

From,
M/s. Sri Tirumala Blue Metals,
Ananthababu (Partner),
No.90, Ottakoothar Street,
Mamallan Nagar, Kanchipuram.

To
District Environmental Engineer (Tiruvannamalai District)
Tamilnadu Pollution Control Board, 541/B,
Ashok Nagar, Venkikal,
Thiruvannamalai District 606 604.

Sub: Submission of Draft EIA/EMP report and Summary for Rough stone and Gravel Quarry of Sri Tirumala Blue Metals over an area of 4.44.35 Ha in Menallur Village, Vembakkam Taluk, Tiruvannamalai District, Tamil Nadu – Public Hearing_Reg

Ref: ToR granted by SEIAA, Tamil Nadu vide letter SEIAA-TN/F.No.9577/SEAC/ToR 1346/2022 dated 10.02.2023

Sir,

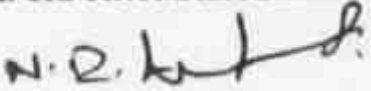
With reference to the above mentioned subject, I am herewith submitting the Draft EIA/EMP report and Summary of EIA/EMP report in English and Tamil along with CD for Rough stone and Gravel Quarry over an area of 4.44.35 Ha in Menallur Village, Vembakkam Taluk, Tiruvannamalai District, Tamil Nadu.

As per the terms of reference issued by SEIAA, Tamil Nadu referred to as (1) above, point no. 39 stipulates conduction of public hearing. Hence, I request you to consider conducting a public hearing for my project at the earliest.

Here with enclosed D.D No – dated for public hearing.

Thank you.

Yours Faithfully,

For SRI TIRUMALA BLUE METALS

PARTNER

Encl: as above

DRAFT EIA / EMP REPORT

FOR

ROUGHSTONE AND GRAVEL QUARRY

Extent	4.44.35 Ha
Location	Menallur Village, Vembakkam Taluk, Tiruvannamalai District, Tamil Nadu.
Land Type	Patta Land
Production	Roughstone – 7,42,365m ³ Weathered Rock – 36890 m ³ Gravel – 1,13,073m ³
Depth	39m
Lease Period	5 years

- Terms of Reference issued by SEIAA, Tamil Nadu vide SEIAA-TN/F.No.9577/SEAC/ToR 1346/2022 dated 10.02.2023.
- Baseline Monitoring Period – Winter Season (Dec 2022 – Feb 2023)

PROJECT PROPONENT

SRI TIRUMALA BLUE METALS

No.90, Ottakoothar Street, Mamallan Nagar, Kanchipuram District

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,



REVISIONS OF EIA/EMP REPORT

Revision number	Report Status	Date of submission
00/JUN/23	Draft EIA /EMP Report	28.06.2023

Environmental Impact Assessment & Environmental Management Plan Report for Rough stone and Gravel Quarry of Sri Tirumala Blue Metals over an area of 4.44.35Ha in Menallur Village, Vembakkam Taluk, Tiruvannamalai District, Tamil Nadu was prepared by Creative Engineers & Consultants and authorized for submission by Mr. P.Giri, EIA Coordinator, CEO, of Creative Engineers & Consultants on 28.06.2023 after due review by the personnel and consultation with the proponent. Current Revision number of the EIA/EMP report is 00/JUN/23, signifying as per the revision mentioned in the above table that this is a draft EIA/EMP report.



PROJECT PROPONENT DECLARATION

We, Sri Tirumala Blue Metals received ToR under EIA Notification 2006 from SEIAA, Tamil Nadu vide their SEIAA-TN/F.No.9577/SEAC/ToR 1346/2022 dated 10.02.2023 for Rough stone and Gravel Quarry over an area of 4.44.35Ha in Menallur Village, Vembakkam Taluk, Tiruvannamalai District, Tamil Nadu.

I 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 23.12.2023.

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.

For SRI TIRUMALA BLUE METALS
N. R. K. S.
PARTNER



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 23.12.2023.

Sri Tirumala Blue Metals received ToR under EIA Notification 2006 from SEIAA, Tamil Nadu vide their SEIAA-TN/F.No.9577/SEAC/ToR 1346/2022 dated 10.02.2023 for Rough stone and Gravel Quarry over an area of 4.44.35Ha in Menallur Village, Vembakkam Taluk, Tiruvannamalai 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

Annexure – VII

Declaration by Experts contributing to the EIA Report for

Rough stone and Gravel Quarry of Sri Tirumala Blue Metals over an area of 4.44.35 Ha in Menallur Village, Vembakkam Taluk, Tiruvannamalai 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:


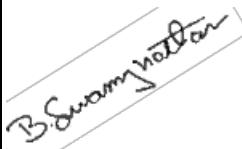
Name: **P.Giri**

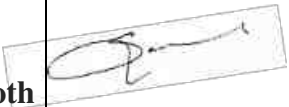


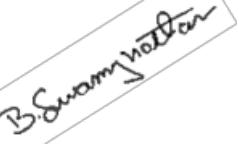

Signature and Date: 


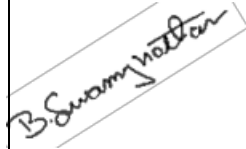


Period of involvement: **October 2022 onwards**

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"> • Identification of baseline monitoring stations and study of the monitored data with respect to the applicable standards. • Identification of sources of air pollution comprising dust, gaseous emission due to mining & other activities • Identification of Impacts & suggestion of mitigation measures Period: October 2022 onwards	
		B.Swamynathan	<ul style="list-style-type: none"> • Data interpretation of Micro meteorological data for wind rose. • Identification of polluting source and suggestion of suitable mitigation measures. Period: Dec 2022 onwards	

2	WP*	G.Sandhya	<ul style="list-style-type: none"> • Study of the monitored data with respect to the applicable standards. • Identification of Water requirement & Source • Preparation of water balance diagram • Identification of Water polluting sources • Impact of the project on the water quality, both surface and groundwater • Suggestion of Mitigation measures to control water pollution <p>Period: Dec 2022 onwards</p>	
3	SHW*	P.Giri	<ul style="list-style-type: none"> • Quantification of mineral & waste from mining operation • Waste disposal method evaluation • Providing dump management plan • Providing Surface Runoff Management Structure Requirements. • Identification of Hazardous waste and its details of disposal <p>Period: October 2022 onwards</p>	
4	SE*	R.Baburaj	<ul style="list-style-type: none"> • Identification of villages in the study area and finalization of demographic profile of the villages within the study area. • Preparation of sections relevant to SE functional area in the EIA/EMP report <p>Period: Dec 2022 onwards</p>	
5	EB*	B.Swamynathan	<ul style="list-style-type: none"> • Perusal of existing data relevant to this project. • Studying the details of flora and fauna, separately for core, buffer zone and forest area based on primary field survey. • Identification of species , Indicating the Schedule of the fauna present in the study area • Assessment of impact on Biological environment and suggestion of mitigative measures • Collecting & providing details of existing and proposed Green belt development /plantation in the core zone <p>Period: Dec 2022 onwards</p>	
6	HG*	K.Shankar	<ul style="list-style-type: none"> • Study of existing surface drainage arrangements in the core and buffer zone, impact due to mining on these drainage courses and suggestion of mitigative 	

			<p>measures</p> <ul style="list-style-type: none"> • Perusal of site specific ground water table details for the core zone and the study area. • Studied the hydrological aspects of surface and groundwater in study area • Study about impact on the hydrology due to mining operation • Suggesting mitigative measures like RWH for enhancement of ground water level <p>Period: Dec 2022 onwards</p>	
7	GEO*	K.Shankar	<ul style="list-style-type: none"> • Study of geology of the ML area and the surrounding areas. • Provide details about Mineral composition <p>Period: Dec 2022 onwards</p>	
8	SC*	B.Swamynathan	<ul style="list-style-type: none"> • Study of soil profile • Assessment of Impact on soil and suggesting plantation scheme. <p>Period: Dec 2022 onwards</p>	
9	AQ*	G.Sandhya	<ul style="list-style-type: none"> • Quantification of emission particulars • Air quality modelling for post project impact on the air quality prediction of the study area. <p>Analysis of the Isopleth generated</p> <ul style="list-style-type: none"> • Arriving at the post project concentration at the AAQ monitoring locations • Preparation of meteorological data in suitable form for input into the model • Simulation of model for generation of Isopleth and data interpretation. • Studying the impact on AAQ monitoring locations due to the generated emissions. • Preparation of sections relevant to AQ functional area in the EIA/EMP report. <p>Period: Dec 2022 onwards</p>	
10	NV*	P.Giri	<ul style="list-style-type: none"> • Identification of baseline monitoring stations and study of the monitored data with respect to the applicable standards. • Predict the noise level and vibration level due to proposed mining operation based on scientific evaluation. • Suggesting the Mitigation measures to control noise 	

			<p>pollution, Suggesting the Mitigation measures to control ground vibration Period: October 2022 onwards</p>	
11	LU	B.Swamynathan	<ul style="list-style-type: none"> • Collection of Remote sensing satellite data to study the land use pattern. • Primary field survey and limited field verification • 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. <p>Period: Dec 2022 onwards</p>	<i>B.Swamynathan</i>
12	RH*	K.Shankar	<ul style="list-style-type: none"> • Identified Major risks involved in the project Mitigation measures suggested to avoid risk. • Preparation of onsite and offsite emergency management plan <p>Period: Dec 2022 onwards</p>	<i>K.Shankar</i>

*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 **Rough stone and Gravel Quarry of Sri Tirumala Blue Metals over an area of 4.44.35 Ha in Menallur Village, Vembakkam Taluk, Tiruvannamalai 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/2023/SA 0187 & date 30.01.2023**



National Accreditation Board for Education and Training



Certificate of Accreditation

Creative Engineers and Consultants,
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 including opencast/ underground mining	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 SAAC minutes dated Oct 4, 2022 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/23/2653 dated January 30, 2023. The accreditation needs to be renewed before the expiry date by Creative Engineers and Consultants, following due process of assessment.

Sr. Director, NABET
Dated: January 30, 2023

Certificate No.
NABET/EIA/2023/SA 0187

Valid up to
December 23, 2023

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



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DRAFT EIA/EMP REPORT FOR ROUGH STONE AND GRAVEL QUARRY OF SRI TIRUMALA BLUE METALS OVER AN AREA OF 4.44.35Ha IN MENALLUR VILLAGE, VEMBAKKAM TALUK, TIRUVANNAMALAI DISTRICT, TAMIL NADU

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TERMS OF REFERENCE & ITS COMPLIANCE



**THIRU.DEEPAK S. BILGI, I.F.S.
MEMBER SECRETARY**

**STATE LEVEL ENVIRONMENT IMPACT
ASSESSMENT AUTHORITY-TAMILNADU**
3rd Floor, Panagal Maaligai,
No.1, Jeenis Road, Saidapet,
Chennai - 600 015.
Phone No. 044-24359973
Fax No. 044-24359975

TERMS OF REFERENCE (ToR)

Lr No.SEIAA-TN/F.No.9577/SEAC/ToR-1346/2022 Dated:10.02.2023.

To

M/s.Sri Tirumala Blue Metals,
Ananthababu (Partner),
No.90, Ottakoothar Street,
Mamallan Nagar,
Kanchipuram District

Sir / Madam,

Sub: SEIAA, Tamil Nadu – Terms of Reference with public Hearing (ToR) for the Proposed Rough stone & Gravel quarry lease over an extent of 4.44.35 Ha in, S. F. Nos. 148/16, 148/17, 148/18, 148/19, 148/20, 148/21, 148/22, 148/23, 148/24, 148/25, 148/38A, 148/39A1, 146/39B, 146/46, 148/1, 148/10, 148/2, 148/26, 148/27, 148/28, 148/29, 148/3, 148/30, 148/39A2, 148/39B2A, 148/39B1, 143/4, 148/5, 148/6, 148/7, 148/9, 149/1A, 149/2A and 150/1A of Menallur Village, Vembakkam Taluk, Tiruvannamalai District, Tamil Nadu by Tvl.Sri Tirumala Blue Metals- under project category – “B1” and Schedule S.No.1 (a) – ToR issued along with Public Hearing - preparation of EIA report – Regarding.

- Ref:**
1. Online proposal No. SIA/TN/MIN/405985/2022, dated 17.11.2022.
 2. Your application submitted for Terms of Reference dated: 21.11.2022.
 - 4.Minutes of the 346th SEAC meeting held on 12.01.2023.
 - 5.Minutes of the 591st SEIAA meeting held on 10.02.2023.


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Kindly refer to your proposal submitted to the State Level Impact Assessment Authority for Terms of Reference.

The proponent, Tvl.Sri Tirumala Blue Metals has submitted application for Terms of Reference (ToR) in Form-I, Pre- Feasibility report for the Proposed Rough stone & Gravel quarry lease over an extent of 4.44.35 Ha in, S. F. Nos. 148/16, 148/17, 148/18, 148/19, 148/20, 148/21, 148/22, 148/23, 148/24, 148/25, 148/38A, 148/39A1, 146/39B, 146/46, 148/1, 148/10, 148/2, 148/26, 148/27, 148/28, 148/29, 148/3, 148/30, 148/39A2, 148/39B2A, 148/39B1, 143/4, 148/5, 148/6, 148/7, 148/9, 149/1A, 149/2A and 150/1A of Menallur Village, Vembakkam Taluk, Tiruvannamalai District, Tamil Nadu.

Discussion by SEAC and the Remarks:-

Proposed Rough stone & Gravel quarry lease over an extent of 4.44.35 Ha in, S. F. Nos. 148/16, 148/17, 148/18, 148/19, 148/20, 148/21, 148/22, 148/23, 148/24, 148/25, 148/38A, 148/39A1, 146/39B, 146/46, 148/1, 148/10, 148/2, 148/26, 148/27, 148/28, 148/29, 148/3, 148/30, 148/39A2, 148/39B2A, 148/39B1, 143/4, 148/5, 148/6, 148/7, 148/9, 149/1A, 149/2A and 150/1A of Menallur Village, Vembakkam Taluk, Tiruvannamalai District, Tamil Nadu by Tvl.Sri Tirumala Blue Metals - For Terms of Reference.

(SIA/TN/MIN/405627/2022,Dt: 11.11.2022)

The proposal was placed in 346th SEAC meeting held on 12.01.2023. The project proponent has given a detailed presentation. The details of the project furnished by the proponent are given in the website (parivesh.nic.in).

The SEAC noted the following:

1. The Project Proponent, Tvl.Sri Tirumala Blue Metals has applied for Terms of Reference for the proposed Rough stone & Gravel quarry lease over an extent of 4.44.35 Ha in S. F. Nos. 148/16, 148/17, 148/18, 148/19, 148/20, 148/21, 148/22, 148/23, 148/24, 148/25, 148/38A, 148/39A1, 146/39B, 146/46, 148/1, 148/10, 148/2, 148/26, 148/27, 148/28, 148/29, 148/3, 148/30, 148/39A2, 148/39B2A, 148/39B1, 143/4, 148/5, 148/6, 148/7, 148/9, 149/1A, 149/2A and 150/1A of Menallur Village, Vembakkam Taluk, Tiruvannamalai District, Tamil Nadu.
2. The project/activity is covered under Category "B1" of Item 1(a) "Mining Projects" of the Schedule to the EIA Notification, 2006.
3. As per the mining plan the lease period is 5 years. The mining plan is for the period of five years & production should not exceed 807050 m³ of rough stone , 36890 m³ of Weathered Rock & 113073m³ of Gravel With an ultimate depth of mining is 49m BGL The annual peak


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production is 164155 m³ of Rough Stone (5th year), 33110 m³ of Weathered Rock (1st year) & 101088 m³ of Gravel (1st year).

Based on the presentation and details furnished by the project proponent, **SEAC decided to grant Terms of Reference (TOR) with Public Hearing** subject to the following TORs, in addition to the standard terms of reference for EIA study for non-coal mining projects and details issued by the MOEF & CC to be included in EIA/EMP Report:

1. 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.
2. The proponent shall also furnish details/photographs of the garland drains provided.
3. The certified compliance report shall be provided along with EIA report
4. 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 prepare and submit an 'Action Plan' for carrying out the realignment of the benches in the proposed quarry lease after it is approved by the concerned Asst. Director of Geology and Mining during the time of appraisal for obtaining the EC.
5. The PP shall carry out the scientific studies to assess the slope stability of the existing working benches / quarry wall during the environmental appraisal. The report shall also cover the slope stability action plan incorporating haul road along with benches, for the proposed workings in the hilly terrain of the quarry.
6. The PP shall carry out a comprehensive biodiversity study (flora & fauna) including soil health to evaluate the impact of mining on the surrounding environmental settings, and it shall be submitted during appraisal.
7. 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.
8. 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.
9. 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.


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10. 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,
- What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?
 - 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.
11. 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).
12. The PP shall carry out Drone video survey covering the cluster, Green belt, fencing etc.,
13. The PP shall furnish the revised manpower including the statutory & competent persons as required under the provisions of the MMR 1961 for the prosed quarry based on the volume of rock handled & area of excavation.
14. 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.
15. 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.
16. The Project Proponent shall conduct the 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) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD / TWAD


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- 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.
17. 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.
 18. 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 & health impacts. Accordingly, the Environment Management plan should be prepared keeping the concerned quarry and the surrounding habitations in the mind.
 19. Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted.
 20. 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.
 21. 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.
 22. 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.
 23. 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.
 24. Impact on local transport infrastructure due to the Project should be indicated.
 25. 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.


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26. A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.
27. Public Hearing points raised and commitments of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project and to be submitted to SEIAA/SEAC with regard to the Office Memorandum of MoEF& CC accordingly.
28. The Public hearing advertisement shall be published in one major National daily and one most circulated vernacular daily.
29. The PP shall produce/display the EIA report, Executive summary and other related information with respect to public hearing in Tamil Language also.
30. 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.
31. 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 and local school/college authorities. 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.
32. 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 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
33. 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.
34. 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.
35. 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


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may be detailed.

36. 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.
37. 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.
38. Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.
39. 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.
40. 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.
41. The PP shall prepare the EMP for the entire life/lease of mine and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine.
42. 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


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Appendix -I
List of Native Trees Suggested for Planting

No	Scientific Name	Tamil Name	Tamil Name
1	<i>Aegle marmelos</i>	Vilvam	வில்வம்
2	<i>Adenaanthera pavonina</i>	Manjadi	மஞ்சாடி, ஆனைக்குன்றிமணி
3	<i>Albizia lebbek</i>	Vaagai	வாகை
4	<i>Albizia amara</i>	Usil	உசில்
5	<i>Bauhinia purpurea</i>	Mantharai	மந்தாரை
6	<i>Bauhinia racemosa</i>	Aathi	ஆத்தி
7	<i>Bauhinia tomentosa</i>	Iruvathi	இருவாத்தி
8	<i>Buchanania axillaris</i>	Kattuma	காட்டுமா
9	<i>Borassus flabellifer</i>	Panai	பனை
10	<i>Butea monosperma</i>	Murukkamaram	முருக்கமரம்
11	<i>Bobax ceiba</i>	Ilavu, Sevvilavu	இலவு
12	<i>Calophyllum inophyllum</i>	Punnai	புன்னை
13	<i>Cassia fistula</i>	Sarakondrai	சரக்கொன்றை
14	<i>Cassia roxburghii</i>	Sengondrai	செங்கொன்றை
15	<i>Chloroxylon sweitenia</i>	Purasamaram	புரசு மரம்
16	<i>Cochlospermum religiosum</i>	Kongu, Manjallavu	கோங்கு, மஞ்சள் இலவு
17	<i>Cordia dichotoma</i>	Naruvuli	நருவுளி.
18	<i>Creteva adansonii</i>	Mavalingum	மாவிளங்கம்
19	<i>Dillenia indica</i>	Uva, Uzha	உசா
20	<i>Dillenia pentagyna</i>	SiruUva, Sitruzha	சிறு உசா
21	<i>Diospyro sebenuum</i>	Karungali	கருங்காலை
22	<i>Diospyro schloroxylon</i>	Vaganai	வாகனை
23	<i>Ficus amplissima</i>	Kalltchi	கல் இச்சி
24	<i>Hibiscus tiliaceou</i>	Aatrupoovarasu	ஆற்றுப்பூவரசு
25	<i>Hardwickia binata</i>	Aacha	ஆச்சா
26	<i>Holoptelia integrifolia</i>	Aayili	ஆயா மரம், ஆயிலி
27	<i>Lanea coromandelica</i>	Odhiam	ஒதியம்
28	<i>Lagerstroemia speciosa</i>	Poo Marudhu	பூ மருது
29	<i>Lepisanthus tetraphylla</i>	Neikottaimaram	நெய் கொட்டை மரம்
30	<i>Limonia acidissima</i>	Vila maram	விலா மரம்
31	<i>Litsea glutinos</i>	Pisinpattai	அரம்பா, பிசின்பட்டை
32	<i>Madhuca longifolia</i>	Illuppai	இலுப்பை
33	<i>Manilkara hexandra</i>	UlakkaiPaalai	உலக்கை பாலை
34	<i>Mimusops elengi</i>	Magizhamaram	மகிழ்மரம்
35	<i>Mitragyna parvifolia</i>	Kadambu	கடம்பு
36	<i>Morinda pubescens</i>	Nuna	நுணா
37	<i>Morinda citrifolia</i>	Vellai Nuna	வெள்ளை நுணா
38	<i>Phoenix sylvestre</i>	Eachai	சச்சமரம்
39	<i>Pongamia pinnat</i>	Pungam	புங்கம்

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40	<i>Premna mollissima</i>	Munnai	முன்னை
41	<i>Premna serratifolia</i>	Narumunnai	நறு முன்னை
42	<i>Premna tomentosa</i>	Malaiipoovarasu	மலை பூவரசு
43	<i>Prosopis cinerea</i>	Vanni maram	வன்னி மரம்
44	<i>Pterocarpus marsupium</i>	Vengai	வேங்கை
45	<i>Pterospermum canescens</i>	Vennangu, Tada	வெண்ணாங்கு
46	<i>Pterospermum xylocarpum</i>	Polavu	புலவு
47	<i>Puthranjiva roxburghii</i>	Karipala	கறிபாலா
48	<i>Salvadora persica</i>	Ugaa Maram	ஊகா மரம்
49	<i>Sapindus emarginatus</i>	Manipungan, Soapukai	மணிபுற்கள் சோப்புக்காய்
50	<i>Saraca asoca</i>	Asoca	சரசாகா
51	<i>Streblus asper</i>	Piray maram	பிராய் மரம்
52	<i>Strychnos nuxvomica</i>	Yetti	எட்டி
53	<i>Strychnos potatorum</i>	Therthang Kottai	தேத்தன் கொட்டை
54	<i>Syzygium cumini</i>	Naval	நாவல்
55	<i>Terminalia belleric</i>	Thandri	தாண்டி
56	<i>Terminalia arjuna</i>	Ven marudhu	வெண் மருது
57	<i>Toona ciliate</i>	Sandhana vembu	சந்தன வேம்பு
58	<i>Thespesia populnea</i>	Puvarasu	பூவரசு
59	<i>Walsuratrifoliata</i>	valsura	வாலசூரா
60	<i>Wrightia tinctoria</i>	Veppalai	வேப்பாளை
61	<i>Pithecellobium dulce</i>	Kodukkapuli	கொடுக்காப்புளி

Discussion by SEIAA and the Remarks:-

The proposal was placed in the 591st Authority meeting held on 10.02.2023. The authority noted that this proposal was placed for appraisal in this 346th meeting of SEAC held on 12.01.2023. After detailed discussions, the Authority accepts the recommendation of SEAC and decided to grant **Terms of Reference (ToR) along with Public Hearing** under cluster for undertaking the combined Environment Impact Assessment Study and preparation of separate Environment Management Plan and considering sustainable and safe mining SEIAA decided to grant **Terms of Reference (ToR) along with Public Hearing** for the period of 5 Years confining to the ultimate depth of mining up to 39m Below ground level and the quantity of 7,42,365m³ of Rough stone and 1,13,073m³ of Gravel as per approved mining plan issued by the Department of Geology & Mining subject to the conditions as recommended by SEAC & normal conditions in addition to the conditions in 'Annexure B' of this minute.


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1. The EMP should include mine closure plan using topsoil and weathered rock. It should be used for site restoration.

Annexure 'B'

Cluster Management Committee

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.
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.,
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.
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.
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.
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.
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.
8. The committee shall furnish the Emergency Management plan within the cluster.
9. The committee shall deliberate on the health of the workers/staff involved in the mining as 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.
11. The committee shall furnish the fire safety and evacuation plan in the case of fire accidents.


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Impact study of mining

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
- a) Soil health & soil biological, physical land chemical features .
 - b) Climate change leading to Droughts, Floods etc.
 - c) Pollution leading to release of Greenhouse gases (GHG), rise in Temperature, & Livelihood of the local people.
 - d) Possibilities of water contamination and impact on aquatic ecosystem health.
 - e) Agriculture, Forestry & Traditional practices.
 - f) Hydrothermal/Geothermal effect due to destruction in the Environment.
 - g) Bio-geochemical processes and its foot prints including environmental stress.
 - h) Sediment geochemistry in the surface streams.

Agriculture & Agro-Biodiversity

13. Impact on surrounding agricultural fields around the proposed mining Area.
14. Impact on soil flora & vegetation around the project site.
15. Details of type of vegetations including no. of trees & 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.
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.
17. Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.
18. The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock.

Forests

19. The project proponent shall detailed study on impact of mining on Reserve forests free ranging wildlife.


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20. The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.
21. The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection.
22. The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site.

Water Environment

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 provided, covering the entire mine lease period.
24. Erosion Control measures.
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.
26. The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.
27. The project proponent shall study and furnish the details on potential fragmentation impact on natural environment, by the activities.
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.
29. The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.
30. The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.

Energy

31. The measures taken to control Noise, Air, Water, Dust Control and steps adopted to efficiently utilise the Energy shall be furnished.


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Climate Change

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.
33. The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock.

Mine Closure Plan

34. Detailed Mine Closure Plan covering the entire mine lease period as per precise area communication order issued.

EMP

35. Detailed Environment Management Plan along with adaptation, mitigation & remedial strategies covering the entire mine lease period as per precise area communication order issued.
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.

Risk Assessment

37. To furnish risk assessment and management plan including anticipated vulnerabilities during operational and post operational phases of Mining.

Disaster Management Plan

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.

Others

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.


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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.
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.

A. STANDARD TERMS OF REFERENCE

- 1) Year-wise production details since 1994 should be given, clearly stating the highest production achieved in any one year prior to 1994. It may also be categorically informed whether there had been any increase in production after the EIA Notification 1994 came into force, w.r.t. the highest production achieved prior to 1994.
- 2) A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given.
- 3) All documents including approved mine plan, EIA and Public Hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management, mining technology etc. and should be in the name of the lessee.
- 4) All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery/ topo sheet, topographic sheet, geomorphology and geology of the 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).
- 5) Information should be provided in Survey of India Topo sheet in 1:50,000 scale indicating geological map of the area, geomorphology of land forms of the area, existing minerals and mining history of the area, important water bodies, streams and rivers and soil characteristics.
- 6) Details about the land proposed for mining activities should be given with information as to whether mining conforms to the land use policy of the State; land diversion for mining should have approval from State land use board or the concerned authority.
- 7) It should be clearly stated whether the proponent Company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA Report with description of the prescribed operating process/procedures to bring into focus any infringement/deviation/violation of the environmental or forest norms/ conditions? The


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hierarchical system or administrative order of the Company to deal with the environmental issues and for ensuring compliance with the EC conditions may also be given. The 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, may also be detailed in the EIA Report.

- 8) Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided.
- 9) The study area will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc. should be for the life of the mine / lease period.
- 10) 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.
- 11) Details of the land for any Over Burden Dumps outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be given.
- 12) Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the Expert Appraisal Committees.
- 13) Status of forestry clearance for the broken up area and virgin forestland involved in the Project including deposition of Net Present Value (NPV) and Compensatory Afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished.
- 14) Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated.
- 15) The vegetation in the RF / PF areas in the study area, with necessary details, should be given.
- 16) A study shall be got done to ascertain the impact of the Mining Project on wildlife of the study


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area and details furnished. Impact of the project on the wildlife in the surrounding and any other protected area and accordingly, detailed mitigative measures required, should be worked out with cost implications and submitted.

- 17) Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger/ Elephant Reserves/(existing as well as proposed), if any, within 10 km of the mine lease should be clearly indicated, supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects due to proximity of the ecologically sensitive areas as mentioned above, should be obtained from the Standing Committee of National Board of Wildlife and copy furnished.
- 18) A detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] shall be carried out. Details of flora and fauna, endangered, endemic and RET Species duly authenticated, separately for core and buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any scheduled-I fauna found in the study area, the necessary plan along with budgetary provisions for their conservation should be prepared in consultation with State Forest and Wildlife Department and details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost.
- 19) Proximity to Areas declared as 'Critically Polluted' or the Project areas likely to come under the 'Aravali Range', (attracting court restrictions for mining operations), should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Department should be secured and furnished to the effect that the proposed mining activities could be considered.
- 20) Similarly, for Coastal Projects, a CRZ map duly authenticated by one of the authorized agencies demarcating LTL, HTL, CRZ area, location of the mine lease with respect to CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority).
- 21) R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation & Resettlement Policy should be kept in view. In respect of SCs /STs and other weaker sections of the society in the study area, a need based sample survey, family-wise, should be undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the


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sectoral programmes of line departments of the State Government. It may be clearly brought out whether the village(s) located in the mine lease area will be shifted or not. The issues relating to shifting of village(s) including their R&R and socio-economic aspects should be discussed in the Report.

- 22) One season (non-monsoon) [i.e. March-May (Summer Season); October-December (post monsoon season) ; December-February (winter season)] primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report. Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-dominant downwind direction. The mineralogical composition of PM10, particularly for free silica, should be given.
- 23) Air quality modeling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of Vehicles for transportation of mineral. The details of the model used and input parameters used for modeling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing pre-dominant wind direction may also be indicated on the map.
- 24) The water requirement for the Project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the Project should be indicated.
- 25) Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.
- 26) 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.
- 27) Impact of the Project on the water quality, both surface and groundwater, should be assessed and necessary safeguard measures, if any required, should be provided.
- 28) 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. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. The Report inter-alia, shall include details of the aquifers


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present and impact of mining activities on these aquifers. Necessary permission from Central Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished.

- 29) Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out.
- 30) Information on site elevation, working depth, groundwater table etc. Should be provided both in AMSL and bgl. A schematic diagram may also be provided for the same.
- 31) A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and submitted, keeping in mind, the same will have to be executed up front on commencement of the Project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered under plantation and the species to be planted. The details of plantation already done should be given. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerant to pollution.
- 32) Impact on local transport infrastructure due to the Project should be indicated. Projected increase in truck traffic as a result of the Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of handling the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress Guidelines.
- 33) Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.
- 34) Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report.
- 35) 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.
- 36) 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


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- along with budgetary allocations.
- 37) 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.
 - 38) Detailed Environmental Management Plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project.
 - 39) Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project.
 - 40) Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.
 - 41) The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.
 - 42) A Disaster management Plan shall be prepared and included in the EIA/EMP Report.
 - 43) 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.
 - 44) Besides the above, the below mentioned general points are also to be followed:-
 - a) Executive Summary of the EIA/EMP Report
 - b) All documents to be properly referenced with index and continuous page numbering.
 - c) Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated.
 - d) Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF&CC/NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the Project.
 - e) Where the documents provided are in a language other than English, an English translation should be provided.
 - f) The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.
 - g) While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF&CC vide O.M. No. J-11013/41/2006-IA. II(I) dated 4th August, 2009, which are available on the website of this Ministry, should be followed.


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- h) Changes, if any made in the basic scope and project parameters (as submitted in Form-I and the PFR for securing the TOR) should be brought to the attention of MoEF&CC with reasons for such changes and permission should be sought, as the ToR may also have to be altered. Post Public Hearing changes in structure and content of the draft EIA/EMP (other than modifications arising out of the P.H. process) will entail conducting the PH again with the revised documentation.
- i) As per the circular no. J-11011/618/2010-IA. II(I) dated 30.5.2012, certified report of the status of compliance of the conditions stipulated in the Environment Clearance for the existing operations of the project, should be obtained from the Regional Office of Ministry of Environment, Forest and Climate Change, as may be applicable.
- j) The EIA report should also include (i) surface plan of the area indicating contours of main topographic features, drainage and mining area, (ii) geological maps and sections and (iii) sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area.

In addition to the above, the following shall be furnished:-

The Executive summary of the EIA/EMP report in about 8-10 pages should be prepared incorporating the information on following points:

1. Project name and location (Village, District, State, Industrial Estate (if applicable).
2. Process description in brief, specifically indicating the gaseous emission, liquid effluent and solid and hazardous wastes.
3. Measures for mitigating the impact on the environment and mode of discharge or disposal.
4. Capital cost of the project, estimated time of completion.
5. The proponent shall furnish the contour map of the water table detailing the number of wells located around the site and impacts on the wells due to mining activity.
6. A detailed study of the lithology of the mining lease area shall be furnished.
7. Details of village map, "A" register and FMB sketch shall be furnished.
8. Detailed mining closure plan for the proposed project approved by the Geology of Mining department shall be submitted along with EIA report.
9. Obtain a letter /certificate from the Assistant Director of Geology and Mining standing that there is no other Minerals/resources like sand in the quarrying area within the approved depth of mining and below depth of mining and the same shall be furnished in the EIA report.
10. EIA report should strictly follow the Environmental Impact Assessment Guidance Manual for


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Mining of Minerals published February 2010.

11. Detail plan on rehabilitation and reclamation carried out for the stabilization and restoration of the mined areas.
12. The EIA study report shall include the surrounding mining activity, if any.
13. Modeling study for Air, Water and noise shall be carried out in this field and incremental increase in the above study shall be substantiated with mitigation measures.
14. A study on the geological resources available shall be carried out and reported.
15. A specific study on agriculture & livelihood shall be carried out and reported.
16. Impact of soil erosion, soil physical chemical and biological property changes may be assumed.
17. Site selected for the project - Nature of land - Agricultural (single/double crop), barren, Govt./ private land, status of its acquisition, nearby (in 2-3 km.) water body, population, within 10km other industries, forest, eco-sensitive zones, accessibility, (note - in case of industrial estate this information may not be necessary)
18. Baseline environmental data - air quality, surface and ground water quality, soil characteristic, flora and fauna, socio-economic condition of the nearby population
19. Identification of hazards in handling, processing and storage of hazardous material and safety system provided to mitigate the risk.
20. Likely impact of the project on air, water, land, flora-fauna and nearby population
21. Emergency preparedness plan in case of natural or in plant emergencies
22. Issues raised during public hearing (if applicable) and response given
23. CER plan with proposed expenditure.
24. Occupational Health Measures
25. Post project monitoring plan
26. The project proponent shall carry out detailed hydro geological study through intuitions/NABET Accredited agencies.
27. A detailed report on the green belt development already undertaken is to be furnished and also submit the proposal for green belt activities.
28. The proponent shall propose the suitable control measure to control the fugitive emissions during the operations of the mines.
29. A specific study should include impact on flora & fauna, disturbance to migratory pattern of animals.
30. Reserve funds should be earmarked for proper closure plan.


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31. A detailed plan on plastic waste management shall be furnished. Further, the proponent should strictly comply with, Tamil Nadu Government Order (Ms) No.84 Environment and forests (EC.2) Department dated 25.06.2018 regarding ban on one time use and throw away plastics irrespective of thickness with effect from 01.01.2019 under Environment (Protection) Act, 1986. In this connection, the project proponent has to furnish the action plan.

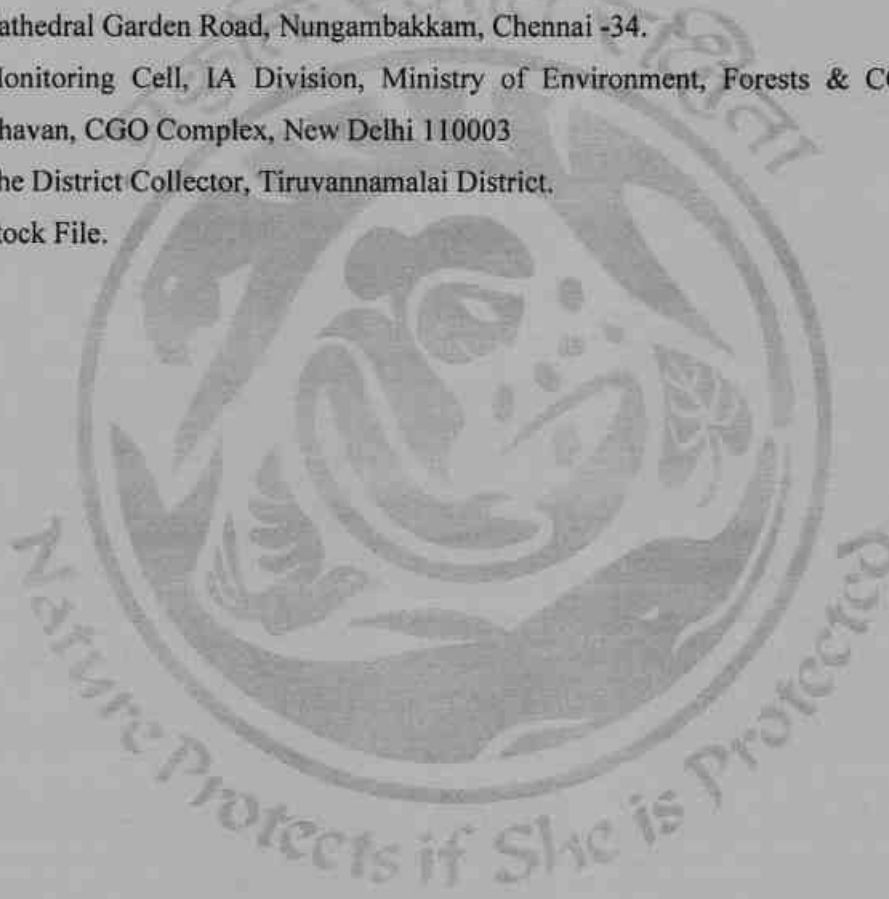
Besides the above, the below mentioned general points should also be followed:-

- a. A note confirming compliance of the TOR, with cross referencing of the relevant sections / pages of the EIA report should be provided.
- b. All documents may be properly referenced with index, page numbers and continuous page numbering.
- c. Where data are presented in the report especially in tables, the period in which the data were collected and the sources should be indicated.
- d. While preparing the EIA report, the instructions for the proponents and instructions for the consultants issued by MoEF & CC vide O.M. No. J-11013/41/2006-IA.II (I) dated 4th August, 2009, which are available on the website of this Ministry should also be followed.
- e. The consultants involved in the preparation of EIA/EMP report after accreditation with Quality Council of India (QCI)/National Accreditation Board of Education and Training (NABET) would need to include a certificate in this regard in the EIA/EMP reports prepared by them and data provided by other organization/Laboratories including their status of approvals etc. In this regard circular no F. No.J-11013/77/2004-IA-II(I) dated 2nd December, 2009, 18th March 2010, 28th May 2010, 28th June 2010, 31st December 2010 & 30th September 2011 posted on the Ministry's website <http://www.moef.nic.in/> may be referred.
 - After preparing the EIA (as per the generic structure prescribed in Appendix-III of the EIA Notification, 2006) covering the above mentioned points, the proponent will take further necessary action for obtaining environmental clearance in accordance with the procedure prescribed under the EIA Notification, 2006.
 - The final EIA report shall be submitted to the SEIAA, Tamil Nadu for obtaining Environmental Clearance.
 - 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.


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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, 1st & 2nd 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, Tiruvannamalai District.
7. Stock File.



DRAFT EIA/EMP REPORT FOR ROUGH STONE AND GRAVEL QUARRY OF SRI TIRUMALA BLUE METALS OVER AN AREA OF 4.44.35Ha IN MENALLUR VILLAGE, VEMBAKKAM TALUK, TIRUVANNAMALAI DISTRICT, TAMIL NADU

TOR COMPLIANCE

S. No	ToR Points	Reply	Pg.No
A. ToR in Addition to Standard ToR			
1.	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 are provided in Chapter-II .	2-7
2.	The proponent shall also furnish detail/photographs of the garland drains provided.	Towards surface runoff management, a garland drain of length 1100m 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 is depicted in Figure 4.4, Chapter-IV .	4-9
3.	The certified compliance report shall be provided along with EIA report	This is a proposed quarry. As such no mining activities have been carried out in this lease area.	2-13
4.	In the case of proposed lease in an existing (or old) quarry where the benches iue nonexistent (or) partially formed critical of the bench geometry approved in the Mining Plan, the Project Proponent (PP) shall prepare and submit an 'Action Plan' for carrying out the realignment of the 'highwall' bench of 25 m to ensure slope stability in the proposed quarry lease which shall be vetted by the concemed Asst. Director of Geology and Mining, 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.	2-13
5.	The PP shall carry out the scientific studies to assess the slope stability of the existing working benches/quarry wall during the environmental appraisal. The report shall also cover the slope stability action plan incorporating haul road along with benches, for the proposed workings in the hilly terrain of the quarry.	Pit slope stability plan has been provided under Section 7.7, Chapter-VII .	7-16
6.	The PP shall carry out a comprehensive biodiversity study (flora & fauna) including soil health to evaluate the impact of mining	A detailed study of flora and fauna composition in the core and buffer zone of the project has been made through primary	3-35



DRAFT EIA/EMP REPORT FOR ROUGH STONE AND GRAVEL QUARRY OF SRI TIRUMALA BLUE METALS OVER AN AREA OF 4.44.35Ha IN MENALLUR VILLAGE, VEMBAKKAM TALUK, TIRUVANNAMALAI DISTRICT, TAMIL NADU

	on the surrounding environmental settings, and it shall be submitted during appraisal.	field surveys. The details are furnished in para 3.5, Chapter III.	
7.	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, III/ Class mines manager appointed by the proponent.	Will be submitted	--
8.	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 using NONEL delay detonators will be used. The various control measures to planned to reduce ground vibration is provided under Section 4.4.2, Chapter-IV.	4-14
9.	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	--
10.	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, a) What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines? b) Quantity of minerals mined out. c) Highest production achieved in any one year d) Detail of approved depth of mining. e) Actual depth of the mining achieved earlier. f) Name of the person already mined in that leases area. g) 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.	This is a proposed quarry. As such no mining activities have been carried out in this lease area.	2-13
11.	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	<ul style="list-style-type: none"> • Satellite imagery with corner coordinates of the project area is provided in Figure 2.4, Chapter-II. • Toposheet of the lease area and buffer 	2-5 3-2



DRAFT EIA/EMP REPORT FOR ROUGH STONE AND GRAVEL QUARRY OF SRI TIRUMALA BLUE METALS OVER AN AREA OF 4.44.35Ha IN MENALLUR VILLAGE, VEMBAKKAM TALUK, TIRUVANNAMALAI DISTRICT, TAMIL NADU

	an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).	zone is provided in Figure 3.1, Chapter-III. • Geology, Geomorphology, Lithology map of the lease area and buffer zone is provided in Figure 3.17, 3.18 and 3.19, Chapter-III.	3-43
12.	The PP shall carry out Drone video survey covering the cluster, Green belt, fencing etc.,	Agreed	--
13.	The PP shall furnish the revised manpower including the statutory & competent persons as required under the provisions of the MMR 1961 for the proposed quarry based on the volume of rock handled & area of excavation.	As per the approved mining plan, it is proposed to employ 23 people for the mining operations	--
14.	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"> • The details of geological and mineable reserves are provided in Table 2.5, Chapter-II. • The production schedule during the plan period is provided in Table 2.8, Chapter-II. • The working methodology is detailed under Section 2.8, Chapter-II. • Anticipated impacts of mining operations on surrounding environment is provided under Chapter-IV. 	<p align="right">2-10</p> <p align="right">2-13</p> <p align="right">2-12</p> <p align="right">4-1</p>
15.	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.	The organization chart is provided as Figure No.10.1, Chapter-X.	10-3
16.	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 provided.	Details of hydrogeological scenario of this project is provided under section 3.6, Chapter-III.	3-41
17.	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	The baseline data on micro- meteorology, ambient air quality, Water quality, noise level, soil and flora & fauna are collected during Winter Season (December 2022 – February 2023) and detailed in Section 3.3 to 3.5 of	3-18



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	traffic/vehicular movement study.	Chapter-III. The details of Traffic Study is provided under Section 4.9, Chapter-IV.	
18.	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 & 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"> The details of the quarries located within the 500m radius of the project is given vide Annexure-3. A cumulative impact study has been carried out and furnished in Para 7.3, Chapter-VII. Environmental Management Plan is provided under Chapter-X. 	7-5 10-1
19.	Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted.	Water requirement for this project is 10KLD. The required water will be procured initially from outside agencies. Later Rain water harvested in the mine sump can also be used.	2-19
20.	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.	<ul style="list-style-type: none"> 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. The land use pattern at present and at the end of the quarrying period has been provided under section 4.5.1, Chapter-IV. The post mining land use has been provided in Table No. 4.14. The post mining land use plan showing afforestation and water body is shown in Figure No- 4.5. 	3-30 4-16 4-20
21.	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.	--
22.	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	--
23.	Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting	<ul style="list-style-type: none"> 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 	4-9



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	proposed in the Project, if any, should be provided.	<p>pond to prevent solids escaping along with discharge, before outlet. etc. Towards surface runoff management, a garland drain of length 1100m 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.</p> <ul style="list-style-type: none"> • Details of rainwater harvesting are provided under Section 4.3.4.2, Chapter-IV. 	4-11
24.	Impact on local transport infrastructure due to the Project should be indicated.	<ul style="list-style-type: none"> • From this proposed quarry 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. • About 9 trips per hour of transport is envisaged. The existing road can easily absorb this traffic due to this project. The details of various mitigative measures towards logistical system is elaborated under Section 4.9, Chapter-IV. 	4-24
25.	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.	3-35
26.	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 7.6, Chapter-VII.	7-4
27.	Public Hearing points raised and commitments of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project and to be submitted to SEIAA/SEAC with regard to the Office Memorandum of MoEF& CC accordingly.	<ul style="list-style-type: none"> • This draft EIA/EMP report will be submitted for public consultation 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 	7-1



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		recorded and incorporated in the EIA/EMP report for approval by SEIAA, Tamil Nadu.	
28.	The Public hearing advertisement shall be published in one major National daily and one most circulated vernacular daily.	Agreed	--
29.	The PP shall produce/display the EIA report, Executive summary and other related information with respect to public hearing in Tamil Language also.	Agreed	--
30.	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.	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.	3-35
31.	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	--
32.	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 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	Agreed	--
33.	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 7.4.1, Chapter-VII.	7-3
34.	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
35.	Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail.	Details of occupational health and safety aspects are given under the subsections of	4-22



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	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.	Para 4.8, Chapter-IV.	
36.	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"> • Details of the socio-economic survey conducted in the buffer zone has been provided in Para 3.2.4, Chapter-III. • 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. 	3-8
37.	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
38.	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.	--
39.	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"> • 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. • Direct employment to about 23 people and indirect employment to scores of people. • 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. 	8-1
40.	If any quarrying operations were carried out in the proposed quarrying site for which now the EC is sought, the Project Proponent shall	This is a proposed quarry. As such no mining activities have been carried out in this lease	--



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	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.	area.	
41.	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.	Will be submitted.	--
42.	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. SEIAA Conditions			
1.	The EMP should include mine closure plan using topsoil and weathered rock. It should be used for site restoration.	<ul style="list-style-type: none"> • Since weathered rock is also a valuable mineral, after payment of necessary seignorage fees to Government, it will be supplied to required customers. • All efforts will be made for site restoration using topsoil and waste material if any. 	--
C. Annexure-B			
Cluster Management Committee			
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 of EMP as committed including Green Belt Development, water sprinkling, tree plantation, blasting etc.,	Details of the cluster management committee is provided under Section 10.2.2, Chapter-X.	10-4
3.	The List of members of the committee formed shall be submitted to AD/It4ines 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	Details of the cluster management committee is provided under Section 10.2.2, Chapter-X.	10-4



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	measures considering the inundation of the cluster and evacuation plan.		
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 achieve sustainable development goals with reference to water, sanitation & safety.	Details of the cluster management committee is provided under Section 10.2.2, Chapter-X.	10-4
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 & 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, & Livelihood of the local people.</p> <p>d) Possibilities of water contamination and impact on aquatic ecosystem health</p> <p>e) Agriculture, Forestry & 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>	<ul style="list-style-type: none"> • As such the production from this lease is very low to cause any appreciable impact. • 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. • Besides, as is it a mining project, no adverse generation of heat is envisaged. • 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 wherein 2250 number of plants will be planted in and around the lease area. 	4-18



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	h) Sediment geochemistry in the surface streams	<ul style="list-style-type: none"> 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 and maintaining the environmental quality within the prescribed standards by effective implementation of various mitigative measures. These mitigative measures will be continued for the entire lease period ensuring no impact on the environment. 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. 	
Agriculture & Agro-Biodiversity			
13.	Impact on surrounding agricultural fields around the proposed mining Area.	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. Due to poor quality of the soil, inconsistent rainfall, water scarcity, high agricultural labor cost, manpower shortage and less yield are reason for very little agricultural activity in this region.	4-18
14.	Impact on soil flora & vegetation around the project site.	The impact of mining on biological environment is provided under Table 4.15, Chapter-IV.	4-17
15.	Details of type of vegetations including no. of trees & 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.	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.	3-35
16.	The Environmental Impact Assessment should study the biodiversity, the natural ecosystem, the soil micro flora, fauna and soil	An ecological survey of the study area was conducted with reference to listing of species	3-35



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	seed banks and suggest measures to maintain the natural Ecosystem.	and assessment of the existing baseline ecological conditions. 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. 4.13. The post mining land use plan showing afforestation and water body is shown in Figure No- 4.5.	4-17
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. Due to poor quality of the soil, inconsistent rainfall, water scarcity, high agricultural labor cost, manpower shortage and less yield are reason for very little agricultural activity in this region.	4-18
Forests			
19.	The project proponent shall detailed study on impact of mining on Reserve forests free ranging wildlife.	There are no reserve forest in the proximity of the lease area. Marudam R.F. is located at 9.6Km on the south eastern side of the lease area.	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. Marudam R.F. is located at 9.6Km on the south eastern side of the lease area.	3-3
Water Environment			
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	Details of hydrogeological scenario of this project is provided under section 3.6, Chapter-III.	3-41



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	intersect groundwater. Necessary data and documentation in this regard may be provided, covering the entire mine lease period.		
24.	Erosion Control Measures	<ul style="list-style-type: none"> • 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. • Towards surface runoff management, a garland drain of length 1100m 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 	4-9
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.	There is a tank on the north eastern side of the lease area at a distance of 160m. There is an odai on the north eastern side at a distance of 440m. There is no proposal to discharge any effluent into this waterbody. No major impact is envisaged on the nearby water bodies due to project operations	4-10
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. 4.14. The post mining land use plan showing afforestation and water body is shown in Figure No- 4.4.	4-17
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.	<ul style="list-style-type: none"> • 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. • The land use pattern details are provided under section 4.5.1, Chapter-IV. 	3-35
29.	The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.	<ul style="list-style-type: none"> • 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.3.19, Chapter-III. 	3-29



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30.	The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.	<ul style="list-style-type: none"> The nearest major water bodies is provided in Table No.3.1, Chapter-III. There is a tank on the north eastern side of the lease area at a distance of 160m. There is an odai on the north eastern side at a distance of 440m. There is no proposal to discharge any effluent into this waterbody. No major impact is envisaged on the nearby water bodies due to project operations. The mining area consists of hard compact rock, hence no major water seepage within the mine is expected from the periphery. The ultimate pit depth of mining is 39m. The ground water table in this area is below this level. Hence, ground water intersection is not envisaged and ground water will not be affected appreciably due to the quarrying operation. 	4-9
Energy			
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
Climate Change			
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 wherein 2250 number of plants will be planted in and around the lease area.	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	--
Mine Closure Plan			
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



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EMP		
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
Risk Assessment		
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. 7-1
Disaster Management Plan		
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
Others		
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.	Vide Annexure No – 14 A-38
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.	Agreed --
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. 4-25



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D. Standard ToR			
1.	Year-wise production details since 1994 should be given, clearly stating the highest production achieved in any one year prior to 1994. It may also be categorically informed whether there had been any increase in production after the EIA Notification 1994 came into force, w.r.t. the highest production achieved prior to 1994.	This is a proposed quarry. As such no mining activities have been carried out in this lease area.	2-15
2.	A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given	Precise Area Communication letter received from the Assistant Director, Dep. of Geology & Mining, Tiruvannamalai Vide Rc.No.157/Kanimam/2022, dated 08.09.2022 (Annexure-1)	A-1
3.	All documents including approved mine plan, EIA and Public Hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management, mining technology etc. and should be in the name of the lessee.	The production capacity, quantity of waste, its management and mining technology in mine plan and EIA, etc., are compatible with one another.	--
4.	All corner coordinates of the mine lease area, superimposed on a High-Resolution Imagery/toposheet, topographic sheet, geomorphology and geology of the 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"> Project coordinates superimposed in satellite imagery and given as Figure No - 2.4 in Chapter – II. The geology and geomorphology map is provided in Figure No.3.17, 3.18, Chapter-III. The Lithology map and Soil map are provided under Figure No. 3.19, 3.20, Chapter-III. The 10km Radius Index plan showing buffer zone is given in Figure No.3.1 in Chapter – III. 	2-6 3-43 3-2
5.	Information should be provided in Survey of India Topo sheet in 1:50,000 scale indicating geological map of the area, geomorphology of land forms of the area, existing minerals and mining history of the area, important water bodies, streams and rivers and soil characteristics.	Replied in Standard ToR point no.4	--
6.	Details about the land proposed for mining activities should be given with information as to whether mining conforms to the land use policy of the State; land diversion for mining should have approval from State land use board or the concerned authority.	Not Applicable	--
7.	It should be clearly stated whether the proponent Company has a well laid down Environment Policy approved by its Board of	<ul style="list-style-type: none"> The proponent will frame a well-planned environmental policy. Its details are 	10-1



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	Directors? If so, it may be spelt out in the EIA Report with description of the prescribed operating process/procedures to bring into focus any infringement/deviation/ violation of the environmental or forest norms/ conditions? The hierarchical system or administrative order of the Company to deal with the environmental issues and for ensuring compliance with the EC conditions may also be given. The 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, may also be detailed in the EIA Report.	provided under Section 10.2.1, Chapter-X. <ul style="list-style-type: none"> The Mines Manager 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 status, noise level control, plantation programme, social development schemes, etc in the mine. The organizational chart for the same has been provided in Figure No.10.1, Chapter-X. 	10-3
8.	Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided.	Various risks likely to arise due to mining activities are detailed under section 7.4, Chapter-VII. This being an opencast mine, subsidence is not applicable. The impact due to ground vibrations due to blasting is given in para 4.3.2, Chapter-IV.	7-13 4-8
9.	The study area will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc. should be for the life of the mine / lease period.	The study area chosen for collecting existing environmental status covers 10 km radial distance from the project periphery (Figure No - 3.1). Data given in the report is for the life of the mine.	3-2
10.	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.	<ul style="list-style-type: none"> 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. The land use pattern at present and at the end of the quarrying period has been provided under section 4.5.1, Chapter-IV. The post mining land use has been provided in Table No. 4.14. The post mining land use plan showing afforestation and water body is shown in Figure No- 4.5. 	3-30 4-16
11.	Details of the land for any Over Burden Dumps outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be given.	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. Besides, there is no proposal for overburden dump outside the lease area.	2-15
12.	Certificate from the Competent Authority in the State Forest Department should be	Not Applicable	--



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	provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the Expert Appraisal Committees.		
13.	Status of forestry clearance for the broken up area and virgin forestland involved in the Project including deposition of Net Present Value (NPV) and Compensatory Afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished.	There is no forest land in the lease area.	--
14.	Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated.	Not applicable	--
15.	The vegetation in the RF / PF areas in the study area, with necessary details, should be given.	There is no forest land in the lease area.	--
16.	A study shall be got done to ascertain the impact of the Mining Project on wildlife of the study area and details furnished. Impact of the project on the wildlife in the surrounding and any other protected area and accordingly, detailed mitigative measures required, should be worked out with cost implications and submitted.	The mining lease area and the 10 km buffer zone from the periphery of the core zone is devoid of declared ecologically sensitive features like national parks, biospheres, sanctuaries, etc.	4-17
17.	Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger/ Elephant Reserves/(existing as well as proposed), if any, within 10 km of the mine lease should be clearly indicated, supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects due to proximity of the ecologically sensitive areas as mentioned above, should be obtained from the Standing Committee of National Board of Wildlife and copy furnished.	Replied in Standard ToR point No.16	--
18.	A detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] shall be carried out. Details of flora and fauna,	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	3-35



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	endangered, endemic and RET Species duly authenticated, separately for core and buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any scheduled-I fauna found in the study area, the necessary plan along with budgetary provisions for their conservation should be prepared in consultation with State Forest and Wildlife Department and details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost.	para 3.5, Chapter III.	
19.	Proximity to Areas declared as 'Critically Polluted' or the Project areas likely to come under the 'Aravali Range', (attracting court restrictions for mining operations), should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Department should be secured and furnished to the effect that the proposed mining activities could be considered.	Not Applicable	--
20.	Similarly, for coastal Projects, A CRZ map duly authenticated by one of the authorized agencies demarcating LTL, HTL, CRZ area, location of the mine lease w.r.t CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority).	Not Applicable	--
21.	R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation & Resettlement Policy should be kept in view. In respect of SCs /STs and other weaker sections of the society in the study area, a need based sample survey, family-wise, should be undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoral programmes of line departments of the State Government. It may be clearly brought out whether the village(s) located in the mine lease area will be shifted or not. The issues relating to shilling of village(s) including their R&R and socio-economic aspects should be discussed in the	The mining activities will be carried out within the mine lease areas only. The entire mine lease areas are patta land in proponent's possession. Hence, the question of R& R does not arise.	7-4



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	Report.		
22.	<p>One season (non-monsoon) (i.e. March-May (Summer Season); October-December (post monsoon season) ; December-February (winter season) primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report. Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-dominant downwind direction. The mineralogical composition of PM10, particularly for free silica, should be given.</p>	<ul style="list-style-type: none"> • The baseline data on micro- meteorology, ambient air quality, Water quality, noise level, soil and flora & fauna are collected during Winter Season (Dec 2022 to Feb 2023) and detailed in para 3.3 to 3.5 of Chapter-III. • Monitoring stations were selected taking into account, wind direction and location of sensitive receptors. • Free silica composition in PM10 sample has been done and the values are found to be Below Detectable Limit (DL 0.05mg/m3) which is well within the prescribed limit of 5mg/m3. 	3-11
23.	<p>Air quality modeling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of Vehicles for transportation of mineral. The details of the model used and input parameters used for modeling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing pre-dominant wind direction may also be indicated on the map.</p>	<ul style="list-style-type: none"> • Air quality modeling details are furnished in para 4.2.2 and its continuous sub paras in Chapter-IV of EIA report. • 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. • The model simulations are done for the air pollutant arising from the mining operations, namely, PM10, PM2.5. Ground Level Concentration (GLC) have been computed using hourly meteorological data. • The Isopleths of PM10, PM2.5 concentrations for with control measures scenario have also been drawn and these are given in Figure No.4.1 and 4.2. • 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 PM10 are within the statutory limits in each case. 	4-3 4-5
24.	<p>The water requirement for the Project, its availability and source should be furnished. A detailed water balance should also be</p>	<p>The total water requirement for this project will be 10.0 KLD comprising 1.0 KLD for</p>	4-8



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	provided. Fresh water requirement for the Project should be indicated.	drinking water and domestic use, 8.0 KLD for dust suppression and 1.0 KLD for greenbelt. The water will be sourced initially from outside agencies. Later the rainwater collected in the mine pit sump will be used for this purpose. The water balance diagram for the same is shown in Figure No 4.3, Chapter-IV.	
25.	Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.	Not Applicable	--
26.	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"> 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. 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. The methods for reducing water consumption and rainwater harvesting is provided in section 4.3.4, Chapter-IV. 	4-9
27.	Impact of the Project on the water quality, both surface and groundwater. should be assessed and necessary safeguard measures, if any required, should be provided.	<ul style="list-style-type: none"> There is no proposal to discharge any effluent into this water body. The ultimate pit depth of mining is 39m. 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. 	4-10
28.	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. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. The Report inter-alia, shall include details of the aquifers present and impact of mining activities on these aquifers. Necessary permission from Central Ground	<ul style="list-style-type: none"> 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. Since the mining area consists of hard compact rock, no major water seepage within the mine is expected from the periphery. The ultimate pit depth of mining is 39m. The 	4-10



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	Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished.	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. • Details of hydro geological study are given in Para 3.6, Chapter – III.	
29.	Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out.	Replied above in Standard ToR point No.27.	--
30.	Information on site elevation, working depth, groundwater table etc. Should be provided both in AMSL and bgl. A schematic diagram may also be provided for the same.	The ultimate pit depth of mining is 39m. The ground water table in this area is below this level.	4-10
31.	A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and submitted, keeping in mind, the same will have to be executed up front on commencement of the. Project. Phasc-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered under plantation and the species to be planted. The details of plantation already done should be given. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerant to pollution.	In the lease area, safety barrier 7.5m around the periphery is left. About 2250 trees will be planted in and around the lease area. The details of proposed plantation is provided under Table 4.16, Chapter-IV.	4-19
32.	Impact on local transport infrastructure due to the Project should be indicated. Projected increase in truck traffic as a result of the Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of handling the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress Guidelines.	From this proposed quarry 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. Details of the traffic study is provided under section 4.9, Chapter-IV.	4-23
33.	Details of the onsite shelter and facilities to be provided to the mine workers should be	This is a proposed project. Site services like	2-19



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	included in the EIA Report.	mine office, first aid room, rest shelters, toilets etc. will be provided as semi-permanent structures.	
34.	Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report.	The post mining land use has been provided in Table No. 4.13. The post mining land use plan showing afforestation and water body is shown in Figure No- 4.4.	4-16
35.	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.	4-22
36.	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"> • Details of the socio economic survey conducted in the buffer zone has been provided in Para 3.2.4, Chapter-III. • 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. 	3-9
37.	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.	3-9
38.	Detailed environmental management plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project.	Detailed environmental management plan is provided in Chapter-X.	10-1
39.	Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project.	<ul style="list-style-type: none"> • This draft EIA/EMP report will be exposed to public consultation 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 	7-1



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		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.	
40.	Details of litigation pending against the project, if any, with direction /order paced by any Court of Law against the Project should be given.	There is no litigation pending against the project.	--
41.	The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.	<ul style="list-style-type: none"> The cost of the project is Rs.1,07,76,100/- The capital and recurring cost of the project is provided under Table No.10.1, Chapter-X. 	2-17 10-9
42.	A Disaster management Plan shall be prepared and included in the EIA/EMP Report.	The disaster management plan has been provided under section 7.4.1, Chapter-VII.	7-14
43.	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"> The Rough Stone 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. Direct employment to 23 people and indirect employment to scores of people. 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. From the CER activities allocated for various social welfare activities, the villages near the lease area will be benefited. 	8-1



CHAPTER - I

INTRODUCTION

CHAPTER 1

INTRODUCTION

1.1 PURPOSE OF THE REPORT:

Sri Tirumala Blue Metals proposes to operate a **Rough Stone and Gravel Quarry** over an area of 4.44.35 Ha in Menallur Village, Vembakkam Taluk, Tiruvannamalai District, Tamil Nadu and has initiated action towards obtaining environmental clearance. It is proposed to mine 7,42,365m³ of Roughstone, 36,890 m³ of Weathered Rock and 1,13,073 m³ of Gravel for a period of 5 years upto a TOR issued depth of 39m.

Although the individual lease area of this 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 common EIA for Quarries of Aditya Durga Aggregates Pvt. Ltd., Sri Tirumala Blue Metals and Thiru R. Monish Kumar falling in this cluster along with separate assessment of impacts and EMP has been carried out. The details of the quarries located within the 500m radius of the project is given vide **Annexure-3**. A cumulative impact study has been carried out and furnished in **Para 7.3, Chapter-VII**.

Figure 1.1: Satellite Imagery of Proposed Quarries in Cluster



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This draft EIA/EMP Report has been prepared for Roughstone and Gravel Quarry of Sri Tirumala Blue Metals over an area of 4.44.35 Ha in Menallur Village, Vembakkam Taluk, Tiruvannamalai District, Tamil Nadu.

This EIA/EMP report is prepared based on standard and additional Terms of Reference issued by SEIAA, Tamil Nadu vide letter no. SEIAA-TN/F.No.9577/SEAC/ToR-1346/2022 dated 10.02.2023 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:

Table 1.1 Identification of project

1	Project Name	Rough Stone and Gravel Quarry of Sri Tirumala Blue Metals
2	Extent	4.44.35 Ha
3	Revised Production as per TOR	Roughstone – 7,42,365m ³ , Weathered Rock – 36,890 m ³ Gravel – 1,13,073 m ³ for 5 years period
4	TOR issued Ultimate Depth	39m
5	Land Classification	Patta land in the name of the applicant company
6	Location	Survey Number: 148/16, 148/17, 148/18, 148/19, 148/20, 148/21, 148/22, 148/23, 148/24, 148/25, 148/38A, 148/39A1, 146/39B, 146/46, 148/1, 148/10, 148/2, 148/26, 148/27, 148/28, 148/29, 148/3, 148/30, 148/39A2, 148/39B2A, 148/39B1, 148/4, 148/5, 148/6, 148/7, 148/9, 149/1A, 149/2A and 150/1A
		Village: Menallur
		Taluk: Vembakkam
		District: Tiruvannamalai
		State: Tamil Nadu

Table 1.2: Identification of Project Proponent

1	Proponent Name	Sri Tirumala Blue Metals
2	Address	Ananthababu (Partner), No.90, Ottakoothar Street, Mamallan Nagar, Kanchpiram District
3	Contact Number	9677167500
4	Email-ID	tirumalabmetals@gmail.com

The Proponent can meet the requirement the financial requirement of this project and will ensure that the mining activities are carried out as per statutory requirements.



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Table 1.3: Statutory Approvals

S.No	Statutory Approval	Authority	Letter Number and Date	Reference
1.	Precise Area Communication Letter	Deputy Director, Dep. of Geology & Mining, Tiruvannamalai	Rc.No.157/Kanimam/2022, dated 08.09.2022	Annexure-1
2.	Mining Plan Approval	Deputy Director, Dep. of Geology & Mining, Tiruvannamalai	Rc.No.157/Kanimam/2022, dated 03.10.2022	Annexure-2
3.	Details of other quarries within 500m radius	Deputy Director, Dep. of Geology & Mining, Tiruvannamalai	Rc.No.157/Kanimam/2022, dated 10.10.2022	Annexure-3

The following conditions have been stated in the Precise Area Letter:

- The LT power line passing in east west & North – South direction should be relocated or 50m safety distance should be left.
- 7.5m safety distance for nearby patta lands

The above conditions have been adhered to.

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

Table 1.4: Brief Description of Nature of project

1.	Sector	1(a), Non-Coal Mining
2.	Type	Fresh Project
3.	Category	B1 (Cluster Situation)
4.	Mineral Mined	Rough stone, Gravel and Weathered Rock
5.	Major/Minor Mineral	Minor
6.	Mining method	Opencast Semi mechanized Mining
7.	End use	The top gravel will be supplied to customers. The mined out rough stone & weathered rock, will despatched to crushers/other buyers.

Table 1.5: Location of the project

S.No	Particulars	Details
1.	Location	Menallur Village, Vembakkam Taluk, Tiruvannamalai District, Tamil Nadu
2.	Corner Coordinates	Latitude: 12°43'58.99"N to 12°44'09.61"N Longitude: 79°42'32.68"E to 79°42'40.25"E
3.	Toposheet Number	58 P/,9,10,13&14



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

1.3.1 IMPORTANCE TO THE COUNTRY AND REGION:

Rough stone and Gravel from this quarry will meet the domestic demand. There is good demand for the Gravel & stone aggregate, which is the main requisite for the construction/ infrastructure sector. Gravel quarried from this lease will be directly transported to the nearby end users. The boulders will be marketed to the nearby crushers for producing crusher aggregates.

This project in the area will provide both direct and indirect employment opportunities through allied opportunities in logistics, trading, repairing works etc., improved per capita income for local people, improved social welfare facilities like infrastructural build-up, improvement in facilities due to the proposed CER activities of the proponent etc.

1.4 SCOPE OF THE STUDY:

Particulars	Details
Proposal no	SIA/TN/MIN/405985/2022
File no	9577/2022
SEAC meeting for issue of TOR	346 th Meeting held on 12.01.2023
SEIAA meeting for issue of TOR	591 st Meeting held on 10.02.2023
Terms of Reference	Received from SEIAA, Tamil Nadu vide their Lr No.SEIAA-TN/F.No.9577/SEAC/ToR-1346/2022. Dated:10.02.2023
Baseline Data Collection	Carried out by Creative Engineers & Consultants , Chennai for Winter Season (December 2022-February 2023)

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.



DRAFT EIA/EMP REPORT FOR ROUGH STONE AND GRAVEL QUARRY OF SRI TIRUMALA BLUE METALS OVER AN AREA OF 4.44.35Ha IN MENALLUR VILLAGE, VEMBAKKAM TALUK, TIRUVANNAMALAI DISTRICT, TAMIL NADU

- 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 quarrying of rough stone and gravel by Sri Tirumala Blue Metals using mechanized opencast method for the lease period of 5 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

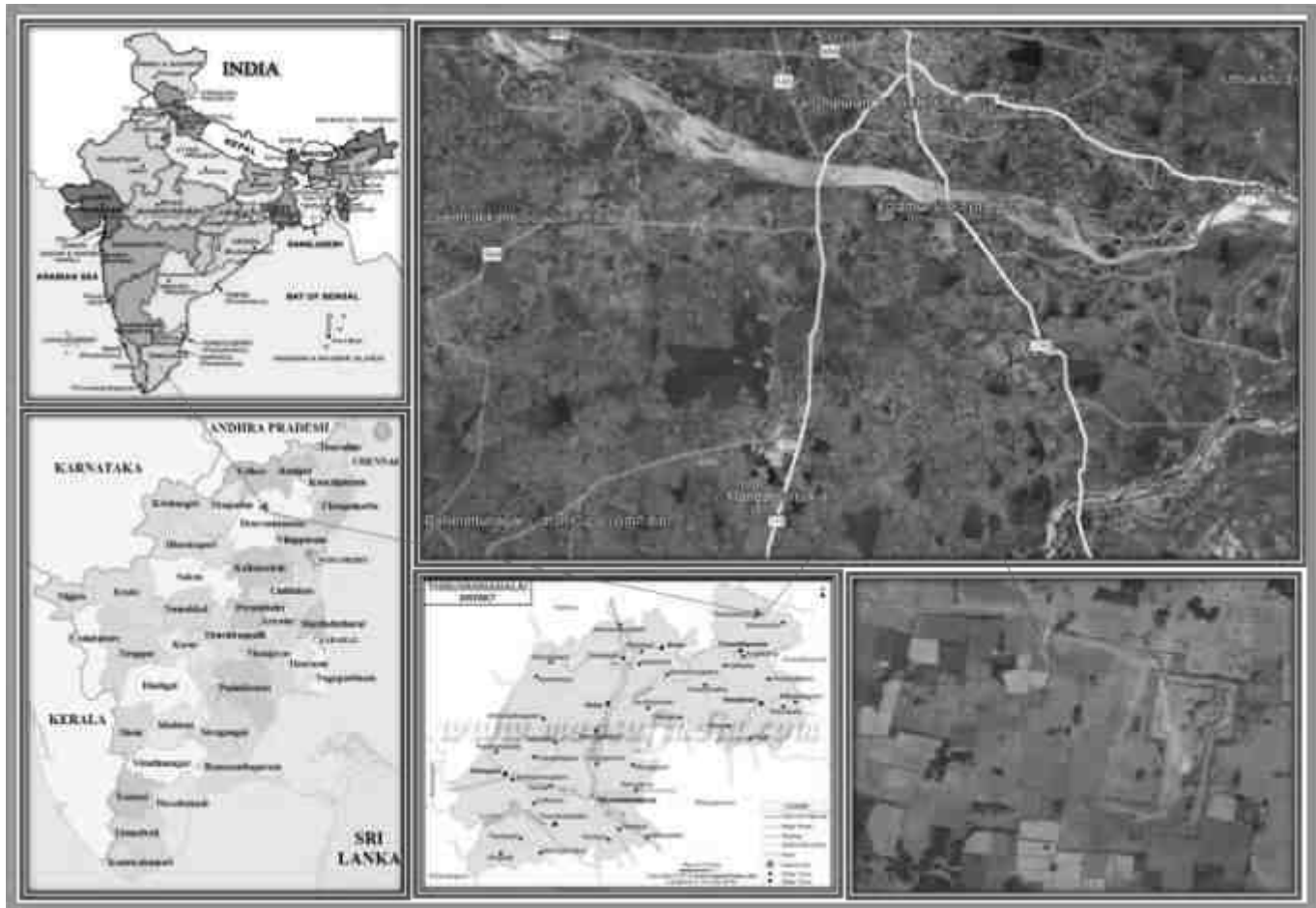
Location	Menallur Village, Vembakkam Taluk, Tiruvannamalai District, Tamil Nadu
Survey No.	148/16, 148/17, 148/18, 148/19, 148/20, 148/21, 148/22, 148/23, 148/24, 148/25, 148/38A, 148/39A1, 146/39B, 146/46, 148/1, 148/10, 148/2, 148/26, 148/27, 148/28, 148/29, 148/3, 148/30, 148/39A2, 148/39B2A, 148/39B1, 148/4, 148/5, 148/6, 148/7, 148/9, 149/1A, 149/2A and 150/1A
Coordinates	Latitude: 12°43'58.99"N to 12°44'09.61"N Longitude: 79°42'32.68"E to 79°42'40.25"E
Nearest Village	Bagavantapuram – 470m (SW)
Nearest Town	Kanchipuram – 8.4km – (N)
Nearest Highway	(SH-116) Kanchipuram – Vandavasi –3.8km – (W)
Nearest Railway Station	Kanchipuram – 12km – (N)
Nearest Airport	Chennai – 58Km – (NE)

DRAFT EIA/EMP REPORT FOR ROUGH STONE AND GRAVEL QUARRY OF SRI TIRUMALA BLUE METALS OVER AN AREA OF 4.44.35Ha IN MENALLUR VILLAGE, VEMBAKKAM TALUK, TIRUVANNAMALAI DISTRICT, TAMIL NADU

Accessibility	The lease area can be approached from Poonathangal – Arpakkam road which connects to SH-118A-Kanchipuram to Uthiramerur road on the eastern side of the lease area, and from Poonathangal – Mamandur road which connects to SH-116-Kanchipuram – Vandavasi on the western side of the lease area.
Topography	Plain terrain, dry lands with scarce vegetation.
Drainage	There is a tank on the north eastern side of the lease area at a distance of 160m. There is an odai at a distance of 440m in the north eastern side of the lease area.

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**.

