

**DRAFT EIA & EMP FOR
PROPOSED ROUGH STONE & GRAVEL QUARRY
CATEGORY - B1 (CLUSTER)**

(Upgraded after Public Hearing as per the provisions of
EIA Notification 2006 & amendments thereof)

ToR Lr.No. SEIAA-TN/F.No.10478/SEAC/ToR-1624/2023, dated 12.12.2023

PROPOSED QUARRY LEASE DETAILS	
SURVEY NOS	110/3, 110/4, 110/5, 127/1 and 127/2
VILLAGE	KODANGIPATTI
TALUK	BODINAICKANUR
DISTRICT	THENI
EXTENT	3.78.0 Ha
PROPOSED PRODUCTION QUANTITY FOR FIVE YEARS	3,61,855 m ³ OF ROUGH STONE, 74,232 m ³ OF GRAVEL
LAND	PATTA LAND

(Sector No. 1(a) (Sector no.1 as per NABET)

Category of the Project: B1 Cluster Mining, Total Cluster Area - 6.51 Ha

Baseline Monitoring Period - October to December 2023

APPLICANT

**Thiru.R.Seenivasan,
S/o.V.Ramasubbu,
No.2-5-16, Rajaji Street, Laksh mipura m,
Periyakulam Taluk, Theni District.**

ORGANIZATION

**M/s. GLOBAL MINING SOLUTIONS
(NABET ACCREDITED & ISO 9001 CERTIFIED CONSULTANT)
PLOT NO.6, SF NO. 13/2, A2, VS CITY, RC CHETTYPATTY,
KOTTAMETTUPATTY, OMALUR, SALEM, TAMIL NADU - 636 455
NABET ACCREDITATION NO - NABET/EIA/2326/IA 0110**

June -2024

DRAFT EIA/EMP OF PROPOSED KODANGIPATTI ROUGH STONE & GRAVEL QUARRY OF THIRU.SEENIVASAN.R OVER AN EXTENT OF 3.78.0 Ha., LOCATED AT SURVEY NO. S.F.Nos.110/3, 110/4, 110/5, 127/1 AND 127/2 OF KODANGIPATTI VILLAGE, BODINAICKANUR TALUK, THENI DISTRICT, TAMIL NADU.

AMENDMENT PAGE

SL	Page No.	Section / Clause / Para / Line (as Applicable)	Date of Amendment	Amendment Made	Reasons of amendment	Signature of Person Authorizing Amendment
1						
3						
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ACKNOWLEDGEMENT

M/s. Global Mining Solutions, Salem is very much our thankful to Thiru.R.Seenivasan, (Lessee) for the confidence and trust placed on our organization for carrying out Environmental Impact Assessment (EIA) for the proposed Rough Stone and Gravel Quarry over a lease extent of 3.78.0 Ha., & cluster extent of 6.51.0 Ha., located at Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu and formulating the Environmental Management Plan (EMP). We also gratefully acknowledge the cooperation and assistance provided by concerned government authorities for collection of secondary information for the preparation of EIA/EMP report. Our sincere thanks to the local people of Kodangipatti and the nearby villages for their whole hearted cooperation and constant involvement during the entire field study without which the study would not have been possible.

For: M/s. Global Mining Solutions



(M. Prabu)

Managing Director

DRAFT EIA/EMP OF PROPOSED KODANGIPATTI ROUGH STONE & GRAVEL QUARRY OF THIRU.SEENIVASAN.R OVER AN EXTENT OF 3.78.0 Ha., LOCATED AT SURVEY NO. S.F.Nos.110/3, 110/4, 110/5, 127/1 AND 127/2 OF KODANGIPATTI VILLAGE, BODINAICKANUR TALUK, THENI DISTRICT, TAMIL NADU.

UNDERTAKING

In Line with MoEF OM No.J – 11013/41/2006-IA.II (I) dated 5th October 2011, we hereby give our undertaking for owning the content and information in the EIA/EMP report submitted for EC of the proposed Rough Stone & Gravel Quarry over a lease extent of 3.78.0 Ha., & cluster extent of 6.51.0 Ha., at located at Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu

For: Global Mining Solutions



Name: Manikandan Manickam

EIA Coordinator – Mining of Minerals

M/s. Global Mining Solutions

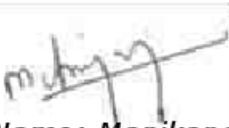
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UNDERTAKING

In line with MOEF&CC OM no. J-11013/41/2006-IA.II (1) dated 4th Aug 2009 and its Amendments, we hereby confirm that all Terms of Reference (ToR) issued by Ministry of Environment, Forest and Climate Change vide Letter No.SEIAA-TN/F.No. 10478/SEAC/ToR-1624/2023, dated: 12.12.2023 for preparation of EIA/EMP report for the proposed Rough Stone & Gravel Quarry over a lease extent of 3.78.0Ha., and cluster extent of 6.51.0 Ha., at Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu, for the production of 3,61,855 m³ of Rough stone and 74,232 m³ of Gravel formation from the proposed lease area of Thiru.R.Seenivasan and the details have been complied in the EIA/EMP report is factually correct.

This EIA/EMP report has been prepared by M/s. Global Mining Solutions (GMS), Salem. GMS is a NABET accredited consultant for preparation of EIA/EMP report of Mining of Minerals (Opencast only) vide certificate No. NABET/EIA/2326/IA 0110, valid till 04.01.2026.

For Global Mining Solutions



Name: Manikandan Manickam

EIA Coordinator – Mining of Minerals

M/s. Global Mining Solutions

DRAFT EIA/EMP OF PROPOSED KODANGIPATTI ROUGH STONE & GRAVEL QUARRY OF THIRU.SEENIVASAN.R OVER AN EXTENT OF 3.78.0 Ha., LOCATED AT SURVEY NO. S.F.Nos.110/3, 110/4, 110/5, 127/1 AND 127/2 OF KODANGIPATTI VILLAGE, BODINAICKANUR TALUK, THENI DISTRICT, TAMIL NADU.



**National Accreditation Board
for Education and Training**



Certificate of Accreditation

Global Mining Solutions

Plot No - 6 SF No 13/2 A2, VS City, RC Chettypatty,
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The organization is accredited as **Category-B** under the QCI-NABET Scheme for Accreditation of EIA Consultant Organizations, Version 3: for preparing EIA-EMP reports in the following Sectors –

S. No	Sector Description	Sector (as per)		Cat.
		NABET	MoEFCC	
1	Mining of minerals-opencast mining only	1	1 (a) (i)	A

Note: Names of approved EIA Coordinators and Functional Area Experts are mentioned in IAAC minutes dated February 10, 2023, posted on the QCI-NABET website.

The Accreditation shall remain in force subject to continued compliance with the terms and conditions mentioned in QCI-NABET's letter of accreditation bearing no. QCI/NABET/ENV/ACO/23/2724 dated March 31, 2023. The accreditation needs to be renewed before the expiry date by Global Mining Solutions, Salem following the due process of assessment.

Sr. Director, NABET
Date: March 31, 2023

Certificate No.
NABET/EIA/2326/IA 0110

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ANNEXURE - VII

Declaration by Experts contributing to the proposed Rough Stone & Gravel Quarry over a lease extent of 3.78.0 Ha., & a cluster extent of 6.51.0 Ha at Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu.

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

EIA Coordinator Name: M. Manikandan Manickam

Signature & Date

Period of involvement: October 2023 to December 2023

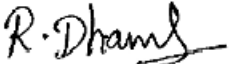
Contact information:

M/s Global Mining Solutions

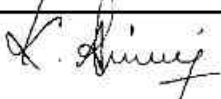




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Kottamettupatty, Omalur,

Salem, Tamil Nadu – 636 455

S. No.	Functional areas	Name of the expert/s	Involvement (period and task**)	Signature and Date
1	AP	Dhanalakshmi Ramanathan	Assessment of existing air quality, Impact of the project on ambient air and suggested mitigation measures for air pollution. <u>Period: October 2023 to December 2023</u>	

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2	WP	Abirami Kaliaperumal	Assessment of existing water quality, impact of the project on surface and ground water quality, suggested mitigation measures for minimizing the impact. <u>Period: October 2023 to December 2023</u>	
3	SHW	Ramadoss N	Assessment of waste generated from the project, suggested waste management practices. <u>Period: March 2023 to May 2023.</u>	
4	SE	Sarasvathy K	Baseline SE study. Data compilation and assessment. Impact of the project on SE status of the area. Formulation of CER plan. <u>Period: October 2023 to December 2023</u>	
5	EB	Saravanan S	Baseline data collection of related to ecology of the area. <u>Period: October 2023 to December 2023</u>	
6	HG	Ravinthiran N	Hydrogeological feature of the area. Ground water depth and impact of project on ground water of the area. <u>Period: October 2023 to December 2023</u>	

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7	AQ	Srilatha Thiruveedhula	<p>Air quality modeling utilizing the area source model. Predication of the ground level concentration of the dust. Suggesting suitable mitigation measures.</p> <p><u>Period: October 2023 to December 2023</u></p>	T. Srilatha
8	NV	Dhanalakshmi Ramanathan	<p>Ambient noise study of the area. Incremental noise generation due to quarry operation and impact of the noise due to the project.</p> <p><u>Period: October 2023 to December 2023</u></p>	R. Dharmaj
9	LU	Dhanalakshmi Ramanathan	<p>Preparation of land use map based on satellite imagery. Land use classification and analysis. Impact prediction of the project on the surrounding land environment.</p> <p><u>Period: October 2023 to December 2023</u></p>	R. Dharmaj
10	RH	S.V. Prashant	<p>Identification of the Risk related to the mining activities. Preparation of emergency disaster management plan. Plan for supply of safety equipment for the worker.</p> <p><u>Period: October 2023 to December 2023</u></p>	S. Prashant
11	SC	Shisupal Sing	<p>Soil monitoring, secondary data collection on soil type, soil management practices, utilization of topsoil.</p>	Shisupal Sing

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			<u>Period: October 2023 to December 2023</u>	
12	GEO	Valliappan Meyyappan	Geological map, stability of quarry and dump, management plan for mine stability, after use of mining quarry and geological feature of the area. <u>Period: March 2023 to May 2023.</u>	

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COMPLIANCE TO TERMS OF REFERENCE

DRAFT EIA/EMP OF PROPOSED KODANGIPATTI ROUGH STONE & GRAVEL QUARRY OF THIRU.SEENIVASAN.R OVER AN EXTENT OF 3.78.0 Ha., LOCATED AT SURVEY NO. S.F.Nos.110/3, 110/4, 110/5, 127/1 AND 127/2 OF KODANGIPATTI VILLAGE, BODINAICKANUR TALUK, THENI DISTRICT, TAMIL NADU.



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

**STATE LEVEL ENVIRONMENT IMPACT
ASSESSMENT AUTHORITY – TAMIL NADU**

3rd Floor, Panagal Mualigai,
No.1, Jeetis Road, Saidapet,
Chennai-15.
Phone No. 044-24359973
Fax No. 044-24359975

TERMS OF REFERENCE (ToR)

Lr No.SEIAA-TN/F.No.10478/SEAC/ToR-1624 /2023 Dated:12.12.2023

To

Thiru.R.Seenivasan,
S/o. V.Ramasubbu,
Residing at No.2-5-16,Rajaji Street,
Lakshimpuram,
Perryakulam Taluk,
Theni District-625 523.

Sir / Madam,

Sub: SEIAA, Tamil Nadu – **Terms of Reference with Public Hearing (ToR)** for the Proposed Rough Stone & Gravel Quarry over an extent of 3.78.0 Ha at S.F.Nos. 110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu Thiru.R.Seenivasan by - 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/439908/2023, Dated:10.08.2023.
 2. Your application submitted for Terms of Reference dated: 16.10.2023.
 3. Minutes of the 390th Meeting of SEAC held on 07.07.2023.
 4. Minutes of the 640th Meeting of Authority held on 27.07.2023.
 5. Minutes of the 423rd Meeting of SEAC held on 15.11.2023.

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6. Minutes of the 678th Meeting of Authority held on 11.12.2023.&12.12.2023

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

The proponent, R.Seenivasan has submitted application for ToR, in Form-I, Pre-Feasibility report for the Proposed Rough Stone & Gravel Quarry over an extent of 3.78.0 Ha at S.F.Nos. 110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu.

Discussion by SEAC and the Remarks:-

Proposed Rough Stone & Gravel Quarry over an extent of 3.78.0 Ha at S.F.Nos. 110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu by Thiru. R.Seenivasan - For Terms of Reference. (SIA/TN/MIN/439908/2023, Dated: 10.08.2023)

The proposal was placed in the 423rd Meeting of SEAC held on 15.11.2023. The details of the project furnished by the proponent are available in the website (pariveshmic.in).

The SEAC noted the following:

1. The Project Proponent, Thiru R.Seenivasan has applied for Terms of Reference for the Proposed Rough Stone & Gravel Quarry over an extent of 3.78.0 Ha at S.F.Nos. 110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu.
2. The proposed quarry/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 3,61,855 m³ of Rough stone & 74,232 m³ of Gravel with ultimate depth of mining 38m BGL.

Earlier, the PP had submitted an online application No. SIA/TN/MIN/428338/2023, Dated:06.05.2023 for obtaining EC. This proposal was placed in 390th meeting of SEAC held on 07.07.2023. Based on the presentation and document furnished by the project proponent, SEAC observed that the total area comes to 6.51 Ha > 5 Ha on viewing the 500m radius cluster certificate and decided to call for the following additional details.

1. The PP shall apply for obtaining the ToR, if the total area of cluster is more than 5 Ha.

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DRAFT EIA/EMP OF PROPOSED KODANGIPATTI ROUGH STONE & GRAVEL QUARRY OF THIRU.SEENIVASAN.R OVER AN EXTENT OF 3.78.0 Ha., LOCATED AT SURVEY NO. S.F.Nos.110/3, 110/4, 110/5, 127/1 AND 127/2 OF KODANGIPATTI VILLAGE, BODINAICKANUR TALUK, THENI DISTRICT, TAMIL NADU.

Lr No.SEIAA-TN/F.No.10478/SEAC/ToR-1624/2023 Dated:12.12.2023

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2. PP shall furnish the following details obtained through the comprehensive scientific studies carried out by the Department of Plant Science and Department of Sociology of Manonmaniam Sundaranar University (MSU), Tirunelveli.
 - (i) Analysis of soil profile, specifically on top soil and organic content of top soil.
 - (ii) Complete Flora and Fauna study by engaging the experts of the MS University.
 - (iii) Enumeration of Native Fodder grasses and other fodder plants.
 - (iv) Medicinal plants harvested by the local people for their own use.
 - (v) Ethnic groups like Kattunayaka living in the area.
 - (vi) Their dependence on the flora for Livelihood and Life support.
 - (vii) Occurrence of Any endemic species and endangered species.
 - (viii) If there are any NTFP collected from the area for Lively and Life support.
 - (ix) Folk healers of the area and their dependence on local Biodiversity.
3. The PP shall furnish the complete details on the Agricultural activities within 500m radius.

Subsequently, this subject was placed in the 640th Authority meeting held on 27.07.2023. The Authority after detailed discussion decided that the PP shall apply for ToR with additional details called by the SEAC.

Now, the PP has applied for Terms of Reference vide online application No. SIA/TN/MIN/439908/2023, Dated:10.08.2023. This proposal was placed in the 423rd Meeting of SEAC held on 15.11.2023. 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. PP shall furnish the following details obtained through the comprehensive scientific studies carried out by the Department of Plant Science and Department of Sociology of Manonmaniam Sundaranar University (MSU), Tirunelveli.
 - (i) Analysis of soil profile, specifically on top soil and organic content of top soil.
 - (ii) Complete Flora and Fauna study by engaging the experts of the MS University.
 - (iii) Enumeration of Native Fodder grasses and other fodder plants.

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Lr No.SEIAA-TN/F.No.10478/SEAC/ToR-1624/2023 Dated:12.12.2023

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- (iv) Medicinal plants harvested by the local people for their own use.
 - (v) Ethnic groups like Kattunayaka living in the area.
 - (vi) Their dependence on the flora for Livelihood and Life support.
 - (vii) Occurrence of Any endemic species and endangered species.
 - (viii) If there are any NTFP collected from the area for Lively and Life support.
 - (ix) Folk healers of the area and their dependence on local Biodiversity.
2. The PP shall furnish the complete details on the Agricultural activities within 500m radius.
 3. The structures within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m & upto 1km shall be enumerated with details such as dwelling houses with number of occupants, whether it belongs to the owner (or) not, places of worship, industries, factories, sheds, etc.
 4. As a part of Ground Water Management, the PP shall carry out the scientific studies to assess the existing hydrogeological condition and impacts of the quarrying operation on the ground water level present in the core zone, by involving any one of the reputed Research and Academic Institution - CSIR-Central Institute of Mining & Fuel Research / Dhanbad, NIRM/Bangalore, Division of Geotechnical Engineering-IIT-Madras, NIT-Dept of Mining Engg, Surathkal, University of Madras - Centre for Environmental Studies, and Anna University Chennai-Dept of Geology, CEG Campus. A copy of such scientific study report shall be submitted to the SEIAA, MoEF, TNPCB, AD/Mines-DGM and DMS, Chennai as a part of Environmental Compliance without any deviation.
 5. The Project Proponent shall furnish the revised EMP based on the study carried out on impact of the dust & other environmental impacts due to proposed quarrying operations on the nearby agricultural lands for remaining life of the mine in the format prescribed by the SEAC considering the cluster situation.

ANNEXURE-I

1. In the case of existing/operating mines, a letter obtained from the concerned AD (Mines) shall be submitted and it shall include the following:
 - (i) Original pit dimension
 - (ii) Quantity achieved Vs EC Approved Quantity
 - (iii) Balance Quantity as per Mineable Reserve calculated.
 - (iv) Mined out Depth as on date Vs EC Permitted depth

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- (v) Details of illegal/illicit mining
 - (vi) Violation in the quarry during the past working.
 - (vii) Quantity of material mined out outside the mine lease area
 - (viii) Condition of Safety zone/benches
 - (ix) Revised/Modified Mining Plan showing the benches of not exceeding 6 m height and ultimate depth of not exceeding 50m.
2. Details of habitations around the proposed mining area and latest VAO certificate regarding the location of habitations within 300m radius from the periphery of the site.
 3. The proponent is requested to carry out a survey and enumerate on the structures located within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m (v) 500m shall be enumerated with details such as dwelling houses with number of occupants, whether it belongs to the owner (or) not, places of worship, industries, factories, sheds, etc with indicating the owner of the building, nature of construction, age of the building, number of residents, their profession and income, etc.
 4. The PP shall submit a detailed hydrological report indicating the impact of proposed quarrying operations on the waterbodies like lake, water tanks, etc are located within 1 km of the proposed quarry.
 5. The Proponent shall carry out Bio diversity study through reputed Institution and the same shall be included in EIA Report.
 6. The DFO letter stating that the proximity distance of Reserve Forests, Protected Areas, Sanctuaries, Tiger reserve etc., up to a radius of 25 km from the proposed site.
 7. In the case of proposed lease in an existing (or old) quarry where the benches are not formed (or) partially formed as per the approved Mining Plan, the Project Proponent (PP) shall the PP shall carry out the scientific studies to assess the slope stability of the working benches to be constructed and existing quarry wall, by involving any one of the reputed Research and Academic Institutions - CSIR-Central Institute of Mining & Fuel Research / Dhanbad, NIRM/Bangalore, Division of Geotechnical Engineering-IIT-Madras, NIT-Dept of Mining Engg. Surathikal, and Anna University Chennai-CEG Campus. The PP shall submit a copy of the aforesaid report indicating the stability status of the quarry wall and possible mitigation measures during the time of appraisal for obtaining the EC.

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DRAFT EIA/EMP OF PROPOSED KODANGIPATTI ROUGH STONE & GRAVEL QUARRY OF THIRU.SEENIVASAN.R OVER AN EXTENT OF 3.78.0 Ha., LOCATED AT SURVEY NO. S.F.Nos.110/3, 110/4, 110/5, 127/1 AND 127/2 OF KODANGIPATTI VILLAGE, BODINAICKANUR TALUK, THENI DISTRICT, TAMIL NADU.

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8. However, in case of the fresh/virgin quarries, the Proponent shall submit a conceptual 'Slope Stability Plan' for the proposed quarry during the appraisal while obtaining the EC, when the depth of the working is extended beyond 30 m below ground level.
9. The PP shall furnish the affidavit stating that the blasting operation in the proposed quarry is carried out by the statutory competent person as per the MMR 1961 such as blaster, mining mate, mine foreman, II/ Class mines manager appointed by the proponent.
10. The PP shall present a conceptual design for carrying out only controlled blasting operation involving line drilling and muffle blasting in the proposed quarry such that the blast-induced ground vibrations are controlled as well as no fly rock travel beyond 30 m from the blast site.
11. The EIA Coordinators shall obtain and furnish the details of quarry/quarries operated by the proponent in the past, either in the same location or elsewhere in the State with video and photographic evidences.
12. If the proponent has already carried out the mining activity in the proposed mining lease area after 15.01.2016, then the proponent shall furnish the following details from AD/DD mines.
 13. What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?
 14. Quantity of minerals mined out.
 - Highest production achieved in any one year
 - Detail of approved depth of mining.
 - Actual depth of the mining achieved earlier.
 - Name of the person already mined in that leases area.
 - If EC and CTO already obtained, the copy of the same shall be submitted.
 - Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches.
 15. All corner coordinates of the mine lease area, superimposed on a High-Resolution Imagery/Topo sheet, topographic sheet, geomorphology, lithology and geology of the mining lease area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).

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16. The PP shall carry out Drone video survey covering the cluster, green belt, fencing, etc.,
17. The proponent shall furnish photographs of adequate fencing, green belt along the periphery including replantation of existing trees & safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan.
18. The Project Proponent shall provide the details of mineral reserves and mineable reserves, planned production capacity, proposed working methodology with justifications, the anticipated impacts of the mining operations on the surrounding environment, and the remedial measures for the same.
19. The Project Proponent shall provide the Organization chart indicating the appointment of various statutory officials and other competent persons to be appointed as per the provisions of the Mines Act'1952 and the MMR, 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the environment.
20. The Project Proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of groundwater pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds, etc. within 1 km (radius) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD / TWAD so as to assess the impacts on the wells due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided.
21. The proponent shall furnish the baseline data for the environmental and ecological parameters with regard to surface water/ground water quality, air quality, soil quality & flora/fauna including traffic/vehicular movement study.
22. The Proponent shall carry out the Cumulative impact study due to mining operations carried out in the quarry specifically with reference to the specific environment in terms of soil health, biodiversity, air pollution, water pollution, climate change and flood control & health impacts. Accordingly, the Environment Management plan should be prepared keeping the concerned quarry and the surrounding habitations in the mind.
23. Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted.

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DRAFT EIA/EMP OF PROPOSED KODANGIPATTI ROUGH STONE & GRAVEL QUARRY OF THIRU.SEENIVASAN.R OVER AN EXTENT OF 3.78.0 Ha., LOCATED AT SURVEY NO. S.F.Nos.110/3, 110/4, 110/5, 127/1 AND 127/2 OF KODANGIPATTI VILLAGE, BODINAICKANUR TALUK, THENI DISTRICT, TAMIL NADU.

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24. Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.
25. Details of the land for storage of Overburden/Waste Dumps (or) Rejects outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be provided.
26. Proximity to Areas declared as 'Critically Polluted' (or) the Project areas which attracts the court restrictions for mining operations, should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the TNPCB (or) Dept. of Geology and Mining should be secured and furnished to the effect that the proposed mining activities could be considered.
27. Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.
28. Impact on local transport infrastructure due to the Project should be indicated.
29. A tree survey study shall be carried out (nos., name of the species, age, diameter etc.,) both within the mining lease applied area & 300m buffer zone and its management during mining activity
30. A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.
31. As a part of the study of flora and fauna around the vicinity of the proposed site, the EIA coordinator shall strive to educate the local students on the importance of preserving local flora and fauna by involving them in the study, wherever possible.
32. The purpose of Green belt around the project is to capture the fugitive emissions, carbon sequestration and to attenuate the noise generated, in addition to improving the aesthetics. A wide range of indigenous plant species should be planted as given in the appendix-I in consultation with the DFO, State Agriculture University. The plant species with dense/moderate canopy of native origin should be chosen. Species of small/medium/tall trees alternating with shrubs should be planted in a mixed manner.

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33. Taller/one year old Saplings raised in appropriate size of bags, preferably ecofriendly bags should be planted as per the advice of local forest authorities/botanist/Horticulturist with regard to site specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner
34. A Disaster management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.
35. A Risk Assessment and management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.
36. Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.
37. Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.
38. The Socio-economic studies should be carried out within a 5 km buffer zone from the mining activity. Measures of socio-economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.
39. Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.
40. Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.
41. If any quarrying operations were carried out in the proposed quarrying site for which now the EC is sought, the Project Proponent shall furnish the detailed compliance to EC conditions given in the previous EC with the site photographs which shall duly be certified by MoEF&CC, Regional Office, Chennai (or) the concerned DEE/TNPCC.

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42. The PP shall prepare the EMP for the entire life of mine and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine.
43. Concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this Terms of Conditions besides attracting penal provisions in the Environment (Protection) Act, 1986.

Discussion by SEIAA and the Remarks:-

The subject was placed in the 678th Authority meeting held on 11.12.2023 & 12.12.2023. The Authority noted that the subject was appraised in the 423rd SEAC meeting held on 15.11.2023. 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 subject to the conditions as recommended by SEAC & normal conditions and conditions in **Annexure 'B'** of this minutes.

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.

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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.


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 and 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.

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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.
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.

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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.

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.

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roads, water bodies such as streams, odai, vaari, canal, channel, river, lake pond, tank etc.

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

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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 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

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- 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 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).

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- 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 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

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- 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 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.

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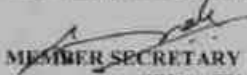
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- 34) Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report.
- 35) Occupational Health impacts of the Project should be anticipated and 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 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

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- 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.
 - 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.

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DRAFT EIA/EMP OF PROPOSED KODANGIPATTI ROUGH STONE & GRAVEL QUARRY OF THIRU.SEENIVASAN.R OVER AN EXTENT OF 3.78.0 Ha., LOCATED AT SURVEY NO. S.F.Nos.110/3, 110/4, 110/5, 127/1 AND 127/2 OF KODANGIPATTI VILLAGE, BODINAICKANUR TALUK, THENI DISTRICT, TAMIL NADU.

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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 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 is 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.

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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.
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

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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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Lr No.SELAA-TN/F.No.10478/SEAC/ToR-1624/2023 Dated:12.12.2023

SELAA-TN

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, Theni District.
7. Stock File.

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S.No	ToR Points	Reply	Pg. No
A. ToR in Addition to Standard ToR			
1.	<p>PP shall furnish the following details obtained through the comprehensive scientific studies carried out by the Department of plant Science and Department of Sociology of Manonmaniam Sundaranar University (MSU), Tirunelveli.</p> <ul style="list-style-type: none"> i. Analysis of soil profile, specifically on top soil and organic content of top soil. ii. Complete Flora and Fauna study by engaging the experts of the MS University. iii. Enumeration of Native Fodder grasses and other fodder plants. iv. Medicinal plants harvested by the local people for their own use v. Ethnic groups like Kattunayaka living in the area vi. Their dependence on the flora for Livelihood and Life support vii. Occurrence of Any endemic species and endangered species viii. If there are any NTFP collected from the area for lively and Life support. ix. Folk healers of the area and their dependence on local Biodiversity. 	<p>A detailed report will be incorporated in the Final EIA/EMP Report.</p>	
2.	<p>The PP shall furnish the complete details on the Agricultural activities within 500m radius.</p>	<p>There are no agricultural activities within 500m of the lease area. The details of the survey on the agricultural activities within</p>	

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		a 300m radius are given in section 3.5 of Chapter 3 and the VAO certificate is enclosed as Annexure – 4.	
3.	The structures within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m & upto 1km shall be enumerated with details such as dwelling houses with number of occupants, whether it belongs to the owner (or) not places of worship, industries, factories, sheds, etc.	There is no such structures located within 500m of the lease area. The details of the survey on the structures within a 300m radius is given in section 3.5 of Chapter 3 and the VAO certificate is enclosed as Annexure – 4	
4.	As a part of Ground Water Management, the PP shall carry out the scientific studies to assess the existing hydrogeological condition and impacts of the quarrying operation on the ground water level present in the core zone, by involving anyone of the reputed Research and Academic institution - CSIR-Central Institute of Mining & Fuel Research / Dhanbad, NIRM Bangalore, Division of Geotechnical Engineering-IIT-Madras, NIT-Dept of Mining Engg, Surathkal, University of Madras - Centre for Environmental Studies, and Anna university Chennai -Dept of Geology, CEG Campus, A copy of such scientific study report shall be submitted to the SEIAA, MoEF, TNPCB' AD/Mines-DGM and DMS, Chennai as a part of Environmental Compliance without any deviation	The scientific studies to assess the hydro geological condition of the quarry for ensuring the safety of the people working in the mine and to determine the impacts of the mining operation on the ground water conditions in the water bodies involving any one of the reputed Research and Academic Institutions will be carried out and a report of the same with detailed action plan will be incorporated in the Final EIA/EMP Report.	

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5.	The Project Proponent shall furnish the revised EMP based on the study carried out on impact of the dust & other environmental impacts due to proposed quarrying operations on the nearby agricultural lands for remaining life of the mine in the format prescribed by the SEAC considering the cluster situation	Noted. The detailed EMP is will be incorporated in the Final EIA/EMP Report and the affidavit for the same will be included.	
Annexure -I			
1.	In the case or existing/operating mines, a letter obtained from the concerned AD(Mines) shall be submitted and it shall include the following: <ul style="list-style-type: none"> i. Original pit dimension ii. Quantity achieved Vs EC Approved Quantity iii. Balance Quantity as per Mineable Reserve calculated iv. Mined out Depth as on date Vs EC Permitted depth v. Details of illegal/illicit mining vi. Violation in the quarry during the past working. vii. Quantity of material mined out outside the mine lease area viii. Condition of Safety zone/benches ix. Revised/Modified Mining Plan showing the benches of not exceeding 6 m height and ultimate depth of not exceeding 50m. 	Not applicable. This is a fresh quarry lease area.	

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	Details of habitations around the proposed mining area and latest VAO certificate regarding the location of habitations within 300m radius from the periphery of the site.	The VAO certificate regarding the location of habitations within a 300m radius from the periphery of the site is attached as Annexure-4.	
2.	The proponent is requested to carry out a survey and enumerate on the structures located within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m (v) 500m shall be enumerated with details such as dwelling houses with number of occupants, whether it belongs to the owner (or) not, places of worship, industries, factories, sheds, etc with indicating the owner of the building, nature of construction, age of the building, number of residents, their profession and income, etc	A site assessment was done to identify and list structures within a 500 m radius of the proposed Quarry. Structures within this radius are listed in Chapter 3.	
3.	The PP shall submit a detailed hydrological report indicating the impact of proposed quarrying operations on the water bodies like lake, water tanks, etc are located within I km of the proposed quarry.	A detailed hydro-geological report of the proposed project will be incorporated in the Final EIA/EMP Report.	
4.	The Proponent shall carry out Bio diversity study through reputed Institution and the same shall be included in EIA Report.	The detailed Bio diversity study details are given in Chapter – 3, Sec 3.11.	
5.	The DFO letter stating that the proximity distance of Reserve Forests, Protected Areas, Sanctuaries, Tiger reserve etc., up to a radius of 25 km from the proposed site	Noted and it will be submitted while submitting the final EIA report.	
6.	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	Not applicable. This is a fresh quarry lease area.	

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	<p>the PP shall carry out the scientific studies to assess the slope stability of the working benches to be constructed and existing quarry wall, by involving any one of the reputed Research and Academic Institutions - CSIR-Central Institute of Mining & Fuel Research / Dhanbad, NIRM/Bangalore, Division of Geotechnical Engineering-IIT-Madras, NIT-Dept of Mining Engg, Surathkal, and Anna University Chennai-CEC Campus. The PP shall submit a copy of the aforesaid report indicating the stability status of the quarry wall and possible mitigation measures during the time of appraisal for obtaining the EC.</p>		
7.	<p>However, in case of the fresh/virgin quarries, the Proponent shall submit a conceptual 'Slope Stability Plan' for the proposed quarry during the appraisal while obtaining the EC, when the depth of the working is extended beyond 30 m below ground level</p>	<p>The slope stability study is detailed in Chapter 7, Sec 7.7</p>	
8.	<p>The PP shall furnish the affidavit stating that the blasting operation in the proposed quarry is carried out by the statutory competent person as per the MMR 1961 such as blaster, mining mate, mine foreman, II/I Class mines manager appointed by the proponent.</p>	<p>Noted and it will be submitted while submitting the final EIA report.</p>	
9.	<p>The PP shall present a conceptual design for carrying out only controlled blasting operation involving line drilling and muffle blasting in the proposed quarry such that the blast-induced ground vibrations are controlled as well as no fly rock travel beyond 30 m from the blast site'</p>	<p>Controlled blasting techniques using delay detonators and optimum charge per delay will be implemented in this quarry. The details on blasting parameters are given in Chapter 2.</p>	

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10.	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'	Prior to this project, the PP had not carried out any quarrying operations.	
11.	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,	Not applicable since this is a fresh quarry.	
12.	What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?	Not applicable since this is a fresh quarry.	
13.	Quantity of minerals mined out. <ul style="list-style-type: none"> • 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. 	Not applicable since this is a fresh quarry.	
14.	All comer 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	Project coordinates superimposed in satellite imagery and topo map given as Figure No – 3.5 and Figure 3.6. The geology and geomorphology map are	

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	of the study area (core and buffer zone).	provided in Figure No.3.16, 3.17, Chapter 3. The soil map is provided under Figure No. 3.19, Chapter-3. The 10km Radius Index plan showing buffer zone is given in Figure No.3.5 & Figure 3.6 in Chapter – 3.	
15.	The PP shall carry out Drone video survey covering the cluster, green belt, fencing, etc.,	Fresh lease. It will be complied after commencement of the mining operation.	
16.	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.	Photographs of the site are provided in Figure 2.6 of Chapter-2. As per the Precise Order, PP has provided a safety distance of 50m is provided as there is a seasonal Odai passing on the Western side of the area. Green belt will be developed over an area of 0.30.0 Ha. The work of the same is under process.	
17.	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.	The details of mineral and mineable reserves are given in detail in Chapter 2, Table 2.6. and the proposed methodology is given in Section 2.12 and the anticipated impacts are detailed in Chapter 4.	

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18.	The Project Proponent shall provide the Organization chart indicating the appointment of various statutory officials and other competent persons to be appointed as per the provisions of the Mines Act'1952 and the MMR, 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the environment.	Complied. Please refer figure 10.1 of Chapter 10.	
19.	The Project Proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of groundwater pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds, etc. within I km (radius) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD / TWAD so as to assess the impacts on the wells due to mining activity. Based on actual monitored data it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided.	A detailed hydro-geological report of the proposed project will be incorporated in the Final EIA/EMP Report.	
20.	The proponent shall furnish the baseline data for the environmental and ecological parameters with regard to surface water/ground water quality. air quality, soil quality & flora/fauna including traffic/vehicular movement study.	The baseline data for environmental and ecological parameters with regard to surface water/ground water quality. air quality, soil quality & flora/fauna including traffic/vehicular movement study is given detailed in Chapter 3, Sec 3.7 to 3.12	

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21.	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.	All the studies were carried out and given in detail in Chapter 3 and the Environment Management plan is given in Chapter 10.	
22.	Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted	The rain water harvesting plan is given in Chapter 4, Sec 4.5.6.	
23.	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	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 has been discussed in Chapter 3. The land use plan of the project area showing per-operational, operational and post-operational phases are discussed in Chapter 2.	
24.	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.	As per the mining plan, there is no overburden anticipated during the entire Rough Stone & Gravel quarrying operation. The excavated rough stone will be	

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		directly loaded into a tipper to the needy crusher/other buyers.	
25.	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. The project is not located in any of the said areas mentioned in the condition.	
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	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 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. Rain water harvesting plan is given in section 4.5.6 of Chapter 4.	

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27.	Impact on local transport infrastructure due to the Project should be indicated.	There is no significant impact on the local traffic due to the proposed project. The traffic density study is given in Chapter 4, Sec 4.8.
28.	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.	The EB study is done and the details are given in Chapter 3, Sec 3.11
29.	A detailed mine closure plan for the proposed project shall be included in EIA/EMP reports which should be site-specific.	The detailed Mine Closure plan is given in Chapter 7, sec 7.9.
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.	Noted, the study will be done and incorporated in the Final EIA/EMP report.
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	The Greenbelt plan is detailed in Chapter 4, Sec 4.6.3.

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32.	Taller/one year old Saplings raised in appropriate size of bags, preferably ecofriendly bags should be planted as per the advice of local forest authorities/botanist/Horticulturist with regard to site specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner	Noted	
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.	A disaster management plan is prepared and details are given in Chapter 7, Sec 7.8.	
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.	A Risk Assessment and management Plan is prepared and given in Chapter 7, Sec 7.2.	
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.	The anticipated Occupational Health impacts of the project is given detailed in Chapter 10. Sec 10.5.	
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.	Noted	

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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.	The detailed Socio Economic study is carried out and it is given in Chapter 3, Sec 3.13	
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	The project benefits are given in Chapter 8.	
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/TNPCCB.	Not applicable. This is a fresh quarry lease 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.	Noted and it will be furnished in the Final EIA/EMP report.	
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	Noted and Agreed.	

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	Conditions besides attracting penal provisions in the Environment (Protection) Act, 1986		
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	There are two quarries within a 500-metre radius. The proponent will take the initiative to form a cluster management committee once environmental clearance is obtained for this quarry as well as the other 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.,	Agreed. Will be complied. An undertaking in this regard is enclosed as Annexure 12.	A305
3	The List of members of the committee formed shall be submitted to AD/Mines before the execution of mining lease and the same shall be updated every year to the AD/Mines.	Agreed. The list of members of the committee formed will be submitted to AD/mines after obtaining Environmental Clearance.	-
4	Detailed Operational Plan must be submitted which must include the blasting frequency with respect to the nearby quarry situated in the cluster, the usage of haul roads by the individual quarry in the form of route map and network.	Agreed. Details of the Operation plan for cluster mining operations will be submitted once we get environmental clearance for all quarries proposed in the cluster area.	-
5	The committee shall deliberate on risk management plan pertaining to the cluster	A risk management plan for the individual quarry is	-

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	in a holistic manner especially during natural calamities like intense rain and the mitigation measures considering the inundation of the cluster and evacuation plan.	given in this report. As far as cluster working conditions are concerned, once the committee is formed, risk management as a cluster including inundation of clusters and the evacuation plan will be elaborated and the same will be submitted to the SEIAA.	
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.	Environmental policy for the cluster will be framed by the cluster management committee and the policy will be in accordance with EPA Act, 1986 and its amendments, guidelines by MoEF&CC/SEIAA and other regulatory bodies. This policy will be displayed in the quarry.	-
7	The committee shall furnish action plan regarding the restoration strategy with respect to the individual quarry falling under the cluster in a holistic manner.	Agreed. It will be complied as mentioned in the Point No.4	-
8	The committee shall furnish the Emergency Management plan within the cluster.	Agreed. It will be complied as mentioned in Point No.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.	Agreed. It will be complied as mentioned in Point No.4	-
10	The committee shall furnish an action plan to achieve sustainable development goals with reference to water, sanitation & safety.	Agreed. It will be complied as mentioned in Point No.4	-

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11	The committee shall furnish the fire safety and evacuation plan in the case of fire accidents.	Agreed. It will be complied as mentioned in Point No.4	-
Impact study of mining			
12	Detailed study shall be carried out in regard to the impact of mining around the proposed mine lease area covering the entire mine lease period as per precise area communication order issued by reputed research institutions on the following,		-
a	Soil health & soil biological, physical land chemical features	Complied. The details are given in Chapter 3 of the Draft EIA report.	144
b	Climate change leading to Droughts, Floods etc.	There is no significant impact on climate change due to this project. This proposed mining activity is a small scale mining extent of 3.78.0Ha. of patta land. The surrounding environment is already subjected to mining activities and based on the past weather data, it is inferred that there is no much change in the climate data of the region and the district profile has no records or past history of climate change leading to droughts and floods. The minor impact of climate change will be controlled by adopting suitable mitigation measures. The anticipated impact and	-

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		its mitigation measures for various environmental attributes are detailed in Chapter 4.	
c	Pollution leads to release of greenhouse gases (GHG), rise in temperature, & livelihood of the local people	Considering that the quantum of production is less, only 1 excavator of 0.90m ³ bucket capacity (with Rock breaker attachment) 3 tippers (5/10Ts) will be engaged. This equipment 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 1250 plants will be planted in and around the lease area.	134 & 175
d	Possibilities of water contamination and impact on aquatic ecosystem health	The total water requirement is 8.5KLD. It will be outsourced from the nearby villages. So no impact in the project area due to water usage. The wastewater generation in the form of runoff water	-

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		<p>during the rainy season will be collected in the bottom quarry through a proper drainage pattern and the collected water will be used for plantation and dust separation during the dry season. However, there is no wastewater discharge from this quarry is being anticipated. So, possibilities of water contamination and impact on aquatic ecosystem health are not envisaged.</p>	
e	Agriculture, Forestry & Traditional practices	<p>There are no forest area and traditional practices within the project area. However, there are some agricultural lands around the project site. It may be affected due to the quarry operation as such dust particles sedimentation in the agricultural land. It will be controlled at the source level by proper dust separation as such as wet drilling, controlled blasting and water sprinkling on the project roads and project surrounding roads. As per Air Quality Modeling the</p>	-

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		impact of the air quality is limited to a 400m radius. So, there is no impact on the agriculture, forestry & traditional practices located within a 10km radius.	
f	Hydrothermal/Geothermal effect due to destruction in the Environment	The proposed quarry operation is Opencast Semi Mechanized operation with drilling, blasting, excavation, loading and transportation. So the effect of Hydrothermal/ Geothermal is not envisaged.	-
g	Bio-geochemical processes and its foot prints including environmental stress	This is a simple mining operation, so bio-geo chemical processes are not envisaged.	-
h	Sediment geochemistry in the surface streams	There is a seasonal Odai passing on the western side of the area and a 50m safety distance is provided. There are seasonal Odai's passing on the Western and Northeastern side of the area at 70 m and 360m away from the area. There is a Kulam situated on the Southeastern side of the area and is 290m away from the area. Due to mining operations, there may be a minimum impact on the said	-

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		water bodies due to dust sedimentation. It will be controlled by wet drilling, water sprinkling and plantation.	
Agriculture & Agro-Biodiversity			
13	Impact on surrounding agricultural fields around the proposed mining Area.	Agreed. It is described in point no. 12 (e) of this ToR Compliance Annexure-B.	-
14	Impact on soil flora & vegetation around the project site.	Complied. The details are given in Chapter 3.	141
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.	Complied. The details are given in Chapter 3.	147
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.	Complied. The details are given in Chapter 3 and section 4.6 of Chapter 4.	147 & 178
17	Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.	The detailed action plan has been described in the EMP (Chapter 10) for the sustainable management of the project area and its surroundings.	231
18	The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock.	Complied. The details are given in Chapter 4.	178
Forests			

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19	The project proponent shall detailed study on impact of mining on Reserve Forests free ranging wildlife.	Koduvilarpatty RF within 500m from North side of the project Boundary. There is no Wild Life Sanctuary etc within a radius of 1Km. The details of flora and fauna in the study area are given in Chapter 3.	147
20	The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.	Complied. The details are given in Chapter 3.	147 & 178
21	The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection.	Not Applicable.	-
22	The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site.	Agreed and complied. Koduvilarpatty RF within 500m from North side of the project Boundary. There is no Wild Life Sanctuary etc within a radius of 1Km. The details of flora and fauna in the study area are given in Chapter 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 water bodies due to mining	Complied. The details are given in section 7.6 of Chapter 7 and Annexure 13.	219 A307

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	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.	There is no waste generation (OB) in this quarry has been envisaged. However, there may be erosion due to the rainy season and that is limited within the quarry area. The control measures are explained in Chapter 4.	172
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.	Complied. The details are incorporated in Chapter 4.	175
26	The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.	Not applicable.	-
27	The project proponent shall study and furnish the details on potential fragmentation impact on natural environment, by the activities.	Fragmentation impact on the environment may be due to drilling and blasting. The anticipated impacts and mitigation measures are discussed in Chapter 4.	181
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	An ecological and biodiversity study has been conducted and the same is incorporated in Chapter 3 of	147 & 231

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	caves, heritage site, and archaeological sites possible land form changes visual and aesthetic impacts.	this EIA/EMP report. However, there are no any features mentioned in this condition within the M.L area. However, the impact anticipated with respect to the environment of the project area is very negligible and it will be minimized within the project area. The details are described in Chapter 10.	
29	The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.	Complied.	-
30	The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.	Complied. The details are described in Chapter 3 and 4.	132 & 175
Energy			
31	The measures taken to control Noise, Air, Water, Dust Control and steps adopted to efficiently utilize the Energy shall be furnished.	Complied. The details are described in Chapter 4.	167
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.	Considering that the quantum of production is less, only 1 excavator of 0.90m ³ bucket capacity (with Rock breaker attachment) 3 tippers (5/10Ts) will be engaged.	-

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33	The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock.	This 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 1250 of plants will be planted in and around the lease area.	-
Mine Closure Plan			
34	Detailed Mine Closure Plan covering the entire mine lease period as per precise area communication order issued.	Complied. Mine Closure Plan has been incorporated in the approved Mining Plan and the same is incorporated in the Chapter 4 & 10.	169, 228 & 234
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.	Complied. The details are described in Chapter 10.	175
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.	A green belt is proposed in an area of 0.30.0 Ha. Green belt development plan showing the plant species selected is given in section 4.6.3 of Chapter 4. The capital cost of Rs. 6.62	231

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		Lakh and a Recurring cost of 0.70 Lakh has been allocated for green belt development.	
Risk Assessment			
37	To furnish risk assessment and management plan including anticipated vulnerabilities during operational and post operational phases of Mining.	Complied. The details are described in section 7.2 of Chapter 7.	210
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.	Complied. The details are described in section 7.8 of Chapter 7.	228
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.	Complied. Enclosed as Annexure 6	A75
40	As per the MoEF& CC office memorandum F.NO.22-65/2017-1A.11I dated: 30.09.2020 and 20.10.2020 the proponent shall address the concerns raised during the public consultation and all the activities proposed	Agreed	206 & A293

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	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.	Complied. The PP has framed a detailed solid waste management system for the project area and the same will be executed by proper awareness and sign boards. The sign boards will be in two languages i.e., Vernacular language (Tamil) and common language (English). The plastic waste generation is very negligible and it will be collected from the source level in a specific dustbin and disposed through the municipal bins.	198
C. 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 new project. No mining has been carried out in this lease area so far by the proponent.	-
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, Theni. (Annexure-1)	A1

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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.	Complied. All the documents are 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).	Complied. Project coordinates superimposed on satellite imagery and given as Figure 2.3 in Chapter 2. The geology and geomorphology maps are provided in Figure 3.26 & 3.27, Chapter-3. The land use and other ecological maps are provided as Figure 3.20 in Chapter 3.	90,161 , 162,119 & 120
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.	-

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6	<p>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.</p>	<p>Not Applicable. The proposed land is patta land, registered in the name of applicant vide patta no.5370. The copy of the land document is attached as Annexure</p>	-
7	<p>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 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.</p>	<p>The proposed quarry is small scale magnitude operation and controlled by the lessee individually by engaging optimum statutory personals.</p> <p>Based on the magnitude of the operation, the PP has framed Environmental Policy and the same is incorporated in section 10.4 of Chapter 10.</p> <p>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 program,</p>	235

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		social development schemes, etc in the mine. The organizational chart for the same has been provided in Figure No.10.1, Chapter-10.	
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 7.2, Chapter-7. This being an opencast semi mechanized mine, subsidence is not applicable. The impact due to ground vibrations due to blasting is given in para 4.10, Chapter-4.	210 & 195
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.	Agreed. The study area considered for this study is 10 km radius and all data contained in the EIA report such as waste generation etc., is 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.	Satellite imagery has been used to study land use and the details of land use in the core and buffer zone is given in section 3.12 of Chapter 3.	150

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	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.	As per the Mining Plan, the Over Burden is in the form of Gravel, after the excavation, gravel loaded into the tipper to the tipper to the needy buyers for road projects and construction works for filling and leveling of low-lying areas. So there will not be any changes in the land use and no R&R issues.	-
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.	Not Applicable. There is no forest land in the lease area.	-

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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.	Not Applicable. 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. There is no forest land in the lease area.	-
15	The vegetation in the RF / PF areas in the study area, with necessary details, should be given.	Koduvilarpatty RF within 500m from North side of the project Boundary.	117
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 mitigate measures required, should be worked out with cost implications and submitted.	There is no Wild Life Sanctuary etc., within a radius of 10Km.	117
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	Koduvilarpatty RF within 500m from North side of the project Boundary. There is no Wild Life Sanctuary etc., within a radius of 1Km.	-

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	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.	Flora and fauna composition in the core and buffer zone of the project has been studied through primary field surveys. The details are furnished in Chapter 3.	147
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	-

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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 programme 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.	Not applicable. No habitation within a 300m of the radius.	-
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	Baseline data for meteorology, ambient air quality, water quality, noise level, soil and flora & fauna are collected during the Pre	121-147

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	<p>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>	<p>Monsoon season (October 2023 to December 2023) and detailed in Chapter-3.</p>	
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>	<p>Modelling is done using AERMOD and the projected values are found to be within the norms. Hence, there is no major impact due to this mining project. The cumulative impact of mining is also studied and the same is found to be within norms. The details are given in section 4.7 of Chapter 4 and for cluster - 7.4.1 of Chapter 7.</p>	181 & 212

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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.	The entire water requirement for the project is 8.5KLD which will be sourced from outside agencies. The water balance diagram is shown in Figure 4.1 of Chapter 4	176
25	Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.	Not Applicable. The required water will be outsourced from the nearby village.	-
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.	Details of the water conservation plan are given in chapter 10. Rainwater harvesting plan are detailed in section 4.5.6 of Chapter 4.	177
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.	The impact studies and mitigation measures of water environment, including surface and ground water are discussed in section 4.5 of Chapter 4.	175
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	As per the mining plan, the ground water table of the project surrounding area is 55m BGL and 38m BGL depth has been envisaged as a workable depth for safe and economic mining during the lease period. So, the proposed mine working will	-

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	Include details of the aquifers 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.	not intersect the ground water table. Therefore, it is not necessary to get permission from CGWA.	
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.	There is a seasonal odai passing on Western side of the area and a 50m Safety distance is provided. There are seasonal odai's passing on Western at 70m and Northeastern side at 360m away from the area. There is a Kulam situated on the Southeastern side of the area and is 290m away from the area	-
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 altitude of the area is above 355 m from MSL. The ultimate pit depth of mining is 38m below ground level. The water table is found at a depth of 55m BGL.	-
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.	In the lease area, safety barrier of 7.5m and 50m are left as a safety zone. Greenbelt/Plantation will be carried out in and around the lease area to enhance the vegetative growth and	179

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	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.	aesthetic in the area. Detailed in section 4.6.3 of Chapter 4.	
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.	The Traffic density survey was carried out to analyze the impact of transportation in the study area as per IRC guidelines 1961 and it is inferred that there is no significant impact due to the proposed transportation from the project area. Details in section 4.8 of Chapter 4.	190
33	Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.	Infrastructure & other facilities will be provided to the mine workers after the grant of the quarry lease and the same has been discussed in Chapter 2.	-

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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/conceptual land use of the study area is given in section 2.21 of Chapter 2.	107
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	Occupational health and safety study is given in Para 4.12 of Chapter-4.	197
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	No major impact on public health will be there since the villages are located more than 1km from the lease area.	-
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.	This project provides employment to 29 people directly. Local people will be hired for unskilled labour. Through CER, nearby schools, hospitals will be benefited. For CER, INR 5.0 Lakh is allocated. Based on the demands of the people during the public hearing, further funds will be allocated, if	-

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		necessary.	
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.	Environmental Management plan details are given in Chapter 10.	231
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.	After the public hearing, the budgetary provisions will be made accordingly.	206
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.	Total Project Cost – Rs. 93,18,000/-, which is excluding EMP cost. The total EMP cost for 5 years is 6 Lakhs i.e., Rs. 28.6 Lakhs of Capital + Recurring costs Rs.62 Lakhs. The breakup of EMP costs is given in Table 10.2 of Chapter 10.	237
42	A Disaster management Plan shall be prepared and included in the EIA/EMP Report.	The disaster and its management plan is given in section 7.8 of Chapter-7.	228

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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.	This project will contribute financially through payment of taxes like royalty, GST, etc. The project will also contribute via CER. This project provides employment to 29 people directly. Local people will be hired for unskilled labour. Through CER, nearby schools, hospitals will be benefited. For CER, INR 5 Lakhs has been allocated.	-
44	Besides the above, the below mentioned general points are also to be followed.		-
	a) Executive Summary of the EIA/EMP Report	Yes, Complied.	-
	b) All documents to be properly referenced with index and continuous page numbering.	Yes, Complied.	-
	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.	Yes, Complied.	-
	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.	Yes, Complied.	-

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	e) Where the documents provided are in a language other than English, an English translation should be provided.	Yes, Complied.	-
	f) The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.	Yes, Complied.	-
	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 4 th August 2009 which are available on the website of this Ministry, should be followed.	Noted & agreed.	-
	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.	Yes, Complied.	-
	i) As per the circular no.J-11011/618/2010-IA.II (I) dated 30.5.2012, certified report of the	Yes, Complied.	-

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	status of compliance of the conditions stipulated in the Environmental 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.	Yes, Complied.	-

CHAPTER 1 INTRODUCTION

1.1 PURPOSE OF THE REPORT

Environmental Impact Assessment (EIA) is a tool used to identify the environmental, social and economic impacts of a project prior to decision-making. It aims to predict environmental impacts at an early stage in project planning and design, find ways and means to reduce adverse impacts, shape projects to suit the local environment and present the predictions and options to decision-makers.

