2	2
46	8	Kadugupattu	1	1	2	1	2	2	2	2	2	2	1	1	2	2	2	1	1
47	9	Palur	1	2	2	2	2	2	2	2	1	2	1	1	1	2	2	2	2
48	10	Nelvoypalayam	1	2	2	1	2	2	2	2	2	2	1	1	2	2	2	1	1
49	11	Perumalcheri	1	2	2	2	2	2	2	2	2	2	1	1	2	2	2	1	1
50	12	Malrajakuppam	2	2	2	2	2	2	2	2	2	2	1	1	2	2	2	2	2
51	13	Madayambakkam	1	1	2	1	2	2	2	2	2	2	1	1	1	2	2	2	2
52	14	Paramankeni	1	2	1	1	2	2	2	2	2	2	1	1	1	2	2	2	2
53	15	Pakkur	1	1	2	1	2	2	2	2	2	2	1	1	2	2	2	2	2
54	16	Cheyyur	1	1	1	1	2	2	2	1	1	1	1	1	1	2	1	1	1
55	17	Chitharkadu	1	2	1	2	2	2	2	2	2	2	1	1	2	2	2	2	2
56	18	Kokkaranthangal	1	1	1	1	2	2	2	2	2	2	1	1	2	2	2	1	1
57	19	Vilangadu	1	2	2	2	2	2	2	2	2	2	2	1	1	2	2	2	2
58	20	Porur	1	2	2	1	2	2	2	2	2	2	1	1	2	2	2	2	2
59	21	Poongunam	1	1	2	2	2	2	2	2	1	2	1	1	1	2	2	2	1
60	22	Puoriampakkam	1	1	2	1	2	2	2	2	2	2	2	1	1	2	2	2	2
61	23	Kannimangalam	2	1	2	1	2	2	2	2	2	2	1	1	2	2	2	2	2
62	24	Chithamur	2	2	2	1	2	2	2	2	1	2	1	1	1	2	1	1	1
63	25	Polambakkam	1	1	2	2	2	2	2	2	1	2	1	1	1	2	2	1	1
64	26	Magundagiri	1	1	2	2	2	2	2	2	1	2	1	1	2	2	2	2	2

\*Source: District Primary Census Abstract, Kancheepuram District of Tamilnadu State-2011

Note : A: Available, NA- Not Available

Status: A(1)/NA(2)



# CREATIVE ENGINEERS & CONSULTANTS

(NABET ACCREDITED, NABL ACCREDITED TESTING LABORATORY,  
DEPARTMENT OF INDUSTRIES AND COMMERCE REGISTERED COMPANY)

## AMBIENT AIR QUALITY

Project	:	Rough Stone and Gravel Quarry of AK Blue Metals Pvt. Ltd & Udhayam Mines and Minerals Pvt. Ltd
Name of the Location	:	Near Lease Area
Station Code	:	A1

SL.NO	DATE	PM10	PM2.5	SO2	NO2
1	05-03-24	57.3	26.9	7.3	8.6
2	06-03-24	58.5	28.1	8.5	11.0
3	16-03-24	57.6	27.1	7.6	9.2
4	17-03-24	59.4	27.9	9.0	12.0
5	19-03-24	58.3	27.9	8.3	10.6
6	20-03-24	58.7	28.3	8.7	11.4
7	30-03-24	60.4	28.4	9.5	13.0
8	31-03-24	58.0	27.3	8.0	10.0
9	02-04-24	57.2	26.9	7.2	8.4
10	03-04-24	58.1	27.7	8.1	10.2
11	13-04-24	60.0	28.2	9.3	12.6
12	14-04-24	58.4	28.0	8.4	10.8
13	16-04-24	57.5	27.0	7.5	9.0
14	17-04-24	58.6	28.2	8.6	11.2
15	27-04-24	57.7	27.1	7.7	9.4
16	28-04-24	59.2	27.8	8.9	11.8
17	30-04-24	59.6	28.0	9.1	12.2
18	01-05-24	57.8	27.2	7.8	9.6
19	11-05-24	59.8	28.1	9.2	12.4
20	12-05-24	57.9	27.2	7.9	9.8
21	14-05-24	57.4	27.0	7.4	8.8
22	15-05-24	59.0	27.7	8.8	11.6
23	25-05-24	58.2	27.8	8.2	10.4
24	26-05-24	60.2	28.3	9.4	12.8
	<b>MIN</b>	<b>57.2</b>	<b>26.9</b>	<b>7.2</b>	<b>8.4</b>
	<b>AVE</b>	<b>58.5</b>	<b>27.7</b>	<b>8.4</b>	<b>10.7</b>
	<b>MAX</b>	<b>60.4</b>	<b>28.4</b>	<b>9.5</b>	<b>13.0</b>

Note: BDL – Below Detectable Limit, DL: Detectable Limit.