Figure 2.1: Location Map



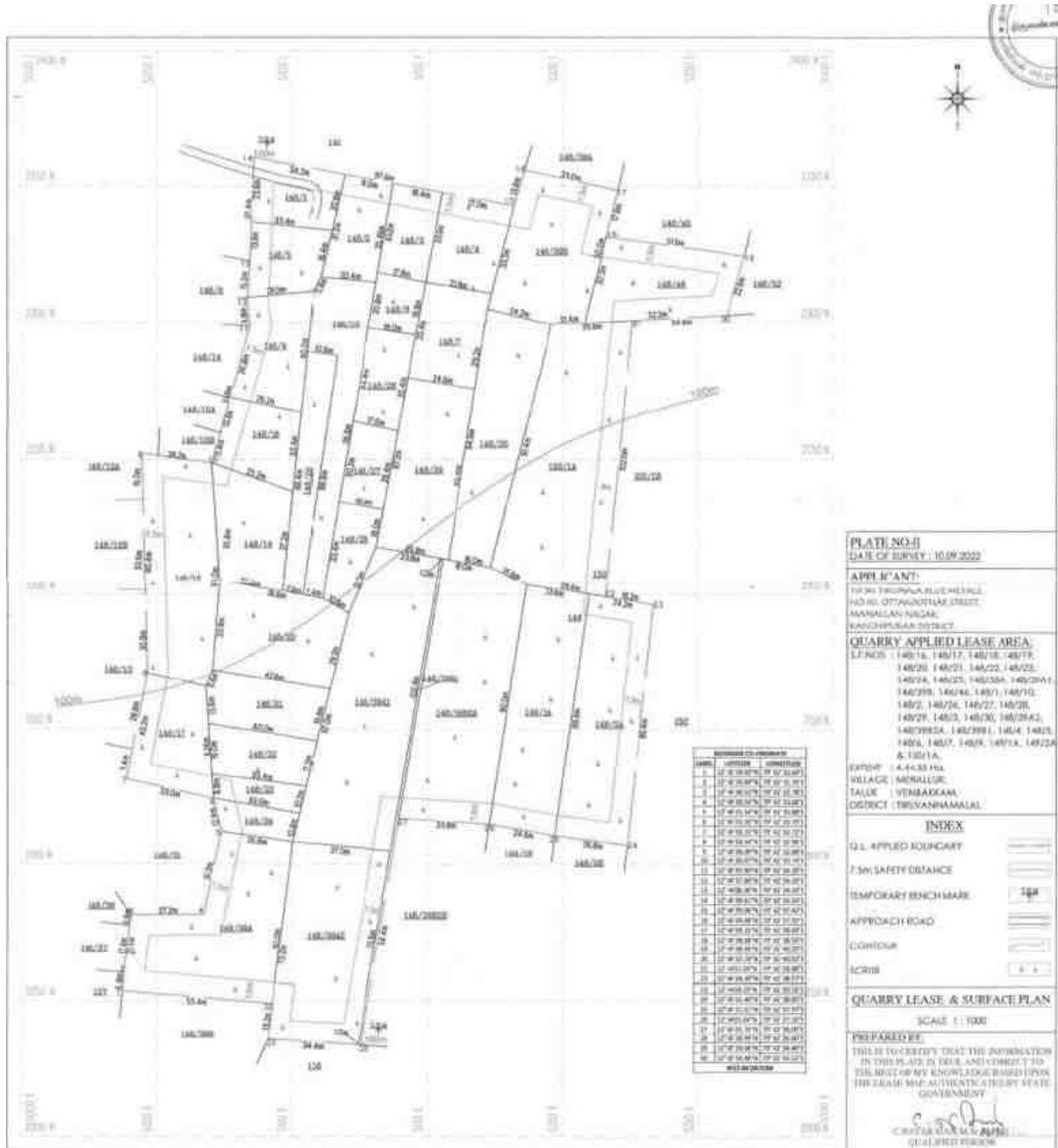
DRAFT EIA/EMP REPORT FOR ROUGH STONE AND GRAVEL QUARRY OF SRI TIRUMALA BLUE METALS OVER AN AREA OF 4.44.35Ha IN MENALLUR VILLAGE, VEMBAKKAM TALUK, TIRUVANNAMALAI DISTRICT, TAMIL NADU

Figure 2.2: Approachability Map



DRAFT EIA/EMP REPORT FOR ROUGH STONE AND GRAVEL QUARRY OF SRI TIRUMALA BLUE METALS OVER AN AREA OF 4.44.35Ha IN MENALLUR VILLAGE, VEMBAKKAM TALUK, TIRUVANNAMALAI DISTRICT, TAMIL NADU

Figure 2.3: Lease Plan



DRAFT EIA/EMP REPORT FOR ROUGH STONE AND GRAVEL QUARRY OF SRI TIRUMALA BLUE METALS OVER AN AREA OF 4.44.35Ha IN MENALLUR VILLAGE, VEMBAKKAM TALUK, TIRUVANNAMALAI DISTRICT, TAMIL NADU

Figure 2.4: Satellite Imagery Showing Corner Co-ordinates of the Project Area



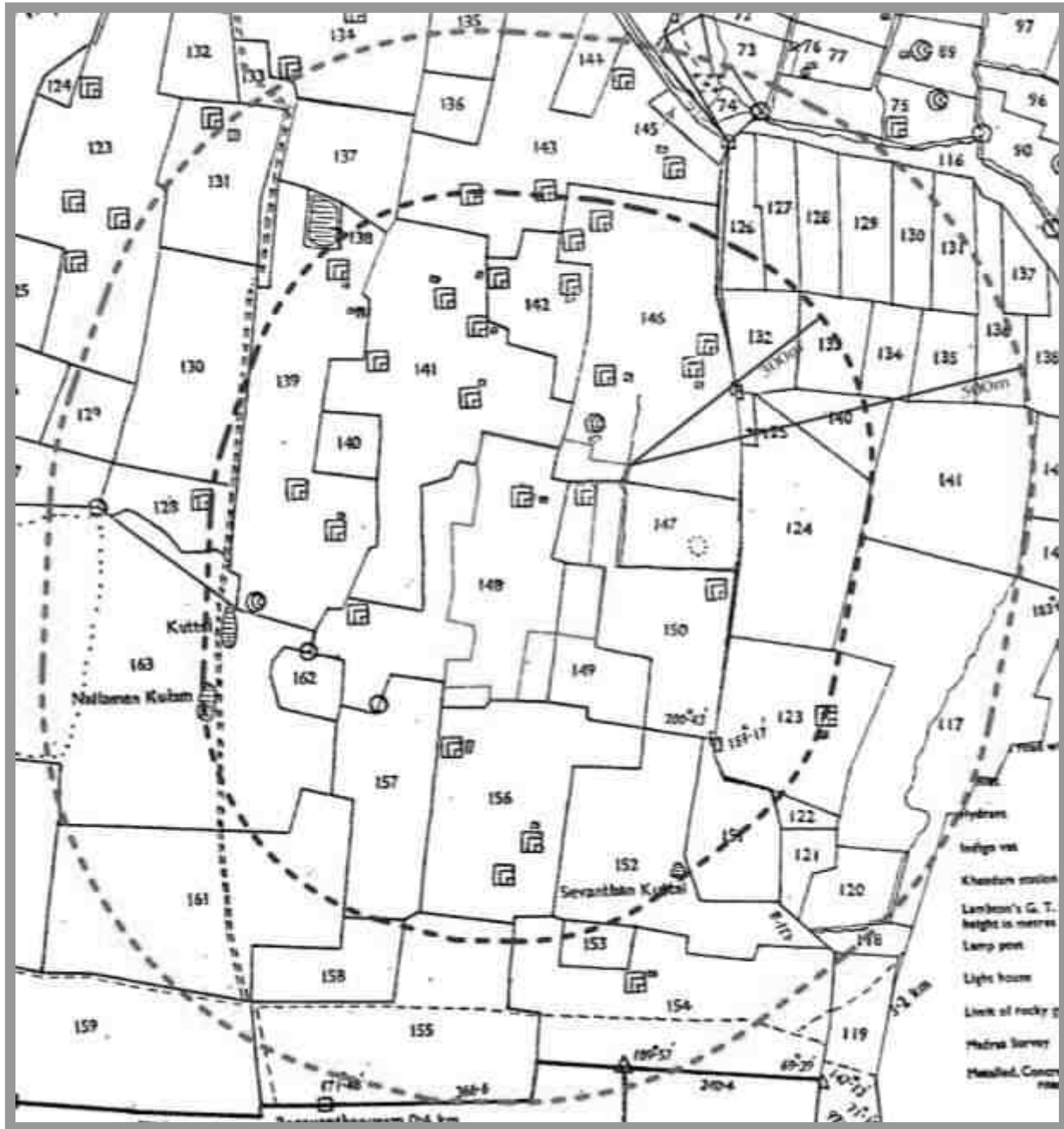
DRAFT EIA/EMP REPORT FOR ROUGH STONE AND GRAVEL QUARRY OF SRI TIRUMALA BLUE METALS OVER AN AREA OF 4.44.35Ha IN MENALLUR VILLAGE, VEMBAKKAM TALUK, TIRUVANNAMALAI DISTRICT, TAMIL NADU

SITE PHOTOGRAPH



DRAFT EIA/EMP REPORT FOR ROUGH STONE AND GRAVEL QUARRY OF SRI TIRUMALA BLUE METALS OVER AN AREA OF 4.44.35Ha IN MENALLUR VILLAGE, VEMBAKKAM TALUK, TIRUVANNAMALAI DISTRICT, TAMIL NADU

Figure 2.5: Village Map



DRAFT EIA/EMP REPORT FOR ROUGH STONE AND GRAVEL QUARRY OF SRI TIRUMALA BLUE METALS OVER AN AREA OF 4.44.35Ha IN MENALLUR VILLAGE, VEMBAKKAM TALUK, TIRUVANNAMALAI DISTRICT, TAMIL NADU

2.4 LAND CLASSIFICATION:

The lease area of 4.44.35 Ha is a patta land in the name of the Partners Thiru.Mukunthababu, Thiru.Ananthababu, Thiru. Haribabu and Thiru.Rajbabu, of Sri Tirumala Blue Metals vide Patta No. 769 and 713(**Annexure-12**). The survey no. wise area breakup has been provided below:

Table 2.2: Survey Number wise Area Breakup

District	Taluk	Village	Survey Nos	Area in Ha	Patta No
Tiruvannamalai	Vembakkam	Menallur	148/16	0.200	769
			148/17	0.115	769
			148/18	0.075	769
			148/19	0.095	769
			148/20	0.155	769
			148/21	0.095	769
			148/22	0.080	769
			148/23	0.030	769
			148/24	0.030	769
			148/25	0.070	769
			148/38A	0.260	769
			148/39A1	0.3209	769
			146/39B	0.1335	713
			146/46	0.150	713
			148/1	0.070	713
			148/10	0.160	713
			148/2	0.065	713
			148/26	0.055	713
			148/27	0.055	713
			148/28	0.055	713
			148/29	0.170	713
			148/3	0.060	713
			148/30	0.175	713
			148/39A2	0.2591	713
148/39B2A	0.300	713			
148/39B1	0.015	713			



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			148/4	0.08	713
			148/5	0.050	713
			148/6	0.045	713
			148/7	0.075	713
			148/9	0.125	713
			149/1A	0.220	713
			149/2A	0.210	713
			150/1A	0.390	713
Total Area in (Hectares)				4.44.35	

2.5 GEOLOGY:

The area is underlain by the wide range of metamorphic rocks of 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, Charnockites basic granulites and calc-gneisses. The younger formations are Quartz veins and pegmatite.

The rock type noticed in the area for lease is Charnockite which contains mostly Quartz and Feldspar with some ferromagnesian minerals. The Charnockite is part of peninsular Gneisses, a high grade metamorphic rock

Table 2.3: Geological succession of the area

Age	Rock Formation
Recent to Sub recent	Alluvium, Gravel
Archaean	Charnockite Peninsular Gneiss, and Calc Gneiss



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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 5 years.
- It is proposed to mine 7,42,365m³ of Roughstone, 36,890 m³ of Weathered Rock and 1,13,073 m³ of Gravel for a period of 5 years upto TOR Issued depth of 39m.
- 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 2.4: Geological and Mineable Reserves

Type of reserves	Rough stone in m³	Weathered Rock m³	Gravel in m³
Geological Resources	19,97,415	44,387	1,33,161
Mineable reserves up to 49m below ground level	8,07,050	36,890	1,13,073
Mineable reserves up to 39m below ground level	7,42,365	36,890	1,13,073

The mineable reserves is arrived after considering the safety distance of 7.5m peripheral safety distance.

2.6.2 MINING METHOD:

Opencast semi 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 weathered rock and rough stone below will be blasted and then excavated. Bench height of 5.0m & 5m width is considered.

Table 2.5: Details of Equipments

S.No	NAME OF THE EQUIPMENT	CAPACITY	REQUIRED
1	Excavator with Rock breaker attachment	0.90m ³ bucket capacity	1
2	Tipper	5/10 tonnes	4
3	Tractor mounted compressor with jack hammer	175 CFM	1



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2.7 PROPOSED SCHEDULE FOR APPROVAL AND IMPLEMENTATION:

The proponent 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.

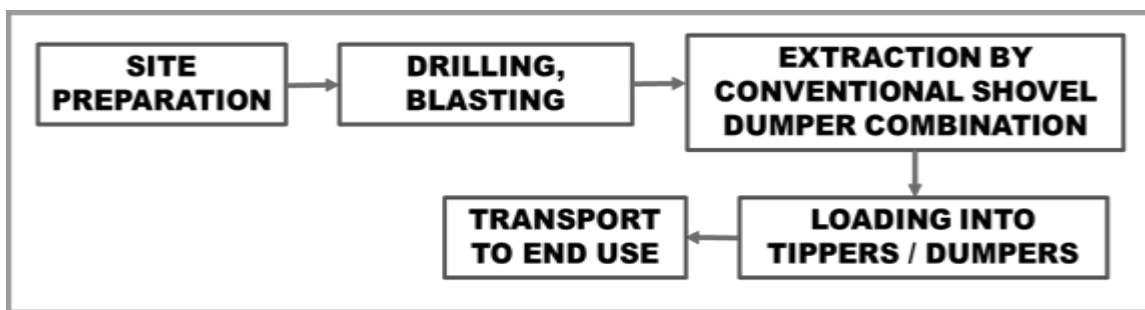
Table 2.6: Proposed Schedule of Implementation

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 2.6: Process Flow Diagram



DRAFT EIA/EMP REPORT FOR ROUGH STONE AND GRAVEL QUARRY OF SRI TIRUMALA BLUE METALS OVER AN AREA OF 4.44.35Ha IN MENALLUR VILLAGE, VEMBAKKAM TALUK, TIRUVANNAMALAI DISTRICT, TAMIL NADU

2.9 PROJECT DESCRIPTION:

2.9.1 PAST PRODUCTION:

This is a proposed quarry. As such no mining activities have been carried out in this lease area.

2.9.2 PLAN PERIOD-PRODUCTION & WASTE DISPOSAL:

As per the approved mining plan, the depth of mining is 49m and it was proposed to mine out 8,07,050m³ of Roughstone, 36,890m³ of Weathered Rock and 1,13,073m³ of Gravel. Now as per the approved ToR issued depth of mining is reduced to 39m and the revised yearwise production is provided below:

Table 2.7: Production Schedule During Plan Period

Year	Roughstone (m3)	Weathered Rock m³	Gravel (m3)
I	155085	33110	101088
II	160110	3780	11985
III	164015	--	--
IV	163685	--	--
V	99470	--	--
Total	742365	36890	113073

Waste Disposal during Plan Period:

There is no waste generation anticipated in this quarry operation 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.



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Figure 2.7: Year wise Plan & Cross Section



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2.9.3 CONCEPTUAL STAGE:

The conceptual pit dimensions is provided below:

Table 2.8: Ultimate Pit Dimensions

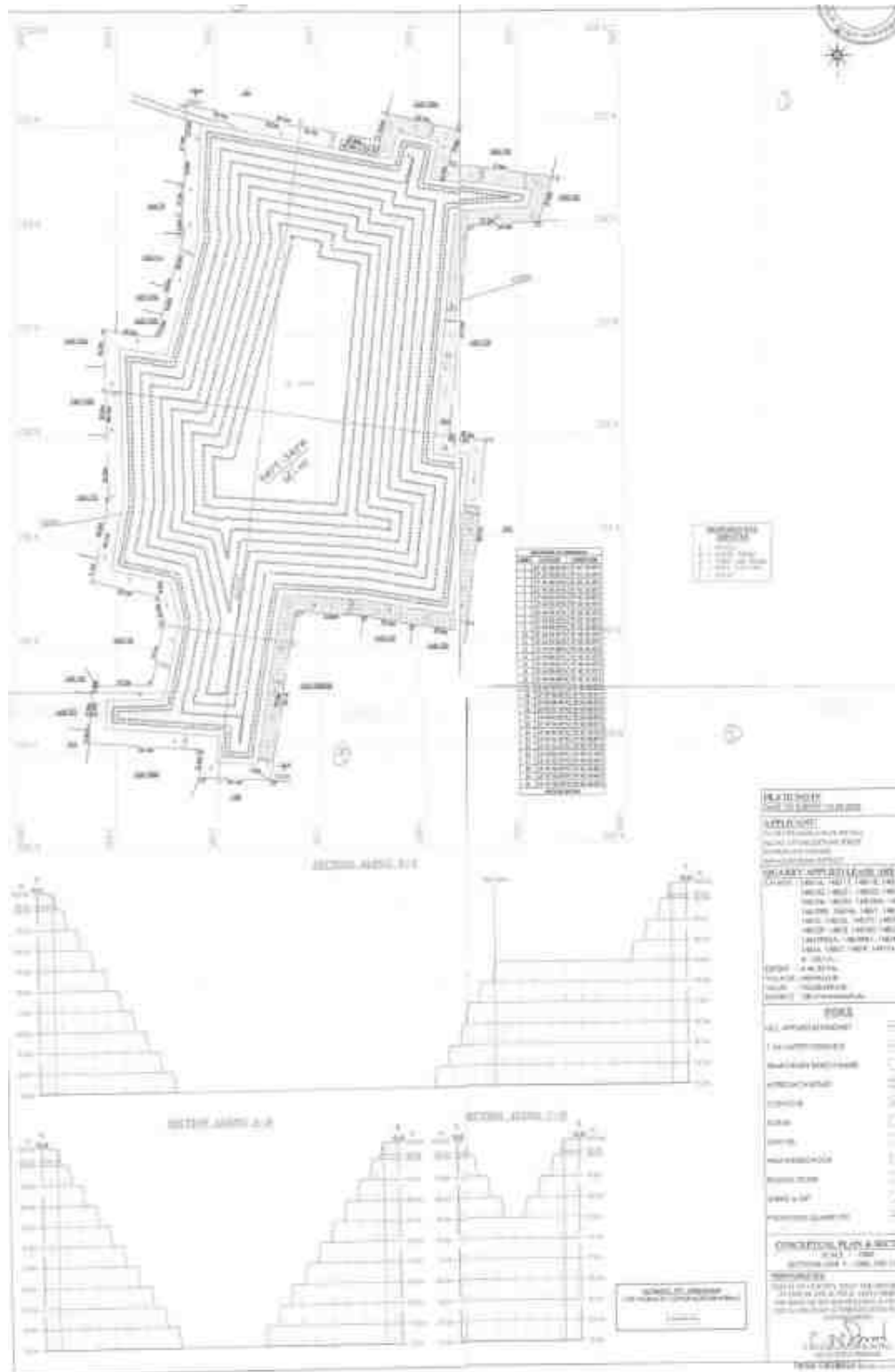
Pit No.	LENGTH(m)	WIDTH(m)	DEPTH(m)
I	301	122	39

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 in **Figure No. 2.8.**



DRAFT EIA/EMP REPORT FOR ROUGH STONE AND GRAVEL QUARRY OF SRI TIRUMALA BLUE METALS OVER AN AREA OF 4.44.35Ha IN MENALLUR VILLAGE, VEMBAKKAM TALUK, TIRUVANNAMALAI DISTRICT, TAMIL NADU

Figure 2.8: Conceptual Plan & Cross Section



DRAFT EIA/EMP REPORT FOR ROUGH STONE AND GRAVEL QUARRY OF SRI TIRUMALA BLUE METALS OVER AN AREA OF 4.44.35Ha IN MENALLUR VILLAGE, VEMBAKKAM TALUK, TIRUVANNAMALAI DISTRICT, TAMIL NADU

LAND DEGRADATION/UTILIZATION:

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

Table 2.9: Land Use

S.No	Land Use	Present Area (Ha)	Area at the end of quarrying period (Ha)
1	Quarrying Pit	Nil	3.67.5
2	Infrastructure	Nil	0.01.0
3	Roads	Nil	0.02.0
4	Green Belt	Nil	0.40.0
5	Unutilized	4.44.35	0.33.8
	Total	4.44.35	4.44.35

At the end of the life of the mine, an area of 3.67.5 Ha will be left as water body, 0.02Ha will be roads, 0.01Ha will be infrastructure, 0.40Ha will be greenbelt area and 0.338 Ha will be unutilized.

2.9.4 PROJECT REQUIREMENTS:

Table 2.10: Project Requirements

Manpower	23 People directly and more than 50 people indirectly										
Water Requirement and Source	Water Requirement: 10 KLD										
	<table border="1"> <thead> <tr> <th>Details</th> <th>Quantity (KLD)</th> </tr> </thead> <tbody> <tr> <td>Drinking water and Domestic Use</td> <td>1.0</td> </tr> <tr> <td>Dust Suppression</td> <td>8.0</td> </tr> <tr> <td>Green belt</td> <td>1.0</td> </tr> <tr> <td>Total</td> <td>10.0</td> </tr> </tbody> </table>	Details	Quantity (KLD)	Drinking water and Domestic Use	1.0	Dust Suppression	8.0	Green belt	1.0	Total	10.0
	Details	Quantity (KLD)									
	Drinking water and Domestic Use	1.0									
	Dust Suppression	8.0									
Green belt	1.0										
Total	10.0										
Source: The required water will be procured initially from outside agencies. Later Rain water harvested in the mine sump can also be used.											
Power Requirement	No electricity needed for mining operation. The minimum power requirement for office, etc will be met from state grid.										
Site Services	This is a proposed project. Site services like mine office, first aid room, rest shelters, toilets etc. will be provided as semi-permanent structures.										
Project Cost	Rs. 1,07,76,100/-										
Funds allocated for socio-economic development	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



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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.

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.

* * * * *



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 Winter Season (Dec 2022 – Feb 2023) 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 entire 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, Tiruvannamalai	Tiruvannamalai
		Temperature, Humidity, Wind Speed, Wind Direction	1 Representative Location
3	Ambient Air Quality	PM10, PM2.5, SO2, NOx, CO	1 Core Zone, 7 Buffer Zone
4	Water Quality	Physical and Chemical Parameters	1 Core Zone, 7 Buffer Zone
5	Noise Levels	Ambient Noise	1 Core Zone, 7 Buffer Zone
6	Soil Quality	Physical and Chemical Parameters	1 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

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Figure 3.1: Study Area Map



DRAFT EIA/EMP REPORT FOR ROUGH STONE AND GRAVEL QUARRY OF SRI TIRUMALA BLUE METALS OVER AN AREA OF 4.44.35Ha IN MENALLUR VILLAGE, VEMBAKKAM TALUK, TIRUVANNAMALAI DISTRICT, TAMIL NADU

Table 3.2: Environmental Setting of the Study Area

S.No	Particulars	Name	Distance and Direction
1	Nearest Highway	(SH-116) Kanchipuram –Vandavasi	3.9Km (W)
2	Nearest Railway station	Kanchipuram Railway Station	12Km (N)
3	Nearest Airport	Chennai	58Km (NE)
4	Nearest Town/City	Kanchipuram	8.5Km (N)
5	Nearest Villages	Bagavantapuram	470m (S)
		Menallur	0.9Km (N)
		Girijapuram	1.1Km (NW)
		Poonathangal	1.9Km (NE)
6	Nearest Major Water Bodies	Poonathangal Eri	160m (NE)
		Odai	440m (NE)
		Canal	2.4Km (N)
		Mamandur Tank	5.0Km (W)
		Cheyar River	4.8Km (SE)
		Palar River	6.1Km (NE)
7	Reserved / Protected Forests	Marudam RF	9.6Km (SE)
8	Notified Archaeologically important places, Monuments	Rock-Cut Pallava Shrine, Koranganilmuttam	3.8Km (NW)
		Mamandur Pallava Cave Temple	4.6Km (W)
9	Environmental sensitive areas, Protected areas as per Wildlife Protection Act, 1972	Nil within 10Km radius	--
10	Seismic Zone	Zone – II (Least Active)	--
11	Other Industries	Other than rough stone quarry & crushers there are no other major industries in the area.	--

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 discussion.



DRAFT EIA/EMP REPORT FOR ROUGH STONE AND GRAVEL QUARRY OF SRI TIRUMALA BLUE METALS OVER AN AREA OF 4.44.35Ha IN MENALLUR VILLAGE, VEMBAKKAM TALUK, TIRUVANNAMALAI DISTRICT, TAMIL NADU

- 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 Roughstone and gravel quarry is located in Poonathangal Village, Vembakkam Taluk, Tiruvannamalai District. The details of the 10Km radius study area has been provided below:

Table 3.3: Study Area Details

Village	Urban Area	Taluk	District
45	1	Cheyyar	Tiruvannamalai
32	5	Kancheepuram	Kancheepuram
23	--	Uthiramerur	
100	6	Total	

Based on the Census Data (2011), it is observed that in the 10Km radius there are 100 villages and 6 urban areas from Cheyyar Taluk of Tiruvannamalai District and Kancheepuram, Uthiramerur Taluk of Kancheepuram District. The demographic profile of the study area is given below:

Table 3.4: Social, Economic and Demographic Profile of the Study Area

Details	Population	Percentage
A. Gender-wise distribution		
Male Population	184315	50.08
Female Population	183740	49.92
Total	368055	100
B. Caste-wise population distribution		
Scheduled Caste	55309	15.03
Scheduled Tribes	3480	0.95
Other	309266	84.03
Total	368055	100
C. Literacy Levels		
Total Literate Population	269503	73.22
Others	98552	26.78
Total	368055	100
D. Occupational structure		



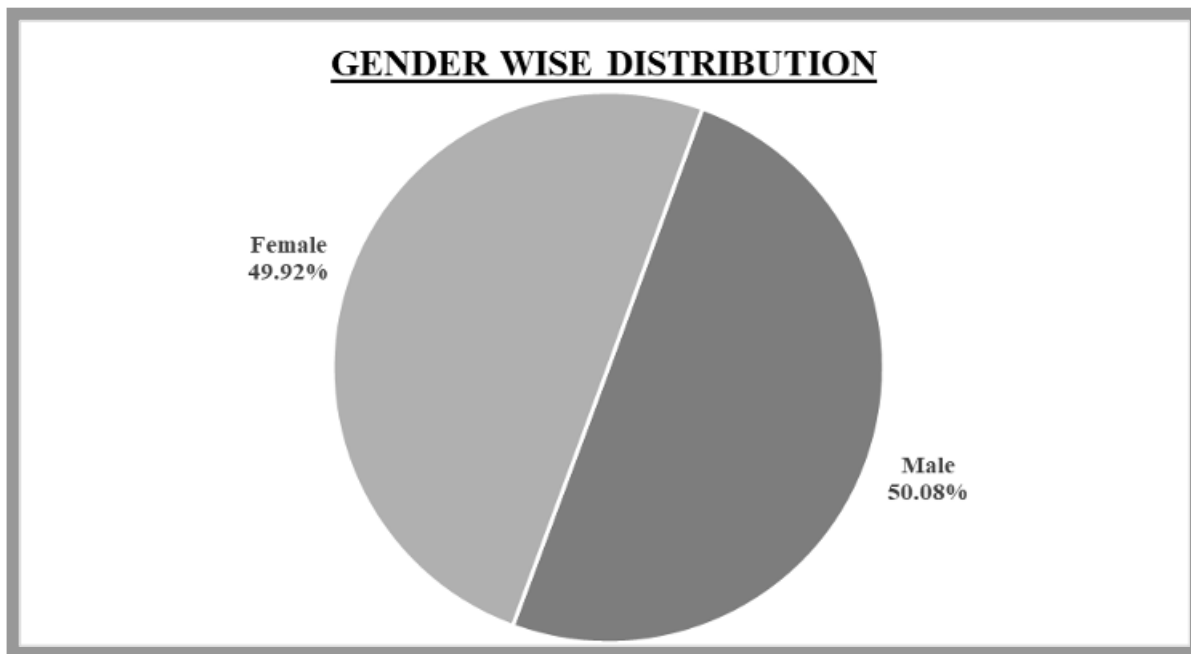
DRAFT EIA/EMP REPORT FOR ROUGH STONE AND GRAVEL QUARRY OF SRI TIRUMALA BLUE METALS OVER AN AREA OF 4.44.35Ha IN MENALLUR VILLAGE, VEMBAKKAM TALUK, TIRUVANNAMALAI DISTRICT, TAMIL NADU

Details	Population	Percentage
Main workers	132990	36.10
Marginal workers	24647	6.70
Total Workers	157637	42.80
Total Non-workers	210418	57.20
Total	368055	100

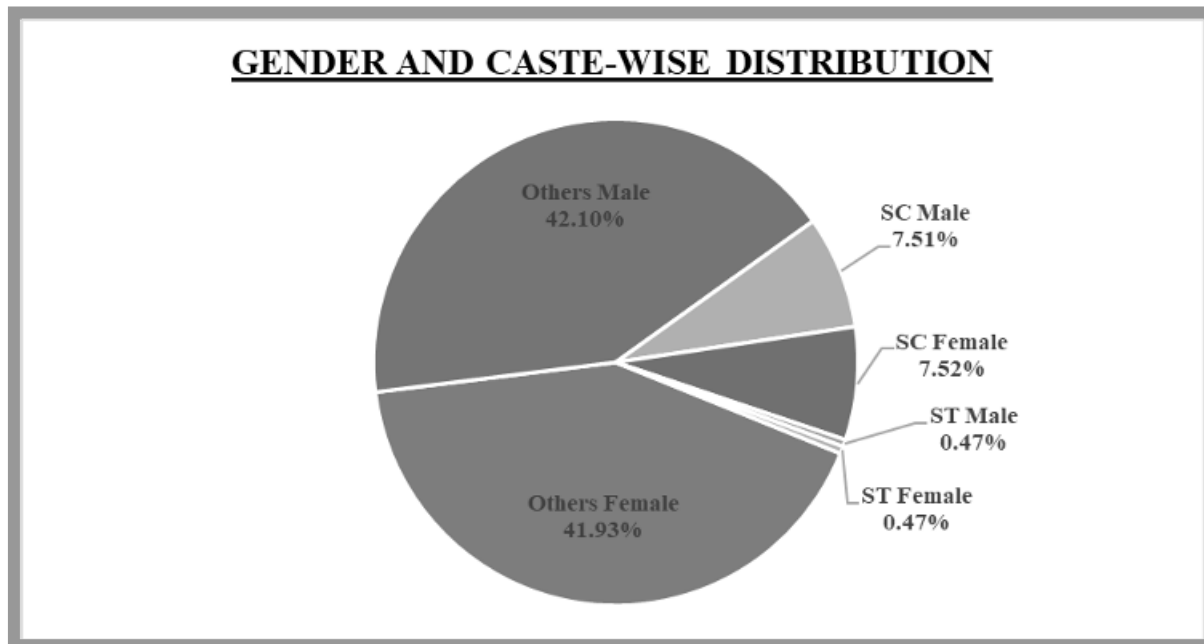
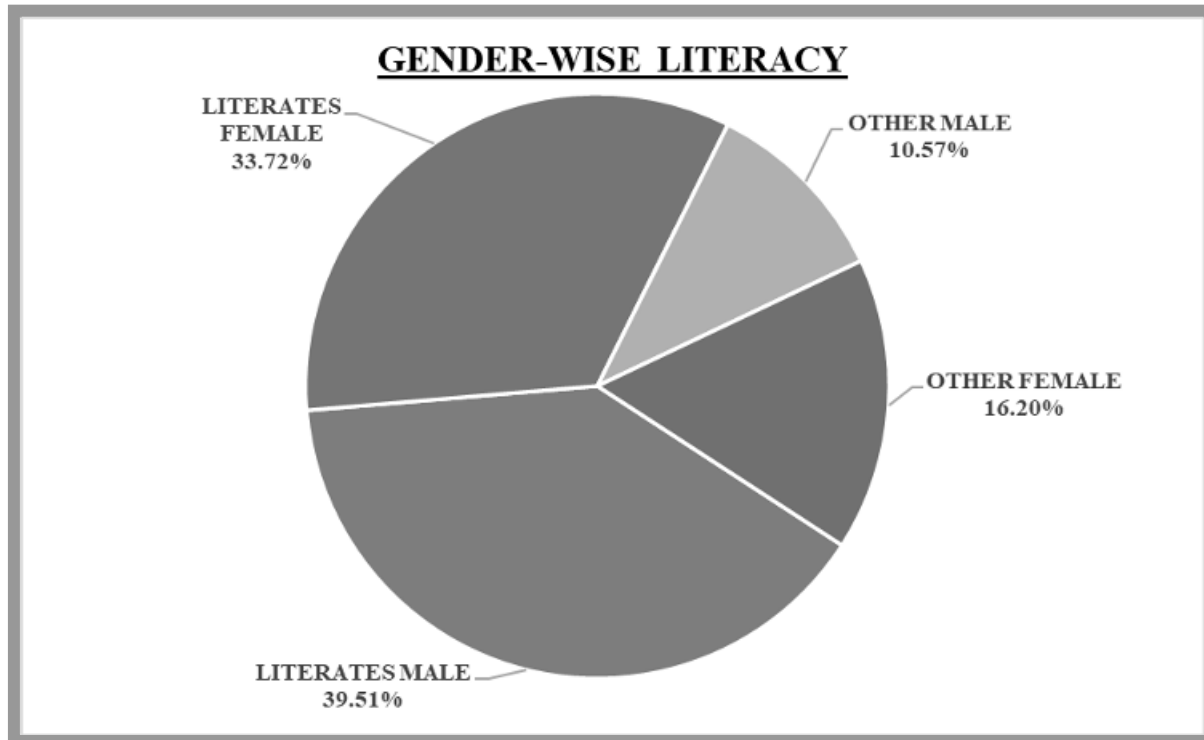
The total population of these 100 rural villages and 6 urban areas is 368055 in which the male population is 184315 (50.08%) and the female population is 183740 (49.92%). This shows that the male and female population ratio is almost equal. Among the total population 0.95% belong to Scheduled Tribes, 15.03% are Scheduled Caste and the balance 84.03 % people belong to other castes. Among the total population, 73.22% of the people are literate. Among the total population, 39.51% are literate males and 33.72% are literate females.

The village wise population, literacy levels and occupational structure details area given in **Annexures 4 and 5**. The demographic structure within the buffer zone is shown diagrammatically in **Figure No – 3.2**.

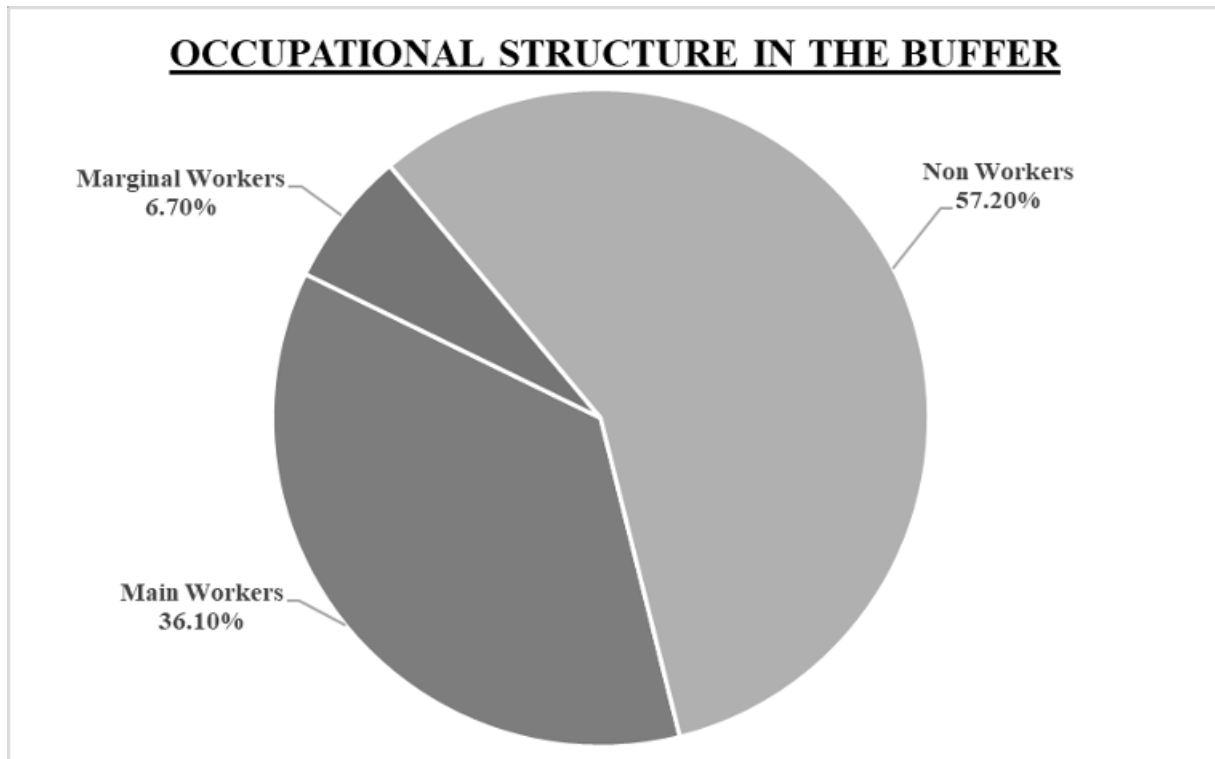
Figure 3.2: Demographic Structure in Buffer Zone



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3.2.3 DETAILS OF AMENITIES:

Based on 2011 census data, regarding the educational facilities, there are totally 102 Primary Schools functioning in these 100 rural villages. Better and higher education facilities are available in nearby Kancheepuram city corporation.

Table 3.5: Primary Schools in the Buffer Zone Rural Villages

S.No	No of Rural Villages	Number of primary schools	Total
1	12	0	0
2	76	1	76
3	11	2	22
4	0	3	0
5	1	4	4
Total	100		102

Table 3.6: Education Facility Availability

PARTICULARS	Available in village
Govt Primary School	88
Govt Middle School	35
Govt Secondary School	19
Govt Senior Secondary School	9
Govt Arts and Science Degree College	0

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Govt Engineering College	0
Govt Medicine College	0
Govt Management Institute	0
Govt Polytechnic	0
Govt Vocational Training School/ITI	0

Table 3.7: Healthcare Amenities Availability

PARTICULARS	Available in village
Community Health Centre	1
Primary Health Centre	5
Primary Health Sub Centre	32
Maternity And Child Welfare Centre	12
TB Clinic	5
Hospital Allopathic	0
Hospital Alternative Medicine	0
Dispensary	5
Veterinary Hospital	8
Mobile Health Clinic	0
Family Welfare Centre	5

Table 3.8: Infrastructure Facilities

Particulars	Available in village
Tap Water-Treated	83
Covered Well	17
Hand Pump	20
Tube Wells/Borehole	23
Post office	10
Bus services	85
Commercial Bank	5
Cooperative bank	9

The details of the educational, medical and infrastructural facilities available in the buffer zone is provided in **Annexures- 6-8**.

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:

- The studied villages have different community people which include different religion and different castes.
- Agriculture is the main occupation in some villages. But it is more along the river side and in lands where bore well facilities are available. Farmers in the locality mainly depend on rain for water source.



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- Due to inconsistent rainfall, poor soil condition/ yield, nov availability of workers for farming due to better employment oppurtunities available in SIPCOT/ other places, less economics, locals have migrated to better avenue and only handful of people are in this activity.
- Majority of the people are small farmers. They also work as agriculture laborers. As it is river fed agriculture and the water is available only for four months, during the rest of the time they have less employment opportunities. Other occupations include construction workers, vendors, etc. Nearby SIPCOT industries also provide good employment opportunity for the locals.
- Other allied activities like livestock rearing and poultry farming are also found. People are involved in supply of milk to cooperative societies.
- Reasonably better amenities like approach road bus facility, electricity, mobile phone connectivity, Public Distribution System , Co operative bank. Scheduled banks etc are available.
- Bore well is the main source for drinking water. There are OHT's, Ground level tanks, public taps are available .
- Private and more improved facilities are available in Kanchipuram.



Elacheri- Primary School



Chinna Elacheri- Primary Health Centre

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Bhagavanthapuram- Primary School



Menallur – Overhead Water tank



Menallur- Government High School



Menallur - Childran welfare Centre



Poonaithangal - Panchayat Council Office



Surttal – Library building

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Vadakalpakkam - Primary School



Sithalapakkam- Akanvadi

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

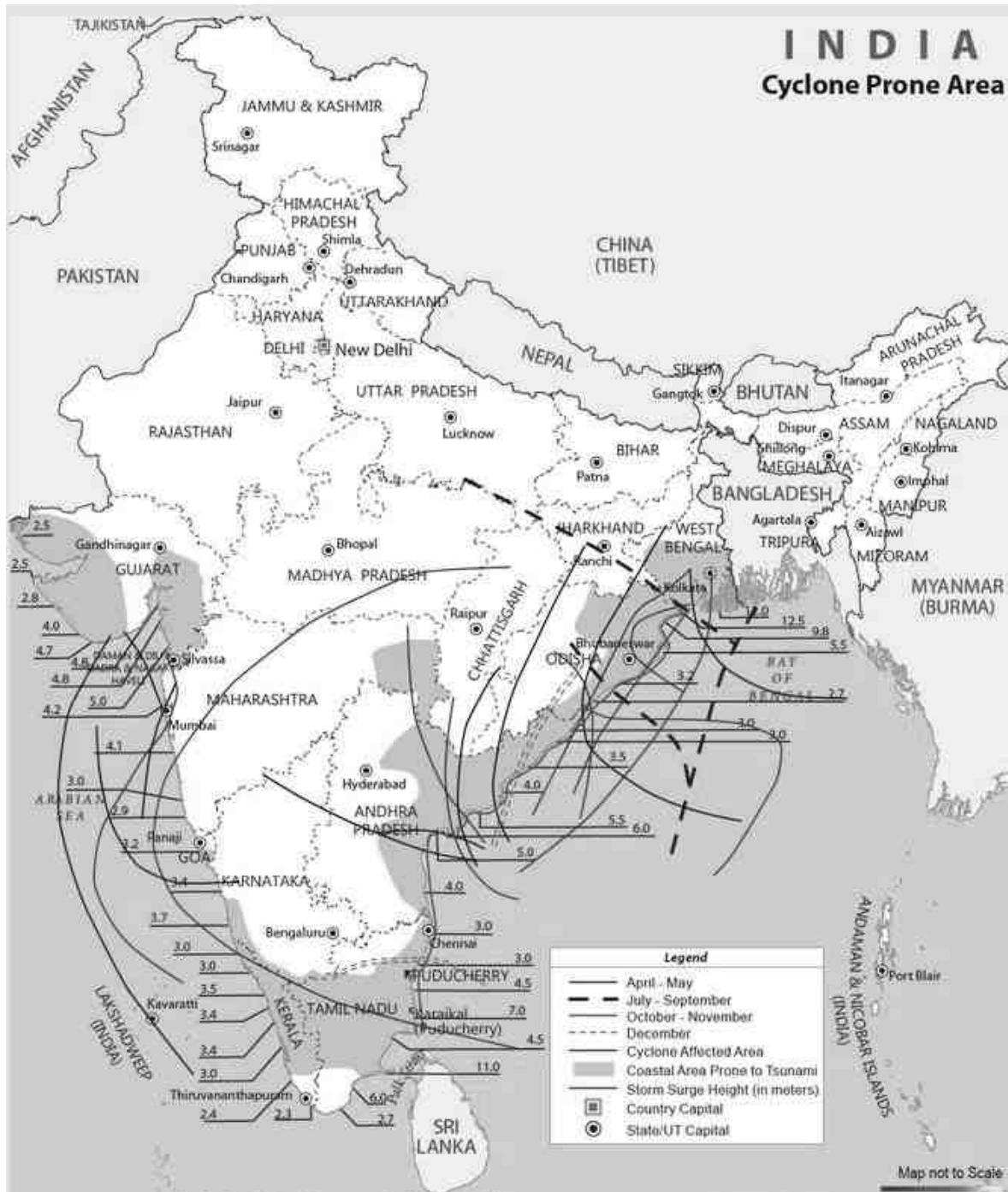
Cyclonic storms and depressions in Bay of Bengal affect the East Coast of India. Isolated ones, forming in January to March in the South Bay of Bengal move West-North-westwards and hit Tamil Nadu coast. In April and May, cyclonic storms and depressions form in the South and adjoining Central Bay and 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:**

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Vulnerability Atlas of India series, above figure accessed from 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.

Figure 3.3: History of Cyclonic Storms

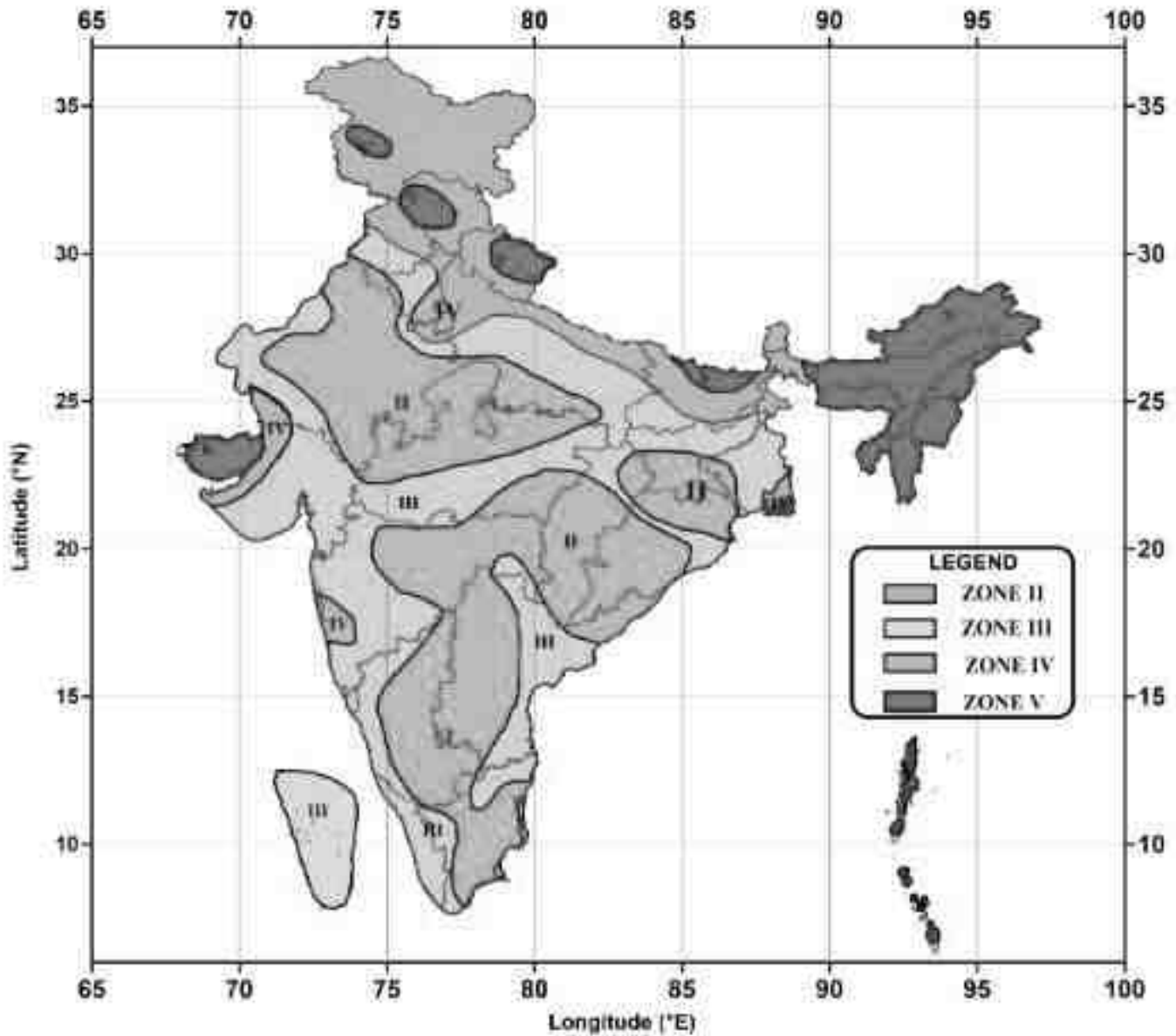


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B. SEISMIC DATA

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



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C. Climate and Rainfall Data:

Rainfall:

The average annual rainfall of the study area is 987 mm, out of which 80 percent is received during monsoon. The soils of the study area have an Ustic moisture regime and Hyperthermic temperature regime. Tiruvannamalai District comes under the Eastern Ghats (TN uplands) and Deccan plateau, hot semiarid region with red loamy soil with cropping period of 90 to 150 days. Excepting hills, the district falls in the North Eastern agro climatic zone of Tamil Nadu. The average annual rainfall of the study area is 987.4 mm, out of which 80 percent is received during monsoon. The soils of the study area have an Ustic moisture regime and Hyperthermic temperature regime.

Temparture:

The district's yearly temperature is 30.28°C (86.5°F) and it is 4.31% higher than India's averages. Tiruvannamalai typically receives about 75.94 millimeters (2.99 inches) of precipitation and has 140.09 rainy days (38.38% of the time) annually. Rainfall data collected by Tiruvannamalai Rain gauge station for the period of 2011 to 2020 is given in below Table.

Table 3.9: Average Annual Rainfall Data (2011-2020)

DISTRICT	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Cumulative
2011	1.09	25.19	0	47.2	37.68	57.39	170.46	239.2	149.04	149.9	193	76.15	1146.3
2012	2.39	0	2.62	47.38	49.59	71.69	187.16	173.93	99.64	264.36	191.44	143.22	1233.4
2013	0	7.56	17.95	3.04	46.34	41.9	73.97	181.11	157.86	157.5	124.28	27.03	838.54
2014	0.01	8.89	0.6	0.22	89.05	90.36	75.32	162.94	155.85	109.2	78.69	56.61	827.74
2015	0.73	0.07	3.16	91.87	73.38	63.93	92.29	164.96	115.53	139.2	499.19	213.6	1457.9
2016	3.7	0	0	0	93.9	90.75	122	96.41	121.04	61.08	8.78	126.97	724.63
2017	26.63	0	2.86	1.42	31.98	35.92	41.7	208.2	84.97	152.25	55.42	13.99	655.34
2018	0.03	13.7	10.61	1.12	11.05	50.25	48.15	70.14	94.92	156.73	169.16	18.28	644.14
2019	0.19	0.33	0.13	16.83	26.08	47.43	215.32	161.76	236.32	223.58	100.81	102.48	1131.3
2020	12.81	0.04	0	11.64	3.11	59.89	95.31	57.81	144.52	144.98	331.5	211.29	1072.9
Normal	19.3	13.5	13	21.5	73.7	55.8	96.9	139	174.1	200.3	161.3	78.2	1046.6

Source – IMD GRID – Tiruvannamalai report



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Figure 3.5: Monthly Average Rainfall

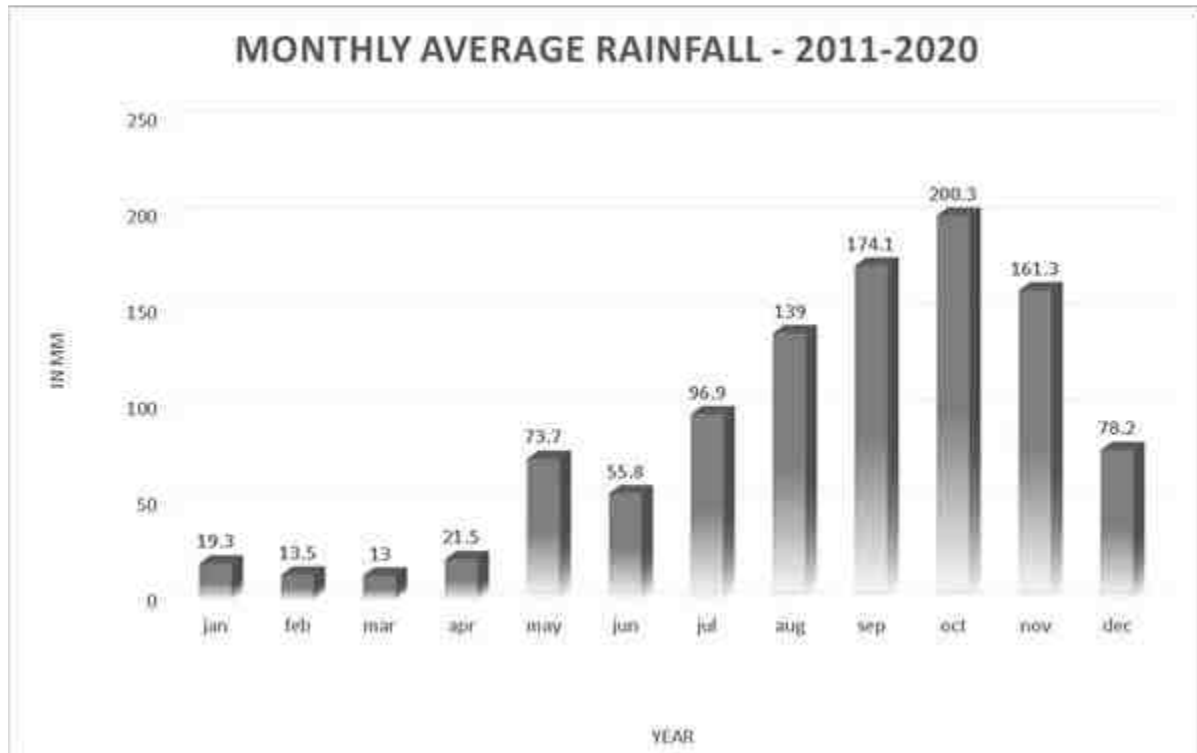
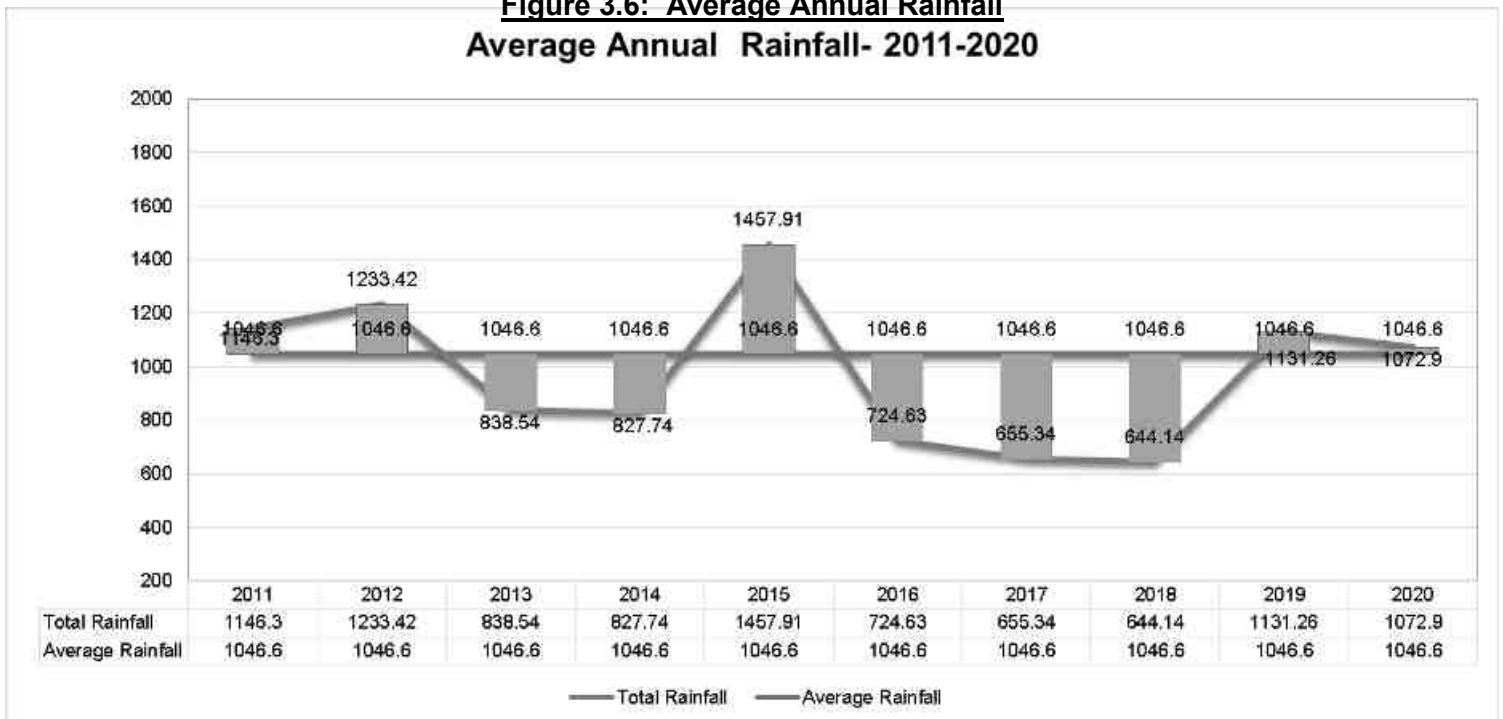


Figure 3.6: Average Annual Rainfall
Average Annual Rainfall- 2011-2020



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3.3.1.3 SITE SPECIFIC METEOROLOGICAL DATA:

Micrometeorology and microclimatic parameters of wind velocity, wind direction, ambient temperature, relative humidity, were collected throughout the monitoring period.

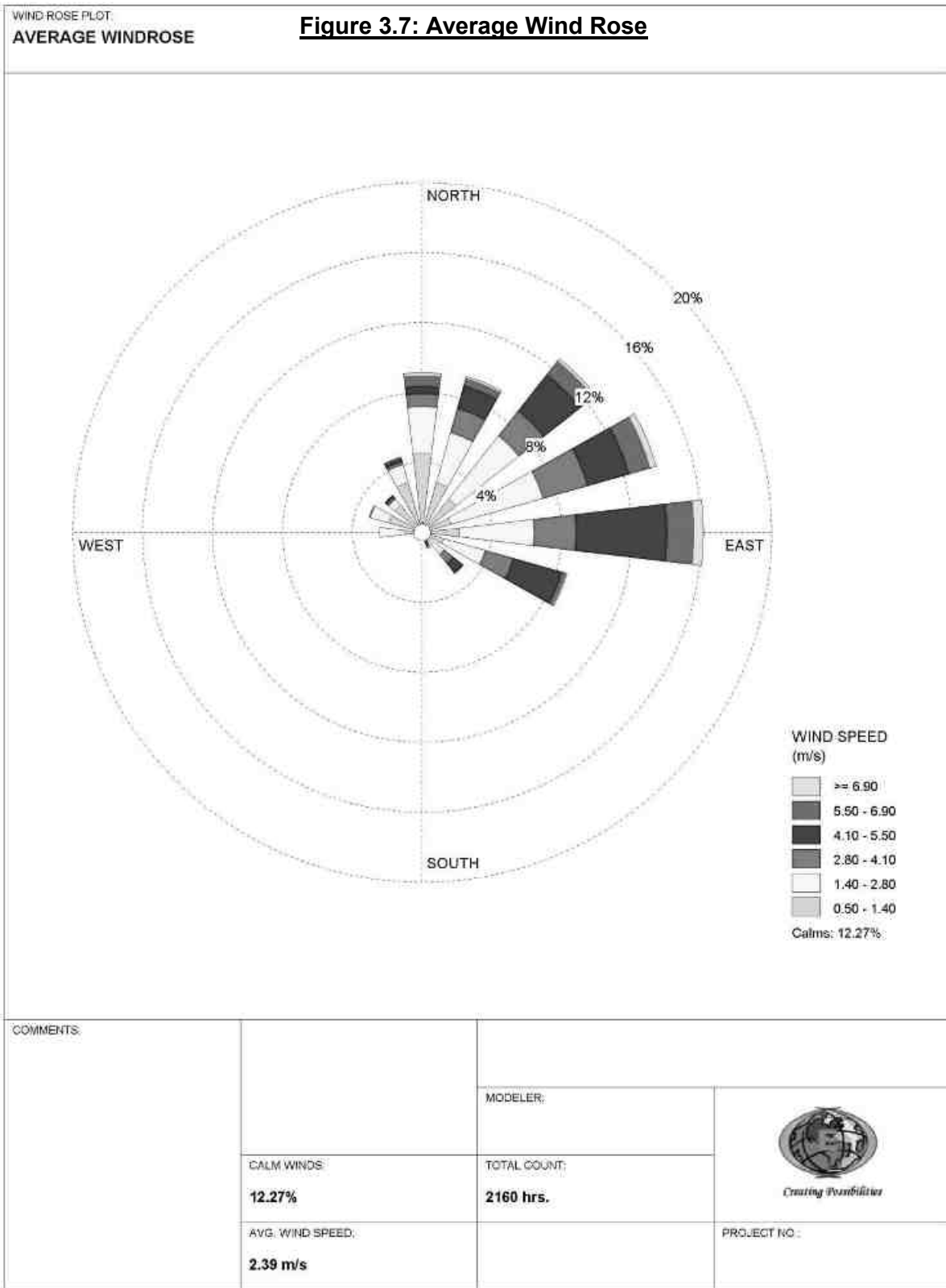
DATA ANALYSIS:

The temperature in the area during the study period ranged from 20.5°C to 34.0°C while the relative humidity varied between 30.0 - 98%. The wind speed during the study period ranged from <1.8 to 37.1 km/h. The predominant wind direction is from E,NE. The meteorological data are presented in **Table no – 3.10**. The average wind rose is depicted in **Figure No - 3.7**.

Table 3.10: Meteorological Data

Season: Winter Season (December 2022 to February 2023)			
S.NO	PARAMETERS	MIN	MAX
1	Temperature In °c	20.5	34.0
2	Humidity in %	30.0	98.0
3	Wind speed in km/hr	<1.8	37.1
4	Predominant wind direction from	E, NE	

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3.3.2 AMBIENT AIR QUALITY (AAQ):

Ambient Air quality has been assessed through a network of 8 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, 8 numbers of air sampling stations were selected in the area as shown below in Table No.3.11.

- ❖ 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 3.11: Air Quality Monitoring

1.	Monitoring Period	Winter Season (Dec 2022 – Feb 2023)
2.	Monitoring Location	The location map showing Ambient Air Quality study stations are shown in Figure No- 3.8 .
3.	Methodology	
	Parameter	Protocol
	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.	Monitoring Frequency	2 days in a week, 4 weeks in a month for 3 months in a season.

Table 3.12: Air Quality Monitoring Locations

S.NO	LOCATION CODE	LOCATION	DISTANCE FROM CORE ZONE (KM)	DIRECTION
1	A1	Near Mine Lease Area	-	-
2	A2	Poonathangal Village	1.9km	NE
3	A3	Senyanallur Village	3.3km	NE
4	A4	Sithalapakkam Village	3.4km	SE
5	A5	Menallur Village	0.9km	N
6	A6	Vadikalpakkam Village	2.5km	NW
7	A7	Bhagavanthapuram Village	0.4km	SW
8	A8	Narasamangalam Village	4.4km	W



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Figure 3.8: Ambient Air Quality Study Stations



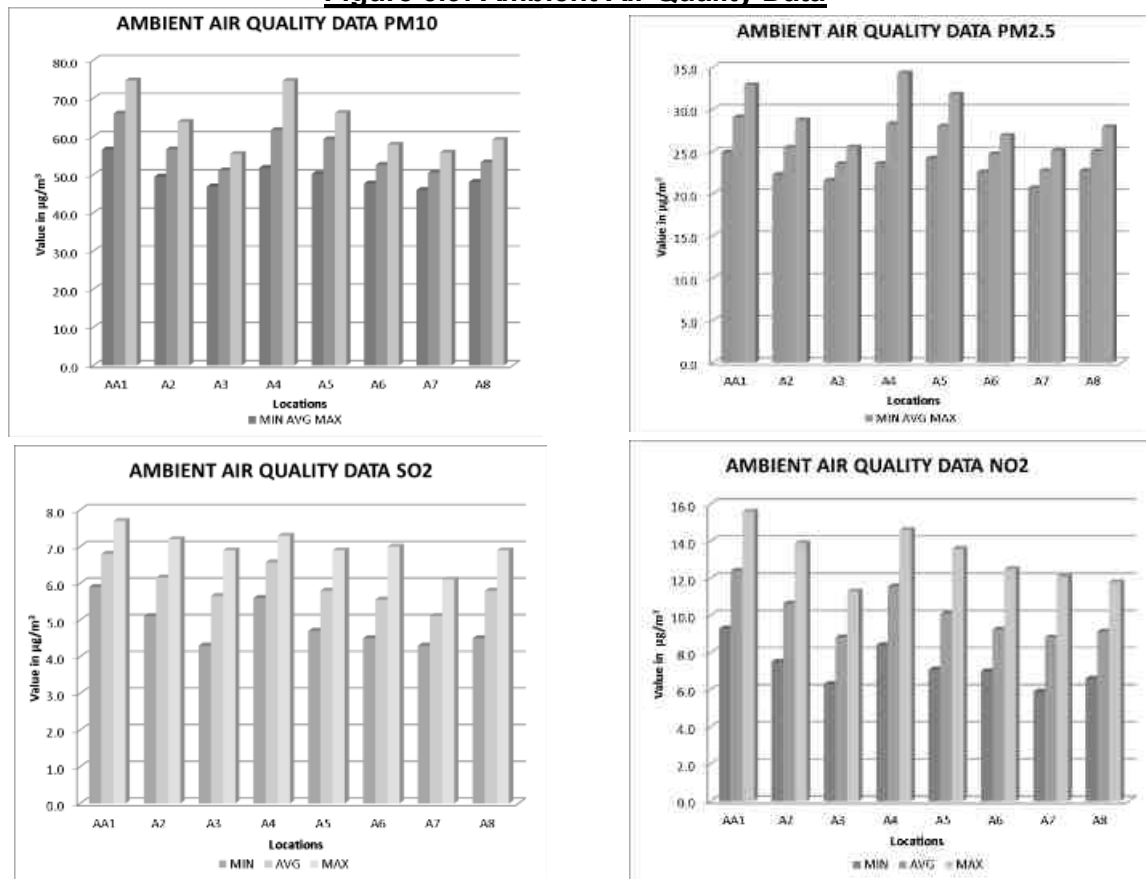
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Table 3.13: Ambient Air Quality Data

PARAMETERS	Cat.*	All Value in $\mu\text{g}/\text{m}^3$											
		PM ₁₀			PM _{2.5}			SO ₂			NO ₂		
LOCATIONS		MIN	AVG	MAX	MIN	AVG	MAX	MIN	AVG	MAX	MIN	AVG	MAX
A1-Near Mine lease area	I	56.6	66.0	74.7	24.9	29.1	32.9	5.9	6.8	7.7	9.3	12.4	15.6
A2-Poonathangal Village	R	49.5	56.7	63.9	22.3	25.5	28.8	5.1	6.2	7.2	7.5	10.6	13.9
A3-Seniyanallur Village	R	46.9	51.2	55.5	21.6	23.5	25.5	4.3	5.7	6.9	6.3	8.8	11.3
A4-Sithalapakkam Village	R	51.8	61.7	74.6	23.6	28.3	34.3	5.6	6.6	7.3	8.4	11.6	14.6
A5-Menallur Village	R	50.2	59.3	66.2	24.2	28.0	31.8	4.7	5.8	6.9	7.1	10.1	13.6
A6-Vadakalpakkam Village	R	47.7	52.6	57.9	22.5	24.7	26.9	4.5	5.6	7.0	7.0	9.2	12.5
A7-Bhagavanthapuram Village	R	46.0	50.5	55.8	20.7	22.7	25.1	4.3	5.1	6.1	5.9	8.8	12.1
A8-Narasamangalam Village	R	48.1	53.2	59.2	22.7	25.0	27.9	4.5	5.8	6.9	6.6	9.1	11.8
NAAQ Limits		PM₁₀			PM_{2.5}			SO₂			NO₂		
	*	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



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3.3.2.1 Results and Discussion:

The AAQ monitored data for all locations for above parameters are shown in **Table No - 3.13** and in **Figure No - 3.9**. Ambient Air Quality data during the study period is given in **Annexure-9**. From the table it is seen that, in the ambient air, the PM₁₀ values were in the range of 46.0-74.7 µg/m³. PM_{2.5} values were in the range of 20.7-34.3 µg/m³. SO₂ levels were ranging from 4.3– 7.7 µg/m³. NO₂ levels were ranging from 5.9-15.6 µg/m³.

The existing Ambient Air Quality levels for PM₁₀, PM_{2.5}, SO₂ and NO₂, are within the NAAQ standards prescribed CPCB limits of 100 µg/m³, 60 µg/m³, 80 µg/m³ & 80 µg/m³. 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)

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 8 locations. Details of the same has been provided below:

Table 3.14: Water Quality Monitoring

1.	Monitoring Period		Winter Season (Dec 2022 – Feb 2023)		
2.	Monitoring Location		The location map showing water sampling locations are given in Figure No.3.10.		
	Code	Location	Sample Type	Distance	Direction
	W1	Near Mine Lease Area	Bore Well	-	-
	W2	Vadikalapakkam Village	Borewell	2.5km	NW
	W3	Seniyanallur Village	Borewell	3.3km	NE
	W4	Poonathangal Village	Borewell	1.1km	NE
	W5	Narasamangalam Village	Borewell	4.4km	W
	W6	Menallur Village	Borewell	0.9km	N
	W7	Bhagavanthapuram Village	Borewell	0.9km	SW
	W8	Sithalapakkam Village	Borewell	3.4km	SE
3.	Methodology		Sampling - IS 3025 Part - I		
			Analysis – IS 3025 relevant parts / APHA 23rd Edition		



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Figure 3.10: Location of Water Sampling Stations



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Table 3.15: Summary of Water Quality Data

Season	Dec 2022 – Feb 2023	
Monitoring Locations	8 locations	
Parameters	Range of values	Limits*
pH at 25 °C	7.38 – 7.81	6.5-8.5
Total Dissolved Solids, mg/L	520 – 1246	2000
Chloride as Cl-, mg/L	84.50 – 386	1000
Total Hardness (as CaCO ₃), mg/L	254 – 490	600
Total Alkalinity (as CaCO ₃), mg/L	154– 414	600
Sulphates as SO ₄ ²⁻ , mg/L	98.60 – 392	400
Iron as Fe, mg/L	BDL(D.L - 0.01)– 0.05	0.3
Nitrate as NO ₃ , mg/L	1.65– 3.26	45
Fluoride as F, mg/L	0.18 – 0.45	1.5

3.3.3.1 Results and Discussion:

The results of the water sample analysis are shown in **Table No - 3.15**. The pH values were ranging in between 7.38 – 7.81 TDS values were in the range of 520 – 1246 mg/L. Chloride values were ranging from 84.50 – 386mg/L. Iron content was found to be in the range BDL(D.L-0.01)-0.05mg/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-10**.

3.3.4 NOISE ENVIRONMENT:

Operational 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 8 locations during the monitoring period. Details of the same are provided below:

Table 3.16: Noise Level Monitoring

1.	Monitoring Period	Winter Season (Dec 2022 – Feb 2023)		
2.	Monitoring Location	The location map showing noise monitoring locations are given in Figure No.3.11 .		
	Code	Location	Distance	Direction
	N1	Near Mine lease area	-	-
	N2	Poonathangal Village	1.1km	NE
	N3	Seniyanallur Village	3.3km	NE



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	N4	Sithalapakkam Village	3.4km	SE
	N5	Menallur Village	0.9km	N
	N6	Vadakalpakkam Village	2.5km	NW
	N7	Bhagavanthapuram Village	0.9km	SW
	N8	Narasamangalam Village	4.4km	W
3.	Methodology	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.	Monitoring Frequency	Once during monitoring period		



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Figure 3.11: Location of Noise Sampling Stations

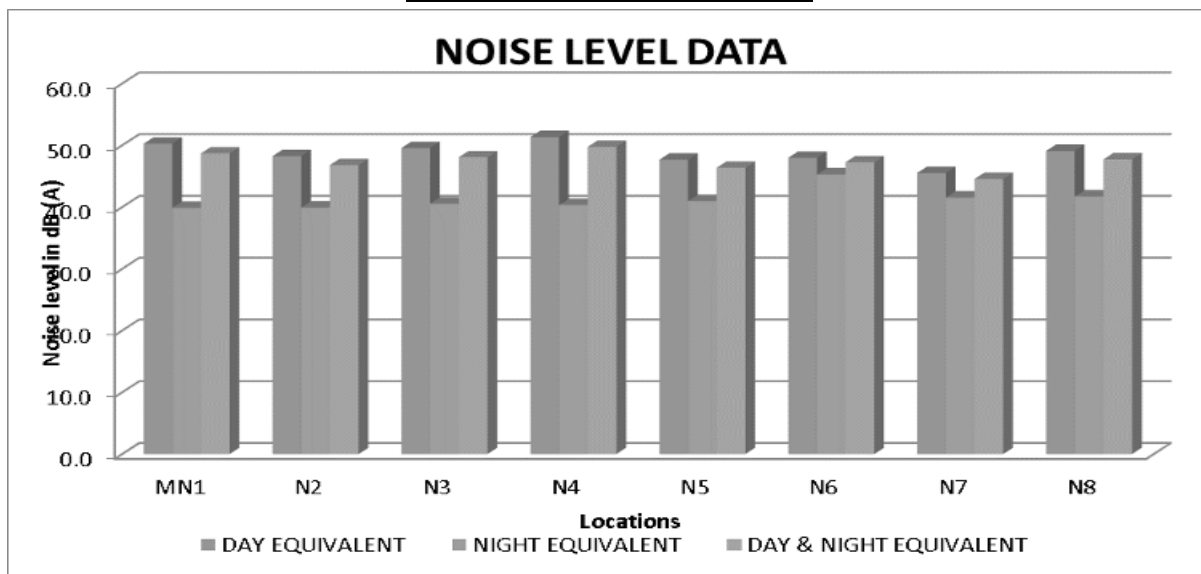


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Table 3.17: Ambient Noise Level in dB (A)

Date and time of monitoring	N1	N2	N3	N4	N5	N6	N7	N8
Day Equivalent	50.3	48.3	49.6	51.3	47.7	48.0	45.5	49.1
Night Equivalent	39.9	39.9	40.6	40.4	41.0	45.3	41.6	41.7
Day & Night Equivalent	48.7	46.8	48.1	49.8	46.4	47.3	44.6	47.7
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-3.17**. The noise values for all above locations are shown in a comparative chart given in **Figure No - 3.12**. In the buffer zone, day Equivalent Noise (Leq-d) noise levels were ranging from 45.5 dB(A) to 51.3 dB(A) and night Equivalent Noise (Leq-d) levels ranged between 39.9 dB(A) to 45.3 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 4 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.