Thiru. R. Seenivasan proposes to operate a Rough Stone & Gravel Quarry at Survey Nos. 110/3, 110/4, 110/5, 127/1 and 127/2 over an extent of 3.78.0 Ha in Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu.

Thiru. R. Seenivasan has obtained a Precise Area communication letter from the Assistant Director, Theni District, to quarry out 3,61,855 m³ of Rough Stone and 74,232 m³ of Gravel over an extent of 3.78.0 Ha., located at Survey No. 110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu. Hence, this proposed quarry falls under the cluster situation due to the following proposed and existing quarries located within a 500m radius. The details are given below.

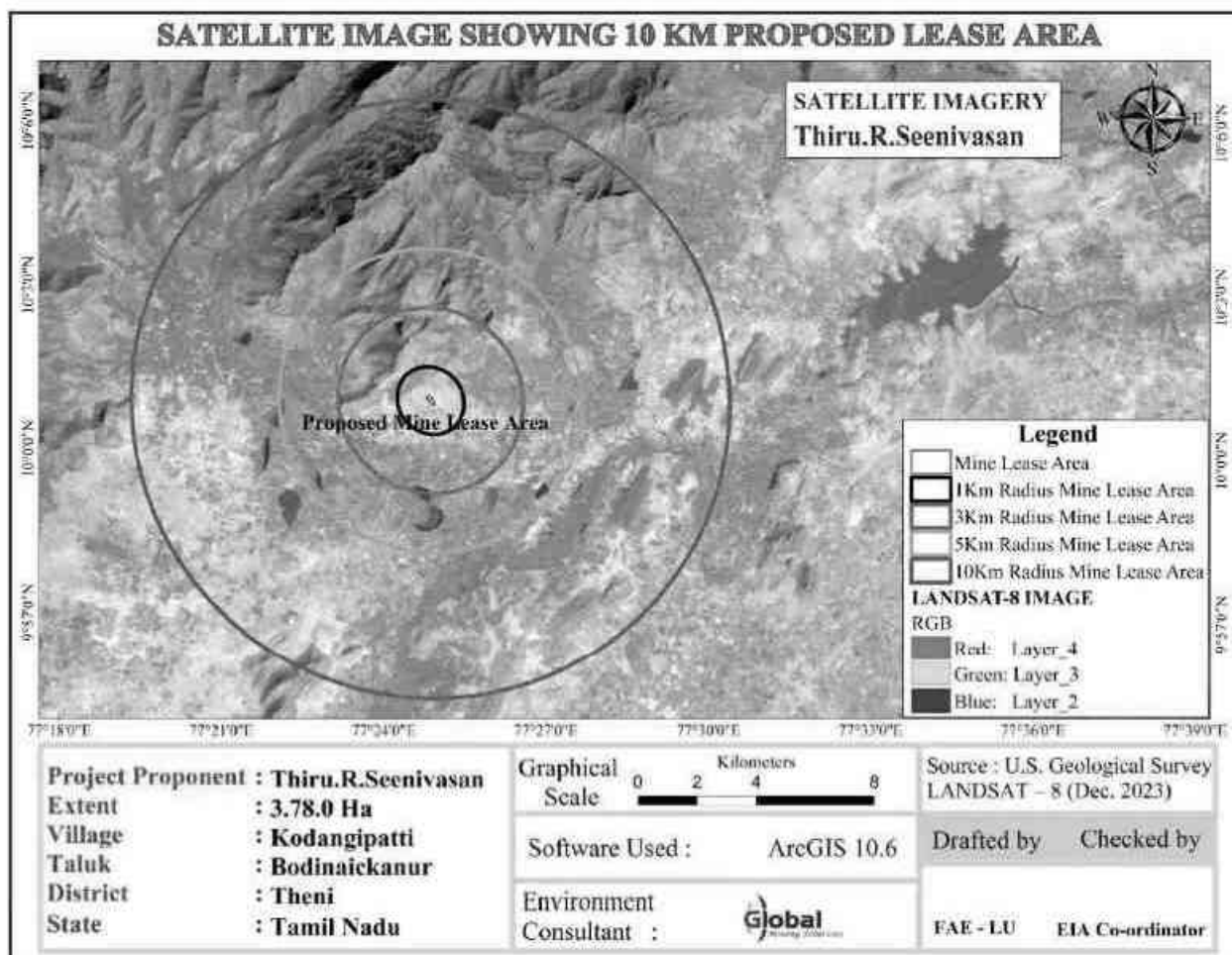
Sl. No.	Extent	Proponent	Status of lease
1	2.73.0 Ha	Thiru. M.Thiyagarajan	Existing
2	3.78.0 Ha	Thiru.R.Seenivasan	Proposed
Total Cluster extent is 6.51.0 Ha			

The cluster includes 2 mining leases i.e., **this proposed quarry (3.78.0 Ha)** and other 1 existing Quarry (2.73.0 Ha) namely Thiru.M.Thiyagarajan at S.F.No.156/1, 156/2A, & 156/3A.

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As per EIA notification, 2006 and its subsequent amendments, the proposed "Kodangipatti Rough Stone & Gravel Quarry of Thiru. R. Seenivasan" cluster falls under Schedule 1(a) Mining of Minerals. It is further classified under Category B1 due to the overall extent of cluster area is 6.51.0 Ha which is >5 Ha. The satellite image showing 10KM proposed lease area is shown in Fig 1.1.

Figure1.1 Satellite Image showing 10KM proposed lease area



The ToR for preparation of EIA/EMP was approved vide letter No.SEIAA-TN/F.No.10478/SEAC/ToR-1624/2023, dated 12.12.2023. This report has been prepared in line with the approved ToR for production of maximum excavation of 3,61,855m³ of Rough Stone, 74,232m³ of Gravel formation for a period of five years.

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After completing the public consultation process, the issues raised and the commitment of Project Proponent during the public hearing will be incorporated in the final EIA/EMP report.

1.2 IDENTIFICATION OF PROJECT AND PROJECT PROPONENT

The proposed project is for mining of Rough Stone & Gravel (under cluster) from the S.F. No. 110/3, 110/4, 110/5, 127/1 and 127/2 located in Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu. As per the EIA notification, 2006 and its subsequent amendments, the project comes under Schedule 1 (a) under Category B1 (Lease area >5 to 250 Ha). The proposed project details are given below.

(a) Proposed project details

Sl. No.	Description	Status/Remarks
1.	Sector	Non-coal mining
2.	Category of the project	B1 (Cluster)
3.	Proposed mineral	Rough Stone & Gravel
4.	Type of Lease	Fresh Lease
5.	Extent of the lease	3.78.0 Ha
6.	Proposed depth of mining	38 m BGL
7.	Method of mining	Opencast Semi-mechanized
8.	Proposed lease period	10 Years
9.	Proposed Environmental Clearance	5 Years
10.	Proposed production quantity for five years	Rough Stone- 3,61,855 m ³ , Gravel- 74,232 m ³

(b) Profile of the project proponent

The proposed lessee Thiru.R.Seenivasan is an individual with sound experience in the identification of quarries, operation and marketing in the field of Rough Stone. The proposed land is Patta land, registered in the name of applicant vide Patta no.5370.

(c) Project proponent details

Name of the proponent : Thiru.R.Seenivasan
Status of the Proponent : Individual

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Address Thiru. R.Seenivasan
S/o.V.Ramasubbu,
No.2-5-16, Rajaji Street, Lakshmipuram,
Periyakulam Taluk, Theni District.
Pin Code– 625 523.

1.3 BRIEF DESCRIPTION OF NATURE OF THE PROJECT

The proposed quarrying operation is Opencast Semi Mechanized method with 5m bench height, 5m bench width and overall bench slope is less than 80°. The quarry operation involves shallow jackhammer drilling, slurry blasting, excavation, loading and transportation.

1.4 SIZE AND LOCATION OF THE PROJECT

(a) Size of the project

Table1.2 Proposed project details		
Sl. No.	Feature	Description
1	Type of land	Patta Land
2	Extent of lease area	3.78.00 Ha
3	Type of lease	Fresh lease
4	Geological Resource	1322860 Cu.m of Rough stone, 113388 Cu.m of Gravel
5	Mineable Resource	3,61,855 Cu.m of Rough Stone, 74,232 Cu.m of Gravel
6	Proposed production quantity for five years	3,61,855 Cu.m of Rough Stone, 74,232 Cu.m of Gravel
7	Proposed depth of mining	38 m BGL

(b) Location of the project

The proposed project site is located in Kodangipatti Village, Bodinaickanur Taluk, Theni District and its Latitude is 10° 00' 52.68"N to 10° 01' 02.39"N & Longitude is 77° 24' 44.43"E to 77° 24' 52.74"E with Survey of India Topo Sheet No. 58F/08 & 58G/05.

1.5 IMPORTANCE OF THE PROJECT TO THE COUNTRY AND REGION

There is an increasing demand for rough stone and gravel in India and other countries. Since the construction industry is rapidly growing now, there is an increasing demand for rough stone. Thus, this project will contribute not only to the demand for Rough stone and Gravel and also provide employment opportunities for the nearby villages.

1.6 SCOPE OF THE STUDY WITH DETAILS OF REGULATORY SCOPING

Any mining project may cause environmental impacts near the project site during its operation. The type and intensity of impacts on various components of the environment may vary depending on the nature of the project, as well as its geographical location. The net impacts of the project can be quantified through Environment Impact Assessment (EIA) studies on Physical, Biological and Socio-economic environment. The EIA studies give a basis for preparing an Environmental Management Plan (EMP) to conserve the environment of the area.

For the purpose of preparing EIA/EMP the SEIAA, Tamil Nadu has issued a Terms of Reference vide letter No.SEIAA-TN/F.No.10478/SEAC/ToR-1624/2023, dated 12.12.2023 in accordance with the provisions of EIA Notification 2006 and its subsequent amendments. This EIA study includes both Core and Buffer zone i.e., the lease area and 10km radius of the project area respectively. This EIA report was prepared based on the data generated from (October 2023 to December 2023) and all individual components of the environment are described in detail. An in-depth analysis of available information has been conducted to work out an effective Environmental Management Plan.

1.7 PRESENT STUDY

The Project Proponent has assigned M/s Global Mining Solutions, Salem to conduct an Environment Impact Assessment / Environmental Management Plan (EIA/EMP) for this project. The Environmental Impact Assessment and Environmental Management Plan of this cluster quarry addressing all the environmental related

DRAFT EIA/EMP OF PROPOSED KODANGIPATTI ROUGH STONE & GRAVEL QUARRY OF THIRU.SEENIVASAN.R OVER AN EXTENT OF 3.78.0 Ha., LOCATED AT SURVEY NO. S.F.Nos.110/3, 110/4, 110/5, 127/1 AND 127/2 OF KODANGIPATTI VILLAGE, BODINAICKANUR TALUK, THENI DISTRICT, TAMIL NADU.

impacts and mitigation measures. The EMP report is based on the data generated from October 2023 to December 2023 by M/s.Shrient Analytical and Research Labs Pvt. Ltd, Chennai and the data generated by the FAE of the M/s.Global Mining Solutions, Salem. The study evaluates the prevailing baseline environmental conditions. The objectives of the present study are given below.

- ✦ To prepare the present baseline scenario through primary field monitoring and secondary data for different environmental descriptors such as air, water, noise, traffic, biodiversity, socio-economic etc.
- ✦ To identify the activities of mining that have bearing on the environment
- ✦ To Assess the impact of proposed project activity
- ✦ To suggest preventive mitigation measures
- ✦ To prepare an Environmental Management Plan (EMP) including environmental monitoring.
- ✦ To Prepare Disaster Management Plan.

1.8 STATUS OF LITIGATIONS

This is a fresh Rough Stone & Gravel Quarry project. There are no litigation/court cases pending against this project.

a. Precise Area Communication:

The Project Proponent has obtained Precise Area Communication from the Assistant Director, Department of Geology and Mining, Theni, Rc.No. 818/Kanimam/2022, dated 06.01.2023. The letter copy enclosed as **Annexure – 1**.

b. Mining Plan Approval Letter:

The project proponent has prepared mining plan under rule 19(l),41 &42 of Tamil Nadu Minor Mineral Concession Rules, 1959 and the same has been approved by the Assistant Director, Department of Geology and Mining, Theni, Rc.No. 818/Kanimam/2021, dated 25.01.2023. The approval letter along with approved plan is enclosed as **Annexure – 2**.

DRAFT EIA/EMP OF PROPOSED KODANGIPATTI ROUGH STONE & GRAVEL QUARRY OF THIRU.SEENIVASAN.R OVER AN EXTENT OF 3.78.0 Ha., LOCATED AT SURVEY NO. S.F.Nos.110/3, 110/4, 110/5, 127/1 AND 127/2 OF KODANGIPATTI VILLAGE, BODINAICKANUR TALUK, THENI DISTRICT, TAMIL NADU.

c. 500m radius quarry features:

The project proponent has obtained an official letter from the Assistant Director, Dept. of Geology & Mining, Theni vide Rc.No.818/Kanimam/2021, dated 09.02.2023. The letter copy enclosed as **Annexure – 3**.

d. Project Proponent undertaking affidavit:

The project proponent has issued an affidavit under MoEF & CC O.M. No. 3-50/2017-IA.III (Pt.) dated 30.05.2018 to comply with the direction of the Hon'ble SC made on 2.08.2017 in W.P. (C) 114 of 2014 in matter of Common Cause vs Union of India & Others. The Affidavit copy is enclosed as **Annexure – 14**.

e. Blasting Agreement:

The Project Proponent has an agreement with M/s. T.M.K. Explosives to carry out the blasting operation for the proposed quarry. The Blasting Agreement is enclosed as **Annexure – 5**.

f. Land document of the proposed lease area:

The proposed land is Patta land registered in the name of applicant vide Patta no.5370.

CHAPTER 2

PROJECT DESCRIPTION

2.1 TYPE OF PROJECT

The type of the project is opencast semi mechanized mining method to excavate Rough Stone & Gravel within the proposed Mine Lease area with shallow drilling, slurry blasting, loading and transportation. This project is located at S.F.No. 110/3, 110/4, 110/5, 127/1 and 127/2, over an extend of 3.78.0 Ha, in Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu.

As per EIA notification, 2006 and its subsequent amendments, the project comes under Schedule 1 (a) under Category B1 (Lease area >5 to 250 Ha), considering the cluster situation and the total cluster area is 6.51.0 Ha. The details of mines located in the cluster area is certified by Assistant Director of Department of Geology and Mining, Theni District through 500m radius letter vide Rc.No.818/Kanimam/2022, dated 09.02.2023.

The cluster includes 2 mining leases i.e., **this proposed quarry (3.78.0 Ha)** and other 1 existing Quarry (2.73.0 Ha) namely Thiru.M.Thiyagarajan at S.F.No.156/1, 156/2A, & 156/3A.

The proposed production is 3,61,855 m³ of Rough Stone and 74,232 m³ of Gravel for the period of five years by open cast semi mechanized mining method.

2.2 NEED FOR THE PROJECT

The construction industry is growing at a very fast rate, so there is an increasing demand for Rough Stone and gravel. Also, in the international market there is a good demand for Indian cut and raw stones. Thus, this project will contribute to the demand for rough stone and gravel and provide employment opportunities for the nearby villages.

2.3 SALIENT FEATURES OF THE PROJECT

The salient features of the proposed Rough Stone & Gravel Quarry of Thiru. R. Seenivasan is given below.

Table 2.1 Salient features of the project		
S.No.	Type of Detail	Description
1	Sector	1(a) Non coal mining
2	Fresh/Existing project	Fresh project
3	Category	B1 Cluster
4	Nature of mineral	Minor mineral
5	Life of the mine	5 years
6	Production Quantity for five years	3,61,855 m ³ of Rough Stone, 74,232 m ³ of Gravel
7	Waste generation and management	Nil
8	Bench height and width	5 m & 5m
9	Ultimate pit depth	38m BGL
10	End use	Rough Stone and gravel, will be sold to nearby crushers and construction industries.

2.4 LOCATION

This project site is in Kodangipatti Village, Bodinaickanur Taluk, Theni District. There is an existing road from the area leads to Durairajapuram - Boothipuram village road on Eastern side of the area. The National Highway (NH-85) Theni - Madurai about 2.1km on southern side of the area. The State Highway (SH-100) Bodinaickanur - Uthamapalayam is about 7.2Km on the southwestern side of the area. The nearest railway station is Bodinaickanur - Madurai line, which is about 1.3Km on southern side of the area. The nearest airport is Madurai Airport, which is located at a distance of 76.72km, SE. The general location is given in Figure 2.1. The google image showing all corner coordinates is given in Figure 2.3.

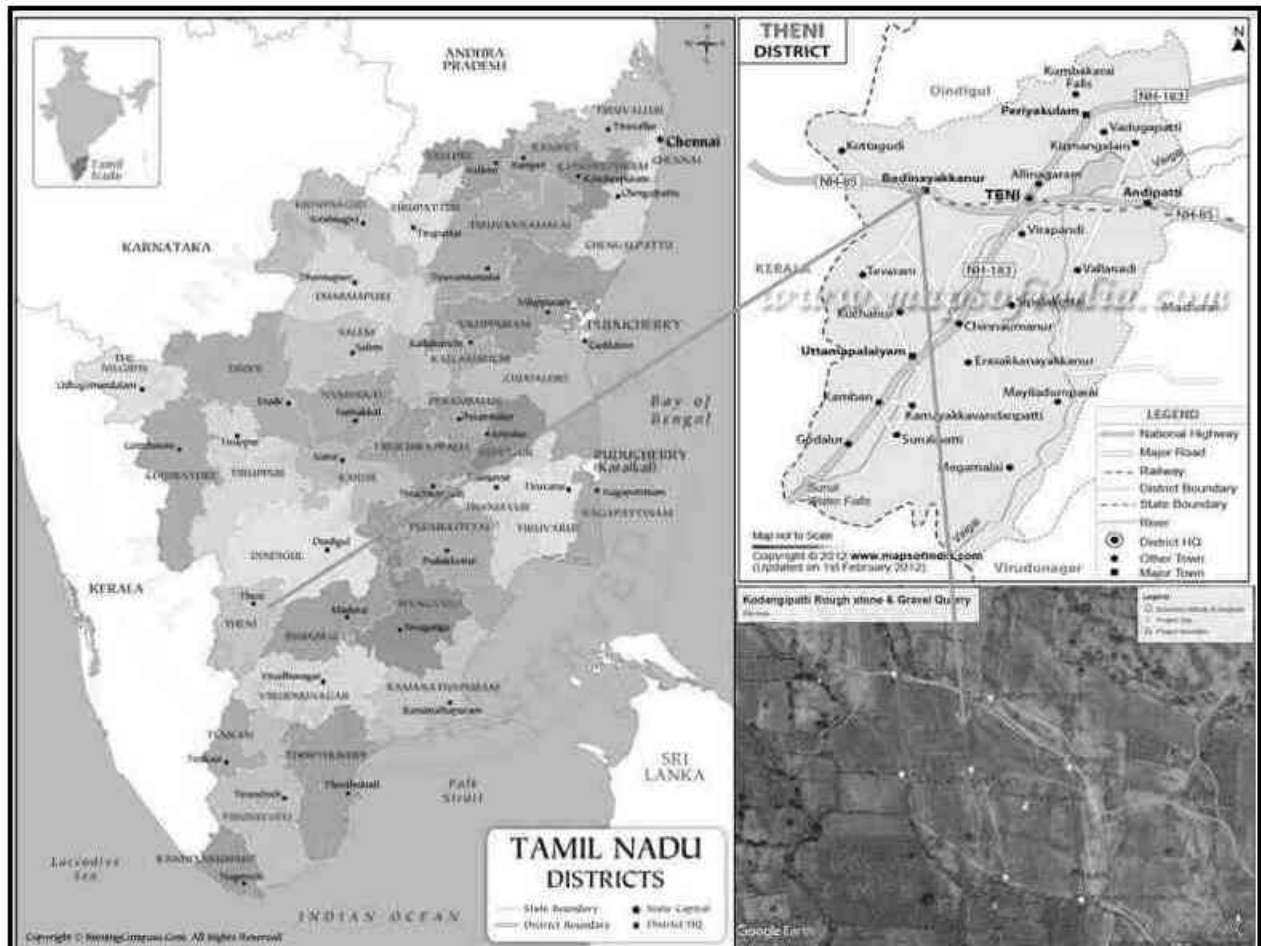
DRAFT EIA/EMP OF PROPOSED KODANGIPATTI ROUGH STONE & GRAVEL QUARRY OF THIRU.SEENIVASAN.R OVER AN EXTENT OF 3.78.0 Ha., LOCATED AT SURVEY NO. S.F.Nos.110/3, 110/4, 110/5, 127/1 AND 127/2 OF KODANGIPATTI VILLAGE, BODINAICKANUR TALUK, THENI DISTRICT, TAMIL NADU.

Table 2.2 Project Site Description

Location	Kodangipatti Village, Bodinaickanur Taluk, Theni District
Survey Nos.	110/3, 110/4, 110/5, 127/1 and 127/2
Co ordinates	Latitude - 10° 00' 52.68"N to 10° 01' 02.39"N Longitude - 77° 24' 44.43"E to 77° 24' 52.74"E
Nearest Village	Kodangipatti – 3.36 km (SE)
Nearest Town	Bodinaickanur – 7.10 km (W)
Nearest Railway	Bodinaickanur - Madurai line - 1.3 km (S)
Nearest Airport	Madurai – 76.72 km (SE)
Topography	The project area exhibits a slightly undulated topography covered by Gravel formation. The massive Charnockite formation is noticed below 3m (Avg) Gravel formation and sloping towards the Southeastern side of the area, the altitude of the area is above 355m (maximum) from MSL.
Accessibility	The lease area can be approachable from an existing road from the area leads to Durairajapuram - Boothipuram village road on Eastern side of the area.
Drainage	There is a seasonal Odai passing on the Western side of the area and a 50m safety distance is provided. There are seasonal Odai's passing on the western 70m and Northeastern side at 360m away from the area. There is a Kulam situated on the Southeastern side of the area and is 290m away from the area.

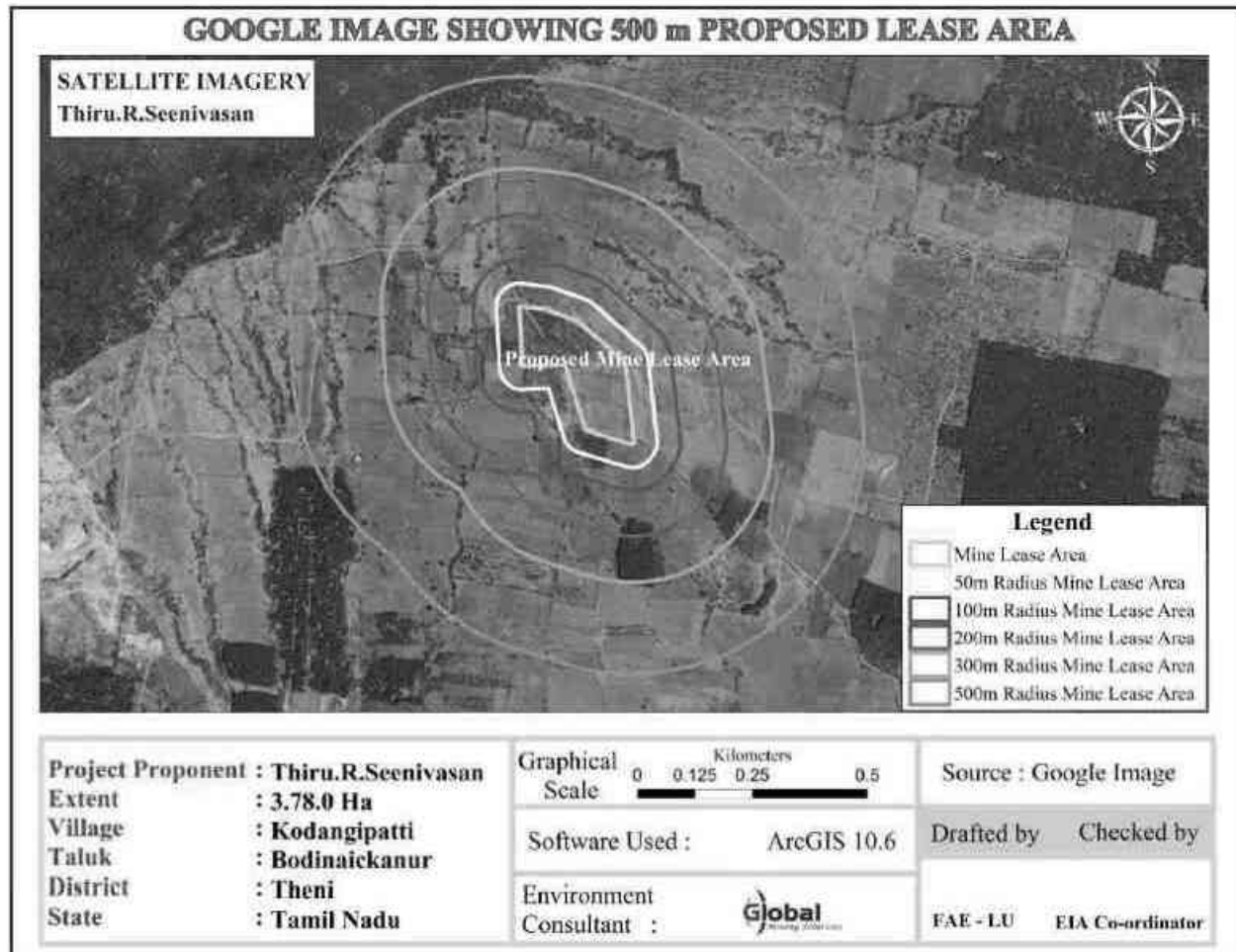
DRAFT EIA/EMP OF PROPOSED KODANGIPATTI ROUGH STONE & GRAVEL QUARRY OF THIRU.SEENIVASAN.R OVER AN EXTENT OF 3.78.0 Ha., LOCATED AT SURVEY NO. S.F.Nos.110/3, 110/4, 110/5, 127/1 AND 127/2 OF KODANGIPATTI VILLAGE, BODINAICKANUR TALUK, THENI DISTRICT, TAMIL NADU.

FIGURE 2.1 LOCATION MAP



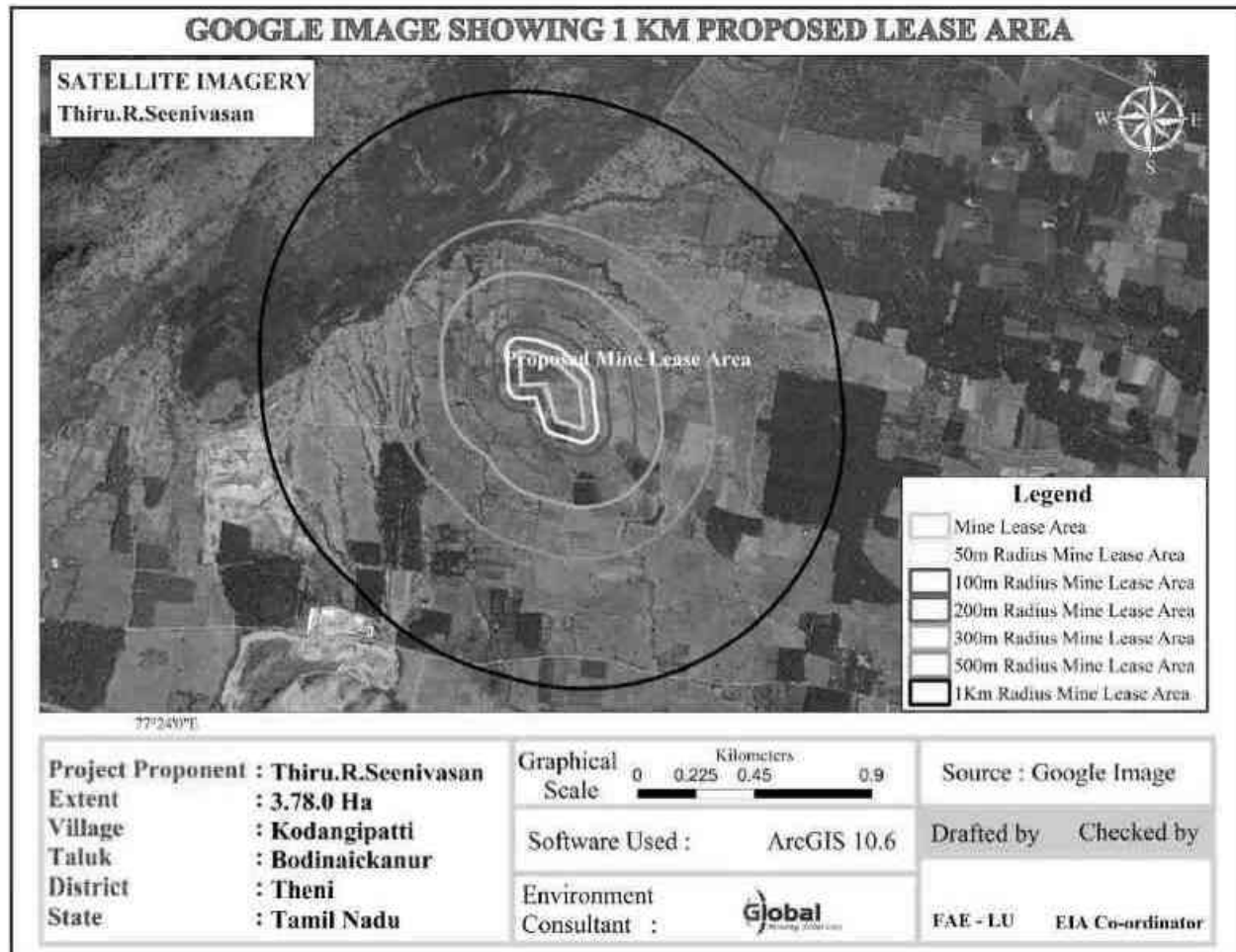
DRAFT EIA/EMP OF PROPOSED KODANGIPATTI ROUGH STONE & GRAVEL QUARRY OF THIRU.SEENIVASAN.R OVER AN EXTENT OF 3.78.0 Ha., LOCATED AT SURVEY NO. S.F.Nos.110/3, 110/4, 110/5, 127/1 AND 127/2 OF KODANGIPATTI VILLAGE, BODINAICKANUR TALUK, THENI DISTRICT, TAMIL NADU.

FIGURE 2.2 GOOGLE IMAGE SHOWING 500M PROPOSED LEASE AREA



DRAFT EIA/EMP OF PROPOSED KODANGIPATTI ROUGH STONE & GRAVEL QUARRY OF THIRU.SEENIVASAN.R OVER AN EXTENT OF 3.78.0 Ha., LOCATED AT SURVEY NO. S.F.Nos.110/3, 110/4, 110/5, 127/1 AND 127/2 OF KODANGIPATTI VILLAGE, BODINAICKANUR TALUK, THENI DISTRICT, TAMIL NADU.

FIGURE 2.3 GOOGLE IMAGE SHOWING 1KM PROPOSED LEASE AREA



DRAFT EIA/EMP OF PROPOSED KODANGIPATTI ROUGH STONE & GRAVEL QUARRY OF THIRU.SEENIVASAN.R OVER AN EXTENT OF 3.78.0 Ha., LOCATED AT SURVEY NO. S.F.Nos.110/3, 110/4, 110/5, 127/1 AND 127/2 OF KODANGIPATTI VILLAGE, BODINAICKANUR TALUK, THENI DISTRICT, TAMIL NADU.

FIGURE 2.4 GOOGLE IMAGE SHOWING 10KM PROPOSED LEASE AREA



2.5 PROJECT BOUNDARY AND PROJECT SITE LAYOUT:

The lease area has 9 corners and the latitude and longitude values are given below.

Corners	Co-Ordinates		Distance between the corners
	Latitude	Longitude	
1	10° 00' 53.66"N	77° 24' 49.25"E	1-2 = 149.8m
2	10° 00' 58.30"N	77° 24' 47.75"E	2-3 = 92.6m
3	10° 00' 58.12"N	77° 24' 44.72"E	3-4 = 131.6m
4	10° 01' 02.39"N	77° 24' 44.43"E	4-5 = 57.0m
5	10° 01' 02.18"N	77° 24' 46.29"E	5-6 = 75.0m

DRAFT EIA/EMP OF PROPOSED KODANGIPATTI ROUGH STONE & GRAVEL QUARRY OF THIRU.SEENIVASAN.R OVER AN EXTENT OF 3.78.0 Ha., LOCATED AT SURVEY NO. S.F.Nos.110/3, 110/4, 110/5, 127/1 AND 127/2 OF KODANGIPATTI VILLAGE, BODINAICKANUR TALUK, THENI DISTRICT, TAMIL NADU.

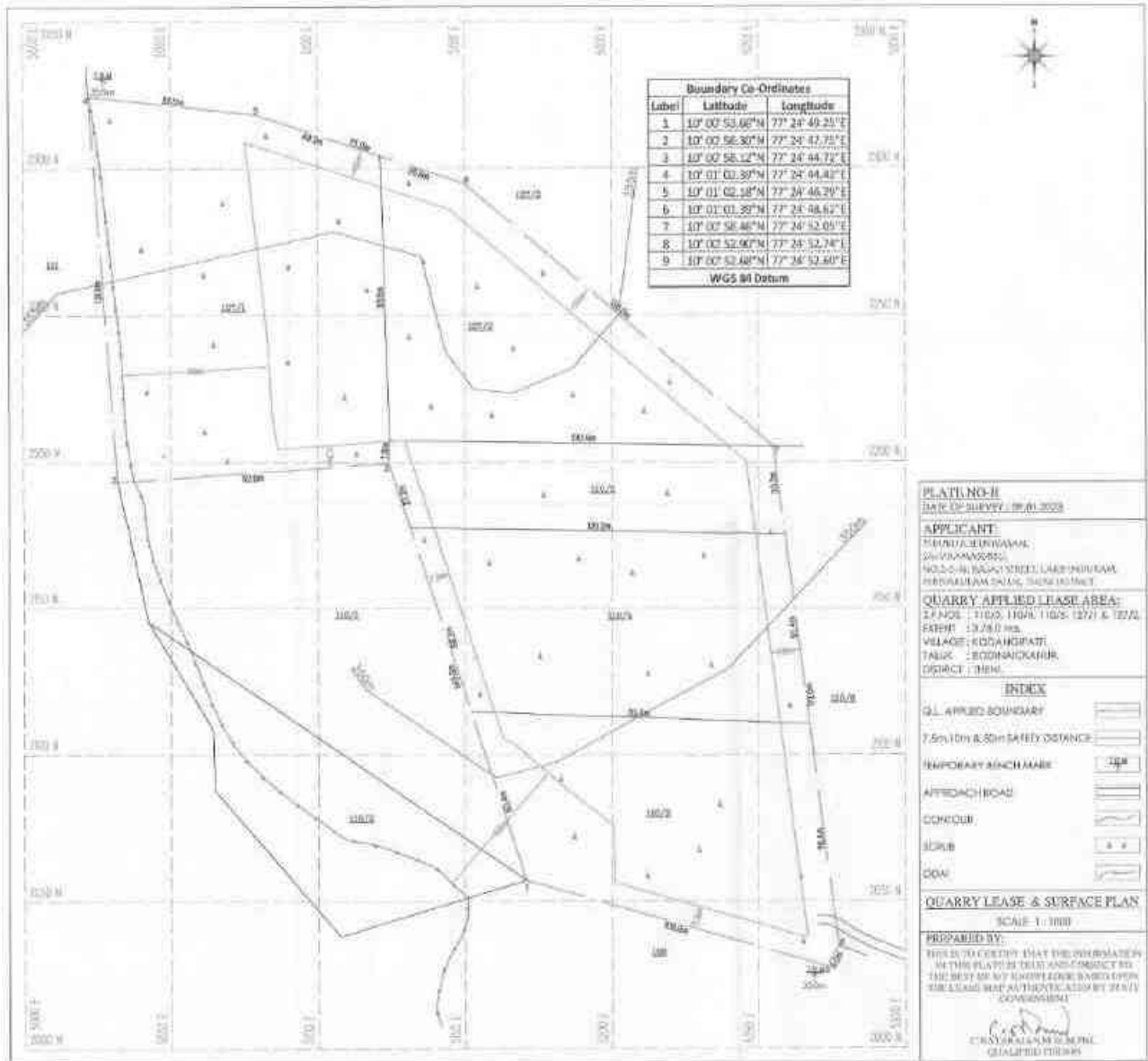
6	10° 01' 01.39"N	77° 24' 48.62"E	6-7	=	138.0m
7	10° 00' 58.46"N	77° 24' 52.05"E	7-8	=	172.0m
8	10° 00' 52.90"N	77° 24' 52.74"E	8-9	=	8.0m
9	10° 00' 52.68"N	77° 24' 52.60"E	9-1	=	106.6m

FIGURE 2.5 GOOGLE IMAGE SHOWING PROJECT SITE



DRAFT EIA/EMP OF PROPOSED KODANGIPATTI ROUGH STONE & GRAVEL QUARRY OF THIRU.SEENIVASAN.R OVER AN EXTENT OF 3.78.0 Ha., LOCATED AT SURVEY NO. S.F.Nos.110/3, 110/4, 110/5, 127/1 AND 127/2 OF KODANGIPATTI VILLAGE, BODINAICKANUR TALUK, THENI DISTRICT, TAMIL NADU.

FIGURE 2.6 SURFACE PLAN OF THE PROJECT AREA



DRAFT EIA/EMP OF PROPOSED KODANGIPATTI ROUGH STONE & GRAVEL QUARRY OF THIRU.SEENIVASAN.R OVER AN EXTENT OF 3.78.0 Ha., LOCATED AT SURVEY NO. S.F.Nos.110/3, 110/4, 110/5, 127/1 AND 127/2 OF KODANGIPATTI VILLAGE, BODINAICKANUR TALUK, THENI DISTRICT, TAMIL NADU.

FIGURE 2.7 SITE PHOTOS



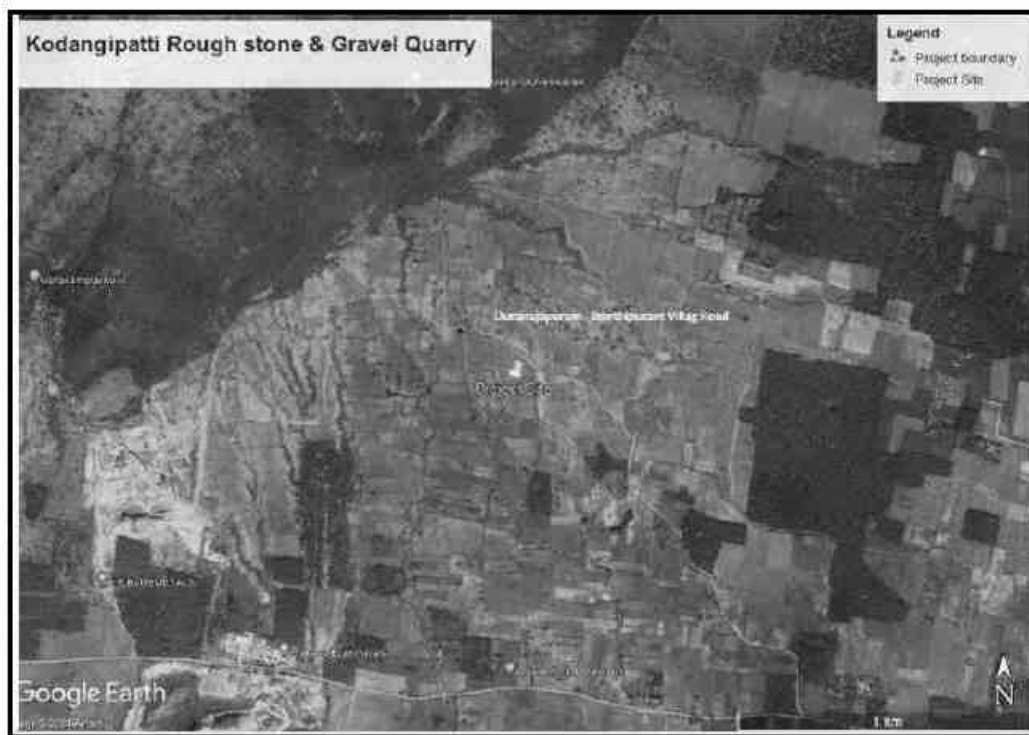
Table 2.4 Site Connectivity

<p>Nearest Roadway</p>	<ul style="list-style-type: none"> • There is an existing road from the area leads to Durairajapuram - Boothipuram village road on Eastern side of the area. • The National Highway (NH-85) Theni – Madurai about 2.1km on the southern side of the area. • The State Highway (SH-100) Bodinaickanur - Uthamapalayam is about 7.2Km on the southwestern side of the area.
<p>Nearest Village</p>	<p>Valayathupatti - 3.9 km – E Kodangipatti – 3.36 km - SE</p>

DRAFT EIA/EMP OF PROPOSED KODANGIPATTI ROUGH STONE & GRAVEL QUARRY OF THIRU.SEENIVASAN.R OVER AN EXTENT OF 3.78.0 Ha., LOCATED AT SURVEY NO. S.F.Nos.110/3, 110/4, 110/5, 127/1 AND 127/2 OF KODANGIPATTI VILLAGE, BODINAICKANUR TALUK, THENI DISTRICT, TAMIL NADU.

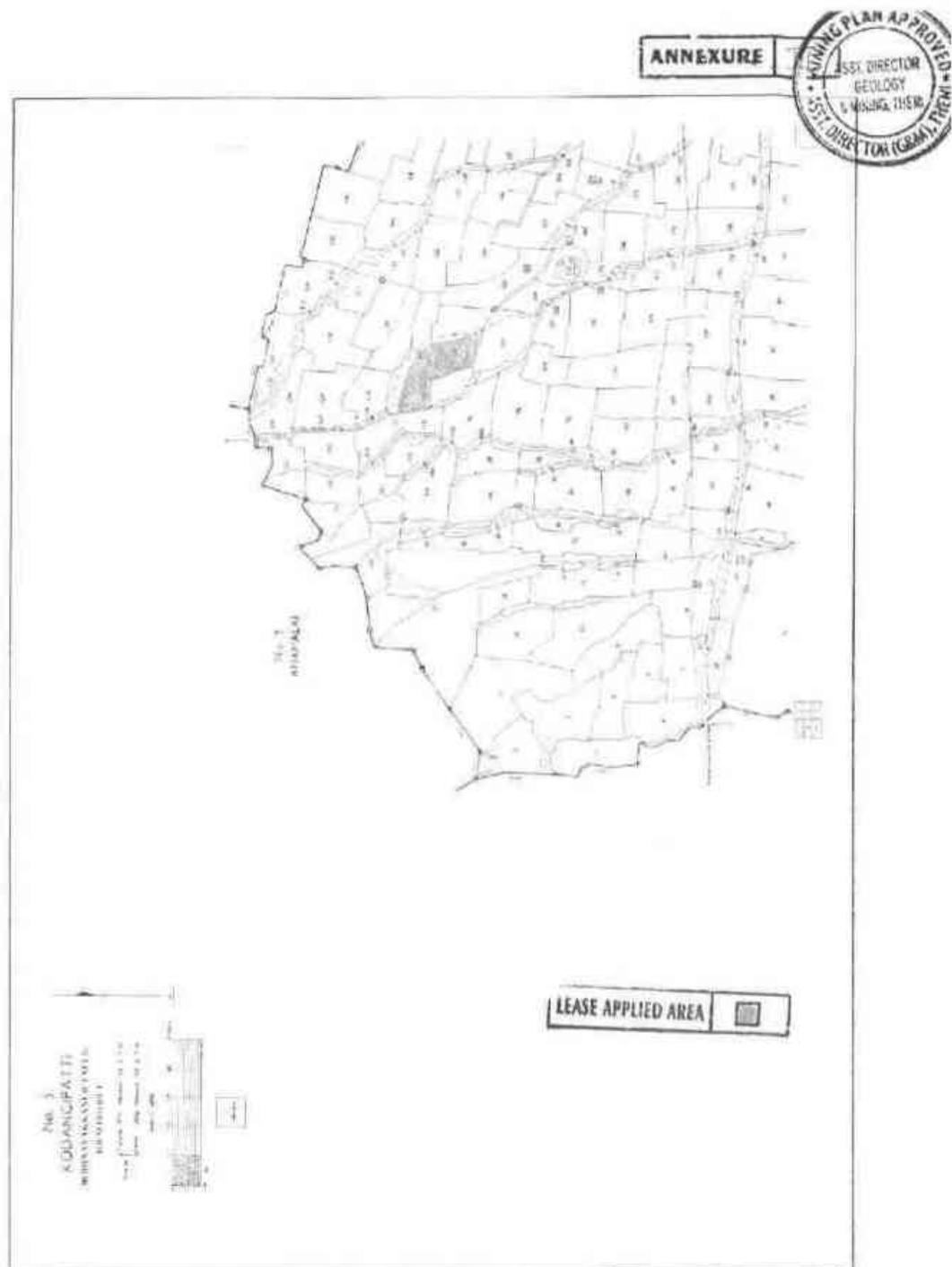
	Durairajapuram – 3.40 Km-SW
Nearest Railway	The nearest railway station is Bodinaickanur - Madurai line, which is about 1.3Km on the southern side of the area
Nearest Airport	Madurai – 76.72 Km – SE

FIGURE 2.8 APPROACHABILITY MAP



DRAFT EIA/EMP OF PROPOSED KODANGIPATTI ROUGH STONE & GRAVEL QUARRY OF THIRU.SEENIVASAN.R OVER AN EXTENT OF 3.78.0 Ha., LOCATED AT SURVEY NO. S.F.Nos.110/3, 110/4, 110/5, 127/1 AND 127/2 OF KODANGIPATTI VILLAGE, BODINAICKANUR TALUK, THENI DISTRICT, TAMIL NADU.