Prepared by

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DEPARTMENT OF INDUSTRIES AND COMMERCE REGISTERED COMPANY)

## AMBIENT AIR QUALITY

Project	:	Rough Stone and Gravel Quarry of AK Blue Metals Pvt. Ltd & Udhayam Mines and Minerals Pvt. Ltd
Name of the Location	:	Chinnavelikadu Village
Station Code	:	A2

SL.NO	DATE	PM10	PM2.5	SO2	NO2
1	05-03-24	47.7	21.0	5.5	7.9
2	06-03-24	50.1	22.0	6.1	8.5
3	16-03-24	48.1	21.2	5.6	8.0
4	17-03-24	49.3	21.7	5.9	8.3
5	19-03-24	55.3	24.3	7.4	9.8
6	20-03-24	53.3	23.5	6.9	9.3
7	30-03-24	46.5	20.5	5.2	7.6
8	31-03-24	48.9	21.5	5.8	8.2
9	02-04-24	51.7	22.7	6.5	8.9
10	03-04-24	54.9	24.2	7.3	9.7
11	13-04-24	48.5	21.3	5.7	8.1
12	14-04-24	50.9	22.4	6.3	8.7
13	16-04-24	52.9	23.3	6.8	9.2
14	17-04-24	55.7	24.5	7.5	9.9
15	27-04-24	50.5	22.2	6.2	8.6
16	28-04-24	53.7	23.6	7.0	9.4
17	30-04-24	46.9	20.6	5.3	7.7
18	01-05-24	51.3	22.6	6.4	8.8
19	11-05-24	52.5	23.1	6.7	9.1
20	12-05-24	54.1	23.8	7.1	9.5
21	14-05-24	52.1	22.9	6.6	9.0
22	15-05-24	54.5	24.0	7.2	9.6
23	25-05-24	47.3	20.8	5.4	7.8
24	26-05-24	49.7	21.9	6.0	8.4
	<b>MIN</b>	<b>46.5</b>	<b>20.5</b>	<b>5.2</b>	<b>7.6</b>
	<b>AVE</b>	<b>51.1</b>	<b>22.5</b>	<b>6.4</b>	<b>8.8</b>
	<b>MAX</b>	<b>55.7</b>	<b>24.5</b>	<b>7.5</b>	<b>9.9</b>

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## AMBIENT AIR QUALITY

Project	:	Rough Stone and Gravel Quarry of AK Blue Metals Pvt. Ltd & Udhayam Mines and Minerals Pvt. Ltd
Name of the Location	:	Periya Venmani Village
Station Code	:	A3

SL.NO	DATE	PM10	PM2.5	SO2	NO2
1	07-03-24	64.4	30.9	7.8	10.8
2	08-03-24	68.6	32.9	8.5	11.5
3	14-03-24	60.2	28.9	7.1	10.1
4	15-03-24	65.6	31.5	8.0	11.0
5	21-03-24	57.2	27.5	6.6	9.6
6	22-03-24	59.6	28.6	7.1	10.1
7	28-03-24	60.8	29.2	7.2	10.2
8	29-03-24	66.2	31.8	8.1	11.1
9	04-04-24	71.6	34.4	8.9	11.9
10	05-04-24	69.8	33.5	8.7	11.7
11	11-04-24	57.8	27.7	6.7	9.7
12	12-04-24	63.2	30.3	7.6	10.6
13	18-04-24	61.4	29.5	7.3	10.3
14	19-04-24	67.4	32.4	8.3	11.3
15	25-04-24	58.4	28.0	6.8	9.8
16	26-04-24	65.1	31.2	7.9	10.9
17	02-05-24	62.1	29.8	7.4	10.4
18	03-05-24	69.2	33.2	8.6	11.6
19	09-05-24	63.8	30.6	7.7	10.7
20	10-05-24	68.2	32.7	8.4	11.4
21	16-05-24	62.6	30.0	7.5	10.5
22	17-05-24	70.4	33.8	8.8	11.8
23	23-05-24	59.3	28.5	6.9	9.9
24	24-05-24	66.8	32.1	8.2	11.2
	<b>MIN</b>	<b>57.2</b>	<b>27.5</b>	<b>6.6</b>	<b>9.6</b>
	<b>AVE</b>	<b>64.2</b>	<b>30.8</b>	<b>7.8</b>	<b>10.8</b>
	<b>MAX</b>	<b>71.6</b>	<b>34.4</b>	<b>8.9</b>	<b>11.9</b>