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Table 3.18: Soil Quality Monitoring

1.	Monitoring Period	Winter Season (Dec 2022 – Feb 2023)		
2.	Monitoring Location	The location map showing soil sampling locations are given in Figure No.3.13.		
	Code	Location	Distance	Direction
	S1	Near Mine lease area	-	-
	S2	Poonaihangal Village	1.1km	NE
	S3	Seniyanallur Village	3.3km	NE
	S4	Sithalapakkam Village	3.4km	SE
3.	Methodology	Composite soil samples using sampling augers and field capacity apparatus.		
4.	Monitoring Frequency	Once during monitoring period		



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Figure 3.13: Location of Soil Sampling Stations



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Table 3.19: Soil Quality Data

S.No	Parameters	Unit	S1	S2	S3	S4
1	pH at 25°C	-	6.55	7.01	7.49	6.94
2	Electrical Conductivity	(µmhos/cm)	80.2	95.7	66.48	73.25
3	Dry matter content	%	96.48	97.34	96.25	95.33
4	Water Content	%	3.52	2.66	3.75	4.67
5	Organic Matter	%	0.66	0.72	0.68	0.86
6	Soil texture	-	Loam	Silty Clay Loam	Loam	Loam
7	Grain Size Distribution i. Sand	%	46.89	20.33	47.64	36.59
8	ii. Silt	%	36.57	40.24	30.26	44.22
9	iii. Clay	%	16.54	39.43	22.10	19.19
10	Phosphorous	µg/g	1.54	1.69	1.31	1.19
11	Sodium	mg/kg	622	590	670	564
12	Potassium	mg/kg	425	484	368	326
13	Total Nitrogen	mg/kg	228	172	184	210
14	Total Sulphur	%	BDL(D.L - 0.02)	BDL(D.L - 0.02)	BDL(D.L - 0.02)	BDL(D.L - 0.02)
15	Water Holding Capacity	3.8	3.2	3.4	2.5	3.8
16	Porosity	15.8	16.7	17.5	16.6	15.8

3.3.5.1 Results and Discussion:

Results of the soil samples show that the pH values were ranging between 6.55 to 7.49 and Electrical Conductivity values were ranging between 66.48 – 95.7 µmhos/cm. Soils are generally Silty clay loam type. Organic matter values were ranging between 0.66 – 0.86%. Total Nitrogen values were ranging between 172 - 228mg/kg. Phosphorus values were ranging between 1.19 – 1.69µg/g. Potassium values were ranging between 326 - 484 mg/kg. Sodium values were ranging between 564 - 670 mg/kg. Total Sulphur values were observed to be BDL. The soil quality data for the 4 samples collected and analyzed are provided in **Table No – 3.19.**

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 acquired on December 2022 (Figure No.3.14) has been used to generate the require landuse map showing their spatial pattern within the buffer area. The table showing data used for generation of information on landuse and subsequent GIS analysis is given below

Table 3.20: RS satellite image used for the present study

S.No	Type of Data	Date	Generated Map
1.	Landsat-8	DEC 2022	Landuse (LU) Map showing 10 Km around the ML area

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.

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Figure 3.14 : Landsat 8 Satellite Data of the Study Area

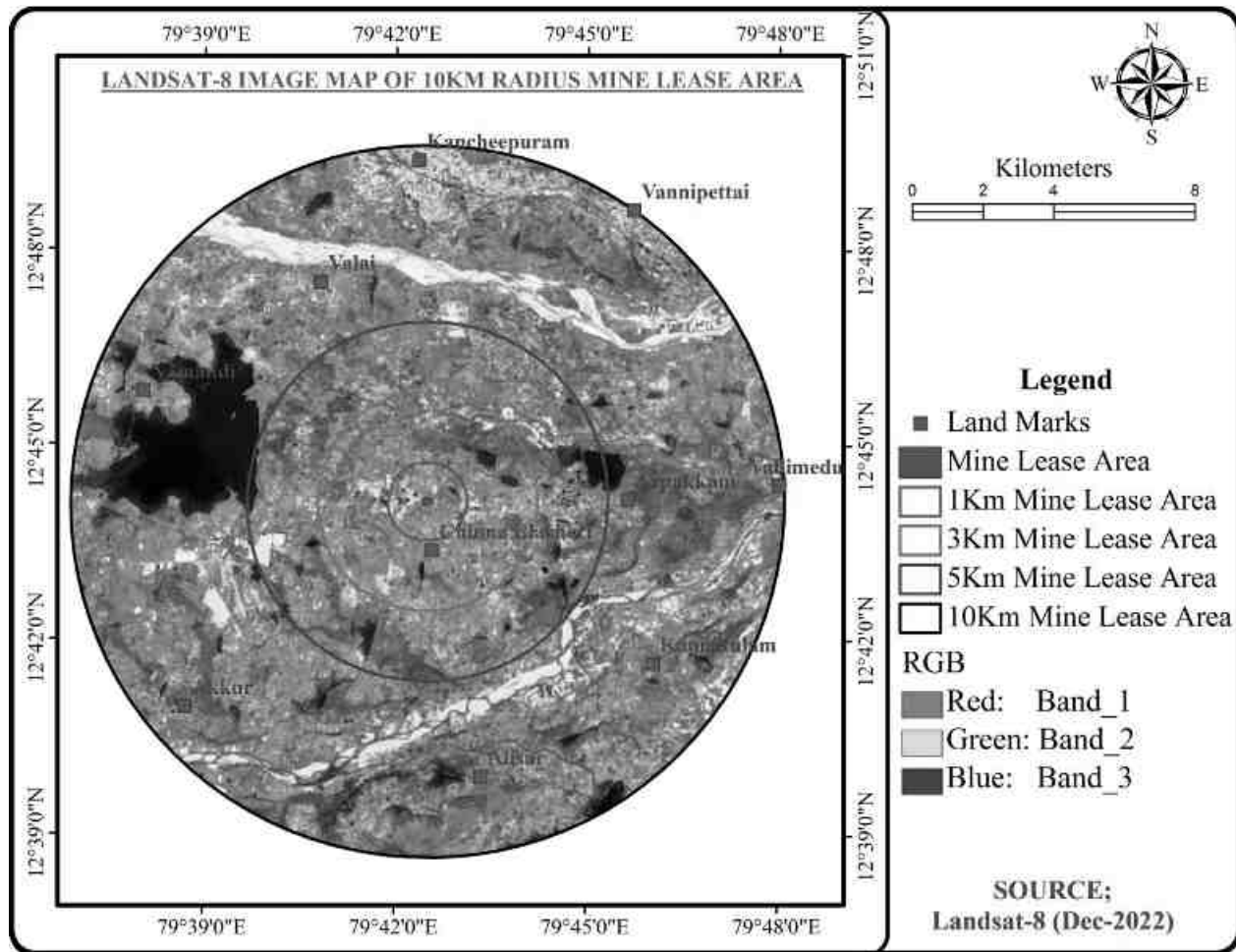


Table 3.21: Major Landuse Units of the Study Area

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. 3.15) using above such elaborate procedure and transformed into GIS environment for its

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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

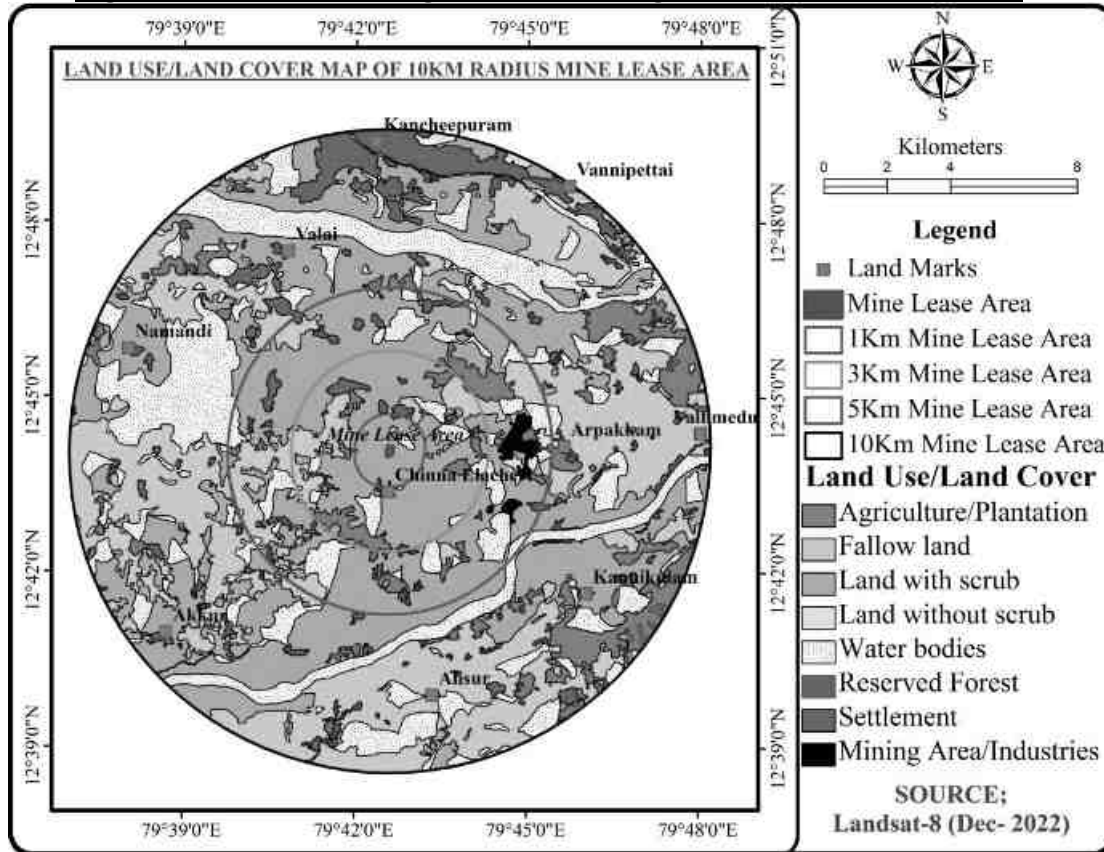


Table 3.22: Area Estimation of Landuse Categories in Buffer Zone

S.No	Landuse Feature	Area (Sq.Km)	Percentage
1	Agriculture/Plantation	21.90	6.8
2	Fallow land	86.88	26.9
3	Land with scrub	124.30	38.4
4	Land without scrub	1.33	0.4
5	Water bodies	67.64	20.9
6	Settlement	19.66	6.1
7	Reserved Forest	0.30	0.1
8	Mining process	1.37	0.4
	Total	323.37	100

From the above table it is seen that 65.30 % of the study area constitute Fallow land and Land with scrub.

3.4.2 LAND USED BASED ON REVENUE RECORDS:

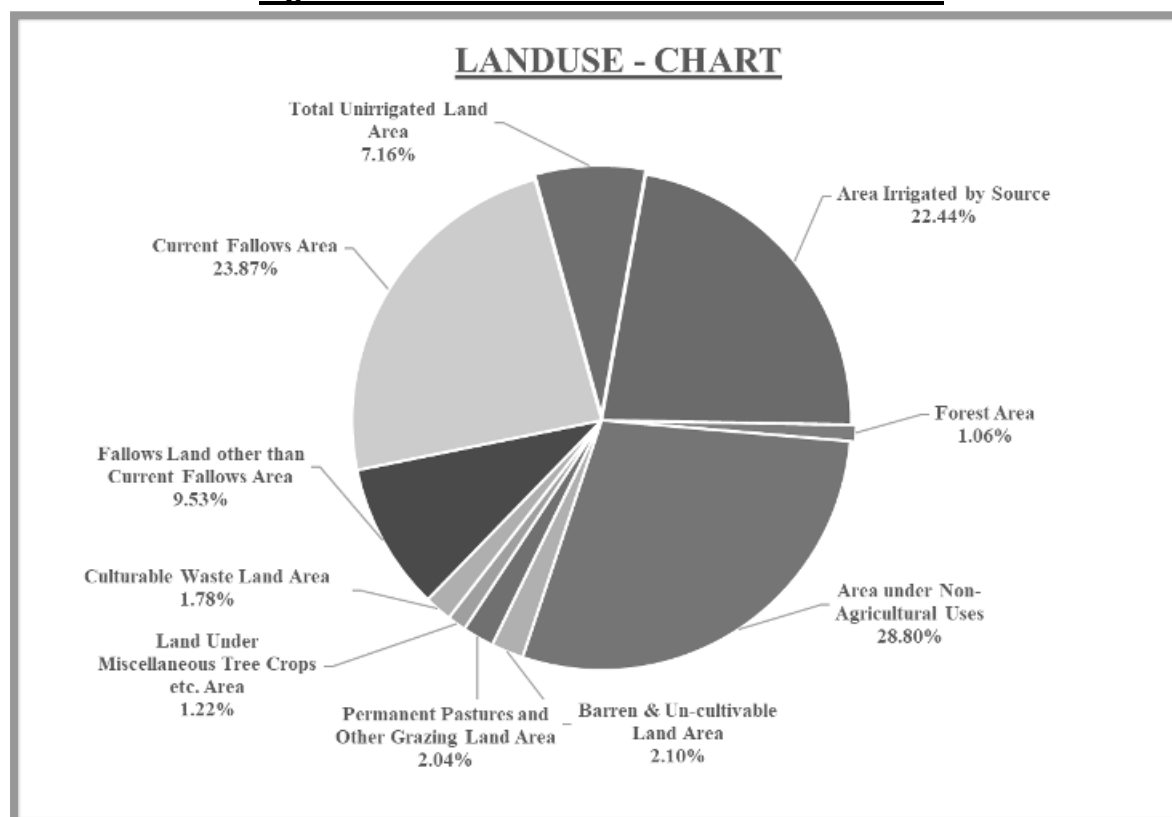
The lease area falls in Poonaitthangal village, Vembakkam Taluk, Tiruvannamalai District, Tamil Nadu state and the study area for the land use pattern (10 km radius) has been divided into four zones viz. Zone-I (0-2 km), Zone-II (2-5 km), Zone-III (5-10 km) and Zone-IV (0-10 km) respectively. The land use pattern of the study area falling within 10 km radius around the proposed project area is presented in Table no - 3.23. Village wise land use pattern is provided in **Annexure-11**.

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Table 3.23: Land Use Pattern of the Study Area Falling Within 10 Km Area in (Ha)

Study Area	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	2357.02	0	291.94	3.99	43.5	3.43	74.26	223.4	1154.78	114.68	447.04
2 - 5 KM	7016	0	1751.53	62.95	155.05	88.38	47.58	647.75	1994.27	454.2	1814.29
5-10 KM	23380.58	348.22	7389.39	619.53	471.17	306.67	461.73	2250.94	4670.13	1775.04	5087.76
0-10 KM	32753.6	348.22	9432.86	686.47	669.72	398.48	583.57	3122.09	7819.18	2343.92	7349.09

Figure 3.16: Landuse within the Buffer Zone Area



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. Accordingly the ecological survey for the proposed quarry area including core and buffer zone were carried out to identify various species occurring in the area.

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.

3.5.1.1 Sampling Methodology:

In order to provide representative ecological status for the study area, the 10-km radius buffer area has been divided into four quartiles for biodiversity sampling, i.e., NE (Q-1), NW (Q-2) SW (Q-3) and SE (Q-4). Each of the quartiles have been examined for representative flora on randomly sampled quadrats for trees (10x10 m), shrubs (5x5 m) and herbs (1x1 m) depending upon prevailing geographical conditions and bio-diversity aspects of study area.

Phyto-sociological Survey: Phyto-sociological parameters, viz., Abundance (i.e., density), average and minimum stems were measured to determine the distribution and ecological aspects of the species. Abundance is a measure of the density of distribution of an individual species within a given area. It is calculated by summed individuals of a species. Average species number is calculated for all quadrates; similarly, minimum number of individuals

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represented is recorded at quadrats level. A total of 10 quadrats were laid down in core area and a total of 20 quadrats were laid out in four quartiles (5 each) of buffer area.

Quadrats method for flora : Quadrats of 10 × 10m were laid down randomly within core and 10kms buffer area; each quadrat was laid to assess the trees (>5 cm GBH) and 5 × 5 m sub-quadrat nested within the quadrat for shrubs and two plot 1 × 1 m for herbs . The quadrats were laid at a minimum distance of a kilometer apart to maximize the sampling efforts and minimize the species homogeneity, such as small stream area, trees in agricultural bunds, tank bunds, farm forestry plantations, natural forest area, avenue plantations, house backyards, etc. In each sample quadrat, individuals belonging to tree, shrub and herb species were recorded separately, and have been identified on the field. The prevailing land use and habitat quality has been noted down for each location on the field.

Vegetation Analysis using index: Species diversity will be calculated by using Shannon and Wiener (1963) formula as follows:

$$H' = - \sum_{i=1}^R p_i \ln p_i$$

Whereas,

H' is Shannon index of general diversity,

p_i is often the proportion of individuals belonging to the i th species in the dataset of interest.

Evenness index was calculated as: $E = H'/H_{max}$,

Whereas $H_{max} = \log_2$ (number of species in the plot)

A.CORE ZONE:

The lease area is a non-forest, private land. Major part of lease area is barren fallow land with few bushes. The detailed list of plants found in the core zone are given in Table no – 3.24.

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Table 3.24: List of Floristic Species in the Core Zone

Sl.No	Species Name	Common Name	Family
Trees			
1	Prosopis juliflora	Cimaikkaruvel	Fabaceae
2	Phoenix sylvestris	Eecha maram	Arecaceae
Shrubs			
1	Cassia auriculata	Fabaceae	Aavarampoo
2	Calotropis gigantea	Apocynaceae	Earukku
Herbs			
1	Sida cordifolia	Malvaceae	Nila –thuthi
2	Abutilon indicum	Malvaceae	Thuththi
3	Acalypha indica	Amaranthaceae	Kupaimeni keeri
Grasses			
1	Cyperus rotundus	Cyperaceae	Korai pullu

C.BUFFER ZONE:

The Dominated species are Borassus flabellifer, Acacia nilotica, Albizia lebeck, Azadirachta indica, Prosopis juliflora, Acacia auriculiformis, Acacia leucophloea etc. The detailed list of plants found in the Bufferzone is given in Table no – 3.25.

Table 3.25: List of Floristic Species in the Buffer Zone

Sl.No	Species name	Family	Local name
Trees			
1	Acacia auriculiformis	Fabaceae	Pencil tree
2	Acacia catechu	Fabaceae	Khair
3	Acacia leucophloea	Fabaceae	Valvelam
4	Acacia nilotica	Fabaceae	Karuvelan
5	Acacia planifrons	Fabaceae	Umbrella thorn
6	Acras sapota L.	Sapotaceae	Sapota
7	Aegle marmelos	Rutaceae	Vivam
8	Albizia amara	Fabaceae	Vagai
9	Albizia lebeck	Fabaceae	Siris
10	Annona squamosa	Annonaceae	Sithapalzhm
11	Areca catechu	Arecaceae	Pakku maram
12	Artocarpus integrifolia	Moraceae	Pala maram
13	Atalantia monophylla	Rutaceae	Kattu Elumeachi
14	Bauhinia purpurea	Caesalpiniaceae	Mantharai
15	Borassus flabellifer	Arecaceae	Panna-maram
16	Butea monosperma	Fabaceae	Palasu
17	Caesalpinia pulcherrima	Fabaceae	Mayilkondrai
18	Carica papaya	Caricaceae	Pappali
19	Cassia fistula	Caesalpinaceae	Konnai
20	Casuarina equisetifolia	Casuarinaceae	Savukku
21	Citrus limon	Rutaceae	Lemon
22	Cocus nucifera	Arecaceae	Tennai
23	Delonix regia	Fabaceae	Gulmohar
24	Ficus benghalensis	Moraceae	Aalamaram
25	Ficus racemosa	Moraceae	Atthi

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Sl.No	Species name	Family	Local name
26	Ficus religiosa	Moraceae	Arasamaram
27	Gmelina arborea	Verbenaceae	Kumalaamaram
28	Lepisanthes tetraphylla	Sapindaceae	Nekota
29	Leucaena leucocephala	Fabaceae	Subabul
30	Madhuca longifolia	Sapotaceae	Iluppai
31	Mangifera indica	Anacardiaceae	Mango
32	Manilkara zapota	Sapotaceae	Sappota
33	Mimusops elengi	Sapotaceae	Magizhamboo
34	Morinda tinctoria	Rubiaceae	Nuna
35	Moringa oleifera	Moringaceae	Murungai
36	Murriya koengii	Rutaceae	Kariveppilai
37	Musa paradisiaca	Musaceae	Valzhlai
38	Peltophorum pterocarpum	Fabaceae	Kilukiluppai
39	Phoenix sylvestris	Arecaceae	Eeachamaram
40	Phyllanthus emblica	Euphorbiaceae	Nelli
41	Pithecellobium dulce	Mimosaceae	kodukkappuli
42	Polyalthia longifolia	Annonaceae	Nettilingam
43	Pongamia pinnata	Fabaceae	Pungai
44	Prosopis juliflora	Fabaceae	Seemai karuvel
45	Psidium guava	Myrtaceae	Koyya
46	Samanea saman	Fabaceae	Amaivagai
47	Saraca asoca	Caesalpiniaceae	Asogam
48	Sygygium cumuni	Myrtaceae	Naval
49	Tamarindus indica	Caesalpinaceae	Puli
50	Tectona grandis	Verbenaceae	Tekku
51	Terminalia arjuna	Combretaceae	Marudha Maram
52	Thespesia populnea	Malvaceae	Puvarasu
Shurbs			
1	Abutilon indicum	Malvaceae	Thutti
2	Aloe vera	Liliaceae	Kathalai
3	Anisomeles indica	Lamiaceae	Indian Catmint
4	Anisomeles malabarica	Lamiaceae	Peyameratti
5	Boerhaavia diffusa	Nyctaginaceae	Kagithapoo
6	Bougainvillea spectabilis	Nyctaginaceae	Kagithapoo
7	Caesalpinia pulcherrima	Caesalpinaceae	Mayilkonnai
8	Calotropis gigantea	Apocynaceae	Earukku
9	Canthium parviflorum	Rubiaceae	Karaicetti
10	Carissa carandas	Apocynaceae	Kala/Kila
11	Carissa spinarum	Apocynaceae	Chirukila
12	Cassia auriculata	Fabaceae	Aavarampoo
13	Datura metel	Solanaceae	Umatai
14	Dodonaea viscosa	Sapindaceae	Velari
15	Euphorbia tirucalli	Euphorbiaceae	Thiru- kalli
16	Grewia tiliifolia	Tiliaceae	Dhaman
17	Hibiscus rosa-sinensis	Malvaceae	Semparuthi
18	Ipomoea carnea	Convolvulaceae	Bush morning glory
19	ixora coccinea	Rubiaceae	Idlipoo
20	Jatropha glandulifera	Euphorbiaceae	Vellaikattukottai
21	Justicia adhatoda	Acanthaceae	Adathoda
22	Lantana camara	Verbenaceae	Unichedi

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Sl.No	Species name	Family	Local name
23	Lawsonia inermis	Lythraceae	Henna
24	Ocimum sanctarum	Amaranthaceae	Thulasi
25	Opuntia stricta	Cactaceae	Sappathikalli
26	Ricinus communis	Euphorbiaceae	Amanakku
27	Solanum pubescens	Solanaceae	Kattusundai
28	Tarenna asiatica	Rubiaceae	Thaerani
29	Tecoma stans	Bignoniaceae	Yellow trumpetbush
30	Tephrosia purpurea	Fabaceae	Kolinji
31	Vitex negundo	Verbenaceae	Nochi
32	Vitex trifolia	Verbenaceae	Nili / Karu nocci
33	Wrightia tinctoria	Apocynaceae	Nilapalai
34	Ziziphus jujuba	Rhamnaceae	Elanthai
Herbs			
1	Abutilon indicum	Malvaceae	Thuththi
2	Acalypha indica	Amaranthaceae	Kupaimeni keeri
3	Achyranthes aspera	Amaranthaceae	Nayuruvi
4	Aloe vera	Asphodelaceae	Chotthu kthalai
5	Alternanthera sesilis	Amaranthaceae	Joy weed
6	Amaranthus tricolor	Amaranthaceae	Sirukkeerai
7	Amaranthus viridis	Amaranthaceae	Kuppaikeerai
8	Andrographis echioides	Acanthaceae	Gopuram tangi
9	Anisomeles malabarica	Lamiaceae	Peyimarutti
10	Argemone mexicana	Papaveraceae	Mexican poppy
11	Boerhavia diffusa	Nyctaginaceae	Erect spiderling (Mukkirattai)
12	Boerhavia erecta	Nyctaginaceae	Erect Spiderling
13	Cassia occidentalis	Caesalpiniaceae	Pei- avarai
14	Cassia tora L.	Caesalpiniaceae	Thagarai
15	Catharanthus roseus	Apocynaceae	Nithyakalyani
16	Cleome viscosa	Amaranthaceae	Ajagandha
17	Cleome viscosa	Cleomaceae	Naai velai
18	Commelina benghalensis	Commelinaceae	Kanavaazhai
19	Leucas aspera	Lamiaceae	Thumbai
20	Ocimum tenuiflorum	Lamiaceae	Thulasi
21	Parthenium hysterophorus	Asteraceae	Parthenium
22	Phyllanthus niruri	Phyllanthaceae	Keelzhaneeli
23	Sida acuta	Malvaceae	Palambasi
24	Sida cordifolia	Malvaceae	Nila -thuthi
25	Sida rhombifolia	Malvaceae	Chitramutti
26	Solanum xanthocarpum	Solanaceae	Kandangkattari
27	Tephrosia purpuria	Fabaceae	Poondu sedi
28	Tridax procumbens	Asteraceae	Vettukai poondu
29	Waltheria indica	Sterculiaceae	shembudu
Climbers			
1	Abrus precatorius	Fabaceae	Kundumani
2	Asparagus racemosus	Asparagaceae	Tannir-vittan
3	Cissus quadrangularis	Vitaceae	Pirandai
4	Clitoria ternatea	Fabaceae	Butterfly Pea
5	Coccinia indica	Cucubitaceae	Kovai
6	Jasminum angustifolium	Oleaceae	Kattumalligai
7	Luffa cylindrica	Cucubitaceae	Peirkkai



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Sl.No	Species name	Family	Local name
8	Ziziphus oenoplia	Rhamnaceae	Kottai-ilanthai
Agriculture crops			
1	Gossypium hirsutum	Malvaceae	Paruththi
2	Sesbania grandiflora	Fabaceae	Agati
3	Capsicum annum	Solanaceae	Red chilli
4	Musa paradisiaca	Musaceae	Valzhai
5	Sorghum vulgare	Poaceae	Solam
Grasses			
1	Cenchrus ciliaris	Poaceae	Kolukkattai-pullu
2	Chloris barbata	Poaceae	Chevvarakupul
3	Chloris bournei	Poaceae	Peria kuruttu pul
4	Chloris inflata	Poaceae	Kodai pullu
5	Chrysopogon fulvus	Poaceae	Cholappullu
6	Cynodon dactylon	Poaceae	Arugam pullu
7	Cyperus rotundus	Cyperaceae	korai pullu

3.5.2 FAUNA:

Methodology: Both direct and indirect observation methods were used to survey the fauna. Point Survey Method was used to study the Bird diversity. Besides, discussion with local villagers Collection secondary data from Government records, published reports as well as through discussion with Forest officials, knowledgeable public were used for the study.

Observation: There is no Wild Life Sanctuary or National Park within the study area of 10 km. Domesticated animals 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. There is no Schedule I animals in the buffer zone area. The list of fauna within the study area is given in Table No – 3.26.

Table 3.26: List of Fauna in the Buffer Zone

S.No	Common Name	Scientific name	IWPA, Schedule
Mammals			
1	Indian Grey Mongoose	Herpestes edwardsii	II
2	Indian Palm squirrel	Funambus palmarum	IV
Birds			
1	Rose-ringed Parakeet	Psittacula krameri	IV
2	Common Myna	Acridotheres tristis	IV
3	Common Kingfisher	Alcedo atthis	IV
4	Red-vented Bulbul	Pycnonotus cafer	IV
5	Purple-rumped Sunbird	Nectarinia zeylonica	IV
6	Black Drongo	Dicrurus macrocercus	IV
7	Spotted Dove	Streptopelia chinensis	IV
8	Common Crow	Corvus splendens	V
9	Indian Cuckoo	Cuculus micropterus	IV
Reptiles			



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S.No	Common Name	Scientific name	IWPA, Schedule
1	Rat Snake	Ptyas mucosa	II
Amphibians			
1	Common Indian toad	Bufo melanostictus	IV
Butterfly			
1	Common crow	Euploea core	IV

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:

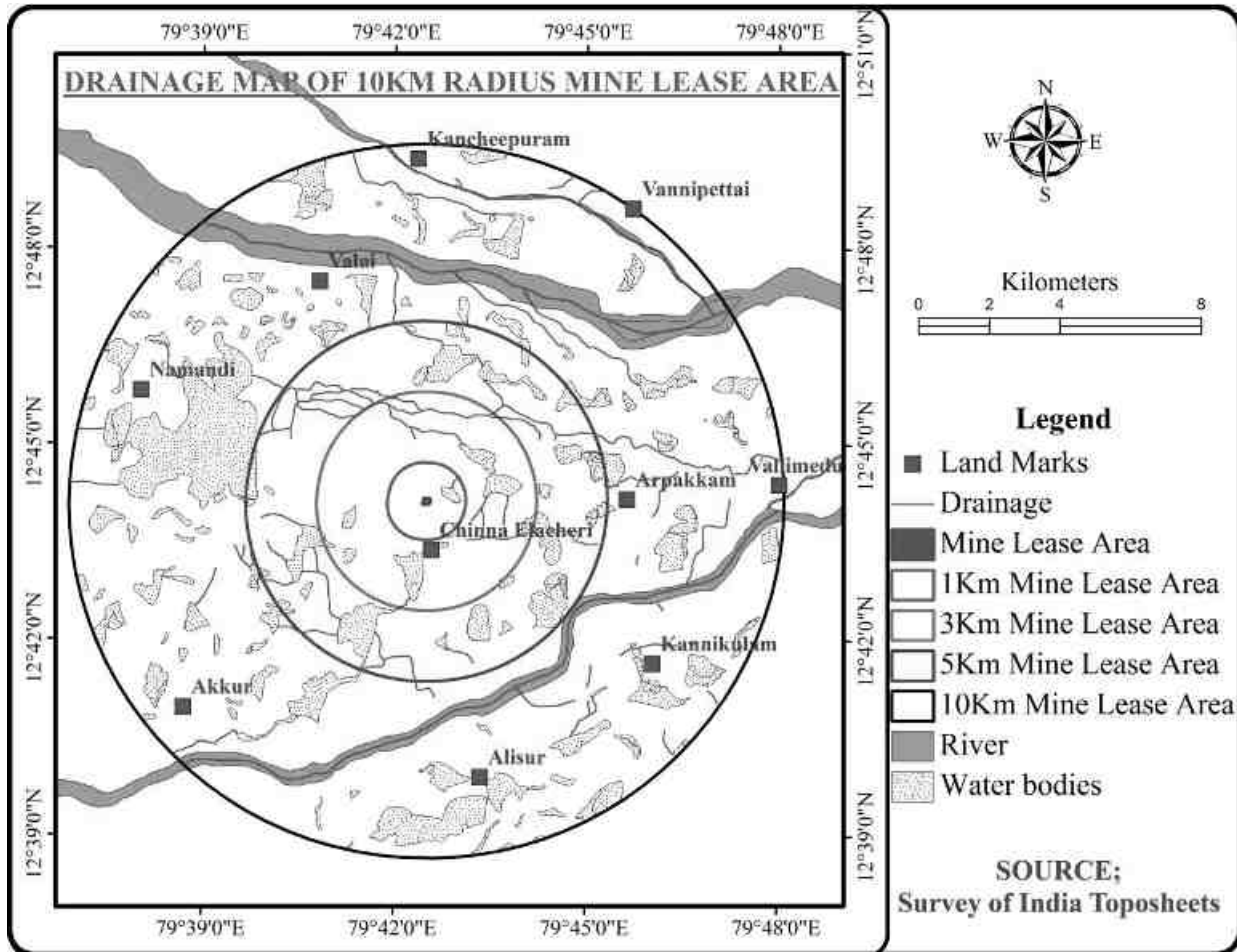
Physiography: The area is a gentle plain terrain with a topography sloping towards east direction. The land is dry with scarce vegetation.

Drainage: Poonathangal Eri is located 160m on the north eastern side of the lease area. There is an odai at a distance of 440m on the north eastern side of the lease area. Further elaborate details of the same has been provided under section 4.3.3C, Chapter-IV. The drainage map prepared from the survey of India topographic maps shows the presence of few streams running in a dendritic pattern.



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Figure 3.17: Drainage Map

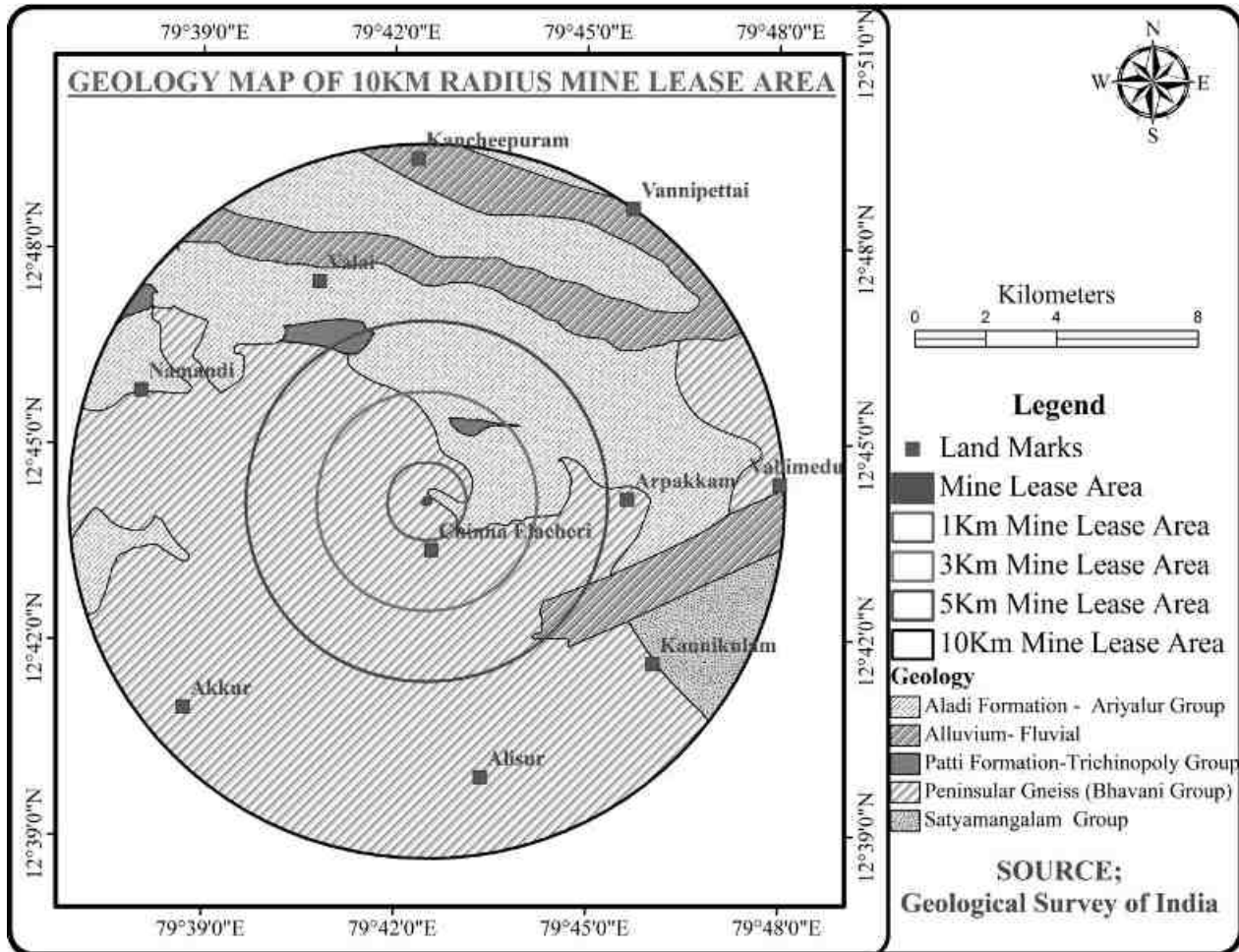


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3.6.2 GEOLOGY AND GEOMORPHOLOGY

Geology: The type of rock formation in the study area is composed of peninsular Gneiss followed by Aladi formation and Alluvium. The lease area falls under Aladi formation category. The geological map is provided below in Figure No.3.18.

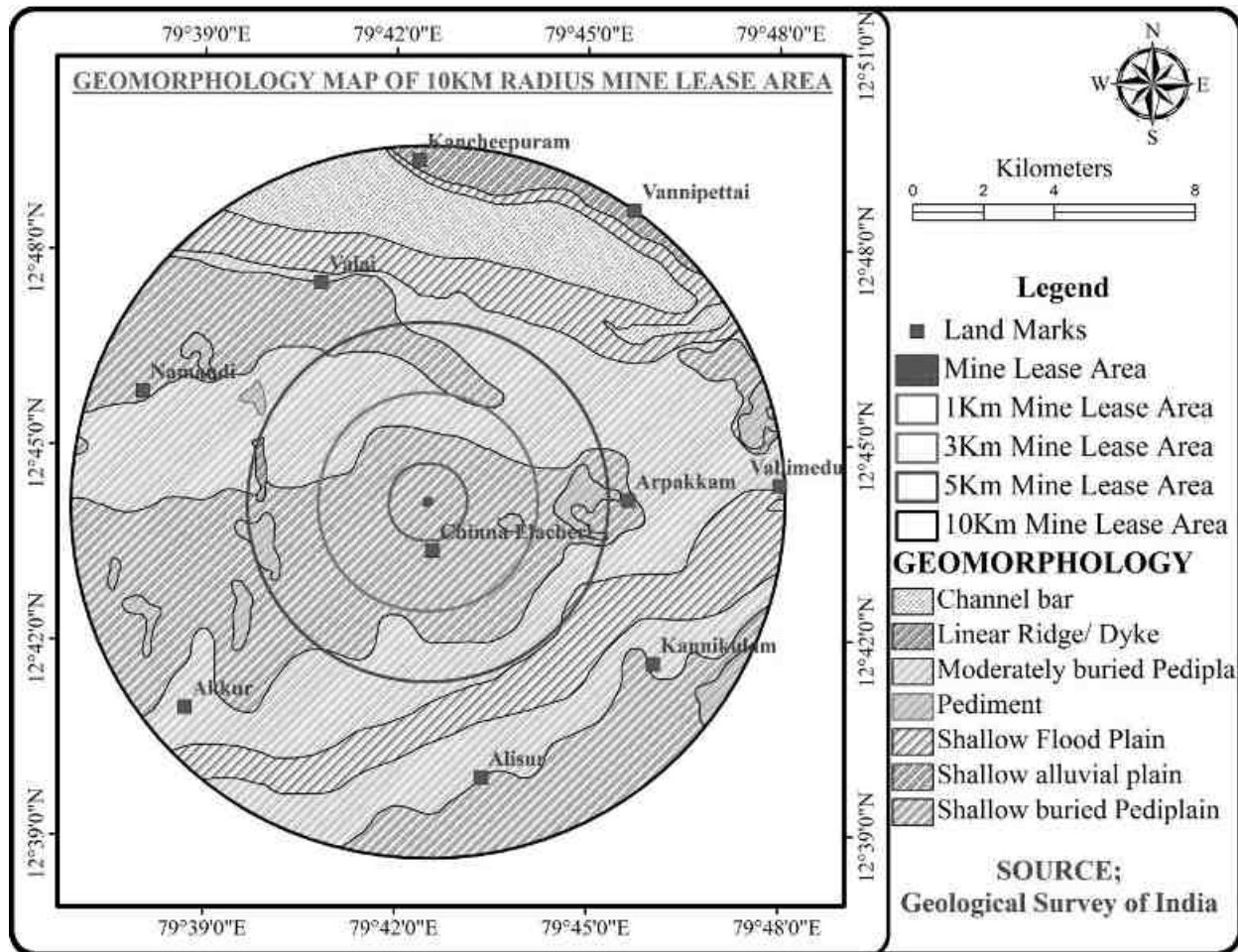
Figure 3.18: Geology Map



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Geomorphology: The geomorphology map of the study derived from the satellite imagery using remote sensing and GIS technique. Predominantly the buffer zone is dominated by Moderately buried pediplain, Shallow buried pediplain, pediment and shallow flood plain. The lease area falls under shallow buried pediplain category.

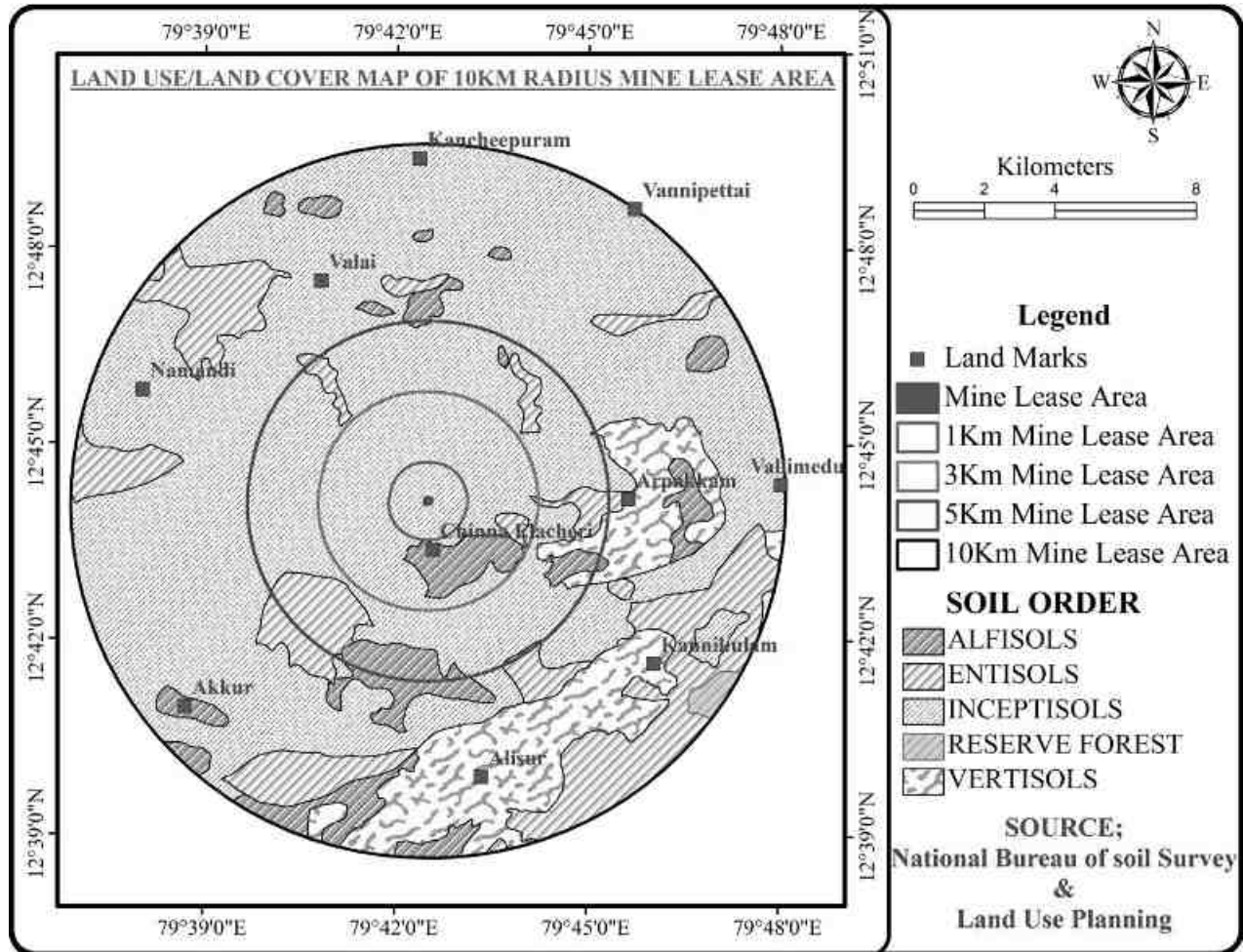
Figure 3.19: Geomorphology Map



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Soil: The study area is characterized by Inceptisol, Vertisols, Entisols and Alfisols. The lease area falls under the category of Inceptisol. The soil map is provided in Figure No.3.20.

Figure 3.20: Soil Map



3.6.3 WATER TABLE OF THE AREA:

Based on the depth to water level data obtained from the India-WRIS, Department of Water Resources, Ministry of Jal Shakti for Vembakkam Taluk, Tiruvannamalai District, Tamil Nadu the following is observed.

Table 3.27: General Trend of Depth to Water Level

Year	Depth to Water Level (m bgl)		Wells Monitored	
	Pre-Monsoon	Post-Monsoon	Pre-Monsoon	Post-Monsoon
2015	5.6	0.32	1	1
2016	2.32	2.28	1	1

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2017	4.24	-	1	-
2018	4.64	-	1	-
2019	7.24	1.64	1	1
2020	-	1.59		1

Well Inventory Data:

In the study area, wells and borewells were studied which indicate that 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. Rain water collected in the tanks in the region acts as a good source of water during post monsoon. The water in the wells are available mainly after post monsoon and it reduces during summer.

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. From the nearby working mines, no such seepage is also observed.

* * * * *



CHAPTER - IV

ANTICIPATED ENVIRONMENTAL IMPACTS & MITIGATION MEASURES

CHAPTER 4

ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

4.1 GENERAL

In this project Semi – 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 PM₁₀, 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_{2.5}), 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 SO₂, NO_x, 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 SO₂, NO_x, 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 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
5	Others	Dust emanation, Gaseous Emission	Covering of loaded tippers with tarpaulins during transportation
			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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Considering that the quantum of production is less, only 1 excavator, 4 tippers will be engaged. These equipments will be properly and regularly maintained. Besides, as mentioned earlier, 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 wherein 2250 number of plants will be planted in and around the lease area.

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, PM₁₀, PM_{2.5}. **Ground Level Concentration (GLC)** have been computed using hourly meteorological data.

Table 4.2: Emission Sources

ACTIVITY	SOURCE TYPE
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 scenario. The details of the emission factors used for the same is provided below:



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Table 4.3: Emission Factors

S.No	Activity	PM10	PM2.5	Unit
1	Ore Loading	1.5×10^{-3}	2.1×10^{-4}	Kg/T
2	OB Loading	1.4×10^{-4}	1.5×10^{-5}	Kg/T
3	Hauling inside lease area	0.19	0.019	g/VKT
4	Drilling	0.1	0.04	Kg/hole

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/POLLUTANTS	PM ₁₀ (g/sec)	PM _{2.5} (g/sec)
Ore Loading	0.11	0.02
Drilling	0.51	0.20
Hauling inside lease area	0.50	0.07
Total	1.12	0.29

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

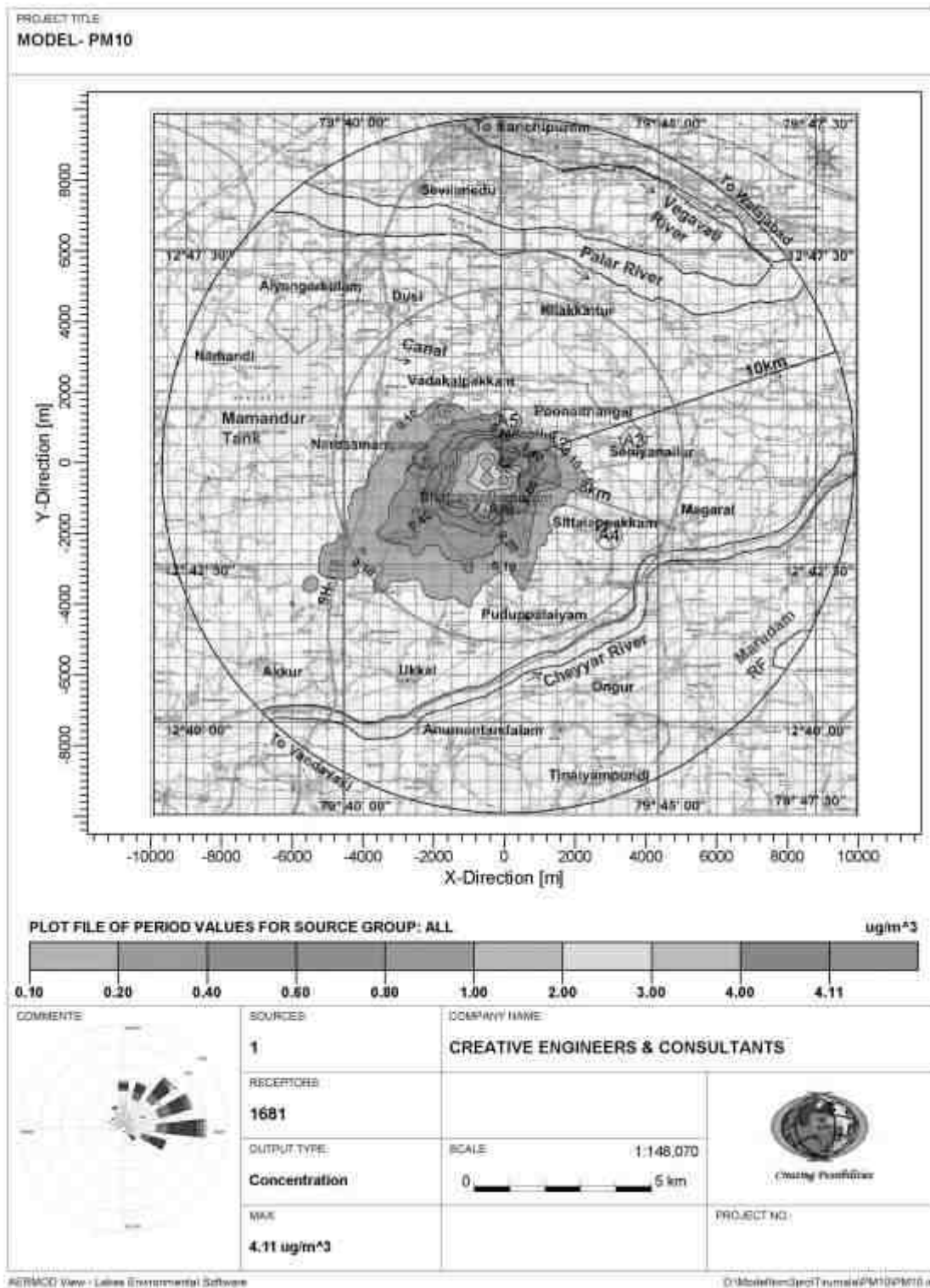
S.No	Parameters	Peak incremental concentration $\mu\text{g}/\text{m}^3$
1	PM ₁₀	4.11
2	PM _{2.5}	2.74

It is observed that the peak incremental concentration for PM₁₀, PM_{2.5} occurring very near the source. At away from the source the values are getting reduced due to dispersion effects. The Isopleths of PM₁₀, PM_{2.5} 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.



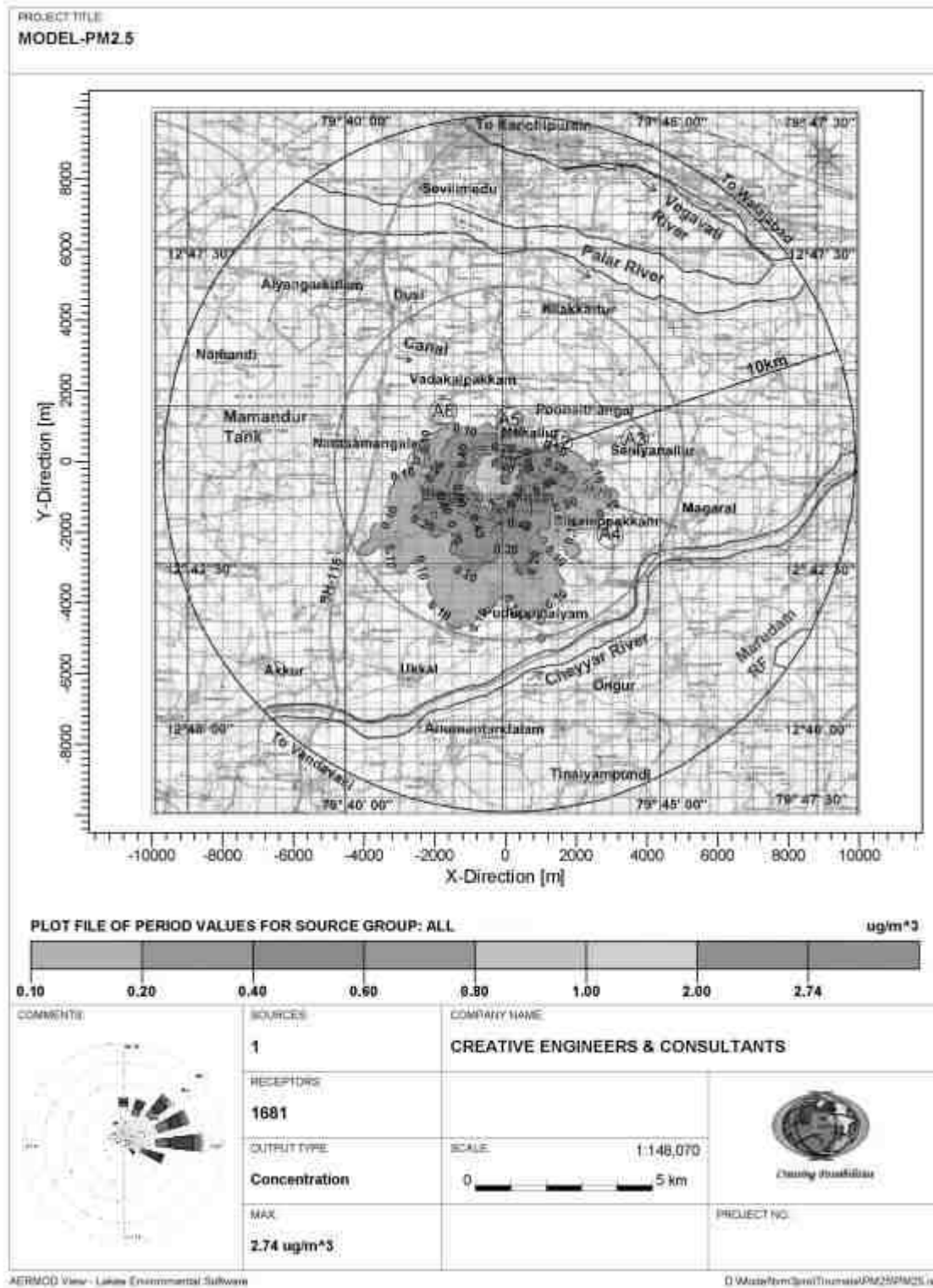
DRAFT EIA/EMP REPORT FOR ROUGH STONE AND GRAVEL QUARRY OF SRI TIRUMALA BLUE METALS OVER AN AREA OF 4.44.35Ha IN MENALLUR VILLAGE, VEMBAKKAM TALUK, TIRUVANNAMALAI DISTRICT, TAMIL NADU

Figure 4.1: Isopleth of GLC Prediction for PM₁₀



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Figure 4.2: Isopleth of GLC Prediction for PM_{2.5}



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4.2.2.4 Predicted Ambient Air Quality:

The post project Concentrations of PM₁₀, PM_{2.5}, (GLC) (base line + incremental) after adopting necessary control measures is given in Table No - 4.6 to 4.7.

Table 4.6: Concentrations Of PM₁₀ after Project Implementation

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

S. No	Location	Background Concentration	Predicted Incremental Concentration	Post Project Concentration	Statutory Limits
1	AA1-Near Mine lease area	74.7	4.0	78.7	-
2	A2-Poonathangal Village	63.9	<1.0	64.9	100
3	A3-Seniyanallur Village	55.5	<1.0	56.5	
4	A4-Sithalapakkam Village	74.6	<1.0	75.6	
5	A5-Menallur Village	66.2	<1.0	67.2	
6	A6-Vadakalpakkam Village	57.9	<1.0	58.9	
7	A7-Bhagavanthapuram Village	55.8	1.0	56.8	
8	A8-Narasamangalam Village	59.2	<1.0	60.2	

Table 4.7: Concentrations Of PM_{2.5} after Project Implementation

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

S. No	Location	Background Concentration	Predicted Incremental Concentration	Post Project Concentration	Statutory Limits
1	AA1-Near Mine lease area	32.9	2.0	34.9	-
2	A2-Poonathangal Village	28.8	<1.0	29.8	60
3	A3-Seniyanallur Village	25.5	<1.0	26.5	
4	A4-Sithalapakkam Village	34.3	<1.0	35.3	
5	A5-Menallur Village	31.8	<1.0	32.8	
6	A6-Vadakalpakkam Village	26.9	<1.0	27.9	
7	A7-Bhagavanthapuram Village	25.1	<1.0	26.1	
8	A8-Narasamangalam Village	27.9	<1.0	28.9	

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 PM₁₀ are in the range of 56.5 $\mu\text{g}/\text{m}^3$ to 78.7 $\mu\text{g}/\text{m}^3$ and with respect to PM_{2.5} are in the range of 26.1 $\mu\text{g}/\text{m}^3$ to 35.3 $\mu\text{g}/\text{m}^3$ 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.

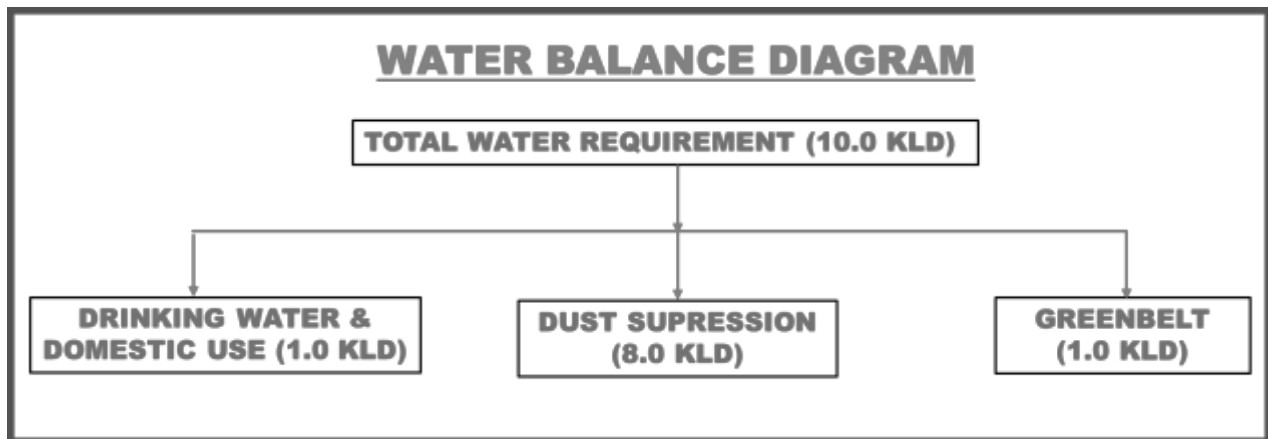


4.3 WATER ENVIRONMENT:

4.3.1 WATER REQUIREMENT:

The total water requirement for this project will be 10.0 KLD comprising 1.0 KLD for drinking water and domestic use, 8.0 KLD for dust suppression and 1.0 KLD for greenbelt. The water will be sourced initially from outside agencies. Later the rainwater collected in the mine pit sump will be used for this purpose. The water balance diagram for the same is shown in **Figure No 4.3**.

Figure 4.3: 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.

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4.3.3 TREATMENT SCHEME:

A. Generation of domestic effluent:

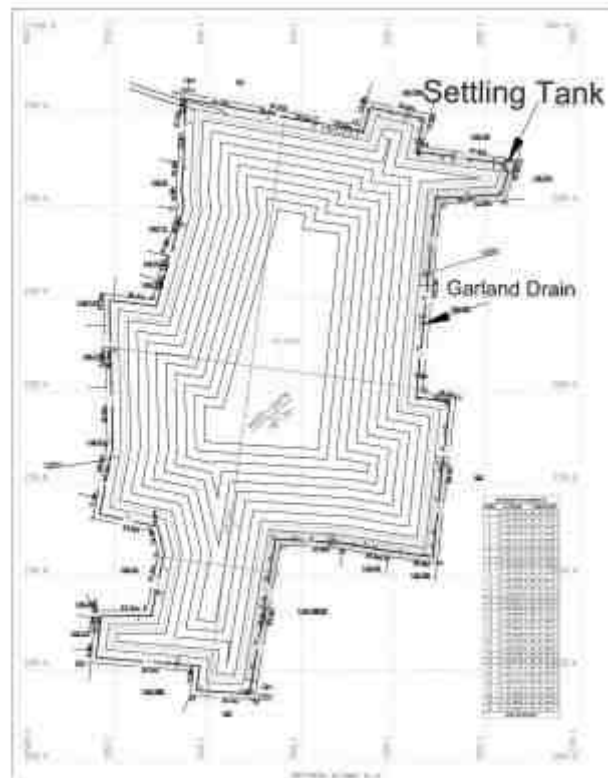
The domestic sewage to be generated from the project will be collected in septic tank with soak pits.

B. Washouts from overburden, ore stockpile, etc.

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.

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. Towards surface runoff management, a garland drain of length 1100m 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**.

Figure 4.4: Surface Runoff Management Structures



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C. Disturbance to drainage courses

There is a tank on the north eastern side of the lease area at a distance of 160m. There is an odai on the north eastern side at a distance of 440m. There is no proposal to discharge any effluent into this waterbody. No major impact is envisaged on the nearby water bodies due to project operations

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. In the nearby region, the formations are compact 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. The mining area consists of hard compact rock, hence no major water seepage within the mine is expected from the periphery. The ultimate pit depth of mining is 39m. The ground water table in this area is below this level. Hence, ground water intersection is 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 Tiruvannamalai district was obtained from the data provided in the technical report of the Central Ground Water Board, South Eastern Coastal Region – ‘District groundwater brochure, Tiruvannamalai District.’

Table 4.8: Ground Water Resources Estimation– Vembakkam 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
2043.19	1357.80	48.17	1405.97	69	Safe



From the table it is seen that the stage of groundwater development of Vembakkam where the study area falls is 69%. 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 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 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.

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 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 4.9: 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 4.10: 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

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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 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 4.11: 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.	North West Corner	50.3	61.7	90
2.	North East Corner	50.3	60.2	90
3	South East Corner	50.3	61.0	90
4	South West Corner	50.3	60.9	90
5	A2-Poonaitangal Village	48.3	48.7	55
6	A3-Seniyallur Village	49.6	49.7	55
7	A4-Sithalapakkam Village	51.3	51.4	55
8	A5-Menallur Village	47.7	48.5	55
9	A6-Vadakalpakkam Village	48.0	48.2	55
10	A7-Bhagavanthapuram Village	45.5	46.9	55
11	A8-Narasamangalam Village	49.1	49.2	55



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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.
- 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 tin net on the southern side and green net along the lease periphery on the other sides.

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

4.4.2 GROUND VIBRATIONAL 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



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column, improper burden, loose material or pebbles near holes and long water columns in the holes.

The following control measures will be planned 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.
- 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 4.12: 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			
A. Buildings/structures not belonging to owner			
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. Building belonging to owner with limited span of life			
Domestic houses/structures (Kuchha brick and cement)	10	15	25



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Industrial buildings (RCC and framed structures)	15	25	50
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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. There is a road at a distance of 275m on the western side of the lease area. It is also suggested to carry out the following precautionary measures before blasting:

- 1) Post security guard / flagmen at least 300m from the mines on either side of the road.
- 2) Blasting flags (red flags) shall be displayed before blasting in the blasting zone before blasting.
- 3) Block movement of men or vehicle and ensure the entire stretch free from movement of men or animals.
- 4) To give a warning signal by way of long hooter / siren/whistle 5 minutes prior to blast.
- 5) To provide “BLAST SIGNAL” 1 minute before blast and also “ALL CLEAR SIGNAL” after inspection of the blasting site and ensuring proper blast by the blaster.
- 6) Restoring the movement only after getting “ALL CLEAR SIGNAL”
- 7) Carrying out blasting through DGMS qualified Blaster and following all the prescribed statutory rules for transportation, storage & handling of explosives .

4.5 LAND ENVIRONMENT:

The lease area of 4.44.35 Ha is a patta land in the name of the Partners Thiru.Mukunthababu, Thiru.Ananthababu, Thiru. Haribabu and Thiru.Rajbabu, of Sri Tirumala Blue Metals vide Patta No. 769 and 713 (**Annexure-4**). The present land use pattern, and the post mining land use pattern is shown below:

Table 4.13: Land Use Table

S.No	Land Use	Present Area (Ha)	Area at the end of quarrying period (Ha)
1	Quarrying Pit	Nil	3.67.5
2	Infrastructure	Nil	0.01.0
3	Roads	Nil	0.02.0
4	Green Belt	Nil	0.40.0
5	Unutilized	4.44.35	0.33.8
	Total	4.44.35	4.44.35



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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. At the end of the life of the mine, an area of 3.67.5 Ha will be left as water body, 0.02Ha will be roads, 0.01Ha will be infrastructure, 0.40Ha will be greenbelt area and 0.338 Ha will be unutilized.

Table 4.14: Land Use During Post Operational Period

S.No	Description	Land use (Ha.)			
		Plantation	Water body	Others	Total
1	Quarrying Pit	--	3.67.5	--	3.67.5
2	Infrastructure	0.01.0	--	--	0.01.0
3	Green Belt	0.40.0	--	--	0.40.0
4	Road	--	--	0.02.0	0.02.0
5	Unutilized	0.33.8	--	--	0.33.8
	TOTAL	0.74.8	3.67.5	0.02.0	4.44.3

Entire mined out area will be properly fenced to prevent inadvertent entry of men and animals. Ultimately the entire mined out area will be left as water body.

4.6 BIOLOGICAL ENVIRONMENT:

4.6.1 EXISTING FLORA AND FAUNA:

The core zone area is a hard rock formation area, with barren patches. 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 4.15: Impact on Biological Environment

S.No	ISSUES	OBSERVATIONS
1	Clearance of vegetation due to mining and allied activities	No clearance of major vegetation is involved.
2	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.
3	Proximity to national park/ wildlife sanctuary/reserve forest/mangroves/Coastline/estuary/	The mining lease area and the 10 km buffer zone from the periphery of the core zone is devoid of declared ecologically sensitive features like national parks, biospheres, sanctuaries,



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	sea	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	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. Due to poor quality of the soil, inconsistent rainfall, water scarcity, high agricultural labor cost, manpower shortage and less yield are reason for very little agricultural activity in this region.
14	Impact on soil health and biodiversity	The lease area is covered with grasses and bushes only (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"> •As such the production from this lease is very low to cause any appreciable impact.
16	Pollution leading to release of greenhouse gases (GHG) rise in temperature (Hydrothermal/Geothermal effect due to destruction in environment, Bio-geochemical processes and its foot prints including environmental	<ul style="list-style-type: none"> •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. •Besides, as is it a mining project, no adverse generation of heat is envisaged. •Certified vehicles with low carbon emissions will only be used.



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	<p>stress) and livelihood of local people.</p>	<p>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 wherein 2250 number of plants will be planted in and around the lease area.</p> <ul style="list-style-type: none"> •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 and maintaining the environmental quality within the prescribed standards by effective implementation of various mitigative measures. •These mitigative measures will be continued for the entire lease period ensuring no impact on the environment. •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.
<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"> •This being a mining project no process effluent will be generated. •Water generation is expected to be due to <ul style="list-style-type: none"> ✓ Direct rainfall falling within the pit ✓ Rain water draining near the lease area. •Direct rain fall will be collected in the mine floor sump. Water from sump will be pumped to settling pond for downstream users. •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 confirming to applicable limits will be let out to downstream users for agricultural or other purposes. •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.

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



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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 is left. About 2250 trees will be planted in and around the lease area.

Table 4.16: Proposed Plantation

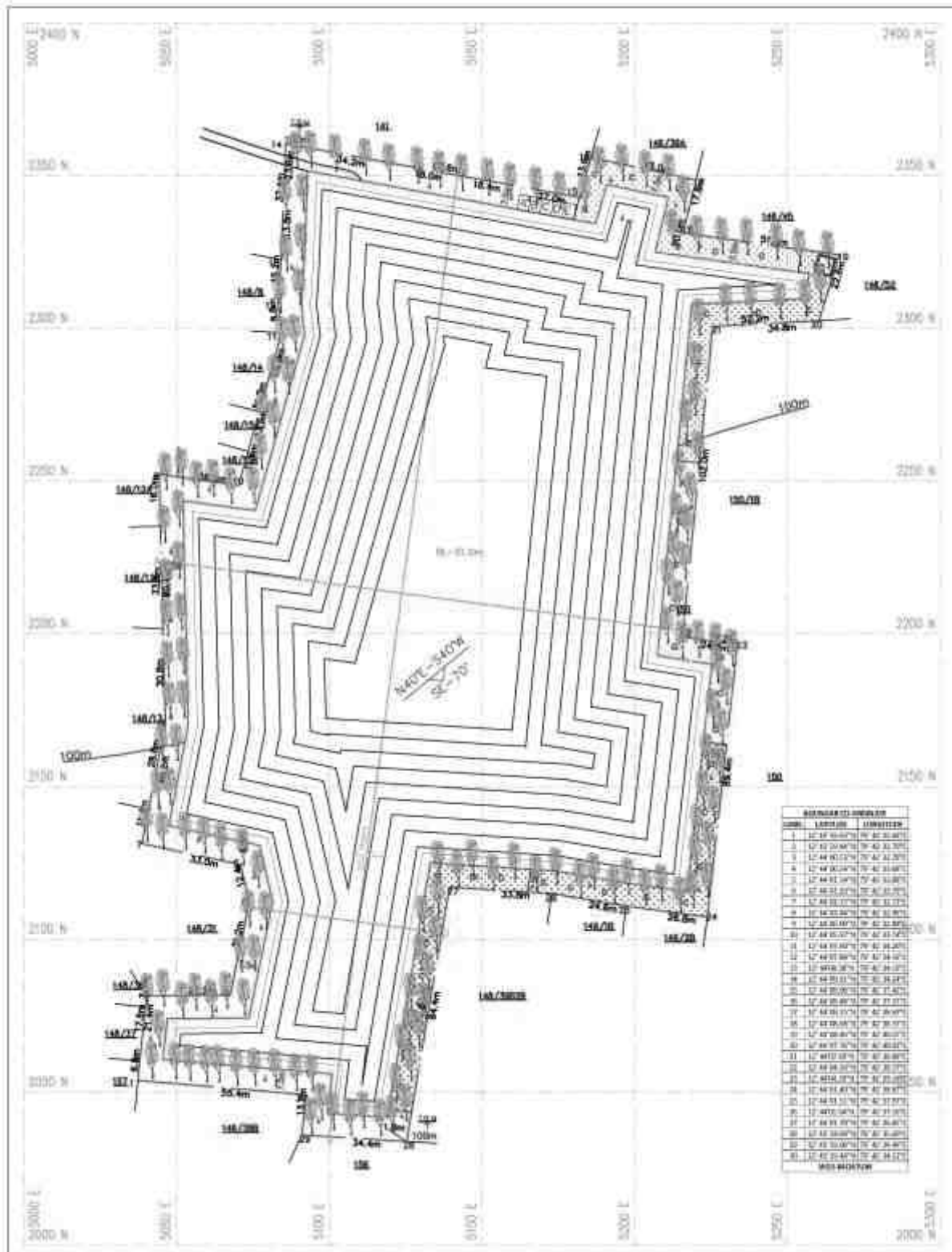
Year	No. of trees proposed to be planted	Name of the species
I	450	Pungai, Vagai, Vembu, Manjal konrai, Naval, Puvarasu, etc.,
II	450	
III	450	
IV	450	
V	450	
Total	2250	

At the end of the life of the mine, an area of 3.67.5 Ha will be left as water body, 0.02Ha will be roads, 0.01Ha will be infrastructure, 0.40Ha will be greenbelt area and 0.338 Ha will be unutilized. The post mining land use plan showing afforestation and water body is shown in **Figure No- 4.5.**



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Figure 4.5: Mine Closure Plan



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4.7 SOCIO ECONOMIC ENVIRONMENT:

The entire lease area is in the 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 mine will employ about 23 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 4.17: CER Cost

Project Cost (Rs.)	Rs. 1,07,76,100/-
CER Cost Requirement (2% of the Project Cost) (Rs.)	Rs. 2,15,522/-
Revised CER cost allocated (Rs.)	Rs. 5,00,000/-

However, towards the socio economic development of the surrounding area, the proponent has earmarked an amount of Rs.5 Lakhs under Corporate Environmental Responsibility. The



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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.
- 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.



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- 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 this proposed quarry 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 expected peak transport will be as follows:

Table 4.18: Details of Transportation

Sl.no	Particulars of activity	Quantity
A	Maximum Rough stone Transported (m ³ /year) - Say	1,64,015
B	No of days in a year	300
C	Transport hours per day	8
D	Truck capacity in T	20
	Trips per hour	9 Trips/hr

From the above table it is seen that there will be about 9 trips per hour. The existing road can easily 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.



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- ❖ 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 this project.

Liquid waste: There is no process effluent generation from this mine. Hence no liquid waste is generated.

Hazardous waste management: In this project the following management practices will be followed:

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



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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.

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CHAPTER - V

ANALYSIS OF ALTERNATIVES (TECHNOLOGY & SITE)

CHAPTER 5
ANALYSIS OF ALTERNATIVES

5.1 ALTERNATE TECHNOLOGY:

This is a proposed Rough Stone and Gravel Quarry in which Semi – 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 this project, 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. However, based on the need and priority it may be suitably modified / improved in consultation with local authorities. The monitoring schedules to be adopted in this quarry are given below.



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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 ₂), Oxides of Nitrogen (NO ₂), Respirable Particulate Matter (PM _{2.5} and PM ₁₀).	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

[NOTIFIED] [NOTIFIED] [NOTIFIED]

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

No. B-2009/2009/PC-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 11th April, 1994 and S.O. 935(E), dated 14th 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 Area	Ecologically Sensitive Areas (notified by Central Government)	Methods of Measurement
(1)	(2)	(3)	(4)	(5)	(6)
1	Sulphur Dioxide (SO ₂), µg/m ³	Annual* 24 hours**	50 80	20 30	- Improved Wet and Gask - Ultraviolet fluorescence
2	Nitrogen Dioxide (NO ₂), µg/m ³	Annual* 24 hours**	40 80	20 30	- Modified Jauch & Hachkoiser (Na-Arsolite) - Chemiluminescence
3	Particulate Matter (size less than 10µm) or PM ₁₀ , µg/m ³	Annual* 24 hours**	50 100	50 100	- Gravimetric - TC984 - Beta attenuation
4	Particulate Matter (size less than 2.5µm) or PM _{2.5} , µg/m ³	Annual* 24 hours**	40 60	40 60	- Gravimetric - TC984 - Beta attenuation
5	Ozone (O ₃), µg/m ³	8 hours** 1 hour**	100 180	100 180	- UV photometric - Chemiluminescence - Chemical Method
6	Lead (Pb), µg/m ³	Annual* 24 hours**	0.50 1.0	0.50 1.0	- AAS/ICP method after sampling on EPDM 2000 or equivalent filter paper - ED-XRF using Teflon filter
7	Carbon Monoxide (CO), mg/m ³	8 hours** 1 hour**	02 04	02 04	- Non Dispersive Infra Red (NDIR) spectroscopy
8	Amonia (NH ₃), µg/m ³	Annual* 24 hours**	100 400	100 400	- Chemiluminescence - Indophenol blue method



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(1)	(2)	(3)	(4)	(5)	(6)
9	Benzene (C ₆ H ₆) µg/m ³	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 ³	Annual*	01	01	- Solvent extraction followed by HPLC/GC analysis
11	Arsenic (As), ng/m ³	Annual*	06	06	- AAS /ICP method after sampling on EPM 2000 or equivalent filter paper
12	Nickel (Ni), ng/m ³	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 05 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/134/05/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 11th April, 1994 and S.O. 935(E), dated 14th October, 1998.