FIGURE 2.7 VILLAGE MAP



DRAFT EIA/EMP OF PROPOSED KODANGIPATTI ROUGH STONE & GRAVEL QUARRY OF THIRU.SEENIVASAN.R OVER AN EXTENT OF 3.78.0 Ha., LOCATED AT SURVEY NO. S.F.Nos.110/3, 110/4, 110/5, 127/1 AND 127/2 OF KODANGIPATTI VILLAGE, BODINAICKANUR TALUK, THENI DISTRICT, TAMIL NADU.

2.6 LAND USE

It is Patta land and allotted to PP for Rough Stone & Gravel Quarry operation.

Location	S.F. No	Area in Ha	Name of the owner	Type of land	Remarks
Kodangipatti Village, Bodinaickanur Taluk, Theni District	110/3, 110/4, 110/5, 127/1 and 127/2	3.78.0	Thiru. R. Seenivasan	Patta land	It is patta land registered in the name of applicant vide Patta no.5370. Please refer Annexure No: IV.
Total		3.78.0			

2.7 GEOLOGY AND TOPOGRAPHY

a. Topography

The mine lease area of 3.78.0 Ha is covered in the Survey of India Toposheet 58F/08 & 58G/05 and is bounded by Latitude: 10° 00' 52.68"N to 10° 01' 02.39"N Longitude: 77° 24' 44.43"E to 77° 24' 52.74"E.

The area applied for quarry lease exhibits slightly undulated topography covered by Gravel formation. The massive Charnockite formation is noticed below 3m (Avg) Gravel formation and sloping towards the Southeastern side of the area, the altitude of the area is above 355m (maximum) from MSL. No major river is found nearby the lease applied area. Water table is found at a depth of 55m in summer and 52m in rainy seasons. The temperature of the area is reported to be 18⁰C to a maximum of 42⁰C during summer. Rainfall of this area is about 800mm to 900 mm during the both NE & SW monsoons. The topomap showing the lease area of the proposed quarry is given in Figure 3.3 and the satellite map showing the proposed lease area is given in Figure 3.4.

DRAFT EIA/EMP OF PROPOSED KODANGIPATTI ROUGH STONE & GRAVEL QUARRY OF THIRU.SEENIVASAN.R OVER AN EXTENT OF 3.78.0 Ha., LOCATED AT SURVEY NO. S.F.Nos.110/3, 110/4, 110/5, 127/1 AND 127/2 OF KODANGIPATTI VILLAGE, BODINAICKANUR TALUK, THENI DISTRICT, TAMIL NADU.

The elevation of the proposed quarry is 355 m RL (maximum). There is no forest land in the mine lease area. The project site is dry land which is not fit for any cropping.

Geologically, the entire district is traversed by hard crystalline rocks of Archaean rocks. However, valley fill sediments are found in the Southern part of Andipatti Taluk and the Western portion of the Western ghats comprising Bodi, Devaram and Cumbum regions. Charnockite and granitic gneisses are extensively quarried as rough stone which is used as aggregates for construction of building, laying of roads and for preparation of value added products like hollow blocks, pillar stones, M-sand etc. Charnockite occurs as massive bodies, medium to coarse grained in all the five taluks- Periyakulam, Theni, Andipatti, Bodinayakanur and Uthamapalayam. At places in Thimmarasanayakanur Bit-I, charnockite occurs with intercalations of calc granulite and hornblende biotite gneiss. Near E.Kamatchipuram, charnockite is found in association with calcgranulite+sillimanite while at places around Kullapuram, it is found associated with calc gneisses. Near Odaipatty, Charnockite is found at a depth of nearly 15m below quartzo-feldspathic gneiss. Near Kombai, coarse grained granites and granitic gneisses are quarried for Roughstones.

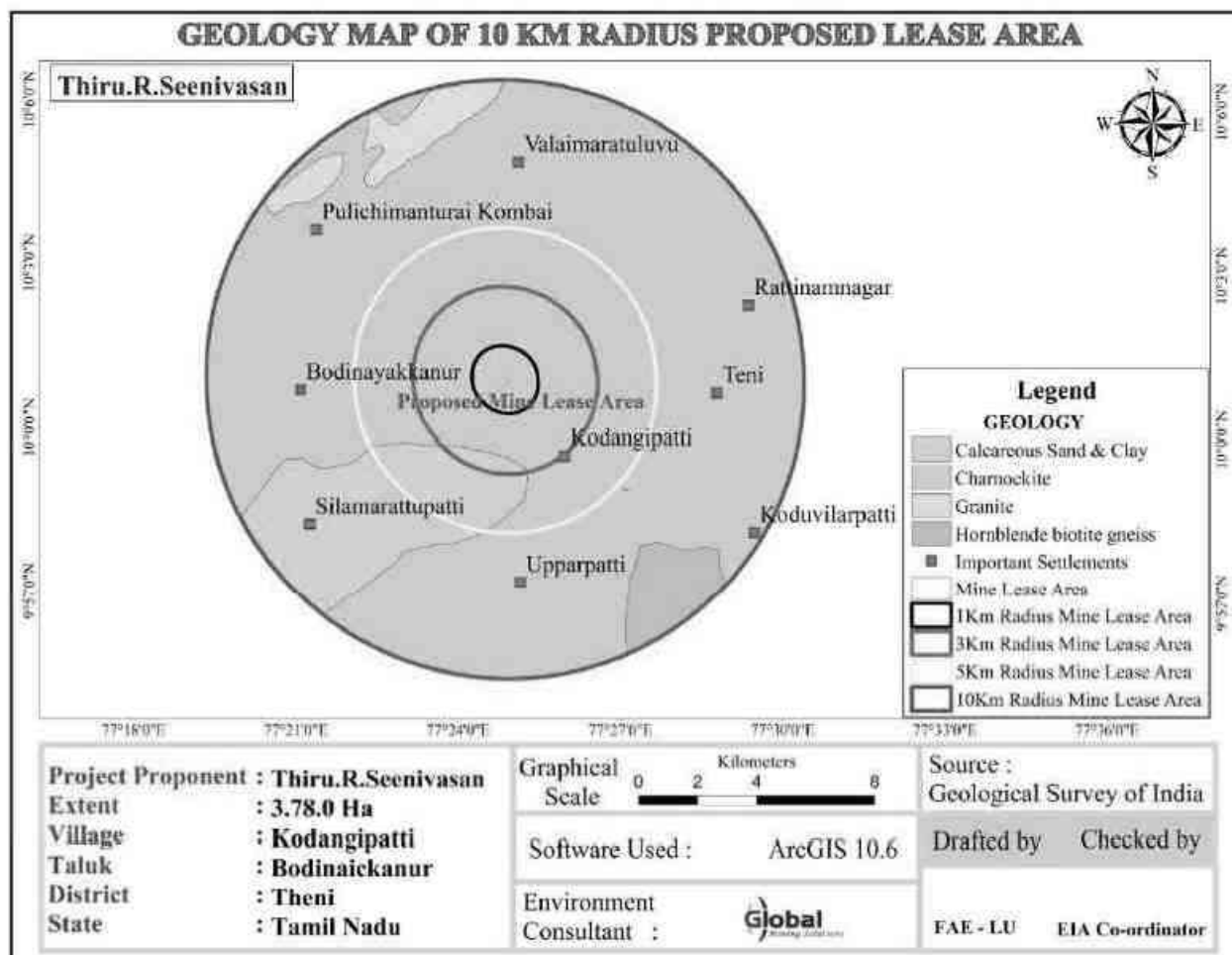
b. Regional Geology

Geologically, Theni District mainly comprises of rocks of the Archaean age. The types of rocks found in the district are Charnockite, Granitic gneiss, Amphibolite, Pyroxenite, Dunite, Migmatite, Banded Magnetite Quartzite, Shale and Clay. Dolerite Dykes (Black Granite) are also noticed cutting across the country rocks.

The Western Ghats comprises Charnockite Group of rocks while the plains are underlain by hornblende – biotite gneiss, sillimanite- garnet-biotite gneiss. Alluvium quaternary sediments are spread almost in central part of the district. Around 70% of the total area is covered with charnockite followed by migmatite and khondalite. The Regional Geology map for the 10 Km radius of the proposed project site is given as Figure 2.8.

DRAFT EIA/EMP OF PROPOSED KODANGIPATTI ROUGH STONE & GRAVEL QUARRY OF THIRU.SEENIVASAN.R OVER AN EXTENT OF 3.78.0 Ha., LOCATED AT SURVEY NO. S.F.Nos.110/3, 110/4, 110/5, 127/1 AND 127/2 OF KODANGIPATTI VILLAGE, BODINAICKANUR TALUK, THENI DISTRICT, TAMIL NADU.

FIGURE 2.10 GEOLOGY MAP COVERING 10 Km RADIUS FROM PROPOSED LEASE AREA

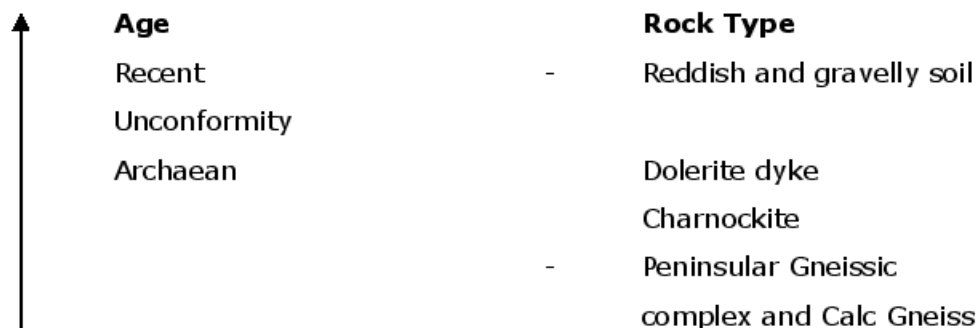


c. Local Geology

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

DRAFT EIA/EMP OF PROPOSED KODANGIPATTI ROUGH STONE & GRAVEL QUARRY OF THIRU.SEENIVASAN.R OVER AN EXTENT OF 3.78.0 Ha., LOCATED AT SURVEY NO. S.F.Nos.110/3, 110/4, 110/5, 127/1 AND 127/2 OF KODANGIPATTI VILLAGE, BODINAICKANUR TALUK, THENI DISTRICT, TAMIL NADU.

Gneisses, a high grade metamorphic rock. The strike of the Charnockite formation is N35⁰E –S35⁰W with almost vertical dipping. The general geological succession of the area is given as under.



2.8 SIZE OR MAGNITUDE OF OPERATION

The proposed production is 3,61,855 m³ of Rough Stone and 74,232 m³ of Gravel for the period of five years by an Opencast Semi Mechanized mining method.

Geological Resources

The geological cross sections are prepared across the strike of the ore body. The area of individual litho units in each cross section is calculated separately. Section wise sectional area is measured and multiplied by the influence to obtain the volume in m³. The volume is multiplied by 2.5MT/m³ (bulk density) to calculate the resource of rough stone in MT. The total geological resources are calculated attached below.

Table 2.5 Geological resources in the lease area						
Section	Length in (m)	Width in (m)	Depth in (m)	Volume in m ³	Gravel formation in m ³	Geological Resources of Rough stone in m ³
XY-AB	88	164	3	43296	43296	
	88	164	35	505120		505120
	Total				43296	505120
XY-CD	198	118	3	70092	70092	
	198	118	35	817740		817740
	Total				70092	817740

DRAFT EIA/EMP OF PROPOSED KODANGIPATTI ROUGH STONE & GRAVEL QUARRY OF THIRU.SEENIVASAN.R OVER AN EXTENT OF 3.78.0 Ha., LOCATED AT SURVEY NO. S.F.Nos.110/3, 110/4, 110/5, 127/1 AND 127/2 OF KODANGIPATTI VILLAGE, BODINAICKANUR TALUK, THENI DISTRICT, TAMIL NADU.

Grand Total	113388	1322860
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Gravel Formation : 1,13,388m³

The Geological Resources of Rough stone : 13,22,860m³

2.9 AVAILABLE MINEABLE RESERVES

Mineable reserve is getting restricted due to the formation of benches, leaving the statutory safety distance in the inner boundary, mineral lock up in the benches itself, ultimate depth of mining, bench slope adopted etc. So, the mineable reserve is estimated after reducing the rough stone blocked in the safety distance, benches and existing pit. The Rough stone and gravel reserves are given below.

Table 2.6 Mineable Resources in the Lease Area

Section	Bench	Length (m)	Width (m)	Depth (m)	Volume in m ³	Gravel in m ³	Mineable Reserves of Rough stone in m ³
XY-AB	I	78	98	3	22932	22932	
	II	73	90	5	32850		32850
	III	67	77	5	25795		25795
	IV	60	64	5	19200		19200
	V	54	51	5	13770		13770
	VI	47	38	5	8930		8930
	VII	41	25	5	5125		5125
	VIII	34	12	5	2040		2040
Total						22932	107710
XY-CD	I	190	90	3	51300	51300	
	II	186	81	5	75330		75330
	III	179	68	5	60860		60860
	IV	173	55	5	47575		47575
	V	166	42	5	34860		34860
	VI	160	29	5	23200		23200
	VII	154	16	5	12320		12320
Total						51300	254145
Grand Total						74232	361855

2.10 LAND USE OF THE PROJECT AREA

The proposed Mine Lease area is dry barren Patta land and the land use pattern of the project site is given below Table 2.7.

Table 2.7 Current Land Use Pattern			
S. No.	Land Use	Present Area (Hect)	Area in use during the quarrying period (Hect)
1	Quarrying Pit	Nil	2.41.0
2	Infrastructure	Nil	0.01.0
3	Roads	Nil	0.02.0
4	Green Belt	Nil	0.30.0
5	Unutilized	3.78.0	1.04.0
Total		3.78.0	3.78.0

2.11 LAND USE AT MINE CLOSURE STAGE

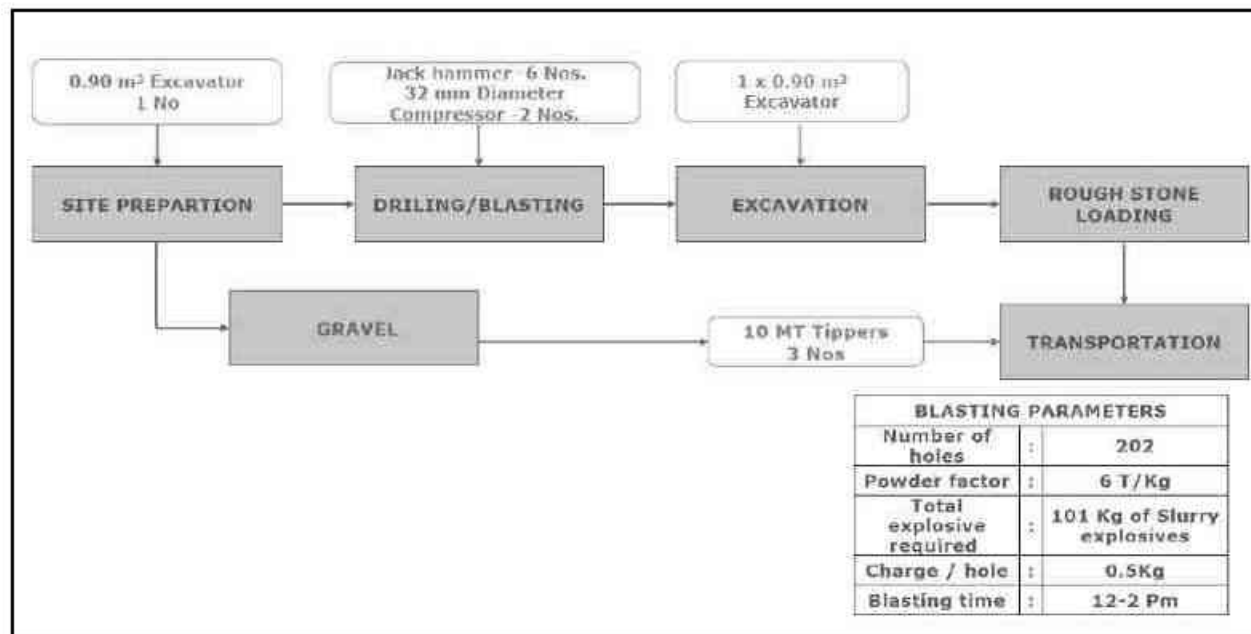
Table 2.8 Land Use at Mine Closure Stage		
S. No.	Land Use	Area in use during the quarrying period (Hect)
1	Area left for water body	2.41.0
2	Green Belt	0.30.0
3	Remaining area	1.07.0
Total		3.78.0

2.12 METHOD OF MINING

Opencast semi mechanized mining with a bench height of 5m and bench width of 5m and 80° Slope is proposed. The quarry operation involves shallow jackhammer drilling, slurry blasting, excavation, loading and transportation of Rough Stone to the needy customers. Occasionally, hydraulic excavators are attached with rock breakers for fragmentation to avoid secondary blasting.

DRAFT EIA/EMP OF PROPOSED KODANGIPATTI ROUGH STONE & GRAVEL QUARRY OF THIRU.SEENIVASAN.R OVER AN EXTENT OF 3.78.0 Ha., LOCATED AT SURVEY NO. S.F.Nos.110/3, 110/4, 110/5, 127/1 AND 127/2 OF KODANGIPATTI VILLAGE, BODINAICKANUR TALUK, THENI DISTRICT, TAMIL NADU.

FIGURE 2.11 PROCESS FLOW CHART



2.13 MACHINERY DETAILS

Table 2.9 Machines involved in the project				
S.No.	Particulars	Size Capacity	Motive Power	Nos
1.	Jack hammer (30-35mm dia hole)	1.2m - 2.0m	Compressed air	6
2.	Compressor	400 psi	Diesel drive	2
3.	Excavator with Bucket and Rock Breaker	0.9 m ³	Diesel drive	1
4.	Tippers	5/10 Ts	Diesel drive	3

TIMING

Mining will be done on a single-shift basis. The timing will be 8 hours from 8 AM to 1 Noon and 2 PM to 5 PM. Lunch time will be provided between 1 Noon and 2 PM. Timing may be variable from season to season depending upon the sunrise and sunset. One day a week will be declared as a holiday.

2.14 BENCH GEOMETRY

The height (max) and width (max) of the benches will be maintained at 5m each and the overall slope angle will be at around 80° with the horizontal.

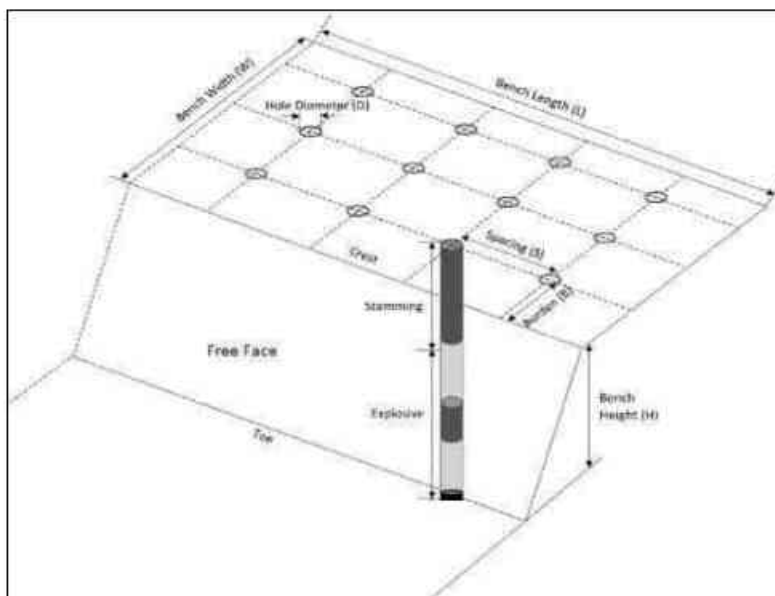
2.15 DEVELOPMENT OF MINING FACES

The proposed mining method is Opencast Semi Mechanized mining. Site preparation as such bush cleaning, approach road, office and sanitary facilities will be done after obtaining all the statutory clearances such as Environmental Clearance, Consent to Operate, Lease Deed, etc., Once the site is ready, will start the quarrying operation and it is anticipated in the month of August 2024.

2.16 DRILLING & BLASTING

Drilling will be done upto maximum depth of 1m at 1.5m interval and drilling diameter will be 32-36 mm. A Jackhammer will be used for drilling with water spray. powder factor of explosives for breaking such hard rock shall be in the order of 6 to 7 Tonnes per Kg of explosives. Small dia 25mm slurry explosive are proposed to be used for shattering and heaving effect for removal of Rough Stone. The proposed blasting pattern is given as Figure 2.12.

FIGURE 2.12 BLASTING PATTERN



DRAFT EIA/EMP OF PROPOSED KODANGIPATTI ROUGH STONE & GRAVEL QUARRY OF THIRU.SEENIVASAN.R OVER AN EXTENT OF 3.78.0 Ha., LOCATED AT SURVEY NO. S.F.Nos.110/3, 110/4, 110/5, 127/1 AND 127/2 OF KODANGIPATTI VILLAGE, BODINAICKANUR TALUK, THENI DISTRICT, TAMIL NADU.

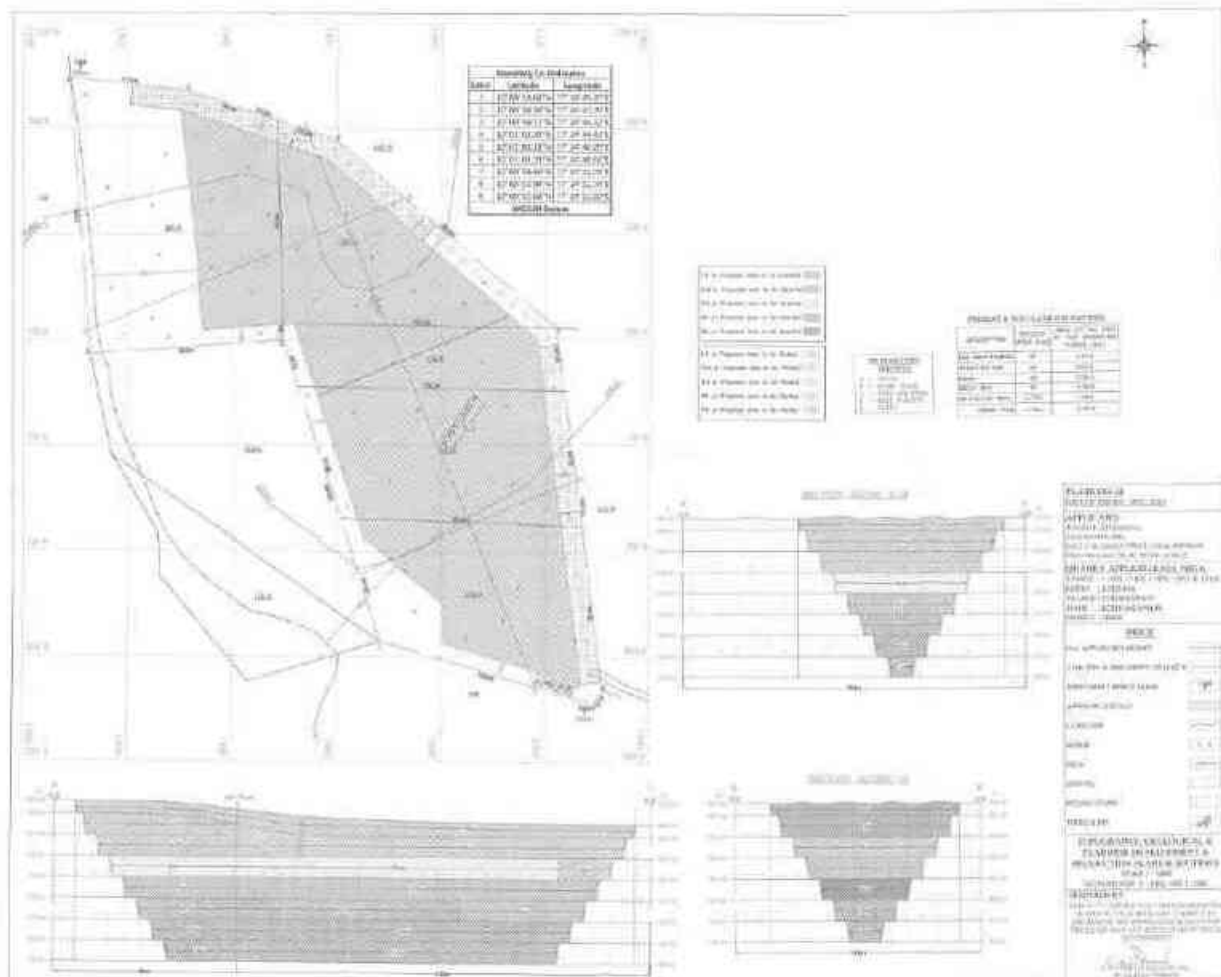
2.17 LOADING & TRANSPORTATION OF ROUGH STONE

A hydraulic excavator will be used for lifting and loading of the rough stone. This excavator in combination with Tippers (5/10Ts) capacity of 3 nos will be used.

2.18 LAYOUT

The layout of the proposed quarry working has been shown in the development Plan/Sections (Figure 2.13) Colouring has been done distinctly for easy identification of the year-wise excavation programme.

FIGURE 2.13 PROJECT LAYOUT PLAN AND SECTIONS



DRAFT EIA/EMP OF PROPOSED KODANGIPATTI ROUGH STONE & GRAVEL QUARRY OF THIRU.SEENIVASAN.R OVER AN EXTENT OF 3.78.0 Ha., LOCATED AT SURVEY NO. S.F.Nos.110/3, 110/4, 110/5, 127/1 AND 127/2 OF KODANGIPATTI VILLAGE, BODINAICKANUR TALUK, THENI DISTRICT, TAMIL NADU.

2.19 PROPOSED PRODUCTION FOR IMPLEMENTATION

Year wise Production of Rough stone from the area will be upto maximum capacity. The recovery factor is up to 100% hence no waste is expected to be generated. All excavated quantity is saleable. The summary of proposed development and production during the mine plan period is given in Table 2.10.

Table 2.10 Summary of production For 5 Years								
Year	Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume in m ³	Gravel In m ³	Mineable reserve of Rough stone in m ³
I	XY-AB	I	78	98	3	22932	22932	
		II	73	90	5	32850		32850
		III	67	77	5	25795		25795
	XY-CD	I	31	90	3	8370	8370	
		II	31	81	5	12555		12555
	Total							31302
II	XY-CD	I	159	90	3	42930	42930	
		II	155	81	5	62775		62775
		III	25	68	5	8500		8500
	Total							42930
III	XY-CD	III	154	68	5	52360		52360
	XY-AB	IV	60	64	5	19200		19200
	Total							
IV	XY-AB	V	54	51	5	13770		13770
	XY-CD	IV	173	55	5	47575		47575
		V	60	42	5	12600		12600
	Total							
V	XY-CD	V	106	42	5	22260		22260
		VI	160	29	5	23200		23200
		VII	154	16	5	12320		12320
	XY-AB	VI	47	38	5	8930		8930
		VII	41	25	5	5125		5125
		VIII	34	12	5	2040		2040
	Total							
Grand Total							74232	361855

DRAFT EIA/EMP OF PROPOSED KODANGIPATTI ROUGH STONE & GRAVEL QUARRY OF THIRU.SEENIVASAN.R OVER AN EXTENT OF 3.78.0 Ha., LOCATED AT SURVEY NO. S.F.Nos.110/3, 110/4, 110/5, 127/1 AND 127/2 OF KODANGIPATTI VILLAGE, BODINAICKANUR TALUK, THENI DISTRICT, TAMIL NADU.

The applicant has proposed to carry out 3,61,855m³ of Rough stone 74,232m³ of Gravel formation at the rate of 100% recovery upto a depth of 38m below ground level for the period of five years.

2.20 CONCEPTUAL PERIOD

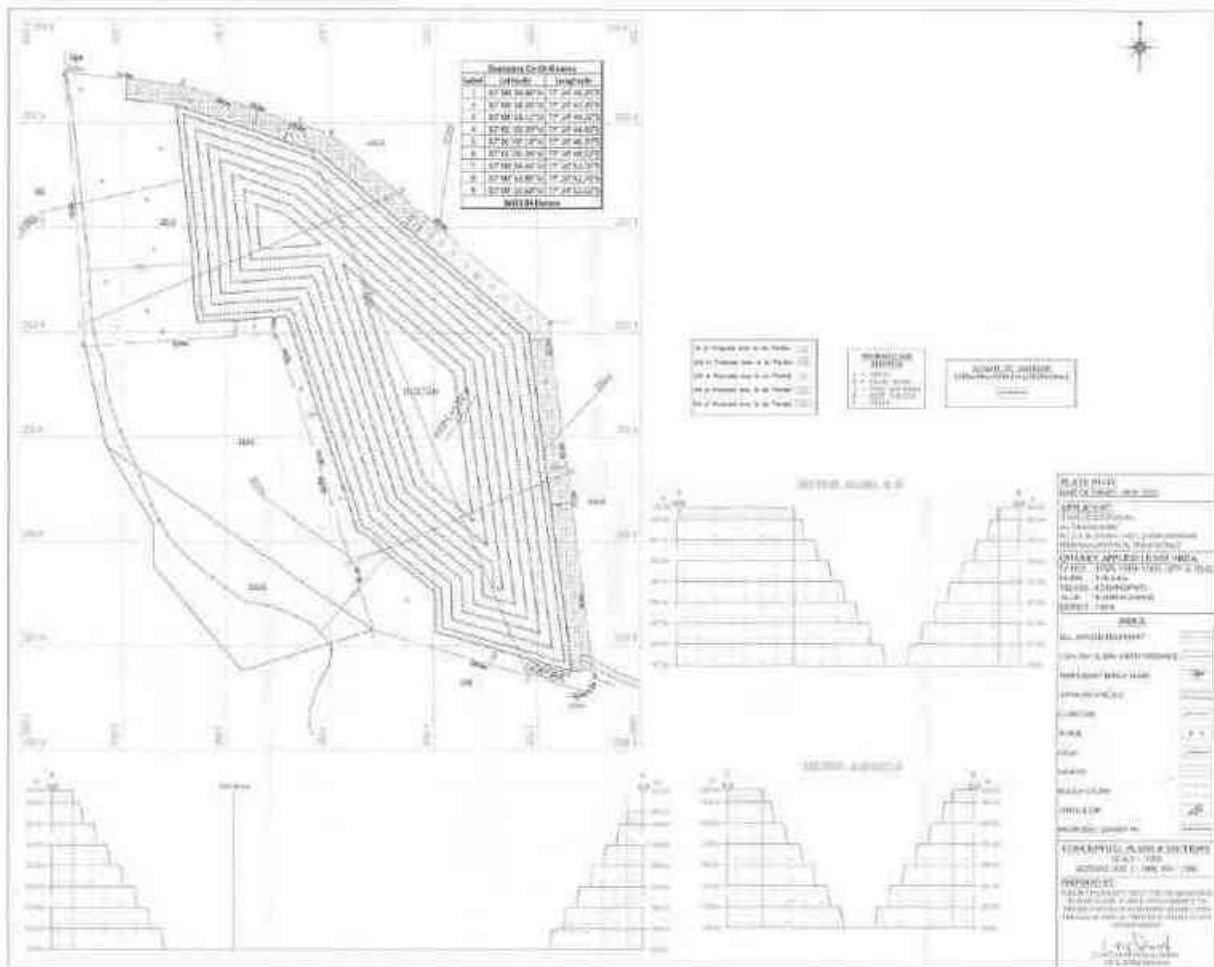
During the conceptual stage, the mined-out area will be converted into water reservoir and safety zone as well as upper benches will be used for plantation at the conceptual period. It will also serve the purpose as socio economic and corporate social responsibility of the lessee by way of supplying water for irrigation purpose or at will of the local people. This will help with ground water recharging as well. The conceptual plan of mine lease area is given in Figure 2.14. The ultimate extent and size of the quarry at the conceptual stage is given below as Table 2.11 and the Land Use pattern is given as Table 2.12. The conceptual plan is given as Figure 2.14

TABLE 2.11 Ultimate Pit Dimension			
Pit No.	Length (max) (m)	Width (Avg) (m)	Depth (max) (m)
I	268	90	38 BGL

TABLE 2.12 Land Use at Mine Closure Stage		
S. No.	Land Use	Area in use during the quarrying period (Ha)
1	Area left for water body	2.41.0
2	Green Belt	0.30.0
3	Remaining area	1.07.0
Total		3.78.0

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FIGURE 2.14 CONCEPTUAL PLAN



A Green belt development plan is proposed for the 5 year period.

S.No.	Year	Species	No. of trees	Spacing	Survival
1	I	Pongamia pinnata,	250	3m x 3m	80%
2	II	Syzygium cumini,	250		
3	III	Albizia lebbeck,	250		
4	IV	Thespesia populnea,	250		
5	V	Bauhinia racemose, Cassia siamea,	250		

DRAFT EIA/EMP OF PROPOSED KODANGIPATTI ROUGH STONE & GRAVEL QUARRY OF THIRU.SEENIVASAN.R OVER AN EXTENT OF 3.78.0 Ha., LOCATED AT SURVEY NO. S.F.Nos.110/3, 110/4, 110/5, 127/1 AND 127/2 OF KODANGIPATTI VILLAGE, BODINAICKANUR TALUK, THENI DISTRICT, TAMIL NADU.

		Azadirachta indica			
Total			1250		

2.21 TECHNOLOGY AND PROCESS DESCRIPTION

- It is proposed to quarry out rough stone with 5m bench height, 5m width with 80° slope using the conventional opencast semi-Mechanized method.
- The quarry operation involves splitting of rock mass of considerable volume from the parent rock by jackhammer drilling and blasting, hydraulic excavators are used for loading the Rough Stone from the pithead to the needy customers.
- Occasionally, hydraulic excavator is attached with rock breakers for fragmentation to avoid secondary blasting.

2.22 PROJECT REQUIREMENTS

S.No.	Nature of requirement	Description
1	Water requirement	Total water requirement of 8.5KLD which will be procured from outside agencies. Out of 8.5KLD, drinking water requirement is 1 KLD, Green belt development is 3.5 KLD and for dust suppression is 4 KLD.
2	Power requirement	No electricity is needed for mining operations. For office demand will be met by the state grid.
3	Manpower requirement	Total Manpower 29 Nos. Permanent employee – 17, Temporary employee – 12
4	Financial requirement	The total Project Cost as per AMP will be INR 93,18,000/- including Operational cost, Fixed Asset cost and EMP cost
5	Funds for Socio economic development	INR 1,86,360/- is allocated.

2.23 Project Cost

The budget of the project is given below.

TABLE 2.14 Budget of the Project		
S.No.	Details	Cost (in INR)
FIXED ASSET COST		
1	Land cost	22,68,000
2	First aid room and accessories	1,00,000
3	Labour Shed	1,00,000
4	Sanitary Facility	1,00,000
SUB TOTAL (A)		25,68,000
OPERATIONAL COST		
1	Machinery	60,00,000
2	Fencing cost	2,00,000
SUB TOTAL (B)		62,00,000
EMP COST (Monitoring Only)		
1	Air Quality	40,000
2	Water Quality	40,000
3	Noise Monitoring	20,000
4	Ground Vibration Test	20,000
SUB TOTAL (C)		1,20,000
EXPENDITURE		
1	Drinking Water Facility	1,20,000
2	Sanitary Arrangement	50,000
3	Safety Kits	50,000
4	Water Sprinkling	1,40,000
5	Afforestation	70,000
SUB TOTAL (D)		5,50,000
GRAND TOTAL (A+B+C+D)		93,18,360

Total Project Cost – Rs. 93,18,000/-, which is excluding EMP cost. Total EMP Cost for 5 years is 6 lakhs i.e., Rs. 28.6 Lakhs of Capital + Recurring cost Rs. 62 lakhs. The breakup of EMP cost is given in Table 10. 2 of Chapter 10.

CHAPTER 3

DESCRIPTION OF THE ENVIRONMENT

3.1 DESCRIPTION OF THE STUDY AREA

The project area is located in Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State over an extent of 3.78.0 Ha. The project area is considered as the Core zone and the area in the surrounding 10km radius is considered as the Buffer Zone. The baseline environmental monitoring was conducted by Shrient Analytical and Research Labs Pvt. Ltd, Chennai, is an NABL and MoEF recognized laboratory for various components of the environment, viz. Air, Noise, Water, Land was carried out from October 2023 to December 2023 in the study area covering 10 km radial distance from the rough stone mine. Other environmental data on flora and fauna, land-use pattern, forest etc. were also generated through field surveys and secondary information collected from different State Govt. departments. Sampling methods and analysis. Socio-economic survey was conducted, through interaction with the people and medical officers by floating questionnaires and collection of information are supported by census data for demographic structures, amenities, and infrastructure availability within the study area. Baseline values for various environmental components are discussed in this chapter.

The components included are:

- ✚ Meteorological environment
- ✚ Air environment
- ✚ Water environment
- ✚ Noise environment
- ✚ Soil environment
- ✚ Biological environment
- ✚ Land use
- ✚ Socio economic environment

± Hydrogeology

3.2 STUDY AREA

The impact of the mining activities can be quantified through Environmental Impact Assessment Studies within the impact zone. The findings of EIA studies help in the preparation of the environmental management plan for mitigating the adverse impacts. For the purpose of studying the baseline status of the environment, core zone and buffer zone are considered for impact assessment.

The core zone comprises a mining lease area over an extent of 3.78.0 Ha at S.F.Nos. 110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu. The geographical coordinates of the project site are Latitude: 10°00'52.68"N to 10°01'02.39"N and Longitude: 77°24'44.43"E to 77°24'52.74"E. The buffer zone comprises a 10 km radius from the core area. The scope of baseline data collection with respect to project activity covers the following components.

- Micro-meteorological monitoring in one of the representative locations.
- Ambient air quality study comprising gaseous, particulate matter at 5 different locations.
- Water quality analysis in 8 different locations (3 – Surface water + 5 Ground Water).
- Noise levels monitoring in 5 different locations
- Soil quality analysis in 3 locations.
- Flora & Fauna status.
- Land use & Land Cover.
- Hydrological study.
- Socio-economic survey.

3.3 STUDY PERIOD

Collection of base line data is an integral part of the preparation of environmental impact assessment report. The scope of the study includes preparation of EIA study with detailed characterization of various environmental components such as air,

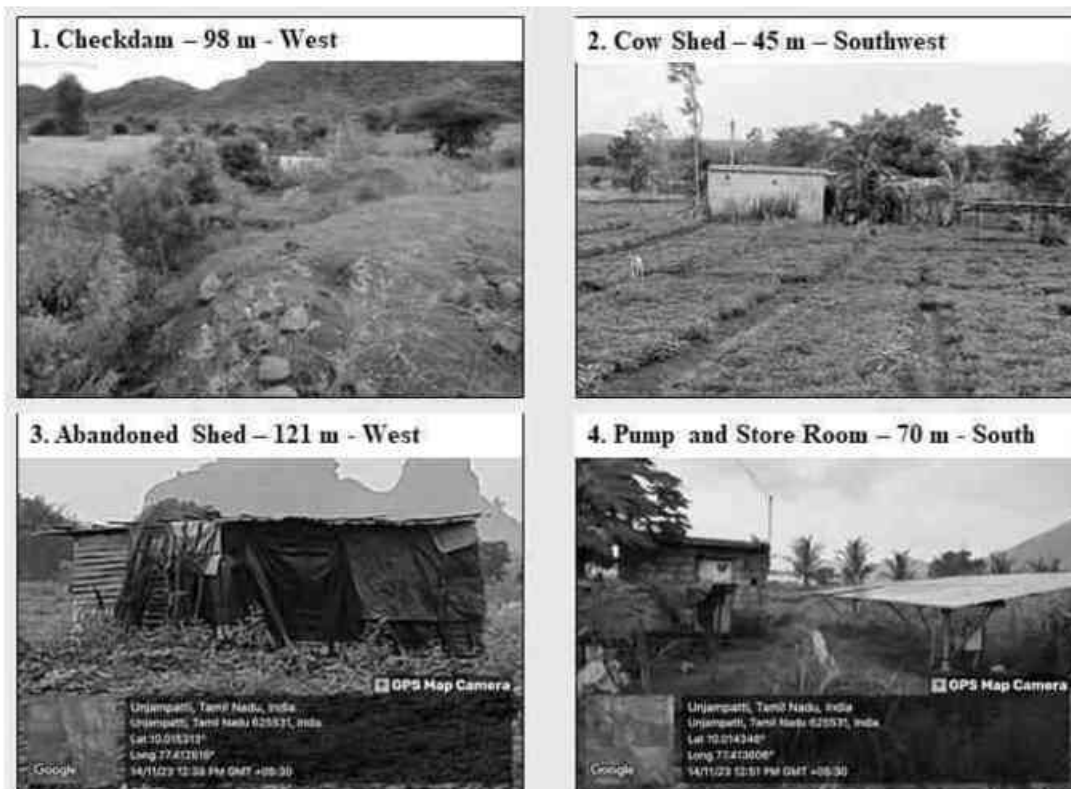
DRAFT EIA/EMP OF PROPOSED KODANGIPATTI ROUGH STONE & GRAVEL QUARRY OF THIRU.SEENIVASAN.R OVER AN EXTENT OF 3.78.0 Ha., LOCATED AT SURVEY NO. S.F.Nos.110/3, 110/4, 110/5, 127/1 AND 127/2 OF KODANGIPATTI VILLAGE, BODINAICKANUR TALUK, THENI DISTRICT, TAMIL NADU.

water, noise, land, biological and socio economic and other impacts of mining like hydro-geological disturbances of the area around 10 km radius from the quarry area. Field monitoring studies to evaluate the baseline status of the project site were carried out covering October 2023 to December 2023 with CPCB guidelines.

3.4 Enumeration of the Structures Located Within 300 m Radius from the Proposed Quarry Site

A Site survey has been conducted to identify and list structures located within a 300 m radius of the proposed Quarry and are detailed below. There are no permanent structures or temples within a 300 meter radius from the project site. The PP has obtained a letter from Village Administrative Office (VAO), Kodangipatty stating that there are no structures situated within a 300 m radius.

FIG 3.1 STRUCTURES WITHIN 300M RADIUS FROM THE LEASE AREA



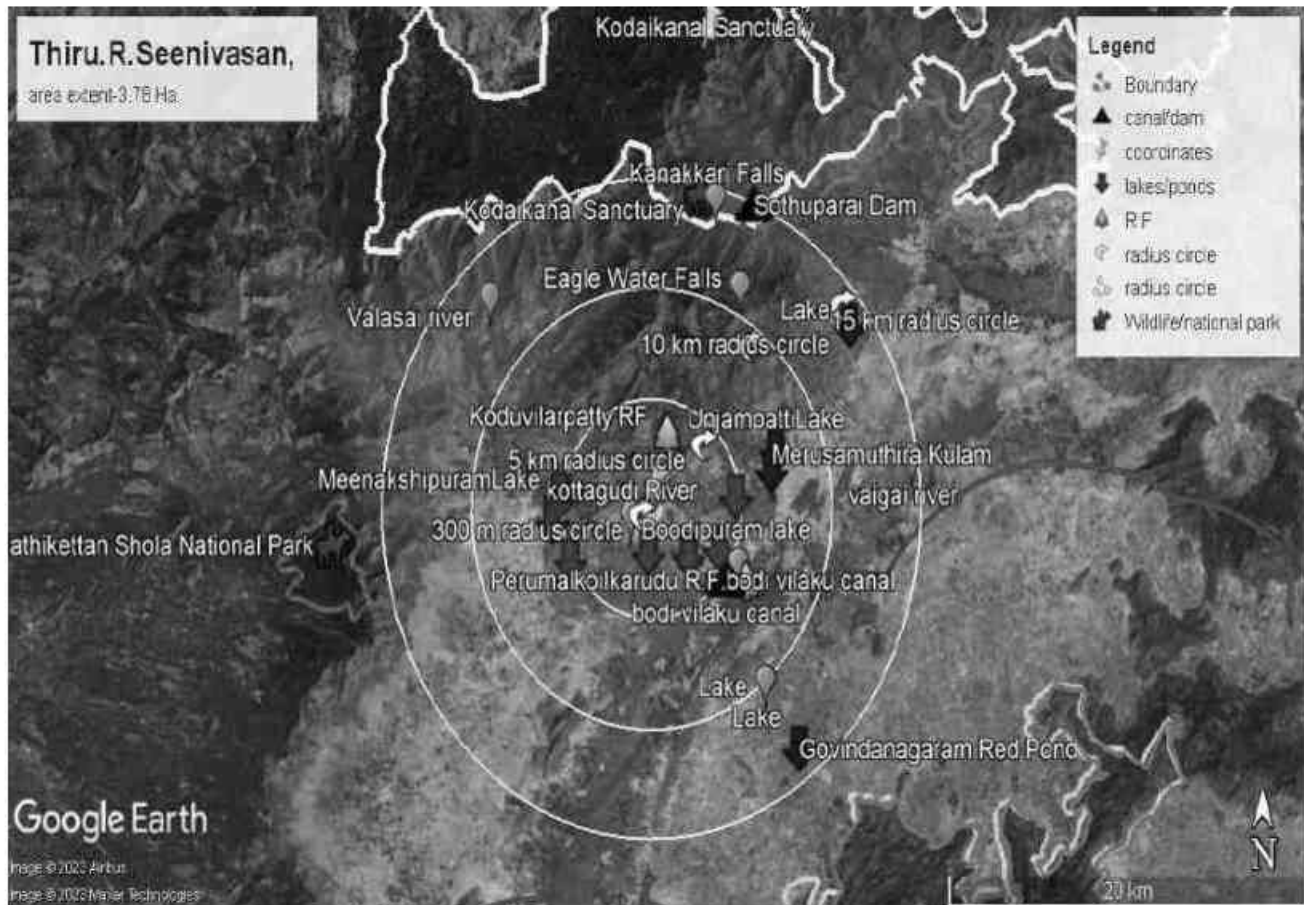
DRAFT EIA/EMP OF PROPOSED KODANGIPATTI ROUGH STONE & GRAVEL QUARRY OF THIRU.SEENIVASAN.R OVER AN EXTENT OF 3.78.0 Ha., LOCATED AT SURVEY NO. S.F.Nos.110/3, 110/4, 110/5, 127/1 AND 127/2 OF KODANGIPATTI VILLAGE, BODINAICKANUR TALUK, THENI DISTRICT, TAMIL NADU.

FIG 3.2 GOOGLE MAP SHOWING 300M RADIUS FROM THE LEASE AREA



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FIG 3.3 ENVIRONMENTAL SENSITIVITY MAP



DRAFT EIA/EMP OF PROPOSED KODANGIPATTI ROUGH STONE & GRAVEL QUARRY OF THIRU.SEENIVASAN.R OVER AN EXTENT OF 3.78.0 Ha., LOCATED AT SURVEY NO. S.F.Nos.110/3, 110/4, 110/5, 127/1 AND 127/2 OF KODANGIPATTI VILLAGE, BODINAICKANUR TALUK, THENI DISTRICT, TAMIL NADU.