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## AMBIENT AIR QUALITY

Project	:	Rough Stone and Gravel Quarry of AK Blue Metals Pvt. Ltd & Udhayam Mines and Minerals Pvt. Ltd
Name of the Location	:	Venmari Village
Station Code	:	A4

SL.NO	DATE	PM10	PM2.5	SO2	NO2
1	07-03-24	58.8	27.9	6.4	7.8
2	08-03-24	61.1	29.0	7.6	8.8
3	14-03-24	63.1	30.0	8.4	9.8
4	15-03-24	60.2	28.6	7.0	8.6
5	21-03-24	59.1	28.1	6.3	8.1
6	22-03-24	61.2	29.1	7.3	9.3
7	28-03-24	62.6	29.7	7.8	10.1
8	29-03-24	61.8	29.4	7.4	9.8
9	04-04-24	59.6	28.3	6.3	8.9
10	05-04-24	62.2	29.5	7.3	10.1
11	11-04-24	58.4	27.7	6.2	7.6
12	12-04-24	60.6	28.8	7.4	8.6
13	18-04-24	62.8	29.8	8.3	9.7
14	19-04-24	60.1	28.5	6.9	8.5
15	25-04-24	61.4	29.2	7.5	9.3
16	26-04-24	59.2	28.1	6.3	8.3
17	02-05-24	59.8	28.4	6.5	8.7
18	03-05-24	62.4	29.6	7.6	10.0
19	09-05-24	58.6	27.8	5.7	8.3
20	10-05-24	60.8	28.9	6.7	9.5
21	16-05-24	63.2	30.0	8.5	9.9
22	17-05-24	60.4	28.7	7.1	8.7
23	23-05-24	61.6	29.3	7.7	9.5
24	24-05-24	59.4	28.2	6.4	8.4
	<b>MIN</b>	<b>58.4</b>	<b>27.7</b>	<b>5.7</b>	<b>7.6</b>
	<b>AVE</b>	<b>60.8</b>	<b>28.9</b>	<b>7.1</b>	<b>9.0</b>
	<b>MAX</b>	<b>63.2</b>	<b>30.0</b>	<b>8.5</b>	<b>10.1</b>

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## AMBIENT AIR QUALITY

Project	:	Rough Stone and Gravel Quarry of AK Blue Metals Pvt. Ltd & Udhayam Mines and Minerals Pvt. Ltd
Name of the Location	:	Nagamalai Village
Station Code	:	A5