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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 ₂), mg/l, Max	4.0	No relaxation	IS 3025 (Part 26)* or ALPHA 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 ₃), mg/l, Max	45	No relaxation	IS 3025 (Part 34)	—
xvii)	Phenolic compounds (as C ₆ H ₅ 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 ₄) 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 ₂ 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 ₃), 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
A. Buildings/structures not belonging to owner			
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. Building belonging to owner with limited span of life			
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 this 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 exposed to public consultation 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:

S.No	Factors	Causes of risks	Control measures
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 burst. b) Down the hole drill rod	• Periodical preventative maintenance and replacement of worn out accessories in the compressor and drill equipment.

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S.No	Factors	Causes of risks	Control measures
		may break due to improper maintenance of rod.	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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.	<ul style="list-style-type: none"> 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.

This being a small rough stone project 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 :
- Slope failure of the pit and waste dumps
- Accident due to heavy mining equipment and
- Blasting and use of Explosives

Mining operation in this lease 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.



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- Training and refresher courses for all the employees working in hazardous premises
- 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 area only. The entire mine lease area is a Patta land. 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 Menallur Village, Vembakkam Taluk, Tiruvannamalai District, Tamil Nadu. The details of the other quarries located within the 500m radius of the project considered for cumulative impact study now (**Annexure-3**) has been provided below:

Table 7.1: Details of quarries within 500m radius

S.No	Name of the Owner	Village & S.F.Nos.	Extent (Ha)	Lease Period	Remarks
Existing Quarries					
1.	Thiru T.Ponnambalam, S/o. Thangavel, Tambaram, Chennai	Menallur S.F.Nos.134/15A, 15B, 17, 18, 19, 136/1, 2, 3A, 3B, 3C, 4, 5, 6, 7, 8, 9, 10, 143/1A, 1B, 1C, 1D, 2, 3, 4, 5, 6, 7A, 7B, 8, 10, 11, 144/2, 3, 4 & 5	4.29.5	06.10.2022 to 05.10.2022	Existing Quarry
2.	M/s.Sri Thirumala Blue Metal, No.90, Ottakuthur Street, Mamallan Nagar, Kanchipuram	Menallur, 147/1A,1B,1C2, 148/39B2B, 149/1B,149/2B,149/3A, 150/1B & 2	2.98.5	07.05.2021 to 06.05.2031	Existing Quarry
Abandoned Quarries					
1.	Thiru R.Mohanraj, S/o. Rajagopal, No.33, Pillaiyar Koil Street, Puliyambedu Village, Ambattur Taluk	Girijapuram 94/2B	0.81.0	16.05.2015 to 12.05.2020	Expired Quarry
Present Proposed Quarries					
1.	Sri Tirumala Blue Metals, No.90, Mamallan Nagar, Kanchipuram District	Menallur 148/16, 148/17, 148/18, 148/19, 148/20, 148/21, 148/22, 148/23, 148/24, 148/39A1, 146/39B, 146/46, 148/1, 148/10, 148/2, 148/26, 148/3, 148/30, 148/39B1, 148/4, 148/5, 148/6, 148/7, 148/9, 149/1A, 149/2A & 150/1A	4.44.35	--	--
Future Proposed Quarries					
1.	Thiru R.Monishkumar, S/o. Rajendiran No.24/25/122V, Vadivel Nagar, JS Hospital, Chengalpattu	Menallur 139/21A, 139/21B, 139/21C, 139/22A, 139/22B, 139/23, 139/24, 139/25A, 139/25B, 139/25C, 139/26, 139/27, 139/28, 139/29, 140/1, 140/2, 140/3, 141/42A, 141/43A, 141/44, 141/45, 141/46, 141/47, 141/48, 141/49, 148/11, 148/12A 148/12B, 148/14, 148/15A, 148/15B and 148/8	3.16.0		
2.	M/s. Sri Ganesh Blue Metals-II	Menallur 123/10,123/11,123/12,123/14A,123/14B,123/15,	3.26..0	--	--

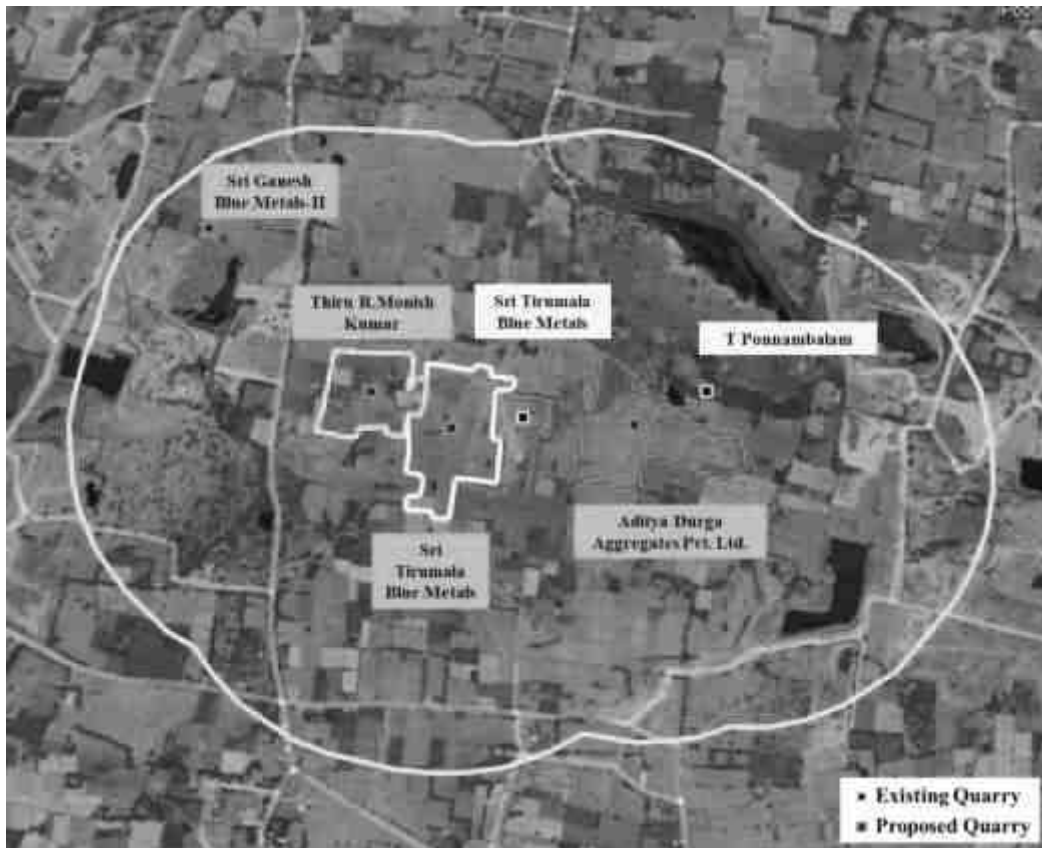


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	S.F.No.127/2B, 129 Menallur Village, Vembakkam Taluk	123/16,123/17,131/1,131/2,131/3,131/4,131/5A1,131/5B 131/6,131/7,131/8,131/9,131/10A,131/10B,131/10C, 132/4B			
3.	M/s.Aditya Durga Aggregates Pvt. Ltd. S.F.No.150/3B, Mellanur Village, Tiruvannamalai	Poonaitthangal 124/30, 124/31, 124/32, 124/33, 117/1, 117/5, 117/6, 117/4, 117/12B, 117/2, 141/2B2(P), 141/2E1, 124/17, 124/22, 124/23, 124/24, 124/25A, 124/25B, 124/35A, 124/34, 124/35B, 124/16, 124/29, 124/6, 124/7, 124/11, 124/36, 124/14, 124/15, 141/2C1, 141/2C2, 141/2E2(P), 141/3(P), 141/4(P), 117/7, 124/8A, 124/8B, 124/12, 124/18, 124/9, 124/10, 124/13, 124/19, 124/20 and 124/21	4.87.88	--	--

From that above it is seen that, 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. 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. For the proposed quarries, a cumulative impact study has been carried out and is provided below:

Table 7.2: Salient details of the proposed quarries

S.No	Project Name	Aditya Durga Aggregates Pvt. Ltd.	Sri Tirumala Blue Metals	Monish Kumar
1	Survey No.	124/30, 124/31, 124/32, 124/33, 117/1, 117/5, 117/6, 117/4, 117/12B, 117/2, 141/2B2(P), 141/2E1, 124/17, 124/22, 124/23, 124/24, 124/25A, 124/25B, 124/35A, 124/34, 124/35B, 124/16, 124/29, 124/6, 124/7, 124/11, 124/36, 124/14, 124/15, 141/2C1, 141/2C2, 141/2E2(P), 141/3(P), 141/4(P), 117/7, 124/8A, 124/8B, 124/12, 124/18, 124/9, 124/10, 124/13, 124/19, 124/20 and 124/21	148/16, 148/17, 148/18, 148/19, 148/20, 148/21, 148/22, 148/23, 148/24, 148/25, 148/38A, 148/39A1, 146/39B, 146/46, 148/1, 148/10, 148/2, 148/26, 148/27, 148/28, 148/29, 148/3, 148/30, 148/39A2, 148/39B2A, 148/39B1, 148/4, 148/5, 148/6, 148/7, 148/9, 149/1A, 149/2A and 150/1A	139/21A, 139/21B, 139/21C, 139/22A, 139/22B, 139/23, 139/24, 139/25A, 139/25B, 139/25C, 139/26, 139/27, 139/28, 139/29, 140/1, 140/2, 140/3, 141/42A, 141/43A, 141/44, 141/45, 141/46, 141/47, 141/48, 141/49, 148/11, 148/12A, 148/12B, 148/14, 148/15A, 148/15B and 148/8
2	Village	Poonaithangal	Menallur	Menallur
3	Taluk	Vembakkam	Vembakkam	Vembakkam
4	District	Virudhunagar	Virudhunagar	Virudhunagar
5	State	Tamil Nadu	Tamil Nadu	Tamil Nadu
6	Lease Area	4.87.88	4.44.35 Ha	3.16.0Ha
7	Precise Area Letter No.	Rc.No.264/Kanimam/2021 dated 14.03.2022	Rc.No.157/Kanimam/2022 dated 08.09.2022	Rc.No.161/Kanimam/2022 dated 08.09.2022
8	Production Capacity	Roughstone – 1019660m ³ Weathered Rock – 38599m ³ Gravel – 39498m ³	Roughstone-742365m ³ Weathered Rock – 36890m ³ Gravel-113073m ³	Roughstone-497630m ³ Weathered Rock-25730m ³ Gravel-52104m ³
9	Method of mining	Opencast Mechanized Mining Method	Opencast Mechanized Mining Method	Opencast Mechanized Mining Method
10	Lease Period	10 years	5 years	5 years
11	Ultimate Depth	47m	39m	38m
12	Project cost	Rs. 1,00,51,520/-	Rs. 1,07,76,100/-	Rs.89,76,000/-
13	CER budget	Rs.5 Lakhs	Rs.5 Lakhs	Rs.5 Lakhs

The cumulative combined impact anticipated due to mining and allied activities in both the proposed quarries are determined for Air, Noise, Vibration, Water, Logistical, Socio Economic and Land Environment. Details of the same are provided below:



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7.6.1 AIR ENVIRONMENT:

The mining and allied activities particularly excavation, hauling, loading and un loading etc. lead to emission of particulate matter. However, effective mitigative measures are provided in the EIA/EMP report to obviate these effects. The cumulative impact on ambient air quality for PM₁₀ and PM_{2.5} due to the operations of both these proposed projects are predicted based on Air Quality Model simulations. The modelling is done for the peak production to know the worst scenario. The cumulative peak Ground Level Concentration (GLC) after effective implementation of various mitigative measures have been computed and given below:

Table 7.3: Cumulative Peak Incremental Concentration

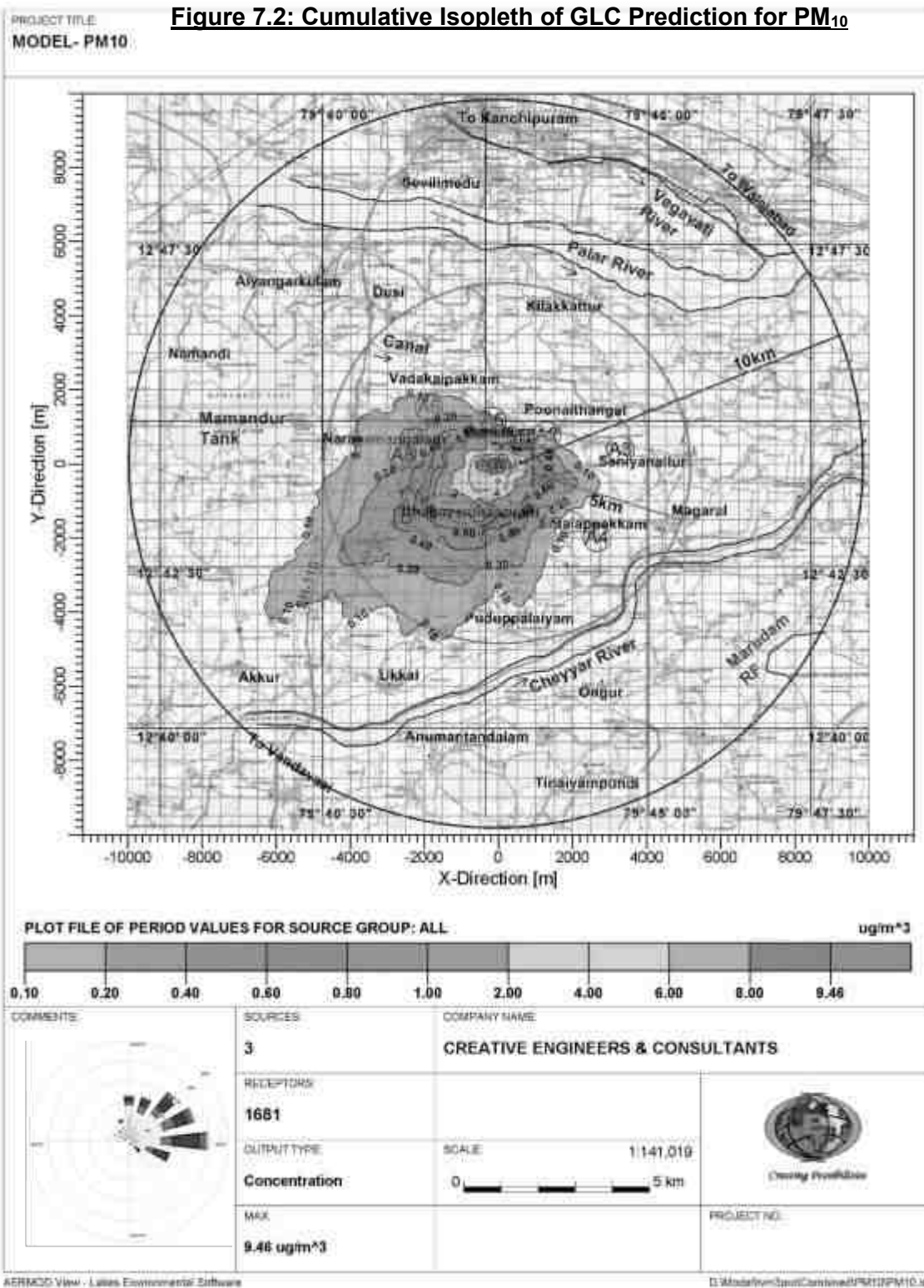
Activity	With Control Measures (µg/m³)
PM ₁₀	9.4
PM _{2.5}	6.1

The cumulative Isopleths of PM₁₀, PM_{2.5} concentrations have been drawn and these are given in **Figure No – 7.2 to 7.3.**



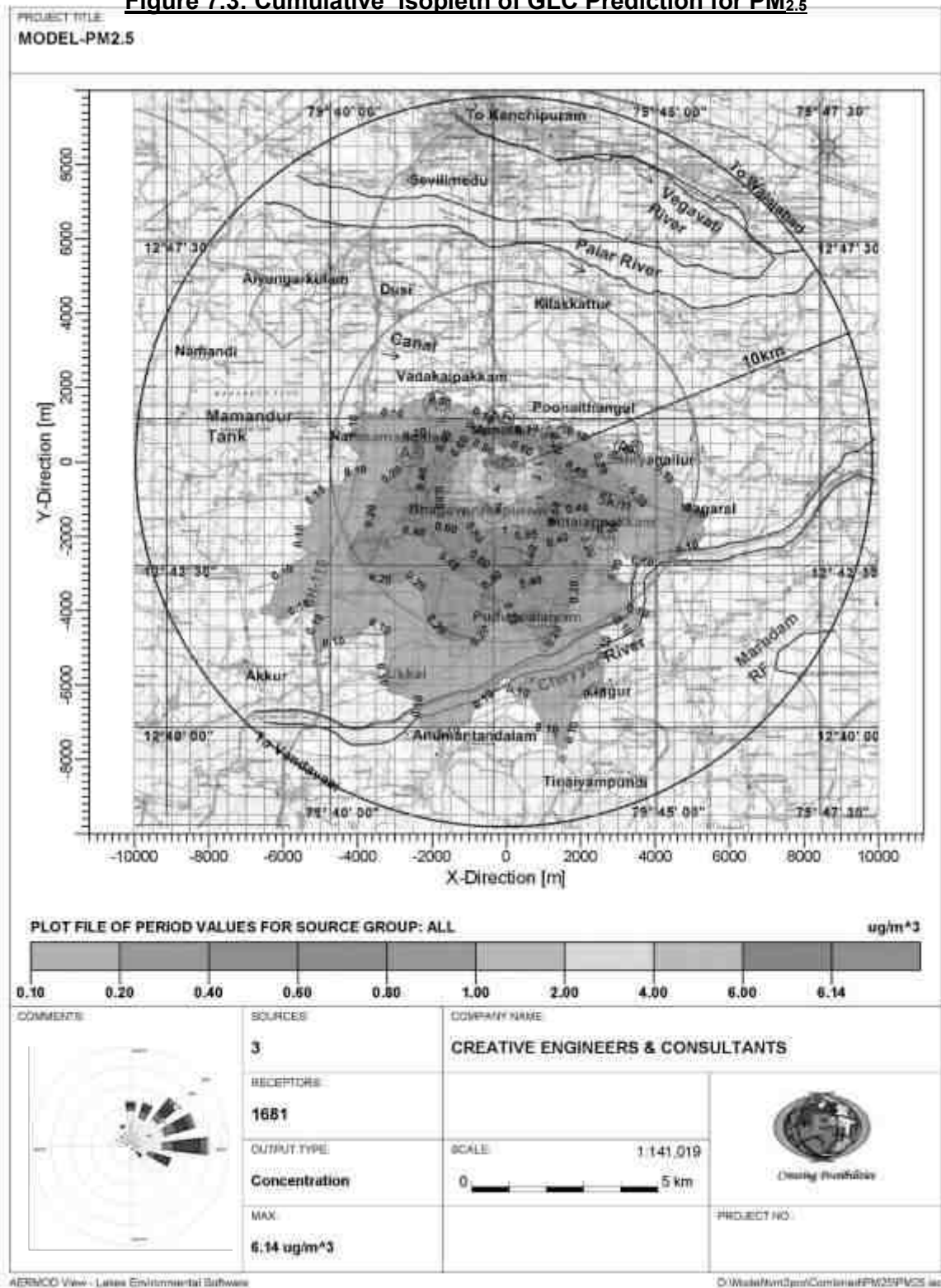
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Figure 7.2: Cumulative Isopleth of GLC Prediction for PM₁₀



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Figure 7.3: Cumulative Isopleth of GLC Prediction for PM_{2.5}



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It is observed that the peak incremental concentration for PM₁₀, PM_{2.5} is occurring very near the source. At away from the source the values are getting reduced due to dispersion effects. The incremental and predicted concentrations at the locations of ambient air quality have been discussed below.

7.6.1.1 PREDICTED AMBIENT AIR QUALITY:

The cumulative combined post project Concentrations of PM₁₀, PM_{2.5}, (GLC) (base line + incremental) after adopting necessary control measures is given below:

Table 7.4: Concentrations of PM₁₀ after Project Implementation

S. No	Location	Background Concentration	Predicted Incremental Concentration	Values in µg/m ³	
				Post Project Concentration	Statutory Limits
1	AA1-Near Mine lease area	66.8	8.0	74.8	-
2	M&TA1-Near Mine Lease Area	74.7	7.0	81.7	
3	A2-Poonathangal Village	63.9	<1.0	64.9	100
4	A3-Seniyallur Village	55.5	<1.0	56.5	
5	A4-Sithalapakkam Village	74.6	<1.0	75.6	
6	A5-Menallur Village	66.2	<1.0	67.2	
7	A6-Vadalkalpakam Village	57.9	<1.0	58.9	
8	A7-Bhagavanthapuram Village	55.8	2.0	57.8	
9	A8-Narasamangalam Village	59.2	<1.0	60.2	

Table 7.5: Concentrations of PM_{2.5} after Project Implementation

S. No	Location	Background Concentration	Predicted Incremental Concentration	Post Project Concentration	Statutory Limits
1	AA1-Near Mine lease area	30.7	4.0	34.7	-
2	M&TA1-Near Mine Lease Area	32.9	3.0	35.9	
3	A2-Poonathangal Village	28.8	2.0	30.8	60
4	A3-Seniyallur Village	25.5	<1.0	26.5	
5	A4-Sithalapakkam Village	34.3	<1.0	35.3	
6	A5-Menallur Village	31.8	<1.0	33.8	
7	A6-Vadalkalpakam Village	26.9	<1.0	27.9	
8	A7-Bhagavanthapuram Village	25.1	2.0	27.1	
9	A8-Narasamangalam Village	27.9	<1.0	28.9	

It can be seen that the resultant added concentrations with baseline figures even at worst scenario and cumulative impact of the projects show that the values of ambient air quality with respect to PM₁₀ are in the range of 56.5 µg/m³ to 81.7 µg/m³ and with respect to PM_{2.5} are in the range of 26.5 µg/m³ to 35.9 µg/m³ which are within the statutory stipulations in respective case.



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7.6.2 WATER ENVIRONMENT:

The water requirement for all the three projects is 30KLD comprising 10KLD for each project. Though it may be sourced from outside agencies initially, for these projects it is planned to use the rain water collected in the mine sump later. Groundwater intersection is not envisaged due to both the quarrying operations. Besides, the stage of groundwater development in Vembakkam Taluk based on technical report of the Central Ground Water Board, South Eastern Costal Region – ‘District groundwater brochure, Tiruvannamalai District.’ is categorized as ‘Safe’ thus proving that there is further scope for groundwater development. Hence, no major impact is expected on groundwater regime due to the cumulative project operations.

7.6.3 NOISE ENVIRONMENT:

Post project noise in the core zone has already been provided under para 4.4, Chapter-IV where it is seen 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. Hence, the cumulative post project noise in the nearby villages has been carried out using the following formula and the results are given below:

$$Lp2 = Lp1 - 20 \log R2/R1$$

Where, Lp1 and Lp2 are sound pressure levels at points located at distances R1 and R2 respectively from the source.

Table 7.6: Post project noise levels

S.No	Location	Baseline Day Eq.in dB(A)	Post project noise Eq in dB(A)	Limit dB(A) as per MoEF&CC
1	Poonathangal Village	48.3	49.3	55
2	Seniyanallur Village	49.6	49.8	55
3	Sithalapakkam Village	51.3	51.6	55
4	Menallur Village	47.7	49.2	55
5	Vadikalpakkam Village	48.0	48.4	55
6	Bhagavanthapuram Village	45.5	47.9	55
7	Narasamangalam Village	49.1	49.3	55



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7.6.4 VIBRATION:

By Carrying out controlled blasting using Nonel milli second delay detonator, Optimum design for burden and spacing & reducing the explosive charge per delay to minimum in both the projects no adverse impact due to blasting vibration is expected.

7.6.5 TRAFFIC:

The mined out minerals will be transported by means of trucks to the consumers like crusher units for producing stone aggregates of different sizes or construction of roads, bridges, buildings and other buyers etc. The cumulative impact on traffic due to transportation of minerals from both these leases are provided below:

Table 7.7: Cumulative number of trips

Details	Aditya Durga Aggregates	Sri Tirumala Blue Metals	Monish Kumar
Average Material Transported (m3/year)	1,45,185	1,64,015	1,11,440
No of days in a year	300	300	300
Transport hours per day	8	8	8
Truck capacity in T	20	20	20
Trips per hour	8 Trips/hr	9 Trips/hr	6 Trips/hr

The total trips from these projects there will be hardly about 23 trips per hour. The existing road can absorb this traffic due to this project. Various measures like proper maintenance of road, covering of the loaded truck with tarpaulin, water sprinkling will be carried out to ensure no adverse impact on the logistical front.

7.6.6 LAND ENVIRONMENT:

Aditya Durga Aggregates Pvt. Ltd.'s lease area of 4.87.88 Ha is a patta land in the name of the applicant vide Patta No. 285,287. At the end of the 5-year period 3.86.82Ha will be used as mined out area at 27m below ground level. Subsequently, in the remaining 6th to 10th year there will be only depth ward mining in the same mined out area up to 47m below ground level). At the end of the life of the mined out area will be left as water body. 0.02.0Ha will be the mine roads, 0.01 Ha will be infrastructure and 0.99.06Ha will be covered with vegetation.



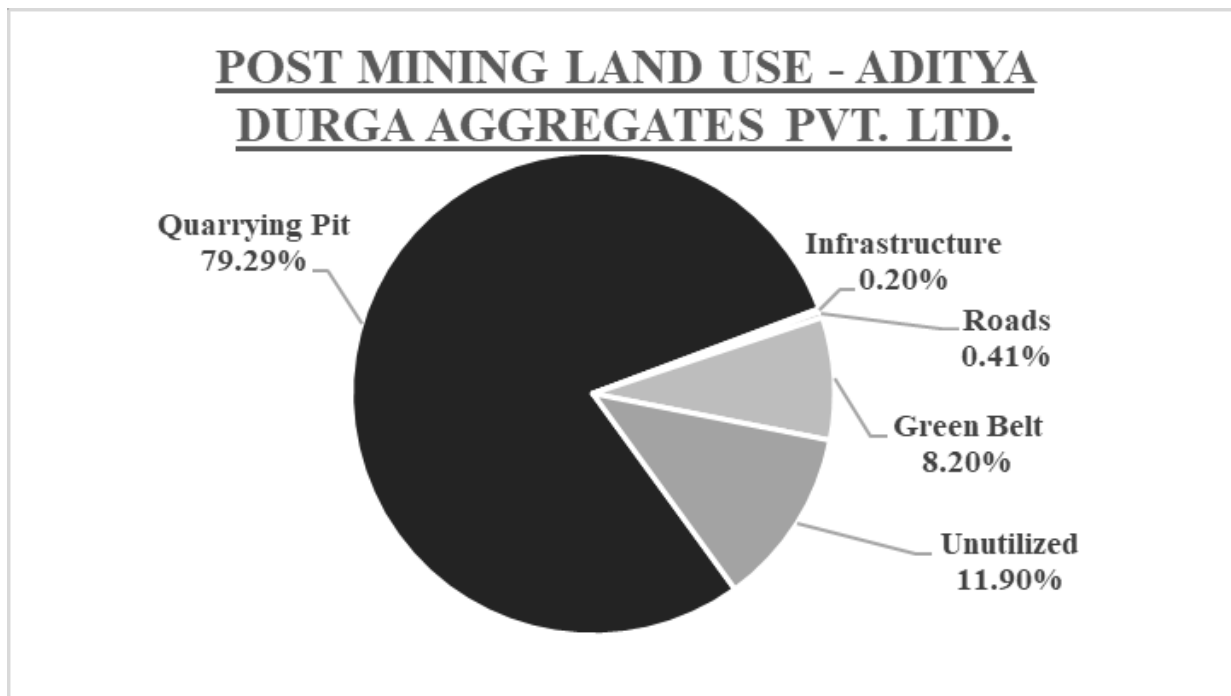
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Sri Tirumala Blue Metals lease area of 4.44.35Ha is a patta land jointly registered in the name of partners of Tvl Sri Tirumala Blue Metals (Thiru.Mukunthababu, Thiru.Ananthababu, Thiru. Haribabu and Thiru.Rajbabu) applicant vide patta no.713 and 769. At the end of the life of the mine, 3.67.50Ha will be mined out area, 0.01Ha will be infrastructure, 0.02Ha will be road, 0.40Ha will be plantation and balance 0.33.85Ha will be unutilized area.

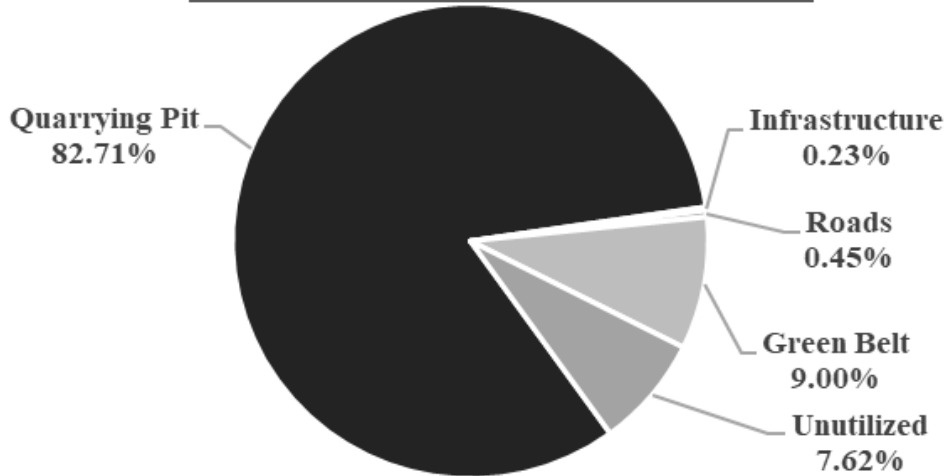
Thiru Monish Kumar's lease area of 3.160 Ha is a patta land in the name of the applicant vide Patta No. 775. At the end of the life of the mine, an area of 2.61 Ha will be left as water body, 0.02Ha will be roads, 0.01Ha will be infrastructure, 0.30Ha will be greenbelt area and 0.22 Ha will be unutilized.

For all the projects, in the post mining stage it will be ensured that the entire mined out area will be properly fenced to prevent inadvertent entry of men and animals. The rainwater harvested in the mined-out void shall be utilized to meet the water requirement.

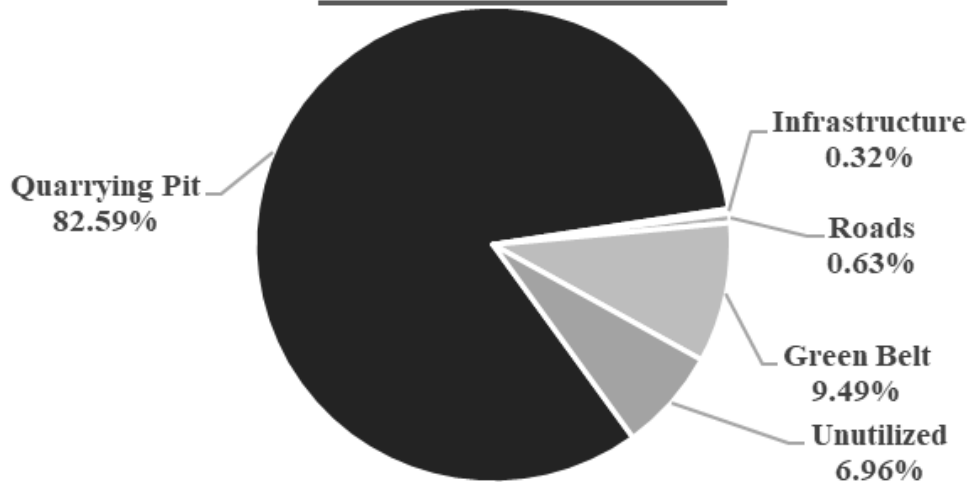
Figure 7.4: Post Mining Land Use



POST MINING LAND USE - SRI TIRUMALA BLUE METALS



POST MINING LAND USE - THIRU MONISH KUMAR



7.7 PIT SLOPE STABILITY PLAN

- Factors affecting slope stability of the mine 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.
 - 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



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over the bench slope to avert damages to quarry face and manage the water flow.

The above will ensure safe and stable mine prospects.

CONCLUSION:

No adverse impact on the surrounding environment is envisaged from this project due to strict enforcement of all the above said mitigative measures.

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 wherein 2250 number of plants will be planted in and around the lease area.

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 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.



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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 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.

* * * * *



CHAPTER - VIII

PROJECT BENEFITS

CHAPTER 8 PROJECT BENEFITS

The proposed Roughstone and Gravel Quarry of Thiru Monish Kumar will improve physical and social infrastructures in the area like:

- Direct employment to 23 people.
- 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 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, 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 proponent has planned to allocate Rs.5.0 Lakhs for various activities under CER. From the CER activities allocated for various social welfare activities, the villages near the lease area will be benefited.

* * * * *



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 this project has been received from SEIAA, Tamil Nadu vide their letter No. SEIAA-TN/F.No.9577/SEAC/ToR-1346/2022 dated 10.02.2023. Environmental cost benefit analysis is not prescribed in the terms of reference. Hence, it is not applicable for this project.

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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 proponent 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:

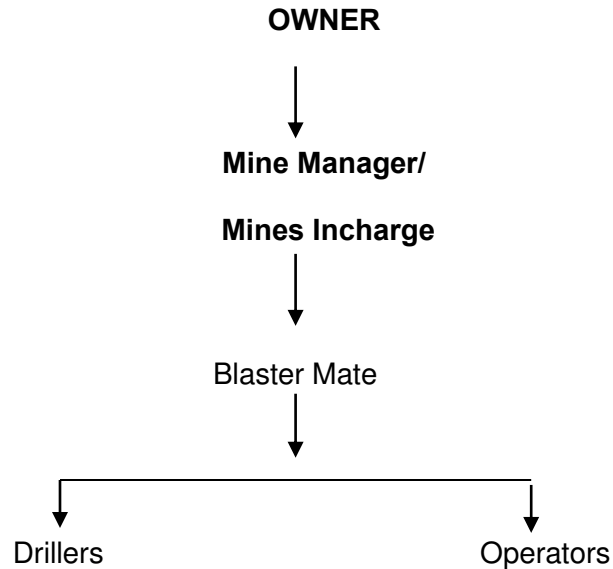
The Mines Manager/Mine Incharge will undertake effective monitoring and implementation of various environmental control measures promptly and effectively and to oversee various environmental management schemes for air quality control, water quality status, noise level



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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 this project 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
- Devising an operation plan for mining and transportation activities.



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- 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.
 - Hydrogeothermal/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 goals 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 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:

- 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.
- 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 this 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 area 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 quarry 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 is a tank on the north eastern side of the lease area at a distance of 160m. There is an odai on the north eastern side at a distance of 440m. There is no proposal to discharge any effluent into this waterbody. No major impact is envisaged on the nearby water bodies due to project operations.

10.2.3.4 Noise Environment:

During 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
- 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.

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- 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 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 is left. About 1600 trees will be planted in and around the lease area. Greenbelt / Plantation will be carried out to enhance the vegetative growth and aesthetic in the safety zone area. This will boost the biological, visual



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and aesthetic outlook of the area. Elaborate details regarding the same is provided under section 4.6.4, Chapter-IV.

10.2.2.7 Socio-Economic Environment:

The proposed project operation 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 proponent has earmarked an amount of Rs.5.0 Lakhs 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 No – 10.1**

Table 10.1: Environmental Control Cost

				Rs. In lakhs	
S. No	Mitigation Measure	Capital cost	Recurring Cost /Annum		
Air Environment					
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	2.87	0.74		
7	Road Maintenance - Haul road maintenancem Regular sweeping and maintenance of approach road	0.00	0.89		
Sub-Total (A)		11.62	2.91		
Noise Environment					
8	Controlled Blasting using NONEL, provision of blaster shed	0.50	20.52		
Sub-Total (B)		0.50	20.52		
Water Environment					
9	Surface Runoff Management Structures	0.44	0.05		
Sub-Total (C)		0.44	0.05		
Implementation of EC, Mining Plan & DGMS Condition					
10	Waste Management - Collection and Disposal	0.30	0.22		



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11	Fencing and Green Net Provision	8.89	0.10
12	Health and Safety - Provision of PPEs, IME, PME, First aid facility	0.92	0.64
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
Sub-Total (D)		10.61	8.84
Green Belt Development			
34	Plantation Inside the lease area(350 Nos.)	0.70	0.11
35	Plantation Outside the lease area (1900 Nos.)	5.70	0.57
Sub-Total (E)		6.40	0.68
Grand Total		29.57	32.99

Towards EMP measures, Rs.29.57 Lakhs is allocated under capital cost. Besides, Rs.32.99 Lakhs per annum will be spent under recurring cost. All the recurring cost of maintenance of pollution control measures, environmental monitoring etc., will be met from revenue.

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:

Sri Tirumala Blue Metals proposes to operate a **Rough Stone and Gravel Quarry** over an area of 4.44.35 Ha in Menallur Village, Vembakkam Taluk, Tiruvannamalai District, Tamil Nadu and has initiated action towards obtaining environmental clearance. It is proposed to mine 7,42,365m³ of Roughstone, 36,890 m³ of Weathered Rock and 1,13,073 m³ of Gravel for a period of 5 years upto TOR issued depth of 39m.

Although the individual lease area of this 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 common EIA for Quarries of Aditya Durga Aggregates Pvt. Ltd., Sri Tirumala Blue Metals and Thiru R. Monish Kumar falling in this cluster along with separate assessment of impacts and EMP has been carried out. The details of the quarries located within the 500m radius of the project is given vide **Annexure-3**. A cumulative impact study has been carried out and furnished in **Para 7.3, Chapter-VII**.

This draft EIA/EMP Report has been prepared for Roughstone and Gravel Quarry of Sri Tirumala Blue Metals over an area of 4.44.35 Ha in Menallur Village, Vembakkam Taluk, Tiruvannamalai District, Tamil Nadu.

This EIA/EMP report is prepared based on standard and additional Terms of Reference issued by SEIAA, Tamil Nadu vide letter no. SEIAA-TN/F.No.9577/SEAC/ToR-1346/2022 dated 10.02.2023 and is in conformance of the generic structure prescribed by MOEF&CC in their notification of September 2006 and the approved mining plan.

11.1.1 STATUTORY APPROVALS:

S.No	Statutory Approval	Authority	Letter Number and Date	Reference
1.	Precise Area Communication Letter	Deputy Director, Dep. of Geology & Mining, Tiruvannamalai	Rc.No.157/Kanimam/2022, dated 08.09.2022	Annexure-1



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2.	Mining Plan Approval	Deputy Director, Dep. of Geology & Mining, Tiruvannamalai	Rc.No.157/Kanimam/2022, dated 03.10.2022	Annexure-2
3.	Details of other quarries within 500m radius	Deputy Director, Dep. of Geology & Mining, Tiruvannamalai	Rc.No.157/Kanimam/2022, dated 10.10.2022	Annexure-3

11.1.2 ENVIRONMENTAL CLEARANCE APPLICATION:

Particulars	Details
Terms of Reference	Received from SEIAA, Tamil Nadu vide their Lr No.SEIAA-TN/F.No.9577/SEAC/ToR-1346/2022. Dated:10.02.2023
Baseline Data Collection	Carried out by Creative Engineers & Consultants , Chennai for Winter Season (December 2022-February 2023)

11.2 SALIENT FEATURES OF THE PROJECT:

Table 11.1: Site Details

Location	Menallur Village, Vembakkam Taluk, Tiruvannamalai District, Tamil Nadu
Survey No.	148/16, 148/17, 148/18, 148/19, 148/20, 148/21, 148/22, 148/23, 148/24, 148/25, 148/38A, 148/39A1, 146/39B, 146/46, 148/1, 148/10, 148/2, 148/26, 148/27, 148/28, 148/29, 148/3, 148/30, 148/39A2, 148/39B2A, 148/39B1, 148/4, 148/5, 148/6, 148/7, 148/9, 149/1A, 149/2A and 150/1A
Coordinates	Latitude: 12°43'58.99"N to 12°44'09.61"N Longitude: 79°42'32.68"E to 79°42'40.25"E
Nearest Highway	(SH-116) Kanchipuram –Vandavasi – 3.9Km (W)
Nearest Village	Bagavantapuram -470m (S)
Nearest Town	Kanchipuram-8.5Km (N)
Nearest Railway Station	Kanchipuram Railway Station – 12Km (N)
Nearest Airport	Chennai – 58Km (NE)
Topography	Plain terrain, dry lands with scarce vegetation.
Accessibility	The lease area can be approached from Poonaihangal – Arpakkam road which connects to SH-118A-Kanchipuram to Uthiramerur road on the eastern side of the lease area, and from Poonaihangal – Mamandur road which connects to SH-116-Kanchipuram – Vandavasi on the western side of the lease area.
Drainage	There is a tank on the north eastern side of the lease area at a distance of 160m. There is an odai at a distance of 440m in the north eastern side of the lease area.



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Table 11.2: Environment Setting of The Study Area

S.No	Particulars	Name	Distance and Direction
1	Nearest Highway	(SH-116) Kanchipuram –Vandavasi	3.9Km (W)
2	Nearest Railway station	Kanchipuram Railway Station	12Km (N)
3	Nearest Airport	Chennai	58Km (NE)
4	Nearest Town/City	Kanchipuram	8.5Km (N)
5	Nearest Villages	Bagavantapuram	470m (S)
		Menallur	0.9Km (N)
		Girijapuram	1.1Km (NW)
		Poonaitthangal	1.9Km (NE)
6	Nearest Major Water Bodies	Poonaitthangal Eri	160m (NE)
		Odai	440m (NE)
		Canal	2.4Km (N)
		Mamandur Tank	5.0Km (W)
		Cheyyar River	4.8Km (SE)
		Palar River	6.1Km (NE)
7	Reserved / Protected Forests	Vegavati River	8.5Km (NE)
		Marudam RF	9.6Km (SE)
8	Notified Archaeologically important places, Monuments	Rock-Cut Pallava Shrine, Koranganilmuttam	3.8Km (NW)
		Mamandur Pallava Cave Temple	4.6Km (W)
9	Environmental sensitive areas, Protected areas as per Wildlife Protection Act, 1972	Nil within 10Km radius	--
10	Seismic Zone	Zone – II (Least Active)	--
11	Other Industries	Other than rough stone quarry & crushers there are no other major industries in the area.	--

Table 11.3: Technical Description

PARTICULARS	DETAILS
Geological reserve	Roughstone – 19,97,415 cum , Gravel- 1,33,161 cum Weathered Rock-44,387 cum
Mineable reserves up to 49m below ground level	Roughstone – 8,07,050 cum , Gravel- 1,13,073 cum Weathered Rock-36,890 cum



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PARTICULARS	DETAILS																												
Mineable reserves up to 39m below ground level	Roughstone – 7,42,365 cum , Gravel- 1,13,073 cum Weathered Rock-36,890 cum																												
Method of Mining	Open cast mechanized mining method with drilling, blasting, excavation, loading and transportation of Roughstone to needy buyers.																												
Production	As per the approved mining plan, the depth of mining is 49m and it was proposed to mine out 8,07,050m ³ of Roughstone, 36,890m ³ of Weathered Rock and 1,13,073m ³ of Gravel. Now as per the approved ToR issued depth of mining is reduced to 39m and the revised yearwise production is provided below																												
	<table border="1"> <thead> <tr> <th>Year</th> <th>Roughstone (m3)</th> <th>Weathered Rock m³</th> <th>Gravel (m3)</th> </tr> </thead> <tbody> <tr> <td>I</td> <td align="center">155085</td> <td align="center">33110</td> <td align="center">101088</td> </tr> <tr> <td>II</td> <td align="center">160110</td> <td align="center">3780</td> <td align="center">11985</td> </tr> <tr> <td>III</td> <td align="center">164015</td> <td align="center">--</td> <td align="center">--</td> </tr> <tr> <td>IV</td> <td align="center">163685</td> <td align="center">--</td> <td align="center">--</td> </tr> <tr> <td>V</td> <td align="center">99470</td> <td align="center">--</td> <td align="center">--</td> </tr> <tr> <td>Total</td> <td align="center">742365</td> <td align="center">36890</td> <td align="center">113073</td> </tr> </tbody> </table>	Year	Roughstone (m3)	Weathered Rock m ³	Gravel (m3)	I	155085	33110	101088	II	160110	3780	11985	III	164015	--	--	IV	163685	--	--	V	99470	--	--	Total	742365	36890	113073
	Year	Roughstone (m3)	Weathered Rock m ³	Gravel (m3)																									
	I	155085	33110	101088																									
	II	160110	3780	11985																									
	III	164015	--	--																									
	IV	163685	--	--																									
V	99470	--	--																										
Total	742365	36890	113073																										
Waste Generation and Management	There is no waste generation anticipated in this quarry operation 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.																												
	Ultimate Depth	39m																											
	Man power	23 People directly and more than 50 people indirectly																											
	Mode of transport	By Road																											
	Water requirement	10 KLD																											
	Source of water	The required water will be procured from outside agencies initially. Later, water collected in the mine pit will be used to meet the needs.																											
Power requirement	All the equipment will be diesel operated. No electricity is needed for mining operation. The minimum power requirement for office, etc will be met from state grid.																												
Life of the mine	5 Years																												
Project cost	Rs. 1,07,76,100/-																												



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11.3 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 **Winter Season (December 2022 – February 2023)** For the purpose of this study, the area has been divided into two zones, namely, core and buffer zones. Core zone is considered as the total lease area, while buffer zone encompasses an area of 10 km radius distance from the periphery of core zone.

11.3.2 SOCIO-ECONOMIC STATUS:

The proposed Roughstone and gravel quarry is located in Poonathangal Village, Vembakkam Taluk, Tiruvannamalai District. The details of the 10Km radius study area has been provided below:

Table 11.4: Details of Buffer Zone

Village	Urban Area	Taluk	District
45	1	Cheyyar	Tiruvannamalai
32	5	Kancheepuram	Kancheepuram
23	--	Uthiramerur	
100	6	Total	

Table 11.5: Social, Economic And Demographic Profile of the Study Area

Details	Population	Percentage
A. Gender-wise distribution		
Male Population	184315	50.08
Female Population	183740	49.92
Total	368055	100
B. Caste-wise population distribution		
Scheduled Caste	55309	15.03
Scheduled Tribes	3480	0.95
Other	309266	84.03
Total	368055	100
C. Literacy Levels		
Total Literate Population	269503	73.22
Others	98552	26.78
Total	368055	100
D. Occupational structure		
Main workers	132990	36.10
Marginal workers	24647	6.70
Total Workers	157637	42.80



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Details	Population	Percentage
Total Non-workers	210418	57.20
Total	368055	100

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 11.6: Baseline Data

A) METEOROLOGICAL DATA			
PARAMETERS	MINIMUM		MAXIMUM
Temperature in °C	20.5		34.0
Humidity in %	30.0		98.0
Wind speed Km/Hr	<1.8		37.1
Predominant wind direction (From)	E, NE		
B) AMBIENT AIR QUALITY			
Monitoring Location – 8 locations			
PARAMETER	RESULT (µg/m ³)		*LIMIT (µg/m ³)
Location	Core Zone	Buffer Zone	
Particulate Matter (Size <10 µm)	56.6 – 74.7	46.0 – 74.6	100
Particulate Matter (Size <2.5 µm)	24.9 – 32.9	20.7 – 34.3	60
Sulphur Dioxide (as SO ₂)	5.9 – 7.7	4.3 – 7.3	80
Nitrogen Dioxide (as NO ₂)	9.3 – 15.6	5.9 – 14.6	80
Conclusion: The existing Ambient Air Quality levels for PM10, PM2.5, SO2 and NO2, are within the NAAQ standards prescribed CPCB limits of 100 µg/m ³ , 60 µg/m ³ , 80 µg/m ³ & 80 µg/m ³ . 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 ³)			
C) WATER QUALITY			
Monitoring Location – 8 locations			
PARAMETER	Result		*LIMIT (µg/m ³)
pH at 25 °C	7.38 – 7.81		6.5-8.5
Total Dissolved Solids, mg/L	520 – 1246		2000
Chloride as Cl ⁻ , mg/L	84.50 – 386		1000
Total Hardness (as CaCO ₃), mg/L	254 – 490		600



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Total Alkalinity (as CaCO ₃), mg/L	154– 414	600
Sulphates as SO ₄ ²⁻ , mg/L	98.60 – 392	400
Iron as Fe, mg/L	BDL(D.L - 0.01)– 0.05	0.3
Nitrate as NO ₃ , mg/L	1.65– 3.26	45
Fluoride as F, mg/L	0.18 – 0.45	1.5

Conclusion: 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.

D) NOISE LEVELS		Monitoring Location – 8 locations	
PARAMETER	RESULT dB(A)		*LIMIT (µg/m ³)
	Day Equivalent	Night Equivalent	
Core Zone	50.3	39.9	90
Buffer Zone	45.5 – 51.3	39.9 – 45.3	Day Equivalent - 55dB(A), Night Equivalent - 45dB(A)

*Permissible noise for industrial workers as laid down by CPCB (at 8 hrs Exposure Time). While comparing with the MoEF&CC Norms, the monitored ambient noise levels are generally within the limit values.

E) SOIL QUALITY		Monitoring Location – 4 locations	
PARAMETER	Range of values		
pH	6.55 – 7.49		
Electrical Conductivity (µmho/cm)	66.48 – 95.7		
Organic matter (%)	0.66 – 0.86		
Total Nitrogen (mg/kg)	172 – 228		
Phosphorus (mg/kg)	1.19 – 1.69		
Sodium (mg/kg)	564 – 670		
Potassium (mg/kg)	326 – 484		
Soil is of 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:



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Table 11.7: Land Use in 10Km Buffer Zone

S.No	Landuse Feature	Area (Sq.Km)	Percentage
1	Agriculture/Plantation	21.90	6.8
2	Fallow land	86.88	26.9
3	Land with scrub	124.30	38.4
4	Land without scrub	1.33	0.4
5	Water bodies	67.64	20.9
6	Settlement	19.66	6.1
7	Reserved Forest	0.30	0.1
8	Mining process	1.37	0.4
	Total	323.37	100

From the above table it is seen that 65.30 % of the study area constitute Fallow land and Land with scrub.

G) BIOLOGICAL ENVIRONMENT:

Flora: The lease area is a non-forest, private land. Major part of lease area is barren fallow land with few bushes. The detailed list of plants found in the core zone are given in Table no – 3.24. The Dominated species in the buffer zone are Borassus flabellifer, Acacia nilotica, Albizia lebbeck, Azadirachta indica, Prosopis juliflora, Acacia auriculiformis, Acacia leucophloea etc. The detailed list of plants found in the Bufferzone is given in Table no – 3.25.

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. There is no Schedule I species in the core & buffer zone. The list of fauna within the study area is given in Table No – 3.27.

H) HYDROLOGICAL STUDY:

The area is a gentle plain terrain with a topography sloping towards east direction. The land is dry with scarce vegetation. Poonathangal Eri is located 160m on the north eastern side of the lease area. There is an odai at a distance of 440m on the north eastern side of the lease area. Further elaborate details of the same has been provided under section 4.3.3C, Chapter-IV. The drainage map prepared from the survey of India topographic maps shows the presence of few streams running in a dendritic pattern



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The general trend of depth to water level for Vembakkam Block, Virudhunagar District, Tamil Nadu the was obtained from the data obtained from India-WRIS, Department of Water Resources, Ministry of Jal Shakti.

In the study area, wells and borewells were studied which indicate that 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. Rain water collected in the tanks in the region acts as a good source of water during post monsoon. The water in the wells are available mainly after post monsoon and it reduces during summer.

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. From the nearby working mines, no such seepage is also observed.

11.4 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES:

11.4.1 GENERAL:

This is a proposed project and Semi – 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.

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 SO₂, NO_x, 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 11.8: 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) have been computed using hourly meteorological data for particulate matter PM10 and PM2.5.

The resultant added concentrations with baseline figures even at worst scenario, show that the values of ambient air quality with respect to PM₁₀ are in the range of 56.5 µg/m³ to 78.7 µg/m³ and with respect to PM_{2.5} are in the range of 26.1 µg/m³ to 35.3µg/m³ 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:

Water Requirement: The total water requirement for this project will be 10.0 KLD comprising 1.0 KLD for drinking water and domestic use, 8.0 KLD for dust suppression and 1.0 KLD for greenbelt. The water will be sourced initially from outside agencies. Later the rainwater collected in the mine pit sump will be used for this purpose.

The activity / source of pollution, its impact / consequence, proposed control measures are explained below:

Table 11.9: 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 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.
		Rainwater Harvesting	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.



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C	Drainage Course	Disturbance to drainage course	There is a tank on the north eastern side of the lease area at a distance of 160m. There is an odai on the north eastern side at a distance of 440m. There is no proposal to discharge any effluent into this waterbody. No major impact is envisaged on the nearby water bodies due to project operations
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- Stage of Groundwater Development:** The groundwater resource data of Tiruvannamalai district was obtained from the data provided in the technical report of the Central Ground Water Board, South Eastern Costal Region – ‘District groundwater brochure, Tiruvannamalai District.’ Based on the report it is seen that this area can be categorized as ‘Safe’ from ground water development point of view.
- Generation of mine pit water:** 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. In the nearby region, the formations are compact 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. The mining area consists of hard compact rock, hence no major water seepage within the mine is expected from the periphery. The ultimate pit depth of mining is 39m. 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 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



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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 -08-1997. 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:

The lease area of 4.44.35 Ha is a patta land in the name of the Partners of Sri Tirumala Blue Metals vide Patta No. 769 and 713 (**Annexure-12**). 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. Plantation will be carried out in this safety zone area. At the end of the life of the mine, an area of 3.67.5 Ha will be left as water body, 0.02Ha will be roads, 0.01Ha will be infrastructure, 0.40Ha will be greenbelt area and 0.338 Ha will be unutilized. Entire mined out area will be properly fenced to prevent inadvertent entry of men and animals. Ultimately the entire mined out area will be left as water body.

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. About 2250 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 quarry will employ about 23 people. 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.

Towards the socio economic development of the surrounding area, the proponent has earmarked an amount of Rs.5.0 Lakhs under Corporate Environmental Responsibility. The activities identified under CER 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:

From this proposed quarry the entire output will be transported to the consumers like external crusher units for producing stone aggregates of different sizes or construction of roads, bridges, buildings and other buyers etc. There will be about 9 trips per hour. The transport route can easily absorb this negligible 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 Rough stone in the transport vehicles before transporting, so that no dust nuisance during transport will arise.
- ❖ Proper maintenance of transport roads
- ❖ Proper maintenance of transport vehicles.
- ❖ Avoiding overloading of material
- ❖ Covering of loaded vehicles with tarpaulins sheet if warranted.

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 this mine. Hence no liquid waste is generated.

The hazardous waste generated in this mine will be stored in a separate storage area with impervious containers for waste oil, oil contaminated clothes, used lead acid batteries, scraps,



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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.

11.5 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.29.57 Lakhs is allocated under capital cost. Besides, Rs.32.99 Lakhs per annum will be spent under recurring cost. All the recurring cost of maintenance of pollution control measures, environmental monitoring etc., will be met from revenue. Further details of the capital and recurring cost of environmental management has been provided in in Table No. 10.2, Chapter-X.

11.6 ADDITIONAL STUDIES:

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. R&R Plan
4. Mine closure plan

This draft EIA/EMP report will be exposed to public consultation as per mandatory procedures through the District Collector and State Pollution Control Board officials after giving 30 days



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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. As such cluster situation applicable and this EMP is prepared. The baseline monitoring carried out for this project reflects the cumulative impact of the existing quarry. For the proposed quarries, a cumulative impact study has been carried out.

Air :The cumulative impact on ambient air quality for PM₁₀ and PM_{2.5} due to the operations of these proposed projects are predicted based on Air Quality Model simulations. It can be seen that the resultant added concentrations with baseline figures even at worst scenario and cumulative impact of the projects show that the values of ambient air quality with respect to PM₁₀ are in the range of 56.5 µg/m³ to 81.7 µg/m³ and with respect to PM_{2.5} are in the range of 26.5 µg/m³ to 35.9 µg/m³ which are within the statutory stipulations in respective case.

Water : The water requirement for all the three projects is 30KLD comprising 10KLD for each project. Though it may be sourced from outside agencies initially, for these projects it is planned to use the rain water collected in the mine sump later. Groundwater intersection is not envisaged due to both the quarrying operations. Besides, the stage of groundwater development in Vembakkam Taluk based on technical report of the Central Ground Water Board, South Eastern Costal Region – ‘District groundwater brochure, Tiruvannamalai District.’ is categorized as ‘Safe’ thus proving that there is further scope for groundwater development. Hence, no major impact is expected on groundwater regime due to the cumulative project operations.

Noise :Cumulative post project noise levels in the nearby 7 villages are within the statutory limits of 55dB(A). Besides it is proposed to carry out various mitigative measures such as carrying out greenbelt and afforestation to act as acoustic barriers.



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Vibration: By Carrying out controlled blasting using Nonel milli second delay detonator, Optimum design for burden and spacing & reducing the explosive charge per delay to minimum in both the projects no adverse impact due to blasting vibration is expected.

Traffic: The mined out minerals will be transported by means of trucks to the consumers like crusher units for producing stone aggregates of different sizes or construction of roads, bridges, buildings and other buyers etc. The total trips from these projects there will be about 23 trips per hour. The existing road can absorb this traffic due to this project. Various measures like proper maintenance of road, covering of the loaded truck with tarpaulin, water sprinkling will be carried out to ensure no adverse impact on the logistical front.

Socio-Economy: The mining operations will provide direct employment opportunity and indirect employment opportunity for scores of people through allied opportunities in logistics, contract workers, trading, repairing works etc. Towards development of the surrounding area, various activities will be carried out under Corporate Environmental Responsibility for these projects.

Land use: For the projects, in the post mining stage it will be ensured that the entire mined out area will be properly fenced to prevent inadvertent entry of men and animals. The rainwater harvested in the mined out void shall be utilized to meet the water requirement.

11.7 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 23.12.2023. The team of experienced professionals that are a part of this organization has been detailed below.

Figure 12.1: Disclosure of consultants engaged

EXPERT NAME	QUALIFICATION	POSITION	EXPERIENCE
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 laboratory.



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EXPERT NAME	QUALIFICATION	POSITION	EXPERIENCE
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	Functional Area Expert (AQ, WP)	Over 5 years experience in preparation of EIA/EMP reports



ANNEXURES

நக.எண்:157/கனிமம்/2022



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ANNEXURE

துணை இயக்குநர் அலுவலகம்.
(புவியியல் மற்றும் சுரங்கத்துறை),
திருவண்ணாமலை-4.

நாள்:08.09.2022

அறிவிக்கை

பொருள்: கனிமங்களும் குவாரிகளும் - சிறுகனிமம் - திருவண்ணாமலை மாவட்டம் - வெம்பாக்கம் வட்டம், மேனல்லூர் கிராம புல எண்கள் 148/16 மற்றும் பலவற்றின் மொத்தம் 4.44.35 ஹெக்டேர் பரப்பில் சாதாரணகல் மற்றும் கிராவல் வெட்டியெடுக்க - குவாரி குத்தகை உரிமம் வழங்கக்கோரி Sri Tirumala Blue Metals என்ற நிறுவனத்தினர் விண்ணப்பம் செய்தது - பரிந்துரை அறிக்கை வரப்பெற்றது - சுரங்கத் திட்டம் (Mining Plan) தயார் செய்து சமர்ப்பிக்க கோருவது - தொடர்பாக.

- பார்வை:
1. Sri Tirumala Blue Metals நெ90 மாமல்லன் நகர், காஞ்சிபுரம் என்ற நிறுவனம் விண்ணப்பம், நாள் 11.07.2022.
 2. இவ்வலுவலக கடிதம் நக.எண் 157/கனிமம்/2022, நாள் 11.07.2022.
 3. வருவாய்க்கோட்ட அலுவலர், செய்யார் அவர்களின் கடிதம் நகஅ5/3583/2022, நாள் 30.08.2022.
 4. Sri Tirumala Blue Metals என்ற நிறுவனத்தின் மனு நாள் 06.09.2022.
 5. உதவி புவியியலாளர் மற்றும் தனி வருவாய் ஆய்வாளர், புவியியல் மற்றும் சுரங்கத்துறை திருவண்ணாமலை அவர்களின் புலத்தணிக்கை அறிக்கை நாள் 07.09.2022.
 6. அரசாணை (MS)எண் 169 தொழில்துறை (எம்.எம்.சி1) துறை நாள் 04.08.2020.
 7. தொடர்புடைய ஆவணங்கள்.

♦♦♦♦♦

திருவண்ணாமலை மாவட்டம், வெம்பாக்கம் வட்டம், மேனல்லூர் கிராம புல எண்கள் 148/16 (0.20.0), 148/17 (0.11.5), 148/18 (0.07.5), 148/19 (0.09.5), 148/20 (0.15.5), 148/21 (0.09.5), 148/22 (0.08.0), 148/23 (0.03.0), 148/24 (0.03.0), 148/25 (0.07.0), 148/38A (0.26.0), 148/39A1 (0.32.09), 146/39B (0.13.35), 146/46 (0.15.0), 148/1 (0.07.0), 148/10 (0.16.0), 148/2 (0.06.5), 148/26 (0.05.5), 148/27 (0.05.5), 148/28 (0.05.5), 148/29 (0.17.0), 148/3 (0.06.0), 148/30 (0.17.5), 148/39A2 (0.25.91), 148/39B2A (0.30.0), 148/39B1 (0.01.5), 148/4 (0.08.0), 148/5 (0.05.0), 148/6 (0.04.5), 148/7 (0.07.5), 148/9 (0.12.5) 149/1A (0.22.0), 149/2A(0.21.0)&150/1A(0.39.0) ஆகியவற்றில் மொத்தம் 4.44.35 ஹெக்டேர் பரப்பில் சாதாரணகல் மற்றும் கிராவல் வெட்டியெடுக்க 10 ஆண்டுகளுக்கு குவாரிக்குத்தகை உரிமம் வழங்கக்கோரி Sri Tirumala Blue Metals என்ற நிறுவனத்தினர் அளித்த பார்வை 1-ல் கண்ட விண்ணப்பத்தின் மீது

For SRI TIRUMALA BLUE METALS

பார்வை 3-ல் கண்ட வருவாய்க்கோட்ட அலுவலர், செய்யார் அவர்களின் பரிந்துரை அறிக்கை வரப்பெற்றது.



2. இந்நிலையில் பார்வை 4-ல் காணும் **Sri Tirumala Blue Metals** என்ற நிறுவனத்தினத்தின் கடிதத்தில் சாதாரணகல் மற்றும் கிராவல் வெட்டியெடுக்க 10 ஆண்டுகளுக்கு கல்குவாரி குத்தகை உரிமம் வழங்க கோரியதை 5 ஆண்டுகளுக்கு மட்டும் குத்தகை உரிமம் வழங்குமாறு கோரியுள்ளார்.

3. அதனைத்தொடர்ந்து பார்வை 5-ல் காணும் திருவண்ணாமலை மாவட்ட புவியியல் மற்றும் சுரங்கத்துறை, துணை இயக்குநர் அலுவலக உதவி புவியியலாளர் மற்றும் தனி வருவாய் ஆய்வாளர் ஆகியோர் அளித்த பரிந்துரை அறிக்கைகள் பரிசீலிக்கப்பட்டது.

4. **Sri Tirumala Blue Metals** என்ற நிறுவனத்தினர் சாதாரணக்கற்கள் மற்றும் கிராவல் வெட்டியெடுக்க 5 ஆண்டுகளுக்கு குவாரிக்குத்தகை உரிமம் வழங்கக்கோரிய வெம்பாக்கம் வட்டம், மேனல்லூர் கிராமபுல எண்கள்.148/16 (0.20.0), 148/17 (0.11.5), 148/18 (0.07.5), 148/19 (0.09.5), 148/20 (0.15.5), 148/21 (0.09.5), 148/22 (0.08.0), 148/23 (0.03.0), 148/24 (0.03.0), 148/25 (0.07.0), 148/38A (0.26.0), 148/39A1 (0.32.09), 146/39B (0.13.35), 146/46 (0.15.0), 148/1 (0.07.0), 148/10 (0.16.0), 148/2 (0.06.5), 148/26 (0.05.5), 148/27 (0.05.5), 148/28 (0.05.5), 148/29 (0.17.0), 148/3 (0.06.0), 148/30 (0.17.5), 148/39A2 (0.25.91), 148/39B2A (0.30.0), 148/39B1 (0.01.5), 148/4 (0.08.0), 148/5 (0.05.0), 148/6 (0.04.5), 148/7 (0.07.5), 148/9 (0.12.5) 149/1A (0.22.0), 149/2A (0.21.0) & 150/1A (0.39.0) ஆகியவற்றில் மொத்தம் 4.44.35 ஹெக்டேர் நிலப்பரப்பில் எவ்வித தடையும் இன்றி குவாரிப்பணி செய்ய வாய்ப்பு உள்ளதால், மேற்படி விண்ணப்பதாரர் **Sri Tirumala Blue Metals** என்ற நிறுவனத்தினருக்கு சாதாரண கற்கள் மற்றும் கிராவல் மண் வெட்டி எடுக்க குவாரி குத்தகை உரிமம் வழங்க பரிந்துரை செய்யப்பட்ட 4.44.35 ஹெக்டேர் பரப்பினை கற்குவாரி செய்ய உகந்த புலம் (Precise Area) என தீர்மானித்து கீழ்க்கண்ட நிபந்தனைகளுக்கு உட்பட்டு அறிவிப்பு செய்யப்படுகிறது.

நிபந்தனைகள்

- 1) விண்ணப்ப புலத்தில் கிழக்கு-மேற்கு மற்றும் வடக்கு-தெற்காக செல்லும் தாழ் மின்னழுத்த கம்பியை சுரங்க திட்ட அறிக்கை சமர்ப்பிக்கும் முன் மாற்றம் செய்யப்பட்டதற்கான தமிழ்நாடு மின்உற்பத்தி மற்றும் பகிர்மானக் கழகம் லிமிடெட், திருவண்ணாமலை சான்று சமர்ப்பிக்கப்பட வேண்டும் அல்லது மேற்படி தாழ் மின்னழுத்த கம்பிகளுக்கு 50மீ பாதுகாப்பு இடைவெளி விட வேண்டும்.
- 2) அருகில் உள்ள பட்டா நிலங்களுக்கு 7.5மீ பாதுகாப்பு இடைவெளி விடவேண்டும்.
- 3) பொதுமக்களுக்கும் அருகிலுள்ள நிலங்களுக்கும் எவ்வித பாதிப்பும் ஏற்படுத்தக்கூடாது.
- 4) குவாரிப்பணி தொடங்குவதற்கு முன்பாக குவாரியை சுற்றி முன் கம்பிவேலி அமைத்து குவாரிப்பணி தொடங்க வேண்டும்.



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- 5) மாண்புமிகு மதுவிலக்குத்துறை அமைச்சர் அவர்களின் தலைமையில் நடைபெறும் குவாரிப்பணி செய்யவேண்டும்.
- 6) சான்றிதழ் பெறப்பட்ட போர்மேன், வெடிப்பாளர் மற்றும் சுரங்கத்தொழிலாளர் மூலம் மாண்புமிகு குவாரிப்பணி செய்யப்பட வேண்டும்.
- 7) குவாரிப்பணி தொடங்குவதற்கு முன் சுரங்க பாதுகாப்பு இயக்குநர், சென்னை அவர்களுக்கு தகவல் தெரிவிக்கப்பட வேண்டும்.
- 8) மாண்புமிகு தகர்த்துறை அமைச்சர் அவர்களைக் கொண்டு மாண்புமிகு துணை அமைச்சர் தலைமையில் நடைபெறும் குவாரிப்பணி செய்வதற்கான வெடிப்பொருட்கள் பயன்படுத்த வேண்டும்.

5. தமிழ்நாடு சிறுகனிம சலுகை விதிகள் 1959 விதிகள் 41 மற்றும் 42-ன்படி கல் மற்றும் இதர சிறு கனிமங்களுக்கு குவாரி குத்தகை உரிமம் வழங்கும் முன்பு ஒப்புதல் பெறப்பட்ட சுரங்கத்திட்ட அறிக்கை மற்றும் சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணைய தடையின்மை சான்று பெறப்பட வேண்டும் என வரையறுக்கப்பட்டுள்ளது.

6. எனவே, Sri Tirumala Blue Metals என்ற நிறுவனத்தினர் ஒப்புதல் பெறப்பட்ட சுரங்கத்திட்ட அறிக்கை மற்றும் சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணைய தடையின்மைச் சான்றிணை பெற்று சமர்ப்பிக்கும் பட்சத்தில் திருவண்ணாமலை மாவட்டம், வெம்பாக்கம் வட்டம், மேனல்லூர் திராம புல எண்கள் 148/16 (0.20.0), 148/17 (0.11.5), 148/18 (0.07.5), 148/19 (0.09.5), 148/20 (0.15.5), 148/21 (0.09.5), 148/22 (0.08.0), 148/23 (0.03.0), 148/24 (0.03.0), 148/25 (0.07.0), 148/38A (0.26.0), 148/39A1 (0.32.09), 146/39B (0.13.35), 146/46 (0.15.0), 148/1 (0.07.0), 148/10 (0.16.0), 148/2 (0.06.5), 148/26 (0.05.5), 148/27 (0.05.5), 148/28 (0.05.5), 148/29 (0.17.0), 148/3 (0.06.0), 148/30 (0.17.5), 148/39A2 (0.25.91), 148/39B2A (0.30.0), 148/39B1 (0.01.5), 148/4 (0.08.0), 148/5 (0.05.0), 148/6 (0.04.5), 148/7 (0.07.5), 148/9 (0.12.5), 149/1A (0.22.0), 149/2A (0.21.0) & 150/1A (0.39.0) ஆகியவற்றில் மொத்தம் 4.44.35 ஹெக்டேர் பரப்பில் கற்குவாரி செய்ய தமிழ்நாடு சிறுகனிம சலுகை விதிகள் 1959 விதி எண் 19(1) மற்றும் 20-ன் கீழ் 5 ஆண்டுகளுக்கு குத்தகை உரிமம் வழங்க உரிய நடவடிக்கை மேற்கொள்ளப்படும் என்ற விவரம் தெரிவிக்கப்படுகிறது.

7. மேலும், இவ்வறிவிப்பு கிடைக்கப்பெற்ற 90 நாட்களுக்குள் மேற்சொன்ன நிபந்தனைகளையும் குறிக்கும் வகையில் வரைவு சுரங்கத்திட்ட அறிக்கை தயார் செய்து துணை இயக்குநர், புவியியல் மற்றும் சுரங்கத்துறை திருவண்ணாமலை அவர்களிடம் ஒப்புதல் பெற சமர்ப்பிக்குமாறும் அறிவுறுத்தப்படுகிறது.

துணை இயக்குநர்,
புவியியல் மற்றும் சுரங்கத்துறை,
திருவண்ணாமலை.

பெறுநர்:

Sri Tirumala Blue Metals.,
நெ.90 சுரங்கத்தொழில் தொகுதி,
மாவட்டம் தலைநகர்,
காவல்நிலையம், மாவட்டம்.

15/11/21

For SRI TIRUMALA BLUE METALS

N. R. K.

A3

PARTNER

From
Thiru.A.Perumal, M.Sc., M.Phil.,
Deputy Director,
Geology and Mining,
Tiruvannamalai - 4.

To
Tvl.Sri Tirumala Blue Metals,
No.90, Ottakoothar Street,
Mamallan Nagar,
Kanchipuram District.

Rc.No.157/Kanimam/2022, dated:03.10.2022

Sir,

Sub: Quarries and Minerals – Minor Mineral Rough Stone and Gravel – Tiruvannamalai District – Vembakkam Taluk – Menallur village – Patta SF.Nos.148/16 & etc., over an extent 4.44.35 hecets., - Application preferred by **Tvl.Sri Tirumala Blue Metals** – Precise area communicated – Submission of Mining Plan for approval - Approved - Regarding.

- Ref: 1. Application from Tvl.Sri Tirumala Blue Metals, Kanchipuram District dated.11.07.2022.
2. Precise Area Communication Notice Rc.No.157/Kanimam/2022, dated.08.09.2022.
3. Mining Plan submitted by Tvl.Sri Tirumala Blue Metals, Kanchipuram District dated. 30.09.2022.

In the reference 2nd cited, the Deputy Director, Geology and Mining Tiruvannamalai has communicated the SF.Nos.148/16 (0.20.0), 148/17 (0.11.5), 148/18 (0.07.5), 148/19 (0.09.5), 148/20 (0.15.5), 148/21 (0.09.5), 148/22 (0.08.0), 148/23 (0.03.0), 148/24 (0.03.0), 148/25 (0.07.0), 148/38A (0.26.0), 148/39A1 (0.32.09), 146/39B (0.13.35), 146/46 (0.15.0), 148/1 (0.07.0), 148/10 (0.16.0), 148/2 (0.06.5), 148/26 (0.05.5), 148/27 (0.05.5), 148/28 (0.05.5), 148/29 (0.17.0), 148/3 (0.06.0), 148/30 (0.17.5), 148/39A2 (0.25.91), 148/39B2A (0.30.0), 148/39B1 (0.01.5), 148/4 (0.08.0), 148/5 (0.05.0), 148/6 (0.04.5), 148/7 (0.07.5), 148/9 (0.12.5) 149/1A (0.22.0), 149/2A(0.21.0) & 150/1A(0.39.0) over an extent 4.44.35 hecets., of Menallur village, Vembakkam Taluk, as precise area to the applicant **Tvl.Sri Tirumala Blue Metals**, for grant of quarry lease for quarrying Rough Stone and Gravel for a period of 5 years with a direction to produce an approved mining plan in respect of the precise area as per Rule 41 of Tamil Nadu Minor Mineral Concession Rules, 1959 by incorporating the conditions stipulated in the Deputy Director, Geology and Mining Tiruvannamalai letter dated 08.09.2022.

2. In response to the precise area communication letter issued by the Deputy Director, Geology and Mining, Tiruvannamalai the applicant has prepared the draft Mining Plan through the Recognized Qualified Person though the precise area been granted for 5 years and submitted for approval vide reference 3rd cited.

3. The draft mining plan submitted in respect of the precise area communication has been examined with reference to the provisions of Rule 41 of Tamil Nadu Minor Mineral Concession Rules, 1959 and the followings are observed.

- i) The boundary Co-ordinates (GPS readings) for the entire boundary pillars of the area have been incorporated and shown in the mining plan.
- ii) All the conditions stipulated in the Deputy Director, Geology and Mining Letter Rc.No.157/Kanimam/2022 dated:08.09.2022 have been incorporated in the mining plan.
- iii) The reserves estimated in the mining plan is

Depth in Mts.	Geological reserves in Cu.m	Mineable Reserves in Cu.m
49m Below ground level (3m Gravel + 1m Weathered Rock + 45m Rough Stone)	Rough Stone : 19,97,415 Weathered Rock : 44,387 Gravel : 1,33,161	Rough Stone : 8,07,050 Weathered Rock : 36,890 Gravel : 1,13,073


4. In the light of the above, in exercise of the powers conferred under Rule 41 (7) of Tamil Nadu Minor Mineral Concession Rules, 1959 the mining plan in respect of Rough Stone quarry of Tvl.Sri Tirumala Blue Metals, is approved subject to the following conditions.

- i) 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) The approval of the mining plan does not in any way imply the approval of the Government in terms of any other provisions of the Mines and Minerals (Development and Regulation) Act 1957, or any other connected laws including Forest (Conservation) Act, 1980, Forest Conservation Rules 1981, Environment Protection Act, 1980, Forest Conservation Rules, 1981, Environment Protection Act, 1980, Indian Explosives Act, 1884 (Central Act IV of 1884) and the rules made there under and the Tamil Nadu Minor Mineral Concession Rules, 1959.

iii) The mining Plan is approved without prejudice to any other order or direction from any court of competent jurisdiction.

iv) Quarrying operations and production shall be carried out as per the approved Mining Plan and the applicant shall be liable to pay the cost of mineral if there is any deviation in the quantum indicated in the approved year wise quantum of production and any such cases as on date are to be dealt with as per Court direction.