3.5 ENVIRONMENTAL SETTINGS OF THE STUDY AREA

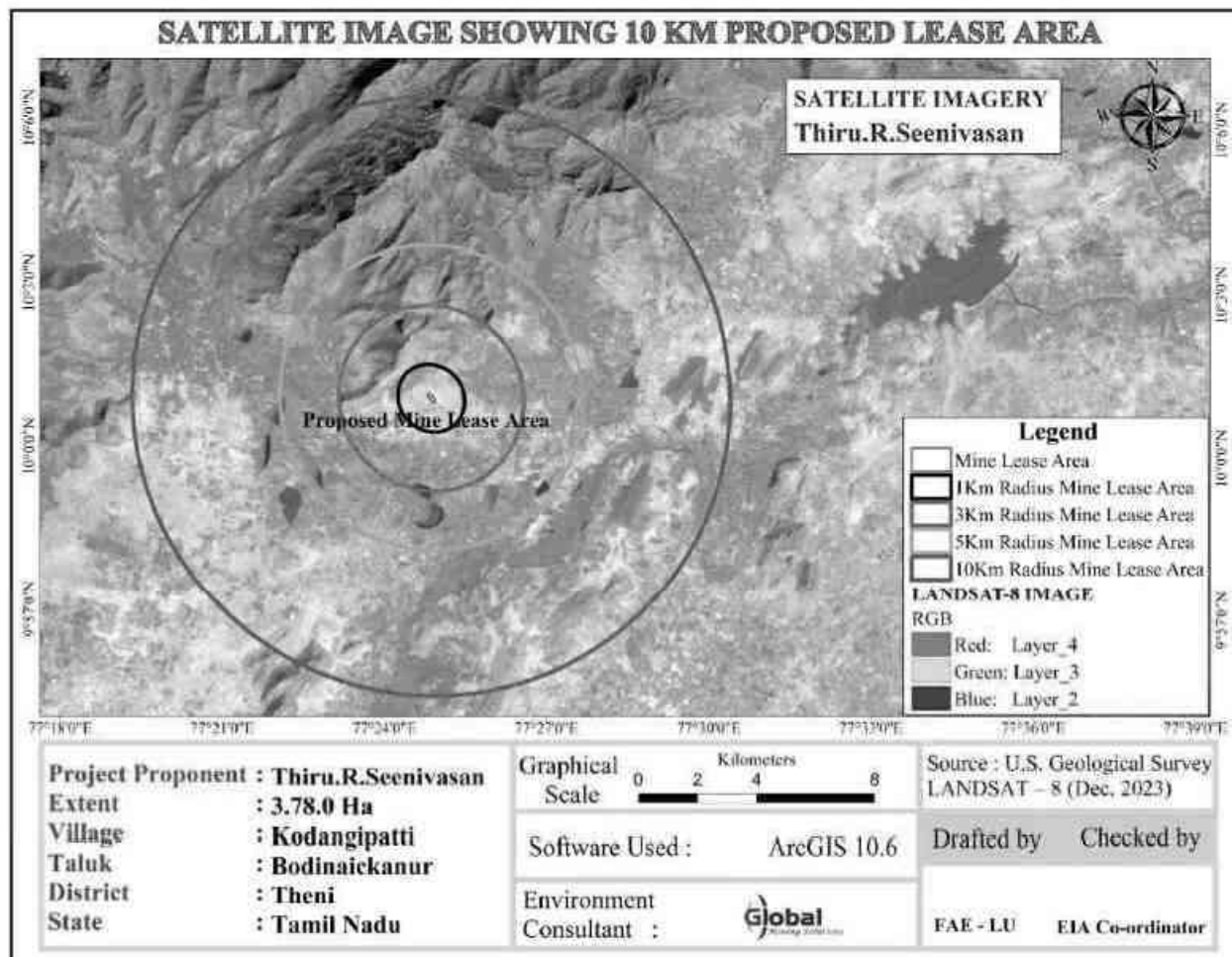
Table 3.1 Environmental Settings of the Study Area				
S.No.	Areas	Distance from project site		
1	Areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related value	Nil within a 15km radius		
2	Areas which are important or sensitive for ecological reasons			
A	Wetlands, water courses or other water bodies,	Water bodies	Distance (Km)	Direction
		Kottagudi River	1.68	SW
		Merusamuthiram River	4.22	NE
		Veerapandi River	5.92	SW
		Valasai River	12.03	NW
		Vaigai River	14.31	NE
		Bodi vilaku Canal	5.81	NE
		Bodinayackanur Seasonal lake	2.76	SW
		Kanakkan Pool	3.34	SE
		Boodipuram lake	4.46	E
		Muthudev anapatti Lake	4.52	SE
		Meenakshipuram Lake	4.94	W
		Bodinayakkanur Lake	5.38	SW
B	Coastal zone, biospheres,	Nil within a 10km radius		
C	Mountains, forests	Koduvilarpatty RF is within 500m from the north side of the project boundary		

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3	Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, overwintering, migration	Nil within a 15km radius
4	Inland, coastal, marine or underground waters	Nil within a 15km radius
5	State, National boundaries	Nil within a 15km radius
6	Routes or facilities used by the public for access to recreation or other tourist, pilgrim areas	Nil within a 15km radius
7	Defence installations	Nil within a 15km radius
8	Densely populated or built-up area	Bodinaickanur – 5.63km in WSW
9	Areas occupied by sensitive man-made land uses (hospitals, schools, places of worship, community facilities)	All facilities are available in Bodinaickanur – 5.63km in WSW
10	Areas containing important, high quality or scarce resources (ground water resources, surface resources, forestry, agriculture, fisheries, tourism, minerals)	Nil
11	Areas already subjected to pollution or environmental damage.(those where existing legal environmental standards are exceeded)	Nil
12	Areas susceptible to natural hazard which could cause the project to present environmental problems (earth quakes, subsidence, landslides, erosion, flooding or extreme or adverse climatic conditions) similar effects	No. The area is not prone to earthquakes, floods, etc.

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FIGURE – 3.5 SATELLITE MAP OF THE PROPOSED LEASE AREA (10 KM RADIUS)



3.6 METEOROLOGICAL ENVIRONMENT

3.6.1 Historical Meteorological Data

A. Cyclone and Depressions

Cyclonic storms and depressions in the 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 the 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

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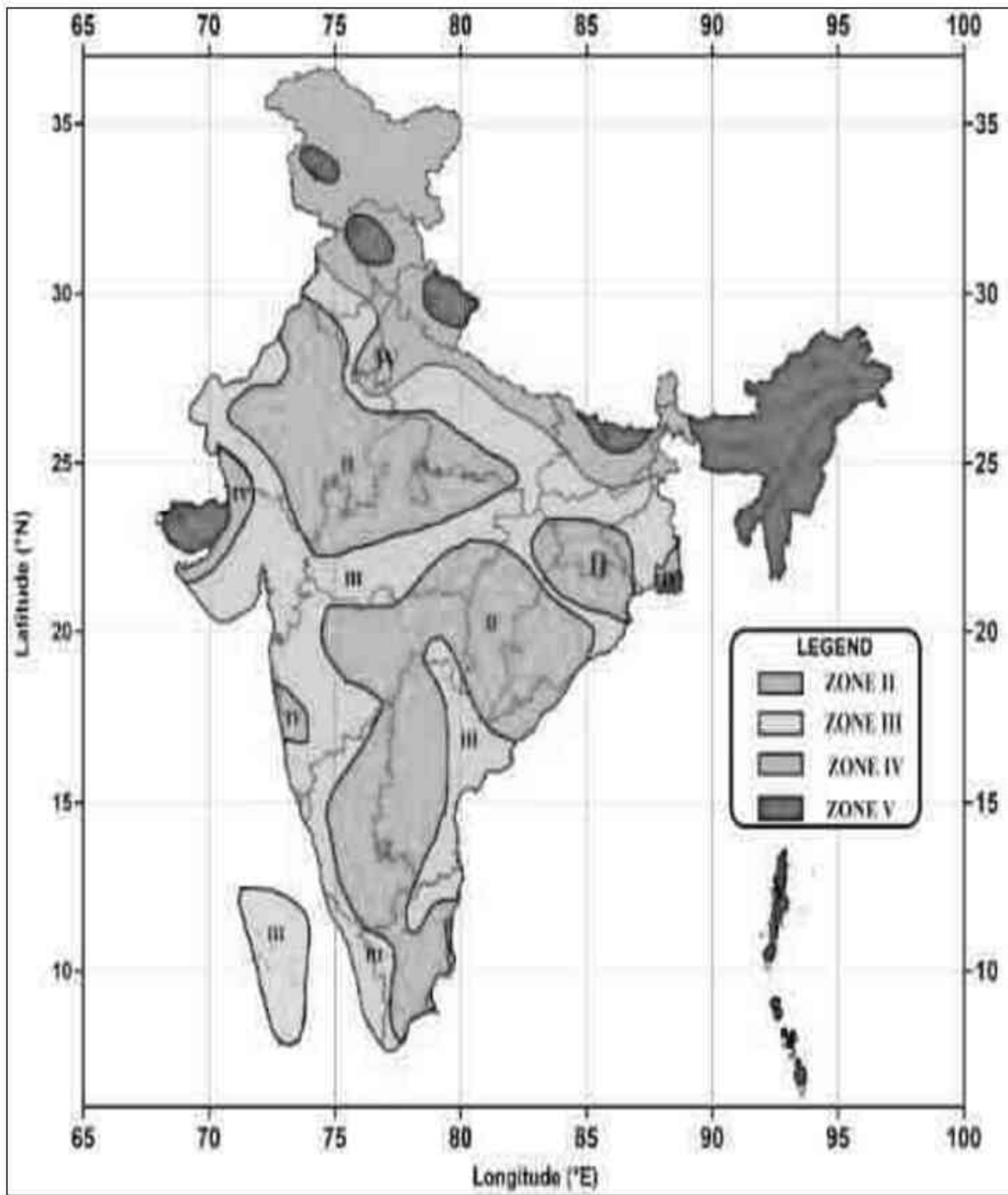
coasts in April and Andhra Pradesh (AP)-Orissa-West Bengal (WB) Bangladesh coasts in May. Most of the monsoon (June - September) storms develop in the central and in the north bay and move west - north - westwards affecting AP - Orissa - WB coasts. Post monsoon (October - December) storms form mostly in the south and central Bay, recurve between 15° and 18° N affecting Tamil Nadu - AP - Orissa - WB - Bangladesh coasts. The history of cyclonic storms, which have struck the Indian coast during the months of October, November and December during the last 75 years. (Source: Vulnerability Atlas of India series, above figure accessed from www.maps of india.com). The 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.

B. Seismic Data

The study area falls in Zone II, which comes under the least active zone. The seismic map of India is given as Fig 3.5.

DRAFT EIA/EMP OF PROPOSED KODANGIPATTI ROUGH STONE & GRAVEL QUARRY OF THIRU.SEENIVASAN.R OVER AN EXTENT OF 3.78.0 Ha., LOCATED AT SURVEY NO. S.F.Nos.110/3, 110/4, 110/5, 127/1 AND 127/2 OF KODANGIPATTI VILLAGE, BODINAICKANUR TALUK, THENI DISTRICT, TAMIL NADU.

FIG 3.6 SEISMIC MAP OF INDIA



C. Climate and Rainfall Data

Climate

The climate of Theni district in the plains, the temperatures range from a minimum of 13° C to a maximum of 39.5° C. In the hills, the temperature varies as low as from 4-5° C to 25° C. The district is known for its salubrious climate, hills and lakes. Since the district is situated on the foot of the Western Ghats and adjoining Kerala State, the district experience cool climate. However, from March to July, the temperature increases.

Rainfall

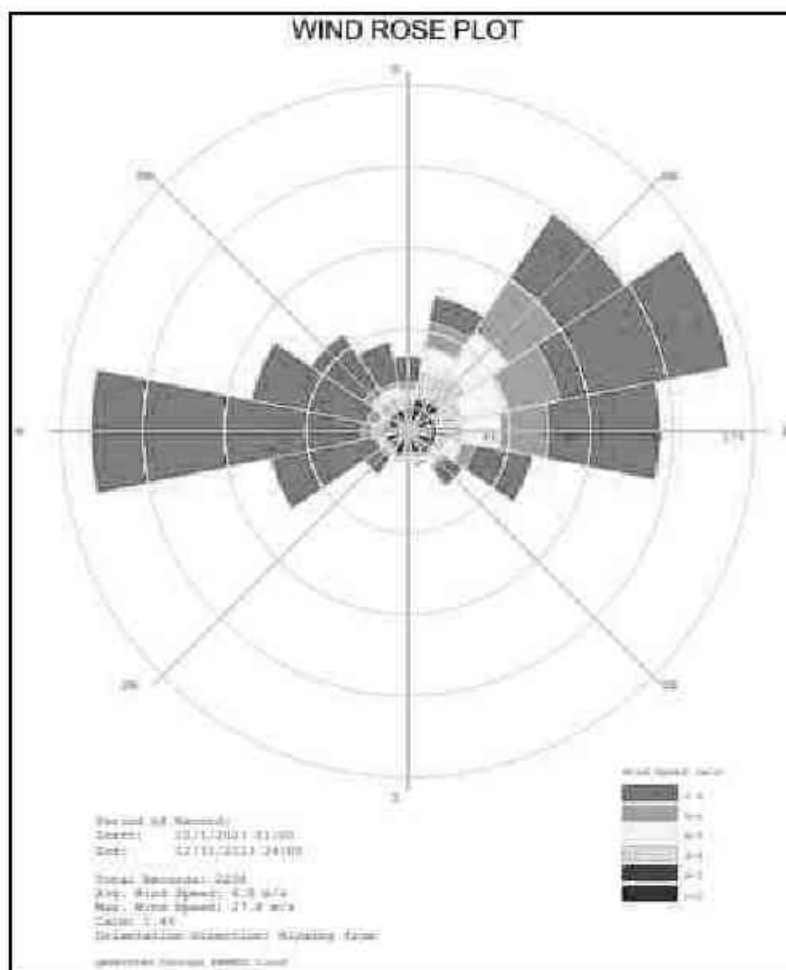
The district receives rainfall under the influence of both the southwest and northeast monsoons. The rainfall data from 3 stations viz. Periyakulam, Bodinaikanur and Uthanapalayam for the period 99 years (1901-1999) have been considered for the analysis. Normal annual rainfall is of the order of 791.2 mm out of which 47% (375.5) received during NE Monsoon and 22% (172.7) is received during SW monsoon. (Source: cgwb 2008)

Rainfall received from 2018 to 2022 is given below.

Table 3.2 Rainfall data					
Actual Rainfall in mm					Average rainfall for 5 years in mm
2018	2019	2020	2021	2022	
1105.4	786.1	922.3	1264.2	1280.2	1071.64

Source: <https://hydro.imd.gov.in>

FIG 3.7 WIND ROSE PLOT DURING OCTOBER TO DECEMBER 2023



3.6.2 Site Specific Meteorological Data

The meteorological parameters were recorded during the study period for ambient temperature, relative humidity, wind speed and wind direction.

The meteorological data collected in the study area from October 2023 to December 2023 which includes temperature, wind speed, wind direction and relative humidity. The predominant wind direction is from the Southwest. The temperature range was from 37.47°C (minimum in night) to 39°C (maximum in day) and remaining meteorological data is detailed in the below Table 3.3.

Table 3.3 Meteorological Data

S.No	Parameters	Min	Max
1.	Temperature in °C	37.47	39
2.	Humidity in %	16	63.08
3.	Wind Speed in km/hr	4	10
4.	Predominant Wind direction from	Southwest	

Source : *Weather and Climate - The Global Historical Weather and Climate Data*

3.7 AMBIENT AIR MONITORING DATA

Ambient air quality monitoring has been carried out in 5 locations. One is in the core zone and the remaining four locations are in the buffer zone areas. Monitoring locations have been chosen such that the measurement represents the overall air conditions prevailing in the area. The study area represents mostly rural environment with stone mining quarries & crushers.

The regional climatologically data, was used as a guideline to know the predominant wind direction during study period. The locations were identified keeping in view predominant wind directions prevailing during the study period, sensitive receptors, human settlements, and mining activities around.

The levels of Respirable Particulate Matter (PM₁₀), Fine Particulates (PM_{2.5}), Sulphur Dioxide (SO₂), Nitrogen Dioxide (NO₂) and Carbon Monoxide (CO) were monitored to establish the baseline status. PM₁₀ were sampled with the help of Respirable Dust Samplers on filter papers and SO₂ & NO_x were absorbed in the respective absorption media in the impingers attached to RD samplers and analyzed Spectrophotometrically. PM_{2.5} was monitored with the help of Fine Particulate Samplers. The monitoring locations for ambient air study are given in Table – 3.5 and Figure 3.8 below.

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Table 3.4 : Air Quality Monitoring

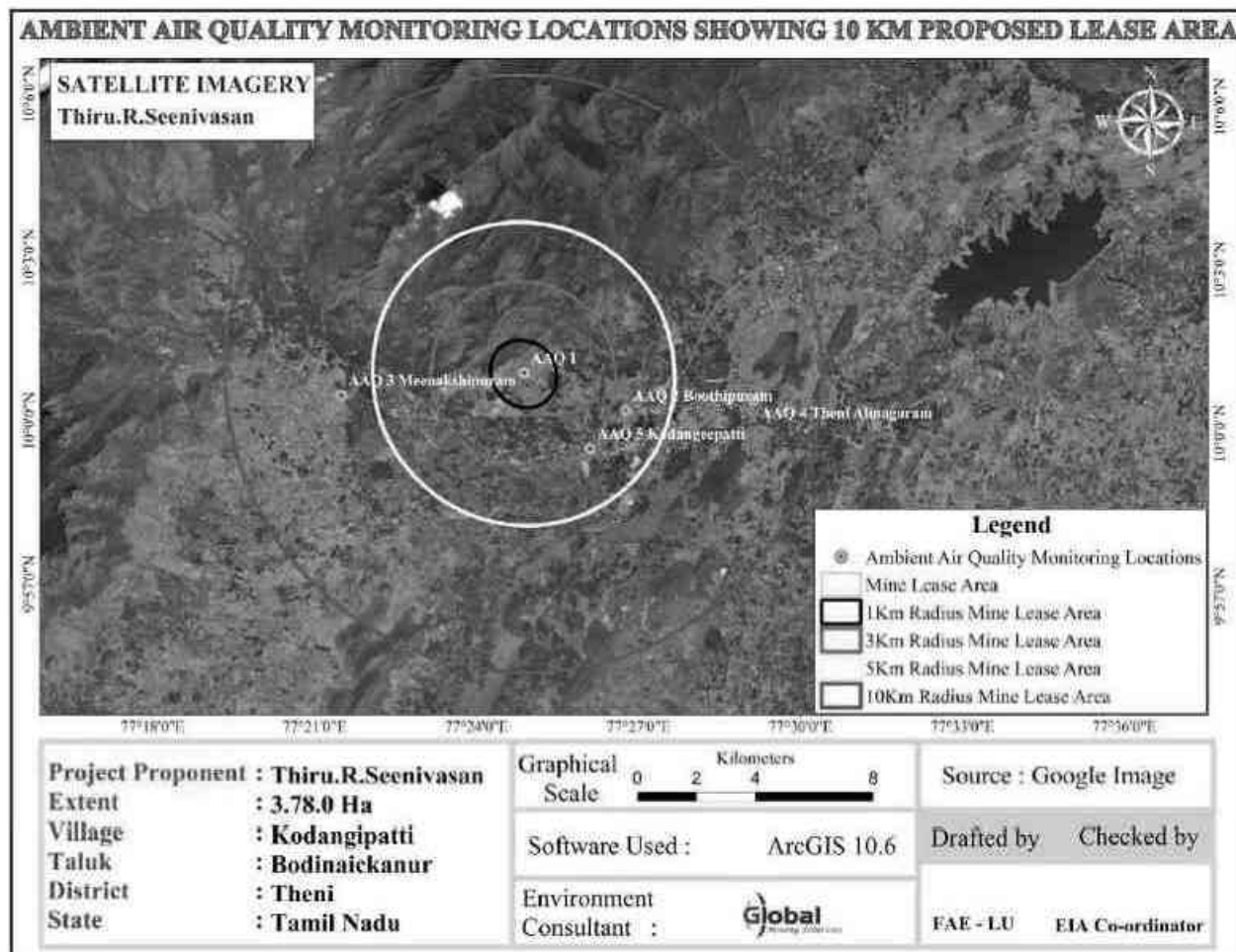
1.	Monitoring Period	October 2023 to December 2023
2.	Monitoring Location	The monitoring locations for ambient air study are given in Table – 3.5 and Figure 3.7.
Methodology		
3.	A. Sampling	(IS-5182:Part 14:2000 & Part-V: Reaffirmed-2003), CPCB Guidelines
	B. Analysis	
	Parameters	Protocol
	Particulate Matter (PM ₁₀)	IS 5182: Part 23:2006
	Particulate Matter (PM _{2.5})	IS 5182: Part 24:2019
	Sulphur Dioxide	IS 5182: Part 02:2001
	Nitrogen Dioxide	IS 5182: Part 06:2006
	Carbon Monoxide	SARL/IOP/013 (Issue No:01, Issue Date-01.03.2023)
4.	Monitoring Frequency	2 days in a week, 4 weeks in a month for 3 months in a season.

TABLE 3.5: AMBIENT AIR QUALITY MONITORING LOCATIONS

S. No.	Station Code	Locations	Distance & Direction	Coordinates
1	A1	Mine Lease Area	Core Zone	10° 0'58.47"N 77°24'49.17"E
2	A2	Boothipuram	3.56 Km, SE	10° 0'18.04"N 77°26'43.14"E
3	A3	Meenakshipuram Bodi	6.16 Km, SW	10° 0'31.53"N 77°21'26.39"E
4	A4	Theni Alinagaram	7.83 Km, E	10° 0'30.90"N 77°29'5.06"E
5	A5	Kodangeepatti	3.17 Km, SE	9°59'35.62"N 77°26'3.66"E

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FIG 3.8 AMBIENT AIR MONITORING LOCATIONS



The concentrations of various air pollutants at the 5 locations are given below. For all the components in the table, the unit are in $\mu\text{g}/\text{m}^3$

Table 3.6 Ambient Air Monitoring Results for Various Pollutants			
Station ID	Min	Max	Avg.
Particulate matter PM-2.5 ($\mu\text{g}/\text{m}^3$)			
AAQ-1	24.8	29.9	27.3
AAQ-2	18.7	23.4	20.9
AAQ-3	20.8	26.5	23.5
AAQ-4	22.6	28.9	25.0
AAQ-5	17.5	26.5	22.82
CPCB NAAQS 2009 for PM_{2.5} - 60 $\mu\text{g}/\text{m}^3$			
Particulate matter PM-10 ($\mu\text{g}/\text{m}^3$)			

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Table 3.6 Ambient Air Monitoring Results for Various Pollutants			
Station ID	Min	Max	Avg.
AAQ-1	49.2	64.9	56.5
AAQ-2	40.7	50.9	45.5
AAQ-3	44.4	57.2	51.1
AAQ-4	49.9	61.4	54.1
AAQ-5	39.4	55.7	48.3
CPCB NAAQS 2009 for PM₁₀ - 100 µg/m³			
Sulphur Di-oxide as SO₂ (µg/m³)			
AAQ-1	3.8	4.9	4.4
AAQ-2	3.9	5.5	4.8
AAQ-3	3.3	4.3	3.6
AAQ-4	3.5	4.6	3.9
AAQ-5	3.1	4.2	3.60
CPCB NAAQS 2009 for SO₂ - 80 µg/m³			
Oxide of Nitrogen as NO₂ (µg/m³)			
AAQ-1	7.9	13.3	10.5
AAQ-2	5.9	7.9	7.0
AAQ-3	7.5	11.1	9.2
AAQ-4	8.1	12.5	9.3
AAQ-5	6.7	10.4	8.28
CPCB NAAQS 2009 for NO₂ - 80 µg/m³			

The results are summarized in a graph and given as below Fig. 3.9 - 3.13.

FIG 3.9 AMBIENT AIR DATA FROM A1 - MINE LEASE AREA

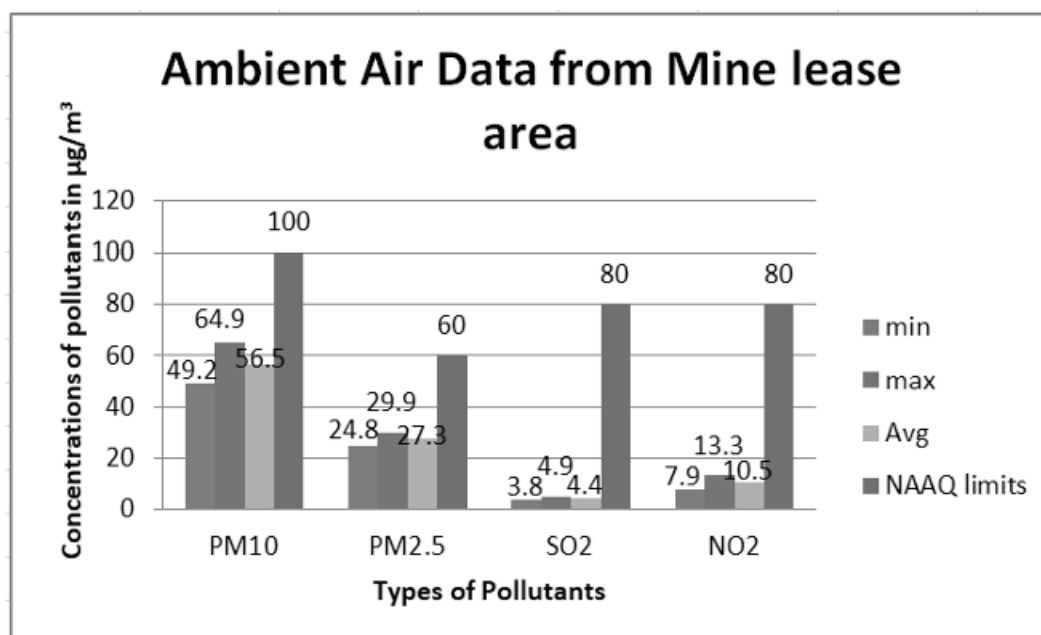


FIG 3.10 AMBIENT AIR DATA FROM A2 - Boothipuram

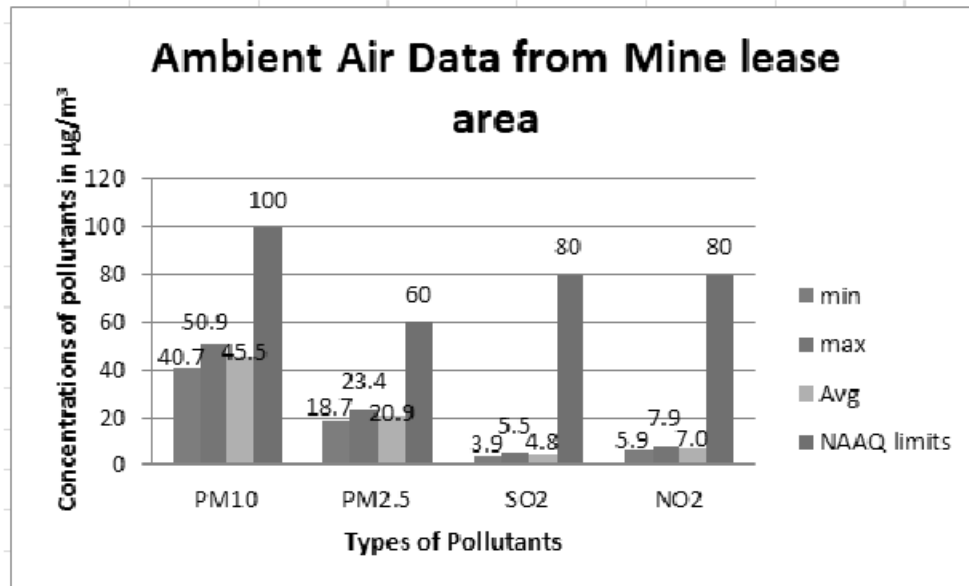


FIG 3.11 AMBIENT AIR DATA FROM A3 - Meenakshipuram Bodi

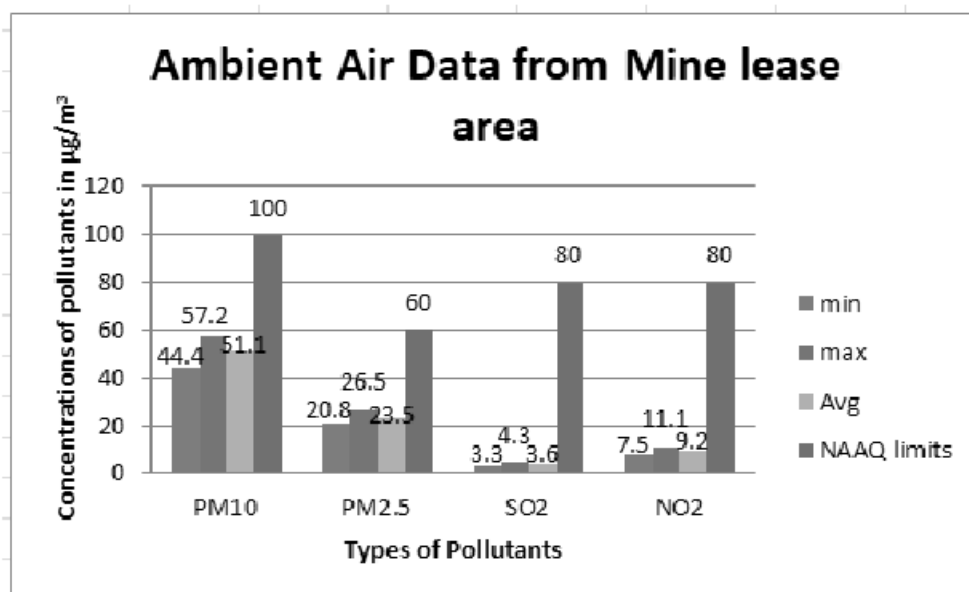


FIG 3.12 AMBIENT AIR DATA FROM A4 - Theni Alinagaram

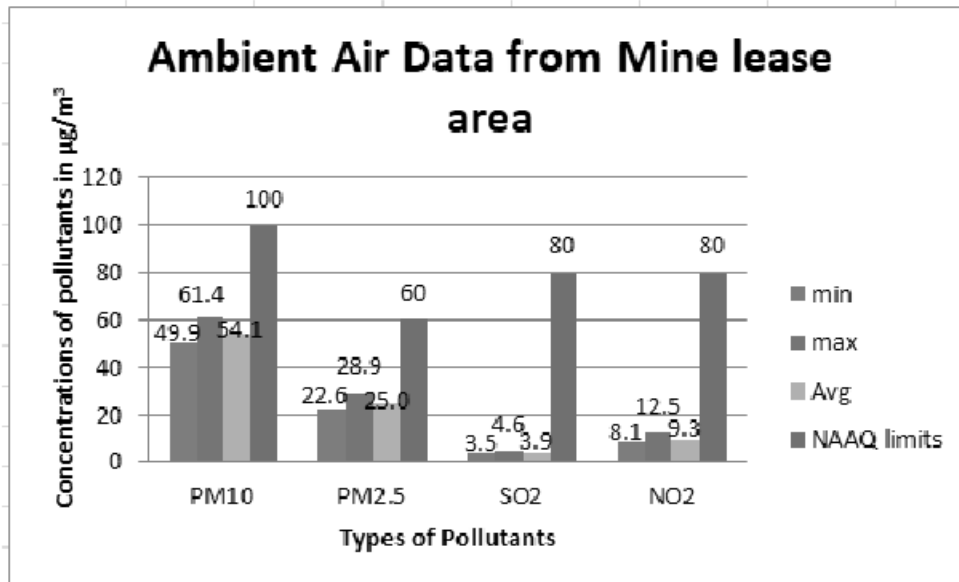
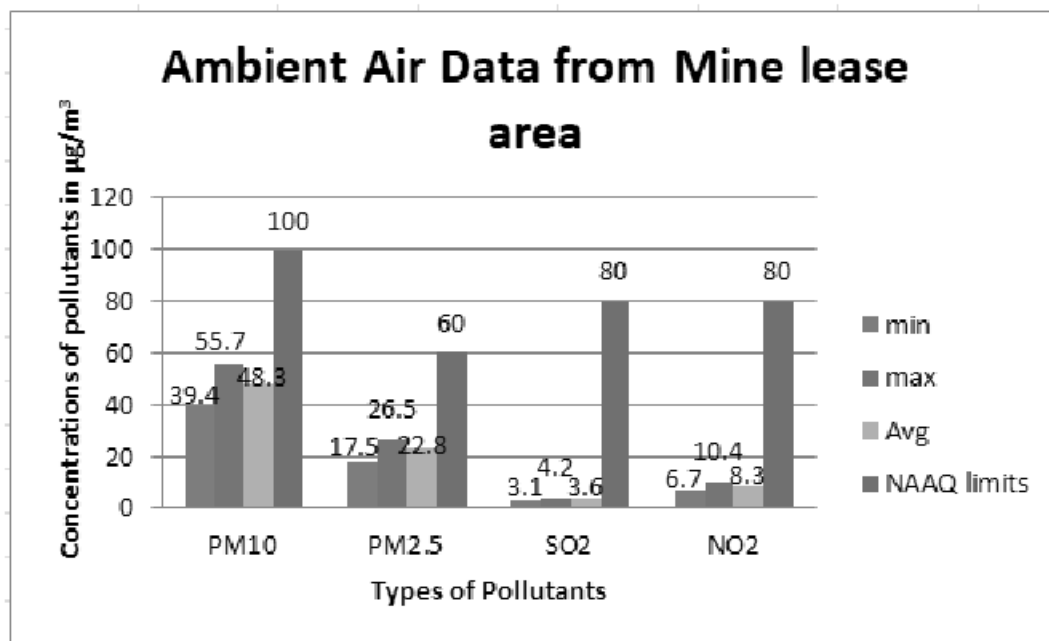


FIG 3.13 AMBIENT AIR DATA FROM A5 - Kodangeepatti



Results and Discussion:

From the table it is seen that, in the ambient air, the PM₁₀ values were in the range of 39.4 – 64.9 µg/m³. PM_{2.5} values were in the range of 17.5 – 29.9 µg/m³. SO₂ levels ranged from 3.1 – 5.5 µg/m³. NO₂ levels ranged from 5.9 – 13.3 µg/m³. While compared with the NAAQ Norms laid by MoEF, all monitored values of PM₁₀, PM_{2.5}, SO₂ and NO₂ were found to be well within the prescribed standards. The CO values in all locations were found to be below the detectable limit (DL – 1100 µg/m³).

3.8 WATER ENVIRONMENT

Assessment of baseline data on water environment includes:

- Identification of water resources
- Collection of water samples
- Analyzing water samples collected for physico-chemical parameters as per standards.

3.8.1 Surface Water

The important rivers in the district are Periyar and Vaigai. These rivers are contiguous by the natural formation of the several hills and valleys. Other important rivers are Kottagudi river in Bodinayakanur Block, Manjalar in Periyakulam Block and Shanmuganathi in Uthamapalayam taluk, all originates from western ghats. Vaigai and Periyar originate from the Western Ghats at the Kambam Valley. These rivers run a distance of about 20 miles in the district, flows towards southeast direction through Nilakkottai taluk in Dindigul district and Madurai taluk. Before entering into the Bay of Bengal, these rivers pass through Ramanathapuram district irrigating some parts in different taluks. Vaigai Dam is built across Vaigai river near Andipatti, with a height of 111 feet and storage of 71 feet of water. It is 7 kms from Andipatti, 14 kms from Theni and 70 kms from Madurai. Sothuparai dam is located at 12 kms from Periyakulam. This dam was built across the Varaha river. It is a beautiful picnic spot. Kumbakkarai falls on the foothills of Kodaikkanal hills, 8 kms from Periyakulam, is yet another water source. Comparatively less known, these

falls offer a breath taking view and help farmers cultivate their lands with different crops.

3.8.2 Ground Water

Ground water occurs under unconfined condition in weathered residium and in colluvium while it is under semi confined to confined condition in deeper fractures. The thickness of weathered residium varies from 5 to 45 m. It is very thick around Thevaram, Kombai, Odapatti abd Gudalur. In general, it varies from 5 to 15 m. The exploration has revealed that there are a maximum of 6 saturated fractures occurring down to a depth range of 140 m. The weathered residuum is tapped by dug wells which even as deep as 40 m when tapping colluvium. The yield of dug wells are of the order of 150 – 350 lpm which can sustain the continuous pumping for 4 – 6 hours a day. The bore wells tapping deeper fractures have the yield of 150 – 420 lpm. The depth to water level in the district varied from 1.22 to 19.18 m bgl during premonsoon (May 2006) while it varied from 2.68 to 16.08 m bgl during post monsoon (Jan 2007). The depth to piezometric surface in the deeper fractures varied from 3.87 to 39.67 m bgl during premonsoon (May 2006) while it varied from 3.57 to 4.55 m bgl during post monsoon (January 2007).

Source: CGWB, 2008

Rainfall is the main source for the availability of water both on surface and sub surface. The quantum of rainfall varies every year depending on the monsoon. However, the extraction of surface and sub-surface water is increasing year by year. It leads to environmental impact on the water sources like depletion of water level, deterioration of water quality. It makes the demand for the quantification of available water and also its quality for various purposes, like agriculture, industries, drinking and domestic purposes. Total Five (05) ground water monitoring locations were identified for assessment in different villages around the project site based on the usage of sub surface water by the settlements/ villages in the study area. The groundwater results are compared with the acceptable and permissible water

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quality standards as per IS: 10500 (2012) for drinking water. Groundwater quality monitoring locations and results are given in Table 3.7 and Table 3.9.

3.8.3 Sampling Locations

Three (3) surface water samples and five (5) ground water samples were collected from the study area and were analysed for physio-chemical, heavy metals and bacteriological parameters in order to assess the effect of mining and other activities on water bodies. The samples were analysed as per the procedures specified by CPCB, IS-10500:2012. The water sampling locations are given in Table 3.7 and shown as Figure 3.14.

The monitoring locations were selected based on :

- Location of the major water bodies
- Location of project site,
- Likely areas that could represent baseline conditions

Water bodies nearby

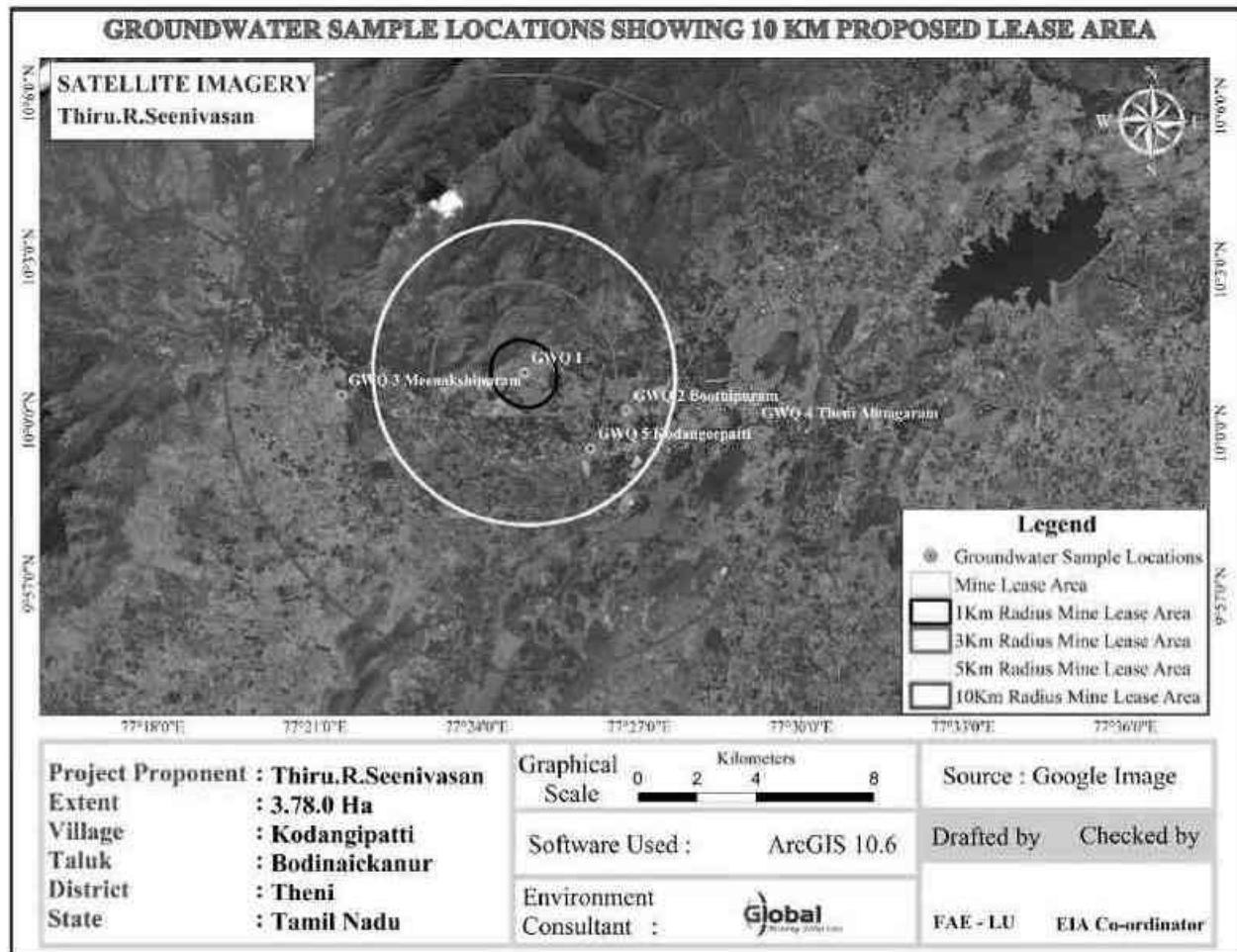
Table 3.7 Water Sampling Locations

S.NO	Location Code	Monitoring Locations	Latitude and longitude
Surface Water			
1	SW1	Boothipuram Pond Water	10° 0'42.60" & 77°27'26.94"E
2	SW2	Merusamuthiram river (Upstream)	10° 1'43.12"N & 77°26'4.02"E
3	SW3	Mullaiperiyar river (Downstream)	9° 55'54.81"N & 77°24'12.02"E
Ground Water			
1	GW1	Within Lease area	10° 0'58.47"N 77°24'49.17"E
2	GW2	Boothipuram	10° 0'18.04"N 77°26'43.14"E
3	GW3	Meenakshipuram Bodi	10° 0'31.53"N 77°21'26.39"E
4	GW4	Theni Alinagaram	10° 0'30.90"N 77°29'5.06"E

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5	GW5	Kodangipatti	9° 59'35.62"N 77°26'3.66"E
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FIG 3.14 GROUND WATER SAMPLING LOCATIONS



DRAFT EIA/EMP OF PROPOSED KODANGIPATTI ROUGH STONE & GRAVEL QUARRY OF THIRU.SEENIVASAN.R OVER AN EXTENT OF 3.78.0 Ha., LOCATED AT SURVEY NO. S.F.Nos.110/3, 110/4, 110/5, 127/1 AND 127/2 OF KODANGIPATTI VILLAGE, BODINAICKANUR TALUK, THENI DISTRICT, TAMIL NADU.

Table 3.8 Surface Water Analysis Results

Sl. No.	Parameter	Unit	SW1	SW2	SW3	Surface water standards (IS 2296 Class-A)
1.	Odour	-	agreeable	Agreeable	Agreeable	-
2.	Turbidity	NTU	<1.0	<1.0	<1.0	1
3.	pH at 25 °C	-	8.25	7.49	8.20	6.5-8.5
4.	Electrical Conductivity	µS/cm	350.2	151.5	174.2	-
5.	Total Dissolved Solids	mg/l	212	92.0	105	500
6.	Total Suspended Solids	mg/l	BDL (DL-2.0)	BDL (DL-2.0)	BDL (DL-2.0)	-
7.	Total hardness as CaCO ₃	mg/l	92.4	43.2	54.6	300
8.	Calcium as Ca	mg/l	19.9	9.36	12.4	-
9.	Magnesium as Mg	mg/l	10.2	4.75	5.64	-
10.	Calcium as CaCO ₃	mg/l	49.8	23.4	31.1	-
11.	Total alkalinity as CaCO ₃	mg/l	67.5	35.5	44.2	-
12.	Chloride as Cl ⁻	mg/l	80.2	28.9	35.6	250
13.	Sulphates as SO ₄ ²⁻	mg/l	40.6	8.74	12.4	400
14.	Iron as Fe	mg/l	0.32	0.15	0.09	1.0
15.	Nitrate as NO ₃	mg/l	1.94	BDL (DL-1.0)	BDL (DL-1.0)	20
16.	Fluoride as F	mg/l	0.32	0.15	0.17	1.5
17.	Manganese as Mn	mg/l	BDL(D.L-0.05)	BDL(D.L-0.05)	BDL(D.L-0.05)	0.5

The samples were analyzed by M/s.Shrient Analytical and Research Labs Pvt. Ltd and the results are summarized below.

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Table 3.9 Ground Water Analysis Results

S. No.	Test Parameter	Unit	GW1	GW2	GW3	GW4	GW5	Specification/Limit (As per IS:10500: 2012)	
								Desirable	Permissible
1	Odour	...	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
3	pH	...	7.32	7.17	7.73	7.12	7.28	6.5 - 8.5	No Relaxation
4	Turbidity	NTU	<1	<1	<1	<1.0	<1	1	5
5	TDS	mg/L	660	580	610	802	856	500	2000
6	Fluoride,(F)	mg/L	0.32	0.32	0.19	0.49	0.33	1	1.5
7	Total Alkalinity, (CaCO ₃)	mg/L	447	225	176	378	254	200	600
8	Total Hardness, (CaCO ₃)	mg/L	333	349	172	580	478	200	600
9	Calcium,(Ca)	mg/L	81.5	86.2	40.8	132	108	75	200
10	Calcium as CaCO ₃		204	216	102	329	270		
11	Free Residual chlorine as Cl ⁻		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)		
12	Chloride,(Cl)	mg/L	124	109	380	245	212	250	1000
13	Magnesium,(Mg)	mg/L	129	133	70.6	251	208	30	100
14	Nitrate, (NO ₃)	mg/L	3.26	BDL(D.L- 1.0)	1.89	2.5	2.32	45	No Relaxation
15	Sulphate, (SO ₄)	mg/L	142	84.3	74.1	99.6	154	200	400
17	Iron,(Fe)	mg/L	BDL(D.L- 0.01)	0.32	0.08	0.04	0.07	1	No Relaxation

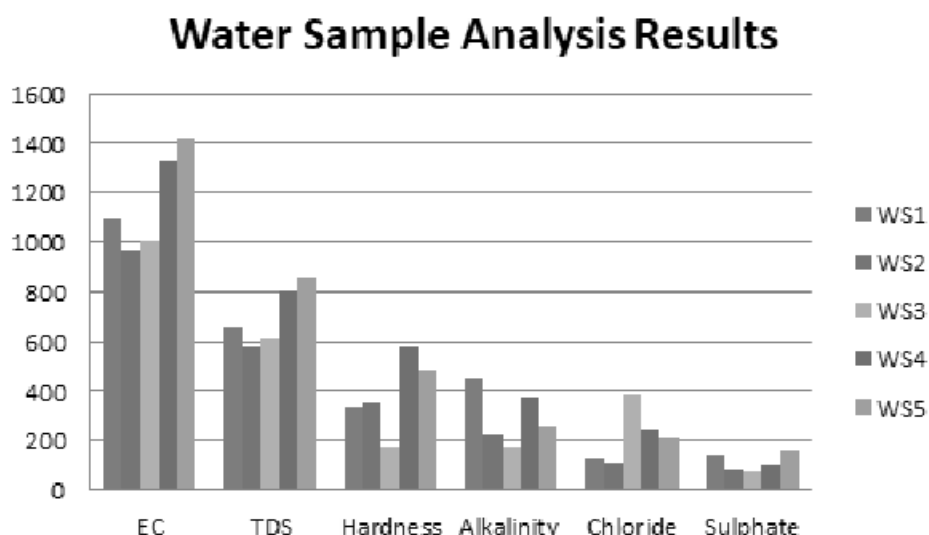
DRAFT EIA/EMP OF PROPOSED KODANGIPATTI ROUGH STONE & GRAVEL QUARRY OF THIRU.SEENIVASAN.R OVER AN EXTENT OF 3.78.0 Ha., LOCATED AT SURVEY NO. S.F.Nos.110/3, 110/4, 110/5, 127/1 AND 127/2 OF KODANGIPATTI VILLAGE, BODINAICKANUR TALUK, THENI DISTRICT, TAMIL NADU.

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)	0.1	0.3
19	Conductivity	µs/c m	1092	961.3	1006	1325	1416	Not Specified	Not Specified

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Some of the common parameters including EC, TDS, Total Hardness, Total Alkalinity, Chlorides and Sulphates in the 5 locations were plotted and the graph is provided below.

FIG 3.15 VALUES OF FEW COMMON PARAMETERS IN WATER ANALYSIS



3.8.4 Discussion

3.8.4.1 Surface Water

The pH varied from 7.49 to 8.25 while turbidity found within the standards (Optimal pH range for sustainable aquatic life is 6.5 to 8.5 pH). Total Dissolved Solids varied from 92 to 212 mg/l. Chloride varied between 28.9 mg/l to 80.2 mg/l. Nitrates varied from BDL to 1.94 mg/l, while sulphates varied from 8.74 to 40.6 mg/l.

3.8.4.2 Ground Water

Suitability of ground water for drinking/irrigation/industrial purposes is determined keeping in view the effects of various chemical constituents present in water as required human use, plant use. Though many ions are very essential for the growth of plants and human body but when present in excess, have an adverse effect on health and growth.

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As per the data, it has been observed that the pH value varies from 7.12 – 7.32, Chlorides Ranges From 109 - 380 mg/l, Sulphates value found to be between 74.1-154 mg/l, Fluoride ranges low in lease area i.e. 0.19 – 0.49, Hardness varies from 172 - 580 mg/l. The ground water has been analyzed as per IS10500: 2012 and found to be suitable for drinking purposes. The total hardness of the samples ranged from soft to moderately hard water and can be fairly used for drinking. Regular groundwater monitoring is suggested as the quality of ground water may fluctuate with groundwater consumption and seasonal variations.