SL.NO	DATE	PM10	PM2.5	SO2	NO2
1	09-03-24	64.1	31.4	8.4	10.1
2	10-03-24	66.2	32.4	9.1	10.7
3	12-03-24	62.2	30.5	7.7	9.4
4	13-03-24	66.8	32.7	9.1	10.9
5	23-03-24	60.5	29.6	7.0	8.9
6	24-03-24	62.3	30.5	7.5	9.5
7	26-03-24	65.3	32.0	8.3	10.4
8	27-03-24	67.1	32.9	8.6	10.8
9	06-04-24	67.4	33.0	8.8	11.1
10	07-04-24	65.6	32.1	8.1	10.5
11	09-04-24	62.6	30.7	7.9	9.6
12	10-04-24	64.4	31.6	8.6	10.2
13	20-04-24	68.2	33.4	9.5	11.2
14	21-04-24	65.9	32.3	8.8	10.6
15	23-04-24	61.1	29.9	7.2	9.1
16	24-04-24	63.8	31.3	8.0	10.0
17	04-05-24	60.8	29.8	6.9	9.0
18	05-05-24	64.7	31.7	8.1	10.3
19	07-05-24	62.9	30.8	7.4	9.7
20	08-05-24	61.4	30.1	6.8	9.2
21	18-05-24	66.5	32.6	9.1	10.8
22	19-05-24	63.5	31.1	8.1	9.9
23	21-05-24	61.7	30.2	7.4	9.3
24	22-05-24	63.2	31.0	7.8	9.8
	<b>MIN</b>	<b>60.5</b>	<b>29.6</b>	<b>6.8</b>	<b>8.9</b>
	<b>AVE</b>	<b>64.1</b>	<b>31.4</b>	<b>8.1</b>	<b>10.0</b>
	<b>MAX</b>	<b>68.2</b>	<b>33.4</b>	<b>9.5</b>	<b>11.2</b>

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## WATER QUALITY DATA

<b>Project Name</b> :	<b>Rough Stone and Gravel Quarry of AK Blue Metals Pvt. Ltd &amp; Udhayam Mines and Minerals Pvt. Ltd</b>		
<b>Location Name</b> :	<b>Location Code</b>		<b>Location Name</b>
	W1		Periya Venmani Village
	W2		Nagamalai Village
	W3		Venmari Village
	W4		Chinnavelikadu Village

S. No.	Parameter	Unit	W1	W 2	W 3	W 4	*Permissible Limits
1	Odour	-	AGREEABLE	AGREEABLE	AGREEABLE	AGREEABLE	<b>AGREEABLE</b>
2	Turbidity	NTU	<1	<1	<1	<1	-
3	pH at 25 °C	-	7.32	7.59	7.26	7.39	<b>6.5-8.5</b>
4	Electrical Conductivity	µmhos/cm	831.4	1036.0	1515.0	1211.0	<b>5.0</b>
5	Total Dissolved Solids	mg/L	506	625	912	78	
6	Total hardness as CaCO <sub>3</sub>	mg/L	250.0	242.0	230.0	392.0	<b>2000</b>
7	Calcium as Ca	mg/L	48.50	64.60	42.00	85.60	<b>600</b>
8	Magnesium as Mg	mg/L	31.00	19.40	30.10	42.70	<b>200</b>
9	Calcium as CaCO <sub>3</sub>	mg/L	121.0	162.0	105.0	214.0	<b>100</b>
10	Magnesium as CaCO <sub>3</sub>	mg/L	129.0	80.8	125.0	178.0	-
11	Total alkalinity as CaCO <sub>3</sub>	mg/L	332.0	230.0	390.0	196.0	-
12	Chloride as Cl <sup>-</sup>	mg/L	120.0	226.0	310.0	265.0	<b>600</b>
13	Free Residual chlorine as Cl <sup>-</sup>	mg/L	BDL (D.L - 0.2)	BDL (D.L - 0.2)	BDL (D.L - 0.2)	BDL (D.L - 0.2)	<b>1.0</b>

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S. No.	Parameter	Unit	W1	W 2	W 3	W 4	*Permissible Limits
14	Sulphates as SO <sub>4</sub> <sup>2-</sup>	mg/L	104	155	270	216	400
15	Iron as Fe	mg/L	0.03	0.05	0.06	0.04	0.3
16	Nitrate as NO <sub>3</sub>	mg/L	3.21	1.64	2.87	1.96	45
17	Fluoride as F	mg/L	0.24	0.35	0.41	0.32	1.5
18	Manganese as Mn	mg/L	BDL (D.L - 0.05)	BDL (D.L - 0.05)	BDL (D.L - 0.05)	BDL (D.L - 0.05)	0.3

**Note:** \* The water quality of the collected ground water samples were found to be within the prescribed permissible limits of IS: 10500:2012 Norms for Drinking in the absence of an alternative source.