Encl: 2 Copies of Approved Mining Plan.


Deputy Director,
Geology and Mining,
Tiruvannamalai.

Copy submitted to:

1. The Chairman, SEIAA,
Tamil Nadu, 3rd Floor, Panagal Maaligai,
No.1, Jeenis Road, Saidapet, Chennai-15.
2. The Commissioner of Geology and Mining, Chennai-32.
3. The District Collector, Tiruvannamalai.



From

To

Annexure-3

Thiru.A.Perumal, M.sc., M.phil.,
Deputy Director,
Geology and Mining,
Tiruvannamalai District.

Tvl.Sri Tirumala Blue Metals,
No.90, Ottakoothar Street,
Mamallan Nagar,
Kanchipuram District.

Rc.No.157/Kanimam/2022, dated:10.10.2022

Sub: Quarries and Minerals - Minor Mineral Rough Stone and Gravel - Tiruvannamalai District - Vembakkam Taluk - Menallur village - Patta SF.Nos.148/16 & etc., over an extent 4.44.35 hecsts., - Application preferred by **Tvl.Sri Tirumala Blue Metals** - Details of quarries located in 500m radius-requested - Regarding.

Ref: Tvl.Sri Tirumala Blue Metals, Kanchipuram District
Dated:10.10.2022.

In the reference cited, applicant **Tvl.Sri Tirumala Blue Metals**, the applicant of proposed Rough Stone quarry lease in SF.Nos.148/16 (0.20.0), 148/17 (0.11.5), 148/18 (0.07.5), 148/19 (0.09.5), 148/20 (0.15.5), 148/21 (0.09.5), 148/22 (0.08.0), 148/23 (0.03.0), 148/24 (0.03.0), 148/25 (0.07.0), 148/38A (0.26.0), 148/39A1 (0.32.09), 146/39B (0.13.35), 146/46 (0.15.0), 148/1 (0.07.0), 148/10 (0.16.0), 148/2 (0.06.5), 148/26 (0.05.5), 148/27 (0.05.5), 148/28 (0.05.5), 148/29 (0.17.0), 148/3 (0.06.0), 148/30 (0.17.5), 148/39A2 (0.25.91), 148/39B2A (0.30.0), 148/39B1 (0.01.5), 148/4 (0.08.0), 148/5 (0.05.0), 148/6 (0.04.5), 148/7 (0.07.5), 148/9 (0.12.5) 149/1A (0.22.0), 149/2A(0.21.0) & 150/1A(0.39.0) over an extent 4.44.35 hecsts., of Menallur village, Vembakkam Taluk, Tiruvannamalai District has requested to furnish the details of quarries located within 500 meters radius from his proposed quarry.

In this regard, the followings are furnished.

i). Existing quarries

Sl. No.	Name of the Owner (Tvl.)	Village & S.F. Nos.	Extent in Hect.	Lease Period	Remarks
1	Thiru.T.Ponnambalam, S/o.Thangavel, Tambaram, Chennai	Menallur & 134/15A, 134/15B, 134/17, 134/18, 134/19, 136/1, 136/2, 136/3A, 136/3B, 136/3C, 136/4, 136/5, 136/6, 136/7, 136/8, 136/9, 136/10, 143/1A, 143/1B, 143/1C, 143/1D, 143/2, 143/3, 143/4, 143/5, 143/6, 143/7A, 143/7B, 143/8, 143/10, 143/11, 144/2, 144/3, 144/4 & 144/5	4.29.5	06.10.2022 to 05.10.2032	Existing Quarry
2	M/s.Sri Thirumala Blue Metal, Represented its partner Thiru.N.R.Anandhababu, No.90, Ottakuthur Street, Mamallan nagar, Kanchipuram	147/1A,1B,1C2, 148/39B2B,149/1B, 149/2B,149/3A, 150/1B, & 2	2.98.5	07.05.2021 to 06.05.2031	Existing Quarry

ii). Abandoned quarries

Sl. No	Name of the Owner (Tvl)	Village & S.F. Nos.	Extent in Hect.	Lease Period	Remarks
1	Thiru. R.Mohanraj s/o Rajagopal, No.33, Pillaiyar koil street, Puliyambedu village, Ambatthur Taluk.	Girijapuram 94/2B	0.81.0	13.05.2015 to 12.05.2020	Quarry Expired

iii). Present Proposed quarries

Sl. No	Name of the Owner (Tvl)	Village & S.F. Nos.	Extent in Hect.
1	Sri Tirumala Blue metals, No.90 Mamallan Nagar, Kanchipuram District	Menallur & 148/16, 148/17, 148/18, 148/19, 148/20, 148/21, 148/22, 148/23, 148/24, 148/25, 148/38A, 148/39A1, 146/39B, 146/46, 148/1, 148/10, 148/2, 148/26, 148/27, 148/28, 148/29, 148/3, 148/30, 148/39A2, 148/39B2A, 148/39B1, 148/4, 148/5, 148/6, 148/7, 148/9, 149/1A, 149/2A & 150/1A	4.44.35

iv). Future Proposed quarries

Sl. No	Name of the Owner (Tvl)	Village & S.F. Nos.	Extent in Hect.
1	Thiru.R.Monishkumar, S/o. Rajendiran, No.24/25/122V Vadivel Nagar, JS Hospital, Chengalpattu Taluk	Menallur & 139/21A, 139/21B, 139/21C, 139/22A, 139/22B, 139/23, 139/24, 139/25A, 139/25B, 139/25C, 139/26, 139/27, 139/28, 139/29, 140/1, 140/2, 140/3, 141/42A, 141/43A, 141/44, 141/45, 141/46, 141/47, 141/48, 141/49, 148/11, 148/12A, 148/12B, 148/14, 148/15A, 148/15B & 148/8	3.16.0
2	M/s.Sri Ganesh Blue Metals-II, S.F.No.127/2B & 129, Menallur Village, Vembakkam Taluk	Menallur & 123/10, 123/11, 123/12, 123/14A, 123/14B, 123/15, 123/16, 123/17, 131/1, 131/2, 131/3, 131/4, 131/5A, 131/5B, 131/6, 131/7, 131/8, 131/9, 131/10A, 131/10B, 131/10C & 132/4B	3.26.0

3	M/s.Aditya Durga Aggregates Pvt. Ltd., S.F.No.150/3B Menallur Village, Tiruvannamalai District.	124/30, 124/31, 124/32, 124/33, 117/1, 117/5, 117/6, 117/4, 117/12B, 117/2, 141/2B2 (Part), 141/2E1, 124/17, 124/22, 124/23, 124/24, 124/25A, 124/25B, 124/35A, 124/34, 124/35B, 124/16, 124/29, 124/6, 124/7, 124/11, 124/36, 124/14, 124/15, 141/2C1, 141/2C2, 141/2E2 (Part), 141/3 (Part), 141/4 (Part), 117/7, 124/8A, 124/8B, 124/12, 124/18, 124/9, 124/10, 124/13, 124/19, 124/20 & 124/21	4.87.88
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Deputy Director,
Geology and Mining,
Tiruvannamalai.

copy
13/10/22

POPULATION BREAKUP & LITERACY LEVEL IN THE BUFFER ZONE

SI.No	No. of Villages	Name of village	Rural / urban	HOUSE HOLDS	POPULATION			POPULATION BELOW 6 AGE GROUP			SCHEDULE CASTE			SCHEDULE TRIBE			LITRERATES			ILLITRERATES		
					TOTAL	MALE	F.MALE	TOTAL	MALE	F.MALE	TOTAL	MALE	F.MALE	TOTAL	MALE	F. MALE	TOTAL	MALE	F.MALE	TOTAL	MALE	F.MALE
0-2 km,Cheyar Sub-District, Tiruvannamalai District																						
1	1	Seniyallur	Rural	91	373	183	190	30	19	11	0	0	0	0	0	0	222	133	89	151	50	101
2	2	Kundiyanthandalam	Rural	170	703	351	352	71	36	35	381	182	199	0	0	0	472	262	210	231	89	142
3	3	Suruttal	Rural	304	1266	659	607	126	66	60	7	5	2	2	0	2	844	507	337	422	152	270
4	4	Poonaitthangal	Rural	80	277	132	145	33	15	18	0	0	0	0	0	0	209	112	97	68	20	48
5	5	Menallur	Rural	363	1444	711	733	153	77	76	650	322	328	0	0	0	947	508	439	497	203	294
6	6	Girijapuram	Rural	61	243	122	121	27	15	12	0	0	0	0	0	0	155	91	64	88	31	57
7	7	Kizhnaickanpalayam	Rural	141	544	264	280	62	26	36	283	133	150	0	0	0	351	193	158	193	71	122
8	8	Vadalkapakkam	Rural	291	1222	628	594	125	69	56	605	310	295	46	28	18	826	483	343	396	145	251
9	9	Sothiyampakkam	Rural	288	1185	599	586	123	59	64	375	189	186	0	0	0	779	468	311	406	131	275
10	10	Bagavanthapuram	Rural	182	777	386	391	103	49	54	0	0	0	7	3	4	413	241	172	364	145	219
11	11	Ezhacheri	Rural	491	2080	1065	1015	242	122	120	770	399	371	25	15	10	1235	729	506	845	336	509
		total (A)		2462	10114	5100	5014	1095	553	542	3071	1540	1531	80	46	34	6453	3727	2726	3661	1373	2288
2-5 km,Cheyar Sub-District, Tiruvannamalai District																						
12	1	Kuranganilmuttam	Rural	187	702	365	337	57	30	27	573	297	276	6	2	4	490	289	201	212	76	136
13	2	Pallavaram	Rural	423	1743	865	878	214	101	113	384	200	184	25	14	11	1144	643	501	599	222	377
14	3	Kanikiluppai	Rural	187	771	380	391	65	40	25	618	310	308	0	0	0	517	285	232	254	95	159
15	4	Vazhavandal	Rural	115	444	229	215	57	27	30	68	40	28	104	58	46	278	166	112	166	63	103
16	5	Mamandur	Rural	1021	4287	2155	2132	456	250	206	390	196	194	6	5	1	2939	1679	1260	1348	476	872
17	6	Narasamangalam	Rural	392	1703	856	847	188	88	100	7	3	4	95	44	51	1045	613	432	658	243	415
18	7	Mathur	Rural	509	2147	1066	1081	238	112	126	291	148	143	0	0	0	1382	795	587	765	271	494
19	8	Chithalapakkam	Rural	145	589	284	305	77	35	42	9	3	6	0	0	0	298	170	128	291	114	177
20	9	Vayalathur	Rural	117	505	257	248	57	38	19	313	158	155	7	3	4	321	172	149	184	85	99
21	10	Arasanipalai	Rural	287	1155	581	574	145	73	72	418	208	210	0	0	0	738	417	321	417	164	253
22	11	Punna	Rural	194	707	338	369	77	29	48	264	128	136	14	7	7	485	269	216	222	69	153
23	12	Dharmacheri	Rural	32	103	55	48	14	13	1	0	0	0	0	0	0	63	33	30	40	22	18
24	13	Pavoor	Rural	308	1370	688	682	140	74	66	1050	530	520	0	0	0	843	438	405	527	250	277
25	14	Sirunallur	Rural	136	563	267	296	60	31	29	315	140	175	0	0	0	336	185	151	227	82	145
26	15	Pudupalayam	Rural	214	853	407	446	81	38	43	474	228	246	0	0	0	662	335	327	191	72	119
Kancheepuram Sub-District, Kancheepuram District																						
27	1	Vitchanthangal	Rural	254	1016	517	499	120	64	56	343	175	168	13	4	9	634	369	265	382	148	234
28	2	Perumanallur	Rural	117	438	203	235	44	16	28	12	5	7	18	7	11	277	148	129	161	55	106
29	3	Vedal	Rural	217	906	463	443	109	47	62	7	3	4	13	7	6	490	279	211	416	184	232
30	4	Kalakattur	Rural	664	2539	1288	1251	301	172	129	59	25	34	172	89	83	1468	810	658	1071	478	593
31	5	Arpakkam	Rural	731	2937	1475	1462	378	181	197	1626	808	818	320	171	149	1794	993	801	1143	482	661
32	6	Magaral	Rural	709	2834	1399	1435	303	154	149	1777	895	882	36	16	20	1754	940	814	1080	459	621
		total (B)		6959	28312	14138	14174	3181	1613	1568	8998	4500	4498	829	427	402	17958	10028	7930	10354	4110	6244
5-10 km,Cheyar Sub-District, Tiruvannamalai District																						
33	1	Pillanthangal	Rural	316	1308	653	655	128	55	73	253	129	124	16	10	6	818	464	354	490	189	301
34	2	Namandi	Rural	318	2031	1185	846	149	78	71	542	283	259	1	0	1	1431	946	485	600	239	361
35	3	Vada Mavanthal	Rural	456	1930	972	958	226	107	119	228	108	120	33	20	13	1334	760	574	596	212	384
36	4	Kunnathur	Rural	303	1433	718	715	157	85	72	571	291	280	12	5	7	916	526	390	517	192	325
37	5	Chithathur	Rural	657	2654	1284	1370	283	142	141	587	276	311	63	30	33	1640	889	751	1014	395	619
38	6	Kanagampakkam	Rural	55	231	126	105	25	13	12	0	0	0	0	0	0	146	97	49	85	29	56
39	7	Perumpulimedu	Rural	153	565	288	277	62	32	30	0	0	0	0	0	0	386	226	160	179	62	117
40	8	Chellaperumpulimedu	Rural	130	545	277	268	76	44	32	5	4	1	0	0	0	320	194	126	225	83	142
41	9	Ukkamperumbakkam	Rural	293	1243	597	646	112	50	62	558	264	294	58	25	33	872	464	408	371	133	238
42	10	Mangal	Rural	174	767	377	390	61	26	35	407	204	203	19	9	10	525	297	228	242	80	162
43	11	Mahajanampakkam	Rural	407	1707	892	815	211	114	97	745	397	348	0	0	0	1196	701	495	511	191	320
44	12	Kunnavakkam	Rural	315	1259	643	616	128	76	52	670	341	329	18	8	10	849	487	362	410	156	254
45	13	Chozhavaram	Rural	340	1316	670	646	163	88	75	610	312	298	2	1	1	941	513	428	375	157	218
46	14	Karanai	Rural	139	677	351	326	81	35	46	666	345	321	0	0	0	426	250	176	251	101	150
47	15	Pandiyampakkam	Rural	248	937	484	453	98	48	50	356	181	175	7	4	3	664	374	290	273	110	163
48	16	Akkur	Rural	754	2896	1454	1442	315	164	151	583	293	290	96	47	49	1948	1086	862	948	368	580
49	17	Koozhamandal	Rural	409	1750	882	868	173	91	82	99	50	49	0	0	0	1246	707	539	504	175	329
50	18	Ukkal	Rural	611	2434	1209	1225	244	131	113	384	194	190	33	17	16	1712	948	764	722	261	461
51	19	Nemili	Rural	135	585	301	284	58	33	25	286	144	142	10	5	5	338	197	141	247	104	143
Cheyar Sub-District, Tiruvannamalai District																						
52	20	Dusi (CT)	Urban	1384	5577	2811	2766	559	285	274	73	44	29	49	26	23	3706	2047	1659	1871	764	1107

Uthiramerur Sub-District, Kancheepuram District																						
53	1	Perunagar	Rural	1346	5499	2823	2676	597	297	300	2068	1081	987	157	74	83	3466	1979	1487	2033	844	1189
54	2	Hanumanthandalam	Rural	311	1278	625	653	128	63	65	248	120	128	30	11	19	817	481	336	461	144	317
55	3	Melpakkam	Rural	163	581	272	309	71	33	38	61	27	34	40	15	25	348	189	159	233	83	150
56	4	Silambakkam	Rural	114	461	244	217	47	24	23	0	0	0	11	5	6	270	173	97	191	71	120
57	5	Vengaram	Rural	48	176	89	87	27	9	18	86	42	44	0	0	0	96	62	34	80	27	53
58	6	Ozhugarai	Rural	322	1240	613	627	132	61	71	488	249	239	0	0	0	697	415	282	543	198	345
59	7	Karuveppampoondi	Rural	436	1652	846	806	185	96	89	844	434	410	19	12	7	1157	638	519	495	208	287
60	8	Vengacheri	Rural	195	753	379	374	92	49	43	1	1	0	45	20	25	435	263	172	318	116	202
61	9	Kannikulam	Rural	172	727	372	355	82	47	35	421	214	207	23	12	11	453	265	188	274	107	167
62	10	Adavappakkam	Rural	185	765	396	369	69	41	28	499	258	241	8	6	2	465	270	195	300	126	174
63	11	Irumaram	Rural	59	223	104	119	27	11	16	222	104	118	0	0	0	134	76	58	89	28	61
64	12	Sembulam	Rural	39	148	66	82	11	4	7	54	23	31	0	0	0	104	52	52	44	14	30
65	13	Kavampair	Rural	179	682	339	343	88	37	51	343	172	171	39	16	23	427	244	183	255	95	160
66	14	Neyyativakkam	Rural	323	1360	666	694	140	62	78	682	316	366	48	24	24	896	513	383	464	153	311
67	15	Nariambakkam	Rural	12	35	14	21	1	1	0	0	0	0	0	0	0	24	10	14	11	4	7
68	16	Puthali	Rural	266	1032	510	522	142	66	76	766	377	389	27	14	13	674	376	298	358	134	224
69	17	Pulivoy	Rural	128	491	237	254	48	16	32	217	105	112	19	8	11	324	184	140	167	53	114
70	18	Thriupulivanam	Rural	478	1821	892	929	206	102	104	356	166	190	85	40	45	1141	625	516	680	267	413
71	19	Andithangal	Rural	109	406	206	200	34	20	14	10	5	5	0	0	0	277	158	119	129	48	81
72	20	Murukkeri	Rural	115	485	258	227	49	28	21	0	0	0	0	0	0	281	173	108	204	85	119
73	21	Thinayampoondi	Rural	262	1103	571	532	151	81	70	893	463	430	54	32	22	706	389	317	397	182	215
74	22	Alisoor	Rural	461	1751	892	859	176	87	89	324	158	166	63	30	33	1093	627	466	658	265	393
75	23	Elanagar	Rural	468	1725	879	846	172	93	79	111	54	57	29	15	14	1003	599	404	722	280	442
Kancheepuram Sub-District, Kancheepuram District																						
76	1	Vippedu	Rural	522	2079	1031	1048	214	104	110	974	480	494	97	51	46	1373	760	613	706	271	435
77	2	Vengudi	Rural	270	1111	542	569	106	56	50	614	297	317	24	9	15	877	451	426	234	91	143
78	3	Seeyamangalam	Rural	144	564	281	283	52	29	23	309	165	144	0	0	0	350	190	160	214	91	123
79	4	Ekanampettai	Rural	577	2268	1137	1131	255	122	133	10	6	4	0	0	0	1707	916	791	561	221	340
80	5	Villivalam	Rural	442	1731	856	875	185	85	100	326	154	172	0	0	0	1036	584	452	695	272	423
81	6	Erivoy	Rural	222	905	454	451	108	61	47	26	9	17	4	2	2	575	314	261	330	140	190
82	7	Thimmaiyanpettai	Rural	767	2948	1461	1487	320	164	156	37	18	19	24	14	10	2144	1163	981	804	298	506
83	8	Muthialpettai	Rural	662	2586	1297	1289	253	127	126	32	16	16	27	13	14	1920	1030	890	666	267	399
84	9	Padappam	Rural	73	284	136	148	29	13	16	239	114	125	0	0	0	224	112	112	60	24	36
85	10	Kolivakkam	Rural	415	2010	1113	897	171	94	77	421	231	190	1	1	0	1391	867	524	619	246	373
86	11	Iyangarkulam	Rural	766	3012	1526	1486	269	142	127	301	158	143	11	5	6	2084	1164	920	928	362	566
87	12	Punjarasanthangal	Rural	350	1425	734	691	136	68	68	224	111	113	54	28	26	853	489	364	572	245	327
88	13	Valathottam	Rural	287	1182	592	590	125	64	61	391	191	200	0	0	0	796	443	353	386	149	237
89	14	Kamugampallam	Rural	49	217	107	110	31	12	19	0	0	0	74	35	39	127	78	49	90	29	61
90	15	Kuruvimalai	Rural	388	1508	769	739	173	87	86	24	14	10	15	8	7	886	501	385	622	268	354
91	16	Kalur	Rural	786	3129	1560	1569	321	171	150	520	256	264	6	3	3	1945	1110	835	1184	450	734
92	17	Asoor	Rural	323	1234	609	625	132	67	65	741	363	378	17	7	10	822	457	365	412	152	260
93	18	Avalur	Rural	992	3960	1948	2012	445	240	205	240	119	121	73	34	39	2377	1322	1055	1583	626	957
94	19	Thammanur	Rural	526	2116	1088	1028	248	134	114	667	330	337	151	83	68	1231	712	519	885	376	509
95	20	Melputhur	Rural	116	430	214	216	50	27	23	300	146	154	0	0	0	263	152	111	167	62	105
96	21	Kolathur	Rural	139	508	243	265	67	35	32	402	190	212	0	0	0	306	159	147	202	84	118
97	22	Kavanthandalam	Rural	461	1619	796	823	134	66	68	392	192	200	67	36	31	970	548	422	649	248	401
98	23	Nelveli	Rural	165	667	322	345	88	38	50	577	280	297	0	0	0	403	220	183	264	102	162
99	24	Kilputhur	Rural	53	170	80	90	12	7	5	1	1	0	0	0	0	99	56	43	71	24	47
100	25	Kambarajapuram	Rural	380	1527	766	761	172	93	79	273	139	134	56	26	30	944	553	391	583	213	370
101	26	Elayanarvelur	Rural	299	1079	544	535	124	67	57	554	273	281	0	0	0	643	352	291	436	192	244
Kancheepuram Sub-District, Kancheepuram District																						
102	1	Kancheepuram (M)	Urban	41807	164384	81992	82392	15955	8158	7797	5833	2871	2962	151	72	79	130703	68601	62102	33681	13391	20290
103	2	Sevilimedu (TP)	Urban	5863	23454	11701	11753	2375	1216	1159	4238	2152	2086	33	21	12	18474	9691	8783	4980	2010	2970
104	3	Konerikuppam (CT)	Urban	2804	11406	5655	5751	1274	619	655	3086	1523	1563	95	44	51	8878	4681	4197	2528	974	1554
105	4	Nattapettai (CT)	Urban	4964	19883	9986	9897	2121	1070	1051	3309	1637	1672	219	110	109	14284	7786	6498	5599	2200	3399
106	5	Thenambakkam (CT)	Urban	3473	13994	7070	6924	1428	730	698	1862	939	923	258	119	139	9705	5255	4450	4289	1815	2474
		total (C)		82873	329629	165077	164552	33357	16991	16366	43240	21604	21636	2571	1262	1309	245092	131651	113441	84537	33426	51111
		Grand Total (A+B+C)		92294	368055	184315	183740	37633	19157	18476	55309	27644	27665	3480	1735	1745	269503	145406	124097	98552	38909	59643

*Source: District Primary Census Abstract, Tiruvannamalai & 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
0-2 km,Cheyyar Sub-District, Tiruvannamalai District																	
1	1	Seniyanallur	Rural	100	25	52	7	8	5	4	2	36	11	20	89	63	76
2	2	Kundiyanthandalam	Rural	76	21	3	1	1	1	1	0	71	19	124	33	151	298
3	3	Suruttal	Rural	411	188	83	21	168	141	3	1	157	25	26	137	222	282
4	4	Poonathangal	Rural	82	17	12	1	36	8	3	0	31	8	7	2	43	126
5	5	Menallur	Rural	323	135	44	23	117	53	15	26	147	33	95	31	293	567
6	6	Girijapuram	Rural	73	75	23	22	20	28	2	15	28	10	2	6	47	40
7	7	Kizhnaickanpalayam	Rural	62	39	5	6	14	22	10	1	33	10	136	154	66	87
8	8	Vadakalpakkam	Rural	295	213	7	3	122	163	6	3	160	44	93	135	240	246
9	9	Sothiyampakkam	Rural	374	330	112	59	81	200	1	1	180	70	3	4	222	252
10	10	Bagavanthapuram	Rural	236	105	84	32	53	44	2	1	97	28	1	3	149	283
11	11	Ezhacheri	Rural	654	476	192	67	244	340	7	4	211	65	1	3	410	536
		total (A)		2686	1624	617	242	864	1005	54	54	1151	323	508	597	1906	2793
2-5 km,Cheyyar Sub-District, Tiruvannamalai District																	
12	1	Kuranganilmuttam	Rural	247	203	17	16	171	174	5	1	54	12	0	0	118	134
13	2	Pallavaram	Rural	472	176	137	35	101	86	21	9	213	46	89	126	304	576
14	3	Kanikiluppai	Rural	238	231	29	1	150	217	2	2	57	11	2	5	140	155
15	4	Vazhavandal	Rural	33	15	5	1	8	5	0	1	20	8	95	89	101	111
16	5	Mamandur	Rural	1021	724	371	257	174	297	34	9	442	161	346	400	788	1008
17	6	Narasamangalam	Rural	540	407	104	84	171	228	4	4	261	91	7	24	309	416
18	7	Mathur	Rural	637	467	196	131	133	210	10	1	298	125	33	59	396	555
19	8	Chithalapakkam	Rural	108	30	27	9	21	16	7	1	53	4	52	87	124	188
20	9	Vayalathur	Rural	140	69	24	0	60	61	0	0	56	8	0	1	117	178
21	10	Arasanipalai	Rural	261	106	81	1	117	83	3	4	60	18	44	55	276	413
22	11	Punnai	Rural	224	240	9	9	140	187	2	2	73	42	20	12	94	117
23	12	Dharmacheri	Rural	37	40	4	2	24	33	1	0	8	5	1	0	17	8
24	13	Pavoor	Rural	410	191	75	10	160	105	4	2	171	74	3	3	275	488
25	14	Sirunallur	Rural	165	126	43	24	49	78	0	0	73	24	7	4	95	166
26	15	Pudupalayam	Rural	263	191	36	8	104	142	8	6	115	35	1	1	143	254
Kancheepuram Sub-District, Kancheepuram District																	
27	1	Vitchanthal	Rural	173	66	26	20	15	19	4	2	128	25	121	93	223	340
28	2	Perumanallur	Rural	113	103	12	13	33	50	0	3	68	37	52	51	38	81
29	3	Vedal	Rural	281	229	13	10	50	112	1	4	217	103	4	20	178	194
30	4	Kalakattur	Rural	771	550	163	105	163	180	116	131	329	134	126	178	391	523
31	5	Arpakkam	Rural	782	335	122	7	207	229	13	10	440	89	37	115	656	1012
32	6	Magaral	Rural	287	140	39	14	94	88	1	2	153	36	534	540	578	755
		total (B)		7203	4639	1533	757	2145	2600	236	194	3289	1088	1574	1863	5361	7672
5-10 km,Cheyyar Sub-District, Tiruvannamalai District																	
33	1	Pillanthangal	Rural	199	46	122	16	45	25	4	3	28	2	117	181	337	428
34	2	Namandi	Rural	430	347	77	60	177	242	63	3	113	42	1	3	754	496
35	3	Vada Mavanthal	Rural	436	247	7	8	149	164	133	15	147	60	125	60	411	651
36	4	Kunnathur	Rural	330	131	101	6	79	103	14	2	136	20	76	135	312	449
37	5	Chithathur	Rural	694	194	64	4	246	77	114	10	270	103	97	306	493	870
38	6	Kanagampakkam	Rural	36	16	3	2	0	0	23	2	10	12	48	34	42	55
39	7	Perumpulimedu	Rural	163	97	74	35	42	43	0	0	47	19	13	51	112	129
40	8	Chellaperumpulimedu	Rural	147	100	60	39	46	49	0	0	41	12	1	1	129	167
41	9	Ukkamperumbakkam	Rural	188	51	63	21	4	3	1	1	120	26	172	133	237	462
42	10	Mangal	Rural	110	12	6	0	72	5	1	0	31	7	70	17	197	361
43	11	Mahajanampakkam	Rural	547	345	173	45	116	246	0	0	258	54	6	15	339	455
44	12	Kunnavakkam	Rural	310	163	47	3	162	143	9	0	92	17	42	42	291	411
45	13	Chozhavaram	Rural	418	303	126	67	73	158	36	14	183	64	22	20	230	323
46	14	Karanai	Rural	235	215	85	57	79	156	0	0	71	2	0	0	116	111
47	15	Pandiyampakkam	Rural	286	180	115	66	97	100	9	1	65	13	13	9	185	264
48	16	Akkur	Rural	650	401	254	138	118	134	24	8	254	121	195	234	609	807
49	17	Koozhamandal	Rural	477	249	219	52	91	157	2	0	165	40	48	44	357	575
50	18	Ukkal	Rural	749	325	385	10	125	249	16	4	223	62	35	304	425	596
51	19	Nemili	Rural	155	108	63	36	40	50	3	1	49	21	28	24	118	152
Cheyyar Sub-District, Tiruvannamalai District																	
52	20	Dusi (CT)	Urban	1601	723	162	32	165	251	182	89	1092	351	93	236	1117	1807

Uthiramerur Sub-District, Kancheepuram District																	
53	1	Perunagar	Rural	762	392	181	141	98	91	50	29	433	131	842	574	1219	1710
54	2	Hanumanthandalam	Rural	341	83	133	27	80	27	4	2	124	27	47	218	237	352
55	3	Melpakkam	Rural	33	10	0	0	0	0	7	0	26	10	147	180	92	119
56	4	Silambakkam	Rural	142	52	122	34	12	13	0	0	8	5	2	1	100	164
57	5	Vengaram	Rural	52	10	32	4	13	5	2	0	5	1	0	0	37	77
58	6	Ozhugarai	Rural	273	119	100	14	66	74	0	1	107	30	82	70	258	438
59	7	Karuveppampondi	Rural	464	318	35	6	303	285	3	3	123	24	3	2	379	486
60	8	Vengacheri	Rural	151	26	45	1	10	3	0	0	96	22	66	112	162	236
61	9	Kannikulam	Rural	232	32	65	1	102	26	4	2	61	3	0	1	140	322
62	10	Adavapakkam	Rural	241	191	17	3	109	157	3	2	112	29	6	3	149	175
63	11	Irumaram	Rural	11	4	1	0	1	0	0	0	9	4	53	61	40	54
64	12	Sembulam	Rural	22	4	7	0	1	0	1	0	13	4	31	33	13	45
65	13	Kavampair	Rural	198	120	29	18	91	85	0	0	78	17	29	36	112	187
66	14	Neyyadivakkam	Rural	416	176	124	59	113	60	2	1	177	56	16	44	234	474
67	15	Nariambakkam	Rural	10	10	5	1	4	9	0	0	1	0	0	0	4	11
68	16	Puthali	Rural	274	126	29	3	135	100	0	0	110	23	59	113	177	283
69	17	Pulivoy	Rural	160	117	14	4	90	99	3	0	53	14	1	1	76	136
70	18	Thriupulivanam	Rural	542	273	64	10	199	181	13	3	266	79	11	12	339	644
71	19	Andithangal	Rural	148	100	92	64	13	15	22	19	21	2	0	0	58	100
72	20	Murukkeri	Rural	169	126	19	8	102	90	0	0	48	28	8	12	81	89
73	21	Thinayampoondi	Rural	143	115	56	46	67	65	0	0	20	4	223	206	205	211
74	22	Alisoor	Rural	599	362	51	39	420	294	6	1	122	28	2	7	291	490
75	23	Elanagar	Rural	132	20	3	0	4	2	0	0	125	18	442	301	305	525
Kancheepuram Sub-District, Kancheepuram District																	
76	1	Vippedu	Rural	564	345	40	16	188	213	21	15	315	101	57	105	410	598
77	2	Vengudi	Rural	241	100	21	7	47	29	11	4	162	60	59	32	242	437
78	3	Seeyamangalam	Rural	130	45	1	0	6	4	11	7	112	34	37	44	114	194
79	4	Ekanampettai	Rural	573	249	19	3	10	5	83	48	461	193	198	302	366	580
80	5	Villivalam	Rural	488	272	81	40	182	174	23	8	202	50	22	66	346	537
81	6	Erivoy	Rural	233	165	20	13	44	99	27	10	142	43	16	30	205	256
82	7	Thimmaiyanpettai	Rural	686	161	5	0	1	0	21	22	659	139	157	52	618	1274
83	8	Muthialpettai	Rural	760	194	14	3	1	5	98	24	647	162	30	65	507	1030
84	9	Padappam	Rural	69	17	7	0	18	7	2	2	42	8	13	31	54	100
85	10	Kolivakkam	Rural	402	133	33	2	106	73	24	5	239	53	27	23	684	741
86	11	Iyangarkulam	Rural	846	413	15	4	42	49	355	164	434	196	44	124	636	949
87	12	Punjarasanthangal	Rural	422	287	8	7	81	110	131	75	202	95	8	38	304	366
88	13	Valathottam	Rural	374	233	74	2	53	116	86	75	161	40	6	2	212	355
89	14	Kamugampallam	Rural	60	5	10	0	5	3	2	0	43	2	3	1	44	104
90	15	Kuruvimalai	Rural	490	220	26	3	24	26	123	61	317	130	20	99	259	420
91	16	Kalur	Rural	887	417	288	138	146	171	13	6	440	102	94	165	579	987
92	17	Asoor	Rural	297	201	38	12	156	147	4	2	99	40	20	26	292	398
93	18	Avalur	Rural	1022	719	219	56	377	513	3	2	423	148	77	208	849	1085
94	19	Thammanur	Rural	538	345	255	147	96	44	1	0	186	154	85	114	465	569
95	20	Melputhur	Rural	131	87	14	5	74	74	0	0	43	8	0	0	83	129
96	21	Kolathur	Rural	119	59	13	2	77	50	0	0	29	7	12	12	112	194
97	22	Kavanthandalam	Rural	458	273	153	42	208	205	9	2	88	24	66	59	272	491
98	23	Nelveli	Rural	38	14	7	1	2	1	1	0	28	12	158	140	126	191
99	24	Kilputhur	Rural	48	41	6	0	20	31	0	0	22	10	0	1	32	48
100	25	Kambarajapuram	Rural	430	301	43	14	171	236	4	4	212	47	30	57	306	403
101	26	Elayanarvelur	Rural	336	139	38	13	115	87	9	3	174	36	13	63	195	333
Kancheepuram Sub-District, Kancheepuram District																	
102	1	Kancheepuram (M)	Urban	45407	11703	279	41	249	68	6202	2663	38677	8931	2820	1637	33765	69052
103	2	Sevilimedu (TP)	Urban	6089	1985	118	11	137	71	437	269	5397	1634	728	893	4884	8875
104	3	Konerikuppam (CT)	Urban	2724	786	28	3	84	73	49	56	2563	654	434	466	2497	4499
105	4	Nattapettai (CT)	Urban	5147	1406	30	11	110	84	928	316	4079	995	880	724	3959	7767
106	5	Thenambakkam (CT)	Urban	3496	1303	105	28	243	307	248	116	2900	852	652	652	2922	4969
		total (C)		87181	29657	5438	1804	7032	7111	9680	4175	65031	16567	10038	10067	67858	124828
		Grand Total (A+B+C)		97070	35920	7588	2803	10041	10716	9970	4423	69471	17978	12120	12527	75125	135293

*Source: District Primary Census Abstract, Tiruvannamalai & Kancheepuram District of Tamilnadu State-2011

EDUCATIONAL FACILITIES IN THE STUDY AREA

Sl.No	No. of Villages	Name of village	Educational Facilities	Govt Pre - Primary School (Nursery/LKG/UKG)	Govt Primary School	Govt Middle School	Govt Secondary School	Govt Senior Secondary School	Govt Arts and Science Degree College	Govt Engineering College	Govt Medicine College)	Govt Management Institute	Govt Polytechnic	Govt Vocational Training School/ITI	Government Non Formal Training Centre	Government School For Disabled
0-2 km,Cheyar Sub-District, Tiruvannamalai District																
1	1	Seniyallur	1	1	1	0	0	0	0	0	0	0	0	0	1	0
2	2	Kundiyandalam	1	1	1	0	0	0	0	0	0	0	0	0	1	0
3	3	Suruttal	1	1	1	0	0	0	0	0	0	0	0	0	1	0
4	4	Poonathangal	2	0	0	0	0	0	0	0	0	0	0	0	0	0
5	5	Menallur	1	1	1	1	1	1	0	0	0	0	0	0	1	0
6	6	Girijapuram	1	1	0	0	0	0	0	0	0	0	0	0	0	0
7	7	Kizhnaickanpalayam	1	1	2	0	0	0	0	0	0	0	0	0	1	0
8	8	Vadakalpakkam	1	1	1	0	0	0	0	0	0	0	0	0	1	0
9	9	Sothiyampakkam	1	1	1	0	0	0	0	0	0	0	0	0	1	0
10	10	Bagavanthapuram	1	1	1	0	0	0	0	0	0	0	0	0	1	0
11	11	Ezhacheri	1	2	2	0	0	0	0	0	0	0	0	0	1	0
		total (A)		11	11	1	1	1	0	0	0	0	0	0	9	0
2-5 km,Cheyar Sub-District, Tiruvannamalai District																
12	1	Kuranganilmuttam	1	1	1	0	0	0	0	0	0	0	0	0	1	0
13	2	Pallavaram	1	1	1	1	1	0	0	0	0	0	0	0	1	0
14	3	Kanikiluppai	1	1	1	0	0	0	0	0	0	0	0	0	1	0
15	4	Vazhavandal	1	1	1	0	0	0	0	0	0	0	0	0	1	0
16	5	Mamandur	1	3	1	1	1	1	0	0	0	0	0	0	1	0
17	6	Narasamangalam	1	1	1	0	0	0	0	0	0	0	0	0	1	0
18	7	Mathur	1	1	2	1	0	0	0	0	0	0	0	0	1	0
19	8	Chithalapakkam	1	1	1	0	0	0	0	0	0	0	0	0	1	0
20	9	Vayalathur	1	1	1	0	0	0	0	0	0	0	0	0	1	0
21	10	Arasanipalai	1	1	1	0	0	0	0	0	0	0	0	0	1	0
22	11	Punnai	1	1	1	1	1	0	0	0	0	0	0	0	1	0
23	12	Dharmacheri	1	1	1	0	0	0	0	0	0	0	0	0	1	0
24	13	Pavoor	1	1	1	0	0	0	0	0	0	0	0	0	1	0
25	14	Sirunallur	1	1	1	0	0	0	0	0	0	0	0	0	1	0
26	15	Pudupalayam	1	1	1	1	1	0	0	0	0	0	0	0	1	0
Kancheepuram Sub-District, Kancheepuram District																
27	1	Vitchanthal	1	2	0	0	0	0	0	0	0	0	0	0	0	0
28	2	Perumanallur	1	1	1	0	0	0	0	0	0	0	0	0	1	0
29	3	Vedal	1	1	1	0	0	0	0	0	0	0	0	0	1	0
30	4	Kalakattur	1	2	1	1	0	0	0	0	0	0	0	0	1	0
31	5	Arpakkam	1	2	1	1	1	1	0	0	0	0	0	0	1	0
32	6	Magaral	1	3	1	1	0	0	0	0	0	0	0	0	1	0
		total (B)		28	21	8	5	2	0	0	0	0	0	0	20	0
5-10 km,Cheyar Sub-District, Tiruvannamalai District																
33	1	Pillanthangal	1	1	1	1	0	0	0	0	0	0	0	0	1	0
34	2	Namandi	1	1	1	1	1	0	0	0	0	0	0	0	1	0
35	3	Vada Mavanthal	1	1	1	0	0	0	0	0	0	0	0	0	1	0
36	4	Kunnathur	1	1	1	1	0	0	0	0	0	0	0	0	1	0
37	5	Chithathur	1	2	2	1	1	1	0	0	0	0	0	0	1	0
38	6	Kanagampakkam	1	1	1	0	0	0	0	0	0	0	0	0	1	0
39	7	Perumpulimedu	1	1	1	0	0	0	0	0	0	0	0	0	1	0
40	8	Chellaperumpulimedu	1	1	1	0	0	0	0	0	0	0	0	0	1	0
41	9	Ukkamperumbakkam	1	1	1	1	0	0	0	0	0	0	0	0	1	0
42	10	Mangal	1	1	1	0	0	0	0	0	0	0	0	0	1	0
43	11	Mahajanampakkam	1	2	1	0	0	0	0	0	0	0	0	0	1	0
44	12	Kunnavakkam	1	1	1	0	0	0	0	0	0	0	0	0	1	0
45	13	Chozhavaram	1	2	2	0	0	0	0	0	0	0	0	0	1	0
46	14	Karanai	1	1	1	0	0	0	0	0	0	0	0	0	1	0
47	15	Pandiyampakkam	1	1	1	0	0	0	0	0	0	0	0	0	1	0
48	16	Akkur	1	2	1	1	1	1	0	0	0	0	0	0	1	0
49	17	Koozhamandal	1	2	1	1	1	0	0	0	0	0	0	0	1	0
50	18	Ukkal	1	2	1	1	1	0	0	0	0	0	0	0	1	0
51	19	Nemili	2	0	0	0	0	0	0	0	0	0	0	0	0	0

Uthiramerur Sub-District, Kancheepuram District																
52	1	Perunagar	1	3	2	1	1	1	0	0	0	0	0	0	1	0
53	2	Hanumanthandalam	1	1	1	0	0	0	0	0	0	0	0	0	1	0
54	3	Melpakkam	1	1	1	0	0	0	0	0	0	0	0	0	1	0
55	4	Silambakkam	1	1	1	0	0	0	0	0	0	0	0	0	1	0
56	5	Vengaram	2	0	0	0	0	0	0	0	0	0	0	0	0	0
57	6	Ozhugarai	1	2	1	0	0	0	0	0	0	0	0	0	1	0
58	7	Karuveppampoondi	1	2	1	1	0	0	0	0	0	0	0	0	1	0
59	8	Vengacheri	1	1	1	0	0	0	0	0	0	0	0	0	1	0
60	9	Kannikulam	1	1	1	0	0	0	0	0	0	0	0	0	1	0
61	10	Adavapakkam	1	2	1	0	0	0	0	0	0	0	0	0	1	0
62	11	Irumaram	2	0	0	0	0	0	0	0	0	0	0	0	0	0
63	12	Sembulam	2	0	0	0	0	0	0	0	0	0	0	0	0	0
64	13	Kavampair	1	1	1	0	0	0	0	0	0	0	0	0	1	0
65	14	Neyyativakkam	1	2	2	1	1	0	0	0	0	0	0	0	1	0
66	15	Nariambakkam	2	0	0	0	0	0	0	0	0	0	0	0	0	0
67	16	Puthali	1	1	1	0	0	0	0	0	0	0	0	0	1	0
68	17	Pulivoy	1	1	1	0	0	0	0	0	0	0	0	0	1	0
69	18	Thriupulivanam	1	2	1	1	1	0	0	0	0	0	0	0	1	0
70	19	Andithangal	1	1	1	0	0	0	0	0	0	0	0	0	1	0
71	20	Murukkeri	1	1	1	0	0	0	0	0	0	0	0	0	1	0
72	21	Thinayampoondi	1	1	1	0	0	0	0	0	0	0	0	0	1	0
73	22	Alisoor	1	1	1	1	0	0	0	0	0	0	0	0	1	0
74	23	Elanagar	1	2	1	1	0	0	0	0	0	0	0	0	1	0
Kancheepuram Sub-District, Kancheepuram District																
75	1	Vippedu	1	2	1	1	1	0	0	0	0	0	0	0	1	0
76	2	Vengudi	1	1	1	0	0	0	0	0	0	0	0	0	1	0
77	3	Seeyamangalam	1	1	1	0	0	0	0	0	0	0	0	0	1	0
78	4	Ekanampettai	1	2	2	1	1	1	0	0	0	0	0	0	1	0
79	5	Villivalam	1	3	1	1	0	0	0	0	0	0	0	0	1	0
80	6	Erivoy	1	1	1	0	0	0	0	0	0	0	0	0	1	0
81	7	Thimmaianpettai	1	3	2	0	0	0	0	0	0	0	0	0	1	0
82	8	Muthialpettai	1	2	1	1	0	0	0	0	0	0	0	0	1	0
83	9	Padappam	1	1	2	0	0	0	0	0	0	0	0	0	1	0
84	10	Kolivakkam	1	1	1	0	0	0	0	0	0	0	0	0	1	0
85	11	Iyangarkulam	1	2	1	1	1	1	0	0	0	0	0	0	1	0
86	12	Punjarasanthangal	1	1	0	0	0	0	0	0	0	0	0	0	0	0
87	13	Valathottam	1	2	1	1	0	0	0	0	0	0	0	0	1	0
88	14	Kamugampallam	2	0	0	0	0	0	0	0	0	0	0	0	0	0
89	15	Kuruvimalai	1	2	1	1	0	0	0	0	0	0	0	0	1	0
90	16	Kalur	1	4	4	1	1	0	0	0	0	0	0	0	1	0
91	17	Asoor	1	2	1	0	0	0	0	0	0	0	0	0	1	0
92	18	Avalur	1	5	2	1	1	1	0	0	0	0	0	0	1	0
93	19	Thammanur	1	2	1	1	0	0	0	0	0	0	0	0	1	0
94	20	Melputhur	1	1	0	0	0	0	0	0	0	0	0	0	0	0
95	21	Kolathur	1	1	0	0	0	0	0	0	0	0	0	0	0	0
96	22	Kavanthandalam	1	3	1	1	0	0	0	0	0	0	0	0	1	0
97	23	Nelveli	1	1	1	0	0	0	0	0	0	0	0	0	1	0
98	24	Kilputhur	1	1	1	0	0	0	0	0	0	0	0	0	1	0
99	25	Kambarajapuram	1	1	1	1	0	0	0	0	0	0	0	0	1	0
100	26	Elayanarvelur	1	2	1	0	0	0	0	0	0	0	0	0	1	0
		total (C)		98	70	26	13	6	0	0	0	0	0	0	59	0
		Grand Total (A+B+C)		137	102	35	19	9	0	0	0	0	0	0	88	0

*Source: District Primary Census Abstract, Tiruvannamalai & Kancheepuram District of Tamilnadu State-2011

(A(1) / NA(2))

MEDICAL FACILITIES WITHIN THE STUDY AREA

Sl.No	No. of Villages	Name of village	Medical Facilities	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)
0-2 km, Cheyyar Sub-District, Tiruvannamalai District														
1	1	Seniyanallur	2	0	0	0	0	0	0	0	0	0	0	0
2	2	Kundiyanthandalam	2	0	0	0	0	0	0	0	0	0	0	0
3	3	Suruttal	1	0	0	1	1	0	0	0	0	0	0	0
4	4	Poonaitangal	2	0	0	0	0	0	0	0	0	0	0	0
5	5	Menallur	2	0	0	0	0	0	0	0	0	0	0	0
6	6	Girijapuram	2	0	0	0	0	0	0	0	0	0	0	0
7	7	Kizhnaickanpalayam	2	0	0	0	0	0	0	0	0	0	0	0
8	8	Vadikalpakkam	1	0	0	1	0	0	0	0	0	0	0	0
9	9	Sothiyampakkam	2	0	0	0	0	0	0	0	0	0	0	0
10	10	Bagavanthapuram	2	0	0	0	0	0	0	0	0	0	0	0
11	11	Ezhacheri	1	0	1	1	1	1	0	0	1	1	0	1
		total (A)		0	1	3	2	1	0	0	1	1	0	1
2-5 km, Cheyyar Sub-District, Tiruvannamalai District														
12	1	Kuranganilmuttam	2	0	0	0	0	0	0	0	0	0	0	0
13	2	Pallavaram	2	0	0	0	0	0	0	0	0	0	0	0
14	3	Kanikiluppai	2	0	0	0	0	0	0	0	0	0	0	0
15	4	Vazhavandal	2	0	0	0	0	0	0	0	0	0	0	0
16	5	Mamandur	1	0	0	1	0	0	0	0	0	1	0	0
17	6	Narasamangalam	1	0	0	1	1	0	0	0	0	0	0	0
18	7	Mathur	2	0	0	0	0	0	0	0	0	0	0	0
19	8	Chithalapakkam	2	0	0	0	0	0	0	0	0	0	0	0
20	9	Vayalathur	2	0	0	0	0	0	0	0	0	0	0	0
21	10	Arasanipalai	2	0	0	0	0	0	0	0	0	0	0	0
22	11	Punnai	2	0	0	0	0	0	0	0	0	0	0	0
23	12	Dharmacheri	2	0	0	0	0	0	0	0	0	0	0	0
24	13	Pavoor	2	0	0	0	0	0	0	0	0	0	0	0
25	14	Sirunallur	2	0	0	0	0	0	0	0	0	0	0	0
26	15	Pudupalayam	1	0	0	1	1	0	0	0	0	0	0	0
		total (B)		0	0	6	2	0	0	0	0	3	0	0
5-10 km, Cheyyar Sub-District, Tiruvannamalai District														
33	1	Pillanthangal	1	0	0	1	0	0	0	0	0	0	0	0
34	2	Namandi	1	0	0	1	0	0	0	0	0	0	0	0
35	3	Vada Mavanthal	2	0	0	0	0	0	0	0	0	0	0	0
36	4	Kunnathur	2	0	0	0	0	0	0	0	0	0	0	0
37	5	Chithathur	1	0	1	1	1	1	0	0	1	1	0	1
38	6	Kanagampakkam	2	0	0	0	0	0	0	0	0	0	0	0
39	7	Perumpulimedu	2	0	0	0	0	0	0	0	0	0	0	0
40	8	Chellaperumpulimedu	1	0	0	1	0	0	0	0	0	0	0	0
41	9	Ukkamperumbakkam	2	0	0	0	0	0	0	0	0	0	0	0
42	10	Mangal	1	0	0	1	0	0	0	0	0	0	0	0
43	11	Mahajanampakkam	2	0	0	0	0	0	0	0	0	0	0	0
44	12	Kunnavakkam	2	0	0	0	0	0	0	0	0	0	0	0

45	13	Chozhavaram	1	0	0	1	1	0	0	0	0	0	0	0
46	14	Karanai	2	0	0	0	0	0	0	0	0	0	0	0
47	15	Pandiyampakkam	2	0	0	0	0	0	0	0	0	0	0	0
48	16	Akkur	1	1	1	1	1	1	0	0	1	1	0	1
49	17	Koozhamandal	1	0	0	1	1	0	0	0	0	0	0	0
50	18	Ukkal	2	0	0	0	0	0	0	0	0	0	0	0
51	19	Nemili	2	0	0	0	0	0	0	0	0	0	0	0

Uthiramerur Sub-District, Kancheepuram District

52	1	Perunagar	1	0	0	3	0	0	0	0	0	0	0	0
53	2	Hanumanthandalam	2	0	0	0	0	0	0	0	0	0	0	0
54	3	Melpakkam	2	0	0	0	0	0	0	0	0	0	0	0
55	4	Silambakkam	2	0	0	0	0	0	0	0	0	0	0	0
56	5	Vengaram	2	0	0	0	0	0	0	0	0	0	0	0
57	6	Ozhugarai	2	0	0	0	0	0	0	0	0	0	0	0
58	7	Karuveppampoondi	1	0	0	1	0	0	0	0	0	0	0	0
59	8	Vengacheri	2	0	0	0	0	0	0	0	0	0	0	0
60	9	Kannikulam	2	0	0	0	0	0	0	0	0	0	0	0
61	10	Adavapakkam	1	0	0	1	0	0	0	0	0	0	0	0
62	11	Irumaram	2	0	0	0	0	0	0	0	0	0	0	0
63	12	Sembulam	2	0	0	0	0	0	0	0	0	0	0	0
64	13	Kavampair	2	0	0	0	0	0	0	0	0	0	0	0
65	14	Neyyativakkam	1	0	0	1	1	0	0	0	0	0	0	0
66	15	Nariambakkam	2	0	0	0	0	0	0	0	0	0	0	0
67	16	Puthali	2	0	0	0	0	0	0	0	0	0	0	0
68	17	Pulivoy	2	0	0	0	0	0	0	0	0	0	0	0
69	18	Thriupulivanam	1	0	0	1	1	0	0	0	0	0	0	0
70	19	Andithangal	2	0	0	0	0	0	0	0	0	0	0	0
71	20	Murukkeri	2	0	0	0	0	0	0	0	0	0	0	0
72	21	Thinayampoondi	2	0	0	0	0	0	0	0	0	0	0	0
73	22	Alisoor	1	0	0	1	0	0	0	0	0	0	0	0
74	23	Elanagar	1	0	0	1	0	0	0	0	0	1	0	0

Kancheepuram Sub-District, Kancheepuram District

75	1	Vippedu	2	0	0	0	0	0	0	0	0	0	0	0
76	2	Vengudi	2	0	0	0	0	0	0	0	0	0	0	0
77	3	Seeyamangalam	2	0	0	0	0	0	0	0	0	0	0	0
78	4	Ekanampettai	2	0	0	0	0	0	0	0	0	0	0	0
79	5	Villivalam	1	0	0	1	0	0	0	0	0	0	0	0
80	6	Erivoy	2	0	0	0	0	0	0	0	0	0	0	0
81	7	Thimmaiyanpettai	1	0	0	1	0	0	0	0	0	0	0	0
82	8	Muthialpettai	1	0	0	1	0	0	0	0	0	0	0	0
83	9	Padappam	2	0	0	0	0	0	0	0	0	0	0	0
84	10	Kolivakkam	2	0	0	0	0	0	0	0	0	0	0	0
85	11	Iyangarkulam	1	0	0	1	0	0	0	0	0	0	0	0
86	12	Punjarasanthangal	2	0	0	0	0	0	0	0	0	0	0	0
87	13	Valathottam	2	0	0	0	0	0	0	0	0	0	0	0
88	14	Kamugampallam	2	0	0	0	0	0	0	0	0	0	0	0
89	15	Kuruvimalai	2	0	0	0	0	0	0	0	0	0	0	0
90	16	Kalur	1	0	1	1	1	1	0	0	1	0	0	1
91	17	Asoor	1	0	0	1	0	0	0	0	0	0	0	0
92	18	Avalur	1	0	1	1	1	1	0	0	1	0	0	1
93	19	Thammanur	1	0	0	0	0	0	0	0	0	1	0	0
94	20	Melputhur	2	0	0	0	0	0	0	0	0	0	0	0
95	21	Kolathur	2	0	0	0	0	0	0	0	0	0	0	0
96	22	Kavanthandalam	2	0	0	0	0	0	0	0	0	0	0	0
97	23	Nelveli	2	0	0	0	0	0	0	0	0	0	0	0
98	24	Kilputhur	2	0	0	0	0	0	0	0	0	0	0	0

99	25	Kambarajapuram	2	0	0	0	0	0	0	0	0	0	0	0
100	26	Elayanarvelur	1	0	0	1	0	0	0	0	0	0	0	0
		total (C)	1	4	25	8	4	0	0	4	4	0	4	
		Grand Total (A+B+C)	1	5	34	12	5	0	0	5	8	0	5	

**Source: District Primary Census Abstract, Tiruvannamalai & Kancheepuram District of Tamilnadu State-2011*

Note : A: Available, NA- Not Available

(A(1) / NA(2))

INFRASTRUCTURAL FACILITIES IN THE STUDY AREA

Sl.No	No. of Villages	Name of village	Tap Water-Treated	Covered Well	Hand Pump	Tube Wells/Borehole	Spring	River/Canal	Tank/Pond/Lake	Post Office	Sub Post Office	Post And Telegraph Office	Telephone (landlines)	Mobile Phone Coverage	Public Bus Service	Railway Station	Commercial Bank	Cooperative Bank	Agricultural Credit Societies
0-2 km,Cheyyar Sub-District, Tiruvannamalai District																			
1	1	Seniyanallur	2	2	2	2	2	2	2	2	2	2	2	1	1	2	2	2	2
2	2	Kundiyanthandalam	1	2	1	2	2	2	2	2	2	2	2	1	1	2	2	2	2
3	3	Suruttal	1	2	2	2	2	2	2	2	2	2	1	1	1	2	2	2	1
4	4	Poonaitthangal	1	1	1	2	2	2	2	2	2	2	1	1	1	2	2	2	2
5	5	Menallur	1	2	1	1	2	2	2	2	1	2	1	1	1	2	2	2	1
6	6	Girijapuram	2	2	2	2	2	2	2	2	2	2	2	1	1	2	2	2	2
7	7	Kizhnaickanpalayam	1	2	2	2	2	2	2	2	2	2	1	1	1	2	2	2	2
8	8	Vadikalpakkam	1	2	2	1	2	2	2	1	1	1	1	1	1	2	2	2	2
9	9	Sothiyampakkam	2	2	1	1	2	2	2	2	2	2	1	1	1	2	2	2	2
10	10	Bagavanthapuram	1	2	2	1	2	2	2	2	2	2	1	1	1	2	2	2	2
11	11	Ezhacheri	1	1	1	2	2	2	2	2	2	2	1	1	1	2	2	2	2
2-5 km,Cheyyar Sub-District, Tiruvannamalai District																			
12	1	Kuranganilmuttam	1	1	2	2	2	2	2	2	2	2	1	1	2	2	2	2	2
13	2	Pallavaram	1	2	1	2	2	2	2	2	2	2	1	1	1	2	2	2	2
14	3	Kanikulupai	1	2	2	2	2	2	2	2	2	2	1	1	1	2	2	2	2
15	4	Vazhavandal	2	2	2	2	2	2	1	2	2	2	1	1	2	2	2	2	2
16	5	Mamandur	1	2	2	2	2	2	2	1	1	1	1	1	1	2	1	2	2
17	6	Narasamangalam	2	1	1	2	2	2	2	2	2	2	1	1	1	2	2	2	2
18	7	Mathur	1	2	1	1	2	2	2	1	1	1	1	1	1	2	2	2	2
19	8	Chithalapakkam	1	2	2	2	2	2	2	2	2	2	2	1	1	2	2	2	2
20	9	Vayalathur	2	2	2	2	2	2	2	1	2	1	1	1	1	2	2	2	2
21	10	Arasanipalai	1	2	2	2	2	2	2	2	1	2	1	1	1	2	2	2	2
22	11	Punnai	1	2	2	2	2	2	2	2	2	2	1	1	1	2	2	2	2
23	12	Dharmacheri	1	2	2	2	2	2	2	2	2	2	1	1	1	2	2	2	2
24	13	Pavoor	1	2	2	2	2	2	2	1	1	1	1	1	1	2	2	2	2
25	14	Sirunallur	2	2	2	2	2	2	2	2	2	2	2	1	1	2	2	2	2
26	15	Pudupalayam	1	2	2	2	2	2	2	1	1	1	1	1	1	2	2	2	2
Kancheepuram Sub-District, Kancheepuram District																			
27	1	Vitchanthangal	1	2	1	2	2	2	2	2	2	2	1	1	1	2	2	2	2
28	2	Perumanallur	1	2	2	2	2	2	2	2	1	2	1	1	1	2	2	2	2
29	3	Vedal	1	2	2	2	2	2	2	2	2	2	2	1	1	2	2	2	2
30	4	Kalakattur	1	2	2	2	2	2	2	2	2	2	1	1	1	2	2	2	2
31	5	Arpakkam	1	1	2	2	2	2	2	2	1	2	1	1	1	2	2	1	1
32	6	Magaral	1	1	2	2	2	2	2	1	2	1	1	1	1	2	1	1	2
5-10 km,Cheyyar Sub-District, Tiruvannamalai District																			
33	1	Pillanthangal	1	1	2	1	2	2	2	2	1	2	1	1	1	2	2	2	2
34	2	Namandi	1	2	2	2	2	2	2	2	1	2	1	1	1	2	2	2	2
35	3	Vada Mavanthal	1	2	2	2	2	2	2	2	2	2	1	1	1	2	2	2	2
36	4	Kunnathur	1	1	2	1	2	2	2	2	1	2	1	1	1	2	2	2	2
37	5	Chithathur	1	1	2	2	2	2	1	1	1	1	1	1	1	2	2	2	1
38	6	Kanagampakkam	2	2	2	1	2	2	2	2	2	2	2	1	1	2	2	2	2
39	7	Perumpulimedu	2	2	2	2	2	2	2	2	2	2	1	1	1	2	2	2	1
40	8	Chellaperumpulimedu	1	2	2	2	2	2	2	2	2	2	2	1	1	2	2	2	2
41	9	Ukkamperumbakkam	1	2	2	1	2	2	2	2	2	2	1	1	1	2	2	2	2
42	10	Mangal	1	2	2	2	2	2	2	2	2	2	1	1	1	2	2	1	2
43	11	Mahajanampakkam	1	2	2	2	2	2	2	2	2	2	1	1	1	2	2	2	2
44	12	Kunnavakkam	1	2	1	2	2	2	2	2	2	2	1	1	1	2	2	2	2
45	13	Chozhavaram	1	2	2	2	2	2	2	1	1	1	1	1	1	2	2	2	2
46	14	Karanai	2	2	2	2	2	2	2	2	2	2	1	1	1	2	2	2	2
47	15	Pandiyampakkam	2	2	2	1	2	2	2	2	2	2	1	1	1	2	2	2	2
48	16	Akkur	1	1	1	1	2	1	2	2	1	2	1	1	1	2	2	1	2
49	17	Koozhamandal	1	2	1	2	2	2	2	2	2	2	1	1	1	2	2	2	2
50	18	Ukkal	1	2	2	2	2	2	2	2	2	2	1	1	1	2	2	2	2
51	19	Nemili	1	2	2	2	2	2	2	2	2	2	1	1	1	2	2	2	2
Uthiramerur Sub-District, Kancheepuram District																			

52	1	Perunagar	1	1	2	2	2	2	2	1	2	1	1	1	2	1	1	1
53	2	Hanumanthandalam	2	2	2	2	2	2	2	2	1	2	1	1	2	2	2	2
54	3	Melpakkam	1	1	2	2	2	2	2	2	2	2	1	1	2	2	2	2
55	4	Silambakkam	1	1	2	2	2	2	2	2	2	2	1	1	1	2	2	2
56	5	Vengaram	2	2	2	2	2	2	2	2	2	2	2	1	1	2	2	2
57	6	Ozhugarai	1	2	2	2	2	2	2	2	1	2	1	1	1	2	2	2
58	7	Karuveppampondi	1	2	2	2	2	2	2	2	2	2	1	1	1	2	2	2
59	8	Vengacheri	1	2	2	2	2	2	2	2	2	2	1	1	2	2	2	2
60	9	Kannikulam	1	2	2	2	2	2	2	2	2	2	1	1	2	2	2	2
61	10	Adavapakkam	1	2	1	2	2	2	2	2	2	2	1	1	2	2	1	2
62	11	Irumaram	2	2	2	2	2	2	2	2	2	2	1	1	2	2	2	2
63	12	Sembulam	2	2	2	2	2	2	2	2	2	2	2	1	1	2	2	2
64	13	Kavampair	1	2	2	2	2	2	2	2	2	2	1	1	2	2	2	2
65	14	Neyyativakkam	1	2	2	1	2	2	2	2	1	2	1	1	1	2	2	1
66	15	Nariambakkam	1	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2
67	16	Puthali	1	2	2	2	2	2	2	2	1	2	1	1	1	2	2	2
68	17	Pulivoy	1	2	2	2	2	2	2	2	2	2	1	1	1	2	2	2
69	18	Thriupulivanam	1	1	2	1	2	2	2	2	1	2	1	1	2	2	1	1
70	19	Andithangal	1	2	2	2	2	2	2	2	2	2	1	1	2	2	2	2
71	20	Murukkeri	1	2	2	2	2	2	2	2	2	2	1	1	1	2	2	2
72	21	Thinayampoondi	1	2	1	2	2	2	2	2	2	2	1	1	1	2	2	2
73	22	Alisoor	1	1	2	2	2	2	2	2	1	2	1	1	1	2	2	2
74	23	Elanagar	1	2	2	2	2	2	2	2	1	2	1	1	1	2	2	2

Kancheepuram Sub-District, Kancheepuram District

75	1	Vippedu	2	2	1	1	2	1	2	2	2	2	1	1	1	2	2	2	1
76	2	Vengudi	1	2	1	2	2	2	2	2	2	2	1	1	1	2	2	2	2
77	3	Seeyamangalam	1	2	2	1	2	2	2	2	2	2	1	1	1	2	2	2	2
78	4	Ekanampettai	1	2	2	2	2	2	2	2	1	2	1	1	1	2	2	2	2
79	5	Villivalam	1	2	2	2	2	2	2	2	2	2	1	1	1	2	2	2	2
80	6	Erivoy	1	1	2	2	2	1	2	2	2	2	1	1	2	2	2	2	2
81	7	Thimmaianpettai	1	2	2	1	2	2	2	2	2	2	1	1	1	2	2	2	2
82	8	Muthialpettai	1	2	1	1	1	1	2	2	1	2	1	1	1	2	2	1	1
83	9	Padappam	1	2	2	2	2	2	2	2	2	2	1	1	2	2	2	2	2
84	10	Kolivakkam	1	2	2	2	2	2	2	2	2	2	1	1	2	1	2	2	2
85	11	Iyangarkulam	1	2	1	1	2	2	2	2	1	1	1	1	1	2	2	2	2
86	12	Punjarasanthangal	1	2	2	1	2	2	2	2	2	2	1	1	1	2	2	2	2
87	13	Valathottam	1	2	2	1	2	2	2	2	2	2	1	1	1	2	2	1	2
88	14	Kamugampallam	1	2	2	2	2	2	2	2	2	2	1	1	1	2	2	2	2
89	15	Kuruvimalai	1	2	2	2	2	2	2	2	2	2	1	1	1	2	2	2	2
90	16	Kalur	1	2	2	2	2	2	2	2	2	2	1	1	1	2	2	2	2
91	17	Asoor	1	2	2	2	2	2	2	2	1	2	1	1	2	2	2	2	2
92	18	Avalur	1	1	2	1	1	2	2	2	1	2	1	1	1	2	2	2	2
93	19	Thammanur	1	2	2	2	1	2	2	2	1	2	1	1	1	2	2	2	2
94	20	Melputhur	1	2	2	1	2	2	2	2	2	2	1	1	1	2	2	2	2
95	21	Kolathur	1	2	2	2	2	2	2	2	2	2	2	1	1	2	2	2	2
96	22	Kavanthandalam	1	2	2	2	2	2	2	2	1	2	1	1	1	2	2	1	1
97	23	Nelveli	1	2	1	2	2	2	2	2	2	2	2	1	1	2	2	2	2
98	24	Kilputhur	2	2	1	2	2	2	2	2	2	2	2	1	1	2	2	2	2
99	25	Kambarajapuram	1	2	2	1	2	2	2	2	2	2	1	1	1	2	2	2	2
100	26	Elayanarvelur	1	2	2	2	2	2	2	2	2	2	1	1	1	2	2	2	2

*Source: District Primary Census Abstract, Tiruvannamalai & Kancheepuram District of Tamilnadu State-2011

Note : A: Available, NA- Not Available

Status: A(1)/NA(2)



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AMBIENT AIR QUALITY

Project	:	Rough Stone And Gravel Quarry of Sri Tirumala Blue Metals
Name of the Location	:	Near Mine Lease Area
Station Code	:	A1

SL.NO	DATE	PM10	PM2.5	SO2	NO2
1	06.12.2022	57.2	26.3	5.5	8.5
2	07.12.2022	53.0	24.4	5.1	7.0
3	17.12.2022	63.8	29.4	6.0	10.6
4	18.12.2022	54.2	24.9	5.2	7.5
5	20.12.2022	66.2	30.5	6.2	11.2
6	21.12.2022	59.6	27.4	5.7	9.2
7	31.12.2022	52.4	24.1	5.1	6.8
8	01.01.2023	56.0	25.8	5.4	8.0
9	03.01.2023	62.0	28.5	5.9	10.2
10	04.01.2023	55.4	25.5	5.3	7.8
11	14.01.2023	67.5	31.1	6.2	11.8
12	15.01.2023	60.8	28.0	5.8	9.6
13	17.01.2023	56.6	26.0	5.4	8.2
14	18.01.2023	60.2	27.7	5.7	9.5
15	28.01.2023	57.8	26.6	5.5	8.6
16	29.01.2023	61.4	28.3	5.8	9.8
17	31.01.2023	62.6	28.8	5.9	10.2
18	01.02.2023	64.4	29.6	6.1	10.8
19	11.02.2023	54.8	25.2	5.3	7.6
20	12.02.2023	59.0	27.1	5.6	9.0
21	14.02.2023	53.6	24.7	5.2	7.2
22	15.02.2023	63.2	29.1	6.0	10.5
23	25.02.2023	65.6	30.2	6.1	11.1
24	26.02.2023	58.4	26.9	5.6	8.8
	MIN	52.4	24.1	5.1	6.8
	AVE	59.4	27.3	5.7	9.1
	MAX	67.5	31.1	6.2	11.8

Note: BDL – Below Detectable Limit, DL: Detectable Limit.

[Handwritten Signature]

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AMBIENT AIR QUALITY

Project	:	Rough Stone And Gravel Quarry Of Sri.Tirumala Blue Metals
Name of the Location	:	Poonathangal Village
Station Code	:	A2

SL.NO	DATE	PM10	PM2.5	SO2	NO2
1	06.12.2022	55.4	24.9	5.4	9.0
2	07.12.2022	57.8	26.0	5.8	10.2
3	17.12.2022	62.0	27.9	6.5	12.3
4	18.12.2022	54.8	24.7	5.3	8.7
5	20.12.2022	53.0	23.8	5.0	7.8
6	21.12.2022	60.8	27.4	6.3	11.7
7	31.12.2022	50.6	22.8	4.6	6.6
8	01.01.2023	56.0	25.2	5.5	9.3
9	03.01.2023	64.4	29.0	6.9	13.5
10	04.01.2023	62.6	28.2	6.6	12.6
11	14.01.2023	51.2	23.0	4.7	6.9
12	15.01.2023	56.6	25.5	5.6	9.6
13	17.01.2023	51.8	23.3	4.8	7.2
14	18.01.2023	53.6	24.1	5.1	8.1
15	28.01.2023	61.4	27.6	6.4	12.0
16	29.01.2023	58.4	26.3	5.9	10.5
17	31.01.2023	63.8	28.7	6.8	13.2
18	01.02.2023	60.2	27.1	6.2	11.5
19	11.02.2023	52.4	23.6	4.9	7.5
20	12.02.2023	54.2	24.4	5.2	8.5
21	14.02.2023	57.2	25.7	5.7	9.9
22	15.02.2023	59.0	26.5	6.0	10.8
23	25.02.2023	59.6	26.8	6.1	11.1
24	26.02.2023	63.2	28.4	6.7	12.9
	MIN	50.6	22.8	4.6	6.6
	AVE	57.5	25.9	5.8	10.1
	MAX	64.4	29.0	6.9	13.5

Note: BDL – Below Detectable Limit, DL: Detectable Limit.

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AMBIENT AIR QUALITY

Project	:	Rough Stone And Gravel Quarry of Sri Tirumala Blue Metals
Name of the Location	:	Seniyannallur Village
Station Code	:	A3

SL.NO	DATE	PM10	PM2.5	SO2	NO2
1	09.03.2022	52.6	24.2	5.4	8.5
2	10.03.2022	55.0	25.3	6.0	9.7
3	16.03.2022	47.8	22.0	4.2	6.1
4	17.03.2022	49.4	22.7	4.6	6.9
5	23.03.2022	50.6	23.3	4.9	7.5
6	24.03.2022	53.8	24.8	5.7	9.1
7	30.03.2022	55.8	25.7	6.2	10.1
8	31.03.2022	51.0	23.5	5.0	7.7
9	06.04.2022	47.4	21.8	4.1	5.9
10	07.04.2022	50.2	23.1	4.8	7.3
11	13.04.2022	56.2	25.9	6.3	10.5
12	14.04.2022	54.6	25.1	5.9	9.5
13	20.04.2022	48.6	22.4	4.4	6.5
14	21.04.2022	52.2	24.0	5.3	8.3
15	27.04.2022	56.6	26.0	6.4	11.0
16	28.04.2022	54.2	24.9	5.8	9.3
17	04.05.2022	48.2	22.2	4.3	6.3
18	05.05.2022	49.8	22.9	4.7	7.1
19	11.05.2022	53.0	24.4	5.5	8.7
20	12.05.2022	51.8	23.8	5.2	8.1
21	18.05.2022	51.4	23.7	5.1	7.9
22	19.05.2022	55.4	25.5	6.1	10.2
23	25.05.2022	49.0	22.5	4.5	6.7
24	26.05.2022	53.4	24.6	5.6	8.9
	MIN	47.4	21.8	4.1	5.9
	AVE	52.0	23.9	5.3	8.2
	MAX	56.6	26.0	6.4	11.0

Note: BDL – Below Detectable Limit, DL: Detectable Limit.

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AMBIENT AIR QUALITY

Project	:	Rough Stone And Gravel Quarry of Sri Tirumala Blue Metals
Name of the Location	:	Sithalapakkam Village
Station Code	:	A4

SL.NO	DATE	PM10	PM2.5	SO2	NO2
1	08.12.2022	59.3	27.1	6.0	10.0
2	09.12.2022	65.7	30.1	6.4	12.1
3	15.12.2022	72.2	33.1	6.9	13.6
4	16.12.2022	69.7	32.0	6.8	13.3
5	22.12.2022	67.3	30.8	6.5	12.7
6	23.12.2022	60.9	27.8	6.2	10.6
7	29.12.2022	52.9	24.1	5.2	7.6
8	30.12.2022	58.5	26.7	5.9	9.7
9	05.01.2023	66.5	30.5	6.5	12.5
10	06.01.2023	55.3	25.2	5.5	8.5
11	12.01.2023	75.3	34.6	6.9	14.0
12	13.01.2023	68.9	31.6	6.6	13.2
13	19.01.2023	56.9	26.0	5.8	9.1
14	20.01.2023	61.7	28.2	6.2	10.9
15	26.01.2023	56.1	25.6	5.6	8.8
16	27.01.2023	62.5	28.6	6.3	11.2
17	02.02.2023	53.7	24.5	5.3	7.9
18	03.02.2023	60.1	27.5	6.1	10.3
19	09.02.2023	68.1	31.2	6.6	13.0
20	10.02.2023	63.3	29.0	6.3	11.5
21	16.02.2023	57.7	26.4	5.8	9.5
22	17.02.2023	54.5	24.8	5.4	8.2
23	23.02.2023	70.5	32.4	6.8	13.5
24	24.02.2023	64.1	29.5	6.4	11.8
	MIN	52.9	24.1	5.2	7.6
	AVE	62.6	28.6	6.2	11.0
	MAX	75.3	34.6	6.9	14.0

Note: BDL – Below Detectable Limit, DL: Detectable Limit.