3.9 NOISE MONITORING

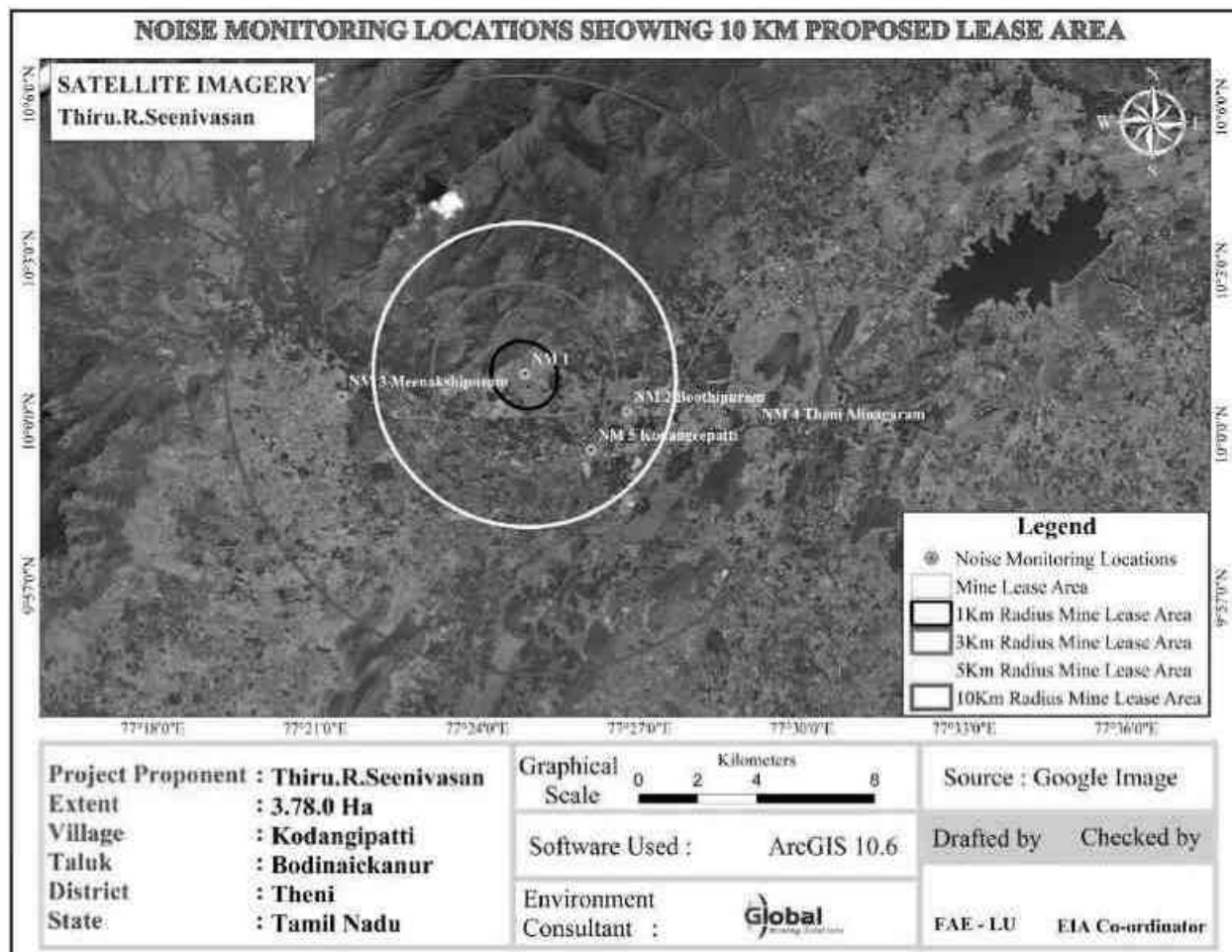
The operational phase of this project may lead to increased noise levels from the existing levels, at least in and around the project area. As noise levels beyond permissible limits will cause adverse impacts on the environment, it has become imperative to assess the noise levels in and around the mine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

Noise levels were measured using a 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 was monitored; one reading for every hour was taken for 24 hours. Details of the same monitoring locations are provided below table 3.10 and in Fig 3.16.

TABLE 3.10: NOISE LEVEL MONITORING LOCATIONS			
S. No.	Station Code	Locations	Coordinates
1	N1	Within Lease area	10° 0'58.47"N 77°24'49.17"E
2	N2	Boothipuram	10° 0'18.04"N 77°26'43.14"E
3	N3	Meenakshipuram Bodi	10° 0'31.53"N 77°21'26.39"E
4	N4	Theni Alinagaram	10° 0'30.90"N 77°29'5.06"E
5	N5	Kodangipatti	9°59'35.62"N 77°26'3.66"E

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FIG 3.16 NOISE MONITORING LOCATIONS



The results are given in Table below.

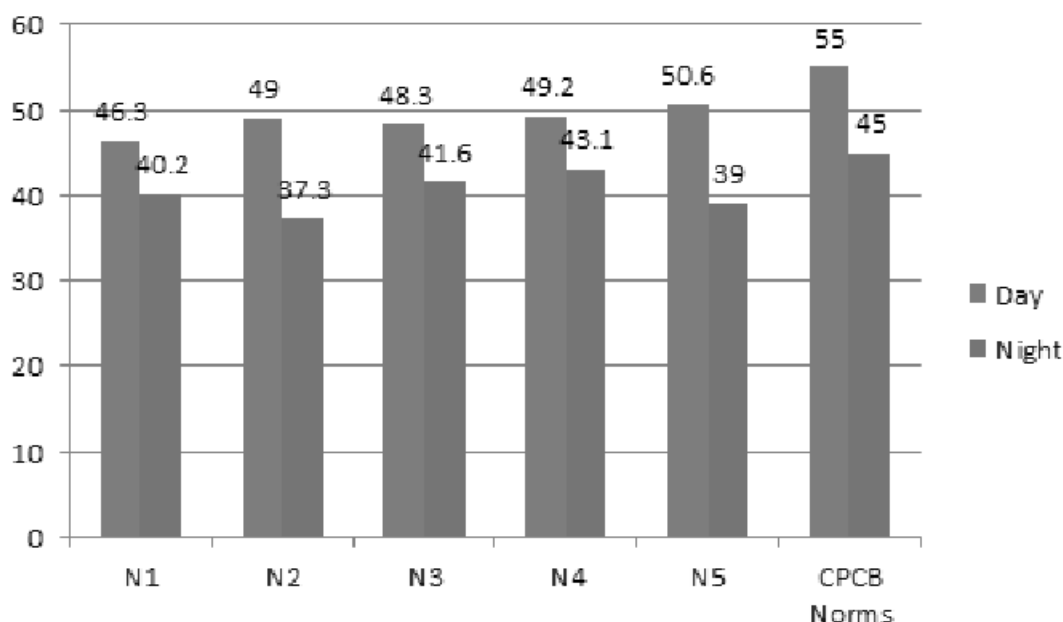
Table 3.11 Noise monitoring results					
S. No	Location	Day equivalent	Night equivalent	Day equivalent limits by CPCB	Night equivalent limits by CPCB
1	Within Lease area	46.3	40.2	55	45
2	Boothipuram	49.0	37.3		
3	Meenakshipuram Bodi	48.3	41.6		

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4	Theni Alinagaram	49.2	43.1		
5	Kodangipatti	50.6	39		

The results are plotted as below.

FIG 3.17 DAY EQUIVALENT VALUES IN 5 LOCATIONS



3.9.1 Discussion

From the table, it is observed that the day Equivalent Noise (Leq-d) level ranges from 46.3 to 50.6 dB(A) and Night Equivalent Noise (Leq-n) level ranges from 37.3 to 43.1 dB(A). Day and Night Equivalent Noise (Leq-n) level were ranging from 45.1 to 48.9 dB(A). While compared with the MoEF Norm of 55 dB(A) for day time and 45 dB(A) for night time in residential areas, the monitored ambient noise levels are within the limited values.

3.10 SOIL ENVIRONMENT

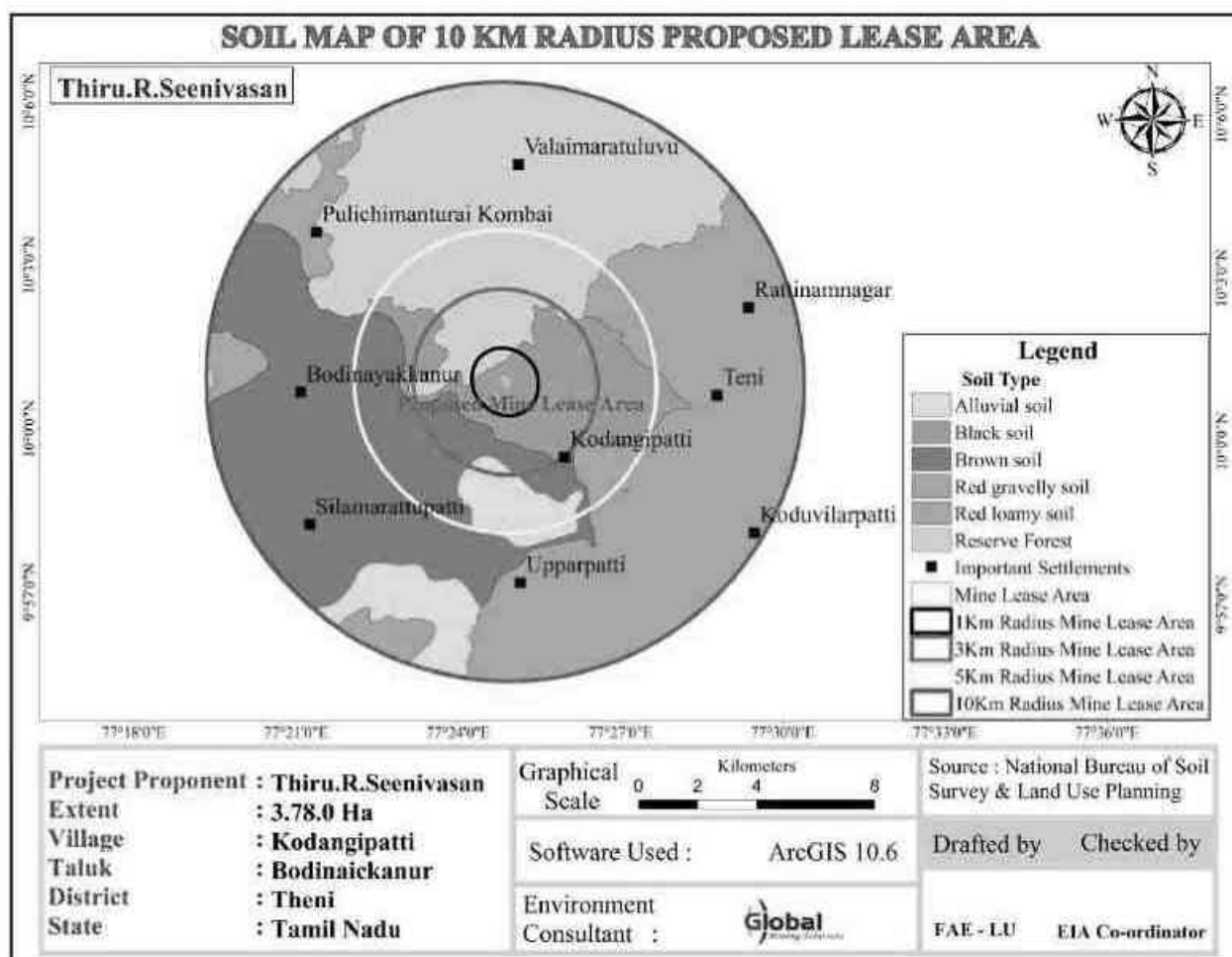
The district is characterised by Red, Black and Brown soils. The major part of the area is characterised by red soil, which can be either transported or lateritic (insitu). These are medium to heavy textured soils with moderate to higher permeability. The black soil is limited to less than 1% of the area. They are fine

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textured with low permeability. The brown soils are limited to less than 1% of the area and they are characterised by low permeability.

The soil quality of the study area is one of the important components of the land environment. The composite soil samples were collected from the study area and analyzed for different parameters. The locations of the monitoring sites are detailed in Figure 3.18. The soil type of the study area is detailed below.

FIG 3.18 SOIL MAP OF 10KM RADIUS PROPOSED LEASE AREA

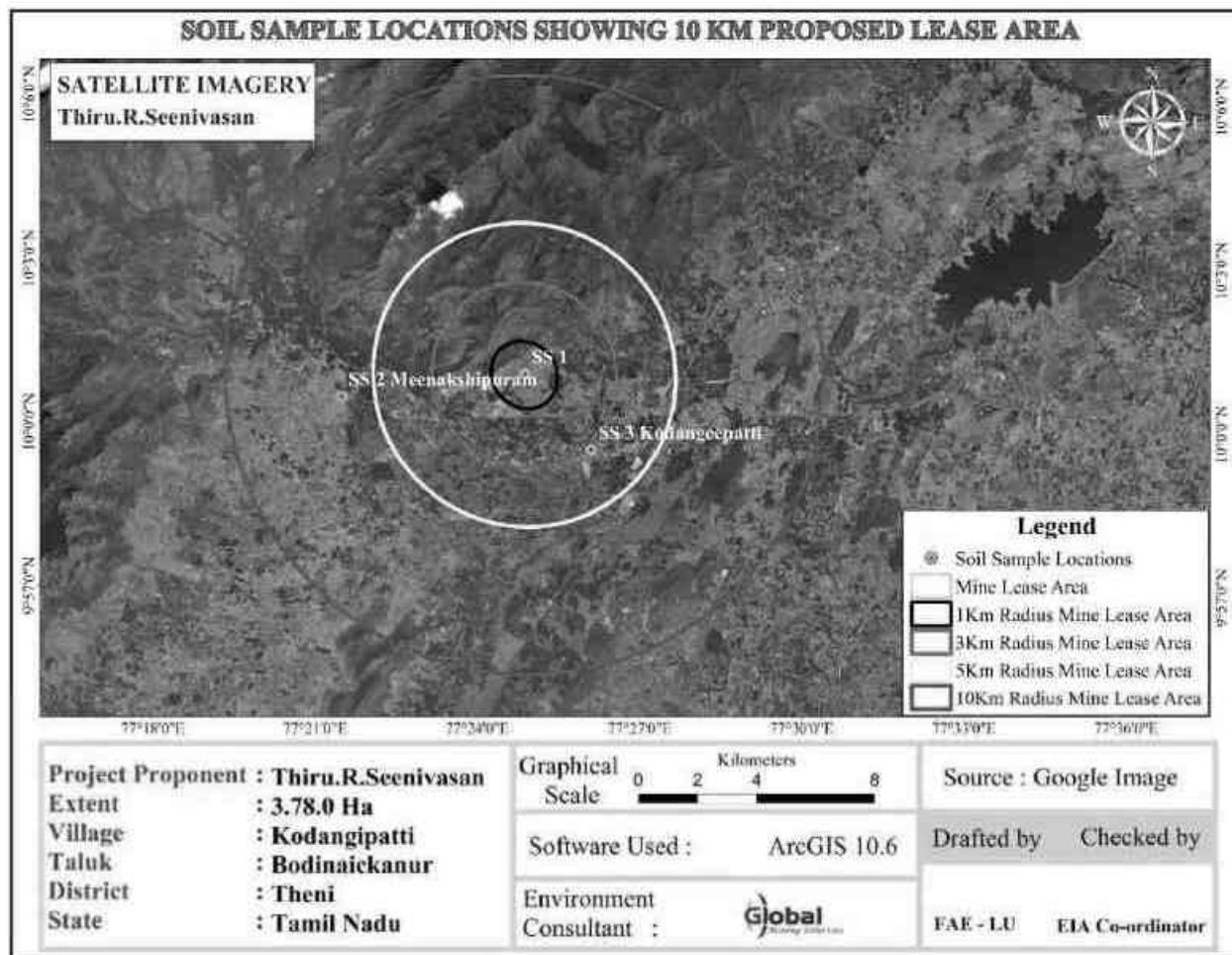


DRAFT EIA/EMP OF PROPOSED KODANGIPATTI ROUGH STONE & GRAVEL QUARRY OF THIRU.SEENIVASAN.R OVER AN EXTENT OF 3.78.0 Ha., LOCATED AT SURVEY NO. S.F.Nos.110/3, 110/4, 110/5, 127/1 AND 127/2 OF KODANGIPATTI VILLAGE, BODINAICKANUR TALUK, THENI DISTRICT, TAMIL NADU.

3.10.1 SOIL SAMPLING ANALYSIS

Soil samples have been collected from the mine lease area and 2 other locations from Meenakshipuram Bodi and Kodangipatti. The locations are shown in figure below.

FIG 3.19 SOIL SAMPLING LOCATIONS



The results are summarized in the table below.

Table 3.12 Results of Soil Sample Analysis				
S.No.	Parameter	S1 Mine lease area	S2 Meenakshipuram Bodi	S3 Kodangipatti
1	pH	7.28	7.62	7.78
2	Electrical Conductivity	38.57	45.82	80.59

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3	Dry Content	98.54	97.66	96.82
4	Water Content	1.46	2.34	3.18
5	Organic Mater	0.65	1.32	0.86
6	Sulphur	BDL(D.L.0.02)	BDL(D.L.0.02)	BDL(D.L.0.02)
7	Phosphorus	1.54	2.13	1.65
8	Texture	Silty Clay loam	Clay Loam	silt loam
9	Sand	18.36	25.67	22.69
10	Clay	39.49	34.01	24.17
11	Loam	42.15	40.32	53.14
12	Total Nitrogen	204	285	452
13	Sodium	456	548	362
14	Potassium	1210	920	670
15	Water Holding Capacity	3.4	3.7	3.5
16	Porosity	18.7	17.6	18.2

3.10.2 Soil Testing Result

Results of the soil samples show that the pH value was found to be 7.28 to 7.78 and Electrical Conductivity values were ranging between 38.57 – 45.82 μ mhos/cm. Soils are generally Silt Loam. Organic matter values range between 0.65 – 1.32 %. Total Nitrogen values range between 204 – 452 mg/kg. Phosphorus values range between 1.54 – 2.13 mg/kg. Potassium values were ranging between 670 – 1210 mg/kg. Sodium values were ranging between 362 – 548 mg/kg. Total Sulphur values were observed to be BDL. The soil quality data for the 3 samples collected and analyzed are provided in Table no – 3.12.

3.11 BIOLOGICAL ENVIRONMENT

The biological study of the area has been conducted in order to understand the ecological status of the existing flora and fauna to generate baseline information and evaluate the probable impacts on the biological environment. The details are given below.

3.11.1 Flora in the study area

A field survey was done to measure the extent of flora present in the study area, the area is divided into 4 quadrants. The flora population in each quadrant is

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summed up for the total population in the study area. Also, data from the State forest department is used. The quadrants used for each type are given below:

S.No.	Size of Quadrant	Type of flora
1	10x10 m	Trees
2	5x5 m	Shrubs
3	1x1 m	Herbs

Core Zone

During the field visit, it is observed that there are no national parks / Sanctuaries / forests in the 10km buffer area. The study area is devoid of any major plantations. Here and there, small bushes are found, which will be removed during mining. Common species found in the core zone are given below.

Table 3.14 Flora in Study Area

No	Species	Family	Habit
1	<i>Agalaia elaeagnoidea</i> *	Meliaceae	Small tree
2	<i>Anisochilus scaber</i> *	Lamiaceae	Herb
3	<i>Aristolochia tagala</i> **	Aristolochiaceae	Climber
4	<i>Arundinella ciliata</i> *	Poaceae	Herb/Grass
5	<i>Arundinella setosa</i> *	Poaceae	Herb/Grass
6	<i>Asystasia dalzelliana</i> *	Acanthaceae	Herb
7	<i>Barleria acuminata</i> *	Acanthaceae	Shrub
8	<i>Barleria tomentosa</i> *	Acanthaceae	Shrub
9	<i>Chrysopogon asper</i> *	Poaceae	Herb/Grass
10	<i>Chrysopogon hackelii</i> *	Poaceae	Herb/Grass
11	<i>Crotalaria longipes</i> ****	Fabaceae	Shrub
12	<i>Cynodon barberii</i> *	Poaceae	Herb/Grass
13	<i>Decalepis hamiltonii</i> **	Asclepiadaceae	Climber

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14	<i>Dicliptera cuneata</i> *	Acanthaceae	Herb
15	<i>Exacum sessile</i> **	Gentianaceae	Herb
16	<i>Ficus beddomei</i> *	Moraceae	Tree
17	<i>Garnotia elata</i> ***	Poaceae	Herb/Grass
18	<i>Jatropha peltata</i> *	Euphorbiaceae	Undershrub
19	<i>Mucuna pruriens</i> **	Fabaceae	Straggler
20	<i>Pseudarthria viscida</i> **	Fabaceae	Herb
21	<i>Strobilanthes consanguinea</i> *	Acanthaceae	Shrub
22	<i>Strobilanthes cuspidatus</i> *	Acanthaceae	Shrub
23	<i>Strychnos potatorum</i> **	Loganiaceae	Tree
24	<i>Tricalysia apiocarpa</i> ***	Rubiaceae	Small tree
25	<i>Tripogon bromoides</i> *	Poaceae	Herb/Grass
26	<i>Zenkaria elegans</i> *	Poaceae	Herb/Grass
*Endemic to the Peninsular India, ** IUCN Red-listed medicinal plants, ***Endemic to Western Ghats, **** Rare, endemic and endangered.			

3.11.2 Fauna in the study area

There is no specific fauna found within ML area. The buffer zone fauna in the area is studied by direct observation method. Secondary data collected from the Forest department and the same is used in this report. People in the nearby locality were also consulted. The commonly found fauna in the area are given below.

S.No.	Scientific name	Common name	Type of fauna	Schedule to which the species belong
1	<i>Canis familiaris</i>	Common dog	Mammals	IV
2	<i>Felis catus domesticus</i>	Domestic cat		IV
3	<i>Golunda ellioti</i>	Indian bush rat		IV
4	<i>Funambus palmarum</i>	Squirrel		IV
5	<i>Lepus nigricollis</i>	Indian hare		IV

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6	Bos indicus	Domestic cow		IV
7	Common Crow	Corvus splendens	Birds	V
8	House Sparrow	Passer domesticus		IV
9	Common Myna	Acridotheres tristis		IV
10	Streptopelia chinensis	Pigeon		IV
11	Calotes versicolor	Lizard	Amphibia	IV
12	Ptyas mucosa	Snake		IV
13	Rana hexadactyla	Frog		IV

Table 3.17: Mammals recorded in the study area

	English name	Zoological name	IUCN status
1	Asian palm civet	<i>Paradoxurus hermaphroditus</i>	LC
2	Bengal Fox *	<i>Vulpes bengalensis</i>	LC
3	Black Rat *	<i>Rattus rattus</i>	LC
4	Blackbuck *	<i>Antelope cervicapra</i>	NT
5	Black-naped hare	<i>Lepus nigricollis</i>	LC
6	Bonnet macaque	<i>Macaca radiata</i>	LC
7	Chital	<i>Axis axis</i>	LC
8	Common Giant flying squirrel	<i>Petaurista petaurista</i>	LC
9	Common mongoose	<i>Herpestes edwardsi</i>	LC
10	Common Palm Squirrel *	<i>Funambulus palmarum</i>	LC
11	Coromandel Pipistrelle *	<i>Pipistrellus coromandra</i>	LC
12	Dhole	<i>Cuon alpinus</i>	EN
13	Elephant	<i>Elephas maximus</i>	EN
14	Eurasian Otter *	<i>Lutra lutra</i>	NT
15	Four-horned Antelope *	<i>Tetracerus quadricornis</i>	VU
16	Gaur	<i>Bos gaurus</i>	VU
17	Golden Jackal *	<i>Canis aureus</i>	LC
18	Greater Bandicoot Rat *	<i>Bandicota indica</i>	LC
19	Hanuman langur	<i>Semnopithecus entellus</i>	LC

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20	House Shrew*	<i>Suncus murinus</i>	LC
21	Indian bison *	<i>Bos gaurus</i>	VU
22	Indian Chevrotain *	<i>Moschiola indica</i>	LC
23	Indian crested Porcupine	<i>Hystrix indica</i>	LC
24	Indian Flying Fox*	<i>Pteropus giganteus</i>	LC
25	Indian Gerbil *	<i>Tatera indica</i>	LC
26	Indian Pangolin	<i>Manis crassicaudata</i>	NT
27	Indian wild pig	<i>Sus scrofa</i>	LC
28	Jungle cat	<i>Felis chaus</i>	LC
29	Leopard	<i>Panthera pardus</i>	NT
30	Leopard cat	<i>Prionailurus bengalensis</i>	LC
31	Lion-tailed Macaque *#	<i>Macaca silenus</i>	EN
32	Little Indian Field Mouse *	<i>Mus booduga</i>	LC
33	Long-eared Hedgehog *	<i>Hemiechinus auritus</i>	LC
34	Madras Treeshrew *	<i>Anathana ellioti</i>	LC
35	Malabar giant squirrel#	<i>Ratufa indica</i>	NT
36	Nilgiri Langur	<i>Semnopithecus johnii</i>	VU
37	Nilgiri Marten *#	<i>Martes gwatkinsii</i>	VU
38	Nilgiri Tahr *	<i>Nilgiritragus hylocrius</i>	EN
39	Ratel or Honey Badger *	<i>Mellivora capensis</i>	LC
40	Sambar	<i>Rusa unicolor</i>	VU
41	Slender loris	<i>Loris lydekkerianus</i>	LC
42	Sloth bear	<i>Melursus ursinus</i>	VU
43	Small Indian civet	<i>Viverricula indica</i>	LC
44	Southern Red Muntjac	<i>Muntiacus muntjak</i>	LC
45	Sri Lankan Giant Squirrel *	<i>Ratufa macroura</i>	NT
46	Striped hyena *	<i>Hyaena hyaena</i>	NT
47	Stripe-necked Mongoose *	<i>Herpestes vitticollis</i>	LC
48	Tiger *	<i>Panthera tigris</i>	EN
49	White spotted Chevrotain	<i>Tragulus meminna</i>	LC
EN: Endangered; VU: Vulnerable; NT: Near threatened; LC: Least concern. *Not encountered during the survey, but are reported by Malik (2004). # Endemic to			

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Western Ghats (Bava et al, 2007)

Table 3.18: Reptiles recorded in the study area

English name	Zoological name	IUCN status
1 Asian House Gecko	<i>Hemidactylus frenatus</i>	LR
2 Bark Gecko	<i>Hemidactylus leschenaultii</i>	LR
3 Beddome's Grass Skink	<i>Mubuya beddomei</i>	LR
4 Bengal Monitor Lizard	<i>Varanus bengalensis</i>	VU
5 Bronze Grass Skink	<i>Mabuya macularia</i>	LR
6 Brook's House Gecko	<i>Hemidactylus brookii</i>	LR
7 Common Cat Snake	<i>Boiga trigonota</i>	LR
8 Common Sand Boa	<i>Gongylophis conicus</i>	LR
9 Common Vine Snake	<i>Ahaetulla nasuta</i>	LR
10 Common Wolf Snake	<i>Lycodon aulicus</i>	LR
11 Fan throated Lizard	<i>Sitanan ponticeriana</i>	LR
12 Green forest Lizard	<i>Calotes calotes</i>	LR
13 Horseshoe Pit Viper	<i>Trimeresurus strigatus</i>	LR
14 Indian garden Lizard	<i>Calotes versicolor</i>	LR
15 Indian Rat Snake	<i>Ptyas mucosa</i>	LR
16 Indian Rock Python	<i>Python molurus molurus</i>	EN
17 Keeled Grass Skink	<i>Mabuya carinata</i>	LR
18 Large-scaled Pit Viper	<i>Trimeresurus macrolepis</i>	LR
19 Malabar Pit Viper #	<i>Trimeresurus malabaricus</i>	VU
20 Red Sand Boa	<i>Eryx johnii</i>	LR
21 Russell's Viper	<i>Daboia russelii</i>	LR
22 Saw-scaled Viper	<i>Echis carinatus</i>	LR
23 South Asian Chamaeleon	<i>Chamaeleo zeylanicus</i>	VU
24 South Indian Rock Agama #	<i>Psammophilus dorsalis</i>	LR
25 Spectacled Cobra	<i>Naja naja</i>	LR
26 Termite-hill Gecko	<i>Hemidactylus triedrus</i>	LR
27 Three-lined Grass Skink #	<i>Mubuya trivittata</i>	LR

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#Endemic to Western Ghats. LR: Low Risk; VU: Vulnerable; EN: Endangered

Table 3.19: Amphibians recorded in the study area

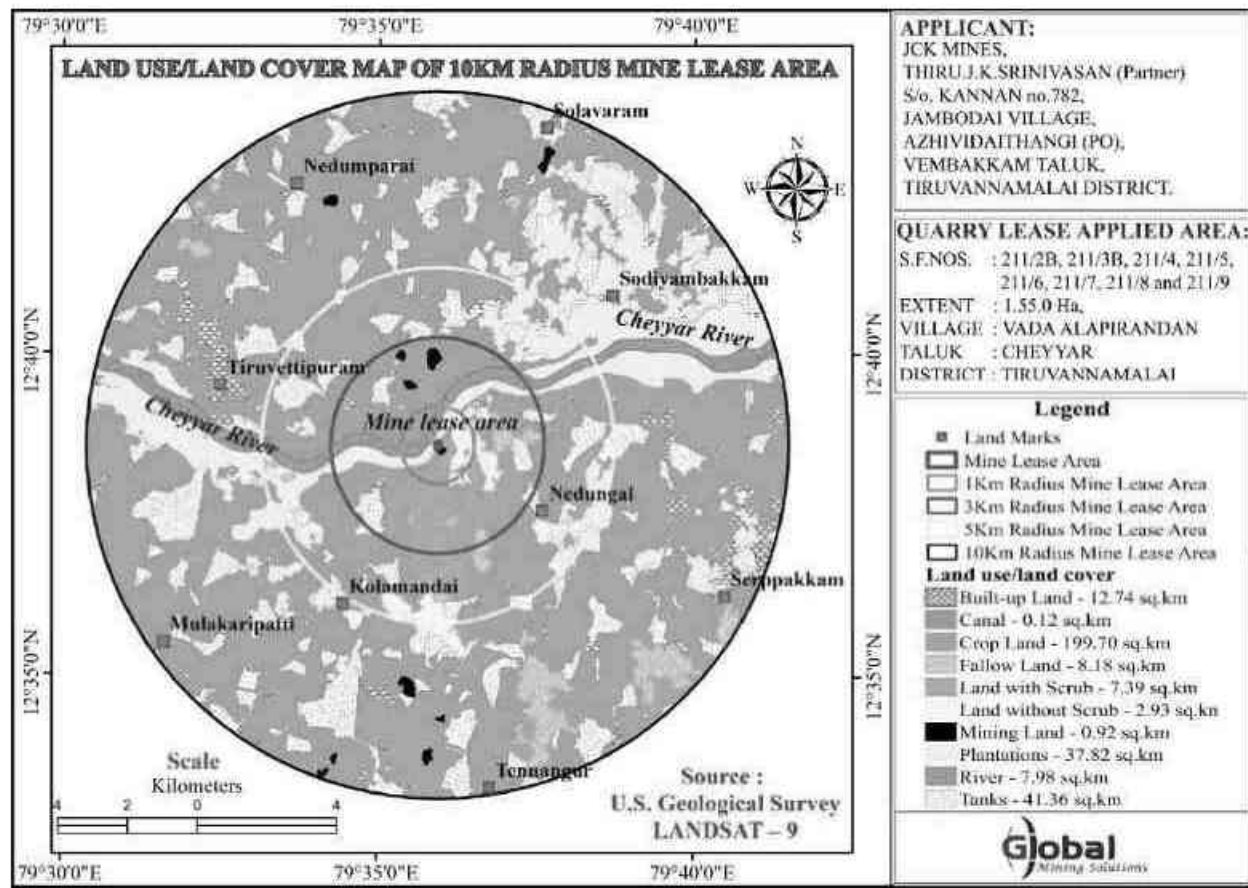
English name	Scientific name	IUCN Status
1 Beddome's Leaping Frog#	<i>Indirana beddomei</i>	LC
2 Bronzed Frog	<i>Sylvirana temporalis</i>	LC
3 Common Indian Toad	<i>Duttaphrynus melanostictus</i>	LC
4 Common Tree Frog	<i>Polypedatus maculatus</i>	LC
5 Cricket Frog	<i>Fejervarya limnocharis</i>	LC
6 Ferguson's Toad	<i>Bufo scaber</i>	LC
7 Indian Bull Frog	<i>Hoplobatrachus tigrinus</i>	LC
8 Indian Burrowing Frog	<i>Sphaerotheca breviceps</i>	LC
9 Indian Painted Frog	<i>Kaloula taprobanica</i>	LC
10 Indian Pond or Green Frog	<i>Euphlyctis hexadactylus</i>	LC
11 Lessor or Marbled Balloon Frog	<i>Uperodon systoma</i>	LC
12 Ornate Narrow-mouthed Frog	<i>Microhyla ornateornata</i>	LC
13 Red Narrow-mouthed Frog	<i>Microhyla rubra</i>	LC
14 Water Skipper or Skipper Frog	<i>Euphlyctis cyanophlyctis</i>	LC
# Endemic to Western Ghats. LC=Least Concern		

3.12 LAND USE

The land use land cover data is found using the LANDSAT - 9 satellite imagery. The number of bands used is 11. The satellite image is given below.

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FIG 3.20 LAND USE/LAND COVER MAP OF THE STUDY AREA



The 1km, 3km, 5km and 10km radius is shown above. The details are given below.

S. No	Land Use	Area in Sq.Km	Area in Percentage
1.	Buildup area	12.74	5.33
2.	Canal	0.12	0.04
3.	Crop land	199.70	61.70
4.	Fallow Land	8.18	2.53
5.	Land with scrub	7.39	2.28
6.	Land without scrub	2.93	0.91

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7.	Mining land	0.92	0.28
8.	Plantations	37.82	11.69
9.	River	7.98	2.47
10.	Tanks	41.36	12.78
Total		319.13	100

3.13 SOCIOECONOMIC ENVIRONMENT

The socio economic environment of the study area is studied by conducting primary sites through site visits and conducting sample surveys. The secondary data obtained from Census 2011 is also used. The following data area collected from secondary data:

- Demographic pattern.
- Health pattern
- Occupational structure.
- Amenities available.

The total number of people residing in the four rural villages in the Tamil Nadu part of the study area is 28600. The male to female sex ratio of the area is 1:1. Only 59% of the total population is literate. The local inhabitants depend on the near-by Bodinayakanur municipal town and Theni municipal town for various amenities. The population comprising of 15512 labourers greatly depend on the job opportunities in the near-by townships, notwithstanding the lion share of the population in the area depending on agriculture. The area has 9807 marginal agricultural labourers and 2007 main cultivators (Census of India, 2001). The area is irrigated by the Periyar and Vaigai irrigation projects and major crops raised are millets, groundnut, pulses, tapioca, plantain, rice, and vegetables. In some parts nearby, silk cotton (Bombax ceiba) cultivation and mango orchards are also seen. Floriculture is not uncommon in and around the study area. Teak and Jatropha plantation are also seen. The average income of people ranges from Rs 50,000 to 1,00,000/- per annum. Nearby educational institutes include a middle school (~ 2.5 km from the

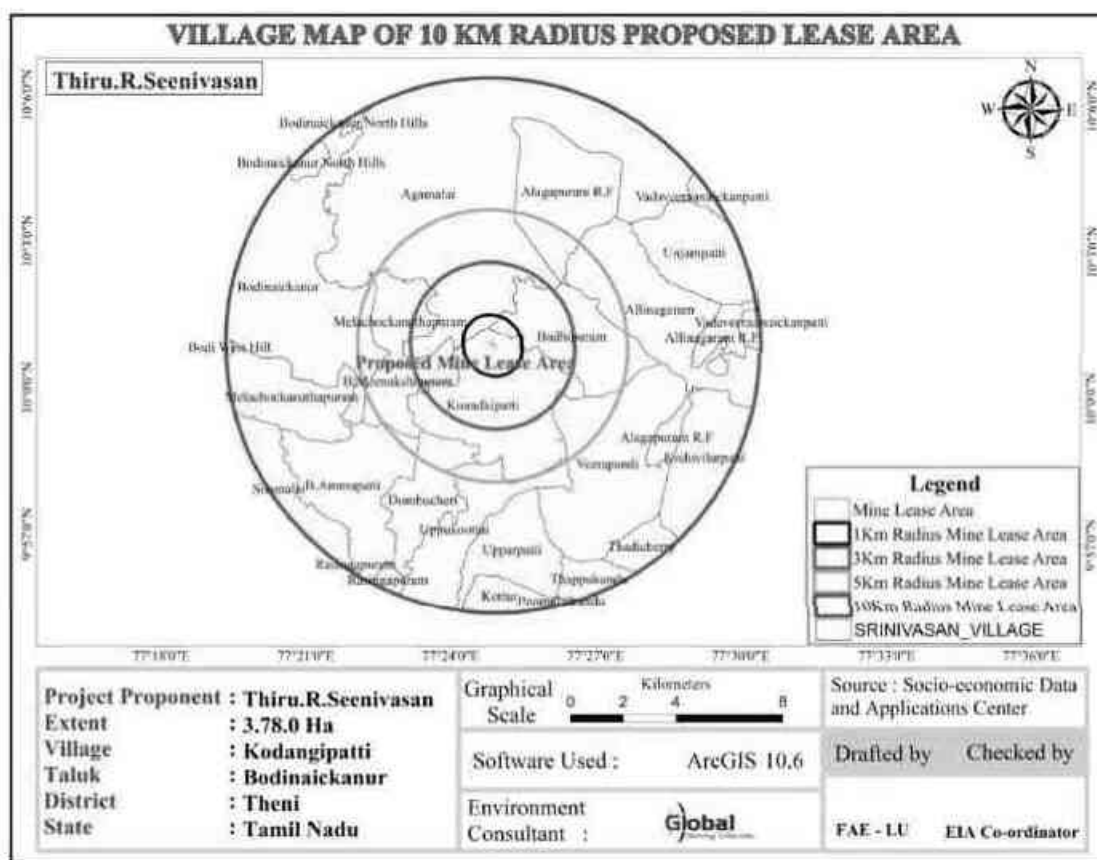
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INO site), a high school at Silamalai (~10 km from the site), and a college at Uthamapalayam (~18 km from the site). Nearest government primary health centre is located at Boothipuram, about 3.57 km away from the site.

3.13.1 DETAILS OF VILLAGES

The profile of the villages located in the study area is given in Fig 3.22 below.

FIG 3.21 VILLAGE MAP OF THE STUDY AREA



DETAILS OF VILLAGES

The project is located in Bodinaickanur Taluk, Theni District. The total population is 24,64,875 which comprises of 12,35,889 males and 12,28,986 females. There are 20 rural villages and one urban area in the study area. The list of villages is given below.

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Table 3.21 Village details in study area

S.No.	Village/Town Name	Radius	Taluk Name	District Name
1.	Budhipuram	0-5km	Bodinaickanur, Theni	Theni
2.	Kodangipatti			
3.	B. Meenakshipuram			
4.	Melachockanathapuram			
5.	Agamalai			
6.	Allinagaram			
7.	Veerapandi			
8.	Dombucheri			
9.	Uppukottai			
10.	B. Ammapatti			
11.	Bodinaickanur			
12.	Silamalai	5-10km	Theni	
13.	Rasingapuram			
14.	Upparpatti			
15.	Kottur			
16.	Poomaliakundu			
17.	Thappukundu			
18.	Thadicherry			
19.	Koduvilarpatti			
20.	Vadaveeranaickanpatti			
21.	Unjampatti			

Table 3.22 Population profile of the study area

Particulars	No of Population	Percentage (%)
A. Population break-up by Gender		
Male Population	172345	50.13
Female Population	171389	49.87
Total	343734	100

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B. Population break-up by Caste		
Scheduled Caste	67577	19.65
Scheduled Tribes	588	0.17
Others	275569	80.16
Total	343734	100
C. Literacy Level		
Total Literate Population(A)	248948	72.42
Literates Male	1,30,772	39.50
Literates Female	1,18,176	32.93
Total Illiterate(B)	94786	27.58
Illiterate male	40,045	10.64
Illiterate Female	54,741	16.94
Total(A+B)	343734	100
D. Occupational structure		
Main workers	140303	40.82
Marginal workers	13040	3.79
Total Workers(A)	153343	44.61
Total Non-workers(B)	190391	55.39
Total(A+B)	343734	100

The above table shows that the male and female population ratio are almost equal. Among the total population, 0.17% belong to Scheduled Tribes, 19.65 % are Scheduled Caste and the balance is 80.16 % people belong to other castes. Among the total population, 72.42% of the people are literate. Among the total population, 39.5% are literate males and 32.93% are literate females. This shows that the male literates are higher than the female literates. The results are plotted in the figures below.

FIG 3.23 GENDER-WISE POPULATION DISTRIBUTION

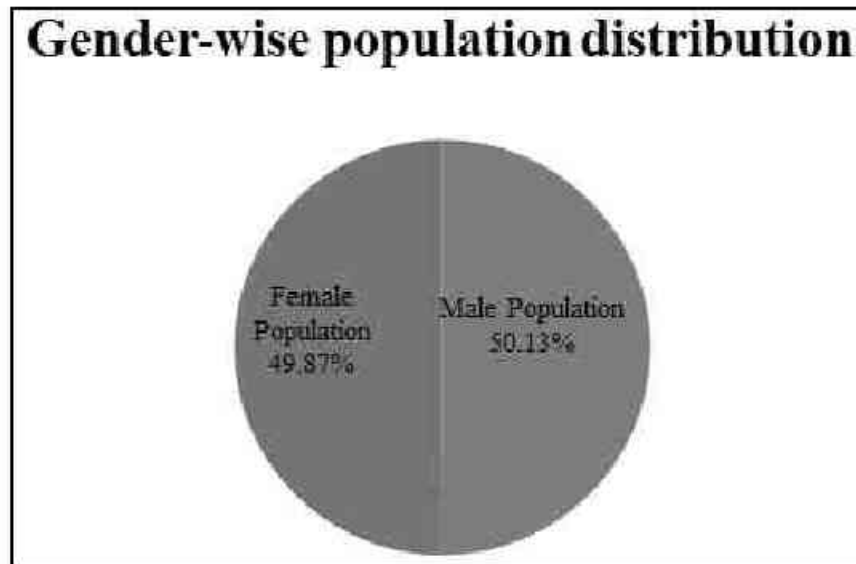


FIG 3.23 GENDER WISE LITERACY DISTRIBUTION

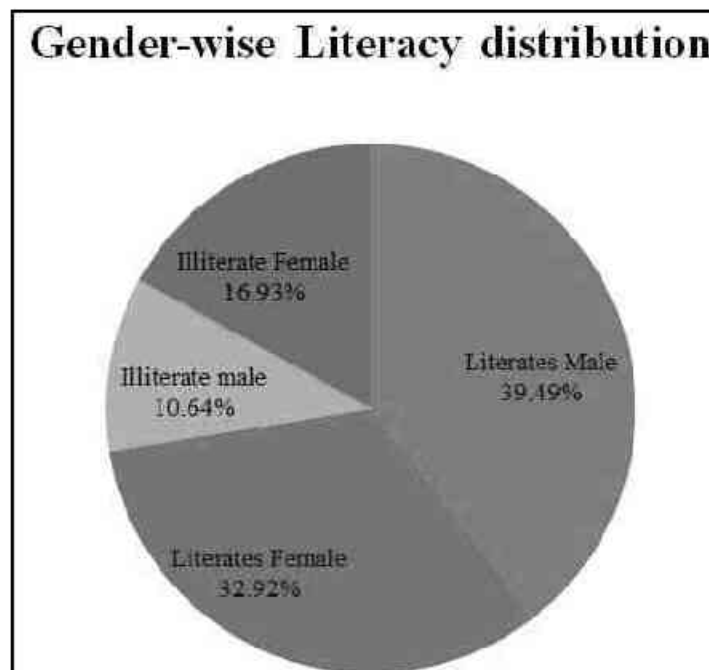
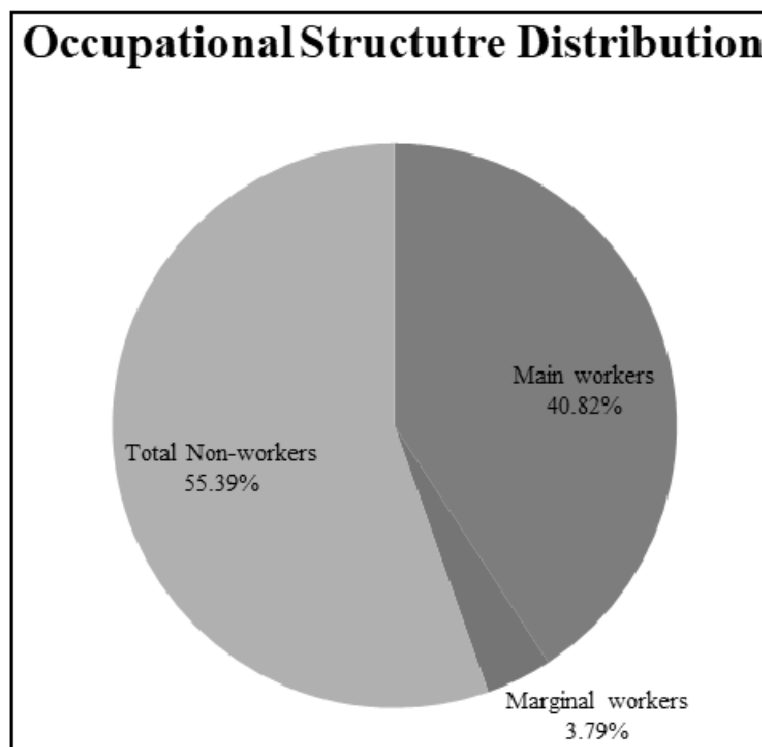


FIG 3.24 OCCUPATIONAL STRUCTURE WITHIN BUFFER ZONE



3.14 Infrastructure facilities in the study area

3.14.1 Education

Table 3.23 Educational infrastructure

S. No.	Particulars	Available in villages (Nos)
1	Govt. Primary School	84
2	Govt. Middle School	43
3	Govt. Secondary School	12
4	Govt. Senior Secondary School	10
5	Govt. Arts and Science Degree College	2
6	Govt. Engineering College	0
7	Govt. Medicine College	0
8	Govt. Management Institute	1
9	Govt. Polytechnic	2
10	Govt. Vocational Training School/ITI	0

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In the study area, there are total 84 primary schools functioning in these 21 rural villages. Among them, 1 village has 1 primary school, 1 village has 2 primary schools & 13 villages have more than 2 primary schools.

3.14.2 Healthcare

In the study area, the following facilities are available.

S.No.	Particulars	Available in villages (Nos)
1	Community Health Centre	2
2	Primary Health Centre	12
3	Primary Health Sub Centre	24
4	Maternity And Child Welfare Centre	20
5	TB Clinic	12
6	Hospital- Allopathy	0

3.14.3 Other Infrastructure

The other infrastructure facilities available are given below.

S.No.	Particulars	Available in village
1	Tap Water-Treated	21
2	Covered Well	10
3	Hand Pump	3
4	Tube Wells/Borehole	10
5	Post office	1
6	Public bus services	21
7	Commercial& Cooperative Bank	6

3.14.4 Sample Survey

The expert visited 3 villages in the study area, namely Agamalai, Kodangipatti and Poomaliakundu villages. Discussions were held with people from nearby localities to study the social and economic conditions prevailing in the area. The expert also

visited nearby hospitals, primary health centres and Balwadis/Anganwadis. The following observations were made.

Primary schools are available in many villages. For hospital facilities, people in the locality have to go to hospital in Bodinaickanur/Theni which is within 6 kms from the lease area. Major schools with higher secondary and senior secondary schools are located in Bodinaickanur. The major Panchayat Union located in the area is Bodinaickanur. Facilities like petrol pump stations, ATM facility are available in Bodinaickanur.

3.15 HYDROGEOLOGY OF THE STUDY AREA

There is a seasonal odai passing on Western side of the area and is 50m Safety distance is provided. And there is a seasonal odai passing on Western and Northeastern side of the area and is 70m and 360m away from the area. There is a Kulam situated on Southeastern side of the area and is 290m away from the area.

3.15.1 HYDROGEOLOGICAL STUDY

The project proponent conducted a Hydro-geological study to evaluate the impact of proposed mining activity on the groundwater table, Open wells, and water bodies such as rivers, tanks, canals, ponds etc., located nearby the proposed mining area is detailed under this section.

3.15.2 PHYSIOGRAPHY AND DRAINAGE

Physiography:

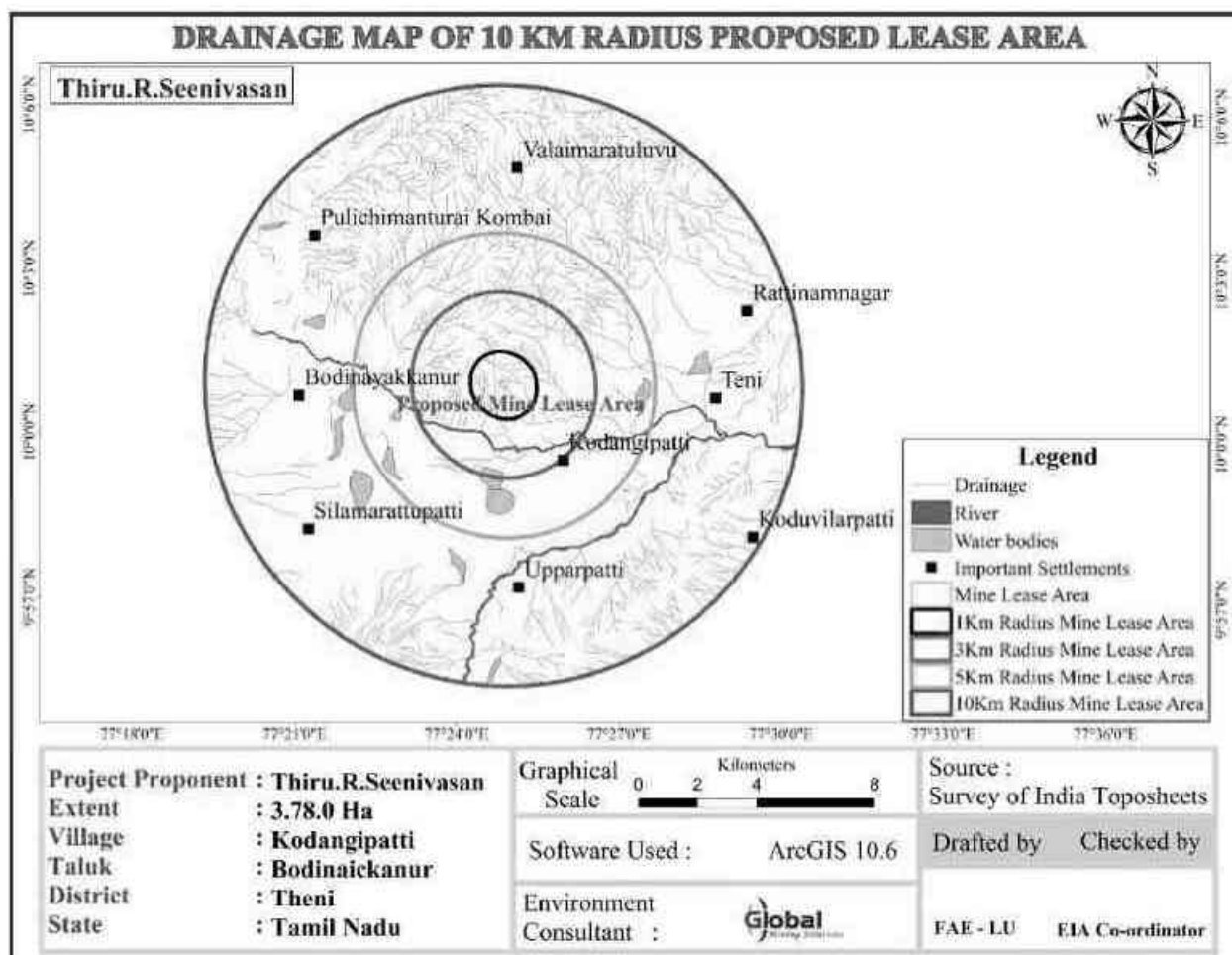
The project area exhibits a slightly undulated topography covered by Gravel formation. The massive Charnockite formation is noticed below 3m (Avg) Gravel formation and sloping towards the Southeastern side of the area, the altitude of the area is above 355m (maximum) from MSL.