  
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### **LAND USE PATTERN OF THE STUDY AREA**

Sl.No	No. of Villages	Name of village	Total Geographical Area (in Hectares)	Forest Area (in Hectares)	Area under Non-Agricultural Uses (in Hectares)	Barren & Uncultivable Land Area (in Hectares)	Permanent Pastures and Other Grazing Land Area (in Hectares)	Land Under Miscellaneous Tree Crops etc. Area (in Hectares)	Culturable Waste Land Area (in Hectares)	Fallows Land other than Current Fallows Area (in Hectares)	Current Fallows Area (in Hectares)	Total Unirrigated Land Area (in Hectares)	Area Irrigated by Source (in Hectares)
<b>0-2 km, Maduranthakam Sub-District, Kancheepuram District</b>													
1	1	Chinnavenmani	419.98	0	49.39	12.81	66.17	0	5.06	0	57.97	0	228.58
2	2	Chitamur	306.54	0	71.3	12.81	0	30.48	1.83	13.15	67.48	0	109.49
3	3	Kattudevadur	1049.57	0	79.96	33.81	9.23	328.24	7.9	0	268.19	0	322.24
4	4	Viralur	304.04	0	102.48	0	40.56	1.13	0.76	0	34.61	1.13	123.37
5	5	Poondi	76.64	0	11.83	0	1.72	0	2.27	0	4.97	0	55.85
6	6	Devanur	122.88	0	17.98	12.81	17.71	9.24	0	0	26.42	0	38.72
		<b>total (A)</b>	<b>2279.65</b>	<b>0</b>	<b>332.94</b>	<b>72.24</b>	<b>135.39</b>	<b>369.09</b>	<b>17.82</b>	<b>13.15</b>	<b>459.64</b>	<b>1.13</b>	<b>878.25</b>
<b>2-5 km, Maduranthakam Sub-District, Kancheepuram District</b>													
7	1	Dharmapuram	138.79	0	10.99	0	0	25.85	0	0	12.03	0	89.92
8	2	Nesapakkam	167.81	0	26.34	0.08	3.97	0	0	5.36	49.09	0	82.97
9	3	Ariyanur	266.43	0	44.1	0	21.32	0	2.26	0	38.34	0	160.41
10	4	Venmari	540.2	0	85.88	3.52	78.7	0	0	8.55	170.13	5.58	187.84
11	5	Ozhavetti	554.21	0	132.11	16.34	0.52	42.79	0	1.75	105.22	0	255.48
12	6	Netrambakkam	353.87	0	62.33	0	35.71	22.4	5.26	21.89	45.27	0	161.01
13	7	Nallamur Keelakaranai	1140.11	57.36	271	135.36	46.2	79.44	47.47	9.29	27.47	5.58	460.94
14	8	Vellarai	84.01	5.7	7.43	0	4.56	11.91	0	0	18.29	12.49	23.63
15	9	Nallur	217.08	0	60.93	0	28.17	8.73	0.99	0	10.14	21.2	86.92
16	10	Erumbedu	877.41	0	223.78	42.98	25.32	70.36	4.15	106.75	7.25	1.5	395.32
17	11	Z.Budur	1001.41	0	385.79	19.12	11.47	93.09	4.08	8	131.72	134.08	214.06
		<b>total (B)</b>	<b>5341.33</b>	<b>63.06</b>	<b>1310.68</b>	<b>217.4</b>	<b>255.94</b>	<b>354.57</b>	<b>64.21</b>	<b>161.59</b>	<b>614.95</b>	<b>180.43</b>	<b>2118.5</b>
<b>Cheyur Sub-District, Kancheepuram District</b>													
18	1	Thiruvadur	465.41	0	64.1	0	45.09	0	34.38	0.32	143.86	0	177.66
19	2	Pudupattu	185.28	0	69.62	0	7.49	0	0.37	0	9.85	0	97.95
20	3	Iranyasidhi	268.21	0	64.29	0	5.3	0	52.22	0	0	74.36	72.04
21	4	Nemanadam	131.67	0	43.96	0	11.72	0	0	0	15.66	0	60.33
22	5	Pakkavancheri	83.39	0	50.12	0	1.69	0	0	0	10.09	0	21.49
23	6	Sengattur	401.01	0	10.22	0	18.21	0	30.83	1.4	103.04	43.5	193.81
24	7	Thirupurakoil	56.28	0	11.01	0	5.27	0	0.08	0	9.48	0	30.44
25	8	Ammanur	571.82	0	140.5	0	4.13	0	4.25	0	93.32	2.47	327.15
26	9	Maruderi	180.27	0	25.57	0	8.91	0	0	20	2.41	0	123.38
<b>5-10km, Maduranthakam Sub-District, Kancheepuram District</b>													
27	1	Kavadur	352.4	0	50.13	19.33	44.35	2.43	4.21	28.29	55.28	0	148.38
28	2	Murukkambakkam	612.57	0	110.57	12.81	20.73	52	0	85.57	71.02	25	234.87
29	3	Mariputhur	390.29	0	89.64	0	41.42	0	7.13	0	98.63	0	153.47
30	4	Avirimedu	337.44	0	125.83	12.81	25.75	36.04	0.99	0.99	33.72	0	101.31
31	5	Chitravadi	156.93	0	13.59	14.61	23.85	2.85	0	0	52.89	0	49.14
32	6	Puliyaranankottai	129.12	0	37.7	0	11.24	14.66	0	3.25	17.14	2.5	42.63
33	7	Z.Endathur	1172.47	0	218.15	0	1.09	360.84	5.49	163.49	150.68	0	272.73
34	8	Melakandai	331.66	0	11.96	16.51	19.54	51.16	0	10	99.16	0	123.33
35	9	Athivakkam	354.5	0	93.14	0	15.83	0	4.66	0	16.99	0	223.88
36	10	Peruveli	984.96	0	294.54	0	55.08	123.97	1.67	65.82	112.73	0	331.15
37	11	Kilvasalai	692.43	0	202.05	41.49	11.41	150.59	0	0	52.97	0.15	233.77