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AMBIENT AIR QUALITY

Project	:	Rough Stone And Gravel Quarry of Sri Tirumala Blue Metals
Name of the Location	:	Menallur Village
Station Code	:	A5

SL.NO	DATE	PM10	PM2.5	SO2	NO2
1	08.12.2022	62.7	29.5	6.1	11.2
2	09.12.2022	67.6	31.8	6.4	13.1
3	15.12.2022	60.1	28.3	5.9	10.3
4	16.12.2022	63.4	29.8	6.1	11.5
5	22.12.2022	51.5	24.2	4.9	6.8
6	23.12.2022	56.4	26.5	5.6	8.9
7	29.12.2022	67.0	31.5	6.4	12.8
8	30.12.2022	61.3	28.8	6.0	10.9
9	05.01.2023	53.6	25.2	5.2	7.7
10	06.01.2023	55.0	25.9	5.4	8.3
11	12.01.2023	53.1	25.0	5.1	7.5
12	13.01.2023	55.7	26.2	5.5	8.6
13	19.01.2023	57.1	26.9	5.7	9.2
14	20.01.2023	62.0	29.2	6.0	11.0
15	26.01.2023	66.2	31.1	6.3	12.5
16	27.01.2023	58.5	27.5	5.8	9.8
17	02.02.2023	54.3	25.5	5.3	8.0
18	03.02.2023	64.8	30.5	6.2	11.9
19	09.02.2023	52.2	24.6	5.0	7.1
20	10.02.2023	57.8	27.2	5.7	9.5
21	16.02.2023	60.6	28.5	5.9	10.6
22	17.02.2023	64.1	30.1	6.2	11.6
23	23.02.2023	65.5	30.8	6.3	12.2
24	24.02.2023	59.2	27.8	5.8	10.1
	MIN	51.5	24.2	4.9	6.8
	AVE	59.6	28.0	5.8	10.0
	MAX	67.6	31.8	6.4	13.1

Note: BDL – Below Detectable Limit, DL: Detectable Limit.

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AMBIENT AIR QUALITY

Project	:	Rough Stone And Gravel Quarry of Sri Tirumala Blue Metals
Name of the Location	:	Vadakalpakkam Village
Station Code	:	A6

SL.NO	DATE	PM10	PM2.5	SO2	NO2
1	08.12.2022	54.0	25.4	5.3	8.9
2	09.12.2022	56.4	26.5	5.9	10.2
3	15.12.2022	50.4	23.7	4.4	7.1
4	16.12.2022	52.4	24.6	4.9	8.2
5	22.12.2022	48.8	23.0	4.0	6.3
6	23.12.2022	51.2	24.1	4.6	7.5
7	29.12.2022	57.2	26.9	6.1	10.7
8	30.12.2022	55.6	26.1	5.7	9.7
9	05.01.2023	56.8	26.7	6.0	10.3
10	06.01.2023	50.8	23.9	4.5	7.3
11	12.01.2023	49.2	23.1	4.1	6.5
12	13.01.2023	53.6	25.2	5.2	8.7
13	19.01.2023	58.0	27.3	6.3	11.6
14	20.01.2023	56.0	26.3	5.8	9.9
15	26.01.2023	54.8	25.8	5.5	9.3
16	27.01.2023	52.8	24.8	5.0	8.3
17	02.02.2023	49.6	23.3	4.2	6.7
18	03.02.2023	54.4	25.6	5.4	9.1
19	09.02.2023	57.6	27.1	6.2	10.9
20	10.02.2023	55.2	26.0	5.6	9.5
21	16.02.2023	52.0	24.5	4.8	7.9
22	17.02.2023	50.0	23.5	4.3	6.9
23	23.02.2023	51.6	24.3	4.7	7.7
24	24.02.2023	53.2	25.0	5.1	8.5
	MIN	48.8	23.0	4.0	6.3
	AVE	53.4	25.1	5.2	8.7
	MAX	58.0	27.3	6.3	11.6

Note: BDL – Below Detectable Limit, DL: Detectable Limit.

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AMBIENT AIR QUALITY

Project	:	Rough Stone And Gravel Quarry of Sri Tirumala Blue Metals
Name of the Location	:	Bhagavanthapuram Village
Station Code	:	A7

SL.NO	DATE	PM10	PM2.5	SO2	NO2
1	10.12.2022	50.3	22.6	4.4	7.7
2	11.12.2022	52.7	23.7	4.8	8.9
3	13.12.2022	47.6	21.4	4.3	6.3
4	14.12.2022	49.5	22.3	4.2	7.3
5	24.12.2022	53.1	23.9	4.9	9.1
6	25.12.2022	50.7	22.8	4.5	7.9
7	27.12.2022	47.1	21.2	4.1	5.9
8	28.12.2022	48.6	21.9	4.6	6.9
9	07.01.2023	54.3	24.4	5.2	9.7
10	08.01.2023	51.1	23.0	4.6	8.1
11	10.01.2023	54.0	24.3	5.1	9.5
12	11.01.2023	52.1	23.4	4.6	8.5
13	21.01.2023	55.1	24.8	5.4	10.1
14	22.01.2023	53.5	24.1	5.0	9.3
15	24.01.2023	47.4	21.3	4.2	6.1
16	25.01.2023	49.1	22.1	4.1	7.1
17	04.02.2023	56.3	25.3	5.6	10.8
18	05.02.2023	54.7	24.6	5.3	9.9
19	07.02.2023	48.0	21.6	4.4	6.5
20	08.02.2023	50.0	22.5	4.3	7.5
21	18.02.2023	48.3	21.7	4.5	6.7
22	19.02.2023	51.5	23.2	4.5	8.3
23	21.02.2023	55.4	24.9	5.5	10.3
24	22.02.2023	52.3	23.5	4.8	8.7
	MIN	47.1	21.2	4.1	5.9
	AVE	51.4	23.1	4.7	8.2
	MAX	56.3	25.3	5.6	10.8

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AMBIENT AIR QUALITY

Project	:	Rough Stone And Gravel Quarry of Sri Tirumala Blue Metals
Name of the Location	:	Narasamangalam Village
Station Code	:	A8

SL.NO	DATE	PM10	PM2.5	SO2	NO2
1	10.12.2022	57.8	27.2	6.1	10.5
2	11.12.2022	55.4	26.1	5.8	9.2
3	13.12.2022	51.0	24.0	4.7	7.0
4	14.12.2022	53.2	24.9	5.2	8.1
5	24.12.2022	51.4	24.2	4.8	7.2
6	25.12.2022	53.4	25.1	5.3	8.3
7	27.12.2022	49.4	23.2	4.3	6.0
8	28.12.2022	52.2	24.6	5.0	7.6
9	07.01.2023	59.8	28.1	6.2	11.2
10	08.01.2023	56.6	26.6	5.9	9.8
11	10.01.2023	57.0	26.8	6.2	10.2
12	11.01.2023	52.6	24.7	5.1	7.8
13	21.01.2023	50.6	23.8	4.6	6.8
14	22.01.2023	53.8	25.3	5.4	8.5
15	24.01.2023	57.4	27.0	6.1	10.2
16	25.01.2023	55.0	25.9	5.8	9.1
17	04.02.2023	49.8	23.4	4.4	6.2
18	05.02.2023	54.2	25.5	5.5	8.6
19	07.02.2023	58.2	27.4	6.2	10.6
20	08.02.2023	56.2	26.4	5.9	9.6
21	18.02.2023	50.2	23.6	4.5	6.6
22	19.02.2023	51.8	24.4	4.9	7.5
23	21.02.2023	54.6	25.7	5.6	8.8
24	22.02.2023	55.8	26.2	5.9	9.5
	MIN	49.4	23.2	4.3	6.0
	AVE	54.1	25.4	5.4	8.5
	MAX	59.8	28.1	6.2	11.2

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WATER QUALITY DATA

Project Name	:	Rough Stone and Gravel Quarry of Sri Tirumala Blue Metals										
Location Name	:		Location Code					Location Name				
			TW1					Near Mine Lease Area				
			W2					Vadakalapakkam Village				
			W3					Senainallur Village				
			W4					Poonathangal Village				
			W5					Narasamangalam Village				
			W6					Menallur Village				
			W7					Bagavanthapuram Village				
			W8					Sithalapakkam Village				

S. No	Parameter	Unit	TW1	W 2	W 3	W 4	W 5	W 6	W 7	W 8	*Permissible Limits
1	pH	-	7.64	7.38	7.69	7.38	7.81	7.52	7.57	7.63	6.5-8.5
2	Electrical Conductivity	µmhos/cm	916	1520	1502	1120	1915	2074	864	1345	-
3	Odor	-	AGREEABLE	AGREEABLE	AGREEABLE	AGREEABLE	AGREEABLE	AGREEABLE	AGREEABLE	AGREEABLE	AGREEABLE
4	Turbidity	NTU	<1	<1	<1	<1	<1	<1	<1	<1	5.0
5	Total Hardness as CaCO ₃	mg/L	314	338	394	452	254	485	274	490	600
6	Calcium Hardness CaCO ₃	mg/L	210	262	196	310	126	260	132	245	-
7	Magnesium Hardness CaCO ₃	mg/L	104	76.0	198	142	128	225	142	245	-
8	Calcium Ca	mg/L	84.0	105	78.4	124	50.4	104	52.8	98.0	200
9	Magnesium Mg	mg/L	25.0	18.2	47.5	34.1	30.7	54.0	34.1	58.8	100
10	Alkalinity CaCO ₃	mg/L	230	340	385	280	398	414	154	210	600
11	Chloride Cl ⁻	mg/L	84.5	180	246	124	384	386	138	243	1000
12	Sulphate SO ₄ ²⁻	mg/L	186	320	238	156	310	392	98.6	202	400

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DEPARTMENT OF INDUSTRIES AND COMMERCE REGISTERED COMPANY)

S. No	Parameter	Unit	TW1	W 2	W 3	W 4	W 5	W 6	W 7	W 8	*Permissible Limits
13	Iron Fe	mg/L	0.05	BDL(DL-0.01)	BDL(DL-0.01)	BDL(DL-0.01)	0.04	0.05	BDL(DL-0.01)	BDL(DL-0.01)	0.3
14	Nitrate NO ₃	mg/L	3.24	2.54	1.65	2.02	2.36	3.26	2.34	2.69	45
15	Fluoride F	mg/L	0.26	0.45	0.38	0.31	0.19	0.32	0.18	0.36	1.5
16	Total Dissolved Solids	mg/L	550	920	902	675	1150	1246	520	810	2000
17	Free Residual Chlorine Cl ⁻	mg/L	BDL (D.L-0.2)	BDL (D.L-0.2)	BDL (D.L-0.2)	BDL(D.L-0.2)	BDL(D.L-0.2)	BDL(D.L-0.2)	BDL(D.L-0.2)	BDL (D.L-0.2)	1.0
18	Manganese Mn	mg/L	BDL (D.L-0.05)	BDL (D.L-0.05)	BDL (D.L-0.05)	BDL (D.L-0.05)	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.

Prepared by



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LAND USE PATTERN OF THE STUDY AREA WITHIN 10 KM RADIUS AROUND THE PROPOSED PROJECT 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)
0-2 km,Cheyyar Sub-District, Tiruvannamalai District													
1	1	Seniyallur	64.37	0	8.6	0	6.63	0	3.64	4.5	20.95	3.03	17.02
2	2	Kundiyanthandalam	342.29	0	55.82	0	0.82	0.28	6.66	19.09	219.17	8.43	32.02
3	3	Suruttal	300.73	0	70.12	0	0	0	3.86	36	120.78	26.09	43.88
4	4	Poonaitthangal	117.05	0	20.25	0	0.69	0	0	15	57.82	0.01	23.28
5	5	Menallur	243.7	0	11.74	0.03	16.67	0	1.25	20	131.11	0.8	62.1
6	6	Girijapuram	104.33	0	7.4	0	0	0	0.73	2	63.45	12.19	18.56
7	7	Kizhnaickanpalayam	188.88	0	15.52	0	3.67	1.9	0.63	15	113.19	0.08	38.89
8	8	Vadalkpakkam	194.2	0	18.69	0	0	0	1.14	17.06	98.93	24	34.38
9	9	Sothiyampakkam	261.13	0	53.87	0	9.06	0.85	12.5	1.1	114.34	25.24	44.17
10	10	Bagavanthapuram	108.38	0	2.91	3.96	5.96	0.4	2.65	2	39.86	4.21	46.43
11	11	Ezhacheri	431.96	0	27.02	0	0	0	41.2	91.65	175.18	10.6	86.31
		total (A)	2357.02	0	291.94	3.99	43.5	3.43	74.26	223.4	1154.78	114.68	447.04
2-5 km,Cheyyar Sub-District, Tiruvannamalai District													
12	1	Kuranganilmuttam	118.27	0	17.09	0	0	0	1.9	0	74.47	1.65	23.16
13	2	Pallavaram	252.35	0	35.3	0	0	1.74	0.29	10.65	143.43	12.61	48.33
14	3	Kanikiluppai	81.02	0	20.68	0	0	0	0.28	15.42	25.54	9.39	9.71
15	4	Vazhavandal	159.07	0	13.8	0	0	0	0.41	5.28	45.46	37.73	56.39
16	5	Mamandur	620.48	0	153.19	10.2	0	0	0.08	6	170.73	14.33	265.95
17	6	Narasamangalam	178.63	0	25.8	24.22	0	0	0.06	0.53	105.21	2.8	20.01
18	7	Mathur	603.59	0	126.55	16.1	20.1	10.15	18.1	0	171.89	142.46	98.24
19	8	Chithalapakkam	182.72	0	31.04	0	0	0	1.7	4.1	75.08	27.63	43.17
20	9	Vayalathur	108.19	0	15.53	0	0	10.47	9.06	1.26	38.52	6.71	26.64
21	10	Arasanipalai	257.92	0	47.12	0	0	4.7	0.11	9	52.32	39.84	104.83
22	11	Punnai	233.9	0	89.79	0	0	0	0	3.97	81.98	18.06	40.1
23	12	Dharmacheri	74.04	0	7.8	0	0	0	0	5.29	41.7	3	16.25
24	13	Pavoor	574.26	0	167.18	0.07	0.67	5.3	1.06	140.2	90.18	50.35	119.25
25	14	Sirunallur	112.33	0	11.24	0	0	8.94	0.09	10	51.24	7.17	23.65
26	15	Pudupalayam	277.83	0	46.21	1.32	0	24.89	0	45.59	92.11	16.6	51.11
Kancheepuram Sub-District, Kancheepuram District													
27	1	Vitchanthangal	293.07	0	120.39	0	2.42	16.76	0	27.98	0	9.39	116.13
28	2	Perumanallur	156.02	0	70.77	0	13.47	5.43	0	1.22	0	3.82	61.31
29	3	Vedal	239.95	0	2.56	0	10.27	0	8.25	115.9	0	6.2	96.77
30	4	Kalakattur	575.95	0	9.57	0	20.28	0	0	150.98	232.78	12.31	150.03
31	5	Arpakkam	834.07	0	287.33	0	87.84	0	6.11	1.01	179.6	2.54	269.64
32	6	Magaral	1082.34	0	452.59	11.04	0	0	0.08	93.37	322.03	29.61	173.62
		total (B)	7016	0	1751.53	62.95	155.05	88.38	47.58	647.75	1994.27	454.2	1814.29
5-10 km,Cheyyar Sub-District, Tiruvannamalai District													
33	1	Pillanthangal	481.33	0	69.33	0	0.4	2.1	30.03	69.11	229.39	33.77	47.2
34	2	Namandi	490.12	0	88.04	168.47	1.4	1.6	2.76	2.49	199.5	4.51	21.35
35	3	Vada Mavanthal	325.61	0	30.8	50.1	5.35	3.4	13.17	2.5	192.66	3.54	24.09
36	4	Kunnathur	322.06	0	76.45	0	6.48	0	0	60.28	74.56	31.33	72.96
37	5	Chithathur	608.67	0	179.94	0	12.61	0	8.5	41.38	257.95	22.2	86.09
38	6	Kanagampakkam	200.8	0	127.32	0.4	0.36	0	1.1	8	52.63	2.04	8.95
39	7	Perumpulimedu	293.34	0	160.32	0	0	0.36	1.05	12	54.16	7.71	57.74
40	8	Chellaperumpulimedu	150.15	0	73.3	0	0	0	0	2.14	62.2	7.61	4.9
41	9	Ukkamperumbakkam	273.81	0	64.51	0	0	0	0.02	10	123.75	34.43	41.1
42	10	Mangal	313.91	0	48.73	5.94	2.1	2.45	19.1	0	179.33	24.97	31.29
43	11	Mahajanampakkam	539.88	0	129.16	0	5.1	0	0	82.44	194.57	39.87	88.74
44	12	Kunnavakkam	351.79	0	90.59	17.76	0	4.86	0.63	0	164.84	17.25	55.86
45	13	Chozhavaram	502.43	0	159.29	3.16	0	0	2.68	40	249.83	21.71	25.76
46	14	Karanai	433.43	0	120.65	4.07	13.92	6.65	0	0	181.82	51.67	54.65
47	15	Pandiyampakkam	250.05	6.08	76.88	10.11	4.6	6	0	0	90.22	18.41	37.75
48	16	Akkur	784.34	0	192.13	0	16.27	1.64	0	4.5	239.54	160.31	169.95
49	17	Koozhamandal	297.27	0	86.49	0	3.96	0	0	17.03	78.58	46.93	64.28
50	18	Ukkal	854.81	0	265.43	4.77	0	8.93	0	0	195	60.6	320.08

51	19	Nemili	115.37	0	8.61	0	3.67	0	0.05	29.51	29.18	23.44	20.91
Uthiramerur Sub-District, Kancheepuram District													
52	1	Perunagar	1428.45	116.16	468.37	9.14	54.3	6.16	0	60.61	256.19	230.42	227.1
53	2	Hanumanthandalam	303.39	3	201.72	0	10.15	0	0	0	0	57.28	31.24
54	3	Melpakkam	561.91	1	79.36	14.1	1.99	30.05	4.46	270.67	0	19.66	140.62
55	4	Silambakkam	175.54	50	12.24	0	5.16	0.03	0.01	1.9	46.57	34.03	25.6
56	5	Vengaram	100.12	2	52.27	0	9.77	0.33	0.85	0.57	9.23	2.6	22.5
57	6	Ozhugarai	237.94	1	97.19	0	0	2.82	11.16	0.61	56.41	0	68.75
58	7	Karuveppampooni	557.94	3	243.67	0	2.25	7.15	0	0	0	134.24	167.63
59	8	Vengacheri	181.1	19.19	43.44	0	0	0	0	0	0	95.06	23.41
60	9	Kannikulam	149.95	1	47.91	0	10.75	20	0	1.48	9.83	9.01	49.97
61	10	Adavapakkam	206.76	2.15	72.24	0	21.02	1.03	2.15	0	49.94	4.2	54.03
62	11	Irumaram	119.64	0	36.59	0	8.39	10	7.25	0	23.99	0	33.42
63	12	Sembulam	74.97	0	0	17.14	2.29	0	0	0	25.61	14.84	15.09
64	13	Kavampair	133.74	1	21.35	0	2.73	12	0	6.82	38.74	2.12	48.98
65	14	Neyyadivakkam	256.95	0	101.92	0	0	0	0.59	0	19.19	0	135.25
66	15	Nariambakkam	136.35	0	9.51	0	0	61	4.27	0	24.72	0.1	36.75
67	16	Sirukalathur	80.98	19.29	6.26	18.67	0	0	2.09	0	16.64	2	16.03
68	17	Puthali	332.62	112.2	37.25	5.34	0	2.1	0	4.72	53.72	0	117.29
69	18	Pulivoy	265.08	0	92.17	50.02	6.83	2.1	0	0	16.77	0	97.19
70	19	Thriupulivanam	709.62	0	124.44	23.97	41.84	0	0	235.67	137.15	7.49	139.06
71	20	Andithangal	108.09	1	18.38	0	7.76	11.08	0	3.44	3.13	0.85	62.45
72	21	Murukkeri	88.92	0	24.06	0	13.2	7	0	0	18.01	0.97	25.68
73	22	Thinayampooni	232.39	0	37.05	0	14.76	0.34	0	89.17	6.71	0.31	84.05
74	23	Alisoor	669.01	0	320.09	0	33.83	0.48	1.24	3.75	143	62.21	104.41
75	24	Elanagar	407.64	10.15	95.4	6.91	9.35	8.68	0	79.54	0	115.53	82.08
Kancheepuram Sub-District, Kancheepuram District													
76	1	Vippedu	404.88	0	202.03	0	3.29	0.43	0	108.33	9.19	15.44	66.17
77	2	Vengudi	194.44	0	83.12	0	0.39	0	37.62	54.19	6.07	2.5	10.55
78	3	Seeyamangalam	175.31	0	85.26	0	0	0	0	69.82	0	4.5	15.73
79	4	Ekanampettai	45.08	0	27.77	0	0	4.14	0	7.02	2.65	0.42	3.08
80	5	Villivalam	451.53	0	155.2	0	8.3	3.99	0	18.23	0	129.93	135.88
81	6	Erivoy	188.44	0	34.1	0	0	0	0	49.09	17.13	0	88.12
82	7	Thimmaiyanpettai	57.47	0	23.76	0	2.1	1.07	0	22.13	4.98	0	3.43
83	8	Muthialpettai	78.36	0	30.86	0	4.27	0	0	21.09	0.4	0	21.74
84	9	Padappam	45.51	0	4.81	0	0	0.63	0	3.31	2.22	1.15	33.39
85	10	Kolivakkam	569.4	0	244.98	0	47.26	0	0	0	182.18	23.09	71.89
86	11	Iyangarkulam	398.46	0	262.06	0	0.5	6.39	67.08	23.53	0	2.3	36.6
87	12	Punjarasanthangal	236.22	0	121.62	0	12.83	0	0	85.97	6.82	2.68	6.3
88	13	Valathottam	419.71	0	289.69	15.86	0.96	0	16.1	23.28	59.18	2.7	11.94
89	14	Kamugampallam	23.34	0	10.09	0	0	0	0	13.25	0	0	0
90	15	Kuruvimalai	189.68	0	3.9	0.26	0.07	0	29.92	111.88	0	0	43.65
91	16	Kalur	829.86	0	436.07	0	0.75	16.31	5.1	145.09	6.44	5.33	214.77
92	17	Asoor	343.14	0	208.06	0	1.83	0	0	49.27	6.03	17.41	60.54
93	18	Avalur	660.3	0	23.99	191.21	0	0	0.04	0	132.27	22.64	290.15
94	19	Thammanur	602.46	0	119.99	0	36.19	0	3.85	0	281.81	0	160.62
95	20	Melputhur	151.08	0	87.76	0	0	0	0	8.16	0	0	55.16
96	21	Kolathur	169.81	0	59.44	0	0.98	0	0	60.84	9.98	0	38.57
97	22	Kavanthandalam	662.21	0	124.28	0	4.23	0	184.49	0	137.52	66.39	145.3
98	23	Nelveli	161.86	0	62.08	0.96	14.25	10.46	0	2.48	0	2.48	69.15
99	24	Kilputhur	260.53	0	15.87	1.17	0	42.3	0	137.52	0	21.01	42.66
100	25	Kambarajapuram	642.51	0	265.71	0	0.38	0.61	3.38	67.45	0	33.4	271.58
101	26	Elayanarvelur	310.72	0	116.04	0	0	0	0.99	28.68	0	16.45	148.56
total (C)			23380.58	348.22	7389.39	619.53	471.17	306.67	461.73	2250.94	4670.13	1775.04	5087.76
Grand Total (A+B+C)			32753.6	348.22	9432.86	686.47	669.72	398.48	583.57	3122.09	7819.18	2343.92	7349.09

*Source: District Primary Census Abstract, Tiruvannamalai & Kancheepuram District of Tamilnadu State-2011

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வட்டாட சியர் அலுவலக இணைய சேவை - நில உரிமை விபரங்கள்



தமிழக அரசு

வருவாய்த் துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

மாவட்டம் : திருவண்ணாமலை

வட்டம் : வெம்பாக்கம்

வருவாய் கிராமம் : மேனல்லூர்

பட்டா எண் : 713

உரிமையாளர்கள் பெயர்

1. ராமமூர்த்தி மகன் முகுந்த பாபு (ஸ்ரீ திருமலா புளு மெட்டல்ஸ்)
2. ராமமூர்த்தி மகன் அனந்தபாபு(ஸ்ரீ திருமலா புளு மெட்டல்ஸ்)
3. ராகவன் மகன் ஹரிபாபு (ஸ்ரீ திருமலா புளு மெட்டல்ஸ்)
4. ராகவன் மகன் ராஜபாபு (ஸ்ரீ திருமலா புளு மெட்டல்ஸ்)



புல எண்	உட்பிரிவு	புன்செய்		நுன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	
141	18A	0 - 5.50	0.30	--	--	--	--	2021/0105/06/264053- -2021/06/10/000030SD -- 19-09-2021
146	39A	0 - 13.35	0.65	--	--	--	--	2022/0105/06/344717- -2022/06/10/000037SD -- 31-05-2022
146	43	0 - 21.00	1.06	--	--	--	--	2021/0103/06/237394- -- -- 02-09-2021
146	45	0 - 17.00	0.84	--	--	--	--	2021/0103/06/237394- -- -- 02-09-2021
146	46	0 - 15.00	0.74	--	--	--	--	2022/0103/06/278873- -- -- 03-05-2022
147	1A	0 - 29.50	1.14	--	--	--	--	2020/0103/06/176698- -- -- 04-07-2020
147	1B	0 - 25.50	0.98	--	--	--	--	2020/0103/06/176698- -- -- 04-07-2020
147	1C2	0 - 30.50	1.20	--	--	--	--	2020/0103/06/176698- -299/1421 -- 04-07- 2020
147	1D	0 - 11.50	0.45	--	--	--	--	2020/0103/06/176698- -- -- 04-07-2020
148	1E	0 - 7.00	0.27	--	--	--	--	2022/0103/06/278873- -- -- 03-05-2022
148	1F	0 - 16.00	0.61	--	--	--	--	2022/0103/06/278873- -- -- 03-05-2022
148	2	0 - 6.50	0.25	--	--	--	--	2022/0103/06/278873- -- -- 03-05-2022
148	26	0 - 5.50	0.22	--	--	--	--	2022/0103/06/278879- -- 03-05-2022

For SRI TIRUMALA BLUE METALS

A33

PARTNER



161

3/22, 4:10 PM

வட்டமிடப்பட்டிருக்கின்ற நிலங்களின் பட்டியலைக் காட்டும் விவரங்கள்

148	27	0 - 5.50	0.20	--	--	--	2022/0103/06/278879- -- -- 03-05-2022
148	28	0 - 5.50	0.20	--	--	--	2022/0103/06/278873- -- -- 03-05-2022
148	29	0 - 17.00	0.66	--	--	--	2022/0103/06/278879- -- -- 03-05-2022
148	3	0 - 6.00	0.23	--	--	--	2022/0103/06/278873- -- -- 03-05-2022
148	30	0 - 17.50	0.67	--	--	--	2022/0103/06/278879- -- -- 03-05-2022
148	39A2	0 - 25.91	1.00	--	--	--	2020/0103/06/176698- -2016/06/10/000009SD -- 04-07-2020
148	39B1	0 - 1.50	0.06	--	--	--	2022/0103/06/279435- -- -- 04-05-2022
148	39B2	0 - 30.00	1.11	--	--	--	2020/0103/06/176698- -- -- 04-07-2020
148	39B2A	0 - 30.00	1.12	--	--	--	2022/0103/06/278879- -- -- 03-05-2022
148	34	0 - 8.00	0.31	--	--	--	2022/0103/06/278873- -- -- 03-05-2022
148	35	0 - 5.00	0.19	--	--	--	2022/0103/06/278873- -- -- 03-05-2022
148	36	0 - 4.50	0.17	--	--	--	2022/0103/06/278873- -- -- 03-05-2022
148	37	0 - 7.50	0.30	--	--	--	2022/0103/06/278879- -- -- 03-05-2022
148	39	0 - 12.50	0.48	--	--	--	2022/0103/06/289212- -- -- 24-06-2022
149	1A	0 - 22.00	0.84	--	--	--	2022/0103/06/278879- -- -- 03-05-2022
149	1B	0 - 21.50	0.83	--	--	--	2020/0103/06/176698- -- -- 04-07-2020
149	2A	0 - 21.00	0.80	--	--	--	2022/0103/06/278879- -- -- 03-05-2022
149	2B	0 - 24.00	0.92	--	--	--	2020/0103/06/176698- -- -- 04-07-2020
149	3A	0 - 25.50	0.98	--	--	--	2020/0103/06/176698- -- -- 04-07-2020
150	1A	0 - 39.00	1.50	--	--	--	2022/0103/06/278879- -2020/06/10/000026SD -- 03-05-2022
150	1B	0 - 36.50	1.41	--	--	--	2020/0105/06/203819- -2020/06/10/000026SD -- 15-07-2020
150	2	0 - 75.50	2.92	--	--	--	2020/0103/06/176698- -- -- 04-07-2020
		6 - 45.26	25.61				

குறிப்பு 2 :

1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <https://eservices.tn.gov.in> என்ற இணைய தளத்தில் 06/10/119/00713/130931 என்ற குறிப்பு எண்ணம் உள்ளிட செய்து உறுதி செய்துகொள்ளவும்.

N. S. S. S. PARTNER



தமிழக அரசு

வருவாய்த் துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

மாவட்டம் : திருவண்ணாமலை

வட்டம் : வெம்பாக்கம்

வருவாய் கிராமம் : மேனல்லூர்

பட்டா எண் : 769

உரிமையாளர்கள் பெயர்

1. இராமமூர்த்தி மகன் முகுந்தபாபு(ஸ்ரீ திருமலா புளு மெட்டல்ஸ்)
2. இராமமூர்த்தி மகன் அனந்தபாபு(ஸ்ரீ திருமலா புளு மெட்டல்ஸ்)
3. இராகவன் மகன் ஹரிபாபு (ஸ்ரீ திருமலா புளு மெட்டல்ஸ்)
4. இராகவன் மகன் ராஜ் பாபு (ஸ்ரீ திருமலா புளு மெட்டல்ஸ்)



புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக்ட - ஏர்	ரூ - பை	ஹெக்ட - ஏர்	ரூ - பை	ஹெக்ட - ஏர்	ரூ - பை	
148	16	0 - 20.00	0.78	--	--	--	--	2021/0103/06/254931- -- -- 16-12-2021
148	17	0 - 11.50	0.44	--	--	--	--	2021/0103/06/254931- -- -- 16-12-2021
148	18	0 - 7.50	0.30	--	--	--	--	2021/0103/06/254931- -- -- 16-12-2021
148	19	0 - 9.50	0.36	--	--	--	--	2021/0103/06/254931- -- -- 16-12-2021
148	20	0 - 15.50	0.59	--	--	--	--	2021/0103/06/254931- -- -- 16-12-2021
148	21	0 - 9.50	0.36	--	--	--	--	2021/0103/06/254931- -- -- 16-12-2021
148	22	0 - 8.00	0.31	--	--	--	--	2021/0103/06/254931- -- -- 16-12-2021
148	23	0 - 3.00	0.11	--	--	--	--	2022/0103/06/261135- -- -- 13-01-2022
148	24	0 - 3.00	0.12	--	--	--	--	2022/0103/06/261135- -- -- 13-01-2022
148	25	0 - 7.00	0.27	--	--	--	--	2021/0103/06/254931- -- -- 16-12-2021
148	38A	0 - 26.00	1.00	--	--	--	--	2022/0103/06/272101- -- -- 20-03-2022
148	38B	0 - 13.50	0.51	--	--	--	--	2022/0103/06/272101- -- -- 20-03-2022
148	39A1	0 - 32.09	1.30	--	--	--	--	2021/0103/06/254931- -2016/06/10/000009SD -- 16-12-2021
156	1	0 - 18.50	0.49	--	--	--	--	2022/0103/06/272101- -- -- 20-03-2022

தமிழ்நாடு வனத்துறை

விடுநர்
திரு.பி.கோ.அருண்லால், இ.வ.ப.,
மாவட்ட வன அலுவலர்,
திருவண்ணாமலை வனக்கோட்டம்,
திருவண்ணாமலை.

பெறுநர்
மாவட்ட ஆட்சித்தலைவர்,
திருவண்ணாமலை மாவட்டம்,
திருவண்ணாமலை.

ந.க.எண்.8917/2022/வ, நாள்: 18.10.2022.

அய்யா,

- பொருள் : கனிமங்களும் குவாரிகளும் - திருவண்ணாமலை மாவட்டம் - Tvl.Sri Tirumala Blue Metals என்ற நிறுவனத்தின் மணுவில் கல்குவாரி குத்தகை உரிமம் கோரப்பட்ட புலத்திலிருந்து சுமார் 25 கி.மீ தொலைவில் காப்புக்காடுகள், வனவிலங்கு சரணாலயம், யானை வழித்தடங்கள், புலிகள் காப்பகம் அமைந்துள்ளதா என்ற விவரம் கோரியது - தொடர்பாக.
- பார்வை 1. மாவட்ட ஆட்சியர் கடிதம் ந.க.எண்:157/கனிமம்/2022, நாள்: 10.10.2022.
2. Tirumala Blue Metals நெ.90 மாமல்லன் நகர், காஞ்சிபுரம் என்ற நிறுவனம் மனு நாள்:10.10.2022.
3. வனச்சரக அலுவலர், ஆரணி வனச்சரகம், ஆரணி க.எண்.528/2022 நாள்:12.10.2022.

பார்வை-1ல் காணும் கடிதத்தில் திருவண்ணாமலை மாவட்டம், வெம்பாக்கம் வட்டம், மேனல்லூர் கிராம புல எண்கள்.148/16 (0.20.0)), 148/17 (0.11.5), 148/18 (0.07.5), 148/19 (0.09.5), 148/20 (0.15.5), 148/21 (0.09.5), 148/22 (0.08.0), 148/23 (0.03.0), 148/24 (0.03.0) 148/25 (0.07.0), 148/38A (0.26.0), 148/39A1 (0.32.09),146/39B (0.13.35), 146/46 (0.15.0), 148/1 (0.07.0), 148/10 (0.16.0),148/2 (0.06.5), 148/26 (0.05.5), 148/27 (0.05.5), 148/28 (0.05.5), 148/29 (0.17.0), 148/3 (0.06.0), 148/30 (0.17.5), 148/39A2 (0.25.91), 148/39B2A (0.30.0), 148/39B1 (0.01.5), 148/4 (0.08.0), 148/5 (0.05.0), 148/6 (0.04.5), 148/7 (0.07.5), 148/9 (0.12.5), 149/1A (0.22.0), 149/2A (0.21.0) & 150/1A (0.39.0) ஆகியவற்றில் மொத்தம் 4.44.35 ஏக்கர் பரப்பில் சாதாரண கற்கள் மற்றும் கிராவல் மண் வெட்டியெடுக்க 5 ஆண்டுகளுக்கு குவாரிக் குத்தகை உரிமம் வழங்கக் கோரி விண்ணப்பிக்கப்பட்ட புலத்திலிருந்து 25 கி.மீ சுற்றளவிற்கு காப்புக் காடுகள், வனவிலங்கு சரணாலயம், யானை வழித்தடங்கள், புலிகள் காப்பகம் ஏதேனும் உள்ளனவா? அவ்வாறு இருந்தால் எவ்வளவு தொலைவில் உள்ளது? என்ற விவரம் கோரப்பட்டது. அது தொடர்பான விவரங்களை பின்வருமாறு தெரிவித்துக்கொள்கிறேன்.

1. மேற்கண்ட குவாரி அமைய உள்ள இடமானது தண்டப்பந்தாங்கல் காப்புக்காட்டு எல்லையிலிருந்து சுமார் 19.3 கி.மீ தொலைவில் அமைந்துள்ளது.

2. மேற்கண்ட புலத்திலிருந்து 25 கி.மீ சுற்றளவிற்குள் வனவிலங்கு சரணாலயம், யானை வழித்தடங்கள், புலிகள் காப்பகம் ஏதுமில்லை.

தங்கள் உண்மையுள்ள,
ஓம்/-பு.கோ.அருண்லால்,
மாவட்ட வன அலுவலர்,
திருவண்ணாமலை வனக்கோட்டம்,
திருவண்ணாமலை.

//உ.ந.உ.ப.//


வரைதொழில் அலுவலர்.

இலட்சத்திரைக்கோட்டை டிவிசனல், வெள்ளாங்குடி வட்டம்,

79. கோலத்தூர் கிராமப் பகுதியில் யாரத்தாங்கூர்: 148/16 to. 25
 60-க்கு 148/38A, 39A1, 29, 3, 30, 39A2, 39B2A, 39B1, 4
 148/5, 6, 7, 9, 10, 2, 26, 27, 28, 29; 146/39B, 46; 149/2A,
 150/1A, 149/1A. இவ். யாரத்தாங்கூர் கிராமப் பகுதியில் 4.44.35 க்கு
 குறிப்பிட்ட நிலம். பட்டியல்கள்: 769, 713 ன். தலைவர் குறிப்பிட்டுள்ள
 பகுதிகளை குறிப்பிட்டுள்ள ①. அமைந்துள்ள ② குறிப்பிட்ட பகுதிகளை
 குறிப்பிட்டுள்ள ③ குறிப்பிட்ட பகுதிகளை ④ கட்டிடம் கட்டிவிட்டு (நீதி திருத்தம்) 4-ம்
 கட்டிடம் கட்டிவிட்டு கிராம (2-வது பகுதி) கட்டிடம் கட்டிவிட்டுள்ள
 கோலத்தூர் யாரத்தாங்கூர் கிராமப் பகுதியில் கிராம 300 க்கு
 கிராமத்தில். 4-ம் பகுதியில் கட்டிடம், 2-ம் பகுதியில் கட்டிடம். 3-ம் பகுதி.
 2-வது பகுதி, 1-வது பகுதி, 4-வது பகுதி, 2-வது பகுதி கட்டிடம்
 கட்டிடம், 3-வது பகுதி. கட்டிடம் கட்டிடம். 1-வது பகுதியில் கட்டிடம்
 கட்டிடம்.

மார்ச்: 10.10.2022

இடம்: கோலத்தூர் கிராமம்.

(Handwritten Signature)

10/10/2022
 மாண்புமிகு நடுவரை அலுவலர்
 மேலநல்லூர் குருட
 எம்.பெருமாள் வட்டம்
 திருவள்ளூர் மாவட்டம்



MINING PLAN FOR MENALLUR ROUGH STONE & GRAVEL QUARRY

(Prepared under rule 19(1), 41 & 42 of Tamil Nadu
Minor Mineral Concession Rules, 1959)

LOCATION OF THE QUARRY LEASE APPLIED AREA

STATE : TAMIL NADU
DISTRICT : TIRUVANNAMALAI
TALUK : VEMBAKKAM
VILLAGE : MENALLUR
S.F.NOS : 148/16, 148/17, 148/18, 148/19,
148/20, 148/21, 148/22, 148/23,
148/24, 148/25, 148/38A,
148/39A1, 146/39B, 146/46,
148/1, 148/10, 148/2, 148/26,
148/27, 148/28, 148/29, 148/3,
148/30, 148/39A2, 148/39B2A,
148/39B1, 148/4, 148/5, 148/6,
148/7, 148/9, 149/1A, 149/2A
AND 150/1A

EXTENT : 4.44.35Ha

FOR APPLICANT

Tvl.Sri Tirumala Blue Metals,
No.90, Ottakoothar Street,
Mamallan Nagar,
Kanchipuram District..

PREPARED BY

C.Natarajan, M.Sc.,M.Phil.,
Qualified Person

No.93/36E2, Subramanியar Kovil Street,
Omalar Taluk, Salem District, Tamil Nadu,
Pin code-636 455.

Mobile: 97502 23535 & 94446 54520.

ECO-FRIENDLY



SUSTAINABILITY



SAFETY



(PPE)

For SRI TIRUMALA BLUE METALS

N.R. Arj



Tvl.Sri Tirumala Blue Metals,
No.90, Ottakoothar Street,
Mamallan Nagar,
Kanchipuram District.

CONSENT LETTER FROM THE APPLICANT

The Mining Plan in respect of **Rough Stone and Gravel** quarry over an extent of 4.44.35hectares of Patta lands in S.F.Nos. 148/16, 148/17, 148/18, 148/19, 148/20, 148/21, 148/22, 148/23, 148/24, 148/25, 148/38A, 148/39A1, 146/39B, 146/46, 148/1, 148/10, 148/2, 148/26, 148/27, 148/28, 148/29, 148/3, 148/30, 148/39A2, 148/39B2A, 148/39B1, 148/4, 148/5, 148/6, 148/7, 148/9, 149/1A, 149/2A and 150/1A of Menallur Village, Vembakkam Taluk, Tiruvannamalai District, Tamil Nadu State has been prepared by

C.Natarajan, M.Sc.,M.Phil.,

Qualified Person

I request the Deputy Director, Department of Geology and Mining, Tiruvannamalai District to make further correspondence regarding modifications of the Mining Plan with the said Qualified Person on this following address.

C.Natarajan, M.Sc.,M.Phil.,

Qualified Person

No.93/36E2,Subramaniyar Kovil Street,
Omalar Taluk, Salem District,
Tamil Nadu, Pin code-636 455.
Mobile:97502 23535 & 94446 54520.

I hereby undertake that all modifications so made in the Mining Plan by the Qualified Person may be deemed to have been made with my knowledge and consent and shall be acceptable to me and building on me in all respects.

Signature of the Applicant

For Tvl.Sri Tirumala Blue Metals

Ananthababu (Partner)

Place: Kanchipuram

Date: 10.09.2022

For SRI TIRUMALA BLUE METALS
N.R. Ananthababu
PARTNER



Tvl.Sri Tirumala Blue Metals,
No.90, Ottakoothar Street,
Mamallan Nagar,
Kanchipuram District.

DECLARATION

The Mining Plan in respect of **Rough Stone and Gravel** quarry over an extent of 4.44.35hectares of Patta lands in S.F.Nos. 148/16, 148/17, 148/18, 148/19, 148/20, 148/21, 148/22, 148/23, 148/24, 148/25, 148/38A, 148/39A1, 146/39B, 146/46, 148/1, 148/10, 148/2, 148/26, 148/27, 148/28, 148/29, 148/3, 148/30, 148/39A2, 148/39B2A, 148/39B1, 148/4, 148/5, 148/6, 148/7, 148/9, 149/1A, 149/2A and 150/1A of Menallur Village, Vembakkam Taluk, Tiruvannamalai District, Tamil Nadu State has been prepared with my consultation and I have understood the contents and agree to implement the same in accordance with the Mining Laws.

Signature of the Applicant

For Tvl.Sri Tirumala Blue Metals

Ananthababu (Partner)

Place: Kanchipuram

Date: 10.09.2022

For SRI TIRUMALA BLUE METALS

PARTNER



C.Natarajan, M.Sc.,M.Phil.,

Qualified Person

No.93/36E2,Subramaniyar Kovil Street,

Omalur Taluk, Salem District,

Tamil Nadu, Pin code-636 455.

Mobile:97502 23535 & 94446 54520.

CERTIFICATE

This is to certify that, the provisions of Minor Minerals Conservation and Development Rules, 2010 (MMCDR) have been observed in the Mining Plan for the grant of **Rough Stone and Gravel** quarry lease over an extent of 4.44.35hectares of Patta lands in S.F.Nos. 148/16, 148/17, 148/18, 148/19, 148/20, 148/21, 148/22, 148/23, 148/24, 148/25, 148/38A, 148/39A1, 146/39B, 146/46, 148/1, 148/10, 148/2, 148/26, 148/27, 148/28, 148/29, 148/3, 148/30, 148/39A2, 148/39B2A, 148/39B1, 148/4, 148/5, 148/6, 148/7, 148/9, 149/1A, 149/2A and 150/1A of Menallur Village, Vembakkam Taluk, Tiruvannamalai District, Tamil Nadu State applied by Tvl.Sri Tirumala Blue Metals for fresh quarry lease.

Wherever specific permission / exemptions / relaxations or approvals are required, the applicant will approach the concerned authorities of State and Central Governments for granting such permissions etc.

Certified

Signature of Qualified Person.


C.Natarajan, M.Sc.,M.Phil.,

Qualified Person
C.NATARAJAN M.Sc.,M.Phil.,
Qualified Person

Place: Salem

Date: 12.09.2022

For SRI TIRUMALA BLUE METALS

PARTNER



C.Natarajan, M.Sc.,M.Phil.,

Qualified Person

No.93/36E2,Subramaniyar Kovil Street,

Omalur Taluk, Salem District,

Tamil Nadu, Pin code-636 455.

Mobile:97502 23535 & 94446 54520.

CERTIFICATE

Certified that, in preparation of Mining Plan for **Rough Stone and Gravel** quarry over an extent of 4.44.35hectares of Patta lands in S.F.Nos. 148/16, 148/17, 148/18, 148/19, 148/20, 148/21, 148/22, 148/23, 148/24, 148/25, 148/38A, 148/39A1, 146/39B, 146/46, 148/1, 148/10, 148/2, 148/26, 148/27, 148/28, 148/29, 148/3, 148/30, 148/39A2, 148/39B2A, 148/39B1, 148/4, 148/5, 148/6, 148/7, 148/9, 149/1A, 149/2A and 150/1A of Menallur Village, Vembakkam Taluk, Tiruvannamalai District, Tamil Nadu State for Tvl.Sri Tirumala Blue Metals, covers all the provisions of Mines Act, Rules, and Regulations etc made there under and whenever specific permission are required, the applicant will approach the Director General of Mines Safety, Chennai. The standards prescribed by DGMS in respect of Mines Health will be strictly implemented.

Certified

Signature of Qualified Person.


C.Natarajan, M.Sc.,M.Phil.,

Qualified Person
C.NATARAJAN M.Sc.,M.Phil.,
Qualified Person

Place: Salem

Date: 12.09.2022

For SRI TIRUMALA BLUE METALS


PARTNER



CERTIFICATE

Certified that I, C.Natarajan, residing at No.93/36 E2, Subramaniyar Kovil Street, Omalur Taluk, Salem District, Tamil Nadu, Pin Code-636 455. I am a Post graduate in Geology (M.Sc., Geology) from Annamalai university and more than five years of experience in mining Field.

Rule 15(1)(a) and (b) of Minerals (Other than Atomic, Hydro Carbons Energy Minerals) concession Rules 2016 stipulates the eligibility for preparing Mining Plans as "(1)(a) a post graduate degree in Geology granted by a university established" and (1)(b) "Professional experience of five years of working in a supervisory capacity in the field of mining after obtaining the degree". Since my qualification and experience are satisfied the Rule (1)(a) and (1)(b) of 15 of the Said Rules, I am eligible to prepare Mining Plans for both Major and Minor Minerals.

Accordingly I prepared this Mining Plan in respect of Rough Stone and Gravel quarry lease applied for an extent of 4.44.35Ha of (Patta lands) in S.F.Nos.148/16, 148/17, 148/18, 148/19, 148/20, 148/21, 148/22, 148/23, 148/24, 148/25, 148/38A, 148/39A1, 146/39B, 146/46, 148/1, 148/10, 148/2, 148/26, 148/27, 148/28, 148/29, 148/3, 148/30, 148/39A2, 148/39B2A, 148/39B1, 148/4, 148/5, 148/6, 148/7, 148/9, 149/1A, 149/2A and 150/1A of Menallur Village, Vembakkam Taluk, Tiruvannamalai District by Tvl.Sri Tirumala Blue Metals, for a period of Five years. Since the Mining Plan is prepared as per the provisions contained in Rule 15(1) (a) and (b) of Minerals (Other than Atomic, Hydro Carbons Energy Minerals) concession Rules 2016, the same may be approved by the Competent Authority.

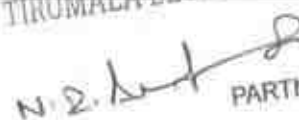

C.Natarajan, M.Sc.,M.Phil.,

Qualified Person
C.NATARAJAN M.Sc.,M.Phil.,
Qualified Person

Place: Salem

Date: 12.09.2022

For SRI TIRUMALA BLUE METALS


PARTNER



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For SRI TIRUMALA BLUE METALS

N. R. Ant

PARTNER



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For SRI TIRUMALA BLUE METALS
N. P. 
PARTNER



MINING PLAN FOR MINOR MINERALS

ROUGH STONE AND GRAVEL

Over an extent of 4.44.35 hectares of Patta land in S.F.Nos. 148/16, 148/17, 148/18, 148/19, 148/20, 148/21, 148/22, 148/23, 148/24, 148/25, 148/38A, 148/39A1, 146/39B, 146/46, 148/1, 148/10, 148/2, 148/26, 148/27, 148/28, 148/29, 148/3, 148/30, 148/39A2, 148/39B2A, 148/39B1, 148/4, 148/5, 148/6, 148/7, 148/9, 149/1A, 149/2A and 150/1A of Menallur Village, Vembakkam Taluk, Tiruvannamalai District, Tamil Nadu State.

(PREPARED UNDER RULE 19(1), 41 and 42 OF TNMMCR 1959)

1.0 Introduction and Executive Summary;

1. The present Mining Plan is prepared for Tvl.Sri Tirumala Blue Metals, No.90, Ottakoothar Street, Mamallan Nagar, Kanchipuram District.
2. The application was processed by the Deputy Director, Department of Geology and Mining, Tiruvannamalai, and passed an order vide Rc.No.157/Kanimam/2022 dated 08.09.2022 directing the applicant to produce approved Mining Plan under Rule 41(5) of the Tamil Nadu Minor Mineral Concession Rules, 1959 and Environmental Clearance Certificate under Rule 42 from the State Level Environmental Impact Assessment Authority (SEIAA) for the grant of quarry lease to quarry **Rough Stone and Gravel** over an extent of 4.44.35 hectares of Patta lands in S.F.Nos. 148/16, 148/17, 148/18, 148/19, 148/20, 148/21, 148/22, 148/23, 148/24, 148/25, 148/38A, 148/39A1, 146/39B, 146/46, 148/1, 148/10, 148/2, 148/26, 148/27, 148/28, 148/29, 148/3, 148/30, 148/39A2, 148/39B2A, 148/39B1, 148/4, 148/5, 148/6, 148/7, 148/9, 149/1A, 149/2A and 150/1A of Menallur Village, Vembakkam Taluk, Tiruvannamalai District of Tamil Nadu State for a period of five years.
3. Accordingly, Mining Plan is prepared under the provisions of rule 19(1), 41 and 42 as per the amendments under Tamil Nadu Minor Mineral Concession Rules, 1959 by incorporating following the conditions imposed in the precise area communication letter.

For SRI TIRUMALA BLUE METALS

N.R. [Signature]

PARTNER



- a) Applicant should transfer LT line (passing on the East-west and North-south direction) before submitting Mining plan or A safety distance of 50m has to be provided to the LT line passing on the east-west and North-south direction.
 - b) A safety distance of 7.5m should be provided to the adjoining patta lands.
 - c) Applicant should not cause any hindrance to public and adjacent lands.
 - d) Barbed wire fencing should be erected all along the boundary of the lease granted area before quarrying operation.
 - e) Quarrying operation should be done proper scientific method only.
 - f) The applicant will engage should have valid certified persons (Mines Manager, Foreman, Mate).
 - g) Before the quarrying operation applicant will intimate to the Director of Mines safety.
 - h) Applicant should use jackhammer and mild explosive during blasting in quarry.
4. Geological Resources is estimated at 19,97,415m³ of Rough stone, 44,387m³ of Weathered Rock and 1,33,161m³ of gravel formation and Mineable Reserves is estimated at 8,07,050m³ of Rough Stone, 36,890m³ of Weathered Rock and 1,13,073m³ of gravel formation and after leaving necessary safety distance from the lease boundary as indicated in the precise area letter and relevant mining laws in force.
5. Production Schedule is proposed production of 8,07,050m³ of Rough Stone, 36,890m³ of Weathered Rock and 1,13,073m³ of gravel formation for the period of five years.
6. applicant ensured that, child labours under 18 years of age will not be engaged for quarrying operation.
7. The applicant ensure that will engage should have valid certified persons (Mines Manager, Foreman, Mate) during quarrying operation.

For SRI TIRUMALA BLUE METALS

N.R. A. S.

2

PARTNER



8. Environmental parameters,

- i) The area does not attract the Forest Conservation Act, 1980 as there is no forest around 9.2Kms radius.
- ii) There is no interstate boundary around 10Kms radius.
- iii) There is no wild life animal sanctuary within 10Kms radius from the project site area under the Wildlife (Protection) Act, 1972.

Therefore, the project seeks clearance only from State Level Environmental Impact Assessment Authority (SEIAA) under B2 Category.

9. Environmental measures to be adopted shall be,

- i) Dust Control at source while drilling and blasting,
- ii) Dust suppression at loading point and transport haul roads,
- iii) Noise Control in blasting, control of fly rock missiles and vibration by doing peak particle velocity with in standard as prescribed by the DGMS and MOEF.
- iv) Unnecessary land degradation should be avoided or damaged land should be reclaimed or rehabilitated.
- v) Avoid uneven rat hole mining and follow scientific and systematic mining by safe bench system of open cast mining.
- vi) Mining near major fracture zones if any should be avoided to control ground water fluctuation in the adjacent agricultural lands.
- vii) Emission test of vehicles should be in tack to maintain minimum emission level of flue gases.
- viii) Noise level should not exceed 80db and the vehicles should use only permitted Air Horn while on road near residential areas.
- ix) Safety zones as prescribed by the Department of Geology and Mining from adjacent infrastructures should be strictly adhere to.
- x) And any other conditions as stipulated by the concerned authorities should be followed to protect the environment.

For SRI TIRUMALA BLUE METALS
N. R. A. S.
PARTNER



EXECUTIVE SUMMARY:

a.	Name of the Village Panchayat	:	Menallur
b.	Name of the Panchayat Union	:	Vembakkam
c.	The proposed total Minable Reserves	:	8,07,050m ³ of Rough Stone, 36,890m ³ of Weathered Rock 1,13,073m ³ of gravel formation
d.	The proposed quantity of reserves (level of production) for Five years to be mined is(Recoverable reserves)	:	8,07,050m ³ of Rough Stone, 36,890m ³ of Weathered Rock 1,13,073m ³ of gravel formation
e.	Total extent of the area	:	4.44.35Ha
f.	Proposed Period of mining	:	Five Years
g.	Existing depth	:	It is fresh quarry lease applied area
h.	Proposed Depth of mining	:	49m (Below ground level) for the proposed mining plan.
i.	Method of mining/level of mechanization	:	Opencast, Semi-mechanized Mining with a bench height of 5m and bench width of 5m and 80° Slope is proposed.
j.	Types of Machineries used in the quarry	:	Machineries like Tractor mounted compressor attached with Jack hammers, Excavators are proposed to deploy for quarrying operation.
k.	Cost of the Project A. Fixed Assets Cost B. Operational Cost C. EMP Cost		Rs. 29,26,100/- Rs. 72,50,000/- Rs. 6,00,000/- Total Project cost(A+B+C)= Rs. 1,07,76,100/-

l. The area applied for lease is bounded by thirty corners and the coordinates are clearly marked in plate no II.

Corners	Co- ordinates		Distance between the corners
	Latitude	Longitude	
1	12° 43' 59.63"N	79° 42' 32.68"E	1-2 = 6.8m
2	12° 43' 59.84"N	79° 42' 32.70"E	2-3 = 21.4m
3	12° 44' 00.53"N	79° 42' 32.78"E	3-4 = 27.2m
4	12° 44' 00.54"N	79° 42' 33.68"E	4-5 = 31.2m
5	12° 44' 01.54"N	79° 42' 33.88"E	5-6 = 12.4m
6	12° 44' 01.93"N	79° 42' 33.79"E	6-7 = 33.0m
7	12° 44' 02.15"N	79° 42' 32.72"E	7-8 = 40.2m
8	12° 44' 03.44"N	79° 42' 32.96"E	8-9 = 80.4m
9	12° 44' 06.09"N	79° 42' 32.88"E	9-10 = 26.2m
10	12° 44' 05.97"N	79° 42' 33.74"E	10-11 = 51.8m
11	12° 44' 07.60"N	79° 42' 34.20"E	11-12 = 8.8m
12	12° 44' 07.88"N	79° 42' 34.16"E	12-13 = 15.2m

For SRI TIRUMALA BLUE METALS
N. P. [Signature]

PARTNER



13	12° 44' 08.38"N	79° 42' 34.19"E	13-14 =	37.4m
14	12° 44' 09.61"N	79° 42' 34.24"E	14-15 =	97.6m
15	12° 44' 09.06"N	79° 42' 37.42"E	15-16 =	13.6m
16	12° 44' 09.48"N	79° 42' 37.55"E	16-17 =	33.0m
17	12° 44' 09.25"N	79° 42' 38.69"E	17-18 =	17.8m
18	12° 44' 08.68"N	79° 42' 38.55"E	18-19 =	51.6m
19	12° 44' 08.46"N	79° 42' 40.25"E	19-20 =	22.6m
20	12° 44' 07.76"N	79° 42' 40.03"E	20-21 =	34.8m
21	12° 44' 07.69"N	79° 42' 38.88"E	21-22 =	102.0m
22	12° 44' 04.39"N	79° 42' 38.57"E	22-23 =	18.2m
23	12° 44' 04.29"N	79° 42' 39.16"E	23-24 =	89.4m
24	12° 44' 01.40"N	79° 42' 38.85"E	24-25 =	26.8m
25	12° 44' 01.51"N	79° 42' 37.97"E	25-26 =	24.6m
26	12° 44' 01.64"N	79° 42' 37.16"E	26-27 =	33.8m
27	12° 44' 01.70"N	79° 42' 36.05"E	27-28 =	84.4m
28	12° 43' 58.99"N	79° 42' 35.60"E	28-29 =	34.4m
29	12° 43' 59.06"N	79° 42' 34.46"E	29-30 =	13.2m
30	12° 43' 59.48"N	79° 42' 34.52"E	30-1 =	55.4m

2.0 General Information:

2.1	a.	Name of the Applicant	:	Tvl. Sri Tirumala Blue Metals
	b.	Address of the Applicant with phone No and e-mail id if any	:	No.90, Ottakoothar Street, Mamallan Nagar. Kanchipuram District. Pincode:631502 Cell No.:9677167500
	c.	Status of the Applicant	:	Partnership firm
2.2	a.	Mineral Which the applicant intends to mine	:	Rough Stone and Gravel.
	b.	Precise area communication letter No.	:	Precise area communication letter received from the Deputy Director, Department of Geology and Mining, Tiruvannamalai, Rc.No.157/Kanimam/2022 dated 08.09.2022
	c.	Period of permission / lease granted	:	The Deputy Director, Department of Geology and Mining, Tiruvannamalai, has grant of lease period for five years .
	d.	Name and Address of the QP preparing Mining Plan	:	C.Natarajan, M.Sc.,M.Phil., Qualified Person No.93/36E2, Subramaniyar Kovil Street, Omalur Taluk, Salem District, Tamil Nadu, Pin-636 455. Mobile: 97502 23535 & 94446 54520.

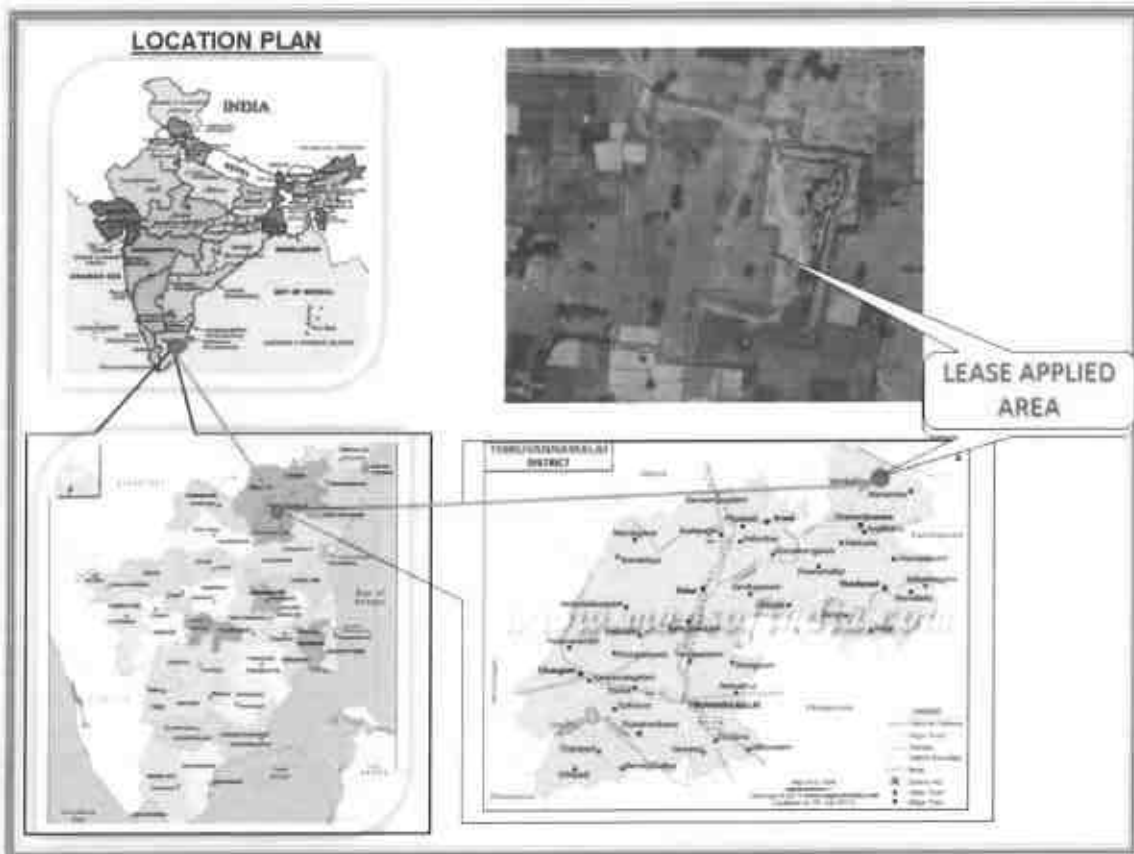
For SRI TIRUMALA BLUE METALS
N. P. A. S.

PARTNER



3.0 Location:

S.No	Details of the Area:	
1	Corner Coordinates	Latitude :12°43'58.99"N to 12°44'09.61"N Longitude :79°42'32.68"E to 79°42'40.25"E
2	Toposheet Number	57 P/10
3	The altitude of the area	100m (MSL)
4	Extent	4.44.35Ha
5	Survey Nos	148/16, 148/17, 148/18, 148/19, 148/20, 148/21, 148/22, 148/23, 148/24, 148/25, 148/38A, 148/39A1, 146/39B, 146/46, 148/1, 148/10, 148/2, 148/26, 148/27, 148/28, 148/29, 148/3, 148/30, 148/39A2, 148/39B2A, 148/39B1, 148/4, 148/5, 148/6, 148/7, 148/9, 149/1A, 149/2A and 150/1A
6	Village	Menallur
7	Taluk	Vembakkam
8	District	Tiruvannamalai
9	State	Tamil Nadu



For SRI TIRUMALA BLUE METALS
N. R. [Signature]
 PARTNER



a.	Classification of the Area (Ryotwari / poramboke / others)	:	Patta land
b.	Ownership / Occupancy of the Applied area (Surface rights)	:	It is patta land jointly registered in the name of partners of Tvl Sri Tirumala Blue Metals (Thiru.Mukunthababu, Thiru.Ananthababu, Thiru. Haribabu and Thiru.Rajbabu) applicant vide patta no.713 and 769, Please refer Annexure No: IV.
c.	Toposheet No. with Latitude and Longitude	:	Topo Sheet No: 57 P/10 Latitude :12°43'58.99"N to 12°44'09.61"N Longitude :79°42'32.68"E to 79°42'40.25"E
d.	Existence of Public Road / Railway line if any nearby the area and approximate distance	:	There is an existing road from the area leads to Bagavandapuram - Girijapuram village road on western side of the area. The Nearest Railway line is Kanchipuram - Chengalpattu line which is about 10.5Km on the Northeastern side of the area.



Fig. Location of the lease Applied Area

For SRI TIRUMALA BLUE METALS
N. R. Raju
 PARTNER



PART - A

4.0 Geology and Mineral Reserves:

4.1	a. Topography	<p>: > The area applied for quarry lease is exhibits almost plain topography covered by Gravel formation. The massive Charnockite formation is noticed below 3m (Avg) Gravel and 1m weathered rock formation and sloping towards Southeastern side of the area, the altitude of the area is above 100m (maximum) from MSL.</p> <p>> No major river is found nearby the lease applied area.</p> <p>> Water table is found at a depth of 60m in summer and 57m in rainy seasons.</p> <p>> Temperature of the area is reported to be 18°C to a maximum of 42°C during summer.</p> <p>> Rainfall of this area is about 800mm to 900 mm during the both NE & SW monsoons.</p>
	b. General Geology of the Area	<p>: The area is underlain by the wide range of metamorphic rocks of 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, Charnockites basic granulites and calc-gneisses. The younger formations are Quartz veins and pegmatite.</p> <p>The rock type noticed in the area for lease is Charnockite which contains mostly Quartz and Feldspar with some ferromagnesian minerals. The Charnockite is part of peninsular Gneisses, a high grade metamorphic rock.</p> <p>The strike of the Charnockite formation is N40°E - S40°W with dipping towards SE70°.</p>



			<p>The general geological succession of the area is given as under.</p> <table border="0"> <tr> <td>AGE</td> <td></td> <td>ROCK TYPE</td> </tr> <tr> <td>Recent</td> <td>-</td> <td>Reddish and gravelly soil</td> </tr> <tr> <td></td> <td>Unconformity</td> <td></td> </tr> <tr> <td>Archaean</td> <td>-</td> <td>Dolerite dyke Charnockite. Peninsular Gneissic complex and Calc Gneiss</td> </tr> </table>	AGE		ROCK TYPE	Recent	-	Reddish and gravelly soil		Unconformity		Archaean	-	Dolerite dyke Charnockite. Peninsular Gneissic complex and Calc Gneiss
AGE		ROCK TYPE													
Recent	-	Reddish and gravelly soil													
	Unconformity														
Archaean	-	Dolerite dyke Charnockite. Peninsular Gneissic complex and Calc Gneiss													
4.2		Details of Exploration already carried out if any	No exploration was carried out, as the Rough stone formations are clearly visible from adjacent existing quarry pit.												
4.3	a.	Estimation of Reserves	<p>The Geological and Recoverable reserves are estimated by cross sectional method.</p> <p>Totally three sections have been drawn, one section drawn length wise as (X-Y) and another two sections drawn width wise as (A-B) and (C-D) to cover maximum area considered for lease.</p> <p>The Plans and Sections have been drawn with a scale of 1:1000 and 1:500 respectively. Please refer plate No.III.</p>												

a. Geological Resources

The quarrying is restricted up to a depth of 49m Below ground level only. Availability of Resources is given below.

Table No-1

Section	Length in (m)	Width in (m)	Depth in (m)	Volume in m ³	Gravel formation in m ³	Weathered Rock in m ³	Geological Resources of Rough stone in m ³
XY-AB	224	172	3	115584	115584		
	224	172	1	38528		38528	
	224	172	45	1733760			1733760
	Total				115584	38528	1733760
XY-CD	93	63	3	17577	17577		
	93	63	1	5859		5859	
	93	63	45	263655			263655
	Total				17577	5859	263655
Grand Total				133161	44387	1997415	

Gravel Formation : 1,33,161m³
 Weathered Rock Formation : 44,387m³
 The Geological Resources of Rough stone : 19,97,415m³

For SRI TIRUMALA BLUE METALS

N. R. [Signature]

PARTNER



b. Mineable Reserve

The mineable reserve calculated by deducting 7.5m safety distance and bench loss:

Table No-2

Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume in m ³	Gravel formation in m ³	Weathered Rock in m ³	Mineable Reserves of Rough stone in m ³
XY-AB	I	216	156	3	101088	101088		
	II	215	154	1	33110		33110	
	III	211	147	5	155085			155085
	IV	204	133	5	135660			135660
	V	198	120	5	118800			118800
	VI	191	107	5	102185			102185
	VII	178	94	5	83660			83660
	VIII	165	81	5	66825			66825
	IX	152	68	5	51680			51680
	X	139	55	5	38225			38225
	XI	126	42	5	26460			26460
Total						101088	33110	778580
XY-CD	I	85	47	3	11985	11985		
	II	84	45	1	3780		3780	
	III	80	38	5	15200			15200
	IV	74	25	5	9250			9250
	V	67	12	5	4020			4020
Total						11985	3780	28470
Grand Total						113073	36890	807050

The mineable reserve is computed as 8,07,050m³ of Rough stone, 36,890m³ of Weathered rock formation and 1,13,073m³ of Gravel formation upto a depth of 49m below ground level only.

Gravel and weathered rock mass will be removed first, after the excavation of weathered rock mass will preserved all along the boundary barrier if market is rise the will be loaded into tipper for needy customer this will be done after paying the necessary Seigniorage Fees to Government.

5.0 Mining:

5.1	Method of Mining	:	<ol style="list-style-type: none"> 1. Opencast method of semi mechanized mining with 5.0m height 5m width and 80° slope of the bench. 2. However, as far as the quarrying of Rough stone is concerned, observance of the provisions of Regulation 106(2) (b) as above is seldom possible due to various inherent petrogenetic factors coupled with mining difficulties. Hence it is proposed to obtain relaxation to the provisions of the above regulation from the Director of mines safety for which necessary provision is available with the regulation 106 (2) (b) of MMR-1961, under Mine Act-1952.
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N. D. K.



5.2	Mode of Working	<p>: The rough stone is proposed to quarry 5m bench height, 5m width with 80° slope and with conventional opencast semi-Mechanized method.</p> <p>The quarry operation involves shallow jack hammer drilling, slurry blasting, excavation, Loading and transportation of Rough stone to the needy buyers. The production of Rough stone in this quarry involves the following method which is typical for Rough Stone quarrying in contrast to other major mineral mining.</p> <p>Splitting of rock mass of considerable volume from the parent rock mass by jackhammer drilling and blasting, hydraulic excavators are used for loading the Rough Stone from pithead to the needy buyers.</p> <p>Occasionally hydraulic excavators are attached with rock breakers for fragmentation to avoid secondary blasting. The primary boulders thus splitted 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.</p>
5.3	Proposed bench height & Width	<p>: Quarrying of Rough Stone is proposed bench height of 5m and bench width of 5m.</p>
5.4	Details of Overburden / Mineral Production proposed for the first 5 years.	<p>: The overburden in the form of Gravel and weathered rock mass after the excavation of weathered rock mass will preserved all along the boundary barrier if market is rise the will be loaded into tipper for needy customer this will be done after paying the necessary Seigniorage Fees to Government. The excavated rough stone and gravel will be directly loaded into tipper to the needy crushers/other buyers for road project and construction works for filling and leveling of low lying areas.</p>



The Yearwise Production and Development Table

Table No-3

Year	Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume in m ³	Gravel in m ³	Weathered Rock in m ³	Mineable reserve of Rough stone in m ³
I	XY-AB	I	216	156	3	101088	101088		
		II	215	154	1	33110		33110	
		III	211	147	5	155085			155085
Total						101088	33110	155085	
II	XY-CD	I	85	47	3	11985	11985		
		II	84	45	1	3780		3780	
		III	80	38	5	15200			15200
		IV	74	25	5	9250			9250
	XY-AB	IV	204	133	5	135660			135660
Total						11985	3780	160110	
III	XY-AB	V	198	120	5	118800			118800
		VI	77	107	5	41195			41195
	XY-CD	V	67	12	5	4020			4020
Total								164015	
IV	XY-AB	VI	114	107	5	60990			60990
		VII	178	94	5	83660			83660
		VIII	47	81	5	19035			19035
Total								163685	
V	XY-AB	VIII	118	81	5	47790			47790
		IX	152	68	5	51680			51680
		X	139	55	5	38225			38225
		XI	126	42	5	26460			26460
Total								164155	
Grand Total						113073	36890	807050	

The applicant has proposed to carry out 8,07,050m³ of Rough stone 36,890m³ of Weathered rock formation and 1,13,073m³ of Gravel formation at the rate of 100% recovery upto a depth of 49m below ground level for the period of five years.

5.5	Machineries to be used								
a.	Drilling		: It is proposed to use following machineries for quarrying rough stone						
	S.No	Type	Nos	Dia Hole mm	Size Capacity	Make	Motive power		
	1	Jack hammer	20	32	1.2m to 6m	Atlas Copco	Compressed air		
	2	Compressor	5	-	400 psi	Atlas Copco	Diesel Drive		
b.	Loading		: Excavator of 0.90m ³ bucket capacity (with Rock breaker attachment) (2No).						
c.	Transportation		: Tipper 4Nos (5/10Ts) capacity.						



5.6	Disposal of Overburden	<p>The overburden in the form of Gravel and weathered rock mass after the excavation of weathered rock mass will preserved all along the boundary barrier if market is rise the will be loaded into tipper for needy customer this will be done after paying the necessary Seigniorage Fees to Government. Gravel will be directly loaded into tipper to the needy crushers/other buyers for road project and construction works for filling and leveling of low lying areas.</p>												
5.7	Brief Note on Conceptual Mining Plan for the entire lease period	<p>Conceptual Mining Plan is prepared with an object of five years of systematic development of bench lay outs, selection of ultimate pit limit, depth of quarrying, ultimate pit slope, selection of sites for construction of infrastructures etc.</p> <p>Ultimate pit size is designed based on certain practical factors such as the economical depth of mining, safety zones, permissible areas etc.</p> <p>Ultimate Pit dimension is given as under,</p> <table border="1" data-bbox="708 1310 1378 1507"> <thead> <tr> <th colspan="4">Ultimate Pit dimension (M)</th> </tr> <tr> <th>Pit No</th> <th>Length (max) in (m)</th> <th>Width (Avg) in (m)</th> <th>Depth(max) in(m)</th> </tr> </thead> <tbody> <tr> <td>I</td> <td>301</td> <td>122</td> <td>49m</td> </tr> </tbody> </table> <p>Afforestation has been proposed on all along the boundary barrier by planting trees.</p> <p>All the baseline information studies like Air Quality monitoring, Noise and Vibration monitoring, Water Analysis studies will be carried out every year as per the MOEF norms.</p>	Ultimate Pit dimension (M)				Pit No	Length (max) in (m)	Width (Avg) in (m)	Depth(max) in(m)	I	301	122	49m
Ultimate Pit dimension (M)														
Pit No	Length (max) in (m)	Width (Avg) in (m)	Depth(max) in(m)											
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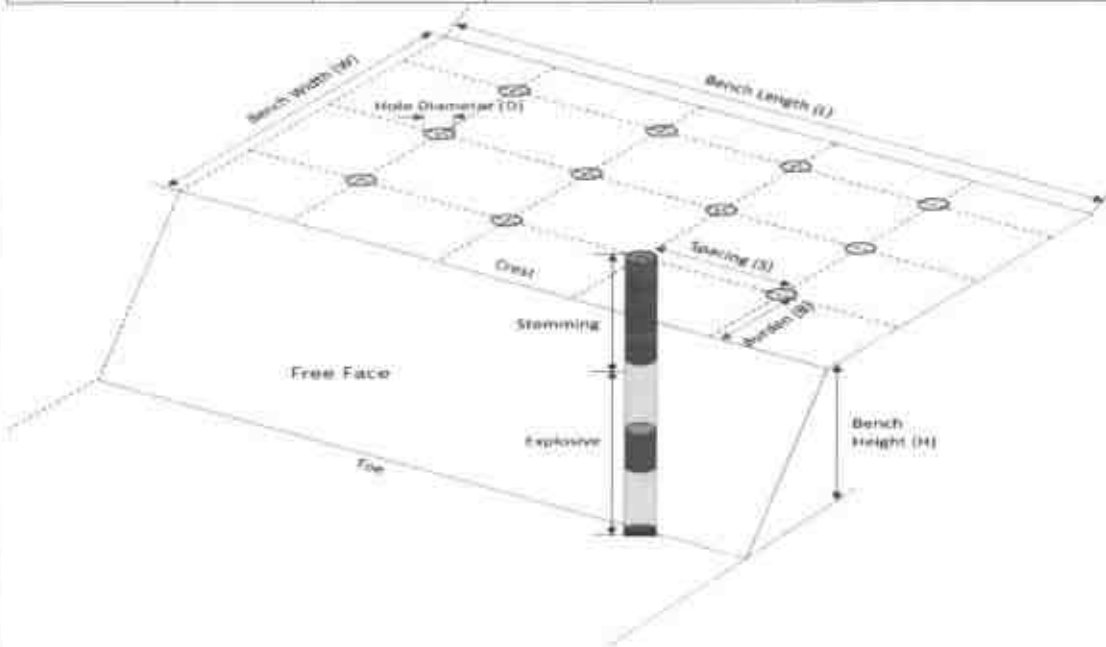
For SRI TIRUMALA BLUE METALS 13
N. R. [Signature]
 PARTNER



6.0 Blasting:

6.1 Blasting Pattern : The massive formation shall be broken into pieces of portable size by drilling and blasting using jack hammers and shot hole blasting. Powder factor of explosives for breaking such hard rock shall be in the order of 6 to 7 Tonnes per K.g of explosives. Blasting parameters are as follows.