Drainage: The drainage pattern study reveals that from the proposed mine lease area with around 1 Km radius and 10 Km study observed in Figure 3.26. There is a seasonal Odai passing on Western side of the area and is 50m Safety distance is provided. And there is a seasonal Odai passing on Western and Northeastern side of

DRAFT EIA/EMP OF PROPOSED KODANGIPATTI ROUGH STONE & GRAVEL QUARRY OF THIRU.SEENIVASAN.R OVER AN EXTENT OF 3.78.0 Ha., LOCATED AT SURVEY NO. S.F.Nos.110/3, 110/4, 110/5, 127/1 AND 127/2 OF KODANGIPATTI VILLAGE, BODINAICKANUR TALUK, THENI DISTRICT, TAMIL NADU.

the area and is 70m and 360m away from the area. There is a Kulam situated on the Southeastern side of the area and is 290m away from the area. There is a river called Kottagudi River passing on 2.05km Southern side away from the lease area.

FIGURE 3. 25 10 KILOMETER RADIUS OF THE DRAINAGE MAP



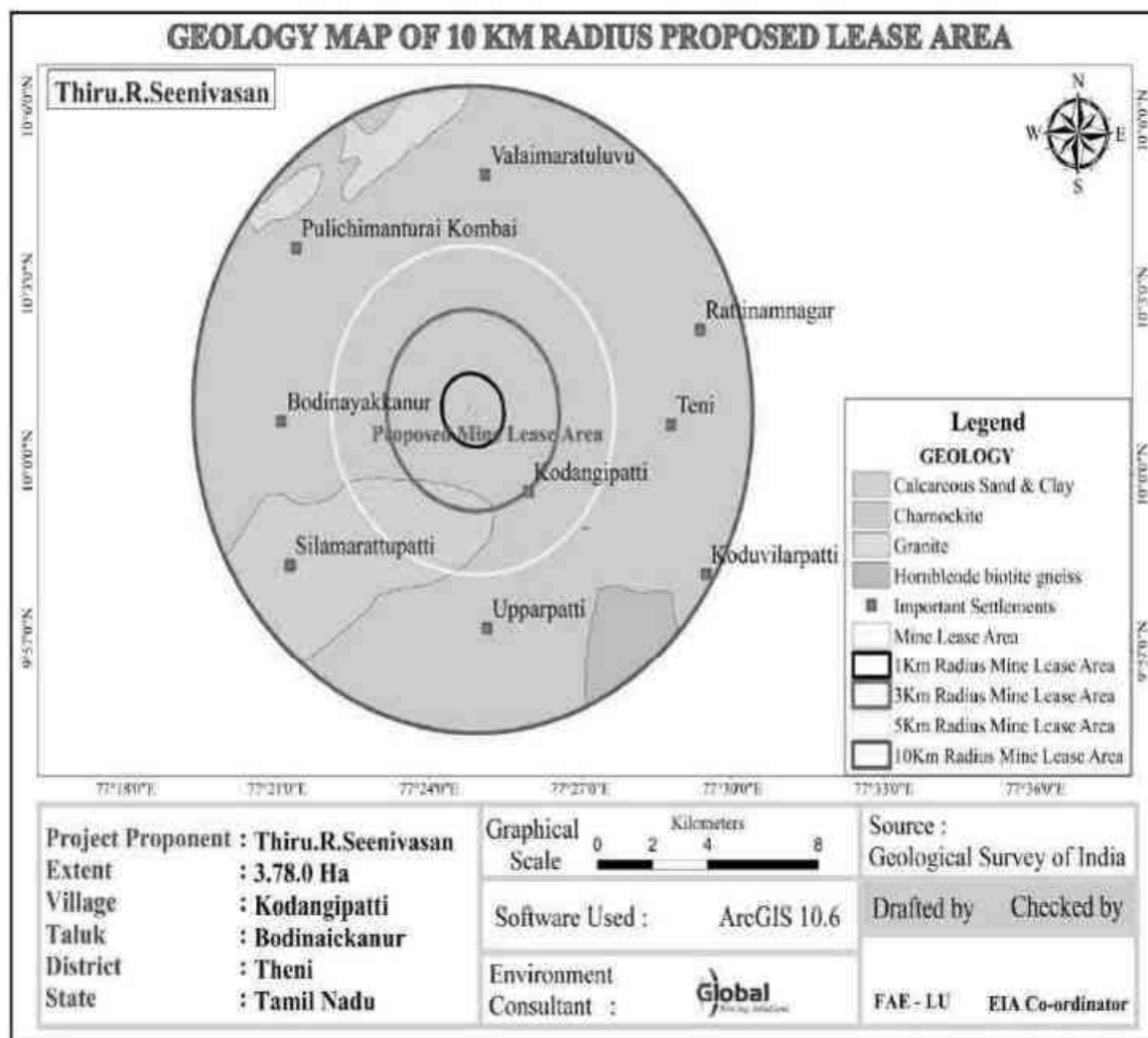
3.15.3 GEOLOGY, GEOMORPHOLOGY AND SOIL

Geology:

The Core and 10 Km buffered zone Geology map (Figure 3.27) shows that the Charnockite, Calcerous Sand & Clay, Granite and Hornblende biotite. The major portion was covered in Charnockite rock followed by Calcerous Sand & Clay. A small portion were occurred in Hornblende biotite gneiss; The geology of the study area is detailed below.

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FIGURE 3. 26 10 KILOMETER RADIUS OF THE GEOLOGY MAP

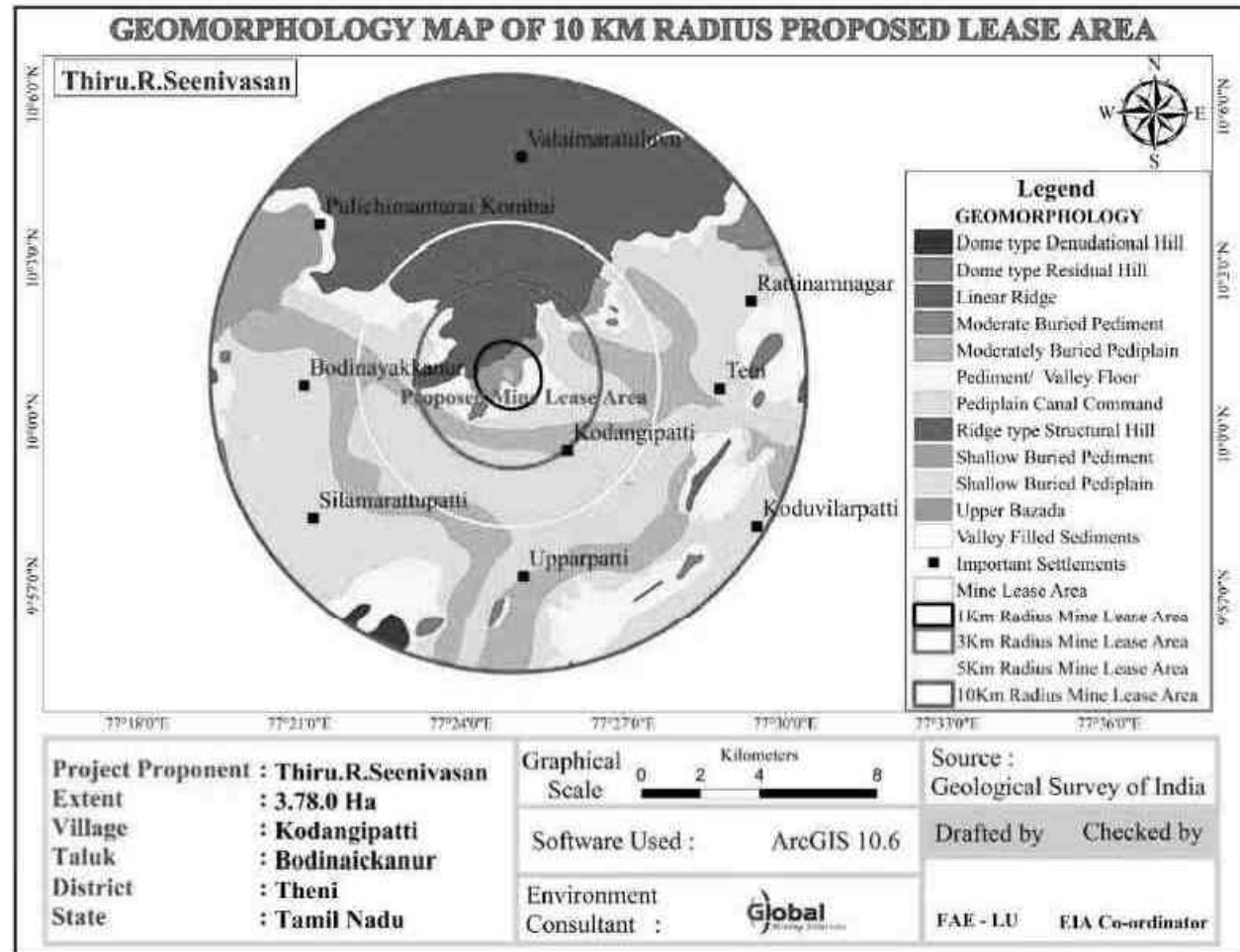


3.15.4 Geomorphology:

The 10 Km radius of the area geomorphological features (Figure 3.28) shows that the area is majorly covered by shallow buried pediment followed by Ridge type structural hill and pediment/Valley floor. The Geomorphology of the study area is shown in figure below.

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FIGURE 3. 27 10 KM RADIUS OF THE STUDY AREA GEOMORPHOLOGY MAP

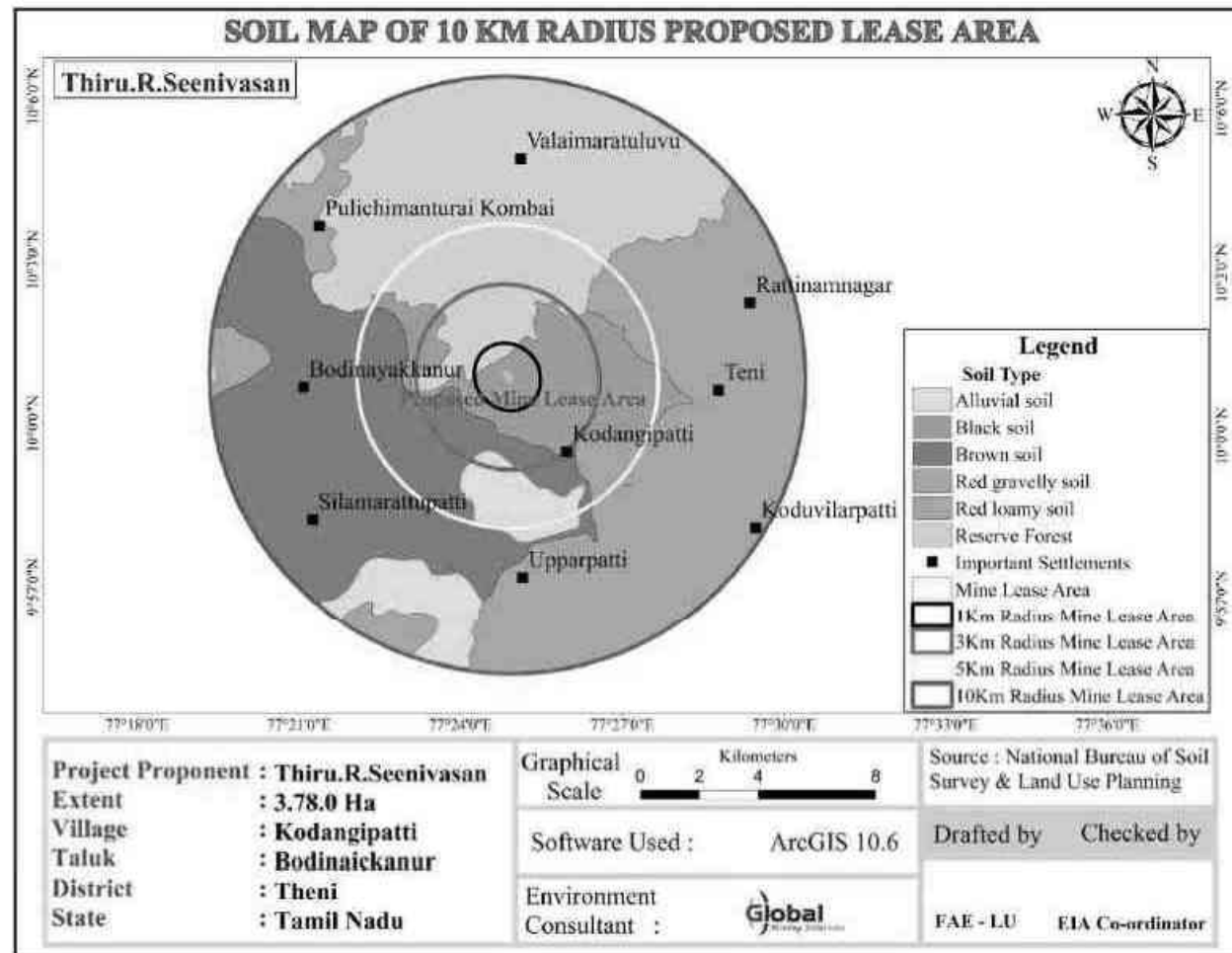


3.15.5 Soil:

The soil types in the study area are mostly Alluvial soil, black soil, Red loamy soil, Brown soil and Red gravelly soil (Figure 3.29.).

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FIGURE 3.28 10 KM RADIUS OF THE STUDY AREA SOIL TYPE MAP



3.15.6 Water Bodies

The drainage pattern study reveals that from the proposed mine lease area with around 1 Km radius and 10 Km study observed in Figure 3.26. There is a seasonal Odai passing on the western side of the area and a 50m safety distance is provided. And there are a seasonal Odai's passing on Western and Northeastern side of the area and at 70m and 360m away from the area. There is a Kulam situated on the Southeastern side of the area and is 290m away from the area. There is a river called Kottagudi River passing on 2.05 km Southern side away from the lease area.

3.15.7 Drainage

Vaigai river has its origin in the eastern slope of Western Ghats in Gandamanayakanur. Theni district is drained by a network of rivers namely Vaigai river, Suruli Ar, Periyar river and Kottagudi river. The tributaries of Vaigai river i.e. Koothantchi Ar, Kottagudi Ar, Theni Ar, Manjalar, Varahanadhi and some local streams are drained in this district. The regional drainage pattern is dendritic and major direction of the flow of river is easterly (east, southeast and northeast) from the Western Ghat hills.

The domestic and agriculture depends on the seasonal rains but greatly depends on groundwater. Since the annual rainfall over the area is the average annual rainfall is 1116.75 mm/year, agriculture has to depend on groundwater for irrigation. Nearly 75% of the water required for irrigation is served by open wells while around 25% is supplied from bore wells, surface water sources are a tank, accounts only for 5% of the total irrigation requirement.

3.15.8 GROUND WATER LEVEL

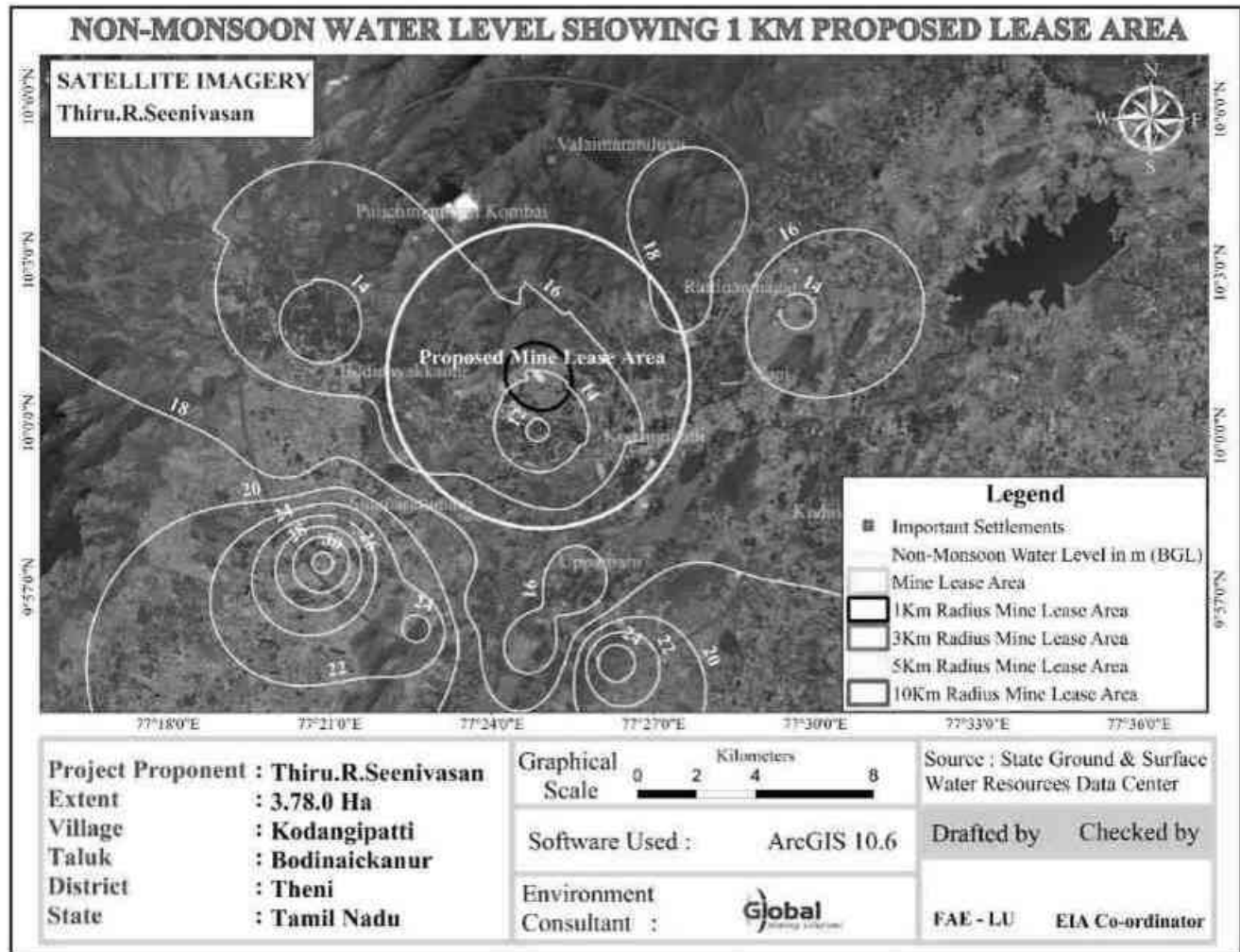
Figure 3.30 & 3.31 shows the Non-Monsoon and Monsoon water level map of the study area. Within 1 km radius of the core area shows that the entire portion falls under Charnockite rock. Therefore, water contain in fractures only.

Monsoon and non-monsoon seasons water level fluctuation studies reveal that less than 30m in the entire study area (10 km radius of the core area). The shallow depth of groundwater level is 12 to 16 m was observed in Ratinamnagar in both seasons.

The SSW part of the investigation area has a depth of groundwater level of 16 to 30m. North-Western and South-East parts of the study area water level is also 12 to 15 m. These portions are located at nearby edge of the 10 km radius.

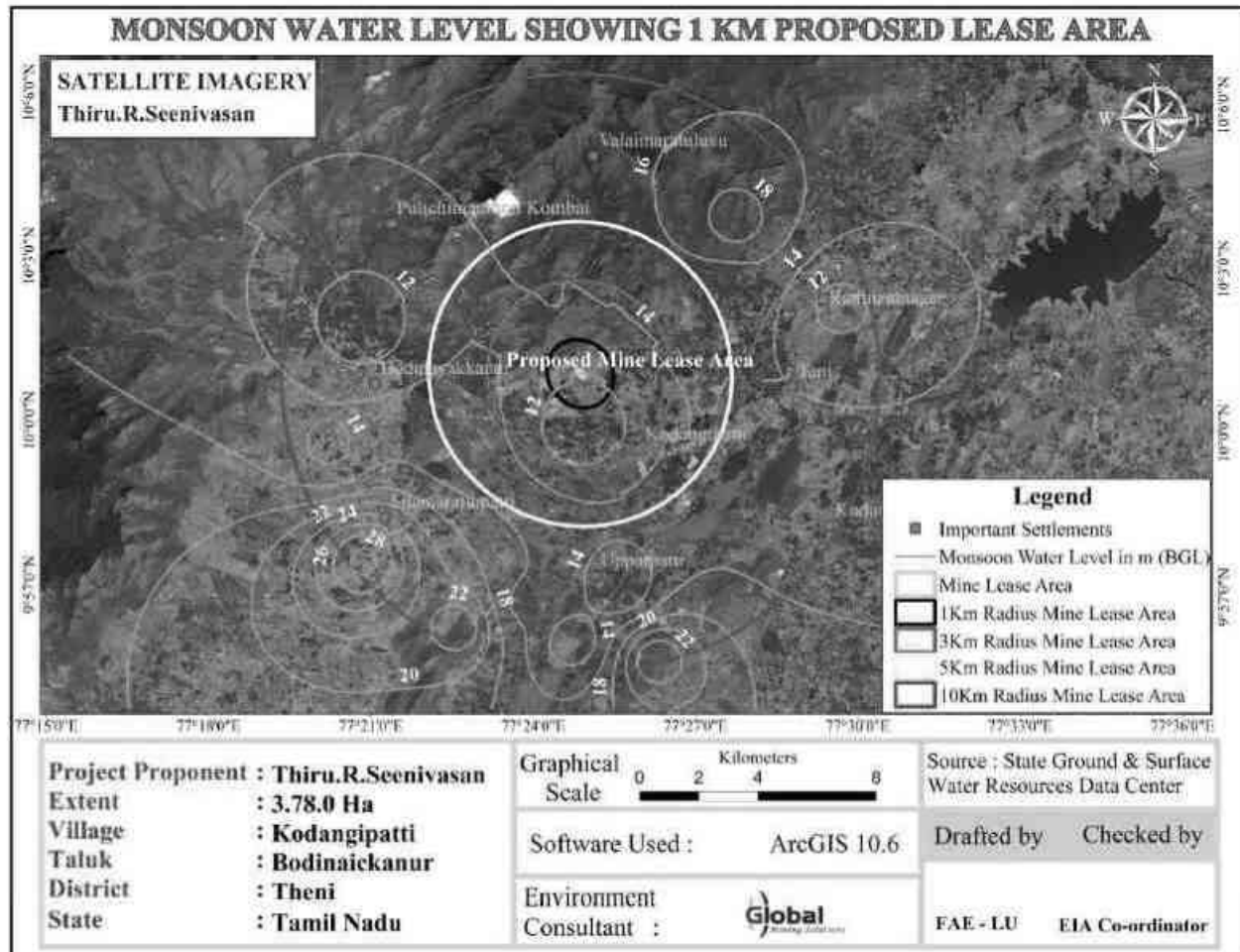
DRAFT EIA/EMP OF PROPOSED KODANGIPATTI ROUGH STONE & GRAVEL QUARRY OF THIRU.SEENIVASAN.R OVER AN EXTENT OF 3.78.0 Ha., LOCATED AT SURVEY NO. S.F.Nos.110/3, 110/4, 110/5, 127/1 AND 127/2 OF KODANGIPATTI VILLAGE, BODINAICKANUR TALUK, THENI DISTRICT, TAMIL NADU.

FIGURE 3.29 NON-MONSOON WATER LEVEL MAP OF THE STUDY AREA



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FIGURE 3.30 MONSOON WATER LEVEL MAP OF THE STUDY AREA



3.15.9 FIELD INVESTIGATION

The temporary seasonal streams water flow from center to outer most area. There is a river called Kottagudi River passing on 2.05km Southern side away from the lease area. The water is temporarily found only during the rainy season.

In this representation in the two seasons, the water level substantially gets fall-down in the Non-monsoon season, because of the rainfall impact and it extended up to the Monsoon season. Some of the wells water level is shallow depth in both seasons. These dug wells are located nearby water bodies. So, clearly shows that surface water is impact in these wells.

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The shallow depth of groundwater level is in the monsoon season. It is interesting to note that the water level is increased because of heavy rainfall during the southwest and northeast monsoon. The groundwater table level is substantially increased in the monsoon season.

In the study area, the shallow aquifer is developed through dug wells and deeper aquifer through tube wells. The study has revealed that potential fractures are encountered at deeper levels. The water in the wells are available mainly monsoon and it reduces during non-monsoon demanding the groundwater. Bore wells are deep and it reflects that the yield is only better at deeper water levels.

Rain water collected in the tanks in the region acts as a good source of water during monsoon season. In order to increase the recharge, tanks, and percolation ponds may be provided with the recharge wells/recharge shafts penetrating this impervious layer to make it more effective in recharging the aquifer.

CHAPTER 4

ANTICIPATED ENVIRONMENTAL IMPACTS AND

MITIGATION MEASURES

4.1 INTRODUCTION

This chapter deals with the various anticipated environmental impacts and mitigation measures of the proposed mining activity. The proposed method of mining is Opencast Semi Mechanized and the quarry operation involves Shallow Jack Hammer Drilling, Blasting, Excavation, Formation of benches, Loading and Transportation of minerals. The above activities may affect the surrounding environment like removal of rock mass, Loss of flora and fauna of the area, surface water discharge, change in air and water quality, etc., If adequate measures are not taken for the proposed operations it will cause the environmental degradation of the area and it will lead to affect to the ecosystem of the surrounding environment.

In order to maintain the existing environmental scenario of the proposed mine lease area, it is mandatory to assess the present ecology and environment of the proposed mine lease area and buffer area of the project before starting mining operations. The various environmental impacts which are identified by the proposed quarrying activities have been discussed below and its subsequent paragraphs.

- ❖ Land Environment
- ❖ Soil Environment
- ❖ Water Environment
- ❖ Air Environment
- ❖ Noise Environment
- ❖ Biological Environment
- ❖ Socio Economic Environment

4.2 LAND ENVIRONMENT

This is a proposed Rough Stone & Gravel Quarry of Thiru. R. Seenivasan at S.F. No. 110/3, 110/4, 110/5, 127/1 and 127/2 over an extent of 3.78.0 Ha in Kodangipatti

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Village, Bodinaickanur Taluk, Theni District, Tamil Nadu. The method of mining is Opencast Semi mechanized with a bench width and height of 5m. It is proposed to excavate to 3,61,855 m³ of Rough Stone and 74,232 m³ of Gravel upto a depth of 38m Below Ground level for the period of five years. There is no stream/odai within the mine lease area.

The main anticipated impact on the Land environment due to quarrying operation is change in landscape, change in land - use pattern.

The entire mine lease area of 3.78.0 Ha. is Patta land. The project area of 3.78.0 Ha (except unutilized area - 7.5 m and a 50m boundary barrier in the southern direction, east side 10m safety distance east direction is proposed to be altered by effective quarrying operation such as excavation (2.41.0 Ha), Infrastructure (0.01 Ha), Road (0.02 Ha) and green belt will be developed in the safety zone of 0.30.0 Ha. The ultimate depth of quarrying is proposed with a maximum depth of 38 m below the ground level and will not intersect the ground water table.

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4.3 ANTICIPATED IMPACTS AND MITIGATION MEASURES

Aspect	Impact	Mitigation measures																																																		
Topography	<p>The area exhibits slightly undulated topography covered by gravel formation. Quarrying activity will lead to change in geological setting of the area i.e., Due to the quarrying activity in the mine lease area will lead to affect the aesthetic view on the environment. Further, due to the movement of heavy vehicles in and around the mine lease area will lead to affect the surrounding agricultural lands, ecology and biodiversity, human habitations due to the emissions from vehicles like SO₂, NO_x, PM₁₀, PM_{2.5}, etc., The existing land use pattern is given as under.</p> <table border="1"> <thead> <tr> <th>Land Use</th> <th>Present Area (Hect)</th> <th>Area in use during the quarrying period (Hect)</th> </tr> </thead> <tbody> <tr> <td>Quarrying Pit</td> <td>Nil</td> <td>2.41.0</td> </tr> <tr> <td>Infrastructure</td> <td>Nil</td> <td>0.01.0</td> </tr> <tr> <td>Roads</td> <td>Nil</td> <td>0.02.0</td> </tr> <tr> <td>Green Belt</td> <td>Nil</td> <td>0.30.0</td> </tr> <tr> <td>Unutilized</td> <td>3.78.0</td> <td>1.04.0</td> </tr> <tr> <td>Total</td> <td>3.78.0</td> <td>3.78.0</td> </tr> </tbody> </table> <p>The ultimate pit dimension of the mine lease area is given below.</p> <table border="1"> <tr> <td>Ultimate Pit dimension at the end of</td> </tr> </table>	Land Use	Present Area (Hect)	Area in use during the quarrying period (Hect)	Quarrying Pit	Nil	2.41.0	Infrastructure	Nil	0.01.0	Roads	Nil	0.02.0	Green Belt	Nil	0.30.0	Unutilized	3.78.0	1.04.0	Total	3.78.0	3.78.0	Ultimate Pit dimension at the end of	<p>The major impact due to this project on land environment is the change in land use. Mining activity will be carried out upto a depth of 38m Below ground level. At the end of the mining period, the quarried pit will act as a water reservoir to store the rain water.</p> <p>The Land use at the end of mine will be as follows.</p> <table border="1"> <thead> <tr> <th>Land Use</th> <th>Area in use during the quarrying period (Hect)</th> </tr> </thead> <tbody> <tr> <td>Area left for water body</td> <td>2.41</td> </tr> <tr> <td>Green Belt</td> <td>0.30</td> </tr> <tr> <td>Remaining area</td> <td>1.07</td> </tr> <tr> <td>Total</td> <td>3.78</td> </tr> </tbody> </table> <p>At the mine closure stage, 3.85 Ha of lease area will be left as a rain water harvesting pond. 0.30 Ha will be developed with green belt.</p> <p>Greenbelt shall be developed around the mine lease area and the details have been given below.</p> <table border="1"> <thead> <tr> <th>Year</th> <th>Species</th> <th>No. of trees</th> <th>Spacing</th> <th>Survival</th> </tr> </thead> <tbody> <tr> <td>I</td> <td rowspan="5">Pongamia pinnata, Syzgium cumini, Albizia lebbeck,</td> <td>250</td> <td rowspan="5">3m x 3m</td> <td rowspan="5">80%</td> </tr> <tr> <td>II</td> <td>250</td> </tr> <tr> <td>III</td> <td>250</td> </tr> <tr> <td>IV</td> <td>250</td> </tr> <tr> <td>V</td> <td>250</td> </tr> </tbody> </table>	Land Use	Area in use during the quarrying period (Hect)	Area left for water body	2.41	Green Belt	0.30	Remaining area	1.07	Total	3.78	Year	Species	No. of trees	Spacing	Survival	I	Pongamia pinnata, Syzgium cumini, Albizia lebbeck,	250	3m x 3m	80%	II	250	III	250	IV	250	V	250
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		Mining plan Period								
		Pit No.	Length (max) (m)	Width (Avg) (m)	Depth (max) (m)					
		I	268	90	38m Below ground level	Thespesia populnea, Bauhinia racemose, Cassia siamea, Azadirachta indica				
						Total	1250			
		If mining is not done systematically it will leads to the dumping failure in the mining area.				Due to the thick vegetation around the mine lease area and sprinkling of water around the haul roads, the dust emissions arises from the vehicles will be controlled. At the end of mining period, fencing will be provided around the mine lease area to arrest the entry of public/cattle to the mining area. The rough stone is proposed to quarry 5m bench height and 5m width with 80° slope and with a conventional opencast semi-Mechanized method. As per the approved mining plan, a safety distance of 50m shall be provided. There is no overburden anticipated during the entire Rough Stone & Gravel Quarrying operation. The excavated rough stone will be directly loaded into a tipper to the needy crusher/other buyers.				
Drainage	Mine drainage is surface water or groundwater that drains from an active or abandoned mine. One of the adverse impact of mine drainage is it will contaminate the ground water.				As per the approved mining plan, the ultimate pit limit is 38 below ground level. The ground water table is reported as 55m BGL. In the proposed mining plan, only 38m below ground level has been envisaged as a workable depth for safe & economic quarrying for the entire lease period. Hence, the quarrying operation may not affect the ground water.					

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<p>Soil Quality and Agriculture</p>	<p>In monsoon seasons due to the excavation of minerals soil erosion and sediment deposition will occur in the nearby water bodies.</p>	<p>It is proposed to quarry upto a depth of 38m below ground level and the nearby water table is 55m BGL. So, the mining activity will not affect the groundwater. To prevent soil erosion during the monsoon season, garland drains will be constructed with silt traps.</p>
<p>Visual impact on surrounding environment</p>	<p>Quarrying activities and rock extraction generally cause several environmental effects on the surrounding areas. The alteration of landscape due to activities like excavation, drilling or blasting, in particular, often generates a visual impact on the receptors set in the surroundings. Among these effects, the shape, extent, or chromatic contrast of the mining surface with the original land form may represent a huge loss of appeal for the growth of new urban settlements.</p>	<p>The reclamation of the post mined quarry surface is aimed at restoring the ecological balance taking into account geological parameters but also local flora and climate. Further, the ultimate depth of mining is 38m BGL. In the postmining stage, the quarried out pit will be used for rainwater harvesting.</p>

4.3.1 Erosion Control Measures

4.3.1.1 *Planting Vegetation*

This method entails planting vegetation with deep roots to ensure the soil is held in place, which is particularly important in areas that are more susceptible to erosion, like hillsides, steep slopes, and along streams and rivers.

The flow of water is impeded by vegetative barriers due to densely concentrated thick stems. They can spread the water runoff to flow through them slowly without erosion. Plants that would serve the purpose of erosion control include deep-rooted native plants like native prairie grasses, wildflowers, and woody perennials.

4.3.1.2 *The Application of Mulches*

This method involves applying mulch materials to cover bare soil and prevent it from being washed away. Mulching is often used to control erosion in the earliest stages of growing shrubs or seedlings. It can modify soil temperature and conserve moisture to reduce the fluctuation of both factors.

4.3.1.3 *Reforestation*

Restoring an ecosystem that has become degraded while protecting existing ones is a good way to ensure the efficiency of soil erosion control. Trees that are correctly planted and maintained can cut down on erosion by as much as 75%.

The removal of forest cover also means an increased risk of earthflow, which is kicked off by the absence of a forest canopy as well as a dense network of interwoven roots within the subsoil. Reforestation is another way to stabilize earth flows, gullies, and shallow landslides that are actively eroding.

4.3.1.4 *Erosion Control Blankets and Anchoring Devices*

Erosion control blankets, geotextiles, mats, and various plastic covers are typically used to control soil erosion in the early stages of growing vegetation or for temporary stabilization during construction projects. These measures are made from natural or synthetic materials designed to hold soil in place and allow vegetation to grow through them. They work by slowing down the flow of water,

protecting the soil from wind and rain, and promoting the establishment of vegetation.

Anchoring devices are used to secure erosion control blankets in place. They are normally made of metal or plastic and come in a variety of shapes and sizes, including staples, pins, and stakes. Anchoring devices are inserted through the erosion control blanket and into the soil to hold it in place. Anchoring ensures that the blanket stays put during heavy rain or wind and prevents soil erosion from occurring.

4.3.1.5 *Using Silt Fencing*

A silt fence or super silt fence is used as a temporary barrier to control sediments. Made of geotextile fabric and supported by wooden stakes or metal posts and chain-link fencing, it is one of the most common devices used in construction projects to control soil erosion and prevent sediment from leaving the site. It works by trapping sediment as water flows through it, allowing the water to pass through while retaining the sediment.

If using silt fencing, ensure that the fence is appropriately installed to ensure its effectiveness. It should not be installed across ditches, waterways, or areas with a concentrated flow of water, as silt fencing cannot cope with higher water pressure.

4.3.1.6 *The Application of Seeding*

When it comes to construction and land development projects, there are two main seeding types: permanent and temporary.

Temporary seeding is used to quickly establish vegetation on disturbed soil to reduce erosion during a construction project. Temporary seeding typically involves fast-growing annual grasses. This can be done by spreading seeds over the soil surface or by a process called hydro-seeding. Hydro-seeding is the process of spraying a mixture of seed, mulch, fertilizer, and water onto the soil surface.

Permanent seeding is done to establish long-term vegetation on disturbed soil after construction is complete. Permanent seeding typically uses a mixture of grasses

and other native vegetation. The goal of permanent seeding is to establish a diverse plant community that can help stabilize the soil and prevent erosion over the long term.

4.3.1.7 *Installing Energy Dissipaters*

Energy dissipates are another common component of erosion control systems, especially in high-velocity areas. These structures are designed to absorb the energy of flowing water. They then disperse it evenly over a wider area, reducing the erosive power of the water. Various types of energy dissipates can be used depending on the specific site and requirements, including check dams, riprap, gabions, rock chutes, and more.

Proper erosion control measures are essential for any construction or land development project, no matter how big or small. Without these measures in place, the risk of wildlife habitat loss, water pollution, and soil loss can be severe.

4.4 SOLID WASTE GENERATION AND MANAGEMENT

The waste generation in the form of solid waste (Municipal Waste) is very negligible. A detailed solid waste management system for the project area is given below and the same will be executed by proper awareness and sign boards. The sign boards will be in two languages i.e., Vernacular language (Tamil) and common language (English). The plastic waste generation is very negligible and it will be collected from the source level in specific dustbin and disposed through the municipal bins.

- Identification of solid waste generations
- Providing dustbins to collect with different color coding
- Creating awareness among the employees
- Developing common storage yards
- Disposal to the nearby municipal yards
- Record keeping
- Review once every quarter

4.5 WATER ENVIRONMENT

4.5.1 Impact on Surface Water Resources

There is a seasonal Odai passing on the western side of the area and a 50m safety distance is provided. And there are seasonal Odai passing on the Western and Northeastern side of the area at 70m and 360m away from the area.

There is a Kulam situated on the Southeastern side of the area and is 290m away from the area. The water table is found at a depth of 55m in summer and 52m in rainy seasons.

Since these water bodies are located outside the lease area and there is no discharge of effluent or any untreated water from the mines will be made into these water bodies, there is no major impact. The project proponent will restrict the mining operation only within the lease and no other work will be carried out near the canal or any area outside the mining lease.

4.5.2 Impact due to Water use in Mines

In the proposed mines, water will be mainly used for domestic purposes, dust suppression & plantation. The total water requirement for the project is 8.5KLD which will be sourced from outside agencies. Negligible sewage of 0.3 KLD will be generated, for which a septic tank with soak pit will be set up. The water balance diagram is given below.

FIG 4.1 WATER BALANCE DIAGRAM



4.5.3 Impact on Ground Water

The mining activity is not likely to intersect ground water as the ground water table occurs at 55 m BGL in the summer season and in the rainy season at 52 m BGL. The mining will go up to the maximum depth of 38 m BGL. So there will be no chance of intersecting the ground water table by the mining activity. So the impact of mining on the ground water is not envisaged.

4.5.4 Mitigation measures

- The entire lease area will be provided with proper garland drains.
- Check wears will be provided to prevent solids from washing off.
- Construction of garland drains around freshly excavated so that flow of water with loose material is prevented.
- The mine water will pass through the natural slopes and valleys and gets accumulated in the settling tank (Bottom pit)

4.5.5 Ground water environment in the buffer zone

The scenario of ground water in Theni District, Theni & Bodinaickanur Taluk is given below.

TABLE 4.1 Ground Water Level Status in Bodinaickanur & Theni

S. No.	Place	Net Annual Ground water availability	Existing gross ground water consumption for irrigation	Existing gross ground water consumption for domestic and industrial water supply	Existing gross ground water consumption for all uses	Stage of ground water development	Category
1.	Bodinaickanur	1,952.78	1,091.6	3.89	1,095.49	56	SAFE
2.	Theni	2,603.59	1,816.8	39.86	1,856.66	71	SEMI CRITICAL

Source: nwm.gov.in

It is planned to carryout appropriate rainwater harvesting schemes and artificial recharge schemes in the area.

4.5.6 Rainwater Harvesting Plan

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

- Development of garland drain around the quarry connected to a settling tank.
- Cleaning of the drains periodically to prevent sanitation
- The supernatant clear water from the settling pond will drain into the nearby channel of the lease.
- Utilizing the rainwater harvested in the mine pit to meet the water requirements of the project.

The average annual rainfall of the area is 900 mm. Taking into consideration 0.35 as runoff co-efficient for mining area, The total quantity of rain water that can be harvested per annum from the area has been tabulated as below.

Table 4.2 – Rainwater Harvesting Plan

S.NO	Rainwater Harvesting Area	Area in Sq.m	Average annual rainfall	Volume of harvestable quantity (Cum) of rain water per annum
1	Quarry Area	2410	0.9	21690
2	Unutilized Area	1040	0.9	936
Total Harvested Rainfall				22,626

Total surface water runoff is 22,626 Cum per Annum. 10% of this amount will be evaporated and the rest 20,364 m³ will be recharged in the rain water harvesting pit.

The dimension of the rain water harvesting pond will be 40m x 20m x20m with a capacity of 16000 cu.m. The rain water stored in the pond will be utilized for plantation, dust suppression activities. The capacity of the rain water harvesting

post will be sufficient to arrest the surface runoff from the lease area considering the highest amount of rain fall.

4.6 VEGETATION

4.6.1 VEGETATION IN THE CORE ZONE

The mine lease area is devoid of major plantations. Shrubs and bushes are majorly found within the lease area. The proponent has plans to develop a green belt in an area of 0.30.0 Ha. Trees like Pongamia pinnata, Syzigium cumini, Albizia lebbeck, Thespesia populnea, Bauhinia racemose, Cassia siamea, Azadirachta indica will be planted around the mine lease area. A total of 1250 trees are planned to be planted. Spacing will be 3m x 3m.

4.6.2 FAUNA

There are no sanctuaries/national parks in the buffer zone of 10km study area. The commonly found fauna in the buffer zone are given in Chapter 3. During mining activity the impacts and mitigation measures for fauna are given in the below table.

Table 4.3 Impacts and mitigation measures for Fauna		
S.No.	Impact	Mitigation measure
1	Fauna is affected due to noise and vibration.	Sirens will be blown before blasting into the mines. To reduce noise levels, plantation work will be done. Blasting will be carried out only in the allotted time.
2	Dust generation due to mining activities	To reduce dust generation, mist sprayers will be used. During transportation, the material will be covered with tarpaulin. Water sprinkling will be done to reduce the generation of pollutants.

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3	Change in land use of the lease area	After the mine closure stage, the mine pit will be left as a rain water collecting tank, which can attract bird population in the nearby areas.
4	Accidental falling of animals	To prevent entry of animals, the mine lease surrounding area will be properly fenced with barbed wire.

4.6.3 GREENBELT DEVELOPMENT PLAN

The main objective of the green belt is to provide a barrier between the source of pollution and the surrounding areas. In order to compensate for the loss of vegetation cover, it is suggested to carry out afforestation program mainly in proposed mine lease area earmarked for plantation program as per the Approved Mining Plan in different phases. This habitat improvement program would ensure the faunal species to re-colonize and improve the abundance status in the core zone. Greenbelt / Plantation will be carried out to enhance the vegetative growth and aesthetic in the safety zone area.

The objectives of the green belt cover will cover the following:

- Noise abatement.
- Reuse of waste water to the extent possible.
- Prevention of soil erosion.
- Ecological restoration.
- Aesthetic, biological and visual improvement of area due to improved vegetative and plantations cover.

Table – 4.4 GREENBELT DEVELOPMENT PLAN

Year	No. of trees proposed to be planted	Survival %	Name of the Species	No. of trees expected to be grown

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I	250	80%	Pongamia	200
II	250	80%	pinnata,	200
III	250	80%	Syzigium	200
IV	250	80%	cumini,	200
V	250	80%	Albizia	200
Total	1250		lebbeck, Thespesia populnea, Bauhinia racemose, Cassia siamea, Azadirachta indica	1000

Nearly 0.30 Ha of area is proposed for Greenbelt development by planting 250 Nos of trees every year and expected growth is around 200 nos @ survival rates of 80%.

The following points have been considered while recommending the species for plantation:

- Natural growth of existing species and the survival rate of various species.
- Suitability of a particular plant species for a particular type of area.
- Creating biodiversity.
- Fast growing, thick canopy, perennial and evergreen large leaf area.
- Efficient in absorbing pollutants without major effects on natural growth.

4.7 AIR ENVIRONMENT

4.7.1 IMPACT DUE TO MINING OPERATION

Impact prediction is a very important phenomenon in evaluating the environmental potential adverse impacts of any proposed mine project. The impact prediction is always carried out under the worst possible conditions so as to mitigate or to

eliminate the environmental hazards. These predictions thus calculated are superimposed over the baseline data to calculate the net impact on the environment after the proposed mine project comes into production.

4.7.2 IMPACT ON AIR ENVIRONMENT

The impact on air environment from a mining activity depends on various factors like production capacity, machinery involved, operations and maintenance of various equipment and vehicles. Apart from these, there will be other activities associated viz transportation of minerals and waste, stocking facilities and dump management within the mine lease area that may contribute to pollution.

4.7.3 Air Emissions

The impacts on air environment from a mining activity depend on various factors like production capacity, machinery involved, operations and maintenance of various equipments and vehicle. Apart from these, there will be other activities associated viz transportation of minerals and waste, stocking facilities and dump management within the mine lease area that may contribute to pollution.

4.7.4 Quantitative Estimation of Impacts on Air Environment

An attempt has been made to predict the incremental rise of various ground level concentrations above the baseline status in respect of air pollution due to proposed is 3,61,855 m³ of Rough Stone and 74,232 m³ of Gravel for a period of five years by the open-cast semi-mechanised mining method.

The pollutants released into the atmosphere will disperse in the down wind direction and finally reach the ground at a farther distance from the source. The concentration of ground level concentrations mainly depends upon the strength of the emission source and micro meteorology of the study area.

In order to estimate the ground level concentrations due to the emissions from the proposed project, EPA approved Industrial Source Complex ISC AERMOD View Model has been employed.

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The mathematical model used for predictions on air quality impact in the present study is ISC-AERMOD View-6.8.6. It is the next generation air dispersion model, which incorporates planetary boundary layer concepts.

The AERMOD is actually a modeling system with three separate components:

AERMOD (AERMIC Dispersion Model), AERMAP (AERMOD Terrain Preprocessor) and AERMET (AERMOD Meteorological Preprocessor).

Special features of AERMOD include its ability to treat the vertical inhomogeneity of the planetary boundary layer, special treatment of surface releases, irregularly shaped area sources, a plume model for the convective boundary layer, limitation of vertical mixing in the stable boundary layer, and fixing the reflecting surface at the stack base.

The AERMET is the meteorological preprocessor for the AERMOD. Input data can come from hourly cloud cover observations, surface meteorological observations and twice-a-day upper air soundings. Output includes surface meteorological observations and parameters and vertical profiles of several atmospheric parameters.

The AERMAP is a terrain preprocessor designed to simplify and standardize the input of terrain data for the AERMOD. Input data include receptor terrain elevation data. Output includes, for each receptor, location and height scale, which are elevations used for the computation of airflow around hills.

Salient features of the AERMOD model are given hereunder.

- ❖ Excavation operations are considered as area sources.
- ❖ Transportation of material on haulage roads has been considered as line source

The predicted ground level concentrations for study period computed using AERMOD model are plotted as isopleths.

4.7.5 Sources of Dust Emission

The proposed mining is carried out by a mechanized opencast method. The air borne particulate matter generated by ore handling operations, transportation and screening of ore is the main air pollutant. The emissions of sulphur dioxide (SO₂), Oxides of Nitrogen (NO_x) contributed by diesel-operated excavation/loading equipment and vehicles plying on haul roads are marginal. Prediction of impacts on air environment has been carried out taking into consideration proposed production and net increase in emissions. Based on the various operations involved in the production of minerals, the various emission sources have been identified as given below.

- a. Area sources.
- b. Line sources.