38	12	Neerpair	711.97	92.39	69.74	51.5	13.75	40	0	0	206.5	57.27	180.82
<b>Cheyur Sub-District, Kancheepuram District</b>													
39	1	Seevadi	327.49	0	75.2	0	14.74	0	3.57	0	84.39	30.06	119.53
40	2	Punnamai	260.76	0	48.88	0	0	5.42	10.68	0	86.48	0	109.3
41	3	Lathur	427.38	35	9.25	0.53	40.32	0.8	17.77	0	109.44	159.04	55.23
42	4	Pachambakkam	258.11	0	8.07	0	1.82	0	0	0	69.49	116.44	62.29
43	5	Pavunjur	709.86	0	6.98	217.77	15.02	99.61	0	0.51	57.89	169.1	142.98
44	6	Uludamangalam	466.21	0	74.64	0	1.81	0	0	17.39	198.85	34.59	138.93
45	7	Periavelikadu	493.01	0	109.61	0	1.04	28.41	24.85	0	132.76	105.45	90.89
46	8	Kadugupattu	532	0	86.17	0	8.51	0	1.44	0	104.5	0	331.38
47	9	Palur	435.21	0	55.59	0	32.24	0	4.97	6.77	57.54	43.29	234.81
48	10	Nelvoypalayam	428.82	0	94.32	0	0	0	1.78	0	141.65	131.16	59.91
49	11	Perumalcheri	65.83	0	13.3	0	0	0	0	11.49	0.99	0	40.05
50	12	Malrajakuppam	90.64	0	12.8	0	0	0	2.97	0	21.42	0	53.45
51	13	Madayambakkam	613.59	0	92.43	0	2.2	20.4	0	37.16	103.19	123.45	234.76
52	14	Paramankeni	1115.44	0	223.95	0	2.31	12.19	0	405.45	260.5	0	211.04
53	15	Pakkur	514.02	0	91.17	0	26.77	0	4.66	0	193.46	1.64	196.32
54	16	Cheyur	3385.24	0	114.31	0	33.55	0	586.88	54.09	2136.64	110.85	348.92
55	17	Chitharkadu	961.24	87.04	262.59	0	29.95	106.36	3.69	14.75	174.46	0	282.4
56	18	Kokkaranthangal	897.07	0	128.2	225.95	10.5	73.12	5.82	0.01	62.45	201.02	190
57	19	Vilangadu	532.1	0	176.58	0	20.9	0	80.73	36.41	17.48	0	200
58	20	Porur	462.83	59.61	76.99	0	7.19	0	0	179.3	19.74	0	120
59	21	Poongunam	1211.08	125.13	123.29	0	12.35	103.05	146.75	250.51	0	0	450
60	22	Puoriampakkam	350.15	0	74.46	8.24	0.69	116.04	0	5.72	0	115.57	29.43
61	23	Kannimangalam	120.63	0	1.52	15.73	8.93	19.73	1.1	15.73	0	3.4	54.49
62	24	Chithamur	177.95	0	3.93	0	21.05	66.85	0	6.12	0	63.78	16.22
63	25	Polambakkam	656.72	0	118.71	0	51.26	0	0	120.4	136.14	8.63	221.58
64	26	Magundagiri	299.7	0	6.16	0	20.34	13.84	0	87.2	0	71.45	100.71
		<b>total (C)</b>	<b>24363.16</b>	<b>399.17</b>	<b>3885.53</b>	<b>637.28</b>	<b>755.34</b>	<b>1500.36</b>	<b>1043.94</b>	<b>1628.14</b>	<b>5524.88</b>	<b>1694.17</b>	<b>7294.35</b>
		<b>Grand Total (A+B+C)</b>	<b>31984.14</b>	<b>462.23</b>	<b>5529.15</b>	<b>926.92</b>	<b>1146.67</b>	<b>2224.02</b>	<b>1125.97</b>	<b>1802.88</b>	<b>6599.47</b>	<b>1875.73</b>	<b>10291.1</b>