Diameter of the hole	Spacing	Depth	Burden for hole	Pattern of hole	Inclination of hole
32-36mm	0.6m	1 to 1.5m	0.6m	Zig Zag	70° from the horizontal



6.2 Types of Explosives : Small dia, 25mm slurry explosive are proposed to be used for shattering and heaving effect for removal and winning of Rough stone. No deep hole drilling or primary blasting is proposed.

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6.3	Measures proposed to minimize ground vibration due to blasting	<p>➤ Controlled blasting measures will be adopted for minimizing ground vibration and fly rock</p> <p>➤ Shallow depths jackhammer drilling and blasting is proposed to be carried out with minimum use of explosive mainly to give shattering effect in rough stone for easy excavation and to control fly rock.</p> <table border="1" data-bbox="766 593 1340 806"> <tr> <td>Number of holes</td> <td>: 466</td> </tr> <tr> <td>Powder factor</td> <td>: 6Ts/Kg of explosives</td> </tr> <tr> <td>Total explosive required</td> <td>: 233Kg slurry explosives</td> </tr> <tr> <td>Charge / hole</td> <td>: 0.5Kg</td> </tr> <tr> <td>Blasting time</td> <td>: 12-2 Pm</td> </tr> </table>	Number of holes	: 466	Powder factor	: 6Ts/Kg of explosives	Total explosive required	: 233Kg slurry explosives	Charge / hole	: 0.5Kg	Blasting time	: 12-2 Pm
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Powder factor	: 6Ts/Kg of explosives											
Total explosive required	: 233Kg slurry explosives											
Charge / hole	: 0.5Kg											
Blasting time	: 12-2 Pm											
6.4	Storage of Explosives and safety measures to be taken while blasting.	<p>➤ The applicant will engage an authorized explosive agency to carry out the small amount of blasting and it will be supervised by competent and statutory foreman/ mines manager.</p> <p>➤ The applicant ensure that will appoint the Mate (Should have Valid Blaster Certificate) during Blasting Operation.</p>										

7.0 Mine Drainage:

7.1	Depth of Water table	<p>The ground water table is reported as 60m below ground level. In the proposed mining plan only 49m Below ground level depth has been envisaged as workable depth for safe & economic quarrying for the entire lease period. Hence the quarrying operation may not affect the ground water.</p>
7.2	Arrangement and Places where the mine water is finally proposed to be discharged	<p>The ground water may not rise immediately in this type of mining. However, the rain water percolation and collection of water from the seepage shall be less than 300lpm and it shall be pumped about periodically by a stand by diesel powered Centrifugal pump motivated with 7.5H.P.Motor. The quality of water is potable and it is not contaminated with any hazardous things. Hence, water stored in the quarry pit will be pumped into the adjacent agricultural fields. Further the water stored in the old pit will also be used for plantation purposes</p>

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8.0 Other Permanent Structures:

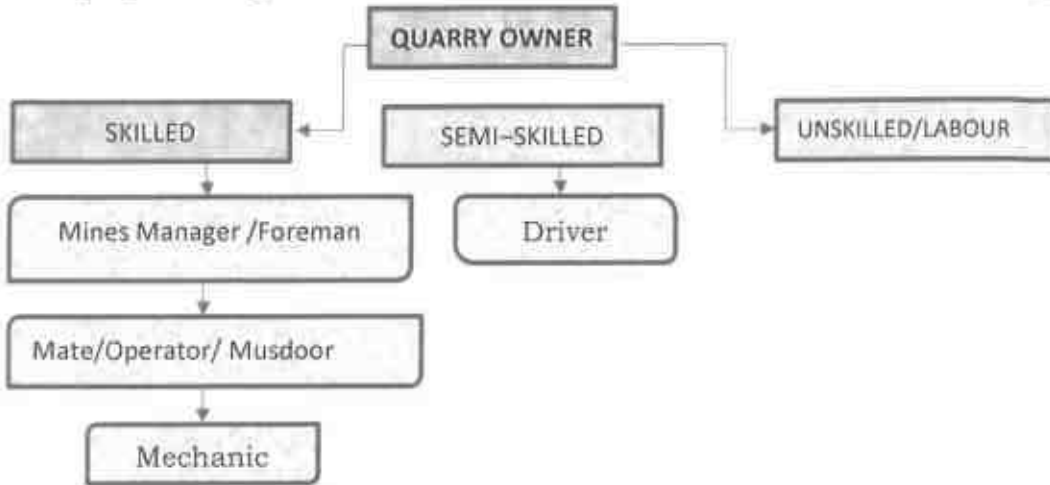
8.1	Habitations / Village	:	There are no habitations within a radius of 300m.
8.2	Power lines (HT/LT)	:	There is LT line passing on the east-west and North-south direction of the lease applied the applicant applied to (TANGEDCO) transfers the line from applied area, please refer copy of acknowledgment is enclosed as Annexure no-VIII.
8.3	Water bodies (River, Pond, Lake, Odai, Channel etc)	:	There is seasonal odai passing on northeastern side of the area and is 440m away from the area, there is tank situated on northeastern side of the area and is 160m away from the area.
8.4	Archeological / Historical Monuments	:	There are no Archeological / Historical Monuments within a radius of 500m.
8.5	Road (NH, SH, Village Road etc)	:	The Nearest National Highway (NH-48) Chennai - Krishnagiri which is about 15.5Km on the Northern side of the area. The State Highway (SH-116) Kanchipuram - Vandavasi is about 3.5Km on western side of the area.
8.6	Places of Worship	:	There are no Places of Worship within a radius of 500m.
8.7	Reserved Forest / Forest / Social Forest / Wild Life Sanctuary etc.,	:	There is no Reserved Forest /Wild Life Sanctuary etc within a radius of 1Km.
8.8	Any Interstate Border, Protected areas under the Wild Life (Protection) Act, 1972, Critically Polluted Areas as Identified by Central Pollution Control Board and Notified Eco sensitive areas	:	There are No inter State border within a radius of 10Kms.
8.9	Any Other Structures	:	Nil



9.0 Employment Potential & Welfare Measures:

9.1 Employment Potential (Management & Supervisory personal)

The proposed organization chart



1.	Skilled	Mines Manager/ Foreman	2 No.
		Mate	2 No.
		Operator	14 No
		Mechanic	1 No.
2.	Semi-skilled	Driver	4 No.
3.	Unskilled	Labours	10Nos.
Total =			33Nos

Allowing 10% absentee, the no. of men of roll will be around 30.

The above man power is adequate to meet out the production schedule and the machinery strength envisaged in the mining plan and to comply the statutory provisions of Mines Safety Regulations.

- **It is been ensured that, child labours under 18 years of age will not be engaged for quarrying operation.**
- **Necessary life insurance policies will be taken by the applicant to all the employees up to the end of the lease period.**

9.2 Welfare Measures

a.	Drinking Water	:	Packaged drinking water is available from the nearby approved water vendors in Menallur village which is about 1.0km on northeastern side of the area.
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For SRI TIRUMALA BLUE METALS ¹⁷

N.R. [Signature]

PARTNER



b.	Sanitary facilities	: Semi-permanent latrines & urinals shall be maintained at convenient places for use of labours as per the provisions of Rule (33) of the Mines Rules, 1960 separately for males and females. Washing facilities shall also be arranged as per rule (36) of the Mines Rules, 1960.
c.	First Aid Facility	: First aid kits are kept in Mines office room, in case of such eventualities the victim will be given first aid immediately at the site and injured person will be taken to the hospital. Hospital is available at distance of 9.5Km (NW) in Kanchipuram the competent and Statutory foreman/ permit manager will be in charge of first aid.
d.	Labour Health	: As per Mines Rule, Periodic medical examination related to occupational health safety will be conducted to all the workers in applicant's own cost.
e. Precautionary safety measures to the Labourers:		
<p>Safety provisions like helmet, goggles, safety shoes, Dust mask, Ear muffs etc., have to be provided as per the circulars and amendments made for Mine labours under the guidance of DGMS being a mechanized operation.</p> <p>Necessary training will be conducted once in a year to all the employees with the help of qualified and experienced officers to train about the safe and systematic quarrying operation.</p> <div data-bbox="379 1317 737 1825" data-label="Image"> </div> <div data-bbox="890 1339 1343 1787" data-label="Image"> </div>		

For SRI TIRUMALA BLUE METALS 18
N. D. [Signature]
 PARTNER



PART - B

10.0 Environmental Management Plan:

- | | | | |
|------|---------------------------|---|--|
| 10.1 | Existing Land Use Pattern | : | <p>1. The area is exhibits almost plain topography covered by Gravel formation.</p> <p>2. Quarrying operation is proposed up to a depth of 49m Below ground level for the proposed mining plan period.</p> <p>3. Fluctuation of Water table in this area is in between 60m and 57m during a year.</p> <p>4. This region receives the average annual rainfall of 800mm to 900mm. The surrounding area is practiced by the seasonal cultivation.</p> |
|------|---------------------------|---|--|

The existing land use pattern is given as under,

Table No-4

Sl. No.	Land Use	Present Area (Hect)	Area in use during the quarrying period (Hect)
1.	Quarrying Pit	Nil	3.67.50
2.	Infrastructure	Nil	0.01.00
3.	Roads	Nil	0.02.00
4.	Green Belt	Nil	0.40.00
5.	Unutilized	4.44.35	0.33.85
	Total =	4.44.35	4.44.35

- | | | | |
|------|--------------|---|---|
| 10.2 | Water Regime | : | Water table in this area is noticed at a depth of 60m and presently, in the proposed mining plan only 49m Below ground level depth has been envisaged as workable depth for safe & economic quarrying for the entire lease period. hence, it will not affect the ground water depletion of this area. |
|------|--------------|---|---|

- | | | | |
|------|-----------------|---|---|
| 10.3 | Flora and Fauna | : | Except acacia bushes, no other valuable trees are noticed in the applied area. Further, neither flora of botanical interest nor fauna of zoological interest is noticed in this area. |
|------|-----------------|---|---|

- | | | | |
|------|---------------------|---|---|
| 10.4 | Climatic conditions | : | Generally subtropical climatic condition prevails throughout the year and there is no sharp variation in climate. |
|------|---------------------|---|---|

This District receives rain both in south west and north east monsoon.

The average rainfall is about 800mm to 900mm and the temperature ranges from 18°C during winter and to a maximum of 42°C during the summer.

For SRI TIRUMALA BLUE METALS¹⁹

N. D. [Signature]

PARTNER



10.5	Human Settlement	<p>: The nearest habitations with the population is given as under.</p> <p style="text-align: center;">Table No-5</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 5%;">S. No</th> <th style="width: 35%;">Name of the Village</th> <th style="width: 35%;">Approximate distance & Direction from lease applied area</th> <th style="width: 25%;">Approximate population</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>Menallur</td> <td>1.0km - NE</td> <td>300</td> </tr> <tr> <td>2.</td> <td>Girijapuram</td> <td>1.7km - NW</td> <td>450</td> </tr> <tr> <td>3.</td> <td>Bagavandapuram</td> <td>1.0Km - SE</td> <td>250</td> </tr> <tr> <td>4.</td> <td>Narasamangalam</td> <td>2.3Km-SW</td> <td>400</td> </tr> </tbody> </table>	S. No	Name of the Village	Approximate distance & Direction from lease applied area	Approximate population	1.	Menallur	1.0km - NE	300	2.	Girijapuram	1.7km - NW	450	3.	Bagavandapuram	1.0Km - SE	250	4.	Narasamangalam	2.3Km-SW	400
S. No	Name of the Village	Approximate distance & Direction from lease applied area	Approximate population																			
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4.	Narasamangalam	2.3Km-SW	400																			
10.6	Plan for Air, Dust Suppression.	<p>: Air or dust expected to be generated from drilling process, hauling roads, places of excavation etc., will be suppressed by periodical wetting of land by water spraying. Wet drilling and dust extractor arrangements will be provided to drilling units so as to control raise of dust from the site of drilling. Operators, those exposed directly to such conditions will be provide such protective equipment like mask, ear plug, helmet, gloze etc., as per the Mines Act.</p>																				
10.7	Plan for Noise Control	<p>: Quarrying of Rough Stone will be carried out by drilling and blasting by using low power explosives, and hence, noise will be very minimum. However, periodical noise level monitoring will be carried out to check the noise level in and around the quarry site. Nowhere the noise level should exceed the permissible limit of 80db during the quarry working hours.</p>																				
10.8	Environmental Impact Assessment Statement Describing Impact on mining on the next Five years	<p>: The mining plan proposed is for a small production of Rough stone without involving deep hole drilling and heavy blasting. Such limited mining activity is not likely to cause any impact adversely on environment as far as pollution of air, water and noise is concerned, anyhow environmental impact studies will be conducted as per EIA notification issued by MOEF. It is B2 Category mine.</p>																				

N. D. S. S.



10.9	Proposal for Waste Management	:	There is no waste anticipated in this rough stone quarry operation.																																				
10.10	Proposal of Reclamation of Land affected during mining activities and at the end of mining.	:	In the proposed mining plan 49m (Below ground level) depth has been envisaged as workable depth for safe & economic mining during the lease period. Hence, after quarry reaches ultimate pit limit (for this lease period) of 49m depth, fencing will be constructed around the quarried pits to prevent inherent entry of the public and cattle.																																				
10.11	Program for Afforestation	:	<p>The 7.5m safety distance along the lease boundary has been identified to be utilized for afforestation. Appropriate native species of Neem/Pungan trees will be planted in a phased manner as described below.</p> <p style="text-align: center;">Table No-6</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Year</th> <th>No. of trees proposed to be planted</th> <th>Survival %</th> <th>Area to be covered Sq.m</th> <th>Name of the species</th> <th>No of trees expected to be grown</th> </tr> </thead> <tbody> <tr> <td>I</td> <td>50</td> <td>80%</td> <td>800</td> <td>Neem/Pungan</td> <td>40</td> </tr> <tr> <td>II</td> <td>50</td> <td>80%</td> <td>800</td> <td>Neem/Pungan</td> <td>40</td> </tr> <tr> <td>III</td> <td>50</td> <td>80%</td> <td>800</td> <td>Neem/Pungan</td> <td>40</td> </tr> <tr> <td>IV</td> <td>50</td> <td>80%</td> <td>800</td> <td>Neem/Pungan</td> <td>40</td> </tr> <tr> <td>V</td> <td>50</td> <td>80%</td> <td>800</td> <td>Neem/Pungan</td> <td>40</td> </tr> </tbody> </table> <p>Nearly 4000Sq.m area is proposed to use under afforestation by planting 50nos. of Neem/Pungan trees during every year with an anticipated survival rate of 80%. The Quarry landuse, layout and afforestation plan is shown in Plate No.III.</p>	Year	No. of trees proposed to be planted	Survival %	Area to be covered Sq.m	Name of the species	No of trees expected to be grown	I	50	80%	800	Neem/Pungan	40	II	50	80%	800	Neem/Pungan	40	III	50	80%	800	Neem/Pungan	40	IV	50	80%	800	Neem/Pungan	40	V	50	80%	800	Neem/Pungan	40
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V	50	80%	800	Neem/Pungan	40																																		
10.12	Proposed Financial Estimate / Budget for (EMP) Environment Management																																						
	A.Fixed Asset Cost:																																						
	1. Land Cost (600000/1Ha)=	:	Rs. 26,26,100																																				
	2. First aid room and accessories	:	Rs.1,00,000																																				
	3. Labour Shed		Rs.1,00,000																																				
	4. Sanitary Facility		Rs.1,00,000																																				
	Total=		Rs. 29,26,100/-																																				



B.Operational Cost:		
1. Machineries	:	Rs.70,00,000/-
2. Fencing cost	:	Rs. 2,50,000
Total	:	Rs.72,50,000/-
C.EMP Cost:		Budget Provision for the entire quarrying period.
	:	Air Quality Sampling = Rs. 40,000/-
	:	Water Quality Sampling = Rs. 40,000/-
	:	Noise Monitoring = Rs. 20,000/-
	:	Ground vibration test = Rs. 20,000/-
Expenditure		
1. Drinking water facility	:	Rs.1,50,000/-
2. Sanitary Arrangments	:	Rs. 50,000/-
3. Safety kids	:	Rs. 50,000/-
4. Water sprinkling	:	Rs. 1,50,000/-
5. Afforestation	:	Rs. 80,000/-
Total=	:	Rs. 6,00,000/-
Total Project Cost (A+B+C)	:	Rs. 1,07,76,100/-
CSR Cost(2% of Total Project Cost)	:	Rs. 2,15,522/-
11.0 Mine Closure Plan:		
11.1	Steps proposed for phased restoration, reclamation of already mined out area.	: There is no proposal for back filling, reclamation and rehabilitation. The quarried pits after the end of the life of lease will be fenced to prevent inherent entry of public and cattles.
11.2	Measures to be under taken on mine closure as per Act & Rules	: Measures will be taken as per the Acts and Rules. The quarried pit will be fenced by using Barbed wire fencing to prevent inherent entry of public and cattle.
11.3	Mitigation measures to be undertaken for safety and restoration/ reclamation of the already mined out area	: Mitigation measures: Drilling will be carried out by wet drilling mode to control the dust propagation into the air. Blasting will be carried out on limited scale. Mist Water spraying on haul road is proposed to prevent the dust propagation into the air.

For SRI TIRUMALA BLUE MARBLE 22
 N. P. ...
 PARTNER



12.0 Any Other Details Intend to Furnish by the Applicant:

- (i) Permission will be obtained from the District Mines Office to extract the Rough Stone from the Boundary barriers and for slopes.
- (ii) Care and precautionary measures will be taken for the safety of workers as per Rules and Acts.
- (iii) The applicant will endeavor every attempt to quarry the Rough Stone economically without any wastage and to improve the environment and ecology.
- (iv) The Mining Plan is prepared by incorporating the conditions stipulated in the precise area communication issued and relevant mining laws in force.
- (v) Any violation pointed out by the inspecting authorities shall be rectified as per the guidelines of the Department.

Prepared by

C. Natarajan
C.Natarajan, M.Sc.,M.Phil.,
Qualified Person
C.NATARAJAN M.Sc.,M.Phil.,
Qualified Person

Place : Salem
Date : 12.09.2022

This Mining Plan Is Approved
Subject to the Conditions/Stipulation
Indicated In The Mining Plan Approval
Letter No. 157/mines/202 Dt: 08.10.22
Office Of The Deputy Director Of
Geology And Mining, Tiruvannamalai.

This Mining Plan is approved based on incorporation of the particulars specified in the letter of the Commissioner of Geology and Mining, Chennai Lr.No: 3868/LC/2012, Dated: 19-11-2012 and subject to further fulfillment of the conditions laid down under Tamil Nadu Minor Mineral Concession Rules, 1959.

[Signature]
Deputy Director
Dept. of Geology and Mining
Tiruvannamalai.

Ja
3/10/22

23
For SRI TIRUMALA BLUE MINES
N. R. Ant
PARTNER

நக.எண்:157/கனிமம்/2022



153

ANNEXURE

துணை இயக்குநர் அலுவலகம்.
(புவியியல் மற்றும் சுரங்கத்துறை).
திருவண்ணாமலை-4.
நாள்:08.09.2022

அறிவிக்கை

பொருள்: கனிமங்களும் குவாரிகளும் - சிறுகனிமம் - திருவண்ணாமலை மாவட்டம் - வெம்பாக்கம் வட்டம், மேனல்லூர் கிராம புல எண்கள் 148/16 மற்றும் பலவற்றின் மொத்தம் 4.44.35 ஹெக்டேர் பரப்பில் சாதாரணகல் மற்றும் கிராவல் வெட்டியெடுக்க - குவாரி குத்தகை உரிமம் வழங்கக்கோரி **Sri Tirumala Blue Metals** என்ற நிறுவனத்தினர் விண்ணப்பம் செய்தது - பரிந்துரை அறிக்கை வரப்பெற்றது - சுரங்கத் திட்டம் (Mining Plan) தயார் செய்து சமர்ப்பிக்க கோருவது - தொடர்பாக.

- பார்வை:
1. Sri Tirumala Blue Metals நெ90 மாமல்லன் நகர், காஞ்சிபுரம் என்ற நிறுவனம் விண்ணப்பம், நாள் 11.07.2022.
 2. இவ்வலுவலக கடிதம் நக.எண் 157/கனிமம்/2022, நாள் 11.07.2022.
 3. வருவாய்க்கோட்ட அலுவலர், செய்யார் அவர்களின் கடிதம் நகஅ5/3583/2022, நாள் 30.08.2022.
 4. Sri Tirumala Blue Metals என்ற நிறுவனத்தின் மனு நாள் 06.09.2022.
 5. உதவி புவியியலாளர் மற்றும் தனி வருவாய் ஆய்வாளர், புவியியல் மற்றும் சுரங்கத்துறை திருவண்ணாமலை அவர்களின் புலத்தணிக்கை அறிக்கை நாள் 07.09.2022.
 6. அரசாணை (MS)எண் 169 தொழில்துறை (எம்.எம்.சி1) துறை நாள் 04.08.2020.
 7. தொடர்புடைய ஆவணங்கள்.

திருவண்ணாமலை மாவட்டம், வெம்பாக்கம் வட்டம், மேனல்லூர் கிராம புல எண்கள் 148/16 (0.20.0), 148/17 (0.11.5), 148/18 (0.07.5), 148/19 (0.09.5), 148/20 (0.15.5), 148/21 (0.09.5), 148/22 (0.08.0), 148/23 (0.03.0), 148/24 (0.03.0), 148/25 (0.07.0), 148/38A (0.26.0), 148/39A1 (0.32.09), 146/39B (0.13.35), 146/46 (0.15.0), 148/1 (0.07.0), 148/10 (0.16.0), 148/2 (0.06.5), 148/26 (0.05.5), 148/27 (0.05.5), 148/28 (0.05.5), 148/29 (0.17.0), 148/3 (0.06.0), 148/30 (0.17.5), 148/39A2 (0.25.91), 148/39B2A (0.30.0), 148/39B1 (0.01.5), 148/4 (0.08.0), 148/5 (0.05.0), 148/6 (0.04.5), 148/7 (0.07.5), 148/9 (0.12.5) 149/1A (0.22.0), 149/2A(0.21.0)&150/1A(0.39.0) ஆகியவற்றில் மொத்தம் 4.44.35 ஹெக்டேர் பரப்பில் சாதாரணகல் மற்றும் கிராவல் வெட்டியெடுக்க 10 ஆண்டுகளுக்கு குவாரிக்குத்தகை உரிமம் வழங்கக்கோரி **Sri Tirumala Blue Metals** என்ற நிறுவனத்தினர் அளித்த பார்வை 1-ல் கண்ட விண்ணப்பத்தின் மீது

For SRI TIRUMALA BLUE METALS

N. R. S. S.

PARTNER

பார்வை 3-ல் கண்ட வருவாய்க்கோட்ட அலுவலர், செய்யார் அவர்களின் பரிந்துரை அறிக்கை வரப்பெற்றது.



2. இந்நிலையில் பார்வை 4-ல் காணும் **Sri Tirumala Blue Metals** என்ற நிறுவனத்தினத்தின் கடிதத்தில் சாதாரணகல் மற்றும் கிராவல் வெட்டியெடுக்க 10 ஆண்டுகளுக்கு கல்குவாரி குத்தகை உரிமம் வழங்க கோரியதை 5 ஆண்டுகளுக்கு மட்டும் குத்தகை உரிமம் வழங்குமாறு கோரியுள்ளார்.

3. அதனைத்தொடர்ந்து பார்வை 5-ல் காணும் திருவண்ணாமலை மாவட்ட புவியியல் மற்றும் சுரங்கத்துறை, துணை இயக்குநர் அலுவலக உதவி புவியியலாளர் மற்றும் தனி வருவாய் ஆய்வாளர் ஆகியோர் அளித்த பரிந்துரை அறிக்கைகள் பரிசீலிக்கப்பட்டது.

4. **Sri Tirumala Blue Metals** என்ற நிறுவனத்தினர் சாதாரணக்கற்கள் மற்றும் கிராவல் வெட்டியெடுக்க 5 ஆண்டுகளுக்கு குவாரிக்குத்தகை உரிமம் வழங்கக்கோரிய வெம்பாக்கம் வட்டம், மேனல்லூர் கிராமபுல எண்கள்.148/16 (0.20.0), 148/17 (0.11.5), 148/18 (0.07.5), 148/19 (0.09.5), 148/20 (0.15.5), 148/21 (0.09.5), 148/22 (0.08.0), 148/23 (0.03.0), 148/24 (0.03.0), 148/25 (0.07.0), 148/38A (0.26.0), 148/39A1 (0.32.09), 146/39B (0.13.35), 146/46 (0.15.0), 148/1 (0.07.0), 148/10 (0.16.0), 148/2 (0.06.5), 148/26 (0.05.5), 148/27 (0.05.5), 148/28 (0.05.5), 148/29 (0.17.0), 148/3 (0.06.0), 148/30 (0.17.5), 148/39A2 (0.25.91), 148/39B2A (0.30.0), 148/39B1 (0.01.5), 148/4 (0.08.0), 148/5 (0.05.0), 148/6 (0.04.5), 148/7 (0.07.5), 148/9 (0.12.5) 149/1A (0.22.0), 149/2A (0.21.0) & 150/1A (0.39.0) ஆகியவற்றில் மொத்தம் 4.44.35 ஹெக்டேர் நிலப்பரப்பில் எவ்வித தடையும் இன்றி குவாரிப்பணி செய்ய வாய்ப்பு உள்ளதால், மேற்படி விண்ணப்பதாரர் **Sri Tirumala Blue Metals** என்ற நிறுவனத்தினருக்கு சாதாரண கற்கள் மற்றும் கிராவல் மண் வெட்டி எடுக்க குவாரி குத்தகை உரிமம் வழங்க பரிந்துரை செய்யப்பட்ட 4.44.35 ஹெக்டேர் பரப்பினை கற்குவாரி செய்ய உகந்த புலம் (Precise Area) என தீர்மானித்து கீழ்க்கண்ட நிபந்தனைகளுக்கு உட்பட்டு அறிவிப்பு செய்யப்படுகிறது.

நிபந்தனைகள்

- 1) விண்ணப்ப புலத்தில் கிழக்கு-மேற்கு மற்றும் வடக்கு-தெற்காக செல்லும் தாழ் மின்னழுத்த கம்பியை சுரங்க திட்ட அறிக்கை சமர்ப்பிக்கும் முன் மாற்றம் செய்யப்பட்டதற்கான தமிழ்நாடு மின்உற்பத்தி மற்றும் பகிர்மானக் கழகம் லிமிடெட், திருவண்ணாமலை சான்று சமர்ப்பிக்கப்பட வேண்டும் அல்லது மேற்படி தாழ் மின்னழுத்த கம்பிகளுக்கு 50மீ பாதுகாப்பு இடைவெளி விட வேண்டும்.
- 2) அருகில் உள்ள பட்டா நிலங்களுக்கு 7.5மீ பாதுகாப்பு இடைவெளி விடவேண்டும்.
- 3) பொதுமக்களுக்கும் அருகிலுள்ள நிலங்களுக்கும் எவ்வித பாதிப்பும் ஏற்படுத்தக்கூடாது.
- 4) குவாரிப்பணி தொடங்குவதற்கு முன்பாக குவாரியை சுற்றி முன் கம்பிவேலி அமைத்து குவாரிப்பணி தொடங்க வேண்டும்.

N.R. A. R.



-3-

- 5) மாண்புமிகும் கிழக்கு வட்டம் குவாரிப்பணி செய்யவேண்டும்.
- 6) சான்றிதழ் பெறப்பட்ட போர்மேன், வெடிப்பாளர் மற்றும் சுரங்கத்திலாளர் மூலம் மாண்புமிகும் குவாரிப்பணி செய்யப்பட வேண்டும்.
- 7) குவாரிப்பணி தொடங்குவதற்கு முன் சுரங்க பாதுகாப்பு இயக்குநர், சென்னை அவர்களுக்கு தகவல் தெரிவிக்கப்பட வேண்டும்.
- 8) மாண்புமிகும் தகர்த்து கைத்துணைப்பாளர்களை கொண்டு மாண்புமிகும் துணைப்பிட்டு குறைவான வெடிப்பொருட்கள் பயன்படுத்த வேண்டும்.

5. தமிழ்நாடு சிறுகனிம சலுகை விதிகள் 1959 விதிகள் 41 மற்றும் 42-ன்படி கல் மற்றும் இதர சிறு கனிமங்களுக்கு குவாரி குத்தகை உரிமம் வழங்கும் முன்பு ஒப்புதல் பெறப்பட்ட சுரங்கத்திட்ட அறிக்கை மற்றும் சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணைய தடையின்மை சான்று பெறப்பட வேண்டும் என வரையறுக்கப்பட்டுள்ளது.

6. எனவே, Sri Tirumala Blue Metals என்ற நிறுவனத்தினர் ஒப்புதல் பெறப்பட்ட சுரங்கத்திட்ட அறிக்கை மற்றும் சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணைய தடையின்மைச் சான்றிணை பெற்று சமர்ப்பிக்கும் பட்சத்தில் திருவண்ணாமலை மாவட்டம், வெம்பாக்கம் வட்டம், மேனல்லூர் திராம புல எண்கள் 148/16 (0.20.0), 148/17 (0.11.5), 148/18 (0.07.5), 148/19 (0.09.5), 148/20 (0.15.5), 148/21 (0.09.5), 148/22 (0.08.0), 148/23 (0.03.0), 148/24 (0.03.0), 148/25 (0.07.0), 148/38A (0.26.0), 148/39A1 (0.32.09), 146/39B (0.13.35), 146/46 (0.15.0), 148/1 (0.07.0), 148/10 (0.16.0), 148/2 (0.06.5), 148/26 (0.05.5), 148/27 (0.05.5), 148/28 (0.05.5), 148/29 (0.17.0), 148/3 (0.06.0), 148/30 (0.17.5), 148/39A2 (0.25.91), 148/39B2A (0.30.0), 148/39B1 (0.01.5), 148/4 (0.08.0), 148/5 (0.05.0), 148/6 (0.04.5), 148/7 (0.07.5), 148/9 (0.12.5) 149/1A (0.22.0), 149/2A (0.21.0) & 150/1A (0.39.0) ஆகியவற்றில் மொத்தம் 4.44.35 ஹெக்டேர் பரப்பில் கற்குவாரி செய்ய தமிழ்நாடு சிறுகனிம சலுகை விதிகள் 1959 விதி எண் 19(1) மற்றும் 20-ன் கீழ் 5 ஆண்டுகளுக்கு குத்தகை உரிமம் வழங்க உரிய நடவடிக்கை மேற்கொள்ளப்படும் என்ற விவரம் தெரிவிக்கப்படுகிறது.

7. மேலும், இவ்வறிவிப்பு கிடைக்கபெற்ற 90 நாட்களுக்குள் மேற்சொன்ன நிபந்தனைகளையும் குறிக்கும் வகையில் வரைவு சுரங்கத்திட்ட அறிக்கை தயார் செய்து துணை இயக்குநர், புவியியல் மற்றும் சுரங்கத்துறை திருவண்ணாமலை அவர்களிடம் ஒப்புதல் பெற சமர்ப்பிக்குமாறும் அறிவுறுத்தப்படுகிறது.

துணை இயக்குநர்,
புவியியல் மற்றும் சுரங்கத்துறை,
திருவண்ணாமலை.

பெறுநர்:

Sri Tirumala Blue Metals.,
நெ.90 சுரங்கத்திட்டம் கி.90
மாவட்டம் தகர்த்து
காவல்துறை மாவட்டம்

15/11/21

For SRI TIRUMALA BLUE METALS
N. R. K.

PARTNER



District : Tiruvannamalai

Survey No : 146

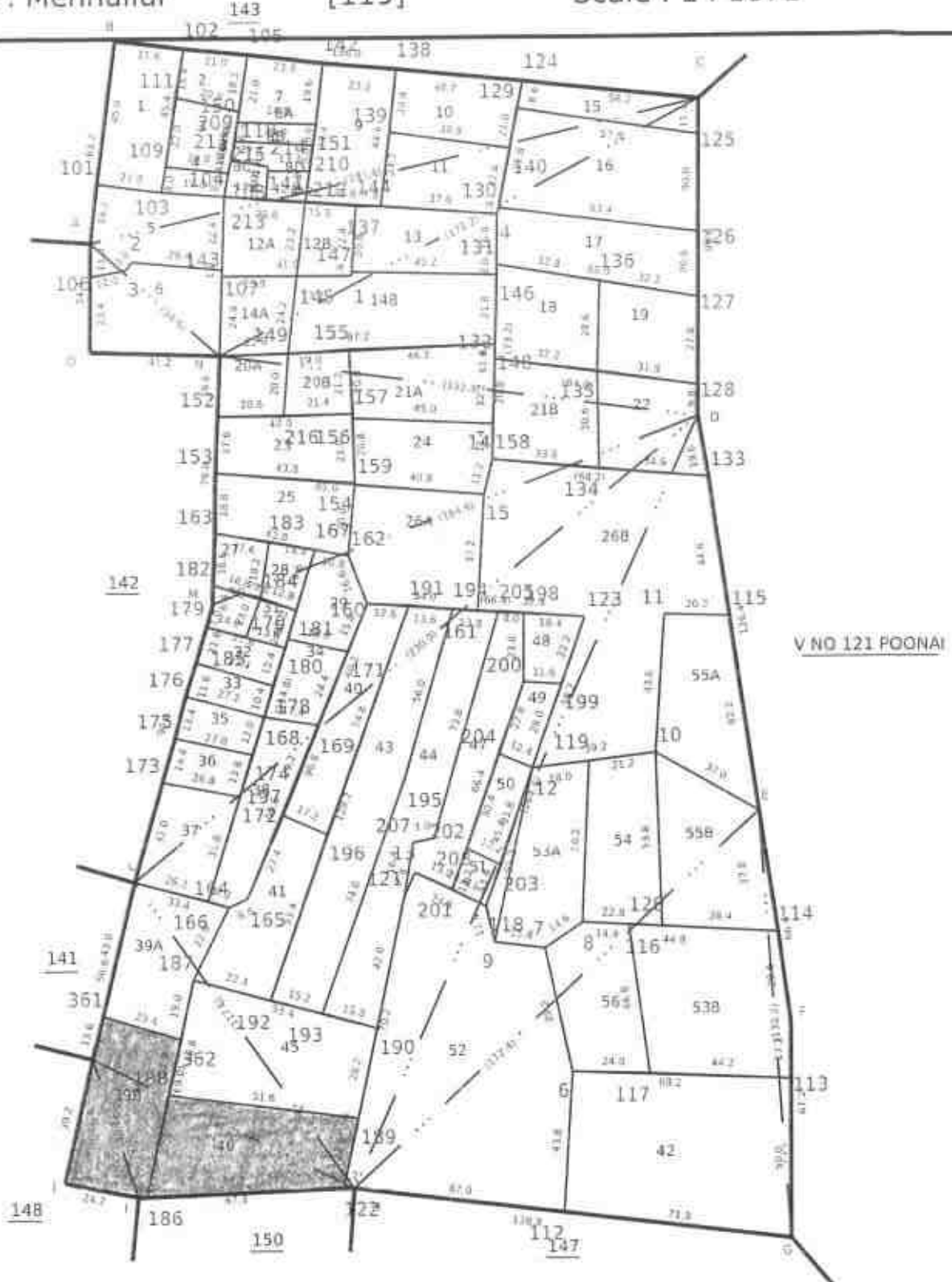
Taluk : VEMBAKKAM

Area : Hect 06 Ares 73.12

Village : Mennallur

[119]

Scale : 1 : 1871



V NO 121 POONAI

LEASE APPLIED AREA

For SRI TIRUMALA BLUE METALS

N. R. A. J.

PARTNER





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வட்டம் (செட்டிபாதி)
புறமண், 148

சிறப்பு
பெயர். செனிசுட்டர்
6 ஏர் 10.0



(செட்டிபாதி)
செனிசுட்டர்
சாலை நெடுஞ்செட்டியார்
சிறப்புள்ள குழு

New Subdivision Plotted as per 398
TKBA 62/1410 Dt. 15.9.2000
P. Aradi
P.T.O For Ladder

செனிசுட்டர்
செனிசுட்டர்
31.10.2000

For SRI TIRUMALA BLUE METALS
N. R. S. PARTNER



158

District : Tiruvannamalai

Survey No : 149

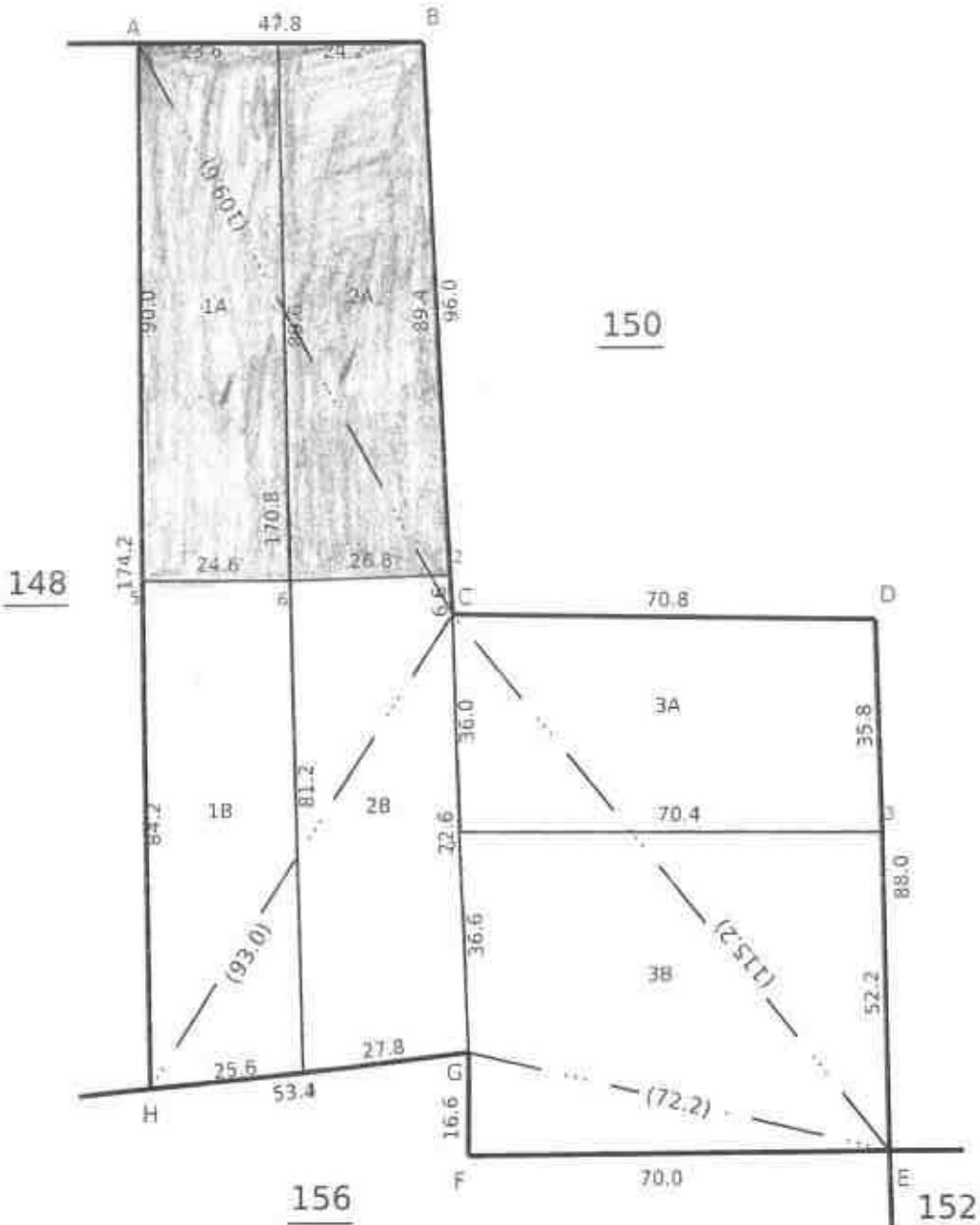
Taluk : VEMBAKKAM

Area : Hect 01 Ares 48.90

Village : Mennallur

[119]

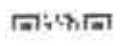
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LEASE APPLIED AREA

For SRI TIRUMALA BLUE METALS

N.R. [Signature] PARTNER

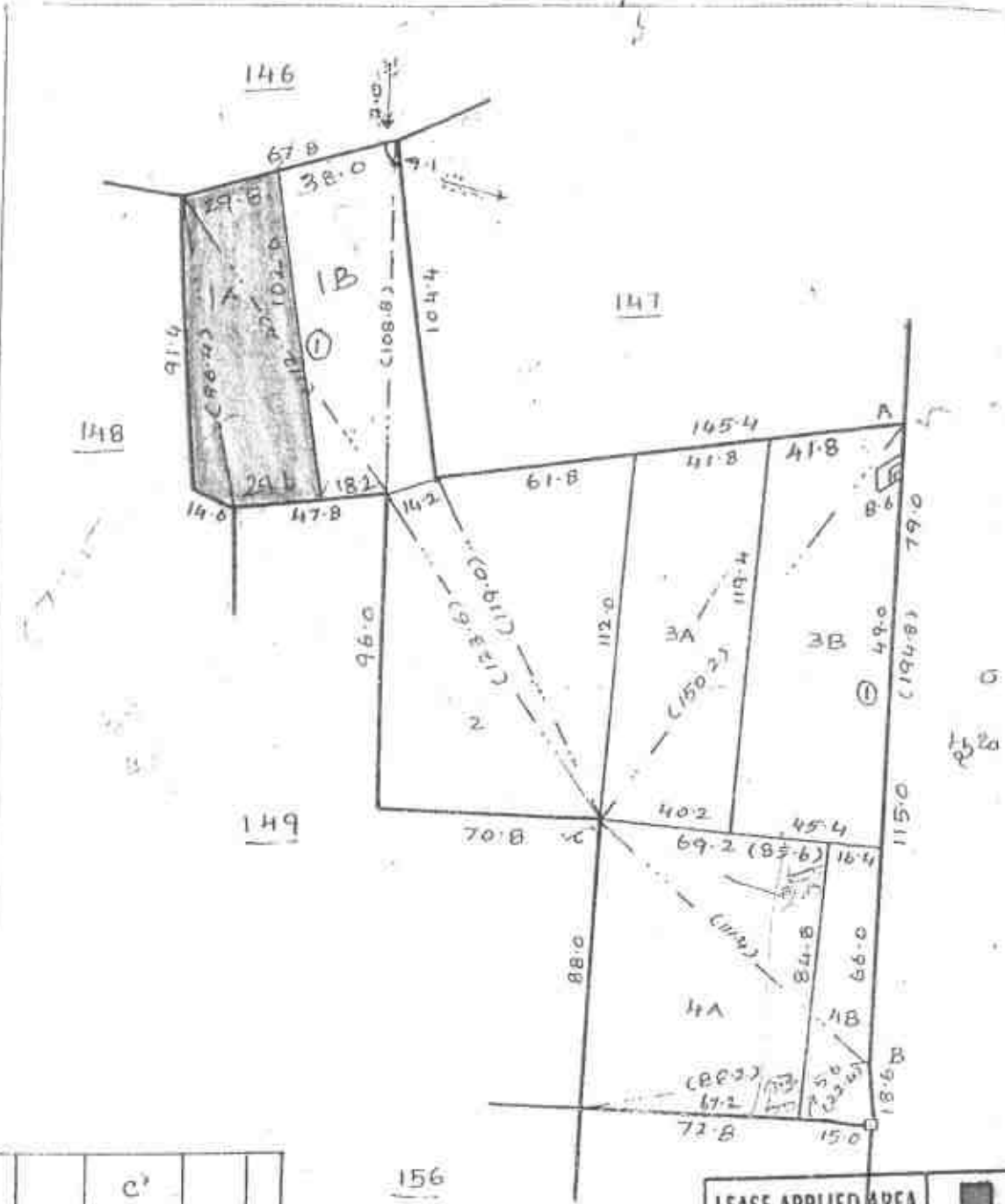




159

புல எண். 150
 புல எண். 150

எண். 119
 பெயர். சிவசுந்தரம்
 3 ஏ. 21



		C ²		
1		150.2		
W Line		15.4		
W 50		5.6		
		A		
		194.8		
		115.0	0.2	1
		B		

LEASE APPLIED AREA

J. S. S. S.
 ஜி. எஸ். எஸ். சிவசுந்தரம்
 சிவசுந்தரம்
 சிவசுந்தரம்

சிவசுந்தரம்
 சிவசுந்தரம்
 5.11.84

சுமார். 1 : 2000

சுமார். 1 : 2000



28/22, 4.10 PM

வட்டாட சியர் அலுவலக இணைய சேவை - நில உரிமை விபரங்கள்



தமிழக அரசு

வருவாய்த் துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

மாவட்டம் : திருவண்ணாமலை

வட்டம் : வெம்பாக்கம்

வருவாய் கிராமம் : மேனல்லூர்

பட்டா எண் : 713

உரிமையாளர்கள் பெயர்

1. ராமமூர்த்தி மகன் முகுந்த பாபு (ஸ்ரீ திருமலா புளு மெட்டல்ஸ்)
2. ராமமூர்த்தி மகன் அனந்தபாபு(ஸ்ரீ திருமலா புளு மெட்டல்ஸ்)
3. ராகவன் மகன் ஹரிபாபு (ஸ்ரீ திருமலா புளு மெட்டல்ஸ்)
4. ராகவன் மகன் ராஜ்பாபு (ஸ்ரீ திருமலா புளு மெட்டல்ஸ்)



புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக்ட - ஏர்	ரூ - பை	ஹெக்ட - ஏர்	ரூ - பை	ஹெக்ட - ஏர்	ரூ - பை	
141	18A	0 - 5.50	0.30	--	--	--	--	2021/0105/06/264053- -2021/06/10/000030SD -- 19-09-2021
146	39A	0 - 13.35	0.65	--	--	--	--	2022/0105/06/344717- -2022/06/10/000037SD -- 31-05-2022
146	43	0 - 21.00	1.06	--	--	--	--	2021/0103/06/237394- -- -- 02-09-2021
146	45	0 - 17.00	0.84	--	--	--	--	2021/0103/06/237394- -- -- 02-09-2021
146	46	0 - 15.00	0.74	--	--	--	--	2022/0103/06/278873- -- -- 03-05-2022
147	1A	0 - 29.50	1.14	--	--	--	--	2020/0103/06/176698- -- -- 04-07-2020
147	1B	0 - 25.50	0.98	--	--	--	--	2020/0103/06/176698- -- -- 04-07-2020
147	1C2	0 - 30.50	1.20	--	--	--	--	2020/0103/06/176698- -299/1421 -- 04-07- 2020
147	1D	0 - 11.50	0.45	--	--	--	--	2020/0103/06/176698- -- -- 04-07-2020
148	1E	0 - 7.00	0.27	--	--	--	--	2022/0103/06/278873- -- -- 03-05-2022
148	1F	0 - 16.00	0.61	--	--	--	--	2022/0103/06/278873- -- -- 03-05-2022
148	2	0 - 6.50	0.25	--	--	--	--	2022/0103/06/278873- -- -- 03-05-2022
148	26	0 - 5.50	0.22	--	--	--	--	2022/0103/06/278879- -- 03-05-2022

For SRI TIRUMALA BLUE METALS

PARTNER



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வட்டமிடப்படாத நிலங்களின் பட்டியல்

148	27	0 - 5.50	0.20	--	--	--	2022/0103/06/278879- -- -- 03-05-2022
148	28	0 - 5.50	0.20	--	--	--	2022/0103/06/278873- -- -- 03-05-2022
148	29	0 - 17.00	0.66	--	--	--	2022/0103/06/278879- -- -- 03-05-2022
148	3	0 - 6.00	0.23	--	--	--	2022/0103/06/278873- -- -- 03-05-2022
148	30	0 - 17.50	0.67	--	--	--	2022/0103/06/278879- -- -- 03-05-2022
148	39A2	0 - 25.91	1.00	--	--	--	2020/0103/06/176698- -2016/06/10/000009SD -- 04-07-2020
148	39B1	0 - 1.50	0.06	--	--	--	2022/0103/06/279435- -- -- 04-05-2022
148	39B2	0 - 30.00	1.11	--	--	--	2020/0103/06/176698- -- -- 04-07-2020
148	39B2A	0 - 30.00	1.12	--	--	--	2022/0103/06/278879- -- -- 03-05-2022
148	34	0 - 8.00	0.31	--	--	--	2022/0103/06/278873- -- -- 03-05-2022
148	35	0 - 5.00	0.19	--	--	--	2022/0103/06/278873- -- -- 03-05-2022
148	36	0 - 4.50	0.17	--	--	--	2022/0103/06/278873- -- -- 03-05-2022
148	37	0 - 7.50	0.30	--	--	--	2022/0103/06/278879- -- -- 03-05-2022
148	39	0 - 12.50	0.48	--	--	--	2022/0103/06/289212- -- -- 24-06-2022
149	1A	0 - 22.00	0.84	--	--	--	2022/0103/06/278879- -- -- 03-05-2022
149	1B	0 - 21.50	0.83	--	--	--	2020/0103/06/176698- -- -- 04-07-2020
149	2A	0 - 21.00	0.80	--	--	--	2022/0103/06/278879- -- -- 03-05-2022
149	2B	0 - 24.00	0.92	--	--	--	2020/0103/06/176698- -- -- 04-07-2020
149	3A	0 - 25.50	0.98	--	--	--	2020/0103/06/176698- -- -- 04-07-2020
150	1A	0 - 39.00	1.50	--	--	--	2022/0103/06/278879- -2020/06/10/000026SD -- 03-05-2022
150	1B	0 - 36.50	1.41	--	--	--	2020/0105/06/203819- -2020/06/10/000026SD -- 15-07-2020
150	2	0 - 75.50	2.92	--	--	--	2020/0103/06/176698- -- -- 04-07-2020
		6 - 45.26	25.61				

குறிப்பு 2 :

1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <https://eservices.tn.gov.in> என்ற இணைய தளத்தில் 06/10/119/00713/130931 என்ற குறிப்பு எண்ணம் உள்ளிட செய்து உறுதி செய்துகொள்ளவும்.

N. S. S. S. PARTNER



தமிழக அரசு

வருவாய்த் துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

மாவட்டம் : திருவண்ணாமலை

வட்டம் : வெம்பாக்கம்

வருவாய் கிராமம் : மேனல்லூர்

பட்டா எண் : 769

உரிமையாளர்கள் பெயர்

1. இராமமூர்த்தி மகன் முகுந்தபாபு(ஸ்ரீ திருமலா புளு மெட்டல்ஸ்)
2. இராமமூர்த்தி மகன் அனந்தபாபு(ஸ்ரீ திருமலா புளு மெட்டல்ஸ்)
3. இராகவன் மகன் ஹரிபாபு (ஸ்ரீ திருமலா புளு மெட்டல்ஸ்)
4. இராகவன் மகன் ராஜ் பாபு (ஸ்ரீ திருமலா புளு மெட்டல்ஸ்)



புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக்டர் - ஏர்	ரூ - பை	ஹெக்டர் - ஏர்	ரூ - பை	ஹெக்டர் - ஏர்	ரூ - பை	
148	16	0 - 20.00	0.78	--	--	--	--	2021/0103/06/254931- -- -- 16-12-2021
148	17	0 - 11.50	0.44	--	--	--	--	2021/0103/06/254931- -- -- 16-12-2021
148	18	0 - 7.50	0.30	--	--	--	--	2021/0103/06/254931- -- -- 16-12-2021
148	19	0 - 9.50	0.36	--	--	--	--	2021/0103/06/254931- -- -- 16-12-2021
148	20	0 - 15.50	0.59	--	--	--	--	2021/0103/06/254931- -- -- 16-12-2021
148	21	0 - 9.50	0.36	--	--	--	--	2021/0103/06/254931- -- -- 16-12-2021
148	22	0 - 8.00	0.31	--	--	--	--	2021/0103/06/254931- -- -- 16-12-2021
148	23	0 - 3.00	0.11	--	--	--	--	2022/0103/06/261135- -- -- 13-01-2022
148	24	0 - 3.00	0.12	--	--	--	--	2022/0103/06/261135- -- -- 13-01-2022
148	25	0 - 7.00	0.27	--	--	--	--	2021/0103/06/254931- -- -- 16-12-2021
148	38A	0 - 26.00	1.00	--	--	--	--	2022/0103/06/272101- -- -- 20-03-2022
148	38B	0 - 13.50	0.51	--	--	--	--	2022/0103/06/272101- -- -- 20-03-2022
148	39A1	0 - 32.09	1.30	--	--	--	--	2021/0103/06/254931- -2016/06/10/000009SD -- 16-12-2021
156	1	0 - 18.50	0.49	--	--	--	--	2022/0103/06/272101- -- -- 20-03-2022

நி. எண். 119. செயல்திட்டம்



1	2	3	4	5	6	7	8	9	10	11	12
146	24	146-24	ச	4.0	...	...	...	...	0 09.5	...	ஏரி.
	25	-25	ச	4	...	7-2	3	4 94	0 09.5	0 46	428 தா. ராஜா முதலியார் மற்றும் மூன்று பேர்களுக்கும் *
	26A	-26A	ச	4	...	7-2	3	4 94	0 12.5	0 62	252 மா. மணி முதலியார்.
	26B	-26B	ச	4.0	...	...	...	...	0 31.0	...	ஏரி.
	26C	-26C	ச	4	...	7-2	3	4 94	0 06.5	0 32	252 மா. மணி முதலியார்.
	26D	-26D	ச	4	...	7-2	3	4 94	0 16.0	0 78	252 மா. மணி முதலியார்.
	27	-27	ச	4	...	7-2	3	4 94	0 03.0	0 16	317 தி. வெங்கடேச பிள்ளை.
	28	-28	ச	4	...	7-2	3	4 94	0 02.5	0 12	317 தி. வெங்கடேச பிள்ளை.
	29	-29	ச	4	...	7-2	3	4 94	0 06.5	0 32	317 தி. வெங்கடேச பிள்ளை.
	30	-30	ச	4	...	7-2	3	4 94	0 02.0	0 10	317 தி. வெங்கடேச பிள்ளை.
	31	-31	ச	4	...	7-2	3	4 94	0 01.5	0 08	317 தி. வெங்கடேச பிள்ளை.
	32	-32	ச	4	...	7-2	3	4 94	0 03.0	0 14	317 தி. வெங்கடேச பிள்ளை.
	33	-33	ச	4	...	7-2	3	4 94	0 03.0	0 14	317 தி. வெங்கடேச பிள்ளை.
	34	-34	ச	4	...	7-2	3	4 94	0 05.5	0 26	317 தி. வெங்கடேச பிள்ளை.
	35	-35	ச	4	...	7-2	3	4 94	0 03.0	0 14	317 தி. வெங்கடேச பிள்ளை.
	36	-36	ச	4	...	7-2	3	4 94	0 03.0	0 16	317 தி. வெங்கடேச பிள்ளை.
	37	-37	ச	4	...	7-2	3	4 94	0 08.5	0 42	317 தி. வெங்கடேச பிள்ளை.
	38	-38	ச	4	...	7-2	3	4 94	0 09.5	0 48	318 தி. கோமேஸ்வர பிள்ளை (ஏ) வெங்கடேச பிள்ளை.
	39	-39	ச	4	...	7-2	3	4 94	0 29.5	1 48	149 தா. சுப்பா பிள்ளை.
	40	-40	ச	4	...	7-2	3	4 94	0 09.0	0 44	318 தி. கோமேஸ்வர பிள்ளை (ஏ) வெங்கடேச பிள்ளை.

* விவரம் பக்கம் 147 க்க்கு

For SRI VENKATESWARA BLUE METALS
 PARTNER
 H.R. ...



1	2	3	4	5	6	7	8	9	10		
146	41	146-41	ர	4	...	7-2	3	4 94	0 05.0	0 44	318 தி. கோபாலி பிள்ளை (ஏ) வெங்கடாசல பிள்ளை.
	42	-42	ர	4	...	7-2	3	4 94	0 31.5	1 58	7 வே. அண்ணா மலை முதலி.
	43	-43	ர	4	...	7-2	3	4 94	0 21.0	1 06	101 டி. கோபால் பிள்ளை.
	44	-44	ர	4	...	7-2	3	4 94	0 19.0	0 94	7 வே. அண்ணா மலை முதலி.
	45	-45	ர	4	...	7-2	3	4 94	0 17.0	0 84	101 தி. கோபால் பிள்ளை.
	46	-46	ர	4	...	7-2	3	4 94	0 15.0	0 74	256 பி. மனோ கரன் (1) வி. செல்வ சாஜி (2) வி. மோகன் (3).
	47	-47	ர	4	...	7-2	3	4 94	0 15.5	0 56	7 வே. அண்ணா மலை முதலி.
	48	-48	ர	4	...	7-2	3	4 94	0 03.0	0 16	7 வே. அண்ணா மலை முதலி.
	49	-49	ர	4	...	7-2	3	4 94	0 03.0	0 14	7 வே. அண்ணா மலை முதலி.
	50	-50	ர	4	...	7-2	3	4 94	0 03.5	0 16	7 வே. அண்ணா மலை முதலி.
	51	-51	ர	4	...	7-2	3	4 94	0 01.5	0 08	7 வே. அண்ணா மலை முதலி.
	52	-52	ர	4	...	7-2	3	4 94	0 58.5	2 92	7 வே. அண்ணா மலை முதலி.
	53A	-53A	ர	4	...	7-2	3	4 94	0 21.0	1 04	7 வே. அண்ணா மலை முதலி.
	53B	-53B	ர	4	...	7-2	3	4 94	0 20.5	1 02	337 தி. ரோஜி அம்மாள்.
	54	-54	ர	4	...	7-2	3	4 94	0 13.0	0 64	7 வே. அண்ணா மலை முதலி.
	55A	-55A	ர	4	...	7-2	3	4 94	0 14.0	0 70	7 வே. அண்ணா மலை முதலி.
	55B	-55B	ர	4	...	7-2	3	4 94	0 16.5	0 82	7 வே. அண்ணா மலை முதலி.
									6 74.0	24 12	
147	1A	147-1A	ர	4	...	7-2	3	4 94	0 29.5	1 14	118 தி. சண்முக முதலியார்

For SRI TIRUMALA BLUE METALS
 N.R. [Signature] PARTNER
 20/06/2024
 28/06/24



உ. எண்: 119 - சேதம் குறி.

1	2	3	4	5	6	7	8	9	10	11	
								கு. எண்	கு. எண்	கு. எண்	
147	IB	147-IB	σ	4	...	7-3	4	3 85	0 25.5	0 98	28 எ. ஆமராவதி யம்மாள்.
	(IC)	-IC	σ	4	...	7-3	4	3 85	0 65.0	2 50	393 மா. கோசேரி பிள்ளை (1), மாணிக்க முத்தையார் (2).
	ID	-ID	σ	4	...	7-3	4	3 85	0 11.5	0 45	28 எ. ஆமராவதி யம்மாள்.
	2	-2	σ	4	...	7-3	4	3 85	0 04.5	0 19	.....
								4 35.0	5 26		
148	1	148-1	σ	4	...	7-3	4	3 85	0 07.0	0 27	356 கு. பெருமாள் சாமி (1), கு. பாஸ்கர் (2).
	2	-2	σ	4	...	7-3	4	3 85	0 06.5	0 25	149 கோ. சுப்பம் மாள்.
	3	-3	σ	4	...	7-3	4	3 85	0 06.0	0 23	149 கோ. சுப்பம் மாள்.
	4	-4	σ	4	...	7-3	4	3 85	0 08.0	0 31	149 கோ. சுப்பம் மாள்.
	5	-5	σ	4	...	7-3	4	3 85	0 05.0	0 19	356 கு. பெருமாள் சாமி (1), கு. பாஸ்கர் (2).
	6	-6	σ	4	...	7-3	4	3 85	0 04.5	0 17	149 கோ. சுப்பம் மாள்.
	7	-7	σ	4	...	7-3	4	3 85	0 07.5	0 30	256 ப. மனோ சுபன் (1), செல்வராஜ் (2), மோகன் (3).
	8	-8	σ	4	...	7-3	4	3 85	0 06.5	0 25	117 தா. சரோஜினி யம்மாள்.
	9	-9	σ	4	...	7-3	4	3 85	0 12.5	0 48	356 கு. பெருமாள் சாமி (1), கு. பாஸ்கர் (2)
	10	-10	σ	4	...	7-3	4	3 85	0 16.0	0 61	149 கோ. சுப்பம் மாள்.
	11	-11	σ	4	...	7-3	4	3 85	0 13.5	0 51	117 தா. சரோஜினி யம்மாள்.
	12A	-12A	σ	4	...	7-3	4	3 85	0 11.0	0 42	182 பா. திருவேல் கி. முத்தையார்.
	12B	-12B	σ	4	...	7-3	4				182 பா. நல்லியல் முத்தையார்.

28/8/2009
9.11.11

Handwritten signatures and notes in the bottom left corner.

For SRI TIRUMALA BLUE METALS



1	2	3	4	5	6	7	8	9	10	11	
148	13	148-13	சு	4	...	7-3	4	3 85	0 20-0	0 76	178 கு. நகராட்சி மாள்.
	14	-14	சு	4	...	7-3	4	3 85	0 05-5	0 22	117 தா. சரோஜினி யம்மாள்.
	15A	-15A	சு	4	...	7-3	4	3 85	0 03-0	0 12	182 பா. திருவேல் விடமுதலியார்.
	15B	-15B	சு	4	...	7-3	4	3 85	0 02-5	0 10	42 பா. கள்விசயப்ப முதலியார்.
	16	-16	சு	4	...	7-3	4	3 85	0 20-0	0 78	331 ப. ஜெகதம் மாள்.
	17	-17	சு	4	...	7-3	4	3 85	0 11-5	0 44	156 மு. சுந்தரம் மாள்.
	18	-18	சு	4	...	7-3	4	3 85	0 07-5	0 30	356 மு. பெருமாள் சாமி (1), மு. பால்கர் (2).
	19	-19	சு	4	...	7-3	4	3 85	0 09-5	0 36	356 மு. பெருமாள் சாமி (1), மு. பால்கர் (2).
	20	-20	சு	4	...	7-3	4	3 85	0 15-5	0 59	356 மு. பெரு மாள்சாமி (1), மு. பால்கர் (2).
	21	-21	சு	4	...	7-3	4	3 85	0 09-5	0 36	356 மு. பெரு மாள்சாமி (1), மு. பால்கர் (2).
	22	-22	சு	4	...	7-3	4	3 85	0 08-0	0 31	356 மு. பெரு மாள்சாமி (1), மு. பால்கர் (2).
	23	-23	சு	4	...	7-3	4	3 85	0 03-0	0 11	356 மு. பெரு மாள்சாமி (1), மு. பால்கர் (2).
	24	-24	சு	4	...	7-3	4	3 85	0 03-0	0 12	356 மு. பெரு மாள்சாமி (1), மு. பால்கர் (2).
	25	-25	சு	4	...	7-3	4	3 85	0 07-0	0 27	356 மு. பெரு மாள்சாமி (1), மு. பால்கர் (2).
	26	-26	சு	4	...	7-3	4	3 85	0 05-5	0 22	256 ப. மனோக ரன் (1), செல்வராஜ் (2), மோகன் (3).
	27	-27	சு	4	...	7-3	4	3 85	0 05-5	0 20	256 ப. மனோக ரன் (1), செல்வராஜ் (2), மோகன் (3).

For ORI TIRUMALA BLUE METALS
 N. D. [Signature]
 திருவள்ளூர் தொகுப்புகள்
 18/10/2018



கி. எண். 119, கோதல்புரம்.

1	2	3	4	5	6	7	8	9	10	11	12	
148	28	148-28	ர	4	...	7-3	4	3 85	0 05.5	0 20	149 கோ. கம்பவர் மார்.	
	29	-29	ர	4	...	7-3	4	3 85	0 17.0	0 66	256 ப. மனோக ரன் (1), செல்வராஜ் (2), மோகன் (3).	
	30	-30	ர	4	...	7-3	4	3 85	0 17.5	0 67	294 பி. முனி யாண்டி (1), பிச்சாண்டி (2).	
	31	-31	ர	4	...	7-3	4	3 85	0 71.5	2 76	33 ரா. கணபதி முதலியார்.	
	32A	-32A	ர	4	...	7-3	4	3 85	0 03.0	0 12	42 பா. கன்னியப்ப முதலியார்.	பிணறு
	32B	-32B	ர	4	...	7-3	4	3 85	0 02.5	0 10	182 பா. திருவேங் கிட முதலியார்.	பிணறு
	33A	-33A	ர	4	...	7-3	4	3 85	0 06.0	0 24	363 கோ. வெங்க டேசு முதலியார் (1), கோ. நடராஜ முதலியார் (2).	
	33B1	-33B1	ர	4	...	7-3	4	3 85	0 13.0	0 50	42 பா. கன்னியப்ப முதலியார்.	
	33B2	-33B2	ர	4	...	7-3	4	3 85	0 13.5	0 52	299 பா. திருவேங் கிடமுதலி யார் (1) பா. கன்னியப் முதலியார் (2).	
	34	-34	ர	4	...	7-3	4	3 85	0 09.0	0 34	182 பா. திருவேங் கிடமுதலியார்.	
	35	-35	ர	4	...	7-3	4	3 85	0 12.0	0 47	182 பா. திருவேங் கிடமுதலியார்.	
	36	-36	ர	4	...	7-3	4	3 85	0 15.0	0 58	363 கோ. வெங்க டேசுமுதலி யார் (1), கோ. நடராஜ முதலியார் (2).	
	37	-37	ர	4	...	7-3	4	3 85	0 14.0	0 53	363 கோ. வெங்க டேசுமுதலி யார் (1), கோ. நடராஜ முதலியார் (2).	
	38A	-38A	ர	4	...	7-3	4	3 85	0 26.0	1 00	6 ஏ. அஞ்சனி தேவி.	
	38B	-38B	ர	4	...	7-3	4	3 85	0 13.5	0 51	451 நா. ராமு முதலியார் யற்றும் நான்கு பேர்களும்.	

For SRI TIRUMALA BLUE METALS
PARTNER



1	2	3	4	5	6	7	8	9	10		
148	39A	148-39A	ர	4	...	7-3	4	3 85	0 58.0	2 26	330 மா. ஜெகநாத முதலியார்.
	39B1	-39B1	ர	4	...	7-3	4	3 85	0 01.5	0 06	330 மா. ஜெகநாத முதலியார்.
	39B2	-39B1	ர	4	...	7-3	4	3 85	0 60.0	2 23	256 ப. மனோகரன் (1), வி. செல்வராஜ் (2) வி.மோகன் (3).
									6 10.0	23 42	
149	①	149-1	ர	4	...	7-3	4	3 85	0 43.5	1 67	408 கோவேரி பிள்ளை (ர) வெங்கடாசலப் பிள்ளை (1), வெங்கடேச பிள்ளை (2), கோபால் பிள்ளை (3).
	②	-2	ர	4	...	7-3	4	3 85	0 45.0	1 73	256 ப. மனோகர பிள்ளை (1), வி. செல்வராஜ் (2), வி. மோகன் (3)
	3A	-3A	ர	4	...	7-3	4	3 85	0 25.5	0 98	335 மா. ஜெயராம கவுண்டர்.
	3B	-3B	ர	4	...	7-3	4	3 85	0 37.5	1 45	256 ப. மனோகர பிள்ளை (1), வி. செல்வராஜ் (2), வி. மோகன்(3).
									1 51.5	5 83	
150	①	150-1	ர	4	...	7-3	4	3 85	0 75.5	2 91	256 ப. மனோகர பிள்ளை (1), வி. செல்வராஜ் (2), வி. மோகன் (3).
	2	-2	ர	4	...	7-3	4	3 85	0 75.5	2 92	335 மா. ஜெயராம கவுண்டர்.
	3A	-3A	ர	4	...	7-3	4	3 85	0 48.0	1 86	264 ச. முனிசாமி கவுண்டர்.
	3B	-3B	ர	4	...	7-3	4	3 85	0 54.0	2 08	261 தா. மானிக்க கவுண்டர்.
	4A	-4A	ர	4	...	7-3	4	3 85	0 54.0	2 08	148 மர. கம்பீர மணி.

For SRI PROMAJA BLUE METALS

N.R.L. PARTNER

[Handwritten signatures and notes]

14

14

15

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16



1 2 3 4 5 6 7 8 // 9 10 11 12
5

148	27B	148	J	4	...	7.3	4	3.85	0.30.0	1.12	256.11. 08.00.00	BA
	2A	3982										
	39B	148	P	4	...	7.3	4	3.85	0.30.0	1.11	284.11. 10.00.00	BA
	2B	3982							0.60.0	2.23		P.

149	1A	149-1	J	4	...	7.3	4	3.85	0.22.0	0.84	256.11. 08.00.00	BA
		UR										
	1B	149-1	J	4	...	7.3	4	3.85	0.21.5	0.83	284.11. 10.00.00	BA
		UR							0.43.5	1.67		P.

149	2A	149-2	J	4	...	7.3	4	3.85	0.21.0	0.80	256.11. 08.00.00	BA
		UR										
	2B	149-2	J	4	...	7.3	4	3.85	0.24.0	0.93	284.11. 10.00.00	BA
		UR							0.45.0	1.73		P.

AS PER T6 BA/767/1424 DT: 13.2.2020

150	4A1	350	J	4	...	7.3	4	3.85	0.36.5	1.20	201 1488 08.00.00	BA
		4A00							0.0344	0.30	6908.10.00.00	BA
	4A2	"	"	"	"	"	"	"	0.60.0	2.31		P.

AS PER T6 BA/39/1430 dt: 17.7.2020

25.2.2020
Sri Tirumala

150	1A	150	J	4	...	7.3	4	3.85	0.39.00	1.50	406.08. 08.00.00	BA
		1A1T							0.36.50	1.41	713.08.00.00	BA
	"	"	"	"	"	"	"	"	0.75.50	2.71	406.08. 08.00.00	BA

(Handwritten signature)
Sri Tirumala Blue Metals

For SRI TIRUMALA BLUE METALS
N.R. [Signature]
PARTIAL



GOVERNMENT OF TAMILNADU
Department Of Registration

FORM C

See Rule 2(a)

Certificate of Registration of Firm

THE REGISTER OF FIRMS, KANCHIPURAM hereby acknowledges the receipts of Statements Prescribed by Section 58(1) of the INDIAN PARTNERSHIP ACT 1932.

The Statements has been filed and the name of the firm.

“SRI TIRUMALA BLUE METALS”

has been entered in the Register of Firms as No 13/2018 of KANCHIPURAM REGISTRATION DISTRICT

DATED THE 1ST DAY OF FEBRUARY 2018.

District Registrar's Office
Kanchipuram.



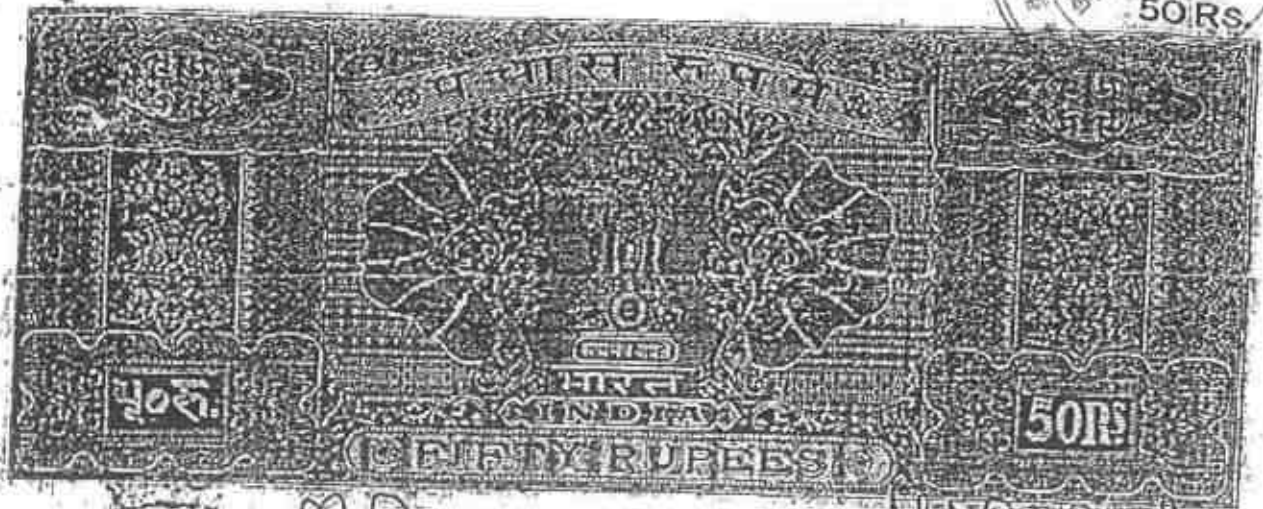
Handwritten signature and date
REGISTRAR OF FIRMS
Firm Kanchipuram
01/02/18



For SRI TIRUMALA BLUE METALS

Handwritten signature

PARTNER



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Handwritten signature and text in Tamil script.

SRI THIRUMALA BLUE METALS,
NO.114, VADAKALPAKKAH, CHEYYAR TALUK, THIRUVARNAHALAI DISTRICT.

DEED OF PARTNERSHIP

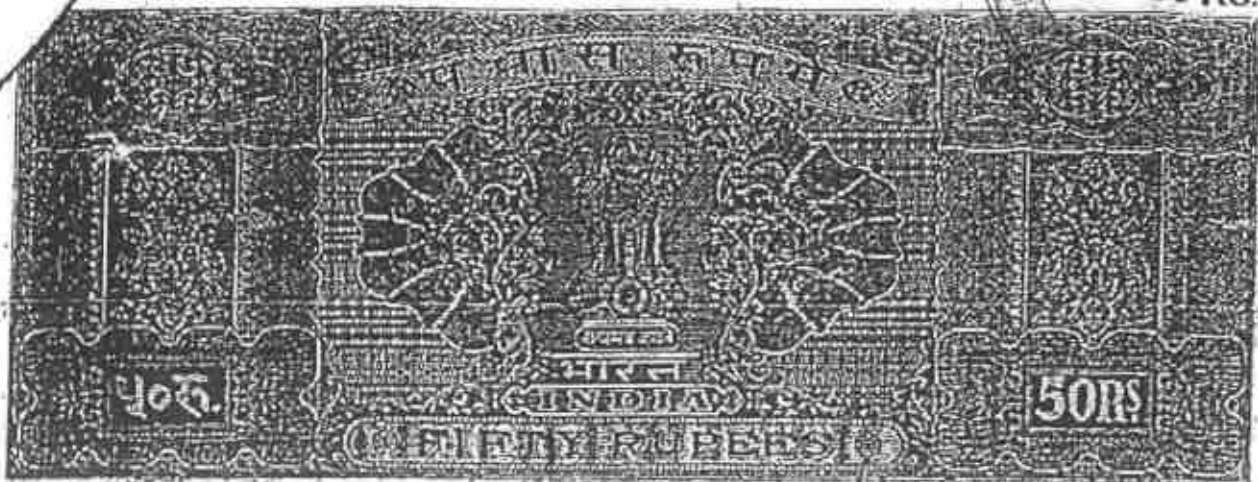
This Deed of Partnership is executed today this 14th day of May 2003 at Kancheepuram between,

1. N.R. ANANTHA BABU, S/O. N.M. RAMAMOORTHY, Hindu, aged 20 Years, residing at No.90, Ottakkothar Street, Mamallan Nagar, Kancheepuram, hereinafter called the First Partner,
2. N.R. MUBUNTHA BABU, S/O. N.M. RAMAMOORTHY, Hindu, aged 27 Years, residing at No.90, Ottakkothar Street, Mamallan Nagar, Kancheepuram, hereinafter called the Second Partner,
3. N.R. HARI BABU, S/O. N.R. M. RAGHAVAN, Hindu, aged 20 Years, residing at Palla Street, Thenneri Village & Post, Kancheepuram District, hereinafter called the Third Partner and,
4. N.R. RAJ BABU, S/O. N.R. M. RAGHAVAN, Hindu, aged 18 Years (completed), residing at Palla Street, Thenneri Village & Post, Kancheepuram District, hereinafter called the Fourth Partner,

Handwritten signatures of N.R. Anantha Babu and N.R. Mubuntha Babu.