Extraction of minerals from mines, is considered as a source. Transportation of material from mining benches to various end points is considered as line sources. The impact of the above sources on air environment is discussed below:

The other sources of air pollution are the dust generated during the movement of tippers on the haul road. Water tankers with spraying arrangement will be used for regular water sprinkling on the haul roads to ensure effective dust suppression. The tippers are well maintained so that exhaust smoke does not contribute abnormal values of noxious gases and unburnt hydrocarbons.

4.7.6 Emission Details

All the emissions discussed above are quantified for proposed maximum production of 3,61,855 m³ of Rough Stone and 74,232 m³ of Gravel for a period of five years by the open-cast semi-mechanised mining method. The existing air quality levels are covered in the baseline scenario.

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Excavation, loading and transportation through tippers are the major sources, which are of significance. Therefore, the emissions considered for modeling are from drilling blasting, excavation & transportation of rough stone and gravel.

The emissions are computed based on AP-42 emission factors. Operational hours, activity rate, wind speed and moisture content have been considered for estimation of emissions from point and area sources. For line source, apart from operational hours, activity rate, moisture, silt content and vehicle weight have been considered.

Predictions are carried out for the worst-case scenario of simultaneous operation of excavators (area sources) and tippers for transportation from the minepit to the loading pit (line sources) over a distance of 500 m.

The number of working days has been taken at 300 days per year with 8 hours of operation/day, hence the concentrations predicted are considered to be the worst case. With control measures, the emissions have been taken at 30% of uncontrolled emissions for handling and 10% of uncontrolled emissions for transportation.

4.7.7 Meteorological Data

The meteorological data recorded continuously during the month of March 2023 - May 2023 on an hourly basis on wind speed, wind direction and temperature has been processed to extract the 24- hourly mean meteorological data as per the guidelines of IMD and MoEF for application of AERMOD model. Stability classes computed for the mean hours is based on guidelines issued by CPCB on modeling. Mixing heights representative of the region have been taken from the available published literature.

4.7.8 Summary of Predicted Ground Level Concentrations

Ground level concentrations due to the mining activities have been estimated to know the incremental raise and extent of impact in the study area.

The maximum ground level concentration is estimated to be about 0.14 $\mu\text{g}/\text{m}^3$ of PM 2.5 & 2.87 $\mu\text{g}/\text{m}^3$ of PM₁₀ within the mine area, where mining operations are

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being carried out. The impact of mining operations would be negligible beyond 0.4 km.

Figure – 4.3 represents the spatial distribution of the predicted ground level concentrations of PM₁₀ due to emissions from the mine.

4.7.9 Emission sources & Quantification

Various point and non-point sources of emissions from the Proposed Rough Stone & Gravel Quarry of Thiru. R. Seenivasan is quantified and presented below:

SEENIVASAN MINES – EMISSION DETAILS

(I) Area Emissions – Total Material handling (Rough Stone)

Quantity, TPA	Rough Stone: 13,22,860 m ³ & Gravel:1,13,388 m ³
Operational Hours Per Year	2400
Activity Rate, t/hr.	400.5416667
Emission of dust, g/t.	0.14
Emission of dust, g /hr.	56.07583333
Area of influence, m ²	625
Uncontrolled emission rate g/s/m ²	0.000026355
Controlled emission rate, PM10 g/s/m ²	0.0000026355
Controlled emission rate, PM2.5 g/s/m ²	0.0000017570

(II) Line Source – Transport of Rough Stone from Pit to Boundary

Quantity, TPA	Rough Stone: 13,22,860 m ³ & Gravel:1,13,388 m ³
Operational Hours Per Year	2400
Capacity of each Dumper (T)	10
Total No. of Tippers/ year	44650
Lead length/trip, Km	0.8
Total VKT/Year	76904
Emission Kg/VKT	0.26
Total emission Kg/Year	19995.04

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Uncontrolled emission rate g/s/m	2.6355
Controlled emission rate, PM10 g/s/m	0.26355
Controlled emission rate, PM2.5 g/s/m	0.17570

Note: *Emission factor computed based on wind speed of 2 m/s, and moisture content of 10 % . + Emission factor computed based on silt content of 10 % and moisture content of 10 %

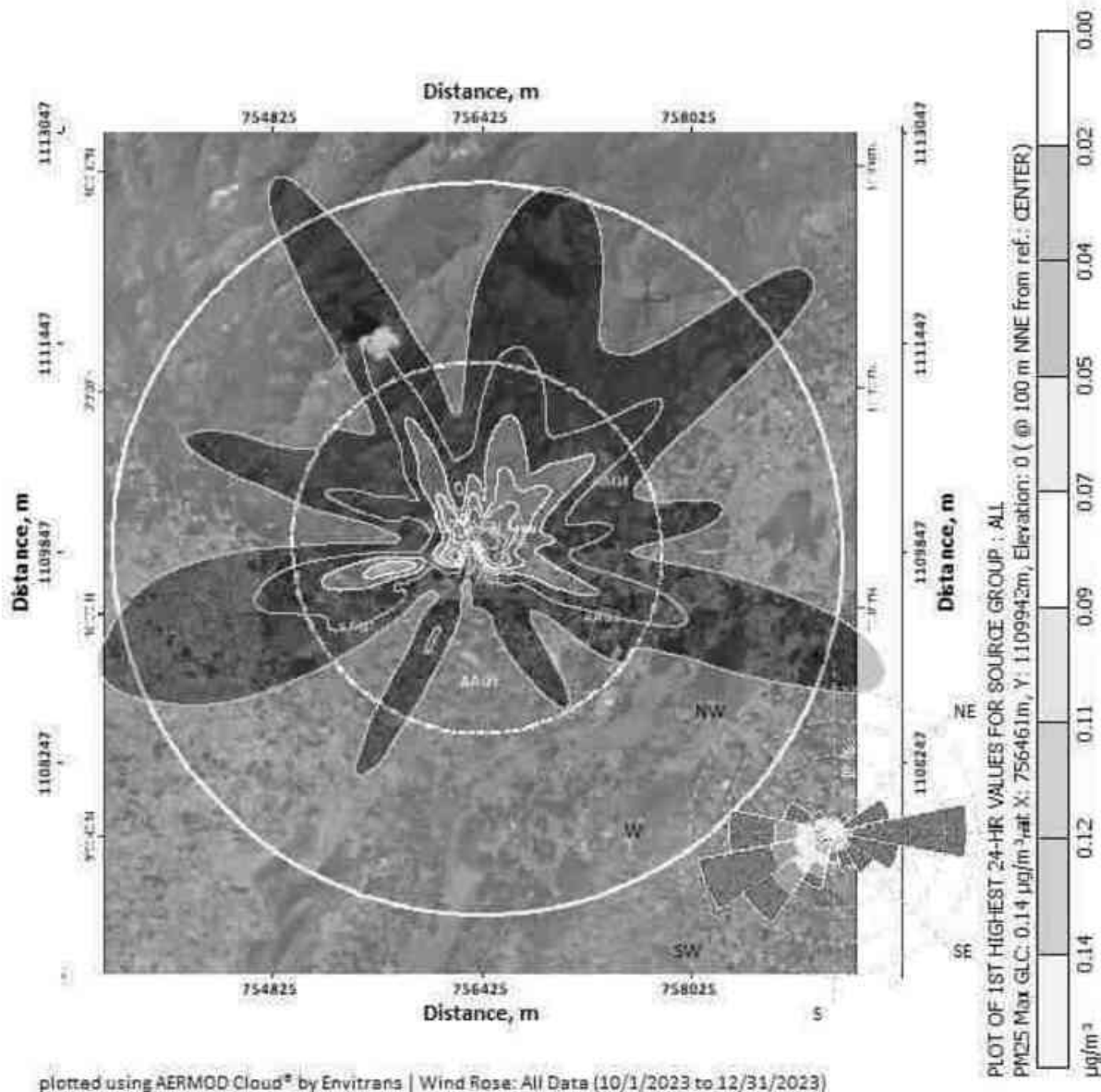


FIG 4.2 Isopleth of GLC Prediction for PM_{2.5}

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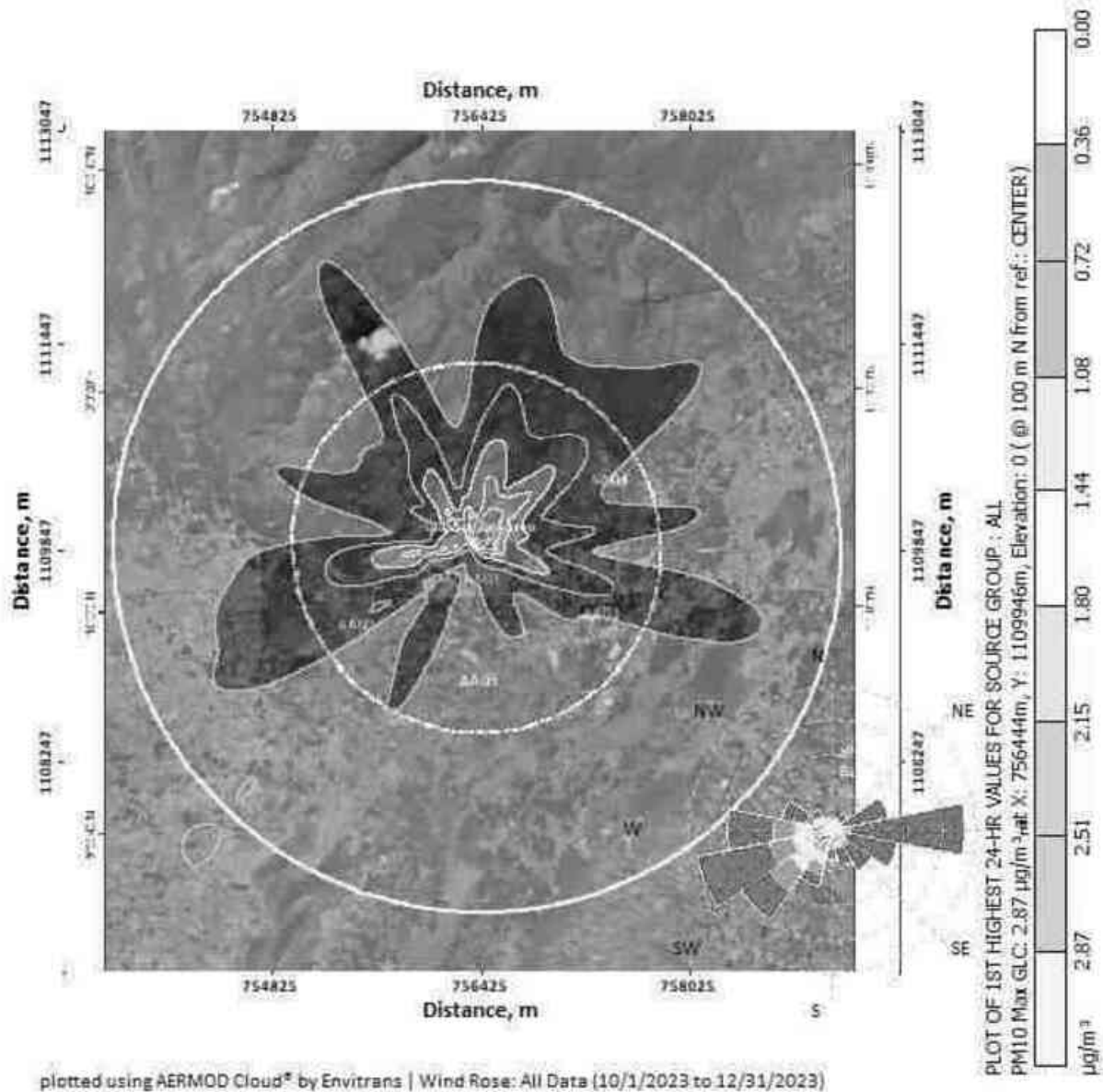


FIG 4.3 Isopleth of GLC Prediction for PM₁₀

4.7.10 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 - 4.5 & 4.6.

Table 4.5 Concentrations of PM _{2.5} after Project Implementation					
SL. No	Location	Background Concentration	Predicted incremental Concentration	Post Project Concentration	Statutory Limits in µg/m ³
1.	Mine Lease Area	27.3	0.14	27.44	60
2.	Boothipuram	20.9	0.12	21.02	
3.	Meenakshipuram Bodi	23.5	0.07	23.57	
4.	Theni Alinagaram	25.0	0.04	25.04	
5.	Kodangeepatti	22.82	0.03	22.85	

Table 4.6 Concentrations of PM ₁₀ after Project Implementation					
SL. No	Location	Background Concentration	Predicted incremental Concentration	Post Project Concentration	Statutory Limits in µg/m ³
1.	Mine Lease Area	56.5	2.87	59.37	100
2.	Boothipuram	45.5	1.80	47.3	
3.	Meenakshipuram Bodi	51.1	0.72	51.82	
4.	Theni Alinagaram	54.1	1.08	55.18	
5.	Kodangeepatti	48.3	0.36	48.66	

The above report seems that, even in the worst-case scenario, the resultant added concentrations with baseline figures show that the values of ambient air quality for PM₁₀ are in the range of 48.66 µg/m³ to 59.37 µg/m³ and for PM_{2.5} are in the range of 21.02 µg/m³ to 27.44 µg/m³ which are within the statutory limits in each case. The mitigation measures undertaken in the mine for control of air pollution are given below.

- Wet drilling will be practiced in drilling operations.

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- Water sprinkling will be done in haul roads & loading etc.
- The mine workers are provided with dust masks.
- Three layer plantation in the safety zone.
- DG sets shall be periodically maintained as per the manufacturer's specifications.

4.8 TRAFFIC DENSITY

The traffic survey conducted based on the transportation route of material, the rough stone, weathered rock and gravel is proposed to be transported mainly through MDR (Bodinayakanur to Theni) located 1.2 km from South side and NH-85 (Theni – Madurai) road located 2.1 km South side of the project.

The number of trips per day cumulatively is 191.

4.8.1 METHODOLOGY

Vehicle Count

The vehicles passing through the road (in both ways) were counted separately for 24 hours at the one selected locations from 06:00 hrs to 06:00 hrs next day continuously. Category wise vehicle counting has been done continuously and recorded in the traffic volume count on an hourly basis under respective categories.

Categorization of Traffic

The engine-driven vehicles were categorized into various heads viz. two wheelers, three wheelers, four wheelers and trucks/bus.

OPERATING CONDITION OF ROAD IN TERMS OF V/C AS PER INDIAN ROADS CONGRESS (IRC) 106 - 1990

Level of Service	General Operating conditions	Range of V/C
A	Free flow (traffic flows at or above the speed limit and motorists have complete mobility between lanes)	<0.30
B	Reasonable flow (slightly more congested,	0.3 – 0.47

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	with some maneuverability)	
C	Stable flow (more congested than B, loads close to capacity)	0.48 – 0.68
D	Approaching unstable flow (speeds are somewhat reduced, example: busy corridor during the middle of a weekday, or a functional urban highway during rush hour)	0.69 – 0.88
E	Unstable flow (flow becomes irregular, speed varies widely and rarely reaches the speed limit)	0.88 - 1.00
F	Forced or breakdown flow (a constant traffic jam)	>1.00

Table 4.7 - Rough Stone Hourly Transportation Requirement

Capacity of trucks	No Trips per day Cumulatively	Volume in PCU	PCU Per hour Considering 8 HOURS
5/10 tonnes	191	950	171

Table 4.8 - Summary of Traffic Volume

Route	Existing Traffic Survey in PCU	Incremental Traffic Survey due to project	Total Traffic Survey Volume	Hourly capacity in PCU as per IRC -1960 guidelines
Bodinaickanur - Theni Road	243	191	434	2000

- Due to this project, the existing traffic volume will not exceed

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- As per the IRC 1960, this existing village road can handle 2000 PCU per hour and a major district road can handle 1500 PCU per hour, hence there will not be any conjunction due to this proposed transportation.

Table 4.9 - Modified Level of Service

Sampling Location	Existing Volume (PCU/hr)	Existing Volume/ Capacity ratio	Additional Volume (PCU/hr)	Modified Volume (PCU/hr)	Modified Volume/ Capacity ratio	Modified LOS
Bodinaickanur - Theni Road	243	0.17	191	360	0.45	B*

(* B -Stable Traffic Flow)

4.9 NOISE ENVIRONMENT

The main noise generating source during mining operations and related activities are drilling, excavation, loading and transportation. Intermittent noise is generated due to the operation of a diesel generator.

4.9.1 Likely Noise Levels in Lease Area due to mining activity

S.No.	Source Name	Noise Level in dB (A)
1	Diesel generator	102
2	Excavator Operation	95
3	Trucks movement	95
4	Drilling	105
5	Blasting	120

It is expected that the generated noise will be limited within the mine lease area and there will be no profound effect of noise on the buffer zone. The noise level will be maintained below the threshold limit by vigorous maintenance of the machineries. Wet drilling with a dust extractor is being used to reduce the noise level during the mining operation.

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Noise levels were measured in the lease area and in the nearby villages Boothipuram Tp, Meenakshipuram Bodi, Teni Alinagaram M and Kodangipatti. The values are given below.

TABLE 4.10 Noise Levels in Monitoring Locations				
S. No.	Location	Distance and direction from Mine lease area	Day Equivalent (in dBA)	Night Equivalent (dBA)
1	Mine Lease Area	Core Zone	46.3	40.2
2	Boothipuram	3.56 Km, SE	49.0	37.3
3	Meenakshipuram Bodi	6.16 Km, SW	48.3	41.6
4	Theni Alinagaram	7.83 Km, E	49.2	43.1
5	Kodangeepatti	3.17 Km, SE	50.6	39

The noise levels are within the MoEF & CC limits of 55 dB(A) in the working area and in the buffer areas, the values are below the limit of 55 dB(A). Since, the residential area norm has been considered for all five locations mentioned above, during mining operation, mine lease area will be considered as industrial area/quarry area for which DGMS norms 85 dB(A)/CPCB guidelines 75 dB(A)

4.9.2 Impact of Noise due to mining

- ⚡ Noise generation in mining is due to operations like drilling, blasting and transportation of minerals within and outside the lease area.
- ⚡ As per DGMS (Directorate General of Mines Safety) limits, the acceptable noise level is 85 dB(A) for an exposure period of 8 hours.
- ⚡ Exposure to loud noise can also cause high blood pressure, heart disease, sleep disturbances, and stress. Noise pollution also impacts on the health and well-being of wildlife.
- ⚡ Noise exceeding prescribed limits may cause impairment like abnormal loudness perception, tinnitus which causes a persistent high-pitched ringing in the ears, paralysis or distorted hearing.

4.9.3 Mitigation measures for Noise level control

- ⚡ As the distance between the source and the receptor increases, the noise level decreases. Hence, there will be a natural attenuation.
- ⚡ The proponent has planned to develop a green belt in the periphery of the lease area which diminishes sound volume by dampening them.
- ⚡ All the equipment/machinery/tippers involved will be properly maintained to control noise generation.
- ⚡ Conducting regular health checkups for employees involved.
- ⚡ Employees will be made to work on shifts to reduce their exposure time.
- ⚡ Providing earplugs to all employees.
- ⚡ Providing green walls/nets wherever possible.

By adopting these measures, the noise levels will be maintained well within MoEF & CC limits since the baseline value is low.

4.10 IMPACTS DUE TO VIBRATION

There will be negligible vibration of the ground due to the following activities.

- ⚡ Due to Blasting
- ⚡ Due to Drilling
- ⚡ Due to movement of machinery

Impacts

- ⚡ Though vibration will be only felt by the people working inside the lease area, it is usually undesired.
- ⚡ Vibration may also cause flyrocks.
- ⚡ It may frighten the birds and small insects in the lease area. However, it will only be felt only for a short period.

Mitigation measures

- ⚡ The DG set will be kept within an acoustic enclosure made of the stone blocks.

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- ✦ Drills will be equipped with sharp bits and wet drilling will be adopted.
- ✦ A well-planned green belt is proposed for the mining to reduce noise level.
- ✦ Proper warning system before blasting will be adopted and clearance of the area before blasting will be ensured.
- ✦ Regular maintenance of the machineries and vehicles to reduce the noise level.
- ✦ Use of ear muffs by workers with occupational exposure to noise.
- ✦ Carrying out blasting on a limited scale, only from 12:00 PM to 2:00 PM
- ✦ Control of fly rock and vibration by maintaining peak particle velocity within the standard as prescribed by the DGMS and MOEF & CC.
- ✦ Shallow depth jackhammer drilling and blasting is proposed to be carried out with minimum use of explosives.
- ✦ Supervising blasting by a competent and statutory Foreman/ Mines Manager.

4.11 SOCIO ECONOMIC IMPACT

It is obvious to assume that the activities of the mining operations will improve the socio-economic levels in the study area. The anticipated impact of this project on various aspects is described in the following sections. The proponent has planned to spend INR 5,00,000 on CER activities.

4.12 OCCUPATIONAL HEALTH

4.12.1 Impacts on humans due to various mining activities

The occupational risk due to proposed mining may be due to drilling, blasting, excavation and transportation. A total of 50 workers will be engaged in the mining activity. Mining activity may cause various health problems for the mine workers, as follows:

- Dust generated during excavation, drilling, stone cutting, sizing and transportation may cause health problems like Silicosis, Asthma, Tuberculosis and other respiratory lung disorders.
- Heavy weight lifted by the workers may cause injuries to arms, legs and back.

- Noise generated during the mining activity may cause Noise Induced Hearing Loss (NIHL).

Table 4.12 Impacts on humans due to various mining activities		
S.No.	Type of activity	Impact
1	Dust generation due to drilling and blasting	Continuous exposure to dust causes Pneumonia, Tuberculosis, Rhematic arthritis and Segmental Vibration
2	Noise generation due to drilling and blasting	The short term impact will be lack of sleep, high blood pressure and heart ailments. Long term exposure may lead to partial or permanent deafness
3	Unexpected accidents	Risks include fly rocks, cracks or fissures due to improper mining methods

4.12.2 Mitigation measures

- The mine worker will be provided with a dust mask to minimize the inhalation of the dust.
- Water sprinkling twice a day is in practice on the haul roads, near excavations and roads to reduce the fugitive dust emission.
- Wet drilling and drilling with a dust extractor will be practiced.
- Ear muffs will be supplied to the workers working in the noise prone area
- The mining site will be supplied with first aid facilities and the entire mine workers will have access to that.
- The mine workers will be well trained in the safety practices in the mining activities.
- As per Mines Rules, 1955, medical examination of employees at the initial stage and periodically, shall be done by a team of qualified medical officers provided by the project proponent.
- Regular medical checkup camps shall also be arranged for detection of occupational diseases and minor diseases in the nearby rural population.

- Free checkup and medicine for treatment for their acute and chronic illness shall be provided by the lessee. Conducting periodical Medical Examination as per DGMS.
- Making all first aid kits available in the mine office
- Keeping fire extinguisher in place
- Educating the employees about how to handle unexpected happenings
- Posting information containing emergency contact numbers in the mine office
- By adopting all these measures, the safety of the employees working in the quarry will be ensured.

4.13 WASTE MANAGEMENT

4.13.1 Solid Waste

Since the entire mined out material will be utilized, there will not be any solid waste generation from this project. However, the solid waste (MSW) generated from administrative activities will be properly collected and disposed to Govt. Authorized yards / Re-cylers / Disposers.

4.13.2 Liquid Waste

There is no process effluent generation from this mine. Hence, no liquid waste is generated. Domestic wastewater i.e 0.3 KLD will be discharged into the soak pit via a septic tank.

4.13.3 Hazardous Waste Management

In this project the following management practices will be followed:

In the quarrying operation, the source of hazardous waste is from machinery maintenance activities that are waste oil/ waste lubricants / Used filters / Used Hydraulic hoses. The said hazardous waste a very negligible quantity , it will be properly collected in the source level, stored in impervious storage yards and disposed off as per the Hazardous waste (Trans-boundary Movement) Management Rules, 2016.

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4.13.4 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 the ban on use of plastic products. The employees will be encouraged to use compostable material or reusable material.

CHAPTER 5

ANALYSIS OF ALTERNATIVES

5.1 ALTERNATE TECHNOLOGY

The mining technology is semi mechanized Opencast in single-shift operation without any change in technology. The operation will be carried out as per DGMS norms. No alternate technology will be used. Details of the technology used are given in Chapter II.

5.2 ALTERNATE SITE

The proposed project is a mining project and will be operated within the lease grant area. So, no alternate sites have been assessed. Since the resource (Rough Stone) is site-specific, the chosen location is the only site to carry out Rough Stone & Gravel Quarry.

CHAPTER 6

ENVIRONMENTAL MONITORING PROGRAMME

6.1 ENVIRONMENTAL MONITORING

Monitoring is done to measure the efficiency of control measures implemented. Regular monitoring of various environmental parameters like air, water, noise and soil environments is needed to assess the status of the environment during the project operation.

A schedule is framed with a timeline to monitor various parameters during the operation of the project. The schedule is framed based on MoEF& CC and the Tamil Nadu State Pollution Control Board. In case the SEIAA/TNPCB/MoEF&CC or other statutory bodies demand monitoring of any additional parameter/factor, the same will also be done.

The proposed quarry is a small quarry. Hence, the Mines-in-charge will be responsible for environmentally related activities. After obtaining EC, the conditions mentioned in EC will be strictly followed. The Mines-in-charge will be responsible for implementing the conditions. EC compliance report will also be submitted periodically.

6.2 OBJECTIVES OF ENVIRONMENTAL MONITORING

The objectives of Environmental Monitoring are as follows.

- ✦ Monitoring and analysis of air and water samples
- ✦ Implementing control and protective measures.
- ✦ Coordinating the environmental related activities within the project as well as with outside agencies. Collecting statistics of health of workers and the population of the surrounding villages. Green belt development etc.
- ✦ Monitoring the progress of the implementation of the Environmental Management Programme.

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- ✚ Monitoring the noise generation in and around the project areas.
- ✚ Monitoring of wastewater treatment and disposal of solid waste.
- ✚ The laboratory will be suitably equipped for sampling/testing for various environmental pollutants.

6.3 ENVIRONMENTAL MONITORING SCHEDULE

To evaluate the effectiveness of the Environmental Management Programme, regular monitoring of the important environmental parameters will be taken up. The frequency of monitoring different parameters is given in table 6.1.

Table 6.1 Environmental Monitoring Schedule			
Sl.No.	Description of Parameters	Parameters	Frequency
1	Air	Air Quality for SPM, PM-10, PM-2.5, SO ₂ and NO _x	24 hour average samples once every 3 months
2	Water	General, Physical, and chemical parameters	Once per season
3	Noise	Leq, Lmax, Lmin, Leq Day & Leq Night dB(A)	8 hour average samples once every 3 months
4	Soil	Physical and Chemical characteristics	Once per season

6.4 LOCATION

Monitoring of the above-mentioned environmental parameters would be done at appropriate and sensitive areas. The exact location of monitoring is given as Figure - 3.7, 3.14, 3.17 & 3.19.

6.5 MEASUREMENT METHODOLOGY

(a) Ambient Air Quality

Ambient air quality will be monitored for SO₂, NO_x, PM₁₀ and PM_{2.5}. The instruments like high volume air samplers and Respirable dust samplers would be used for this purpose. These parameters will be monitored as mentioned in the monitoring schedule previously.

(b) Water Quality

Water quality analysis will be done quarterly and the monitored parameters include pH, temperature, TDS, etc. as specified by SPCB from time to time.

(c) Noise Monitoring

Noise levels will be monitored in the working environment, mainly by noise producing sources over the boundary and around the mining area.

(d) Green Belt and Afforested Areas

Continuous vigilance and monitoring of the green belt will be done for performance and survival rate of the saplings. Watch and ward personnel will properly guard the plantation. Provision will be made for fertilizer application and watering on schedule.

(e) Socio-Economics

Gravity modeling (traffic density) studies will be done with the objective of knowing about the interaction of nearby situated towns. Central Place Hierarchization studies (studies related to change in amenities/services etc.) would be conducted to know about the socio-economic status of the villages along with the above-mentioned studies at every five-year interval.

6.6 TECHNICAL ASPECTS OF MONITORING THE EFFECTIVENESS OF MITIGATION MEASURES

The above monitoring schedule will be followed periodically. After collection of the

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data, the mines-in-charge will analyze the data obtained. The data thus obtained will be incorporated in the EC Compliance report submitted to the Regional office, MoEF&CC. The measurement methodologies will be as per CPCB/BIS/MoEF&CC/DGMS norms.

6.7 EMERGENCY PROCEDURES

In case of any emergency due to environmental conditions, the mines in-charge will immediately report to the top level management and the emergency response protocol will be implemented as per MoEF&CC/ SPCB / DGMS norms.

6.8 REPORTS TO BE GENERATED

The Project Proponent will maintain records of each test and its interpretation so as to formulate an adequate Environmental Management Plan. The set of records planned to be maintained by Project Proponent are given in below table 6.2.

S.No.	Particulars
1	Monitoring results for Air, Water & Soil.
2	Records of slope failure, land erosion & drainage.
3	Plantation Records
4	Environmental and related standards/ norms
5	Records pertaining to statutory consents, approvals.
6	Periodic Medical examination (PME) records.
7	Complain register (Environmental pollution)
8	Records on water and electricity consumption
9	Periodic progress records.
10	Environmental Expenses Records

6.9 DETAILED BUDGET AND PROCUREMENT SCHEDULES

Total EMP Cost for 5 years is 205.64 lakhs i.e., Rs. 33.22 Lakhs of Capital + Recurring cost Rs. 172.42 lakhs. The breakup of EMP cost is given in Table 10. 2 of Chapter 10.

CHAPTER 7

ADDITIONAL STUDIES

The additional studies covered in this EIA / EMP report are,

1. Public consultation
2. Risk Assessment
3. Social Impact Assessment, R&R Action Plans
4. Cumulative Environmental Impact Assessment Study
5. A detailed Hydrogeological Study
6. Slope Stability plan

7.1 PUBLIC CONSULTATION

The SEIAA of Tamilnadu, in the ToR issued for this project, has directed the project proponent to conduct a Public Hearing in accordance with the notification issued by the MoEF& CC vide S.O.1533 (E) dated 14.09.2006.

After completing the public consultation process, the issues raised and the commitment of Project Proponent during the public hearing will be incorporated in the final EIA/EMP report. The following Additional Studies were/will be carried out in as per Terms of Reference: Risk Assessment & Disaster Management Plan.

7.2 RISK ASSESSMENT & MANAGEMENT

Objectives

Risk assessment is a method in which possible threats/hazards which may arise during mining operations are identified so that adequate machinery/equipment are made available in precaution. The objectives of environmental risk assessment are governed by the following, which excludes natural calamities:

- ✚ To identify the potential hazardous areas so that necessary design safety measures can be adopted to minimize the probability of accidental events.
- ✚ To identify the potential areas of environmental disaster which can be prevented by proper design of the installations and its controlled

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operation.

- ✚ To manage an emergency situation or a disastrous event, if any, from the mining operation.

The major hazards related to the mining activities are as follows

- ✚ Open cast bench slope failure
- ✚ Accident due to fall of quarry sides
- ✚ Accident due to machineries
- ✚ Accident due to explosives
- ✚ Accident due to large block cutting, separation and loading

Some of the common hazards are identified and the corresponding precautionary measures are drafted.

Table 7.1 Hazards and Precautionary measures		
S.No.	Hazard	Precautionary measures
1	Fire	Fire suppressants will be made available at the mine office and explosive storage room.
2	Explosion	Controlled blasting will be done. DGMS norms will be strictly followed during blasting. Blasting will be done only by trained professionals.
3	Combustion of chemicals or hazardous substances	Combustible Substances are stored with all precautionary measures. Fire suppressant is made available at storage sites.
4	Landslide	Width, height and slope will be maintained as suggested by DGMS
5	Accidents during handlings	All vehicles will be properly maintained. Overloading will not be done. Only trained/certified people will be employed.

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6	Accidental fall of people or animals	The lease area will be fenced properly. Only people working in the mines will be permitted to enter.
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7.3 REHABILITATION AND RESETTLEMENT (R & R) PLAN

No land is acquired from people dwelling in the area. The lease area is uninhabited land. No R & R plan is proposed.

7.4 CUMULATIVE ENVIRONMENTAL IMPACT ASSESSMENT STUDY

The details of other quarries located within the 500m radius of this project are provided below:

Table 7.2 Details of quarries within 500m radius (as per 500m certificate)					
S.No.	Name and address of the Lessee	Village and S.F No	Extent in Hectare	Lease period	Remarks
i) Existing Quarries					
1	Thiru.M.Thiyagarajan	Kodangeepatti village	2.73.0	10.02.2023 to 09.02.2023	
ii) Abandoned quarries					
Nil					
iii) Present proposed quarries					
1	Thiru.R.Seenivasan	Kodangeepatti village 110/3,110/4,127/1 & 127/2	3.78.0	Proposed Quarry	

The cumulative impact of these one proposed and one existing quarries has been studied and the details are given in Chapter 4.

7.4.1 AIR QUALITY IMPACT PREDICTION FOR THE CLUSTER

The AERMOD atmospheric dispersion modeling (AERMOD Cloud remote version) is used for assessment of incremental Ground level concentration (GLC) for the cluster area. The Area source model taken into consideration taking into consideration wet drilling and loading of the cluster mines. Furthermore, line source model was taken into consideration for transportation through haul road. Baseline meteorological studies were conducted for the period of October to December 2023. The following sources are considered.

7.4.1.1 Emission sources & Quantification of the cluster area.

SEENIVASAN.R MINES

(I) POINT SOURCE EMISSION

Drill dust emission = 0.022 gm/sec

(II) Area Emissions – Total Material handling (Rough Stone)

Quantity, TPA	Rough Stone: 3,61,855 m ³ & Gravel:4,232 m ³
Operational Hours Per Year	2400
Activity Rate, t/hr.	400.5416667
Emission of dust, g/t.	0.14
Emission of dust, g /hr.	56.07583333
Area of influence, m ²	625
Uncontrolled emission rate g/s/m ²	0.000026355
Controlled emission rate, PM10 g/s/m ²	0.0000026355
Controlled emission rate, PM2.5 g/s/m ²	0.0000017570

(III) Line Source – Transport of Rough Stone from Pit to Boundary

Quantity, TPA	Rough Stone: 3,61,855 m ³ & Gravel:4,232 m ³
Operational Hours Per Year	2400
Capacity of each Dumper (T)	10
Total No. of Tippers/ year	44650
Lead length/trip, Km	0.8

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Total VKT/Year	76904
Emission Kg/VKT	0.26
Total emission Kg/Year	19995.04
Uncontrolled emission rate g/s/m	2.6355
Controlled emission rate, PM10 g/s/m	0.26355
Controlled emission rate, PM2.5 g/s/m	0.17570

*Note: *Emission factor computed based on wind speed of 2 m/s, and moisture content of 10 %. + Emission factor computed based on silt content of 10 % and moisture content of 10 %*

7.4.1.2 Predicted emissions of the cluster:

Predicted maximum ground level concentrations considering micro meteorological data of October 2023 to December 2023 are superimposed on the maximum baseline concentrations obtained during the study period to estimate the post project scenario, which would prevail at the post operational phase. The overall scenario with predicted concentrations over the maximum baseline concentrations is shown in the following table along with isopleths Figures 7.1 & 7.2. Various predicted emission levels in the villages surrounding site are presented in Table 7.4 and 7.5 below.

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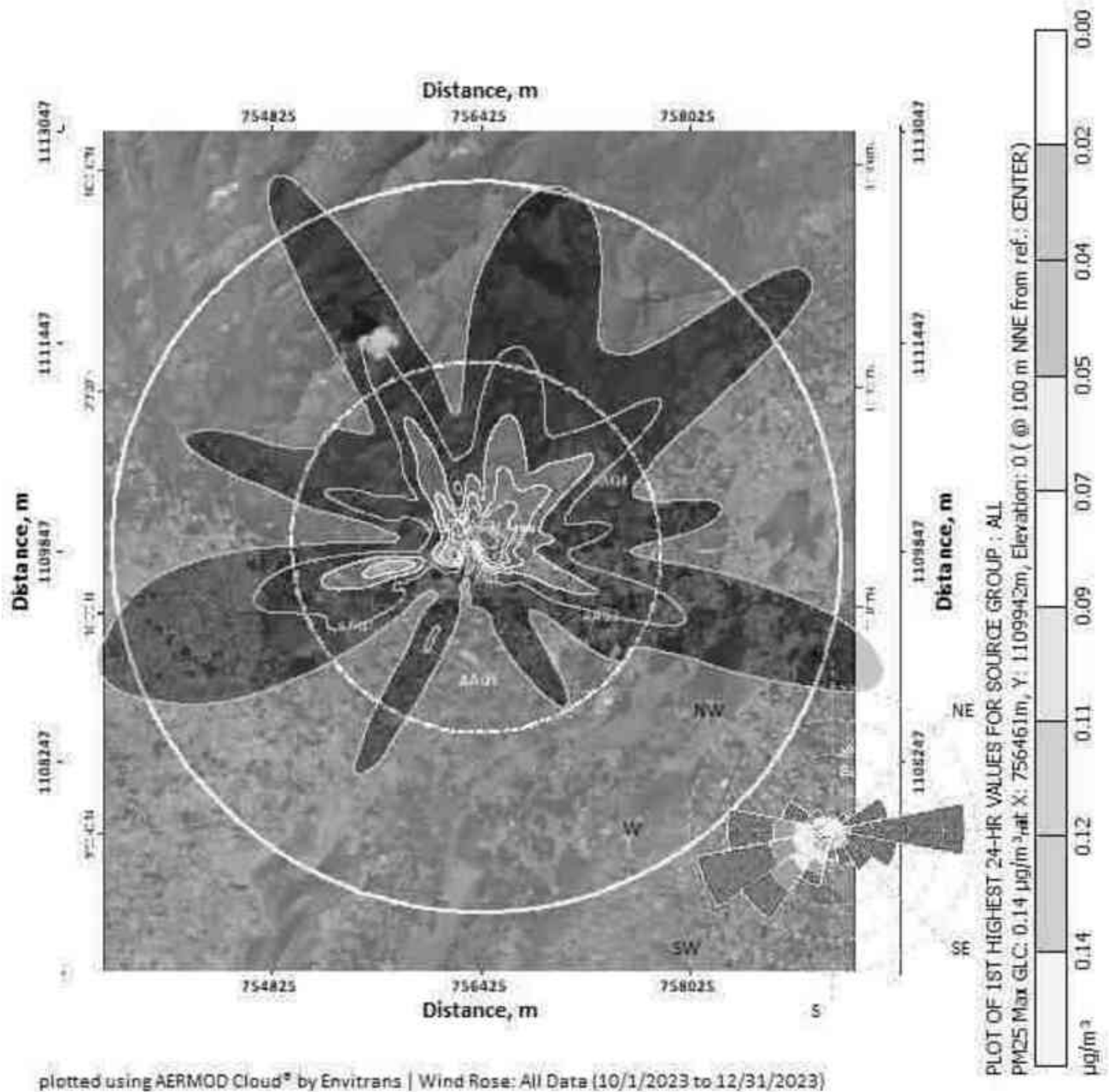


FIG 7.3 Isopleth of GLC Prediction for PM_{2.5}

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Table 7.3 Concentrations of PM_{2.5} after Project Implementation					
SL. No	Location	Background Concentration	Predicted incremental Concentration	Post Project Concentration	Statutory Limits in µg/m³
1.	Mine Lease Area	27.3	0.14	27.44	60
2.	Boothipuram	20.9	0.12	21.02	
3.	Meenakshipuram Bodi	23.5	0.07	23.57	
4.	Theni Alinagaram	25.0	0.04	25.04	
5.	Kodangeepatti	22.82	0.03	22.85	

Table 7.4 Concentrations of PM₁₀ after Project Implementation					
SL. No	Location	Background Concentration	Predicted incremental Concentration	Post Project Concentration	Statutory Limits in µg/m³
1.	Mine Lease Area	56.5	2.87	59.37	100
2.	Boothipuram	45.5	1.80	47.3	
3.	Meenakshipuram Bodi	51.1	0.72	51.82	
4.	Theni Alinagaram	54.1	1.08	55.18	
5.	Kodangeepatti	48.3	0.36	48.66	

The above report seems that, even in the worst-case scenario, the resultant added concentrations with baseline figures show that the values of ambient air quality for PM₁₀ are in the range of 47.3 µg/m³ to 59.37 µg/m³ and for PM_{2.5} are in the range of 21.02 µg/m³ to 27.44 µg/m³ which are within the statutory limits in each case. The mitigation measures undertaken in the mine for control of air pollution are given below.

- Wet drilling will be practiced in drilling operations.
- Water sprinkling will be done in haul roads & loading etc.
- The mine workers are provided with dust masks.

- Three layer plantation in the safety zone.
- DG sets shall be periodically maintained as per manufacturer's specifications.

7.5 Cumulative Impact on 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 these three leases is provided below, the Traffic study are detailed in section 4.8 of Chapter 4.

The proposed projects will bring 20 trips per day. The existing road can absorb this additional 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 HYDROGEOLOGICAL STUDY

The project proponent conducted a Hydro-geological study to evaluate the impact of proposed mining activity on the groundwater table, Open wells, and water bodies such as rivers, tanks, canals, ponds etc., located nearby the proposed mining area is detailed under this section. A detailed and comprehensive report is enclosed in Annexure 13. The major points are detailed below.

To assess the groundwater level fluctuation of monsoon and non-monsoon seasons based on the PWD and TWAD data as well as field data within a 1 km radius and its contour map preparation using GIS technology. The influences on the groundwater-level variations are critically analyzed, and the impacts of the same on groundwater quality and quantity have been discussed in detail.

The drainage pattern study reveals that from the proposed mine lease area with around 500 m and 1 Km radius study observed in Figure 3.2. There is no river passed through within the 1 Km radius and seasonal streams are identified in the study area. In the seasonal streams were observed in dry condition. The only one

water body observed was in 500m radius. According to the drainage pattern study there are no major impacts on the water bodies (Tank). See in Plate II the seasonal streams field photos.

7.6.1 Groundwater Level Studies

The observation wells measured the water level data (below ground level) in and around the 1km radius of the mine lease area during the month of September 2023 (Monsoon season) and month of February 2023 (Non-Monsoon season). The field measured water level data was imported to GIS environment and existing open well points converted into point features with the help of latitude and longitude values. By using the IDW tool in GIS software, the spatial distribution map of groundwater depth level maps is generated for the study area (1 km radius from the mine lease area).

Spatial maps are used to study groundwater level conditions. The season wise spatial maps are generated by using the Arc GIS software. In these spatial maps, water level contours have been shown, indicating water level conditions during Non-monsoon and Monsoon periods representing adverse seasonal condition as well as normal rainfall periods.

The non-monsoon season BGL minimum depth is 12m and the maximum depth is 30m and also monsoon season water level range from 12m to 28m. It is major deviation of BGL, because these wells depth various from 3.50 m to 6.20 m. This area is an unconfined aquifer; this aquifer occurred in shallow depths (at in 15m). The investigation area groundwater is mainly dependent on the local rainfall.

7.6.2 Measurement of Apparent Resistivity and Interpretation of resistivity Data

The 4 geo-electrical resistivity surveys were conducted within 1 km radius from mining lease area. The geographic locations of the survey sites are shown in Figure 3.11. The VES - 1 site was located in the north-western part of the 1 km radius

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proposed lease area. VES - 2 site in south-western part, VES-3 site in south-eastern part and VES-4 site in north-eastern part of 500 m and 1 km radius proposed lease area. These sites were located on the Charnockite rock area.

7.6.3 CONCLUSION

Proposed Rough Stone & Gravel Quarry over an extent of 3.78.0 Ha in S.F. No. 110/3, 110/4, 110/5, 127/1 and 127/2 at Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State. The present hydrogeological investigation was executed within 1 km radius of lease area. The detailed conclusion and recommendations are given below.

The drainage pattern study reveals that from the proposed mine lease area with around 500 m and 1 Km radius study observed in Figure 3.3. There is no river passed through within the 1 Km radius and seasonal streams are identified in the study area. In the seasonal streams were observed in dry condition. The only one water body observed with in 500m radius. According to the drainage pattern study there are no major impacts on the water bodies (Tank).

Within 1 km radius of core area shows that the entire portion fall under Charnockite rock. Therefore, water contain in fractures only.

The observation wells had been measured the water level data (below ground level) in and around 1km radius of the mine lease area during month of September 2023 (Monsoon season) and month of February 2023 (Non-Monsoon season). The spatial distribution map of groundwater depth level maps generated for study area (10 km radius from Mine lease area).

Monsoon and non-monsoon seasons water level fluctuation studies reveals that the less than 30m in entire study area (10 km radius of the core area). Shallow depth of groundwater level is 12 to 16 m was observed in Ratinamnagar in both seasons.

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The SSW part of the investigation area has depth of groundwater level is 16 to 30m. North-Western and South-East parts of the study area water level are also depth is 12 to 15 m. These portions are located in nearby edge of the 10 km radius.

Above mentioned results are evaluated through Hydro-geophysical investigation. The vertical distribution of the lithology pseudo-section shows that the porosity and permeability are very poor. So, groundwater occurred in above 85m (deeper aquifer).

The interpreted results of Vertical Electrical Sounding (VES) 2D pseudo-section of lithological variation shows that the topsoil thickness is less than 1 m, with a resistivity of less than 100 ohm.m.

The second layer is composed of weathered and boulder charnockite rock. This acts as an infiltration layer; it has a resistivity ranging from 100 to 200 ohm.m respectively. Therefore, water penetration is high during the rainy season. The water holding capacity is very low in the two layers (layers 1 and 2). Therefore, this area is not suitable for agricultural activities.

The third layer is composed of minor fractured charnockite rock. This minor fractured portion acts as a zone of aeration. It has a resistivity ranging from 200 to 400 ohm.m respectively. Therefore, water penetration only in monsoon seasons.

The fourth layer consists of fissured charnockite rock layer acts as a zone of saturation. The surface and sub-surface water are continuously moving in a downward direction up to the fissured charnockite rock. The groundwater is presented in the bottom portion of this layer. Also, this study recommends for the slope stability analysis to be conducted in the working depth of 20 m after commencement of quarry operations to maintain the safe and stable bench working. Based on the slope stability report, the proponent should implement the slope stabilization techniques for the benches and slope monitoring system if required.

RECOMMENDATIONS

- ❖ It is recommended for the regular monitoring of Hydrogeological observation.
- ❖ Rain water flow path and stream path shall be maintained once in season before and after monsoon and the condition of the same should be reported to the concern Tahsildar office.
- ❖ Designing of suitable land use pattern within the mine lease area or catchment areas is a step forward activity towards the mitigation and preventive care.
- ❖ Effective local runoff arrangement of rainwater for groundwater infiltration into the soil and in hard-rock areas.

All the above facts should be kept in mind and proper implementation is the most significant thing in carrying out of any such activities.

This report has been prepared to our best knowledge of technical expertise with field driven data of Geophysical and Geological prospecting.

Impact on Water bodies and its Mitigation Measures

Anticipated Impact	Mitigation Measures
Impact due to Usage of Water in mines	The total water requirement is 8.5KLD. It will be sourced from outside agencies. So no impact in the project area due to water usage.
Generation of waste water from vehicle washing	There is no proposal for rough stone processing or workshop within the project area, thus there is no effluent anticipated in the mine.
Domestic sewage	Domestic sewage from site office & urinals/latrines

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	provided in ML is discharged in septic tank followed by soak pits
Washouts from surface exposure or working areas	Garland drain, settling tank will be constructed along the proposed mining lease area. The Garland drain will be connected to settling tank and sediments will be trapped in the settling traps and only clear water will be discharged.
Impact on Surface Water Resources	<p>The nearby waterbodies:</p> <p>Bodinayackanur Seasonal lake -2.76 km - SW</p> <p>Kanakkan Pool – 3.34 km - SE</p> <p>Boodipuram lake - 4.46 km - E</p> <p>Surface run-off water of the M.L. area is drained through proposed drainage and collected in the bottom of the quarry and collected water will be used for same quarry operation as such for plantation & dust suppression.</p> <p>Since these water bodies are located outside the lease area and there is no discharge of effluent or any untreated water from the mines will be made into these water bodies, there is no major impact. The project proponent will restrict the mining operation only within the lease and no other work will be carried out near the water bodies or any area outside the mining lease.</p>
Impact on Ground water	<p>The water required for quarry operations will be outsourced, so there is no anticipated withdrawal of groundwater.</p> <p>The quarrying activity will not intersect ground water table as quarrying is proposed upto a depth of 38 m BGL. The aquifer is presented at a depth of 55m BGL with resistivity dropped.</p>
Water Quality	Six months once analysis of quarry pit water and ground water quality in nearby villages will be carried

	out to ensure the water quality is not affected due to the quarrying activities.
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7.7 SLOPE STABILITY STUDY

The proposed quarry is a very small quarry and the production is also less. Opencast Semi-mechanized mining with a bench height of 5m and bench width of 5m and 80° Slope is proposed. The depth of mining is proposed as 38m BGL, which is the ultimate pit limit. Also, there is no overburden since the entire mined out material will be utilized.

As far as technical factors are concerned, the following precautionary measures will be adopted:

- Strict adherence to DGMS norms
- Frequent inspection by Mines-in-charge/Mines Manager
- Bench height, width, slope will be as per DGMS norms

In the VES-1 to VES-4 attached in Annexure 13 are considered for pseudo-section and it is shown in Figures 3.12 (VES-1) and 3.15 (VES-4) Refer Annexure 13. The VES-1 site in north-western part and VES-4 site in north-eastern portion of the study area. Topsoil resistivity ranging from 33.84 Ω -m to 100 Ω -m was observed. The second layer is composed of weathered and boulder charnockite rock. This acts as an infiltration layer; it has a resistivity ranging from 100 to 200 ohm.m. with a depth various from 1.8m to 8.5 m (VES-1) and 1.8m to 17 m (VES-4) respectively. The formation slope towards north-western direction, based on the VES-1 and VES-4.