\*Source: District Primary Census Abstract, Kancheepuram District of Tamilnadu State-2011



National Accreditation Board for  
Testing and Calibration Laboratories

**CERTIFICATE OF ACCREDITATION**

**CREATIVE ENGINEERS & CONSULTANTS**

has been assessed and accredited in accordance with the standard

**ISO/IEC 17025:2017**

**"General Requirements for the Competence of Testing &  
Calibration Laboratories"**

for its facilities at

9B/4 BHARATHWAJAR STREET, EAST TAMBARAM, CHENNAI, KANCHIPURAM, TAMIL NADU, INDIA

in the field of

**TESTING**

Certificate Number: TC-6741

Issue Date: 20/12/2022

Valid Until: 19/12/2024

This certificate remains valid for the Scope of Accreditation as specified in the annexure subject to continued satisfactory compliance to the above standard & the relevant requirements of NABL.

(To see the scope of accreditation of this laboratory, you may also visit NABL website [www.nabl-india.org](http://www.nabl-india.org))

Name of Legal Identity: CREATIVE ENGINEERS AND CONSULTANTS

Signed for and on behalf of NABL



N. Venkateswaran  
Chief Executive Officer



## National Accreditation Board for Education and Training

# Certificate of Accreditation

### Creative Engineers and Consultants, Chennai

9B/4, Bharathwajar street, East Tambaram, Chennai, Tamil Nadu

The organization is accredited as **Category-A** under the QCI-NABET Scheme for Accreditation of EIA Consultant Organization, Version 3: for preparing EIA/EMP reports in the following Sectors-

S. No	Sector Description	Sector (as per)		Cat.
		NABET	MoEFCC	
1.	Mining of minerals- opencast mining only	1	1 (a) (i)	A
2.	Thermal power plants	4	1 (d)	A
3.	Mineral beneficiation	7	2 (b)	A
4.	Cement plants	9	3 (b)	A


**Note:** Names of approved EIA Coordinators and Functional Area Experts are mentioned in RAAC minutes dated May 03, 2024, posted on QCI-NABET website.

The Accreditation shall remain in force subject to continued compliance to the terms and conditions mentioned in QCI-NABET's letter of accreditation bearing no QCI/NABET/ENV/ACO/24/3250 dated May 24, 2024. The accreditation needs to be renewed before the expiry date by Creative Engineers and Consultants, Chennai following due process of assessment.

Issue Date  
May 24, 2024

Valid up to  
December 23, 2026



  
Mr. Ajay Kumar Jha  
(Sr. Director, NABET)

Certificate No.  
NABET/EIA/23-26/RA 0331

  
Prof (Dr) Varinder S Kanwar  
(CEO-NABET)

For the updated List of Accredited EIA Consultant Organizations with approved Sectors please refer to QCI-NABET website.