Handwritten signatures of N.R. Hari Babu and N.R. Raj Babu.

For SRI THIRUMALA BLUE METALS
N. R. Anantha Babu
PARTNER



வசதிதொரிய தொலைவின
உடனொருங்கின

வசதிதொரிய தொலைவின
உடனொருங்கின
R. C. No. 7383/74

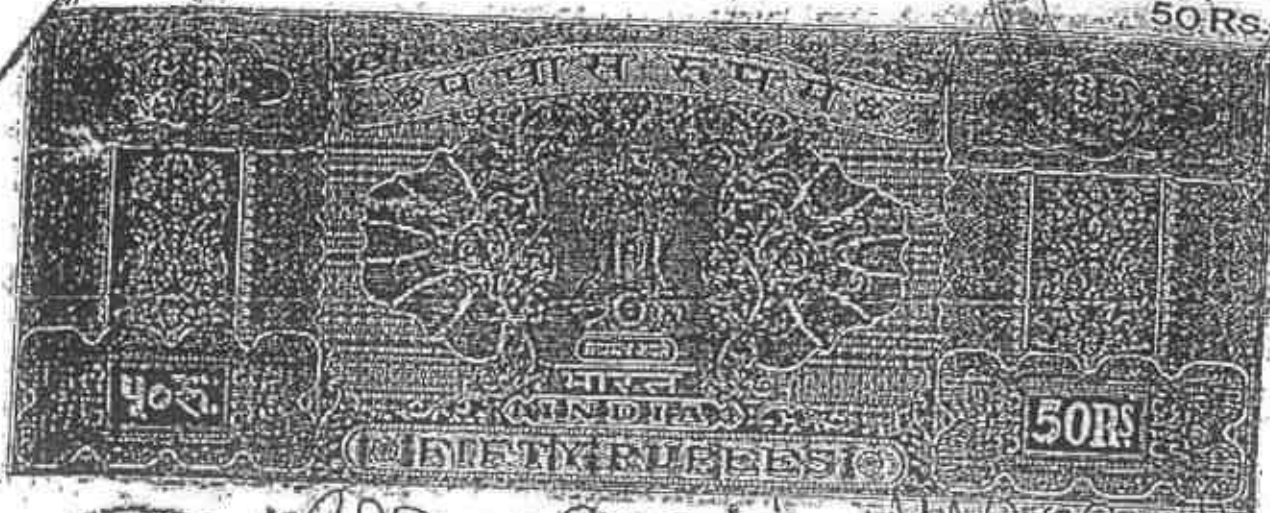
WHEREAS, the above Four Partners have commenced business in Blue Metals by establishing a crushing unit at No. 114, Vadakalpakkam, Cheyyar Taluk, Thiruvannamalai District, under partnership since they have already practical experience in this field and

WHEREAS, it was mutually agreed that the terms of partnership shall be reduced in writing, this deed of partnership is executed as follows :-

1. NAME:- The name of the Partnership business shall be "SRI TIRUMALA BLUE METALS"
2. ADDRESS:- The Registered Office of the Firm and the Unit of the Crusher shall be at No. 114, Vadakalpakkam, Cheyyar Taluk, Thiruvannamalai District. (Survey Nos. 204/2B/1, 204/2B/2, 204/2C/1, 204/2C/2, 204/3, 204/17) The Partners may change the place or open a Branch/es for the convenience of the business of the Firm.

1. N.R. [Signature] 3. N.P. [Signature]
2. [Signature] 4. A.R. [Signature]

For SRI TIRUMALA BLUE METALS
N.R. [Signature]
PARTNER



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Handwritten signature and text in Devanagari script, including a reference number: R.C.No: 7383/17

3. **BUSINESS:** The Firm shall establish one crushing of Blue Metal unit and sale of Blue Metals. It may commence or carry on such other allied and connected business and such other business or businesses as the partners may decide from time to time, by passing a necessary resolution to the that effect.

4. **CAPITAL:** The Capital of the Firm shall be Rs.2,00,000/- (Rupees Two Lakhs only) to be contributed by the Partners as follows:-

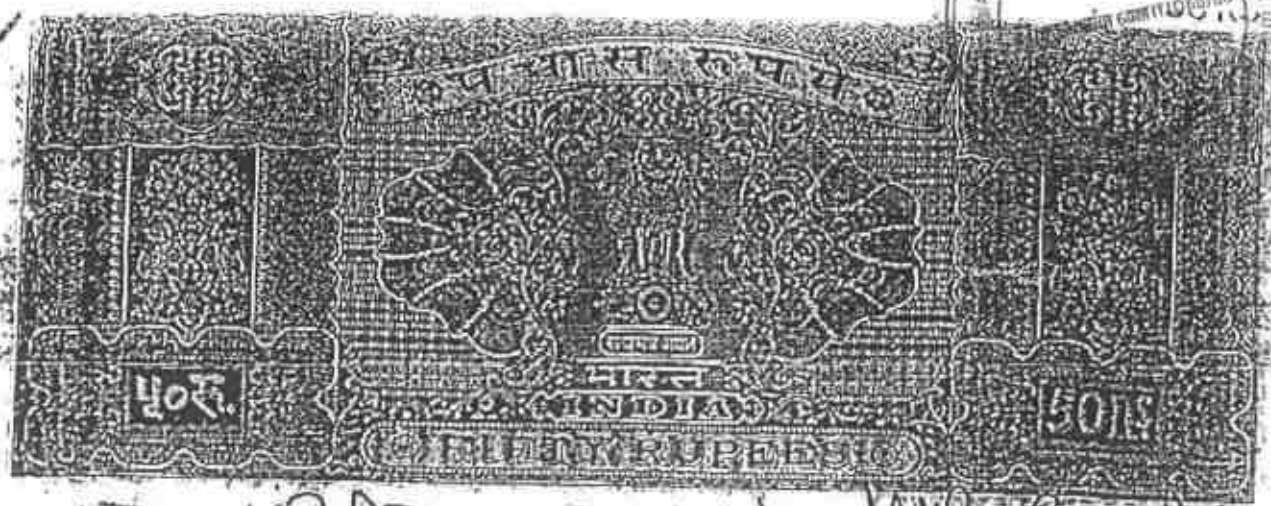
1. N.R. ANANTHA BABU	Rs. 50,000/-
2. N.R. MUGUNTHA BABU	Rs. 50,000/-
3. N.R. HARI BABU	Rs. 50,000/-
4. N.R. RAJ BABU	Rs. 50,000/-
Total Rs.2,00,000/-	

This capital is fixed and it shall carry an interest of 12% p.a. For the purpose of claiming interest on capital the credit balance in the current account of the partners shall also be considered.

Handwritten signatures of the partners:
 1. N.R. Anantha Babu 3. N.R. Hari Babu
 2. N.R. Muguntha Babu 4. N.R. Raj Babu

For SRI TIRUMALA BLUE METALS
 N.R. A. PARTNER

175
 2003
 11



Dr. P. Srinivasulu Reddy
 All work under

Dr. P. Srinivasulu Reddy
 Chartered Accountant,
 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100
 R. C. No. 7353

5. BOOKS OF ACCOUNTS:- The books of accounts shall be kept at the administrative office of the Firm and they shall be closed on 31st March of each year and the Balance Sheet and Profit and Loss Account shall be drawn.

6. PROFIT AND LOSS RATIO:- The profit or losses shall be divided by the Partners to benefit of the Partnership in the following ratios:-

	PROFIT	LOSS
1. N.R. ANANTHA BABU	25%	25%
2. N.R. MUGUNTHA DABU	25%	25%
3. N.R. HARI DABU	25%	25%
4. N.R. RAJ DABU	25%	25%
	100%	100%

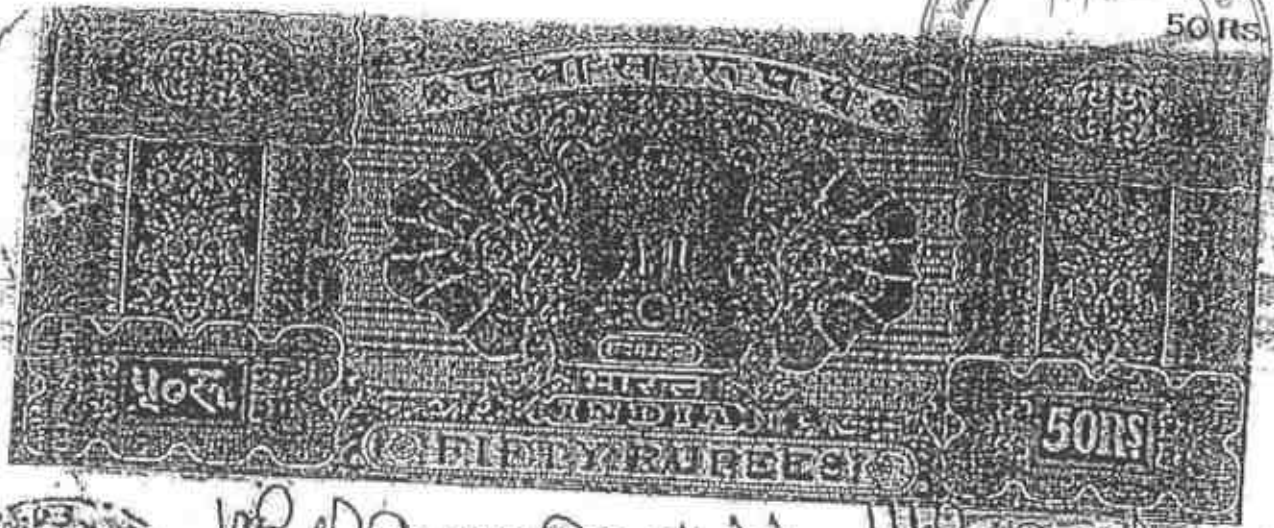
7. DURATION:- The Partnership shall be "AT WILL". It shall be effective from 14.05.2003.

8. BANK ACCOUNT:- The Bank Account of the Firm shall be operated by Mr. N.R. Anantha Babu, who shall be designated as Managing Partner of the Firm.

1. N.R. Anantha Babu
 2. N.R. Muguntha Dabu
 3. N.R. Hari Dabu
 4. N.R. Raj Dabu

For SRI TRIMALA DIAMETALS
 N.R. Anantha Babu
 PARTNER

172 50RS



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Handwritten signatures and notes in Tamil script.

10. ACCOUNTING YEAR:- Financial Year shall be accounting year of the Partnership Business (April to March). The current accounting year ends 31st March 2004 and thereafter on every 31st March.

11. LOANS:- The Partners on behalf of the Firm can raise loans from Banks, Private persons or Financial Institution etc. The Firm however is not responsible for the individual debts of the Partners.

12. RETIREMENT:- Any partner desirous of retiring from the partnership shall give six clear calendar months notice in writing to the other partners and the accounts of the outgoing partner shall be settled in full at the time of his leaving the partnership. The other partners shall be at liberty to carry on the business of the Firm.

13. GOODWILL:- No retiring partner shall have the right to claim any share in the Goodwill of the Firm and that no adjustment as to Goodwill shall be made in the dissolution of the Firm.

- 1. N.R. [Signature]
- 2. N.R. [Signature]
- 3. N.R. [Signature]
- 4. N.R. [Signature]

For SRI TRIMALA BLUE METALS
N.R. [Signature]
PARTNER

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TAMIL NADU ELECTRICITY BOARD
TIRUVANNAMALAI Electricity Distribution Circle

From



To

Tr./Tmt. SRI THIRUMALA BLUE METALS

Appl.No :2580922643

Appl.Type :DCW-Works/LT

Distrib :

Adds : No.119,Mananallur Village

,Vembakkam Tk,Sf.No.148/3

8a,148/38b,156/1,156/4

LR.NO.AE/JE/O&M/ /F.App.Tracking/D.No /20 DATED: _____

Dear Sir / Madam,

Sub: Eley -TIRUVANNAMALAI.Eley.Distn.Circle - Application for
DCW-Works/LT ♦Demand Issued - Payment Requested-Reg.

You are informed that your application No 2580922643 Dated 15-09-2022 towards DCW-Works/LT in distribution of MAMANDUR section has already been sanctioned on 20-09-2022. Your are requested to pay an additional amount of Rs.24961/- before 05-10-2022 without fail to proceed further.

Account Code	Amount(Rs.)
46941-CGST	1903.77.00
46942-SGST	1903.77.00
61960-Labour Charges	21153.00
62948-Rounding Off	.46.00
Total	24961.00

(Rupees Twenty Four Thousand Nine Hundred And Sixty One Only)

Yours faithfully,

TAMIL NADU ELECTRICITY BOARD

ACKNOWLEDGEMENT

RECEIVED A DEMAND NOTICE for the Application no 2580922643 towards
DCW-Works/LT in distribution of MAMANDUR Section.

For SRI THIRUMALA BLUE METALS
N.R. Anand
PARTNER

DEMAND AMOUNT : Rs.24961/-

DUE DATE : 05-10-2022

தமிழ்நாடு மின் உற்பத்தி மற்றும் பகிர்மானக் கழகம்

சென்னை மின் பகிர்மான வட்டம் / தெற்கு - I

மின் கட்டண ஓசீது

SRI THIRUMALA BLUE METALS
வரிசை எண்.: 1913014

09B400C

மின்.இ.எண்.: 258-09/22-643 கட்டண விகிதம்:

இரசீது எண்.: VMT258IA1D1345 22-09-2022:4:25:31

வ.எண்.	கட்டண விவரம்	தொகை (ரூ.)
	GST Applicable Charges ;SAC Code:998631	
61950	Labour Charges	21153
46941	CGST @ 9%	1903.77
46942	SGST @ 9%	1903.77
62948	Rounding Off	0.46
	Total	24981/-



தொகை (எழுத்தால்) Twenty Four Thousand Nine Hundred And Sixty One Only by DD

இதர விவரங்கள்: Cheque/DD No.:144266 Date:21/09/2022 Amount:24961/- Bank:IB

5 (i) Support services are taxable under GST

1. TANGEDCO CIN No. : U40109TN2009SGC073746

2. TANGEDCO GST No. : 33AADCT4784E1ZC

3. HSN CODE : 27160000

4. SAC CODE : 996912

5. ELECTRICAL ENERGY

EXEMPTED UNDER GST

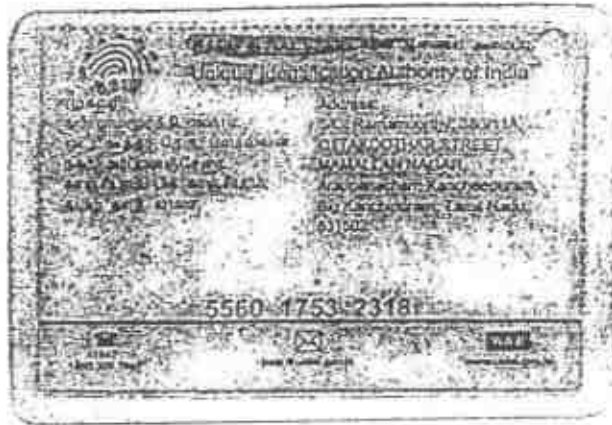
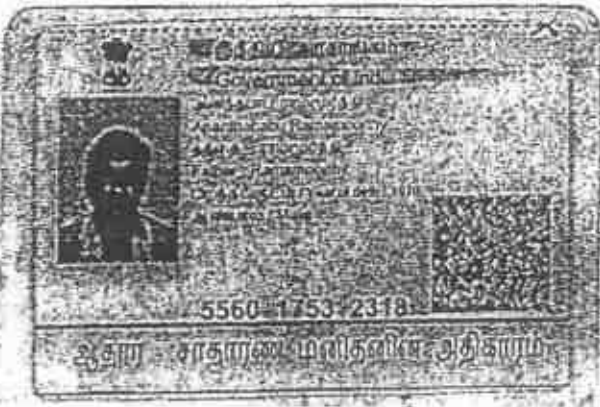
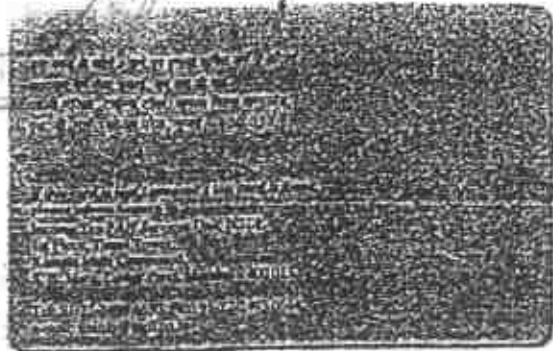


RECEIVED

கணக்கீட்டாளர் / கண்காணிப்பாளர்

உருபம் மேற்பார்வையாளர்





For SRI TIRUMALA BLUE METALS
N. D. A. S. D.
PARTNER

ANNEXURE X

CHETTINAD CEMENT CORPORATION LTD.,

(Regd. Office: RANI SEETHAI HALL BUILDING IV & V FLOORS 503, ANNA SALAI, MADRAS-600006.)

21144
PHONE 22744 | KARUR
TELE: 21745
GRAM 'CEMENT' Palour C.F.
Telex: 0456-215.
STD Code: 0434



All Correspondences to
Kumarajah Muthiah Nagar,
PHILYUR CEMENT FACTORY POST 629114
(Karur Taluk Trichy Dist.)

T. RAJU., B.E.,
MINES MANAGER & DY. GENERAL MANAGER.

22nd September, 1987.

CERTIFICATE.

This is to certify that Mr. C. Natarajan has been working as a Geologist from 14-12-1979 to till date. He has been incharge of supervision of day to day functions in respect of Exploration, Preparation of Geological Plans & Sections, Preparation of Mines Plans, and Quality control and other allied mining activities in the following Pits of our Seethainagar Limestone Mines in Anna District.

<u>Name of the Pit.</u>	<u>Average Raising/day.</u>
1. Alembadi Pit.	- 1,700 T.
2. Mallapuram Pit.	- 900 T.
3. Karikkali Pit.	- 150 T.

Total.	- 2,750 T.

He has got nearly eight years of total experience in our Mines in the above supervisory capacity.

for CHETTINAD CEMENT CORPORATION LTD.,

T. Raju

(T. RAJU).

Mines Manager & Dy. General Manager.

For SRI TIRUMALA BLUE METALS

N. R. S. R.

PARTNER



Faculty of Science

The Senate of the Annaamalai University hereby makes known that Mr. Subbaraja has been admitted to the Degree of Master of Science (by Examination) in Zoology, he having been certified by duly appointed Examiners at the examination held in April, 1976, to be qualified to receive the same and that he was placed in the Second Class.

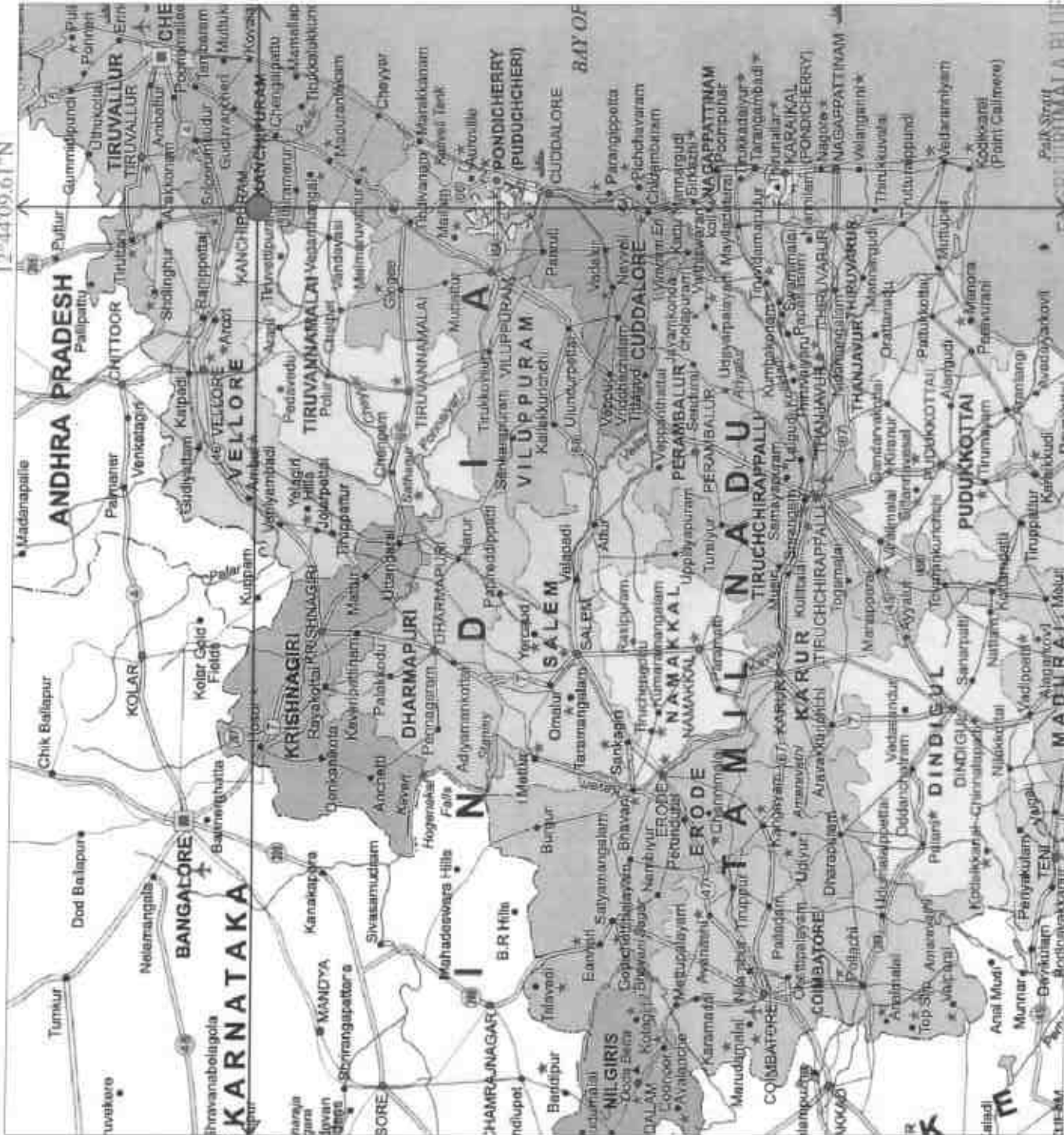
Given under the seal of the University.

For SRI TIRUMALA BLUE METALS
N.R. [Signature]

PARTNER
N. Chandrasekh
V. [Signature]

Annaamalai University

12°44'09.61"N



79°42'40.25"E

12°44'58.99"N

79°42'40.25"E

PARTNER

PLATE NO: I

DATE OF SURVEY : 10.07.2007

APPLICANT:

TLSRU TIRUMALA BLUE METALS
NO.90, OTTAKOOTHAR STREET,
MAMALLAN NAGAR,
KANCHIPURAM DISTRICT.

QUARRY LEASE APPINED AREA

S.F.NOS : 148/16, 148/17, 148/18, 148/19,
148/20, 148/21, 148/22, 148/23,
148/24, 148/25, 148/38A, 148/39A1
146/39B, 146/46, 148/1, 148/10,
148/2, 148/26, 148/27, 148/28,
148/29, 148/3, 148/30, 148/39A2,
148/39B2A, 148/39B1, 148/4, 148/5
148/6, 148/7, 148/9, 149/1A, 149/2,
& 150/1A.

EXTENT : 4.44.35 Hq.

VILLAGE : MENALLUR.

TALUK : VEMBAKKAM.

DISTRICT : TIRUVANNAMALAI.

INDEX

Q. L. A. AREA : ●

TOPO SHEET NO : 57 P / 10

LATITUDE : 12°43'58.99"N to 12°44'09.61"N

LONGITUDE : 79°42'32.68"E to 79°42'40.25"E

LOCATION PLAN

NOT TO SCALE

PREPARED BY :

THIS IS TO CERTIFY THAT THE INFORMATION
IN THIS PLATE IS TRUE AND CORRECT TO
THE BEST OF MY KNOWLEDGE BASED UPON
THE LEASE MAP AUTHENTICATED BY STATE
GOVERNMENT.

C. Natarajan
C. NATARAJAN, M.Sc., M.Phil.,
QUALIFIED PERSON

79°42'32.68"E

12°44'58.99"N

79°42'40.25"E

PARTNER

79°42'32.68"E

12°44'58.99"N

79°42'40.25"E

PARTNER

PLATE NO: 1A
DATE OF SURVEY : 10.09.2022



APPLICANT:

T.V. SRI TIRUMALA BLUE METALS
NO.90, OTTAKOOTHAR STREET,
MAMALLAN NAGAR,
KANCHIPURAM DISTRICT.

QUARRY LEASE APPLIED AREA:

S.F.NOS : 148/16, 148/17, 148/18, 148/19,
148/20, 148/21, 148/22, 148/23,
148/24, 148/25, 148/38A, 148/39A1,
146/39B, 146/46, 148/1, 148/10,
148/2, 148/26, 148/27, 148/28,
148/29, 148/3, 148/30, 148/39A2,
148/39B2A, 148/39B1, 148/4, 148/5,
148/6, 148/7, 148/9, 149/1A, 149/2A
& 150/1A,

EXTENT : 4.44.35 Ha,
VILLAGE : MENALLUR,
TALUK : VEMBAKKAM,
DISTRICT : TIRUVANNAMALAI.

INDEX

TOPO SHEET NO : 57 P/ 10

LATITUDE : 12°43'58.99"N to 12°44'09.61"N

LONGITUDE : 79°42'32.68"E to 79°42'40.25"E

Q.L.APPLIED AREA	
500M RADIUS	
1KM RADIUS	
APPROACH ROAD	
PANCHAYAT ROAD	
ODAI	
BARREN LAND	
TREES	
SEASONAL AGRICULTURE	
HABITATIONS	
QUARRY PIT	
TANK	

LAND USE PATTERN

DESCRIPTION	AREA IN (%)
ROAD	05
TREES	10
BARREN LAND	40
AGRICULTURE LAND	20
HABITATIONS	10
WATER BODIES	15

ENVIRONMENTAL PLAN

SCALE 1: 10,000

PREPARED BY :
THIS IS TO CERTIFY THAT THE INFORMATION
IN THIS PLATE IS TRUE AND CORRECT TO
THE BEST OF MY KNOWLEDGE BASED UPON
THE LEASE MAP AUTHENTICATED BY STATE
GOVERNMENT

C. NATARAJAN, M.Sc, M.Phil.
QUALIFIED PERSON

For SRI TIRUMALA BLUE METALS
N.R. [Signature]
PARTNER



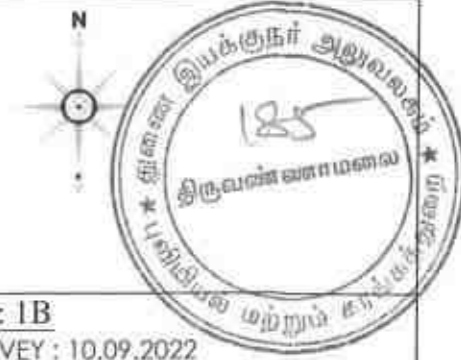


PLATE NO: 1B
DATE OF SURVEY : 10.09.2022

APPLICANT:
 Tvl.SRI TIRUMALA BLUE METALS,
 NO.90, OTTAKOOTHAR STREET,
 MAMALLAN NAGAR,
 KANCHIPURAM DISTRICT.

QUARRY LEASE APPLIED AREA:
 S.F.NOS : 148/16, 148/17, 148/18, 148/19,
 148/20, 148/21, 148/22, 148/23,
 148/24, 148/25, 148/38A, 148/39A1,
 146/39B, 146/46, 148/1, 148/10,
 148/2, 148/26, 148/27, 148/28,
 148/29, 148/3, 148/30, 148/39A2,
 148/39B2A, 148/39B1, 148/4, 148/5,
 148/6, 148/7, 148/9, 149/1A, 149/2A
 & 150/1A,
 EXTENT : 4.44.35 Ha,
 VILLAGE : MENALLUR,
 TALUK : VEMBAKKAM,
 DISTRICT : TIRUVANNAMALAI.

INDEX
 TOPO SHEET NO : 57 P/ 10
 LATITUDE : 12°43'58.99"N to 12°44'09.61"N
 LONGITUDE : 79°42'32.68"E to 79°42'40.25"E

Q.L.APPLIED AREA	
500M RADIUS	
1KM RADIUS	
APPROACH ROAD	
PANCHAYAT ROAD	

SATELLITE IMAGERY MAP
 SCALE 1: 10,000

PREPARED BY :
 THIS IS TO CERTIFY THAT THE INFORMATION
 IN THIS PLATE IS TRUE AND CORRECT TO
 THE BEST OF MY KNOWLEDGE BASED UPON
 THE LEASE MAP AUTHENTICATED BY STATE
 GOVERNMENT

C. NATARAJAN, M.Sc, M.Phil.,
 QUALIFIED PERSON

For SRI TIRUMALA BLUE METALS

 PARTNER



APPLICANT:

T.V. SRI TIRUMALA BLUE METALS,
NO.90, OTTAKOOTHAR STREET,
MAMALLAN NAGAR,
KANCHIPURAM DISTRICT.

QUARRY LEASE APPLIED AREA:

S.F.NOS : 148/16, 148/17, 148/18, 148/19,
148/20, 148/21, 148/22, 148/23,
148/24, 148/25, 148/38A, 148/39A1,
146/39B, 146/46, 148/1, 148/10,
148/2, 148/26, 148/27, 148/28,
148/29, 148/3, 148/30, 148/39A2,
148/39B2A, 148/39B1, 148/4, 148/5,
148/6, 148/7, 148/9, 149/1A, 149/2A
& 150/1A,

EXTENT : 4.44.35 Ha.
VILLAGE : MENALLUR,
TALUK : VEMBAKKAM,
DISTRICT : TIRUVANNAMALAI.

INDEX

TOPO SHEET NO : 57 P / 10

LATITUDE : 12°43'58.99"N to 12°44'09.61"N

LONGITUDE : 79°42'32.68"E to 79°42'40.25"E

Q.L.APPLIED AREA

10KM RADIOUS

CONVENTIONAL SYMBOLS	
Water bodies	Blue
Highways	Double line
Roads	Single line
Railways	Black line with cross-ticks
Boundaries	Dashed line
Contours	Brown line
Spot heights	Black dot
Buildings	Black rectangle
Vegetation	Green shading
Open spaces	White
...	...

TOPO SKETCH OF QUARRY LEASE

APPLIED AREA FOR

10Km RADIUS

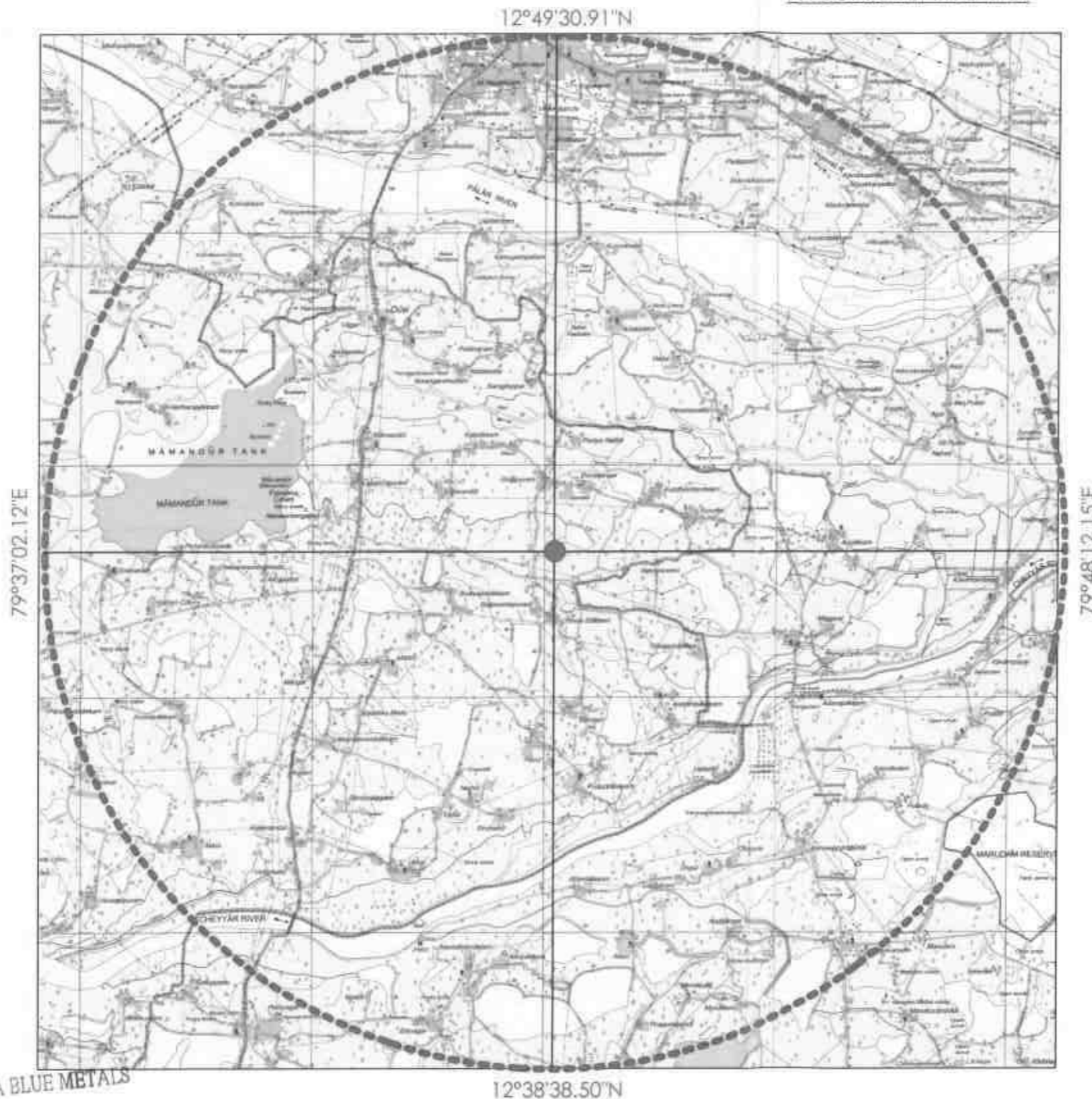
SCALE- 1:100000

THIS IS TO CERTIFY THAT THE INFORMATION
IN THIS PLATE IS TRUE AND CORRECT TO
THE BEST OF MY KNOWLEDGE BASED UPON
THE LEASE MAP AUTHENTICATED BY STATE
GOVERNMENT

C. Natarajan
C. NATARAJAN, M.Sc, M.Phil.,
QUALIFIED PERSON

PLATE NO-1C

DATE OF SURVEY : 10.09.2022



For SRI TIRUMALA BLUE METALS
N.R. Subbaraj
PARTNER

KEY PLAN

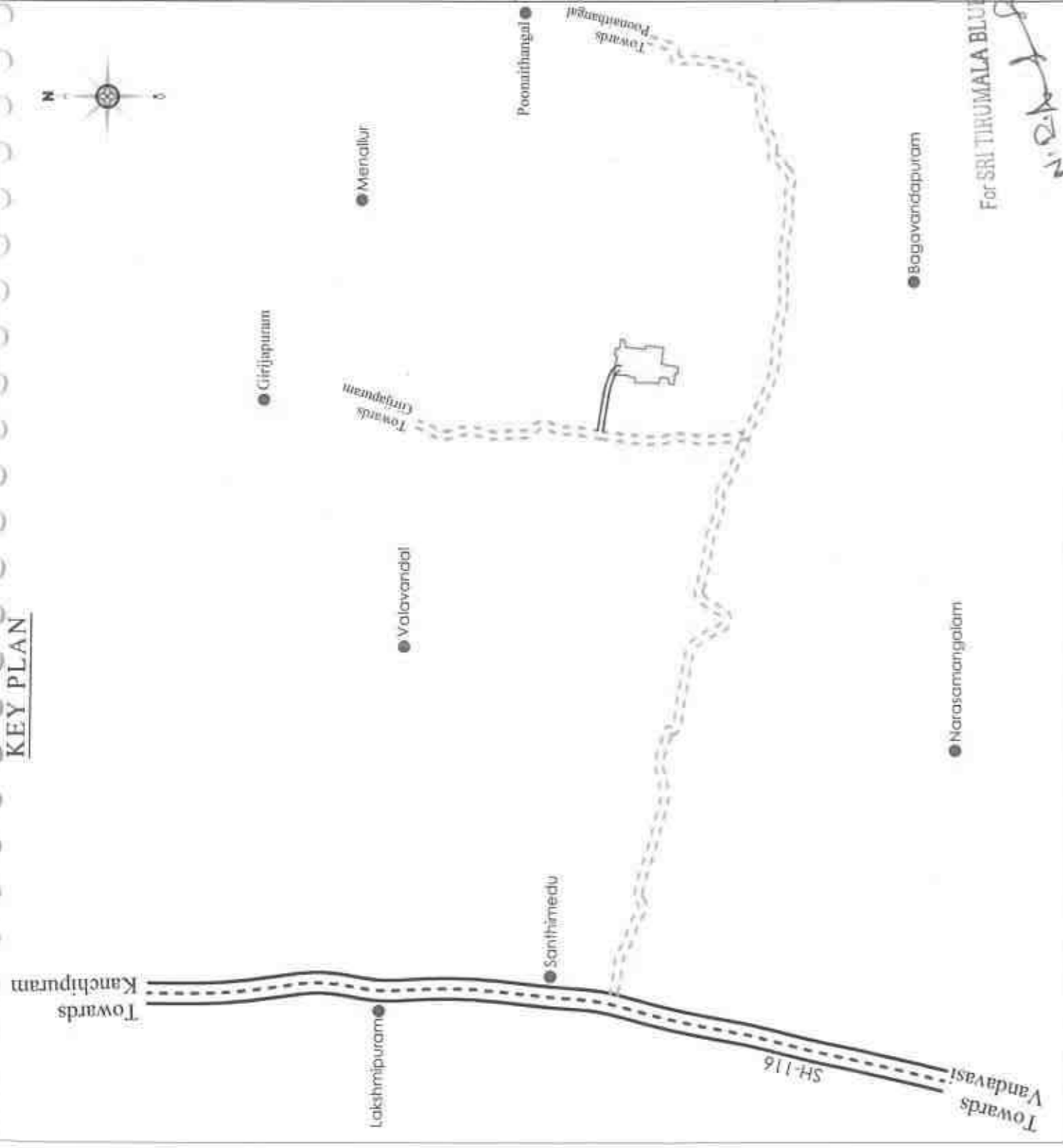


PLATE NO:ID
DATE OF SURVEY : 10.09.2022

APPLICANT:

T/s SRI TIRUMALA BLUE METALS
NO.90, OTTAKOOTHAR STREET,
MAMALLAN NAGAR,
KANCHIPURAM DISTRICT

QUARRY LEASE APPLIED AREA:

S.F.NOS : 148/16, 148/17, 148/18, 148/19,
148/20, 148/21, 148/22, 148/23, 148/24,
148/25, 148/26, 148/27, 148/28, 148/29,
146/39B, 146/46, 148/1, 148/10,
148/2, 148/26, 148/27, 148/28,
148/29, 148/3, 148/30, 148/39A2,
148/39B2A, 148/39B1, 148/4, 148/5,
148/6, 148/7, 148/9, 149/1A, 149/2A
& 150/1A.

EXTENT : 4.44.35 Ha.
VILLAGE : MENALLUR,
TALUK : VEMBAKKAM,
DISTRICT : TIRUVANNAMALAI.

INDEX

- Q.L-APPLIED AREA
- APPROACH ROAD
- PANCHAYAT ROAD
- STATE HIGHWAY
- HABITATIONS

KEY PLAN

Not To Scale

PREPARED BY:

THIS IS TO CERTIFY THAT THE INFORMATION
IN THIS PLATE IS TRUE AND CORRECT TO
THE BEST OF MY KNOWLEDGE BASED UPON
THE LEASE MAP AUTHENTICATED BY STATE

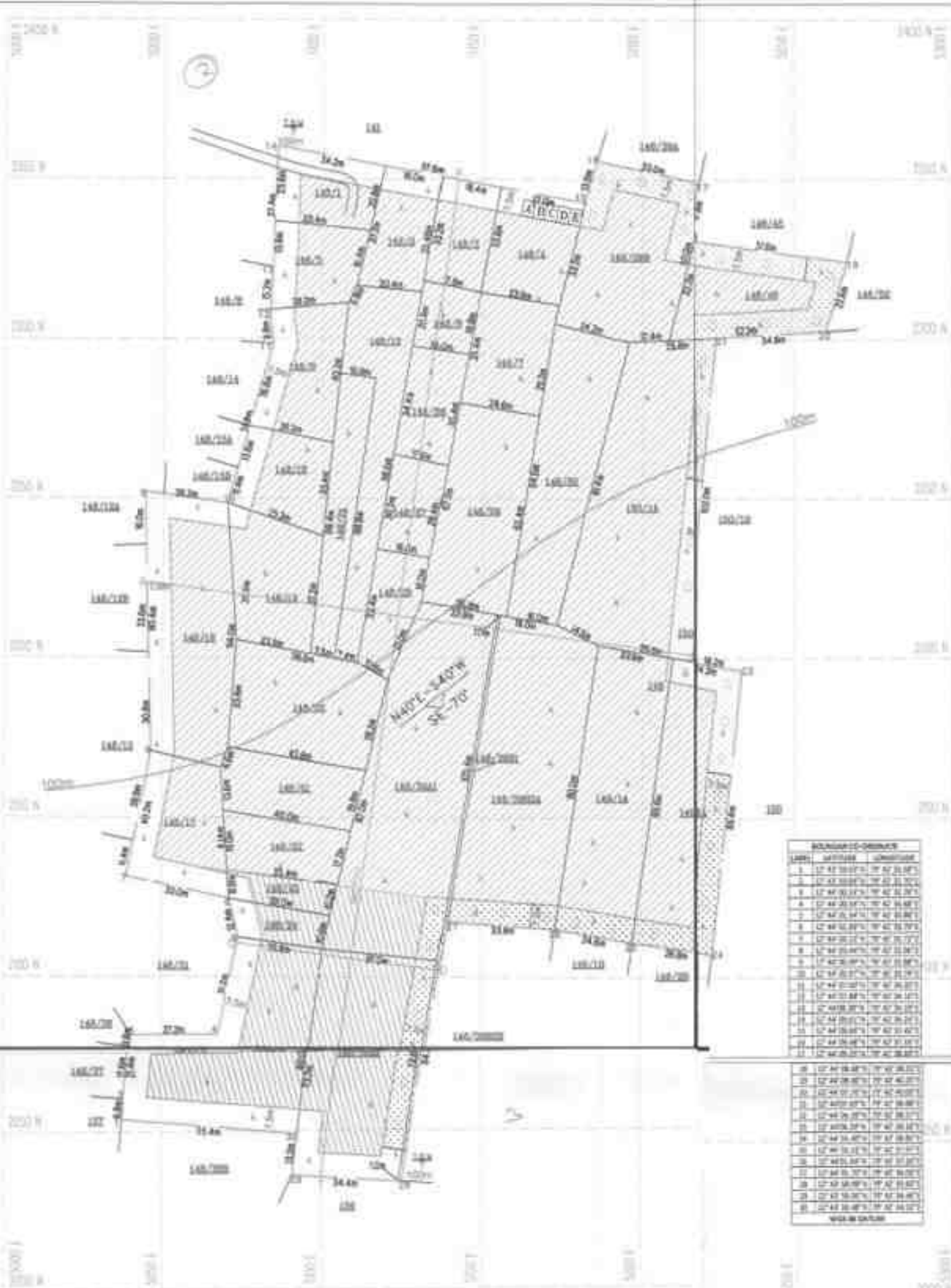
For SRI TIRUMALA BLUE METALS

N.R.K.J.

GOVERNMENT

C.NATARAJAN, M.Sc., M.Phil.,
PARTNER QUALIFIED PERSON





PROPOSED SITE SURVEY
 A - OFFICE
 B - STONE STOCK
 C - ROAD AND HIGHWAY
 D - RIVER CHANNEL
 E - TOILET

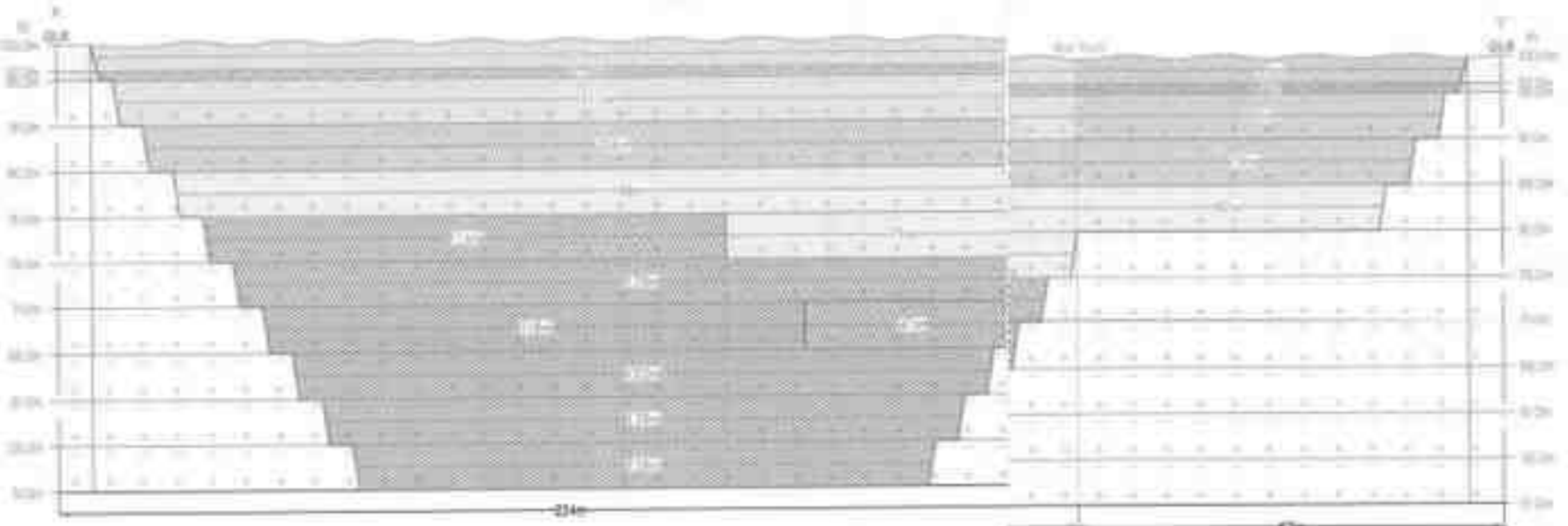
BOUNDARY-DIMENSIONS

148/14	148/15	148/16	148/17	148/18	148/19	148/20	148/21	148/22	148/23	148/24	148/25	148/26	148/27	148/28	148/29	148/30	148/31	148/32	148/33	148/34	148/35	148/36	148/37	148/38	148/39	148/40	148/41	148/42	148/43	148/44	148/45	148/46	148/47	148/48	148/49	148/50	148/51	148/52	148/53	148/54	148/55	148/56	148/57	148/58	148/59	148/60	148/61	148/62	148/63	148/64	148/65	148/66	148/67	148/68	148/69	148/70	148/71	148/72	148/73	148/74	148/75	148/76	148/77	148/78	148/79	148/80	148/81	148/82	148/83	148/84	148/85	148/86	148/87	148/88	148/89	148/90	148/91	148/92	148/93	148/94	148/95	148/96	148/97	148/98	148/99	148/100
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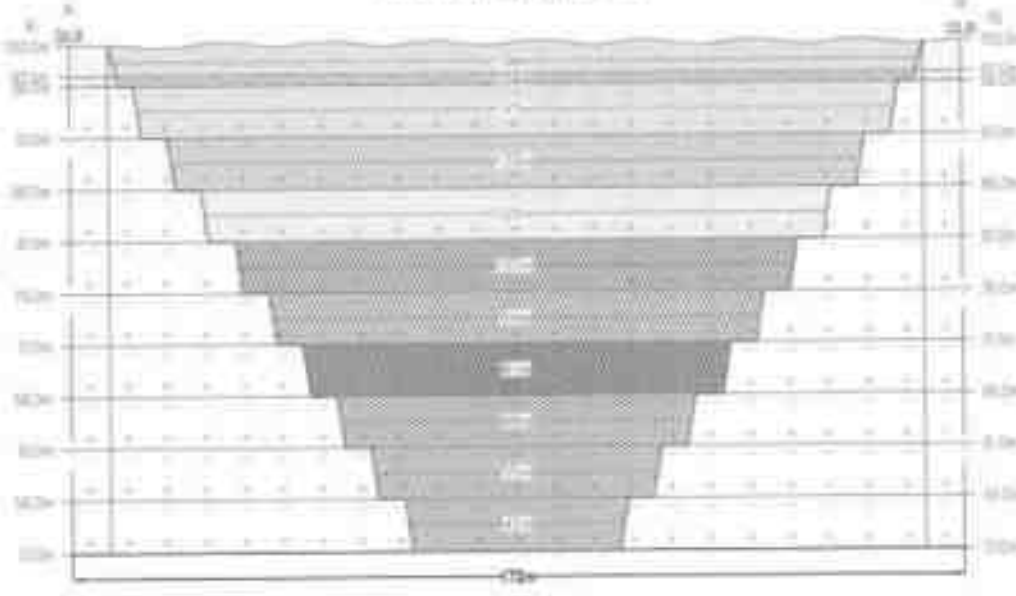
PRESENT & POST LAND USE PATTERN

DESCRIPTION	PRESENT AREA (HA)	AREA AT THE END OF THE QUARRYING PERIOD (HA)
SEA-DEEP QUARRYING	NI	2.47.33
INFRASTRUCTURE	NI	0.01.30
ROADS	NI	0.02.30
GREEN BELT	NI	0.41.30
UNUTILIZED AREA	4.44.33	0.34.33
GRAND TOTAL	4.44.33	4.44.33

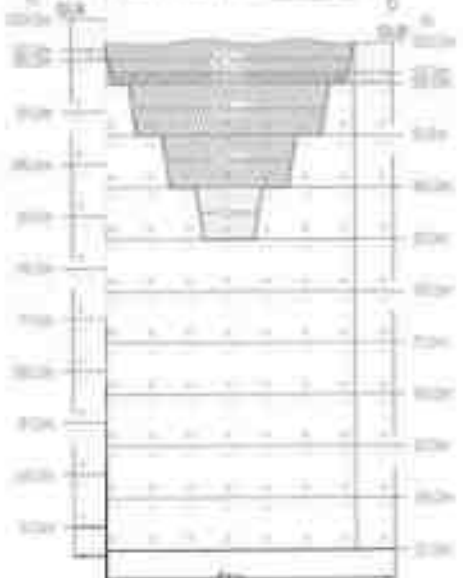
SECTION ALONG X-Y



SECTION ALONG A-B



SECTION ALONG C-D



1st yr Proposed area to be Plotted	[Symbol]
2nd yr Proposed area to be Plotted	[Symbol]
3rd yr Proposed area to be Plotted	[Symbol]
4th yr Proposed area to be Plotted	[Symbol]
5th yr Proposed area to be Plotted	[Symbol]
1st yr Proposed area to be Quarried	[Symbol]
2nd yr Proposed area to be Quarried	[Symbol]
3rd yr Proposed area to be Quarried	[Symbol]
4th yr Proposed area to be Quarried	[Symbol]
5th yr Proposed area to be Quarried	[Symbol]

PLATE NO III
 DATE OF SURVEY: 15.09.2022
APPLICANT:
 MRS. TELMALA SURESH
 NO.30, OTTARACOTHA STREET,
 MANGALURU NAGAR,
 KANCHANUR DISTRICT

QUARRY APPLIED LEASE AREA:
 S.NOS: 148/14, 148/17, 148/18, 148/19,
 148/20, 148/21, 148/22, 148/23,
 148/24, 148/25, 148/26A, 148/27A,
 148/29B, 148/44, 148/71, 148/70,
 148/72, 148/26, 148/27, 148/28,
 148/29, 148/33, 148/30, 148/39A2,
 148/39B2A, 148/39B1, 148/4, 148/5,
 148/6, 148/7, 148/9, 148/1A, 148/2
 & 150/1A
 EXTENT: 4.44.33 Hrs.
 VILLAGE: MENALUR,
 TALUK: VEMBARKAM,
 DISTRICT: TRUVANKGALUR

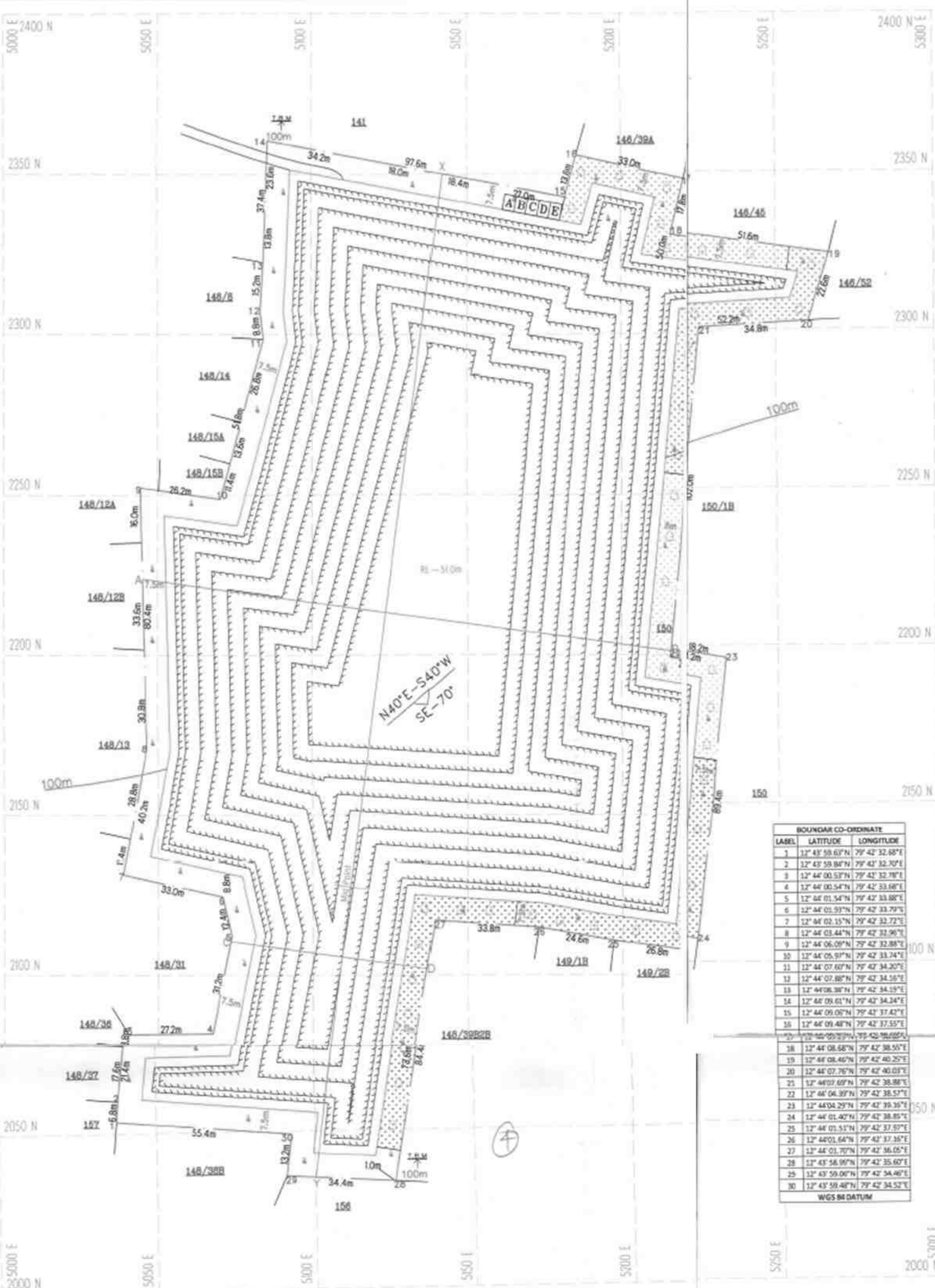
INDEX

G.L. APPLIED BOUNDARY	[Symbol]
7.5m SAFETY DISTANCE	[Symbol]
TEMPORARY BENCH MARK	[Symbol]
APPROACH ROAD	[Symbol]
CONTOUR	[Symbol]
SCRIP	[Symbol]
GRAVE	[Symbol]
WEATHERED ROCK	[Symbol]
ROUGH STONE	[Symbol]
STAKE & DP	[Symbol]

TOPOGRAPHY, GEOLOGICAL & YEARWISE DEVELOPMENT & PRODUCTION PLAN & SECTIONS
 SCALE 1:1000
 SECTION'S HOR 1:1000 VER 1:500

PREPARED BY:
 THIS IS TO CERTIFY THAT THE INFORMATION IN THIS PLAN IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE BASED UPON THE LEASE MAP AS SUBMITTED BY THE APPLICANT.

[Signature]
 QUALIFIED PERSON



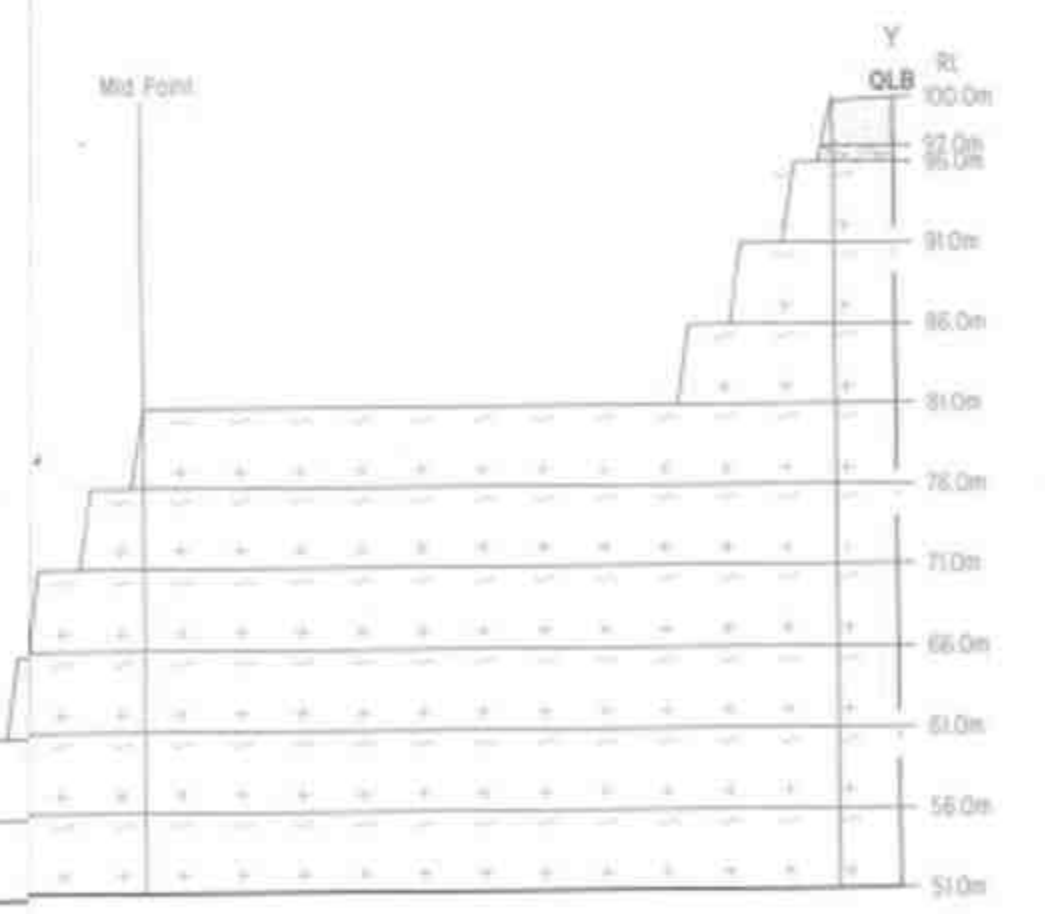
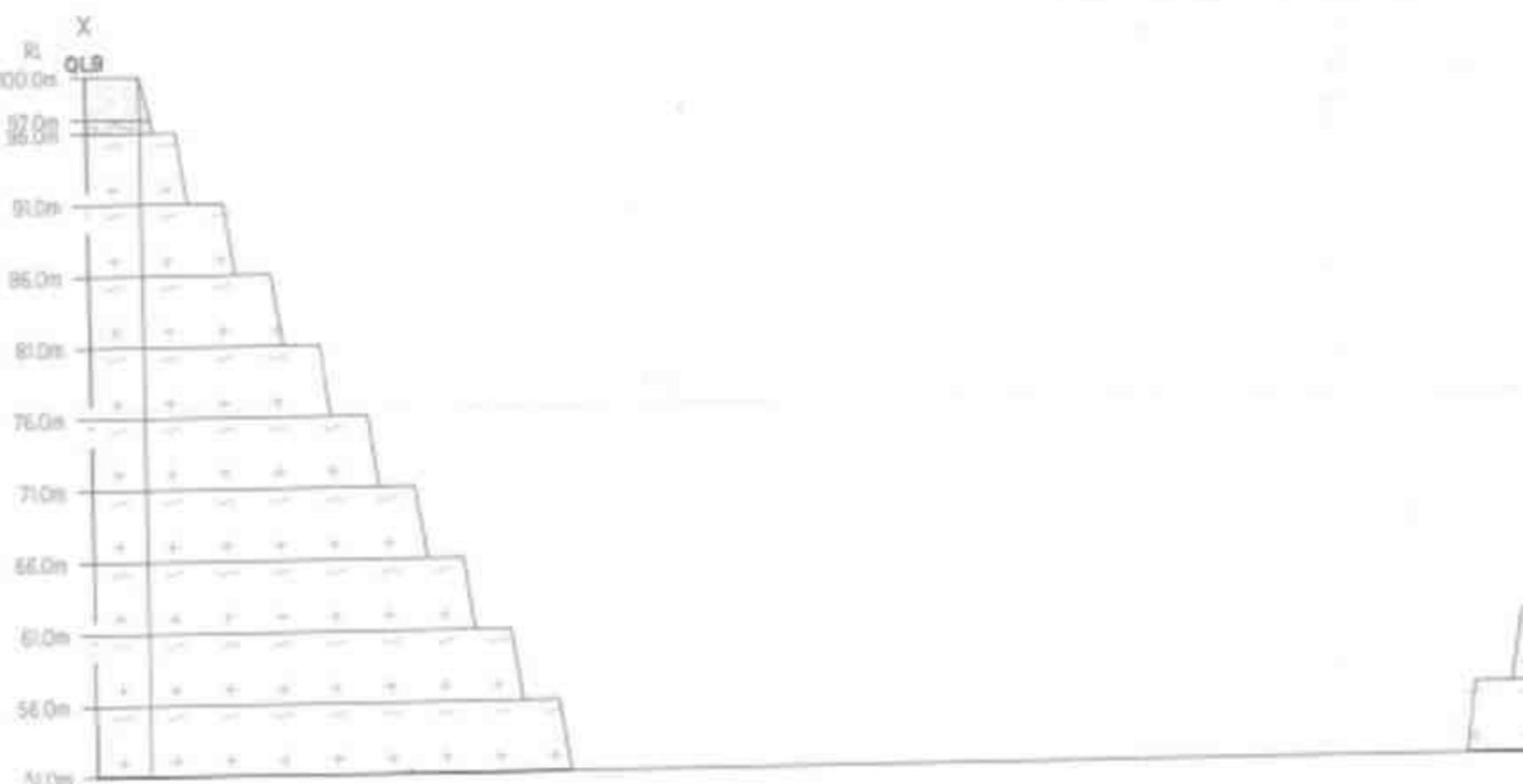
PROPOSED SITE SERVICES

- A - OFFICE
- B - STORE ROOM
- C - FIRST AID ROOM
- D - RECT SHIFTER
- E - TOILET

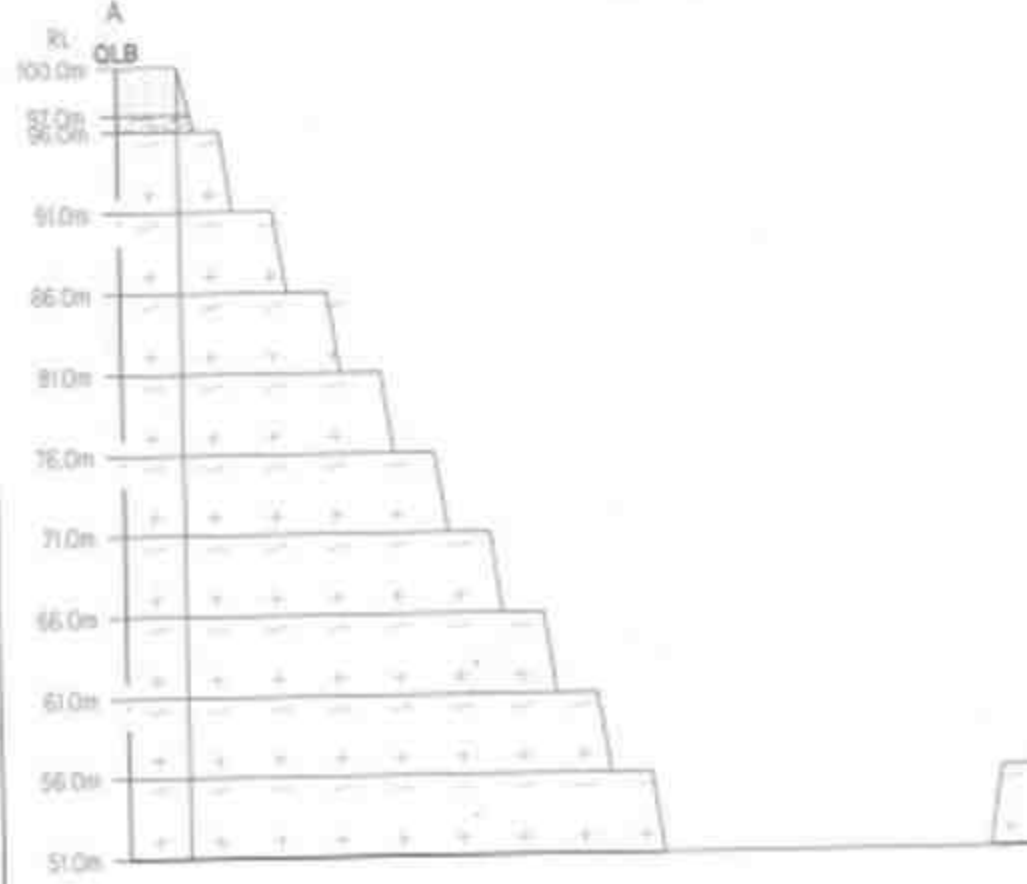
LABEL	LATITUDE	LONGITUDE
1	12° 43' 58.67" N	79° 42' 32.88" E
2	12° 43' 58.84" N	79° 42' 32.70" E
3	12° 44' 00.57" N	79° 42' 32.78" E
4	12° 44' 00.54" N	79° 42' 33.68" E
5	12° 44' 01.54" N	79° 42' 33.88" E
6	12° 44' 01.53" N	79° 42' 33.79" E
7	12° 44' 02.15" N	79° 42' 32.72" E
8	12° 44' 03.44" N	79° 42' 32.96" E
9	12° 44' 06.09" N	79° 42' 32.88" E
10	12° 44' 05.97" N	79° 42' 33.24" E
11	12° 44' 07.60" N	79° 42' 34.20" E
12	12° 44' 07.88" N	79° 42' 34.56" E
13	12° 44' 08.38" N	79° 42' 34.59" E
14	12° 44' 08.61" N	79° 42' 34.34" E
15	12° 44' 09.02" N	79° 42' 33.42" E
16	12° 44' 09.48" N	79° 42' 33.55" E
17	12° 44' 09.93" N	79° 42' 34.65" E
18	12° 44' 08.58" N	79° 42' 38.50" E
19	12° 44' 08.46" N	79° 42' 40.25" E
20	12° 44' 07.76" N	79° 42' 40.03" E
21	12° 44' 07.69" N	79° 42' 38.88" E
22	12° 44' 06.97" N	79° 42' 38.57" E
23	12° 44' 04.29" N	79° 42' 39.26" E
24	12° 44' 01.40" N	79° 42' 38.85" E
25	12° 44' 01.57" N	79° 42' 37.57" E
26	12° 44' 01.64" N	79° 42' 37.16" E
27	12° 44' 01.70" N	79° 42' 36.05" E
28	12° 43' 58.99" N	79° 42' 35.60" E
29	12° 43' 58.00" N	79° 42' 34.46" E
30	12° 43' 58.48" N	79° 42' 34.52" E

WGS 84 DATUM

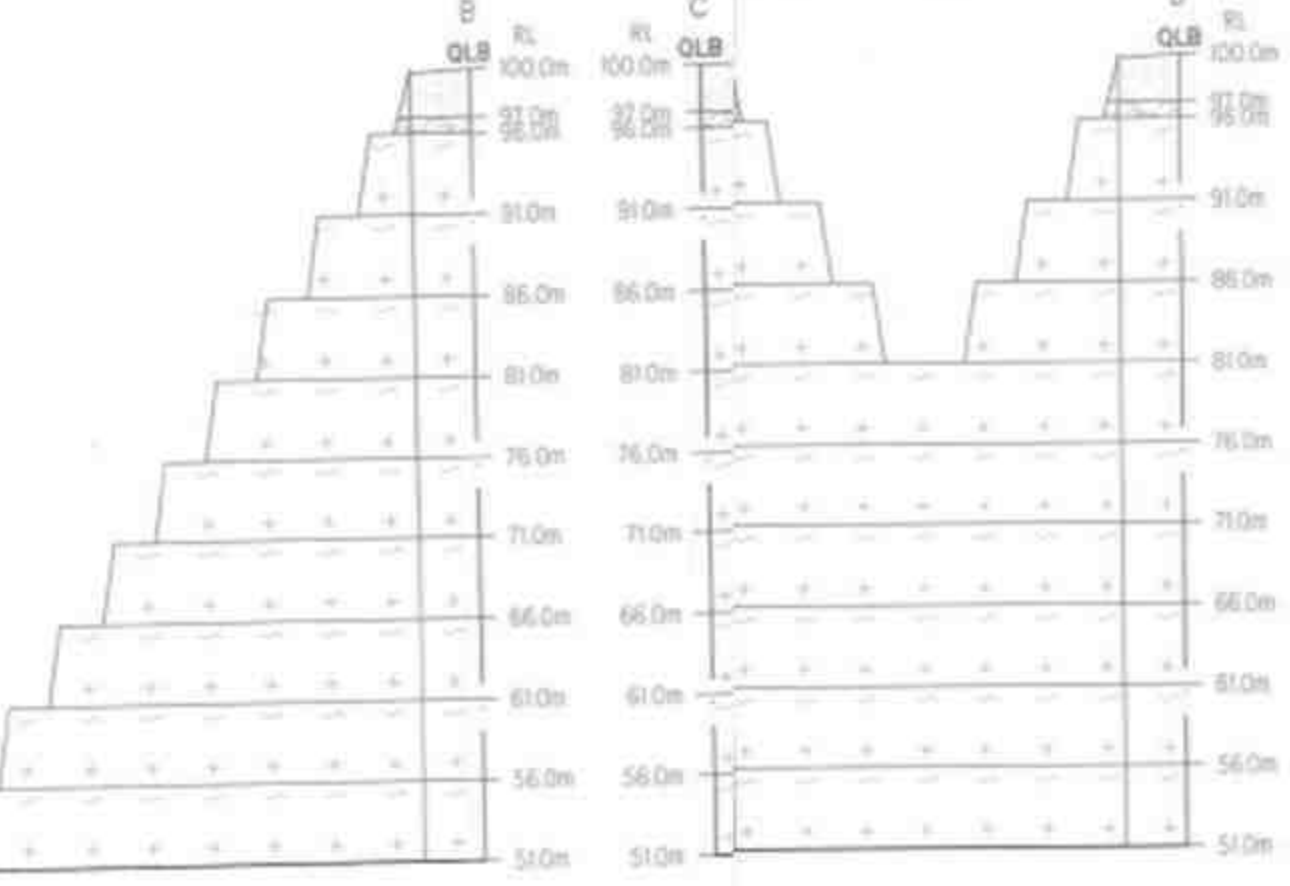
SECTION ALONG X-Y



SECTION ALONG A-B



SECTION ALONG C-D



ULTIMATE PIT DIMENSION
L301m(Max)X122m(Avg)X049m(Max)

PLATE NO-IV
DATE OF SURVEY : 10.09.2022

APPLICANT:
T.V. SRI TIRUMALA BLUE METALS,
NO. 90, OTTAKOOTHAR STREET,
MAMALLAN NAGAR,
KANCHIPURAM DISTRICT.

QUARRY APPLIED LEASE AREA:
S.F. NOS : 148/16, 148/17, 148/18, 148/19,
148/20, 148/21, 148/22, 148/23,
148/24, 148/25, 148/38A, 148/39A,
146/39B, 146/46, 148/1, 148/10,
148/2, 148/26, 148/27, 148/28,
148/29, 148/3, 148/30, 148/39A,
148/39B2A, 148/39B1, 148/4, 148/6,
148/6, 148/7, 148/9, 149/1A, 149/1B,
& 150/1A.

EXTENT : 4.44.35 Ha.
VILLAGE : MENALLUR,
TALUK : VEMBAKKAM,
DISTRICT : TIRUVANNAMALAI.

INDEX

- Q.L. APPLIED BOUNDARY
- 7.5m SAFETY DISTANCE
- TEMPORARY BENCH MARK
- APPROACH ROAD
- CONTOUR
- SCRUB
- GRAVEL
- WEATHERED ROCK
- ROUGH STONE
- STRIKE & DIP
- PROPOSED QUARRY PIT

CONCEPTUAL PLAN & SECTION
SCALE 1 : 1000
SECTIONS HOR 1 : 1000, VER 1 : 500

PREPARED BY:
THIS IS TO CERTIFY THAT THE INFORMATION IN THIS PLATE IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE BASED ON THE LEASE MAP AUTHENTICATED BY THE GOVERNMENT

C. NATARAJAN Sc.M.Phil.,
QUALIFIED PERSON

For SRI TIRUMALA BLUE METALS