In the VES-2 to VES-3 are considered for pseudo-section and it is shown in Figures 3.13 of Annexure 13 (VES-2) and 3.14 (VES-3). The VES-2 site in south-western part and VES-3 site in south-eastern portion of the study area. The second layer thickness various from 2.2m to 19 m (VES-2) and 1.5m to 4.2 m (VES-3) respectively. The formation slope towards south-eastern direction, based on the VES-2 and VES-3. The slope of the formation is two different directions, refer the

geophysical study. So, 1 km radius of the proposed mine lease area is up land (ridge).

7.8 DISASTER MANAGEMENT PLAN

Proper preventive mechanism exists already in the mines.

- Precautionary measures are well explained to all staff by the mines in-charge.
- PPE necessary for all staff are available in the quarry. No person is allowed to enter inside without PPE. Avoiding quarrying during unfavorable environmental conditions.
- Carrying out safe blasting by following DGMS norms
- Safety equipment like fire extinguishers, first aid kit, etc are present in the mine.
- Proper maintenance of machinery used for mining
- In case of any emergency, the contact numbers of mines in-charge, mines manager, Management contact are available in the mine office.

7.9 MINE CLOSURE PLAN

The quarrying operation is proposed up to a depth of 38m BGL only, which will be achieved in 5 years. The ultimate pit dimension will be 268m x 90m x 38m BGL. After completion of the quarrying operation, the mined out pit will be left as rain water harvesting pond. The quarry will be properly fenced with barbed wire.

CHAPTER 8

PROJECT BENEFITS

The project area is located on Patta land, thereby causing no impact on the loss of agriculture or forest land. The project will create employment opportunities in the area. There will be no adverse effect of mining on the socioeconomic status of the people; rather, mining activities will improve their standard of living. The mining activity creates employment opportunities for the local people, and this definitely raises their economic status. Apart from the overall beneficial impact of the project on the local people of the region, it is felt necessary to augment facilities in the fields of education, health, and social awareness, including concern for the environment and ecosystem.

The mining activity at proposed Rough Stone of Thiru. Seenivasan.R cluster will create direct employment opportunity for 29 local people directly. The PP has proposed a CER amount of Rs.5,00,000 for project surrounding schools development.

CHAPTER 9

ENVIRONMENTAL COST BENEFIT ANALYSIS

Environmental Cost Benefit Analysis is recommended during the scoping stage, if needed. In the ToR granted by SEIAA, Tamil Nadu it is not recommended. Hence, not applicable.

CHAPTER 10

ENVIRONMENTAL MANAGEMENT PLAN

10.1 OBJECTIVES

The Environmental Management Plan is developed to ensure that a project is implemented in an environmentally sustainable manner, where all contractors and subcontractors, including consultants, understand the potential environmental risks arising from the project and take appropriate actions to minimize those risks. EMP also ensures that the project implementation is carried out in accordance with the planned design and by taking appropriate mitigation measures to reduce adverse environmental impacts during the project's life cycle. The impacts due to this mining project are detailed in Chapter 4 and Mitigation measures at the source level and an overall Management Plan at the site level are elaborated on in this chapter.

10.2 BASIS OF EMP

The Environmental Management Plan for the proposed project activities is formulated taking into considerations the following key environmental issues.

- ⚡ Project activities
- ⚡ Studies on Environmental Impact Assessment
- ⚡ Air & water pollution control
- ⚡ Working zone environment improvement
- ⚡ Occupational hazards & safety
- ⚡ Environmental monitoring facilities
- ⚡ Environmental management costs

EMP covers all phases of the project considering the impacts with mitigation measures and monitoring programme. The plan outlines the measures that will be

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undertaken to ensure compliance with environmental legislation and to minimize adverse impact. Details of EMP measures for implementation in the mine are given below.

Table 10.1 Environmental Management Plan	
Environmental Parameter	Mitigation Measures
Air	Wet drilling to suppress the dust emission from drill machine
	Regular water sprinkling on haulage road through fixed water sprinkler.
	3.5KLD of water will be used for dust suppression.
	Avoiding blasts during high wind period, night times and temperature inversion periods.
	Regular grading of haul road to clear accumulation of loose material.
	It will be ensured that vehicles are properly maintained to comply with exhaust emission requirements
	Maintenance as per the operator manual of the equipment and machinery in the mines to minimize air pollution
	Ambient Air Quality Monitoring was carried out in the project area and in surrounding villages to assess the impact due to the mining activities and the efficacy of the adopted air pollution control measures.
Afforestation for control of dust.	
Surface water	The nearby waterbodies: Bodinayackanur Seasonal lake -2.76 km - SW Kanakkan Pool – 3.34 km - SE Boodipuram lake -4.46 km - E. Adequate safety distance is left. No dumping of material or discharge will be done in or near the canal or water body.

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	<p>Surface runoff management structures like a garland drain of required length which is connected to a settling pond will be constructed around the quarry to collect the rain water.</p> <p>Monthly or after rainfall, inspection will be done to ensure the performance of water management structures and systems.</p> <p>There is no discharge of any effluent into nearby water bodies.</p>
Ground Water	<p>The quarrying operation is proposed upto a depth of 38 m below ground level, Water table is found at a depth of 55m in summer and 52m in rainy seasons, hence the project will not intersect the Ground water table during entire quarry period.</p>
Water Consumption and Wastewater generation	<p>Water required for this project will be sourced from vendors.</p> <p>Domestic wastewater generation of 0.3 KLD will be treated in a septic tank with a soak pit.</p> <p>Conduct ground water and surface water monitoring for parameters specified by CPCB</p>
Noise	<p>The workers employed are provided with protection equipment, earmuffs and ear- plugs for the protection from high noise levels generated at the mine site wherever required.</p> <p>Noise levels are controlled by using the optimum explosive charge, proper delay detonators and proper stemming to prevent blowing out of holes.</p> <p>Development of thick greenbelt all along the safety Zone (7.5 m and 50m) of the project area to attenuate the noise and the same will be maintained.</p> <p>Preventive maintenance of mining machinery and replacement of worn-out accessories to control noise generation.</p> <p>Annual ambient noise level monitoring is carried out in the project area and in surrounding villages to assess the impact due to the mining activities and the efficacy of the adopted noise control measures. Additional noise control measures will be adopted if required as per the observations during monitoring.</p>

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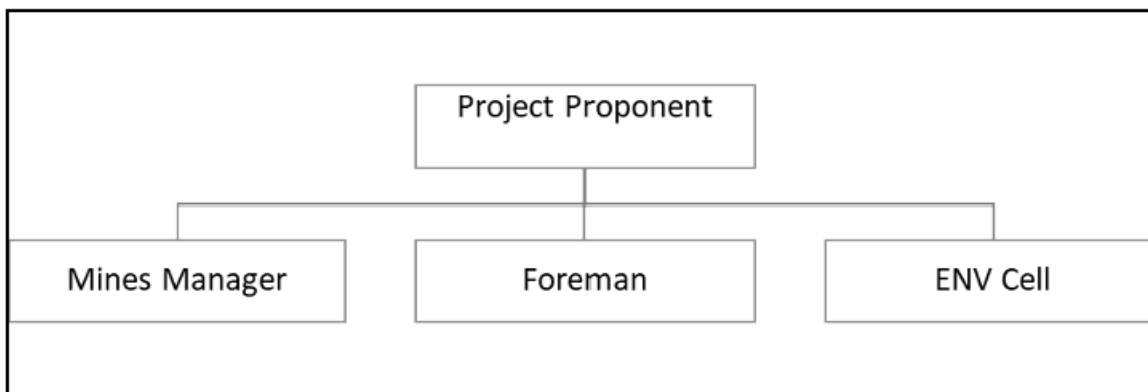
Ground Vibration and Fly Rock Control	Controlled blasting using delay detonators will be carried out to maintain the PPV value well within the prescribed standards of DGMS.
	Drilling and blasting will be carried out under the supervision of qualified persons.
	Will be Ensured that blast holes are adequately stemmed for the depth of the hole and stemmed with suitable angular material.
	To be Undertake noise or vibration monitoring.
Land Environment	At the conceptual stage, the mining pits will be converted into Rain Water Harvesting pits. The remaining area will be converted into a greenbelt area.
	No external dumping i.e., outside the project area. The entire material will be sold.
	Garland drains with catch pits / settlement traps to be provided all around the project area to prevent run off affecting the surrounding lands.
	The periphery of the project area will be planted with thick plantations to arrest the fugitive dust, which will also act as acoustic barrier.
	Frequent Soil and groundwater testing as per the Environmental Monitoring Plan.
Top Soil / Overburden	There is no overburden anticipated during the quarrying operation.
Biological Environment	During mining, thick plantation will be carried out on the mentioned safety zone areas.
	The main attributes that retard the survival of saplings is fugitive dust, this fugitive dust can be controlled by water sprinkling on the haul roads and installing a sprinkler unit near the newly planted area.
	Regular review of Green belt development programme.
	Year-wise greenbelt development plan mentioned in Chapter II will be monitored.

10.3 ADMINISTRATION AND TECHNICAL SETUP

Since this is a very small quarry, the mines in-charge will take care of all environmental related aspects. He will ensure effective implementation of the environmental management plan and to ensure compliance of environmental statutory guidelines through Mine Management Level. The action plan for monitoring consists of monitoring of following environmental components.

- ✦ Monitoring of the water/ waste water quality, air quality and solid waste generated.
- ✦ Analysis of the water and air samples collected through external laboratory.
- ✦ Implementation and monitoring of the pollution control and protective measures/ devices which shall include financial estimation, ordering, installation of air pollution control equipment, waste water treatment plant, etc.
- ✦ Co-ordination of the environment related activities within the project as well as with outside agencies.
- ✦ Collection of health statistics of the workers and population of the surrounding villages.
- ✦ Green belt development.
- ✦ Monitoring the progress of implementation of the environmental monitoring programme.
- ✦ Compliance to statutory provisions, norms of State Pollution Control Board, Ministry of Environment and Forests and the conditions of the environmental clearance as well as the consents to establish and consents to operate.

Fig. 10.1 Organization Chart



10.4 ENVIRONMENTAL POLICY

- ✦ The Project Proponent has stipulated a well-defined environmental policy by which the lessee is committed to conducting business with a strong environmental conscience towards the community, customers, and employees. The environment policy is given as below.
- ✦ The Environment policy of "Rough Stone Quarry of Thiru. R.Seenivasan" is that the rules and commitment are driven towards conservation of the environment.
- ✦ The lessee is committed to efficient use of natural resources based on the reduce, recycle and reuse method.
- ✦ The project is committed to the identification of possible impacts and will take the necessary management steps to mitigate the impacts.
- ✦ Environment performance will be regularly monitored and reported for continual improvement of our environment and health performance.

10.5 OCCUPATIONAL SAFETY & HEALTH MANAGEMENT

Occupational safety and health are very closely related to productivity and a good employer-employee relationship. The main factors affecting occupational health in quarries are fugitive dust and noise. Safety of employees during quarrying operations and maintenance of mining equipment will be taken care of as per the Mines Act 1952 and Rule 29 of the Mines Rules 1955. To avoid any adverse effect on the health of workers due to dust, noise, and vibration, sufficient measures have been provided. The health status of workers in the mine will be regularly monitored

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under an occupational surveillance programme. Under this programme, all employees are subjected to a detailed medical examination at the time of employment. Before the induction of employees, a pre-medical checkup is done. In addition, a periodical medical checkup will be done annually for all employees.

10.6 COST OF ENVIRONMENTAL CONTROL MEASURES

The effective implementation of EMP is not only reduce pollution load and comply the regulatory requirement but also increase productivity and improve marketability of product. Total EMP Cost for 5 years is 205.64 lakhs i.e., Rs. 33.22 Lakhs of Capital + Recurring cost Rs. 172.42 lakhs. The capital and recurring cost of EMP for the cluster of mines has been given in below table.

Table 10.2 - Environmental Management Plan Budget

EMP Cost			
Sl. No.	Mitigation Measure	Capital cost (Rs in lakhs)	Recurring Cost /Annum (Rs in lakhs)
Air Environment			
1	Haul Road Maintenance	0.45	0.45
2	Water Sprinkler Arrangement	8.00	1.00
3	AAQ Monitoring	0.00	0.50
4	Control Blasting (Muffle blasting)	0.00	0.01
5	Wet Drilling	1.75	0.17
6	No overloading of trucks/tippers/tractors	0.00	0.05
7	Stone carrying trucks will be covered by tarpaulin	0.00	0.10
8	Enforcing speed limits of 20 km/hr within ML area	0.50	0.00
9	Regular monitoring of exhaust fumes as per RTO norms	0.00	0.05
10	Regular sweeping and maintenance of approach roads for at least about 200 m from ML Area	0.00	0.23

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11	Installing wheel wash system near gate of quarry	0.50	0.20
Sub-Total (A)		11.2	2.76
Noise Environment			
12	Provision for Portable blaster shed	0.50	0.02
13	NONEL Blasting will be practiced to control Ground vibration and fly rocks	0.00	7.26
Sub-Total (B)		0.50	7.28
Water Environment			
14	Water management (Garland Drain)	0.45	0.05
15	Sump Maintenance	0.00	0.20
16	Dewatering Cost	0.00	1.00
Sub-Total (C)		0.45	1.25
Implementation of EC, Mining Plan & DGMS Condition			
17	Waste management (Spent Oil, Grease etc.,)	0.25	0.20
18	Providing Waste Dustbin	0.05	0.02
19	Environmental Parameters Display Board	0.10	0.01
20	Issue of PPE's	2.00	0.50
21	IME & PME Checkup	0.00	0.50
22	First Aid facility Provision	0.00	0.18
23	Signage & boards for safety precautions	0.10	0.02
24	Barbed Wire Fencing to quarry area	9.00	0.10
25	Parking yard Management	2.25	0.10
26	Installation of CCTV cameras in the mines and mine entrance	0.30	0.05
27	Implementation as per Mining Plan and ensure safe quarry working	0.00	7.80
Sub-Total (D)		14.05	9.48
Green Belt Development			

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28	Plantation inside ML area (100 Nos)	0.26	0.03
29	Plantation outside ML area (1200 Nos)	6.36	0.63
	Sub-Total (E)	6.62	0.66
Additional Key EMP Expenses			
30	Establishing Rainwater Structure	0.10	5.00
31	Environmental Awareness Programme	0.30	0.00
	Sub-Total (F)	0.40	5.00
	Grand Total in Lakhs (A+B+C+D+E+F)	33.22	26.43
EMP Cost for 5 years			
32	1 st Year	0.0	26.43
33	2 nd Year	0.0	27.75
34	3 rd Year	0.0	29.13
35	4 th year	0.0	30.58
36	5 th year	0.0	32.10
	Sub Total (G)	0.0	172.42
Total EMP Cost for 5 years is 205.64 lakhs			
i.e., Rs.33.22 Lakhs of Capital + Recurring cost Rs. 172.42 lakhs for Five years			

10.7 CONCLUSION

Various aspects of mining activities were considered, and related impacts were evaluated. Considering all the possible ways to mitigate the environmental concerns, an Environmental Management Plan was prepared, and Rs. 205.64 Lakhs has been allocated for the same. The EMP is dynamic, flexible, and subjected to periodic review. For projects where major environmental impacts are associated, EMP will be under regular review. Thus, the proper steps will be taken to accomplish all the goals mentioned in the EMP, and the project will have a positive impact on the study area.

CHAPTER 11

SUMMARY& CONCLUSION

11.1 INTRODUCTION

Thiru. R. Seenivasan has obtained a Precise Area Communication Letter from District Collector, Theni District to quarry out 3,61,855m³ of Rough Stone, 74,232m³ of Gravel formation from an extent of 3.78.0 Ha located in S.F. No. 110/3, 110/4, 110/5, 127/1 and 127/2 at Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.

As per EIA notification, 2006 and its subsequent amendments, the proposed "Rough Stone Quarry of Thiru. R. Seenivasan" mines cluster falls under Schedule 1(a) of EIA Notification and its subsequent amendments, the project comes under Category B1. The ToR for preparation of EIA/EMP report of the project was approved vide letter No.SEIAA-TN/F.No.10478/SEAC/ToR-1624/2023, dated 12.12.2023 This report has been prepared in line with the approved TOR for production of maximum excavation of 3,61,855 m³ of Rough Stone and 74,232 m³ of Gravel .

S.No.	Description	Status/Remarks
1.	Sector	Non-coal mining
2.	Category of the project	B1 (Cluster)
3.	Proposed mineral	Rough Stone & Gravel
4.	Type of Lease	Fresh Lease
5.	Extent of the lease	3.78.0 Ha
6.	Proposed depth of Mining	38 m BGL
7.	Method of mining	Opencast Semi-mechanized
8.	Proposed lease period	10 Years
9.	Proposed Environmental Clearance	5 Years
10.	Proposed production quantity for five years	Rough Stone- 3,61,855 m ³ , Gravel- 74,232 m ³

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The Lessee Thiru. R. Seenivasan is an individual with sound experience in the identification, quarrying and marketing of Rough Stone. The proposed land is a Patta land.

11.2 LOCATION

The proposed project site is located in Kodangipatti Village, Bodinaickanur Taluk, Theni District and its Latitude 10° 00' 52.68"N to 10° 01' 02.39"N & Longitude 77° 24' 44.43"E to 77° 24' 52.74"E with Survey of India Topo Sheet No. 58F/08 & 58G/05. To conduct the study, the proposed mine lease area (core zone) and an impact zone of 10 km radius (called buffer zone) around the proposed mine site were considered. The EIA report is based on three months baseline data (Summer season i.e. October 2023 to December 2023)

11.3 GEOLOGY

The area applied for quarry lease exhibits slightly undulated topography covered by Gravel formation. The massive Charnockite formation is noticed below 3m (Avg) Gravel formation and sloping towards Southeastern side of the area, the altitude of the area is above 355m (maximum) from MSL. No major river is found nearby the lease applied area. Water table is found at a depth of 55m in summer and 52m in rainy seasons. Temperature of the area is reported to be 18°C to a maximum of 42°C during summer. Rainfall of this area is about 800mm to 900 mm during the both NE & SW monsoons

11.4 PROJECT DESCRIPTION

The proposed production is 3,61,855 m³ of Rough Stone and 74,232 m³ of Gravel for the period of five years by open cast semi mechanized mining method.

- It is proposed to quarry out rough stone with 5m bench height, 5m width with 80° slope using conventional Open cast Mechanized method. The quarry operation involves shallow jack hammer drilling, slurry blasting, excavation, Loading and transportation of Rough Stone.

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- There is no overburden anticipated during entire Rough Stone & Gravel

S.No.	Type of Detail	Description
1	Sector	1(a) Non coal mining
2	Fresh/Existing project	Fresh project
3	Category	B1 Cluster
4	Nature of mineral	Minor mineral
5	Production	5 years
6	Life	3,61,855 m ³ of Rough Stone, 74,232 m ³ of Gravel
7	Waste generation and management	Nil
8	Bench height and width	5 m & 5m
9	Ultimate pit depth	38m BGL
10	End use	Rough Stone and gravel, will be sold to nearby crushers and construction industries.

Quarrying operation.

11.5 PROJECT REQUIREMENTS

The requirements of the project are given below.

S.No.	Nature of requirement	Description
1	Water requirement	Total water requirement of 8.5KLD which will be procured from outside agencies. Out of 8.5KLD, drinking water requirement is 1 KLD, Green belt development is 3.5 KLD and for dust suppression is 4 KLD.
2	Power requirement	No electricity is needed for mining operations. For office demand will be met by the state grid.
3	Manpower requirement	Total Manpower 29 Nos. Permanent employee – 17 Temporary employee – 12

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4	Financial requirement	The total Project Cost as per AMP will be INR 93,18,000/- including Operational cost, Fixed Asset cost and EMP cost
5	Funds for Socio economic development	INR 1,86,360/- is allocated. However, 5 Lakhs will be spent.

11.6 DESCRIPTION OF LEASE AREA

The features in the study area is given below.

S. No.	Areas	Distance from proposed project		
1	Areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related value	Nil within a 15km radius		
2	Areas which are important or sensitive for ecological reasons			
A	Wetlands, water courses or other water bodies,	Water bodies	Distance (Km)	Direction
		Kottagudi River	1.68	SW
		Merusamuthiram River	4.22	NE
		Veerapandi River	5.92	SW
		Valasai River	12.03	NW
		Vaigai River	14.31	NE
		Bodi vilaku Canal	5.81	NE
		Bodinayakkanur Seasonal lake	2.76	SW
		Kanakkan Pool	3.34	SE
		Boodipuram lake	4.46	E
		Muthudevanapatti Lake	4.52	SE
		Meenakshipuram Lake	4.94	W
		Bodinayakkanur Lake	5.38	SW
		B	Coastal zone, biospheres	None in a 10km radius

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C	Mountains, forests	Koduvilarpatty RF within 500m from the north side of the project Boundary
3	Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, overwintering, migration	Nil within a 15km radius
4	Inland, coastal, marine or underground waters	Nil within a 15km radius
5	State, National boundaries	Nil within a 15km radius
6	Routes or facilities used by the public for access to recreation or other tourist, pilgrim areas	Nil within a 15km radius
7	Defence installations	Nil within a 15km radius
8	Densely populated or built-up area	Bodinaickanur – 5.63 km, WSW
9	Areas occupied by sensitive man-made land uses (hospitals, schools, places of worship, community facilities)	All facilities are available in Bodinaickanur – 5.63 km, WSW
10	Areas containing important, high quality or scarce resources (ground water resources, surface resources, forestry, agriculture, fisheries, tourism, minerals)	The area has rock in many places in the surrounding area.
11	Areas already subjected to pollution or environmental damage (those where existing legal environmental standards are exceeded)	Nil
12	Areas susceptible to natural hazard which could cause the project to present environmental problems (earth quakes, subsidence, landslides, erosion, flooding or extreme or adverse climatic	No. The area is not prone to earthquakes, floods, etc.

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conditions) similar effects

The baseline data collection for meteorology, air, water, noise and soil environments has been carried out from October to December 2023.

11.7 AIR ENVIRONMENT

The air monitoring has been carried out in 5 locations and the results are given below.

DETAILS OF AMBIENT AIR QUALITY MONITORING LOCATIONS				
S. No.	Station Code	Locations	Distance & Direction	Coordinates
1	AAQ1	Mine Lease Area	Core Zone	10° 0' 58.47"N 77°24'49.17"E
2	AAQ 2	Boothipuram	3.56 Km, SE	10° 0' 18.04"N 77°26'43.14"E
3	AAQ 3	Meenakshipuram Bodi	6.16 Km, SW	10° 0' 31.53"N 77°21'26.39"E
4	AAQ 4	Theni Alinagaram	7.83 Km, E	10° 0' 30.90"N 77°29' 5.06"E
5	AAQ 5	Kodangeepatti	3.17 Km, SE	9°59'35.62"N 77°26'3.66"E

Air Quality Monitoring Results:

Station ID	Min	Max	Avg.
Particulate matter PM_{2.5} (µg/m³)			
AAQ-1	19.3	29.3	23.0
AAQ-2	20.4	29.3	23.8
AAQ-3	18.7	29.1	24.2
AAQ-4	20.6	30.2	25.1
AAQ-5	22.2	34.3	25.3
Particulate matter PM₁₀ (µg/m³)			
AAQ-1	42.4	54.5	49.7
AAQ-2	45.1	56.4	49.4
AAQ-3	43.1	57.2	48.3
AAQ-4	45.4	60.2	52.2
AAQ-5	47.2	61.3	52.3
Sulphur Di-oxide as SO₂ (µg/m³)			

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Station ID	Min	Max	Avg.
AAQ-1	3.4	5.8	4.3
AAQ-2	5.4	7.9	4.6
AAQ-3	4.0	6.4	4.8
AAQ-4	3.8	8.4	8.4
AAQ-5	4.2	7.6	8.2
Oxide of Nitrogen as NO ₂ (µg/m ³)			
AAQ-1	5.4	7.9	6.3
AAQ-2	5.8	7.6	6.7
AAQ-3	6.2	9.2	7.4
AAQ-4	6.7	11.4	8.4
AAQ-5	6.8	10.4	8.2

All the values of pollutant concentrations were found to be within the NAAQs Standards.

11.8 WATER ENVIRONMENT

Assessment of baseline data on water environment includes:

- Identification of water resources
- Collection of water samples
- Analyzing water samples collected for physico-chemical parameters as per standards.

Three (3) surface water samples and Five (5) ground water samples were collected from the study area and were analysed for physio-chemical, heavy metals and bacteriological parameters in order to assess the effect of mining and other activities on water bodies. The samples were analysed as per the procedures specified by CPCB, IS-10500:2012. The water sampling locations are given in Table 3.7 and shown as Figure 3.14.

Water Sampling Locations

S.NO	Location Code	Monitoring Locations	Latitude and longitude
Surface Water			

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1	SW1	Boothipuram Pond Water	10° 0'42.60" & 77°27'26.94"E
2	SW2	Merusamuthiram river (Upstream)	10° 1'43.12"N & 77°26'4.02"E
3	SW3	Mullaiperiyar river (Downstream)	9°55'54.81"N & 77°24'12.02"E
Ground Water			
1	GW1	Within Lease area	10° 0'58.47"N 77°24'49.17"E
2	GW2	Boothipuram	10° 0'18.04"N 77°26'43.14"E
3	GW3	Meenakshipuram Bodi	10° 0'31.53"N 77°21'26.39"E
4	GW4	Theni Alinagaram	10° 0'30.90"N 77°29'5.06"E
5	GW5	Kodangipatti	9° 59'35.62"N 77°26'3.66"E

Surface Water Analysis Results

Sl. No.	Parameter	Unit	SW1	SW2	SW3	Surface water standards (IS 2296 Class-A)
1.	Odour	-	agreeable	Agreeable	Agreeable	-
2.	Turbidity	NTU	<1.0	<1.0	<1.0	1
3.	pH at 25 °C	-	8.25	7.49	8.20	6.5-8.5
4.	Electrical Conductivity	µS/cm	350.2	151.5	174.2	-
5.	Total Dissolved Solids	mg/l	212	92.0	105	500
6.	Total Suspended Solids	mg/l	BDL (DL-2.0)	BDL (DL-2.0)	BDL (DL-2.0)	-
7.	Total hardness as CaCO ₃	mg/l	92.4	43.2	54.6	300
8.	Calcium as Ca	mg/l	19.9	9.36	12.4	-
9.	Magnesium as Mg	mg/l	10.2	4.75	5.64	-
10.	Calcium as CaCO ₃	mg/l	49.8	23.4	31.1	-
11.	Total alkalinity as CaCO ₃	mg/l	67.5	35.5	44.2	-
12.	Chloride as Cl ⁻	mg/l	80.2	28.9	35.6	250
13.	Sulphates as SO ₄ ²⁻	mg/l	40.6	8.74	12.4	400
14.	Iron as Fe	mg/l	0.32	0.15	0.09	1.0
15.	Nitrate as NO ₃	mg/l	1.94	BDL (DL-1.0)	BDL (DL-1.0)	20
16.	Fluoride as F	mg/l	0.32	0.15	0.17	1.5
17.	Manganese as Mn	mg/l	BDL(D.L-0.05)	BDL(D.L-0.05)	BDL(D.L-0.05)	0.5

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Results of Ground Water sampling Analysis in 5 locations									
S. No.	Test Parameter	Unit	GW1	GW2	GW3	GW4	GW5	Specification/Limit (As per IS:10500:2012)	
								Desirable	Permissible
1	Odour	...	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
2	Taste	...	7.32	7.17	7.73	7.12	7.28	6.5 - 8.5	No Relaxation
3	pH	...	<1	<1	<1	<1.0	<1	1	5
4	Turbidity	NTU	660	580	610	802	856	500	2000
5	TDS	mg/L	0.32	0.32	0.19	0.49	0.33	1	1.5
6	Fluoride,(F)	mg/L	447	225	176	378	254	200	600
7	Total Alkalinity, (CaCO ₃)	mg/L	333	349	172	580	478	200	600
8	Total Hardness, (CaCO ₃)	mg/L	81.5	86.2	40.8	132	108	75	200
9	Calcium,(Ca)	mg/L	204	216	102	329	270		
10	Calcium as CaCO ₃		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)		
11	Free Residual chlorine as Cl ⁻		124	109	380	245	212	250	1000
12	Chloride,(Cl)	mg/L	129	133	70.6	251	208	30	100

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13	Magnesium,(Mg)	mg/L	3.26	BDL(D.L-1.0)	1.89	2.5	2.32	45	No Relaxation
14	Nitrate, (NO3)	mg/L	142	84.3	74.1	99.6	154	200	400
15	Sulphate, (SO4)	mg/L	BDL(D.L-0.01)	0.32	0.08	0.04	0.07	1	No Relaxation
16	Chromium, (Cr)	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)	0.1	0.3
17	Iron,(Fe)	mg/L	1092	961.3	1006	1325	1416	Not Specified	Not Specified
18	Manganese, (Mn)	mg/L	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
19	Conductivity	µs/cm	7.32	7.17	7.73	7.12	7.28	6.5 - 8.5	No Relaxation

All the values were found to be within permissible limits

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11.9 NOISE ENVIRONMENT

Noise levels were measured in 5 locations and the results are given below.

Noise sampling locations in the study area				
S. No.	Station Code	Locations	Distance & Direction	Coordinates
1	N 1	Within Lease area	Core Zone	10° 0'58.47"N 77°24'49.17"E
2	N 2	Boothipuram	3.56 Km, SE	10° 0'18.04"N 77°26'43.14"E
3	N 3	Meenakshipuram Bodi	6.16 Km, SW	10° 0'31.53"N 77°21'26.39"E
4	N 4	Theni Alinagaram	7.83 Km, E	10° 0'30.90"N 77°29'5.06"E
5	N 5	Kodangipatti	3.17 Km, SE	9°59'35.62"N 77°26'3.66"E

Noise monitoring results					
S. No	Location	Day equivalent	Night equivalent	Day equivalent limits by CPCB	Night equivalent limits by CPCB
1	Within Lease area	46.3	40.2	55	45
2	Boothipuram	49.0	37.3		
3	Meenakshipuram Bodi	48.3	41.6		
4	Theni Alinagaram	49.2	43.1		
5	Kodangipatti	50.6	39		

11.10 SOIL ENVIRONMENT

Soil samples are collected from 3 locations and the results are given below.

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Results of Soil Sample Analysis				
S.No.	Parameter	S1 Mine lease area	S2 Meenakshipuram Bodi	S3 Kodangipatti
1	pH	7.28	7.62	7.78
2	Electrical Conductivity	38.57	45.82	80.59
3	Dry Content	98.54	97.66	96.82
4	Water Content	1.46	2.34	3.18
5	Organic Mater	0.65	1.32	0.86
6	Sulphur	BDL(D.L.0.02)	BDL(D.L.0.02)	BDL(D.L.0.02)
7	Phosphorus	1.54	2.13	1.65
8	Texture	Silty Clay loam	Clay Loam	silt loam
9	Sand	18.36	25.67	22.69
10	Clay	39.49	34.01	24.17
11	Loam	42.15	40.32	53.14
12	Total Nitrogen	204	285	452
13	Sodium	456	548	362
14	Potassium	1210	920	670
15	Water Holding Capacity	3.4	3.7	3.5
16	Porosity	18.7	17.6	18.2

11.11 BIOLOGICAL ENVIRONMENT

11.11.1 FLORA

The field survey is done to measure the extent of flora present in the study area, the area is divided in to 4 quadrants. The flora population in each quadrant is summed up for the total population in the study area. Also, data from the State forest department is used. The quadrants used for each type are given below:

S.No.	Size of Quadrant	Type of flora
1	10x10 m	Trees
2	5x5 m	Shrubs
3	1x1 m	Herbs

Core Zone

During the field visit, it is observed that there are no national parks / Sanctuaries / forests in the 10km buffer area. The study area is devoid of any major plantations. Here and there small bushes are found, which will be

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removed during mining. Common species found in the core zone are given below.

Table Flora in Study Area

No	Species	Family	Habit
1	<i>Agalaia elaeagnoidea</i> *	Meliaceae	Small tree
2	<i>Anisochilus scaber</i> *	Lamiaceae	Herb
3	<i>Aristolochia tagala</i> **	Aristolochiaceae	Climber
4	<i>Arundinella ciliata</i> *	Poaceae	Herb/Grass
5	<i>Arundinella setosa</i> *	Poaceae	Herb/Grass
6	<i>Asystasia dalzelliana</i> *	Acanthaceae	Herb
7	<i>Barleria acuminata</i> *	Acanthaceae	Shrub
8	<i>Barleria tomentosa</i> *	Acanthaceae	Shrub
9	<i>Chrysopogon asper</i> *	Poaceae	Herb/Grass
10	<i>Chrysopogon hackelii</i> *	Poaceae	Herb/Grass
11	<i>Crotalaria longipes</i> ****	Fabaceae	Shrub
12	<i>Cynodon barberii</i> *	Poaceae	Herb/Grass
13	<i>Decalepis hamiltonii</i> **	Asclepiadaceae	Climber
14	<i>Dicliptera cuneata</i> *	Acanthaceae	Herb
15	<i>Exacum sessile</i> **	Gentianaceae	Herb
16	<i>Ficus beddomei</i> *	Moraceae	Tree
17	<i>Garnotia elata</i> ***	Poaceae	Herb/Grass
18	<i>Jatropha peltata</i> *	Euphorbiaceae	Undershrub
19	<i>Mucuna pruriens</i> **	Fabaceae	Straggler
20	<i>Pseudarthria viscida</i> **	Fabaceae	Herb
21	<i>Strobilanthes consanguinea</i> *	Acanthaceae	Shrub
22	<i>Strobilanthes cuspidatus</i> *	Acanthaceae	Shrub
23	<i>Strychnos potatorum</i> **	Loganiaceae	Tree
24	<i>Tricalysia apiocarpa</i> ***	Rubiaceae	Small tree
25	<i>Tripogon bromoides</i> *	Poaceae	Herb/Grass
26	<i>Zenkaria elegans</i> *	Poaceae	Herb/Grass

*Endemic to the Peninsular India, ** IUCN Red-listed medicinal plants, ***Endemic to Western Ghats, **** Rare, endemic and endangered.

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11.11.2 Fauna in the study area

There is no specific Fauna found within ML area. The buffer zone Fauna in the area is studied by direct observation method. Secondary data collected from Forest department and the same is used in this report. People in the nearby locality were also consulted. The commonly found fauna in the area are given below.

Table Fauna in buffer zone				
S.No.	Scientific name	Common name	Type of fauna	Schedule to which the species belong
1	Canis familiaris	Common dog	Mammals	IV
2	Felis catus domesticus	Domestic cat		IV
3	Golunda ellioti	Indian bush rat		IV
4	Funambus palmarum	Squirrel		IV
5	Lepus nigricollis	Indian hare		IV
6	Bos indicus	Domestic cow		IV
7	Common Crow	Corvus splendens	Birds	V
8	House Sparrow	Passer domesticus		IV
9	Common Myna	Acridotheres tristis		IV
10	Streptopelia chinensis	Pigeon		IV
11	Calotes versicolor	Lizard	Amphibia	IV
12	Ptyas mucosa	Snake		IV
13	Rana hexadactyla	Frog		IV

Table Mammals recorded in the study area			
	English name	Zoological name	IUCN status
1	Asian palm civet	<i>Paradoxurus hermaphroditus</i>	LC
2	Bengal Fox *	<i>Vulpes bengalensis</i>	LC
3	Black Rat *	<i>Rattus rattus</i>	LC
4	Blackbuck *	<i>Antelope cervicapra</i>	NT
5	Black-naped hare	<i>Lepus nigricollis</i>	LC

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6	Bonnet macaque	<i>Macaca radiata</i>	LC
7	Chital	<i>Axis axis</i>	LC
8	Common Giant flying squirrel	<i>Petaurista petaurista</i>	LC
9	Common mongoose	<i>Herpestes edwardsi</i>	LC
10	Common Palm Squirrel *	<i>Funambulus palmarum</i>	LC
11	Coromandel Pipistrelle *	<i>Pipistrellus coromandra</i>	LC
12	Dhole	<i>Cuon alpinus</i>	EN
13	Elephant	<i>Elephas maximus</i>	EN
14	Eurasian Otter *	<i>Lutra lutra</i>	NT
15	Four-horned Antelope *	<i>Tetracerus quadricornis</i>	VU
16	Gaur	<i>Bos gaurus</i>	VU
17	Golden Jackal *	<i>Canis aureus</i>	LC
18	Greater Bandicoot Rat *	<i>Bandicota indica</i>	LC
19	Hanuman langur	<i>Semnopithecus entellus</i>	LC
20	House Shrew*	<i>Suncus murinus</i>	LC
21	Indian bison *	<i>Bos gaurus</i>	VU
22	Indian Chevrotain *	<i>Moschiola indica</i>	LC
23	Indian crested Porcupine	<i>Hystrix indica</i>	LC
24	Indian Flying Fox*	<i>Pteropus giganteus</i>	LC
25	Indian Gerbil *	<i>Tatera indica</i>	LC
26	Indian Pangolin	<i>Manis crassicaudata</i>	NT
27	Indian wild pig	<i>Sus scrofa</i>	LC
28	Jungle cat	<i>Felis chaus</i>	LC
29	Leopard	<i>Panthera pardus</i>	NT
30	Leopard cat	<i>Prionailurus bengalensis</i>	LC
31	Lion-tailed Macaque *#	<i>Macaca silenus</i>	EN
32	Little Indian Field Mouse *	<i>Mus booduga</i>	LC
33	Long-eared Hedgehog *	<i>Hemiechinus auritus</i>	LC
34	Madras Treeshrew *	<i>Anathana ellioti</i>	LC
35	Malabar giant squirrel#	<i>Ratufa indica</i>	NT
36	Nilgiri Langur	<i>Semnopithecus johnii</i>	VU
37	Nilgiri Marten *#	<i>Martes gwatkinsii</i>	VU
38	Nilgiri Tahr *	<i>Nilgiritragus hylocrius</i>	EN
39	Ratel or Honey Badger *	<i>Mellivora capensis</i>	LC

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40	Sambar	<i>Rusa unicolor</i>	VU
41	Slender loris	<i>Loris lydekkerianus</i>	LC
42	Sloth bear	<i>Melursus ursinus</i>	VU
43	Small Indian civet	<i>Viverricula indica</i>	LC
44	Southern Red Muntjac	<i>Muntiacus muntjak</i>	LC
45	Sri Lankan Giant Squirrel *	<i>Ratufa macroura</i>	NT
46	Striped hyena *	<i>Hyaena hyaena</i>	NT
47	Stripe-necked Mongoose *	<i>Herpestes vitticollis</i>	LC
48	Tiger *	<i>Panthera tigris</i>	EN
49	White spotted Chevrotain	<i>Tragulus meminna</i>	LC

EN: Endangered; VU: Vulnerable; NT: Near threatened; LC: Least concern. *Not encountered during the survey, but are reported by Malik (2004). # Endemic to Western Ghats (Bava et al, 2007)

Table : Reptiles recorded in the study area

	English name	Zoological name	IUCN status
1	Asian House Gecko	<i>Hemidactylus frenatus</i>	LR
2	Bark Gecko	<i>Hemidactylus leschenaultii</i>	LR
3	Beddome's Grass Skink	<i>Mubuya beddomei</i>	LR
4	Bengal Monitor Lizard	<i>Varanus bengalensis</i>	VU
5	Bronze Grass Skink	<i>Mabuya macularia</i>	LR
6	Brook's House Gecko	<i>Hemidactylus brookii</i>	LR
7	Common Cat Snake	<i>Boiga trigonota</i>	LR
8	Common Sand Boa	<i>Gongylophis conicus</i>	LR
9	Common Vine Snake	<i>Ahaetulla nasuta</i>	LR
10	Common Wolf Snake	<i>Lycodon aulicus</i>	LR
11	Fan throated Lizard	<i>Sitanan ponticeriana</i>	LR
12	Green forest Lizard	<i>Calotes calotes</i>	LR
13	Horseshoe Pit Viper	<i>Trimeresurus strigatus</i>	LR
14	Indian garden Lizard	<i>Calotes versicolor</i>	LR
15	Indian Rat Snake	<i>Ptyas mucosa</i>	LR
16	Indian Rock Python	<i>Python molurus molurus</i>	EN
17	Keeled Grass Skink	<i>Mabuya carinata</i>	LR
18	Large-scaled Pit Viper	<i>Trimeresurus macrolepis</i>	LR

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19	Malabar Pit Viper#	<i>Trimeresurus malabaricus</i>	VU
20	Red Sand Boa	<i>Eryx johnii</i>	LR
21	Russell's Viper	<i>Daboia russelii</i>	LR
22	Saw-scaled Viper	<i>Echis carinatus</i>	LR
23	South Asian Chamaeleon	<i>Chamaeleo zeylanicus</i>	VU
24	South Indian Rock Agama#	<i>Psammophilus dorsalis</i>	LR
25	Spectacled Cobra	<i>Naja naja</i>	LR
26	Termite-hill Gecko	<i>Hemidactylus triedrus</i>	LR
27	Three-lined Grass Skink#	<i>Mubuya trivittata</i>	LR
#Endemic to Western Ghats. LR: Low Risk; VU: Vulnerable; EN: Endangered			

Table Amphibians recorded in the study area

	English name	Scientific name	IUCN Status
1	Beddome's Leaping Frog#	<i>Indirana beddomei</i>	LC
2	Bronzed Frog	<i>Sylvirana temporalis</i>	LC
3	Common Indian Toad	<i>Duttaphrynus melanostictus</i>	LC
4	Common Tree Frog	<i>Polypedatus maculatus</i>	LC
5	Cricket Frog	<i>Fejervarya limnocharis</i>	LC
6	Ferguson's Toad	<i>Bufo scaber</i>	LC
7	Indian Bull Frog	<i>Hoplobatrachus tigrinus</i>	LC
8	Indian Burrowing Frog	<i>Sphaerotheca breviceps</i>	LC
9	Indian Painted Frog	<i>Kaloula taprobanica</i>	LC
10	Indian Pond or Green Frog	<i>Euphlyctis hexadactylus</i>	LC
11	Lessor or Marbled Balloon Frog	<i>Uperodon systoma</i>	LC
12	Ornate Narrow-mouthed Frog	<i>Microhyla ornateornata</i>	LC
13	Red Narrow-mouthed Frog	<i>Microhyla rubra</i>	LC
14	Water Skipper or Skipper Frog	<i>Euphlyctis cyanophlyctis</i>	LC
# Endemic to Western Ghats. LC=Least Concern			

11.12 LAND USE

The land use land cover data is found using the LANDSAT – 9 satellite imagery. The number of bands used is 11. The land use pattern is given below:

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S.No.	Type of land	Area in sq.km
1.	Buildup area	12.74
2.	Canal	0.12
3.	Crop land	199.70
4.	Fallow Land	8.18
5.	Land with scrub	7.39
6.	Land without scrub	2.93
7.	Mining land	0.92
8.	Plantations	37.82
9.	River	7.98
10.	Tanks	41.36
	Total	319.13

11.13SOCIO ECONOMIC ENVIRONMENT

The socio economic environment of the study area is studied by conducting primary sites through site visits and conducting sample surveys. The secondary data obtained from Census 2011 is also used.

The following data area collected from secondary data.

- Demographic pattern.
- Health pattern
- Occupational structure.
- Amenities available.
- Discussions were held with the people from nearby locality to study the social and economic conditions prevailing in the area. The expert also visited nearby hospitals, primary health centres and Balwadis/Anganwadis.
- The following observations were made:
 - Primary schools are available in many villages.
 - For hospital facilities, people in the locality have to go to hospital in Bodinaickanur and Theni which is about 5 km from the lease area.

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- Major schools with higher secondary and senior secondary schools are located in Bodinaickanur and Theni.
- The major Panchayat Union located in the area is Bodinaickanur.
- Facilities like petrol pump stations, ATM facility are available in Bodinaickanur and Theni.

11.14 GROUND WATER STUDY

For Ground water study, satellite imagery is used. Water levels from monitoring levels are collected through imaging. The pre-monsoon and post-monsoon data are collected and the results are analyzed.

During field visit, it is observed that water is available in wells only after monsoon. The yield is obtained at deep levels only.

As far as the mining lease area is considered, the area is rocky and no major seepage is envisaged. The production quantity is very less and the depth proposed is 38 m BGL. Hence, there will not be any major impact due to mining on water levels or ground water levels in the area.

11.14.1 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Environmental impacts on the following environments are identified.

- Land environment
- Water environment
- Vegetation
- Fauna
- Air environment
- Noise environment
- Socio-economic impacts

11.15 LAND ENVIRONMENT: IMPACT AND MITIGATION MEASURES

The major impact due to this project on land environment is the change in land use. Since this quarry is a small one and the production is less, mining activity will be carried out upto 38m BGL. Other than quarrying of minerals, no other change will be done since there is no dumping. To prevent soil erosion during

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monsoon season, garland drain will be constructed with silt traps. At the mine closure stage, 2.41.0 Ha of lease area will be left as rain water harvesting pond. 0.30.0 Ha will be developed with green belt. For this, plants like Pongamia pinnata, Syzigium cumini, Albizia lebbeck, Thespesia populnea, Bauhinia racemose, Cassia siamea, Azadirachta indica are selected. A total of 1250 trees are planned to be planted. Spacing will be 3m x 3m.

11.16 WATER ENVIRONMENT: IMPACT AND MITIGATION MEASURES

In the proposed mines, water will be mainly used for domestic purpose, dust suppression & plantation. The total water requirement for the project is 8.5KLD which will be sourced from outside agencies. Negligible sewage of 0.3 KLD will be generated, for which a septic tank with soak pit will be set up.

During monsoon season, the excess rain water, if any, will be led through garland drain of 0.6m width and 0.3 m depth to the collection pond with silt traps.

Since the mining operation will be limited upto depth of 38m BGL, there will not be any seepage. However, the rain water percolation and collection of water from seepage shall be less than 300lpm and it shall be pumped out periodically by a stand by diesel powered Centrifugal pump motivated with 7.5H.P.Motor. The quality of water is expected to be potable. Hence, water stored in the quarry pit will be pumped into the adjacent agricultural fields. Further the water can also be used for plantation purposes

The proponent will restrict the mining operation only within the lease and no other work will be carried out near the canal or any area outside the lease.

It is planned to carryout appropriate rainwater harvesting schemes and artificial recharge schemes in the area.

- ✚ Rain water falling in the quarry will be collected efficiently through garland drains.

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- ⊕ Water thus collected will be passed through collection tank with silt traps. This water can be used by the proponent for water sprinkling and for green belt purposes.
- ⊕ Excess water after desiltation will be provided to downstream users, if any

11.17 BIOLOGICAL ENVIRONMENT: IMPACT AND MITIGATION MEASURES

Impacts

- Fauna is affected due to noise and vibration.
- Dust generation due to mining activities
- Change in land use of the lease area
- Accidental falling of animals

Mitigation measures

- Sirens will be blown before blasting in the mines. To reduce noise levels, plantation will be done. Blasting will be carried out only in the allotted time.
- To reduce dust generation, mist sprayers will be used. During transportation, the material will be covered with tarpaulin. Water sprinkling will be done to reduce generation of pollutants
- After the mine closure stage, the mine pit will be left as rain water collecting tank, which can attract bird population in the nearby areas.
- To prevent entry of animals, the mining area will be properly fenced.

11.18 AIR ENVIRONMENT: IMPACT AND MITIGATION MEASURES

The major air pollutants due to mining operations are fugitive emissions like PM₁₀, PM_{2.5}. Other than these pollutants, gaseous emissions of sulfur dioxide (SO₂) and oxides of nitrogen (NO_x) due to excavation/loading equipment and vehicles plying on haul roads are the cause of air pollution in the project area.

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The major impacts are Dust emission due to drilling, blasting and transportation. The major mitigation measures include Using Wet drilling methods, Allowing drilling only with PPE, Carrying out blasting only during specified times, Avoiding blasting during unfavourable weather conditions, Using explosives of good quality, Using mist sprayers Regular wetting of transport, Covering the materials carried in tippers with tarpaulin, Proper maintenance of vehicles used for transportation, Conducting regular emission tests for vehicles used for transport Development of greenbelt is proposed in the safety zone of 10m and 7.5m barriers in the lease area.

The anticipated data is calculated using AERMOD software and the projected values are found to be within limits.

11.19 NOISE ENVIRONMENT: IMPACT AND MITIGATION MEASURES

Impacts

- ⚡ Noise generation in mining is due to operation like drilling, blasting and transportation of minerals within and outside the lease area.
- ⚡ As per DGMS (Directorate General of Mines Safety) and OSHA (Occupational Safety and Health Administration) limits, the acceptable noise level is 90 dB(A) for an exposure period of 8 hours.
- ⚡ Exposure to loud noise can also cause high blood pressure, heart disease, sleep disturbances, and stress. Noise pollution also impacts the health and well-being of wildlife.
- ⚡ Noise exceeding prescribed limits may cause impairment like abnormal loudness perception, tinnitus, which causes a persistent high-pitched ringing in the ears, paralysis or distorted hearing.

Mitigation measures

- ⚡ As the distance between the source and receptor increases, the noise level also decreases. Hence, there will be a natural attenuation
- ⚡ The proposed has planned to develop green belt in the periphery of the lease area, which diminishes sound volume by dampening them.

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- ⊕ All the equipment/machinery/trucks involved will be properly maintained to control noise generation
- ⊕ Conducting regular health checkups for employees involved
- ⊕ Employees will be made to work on shifts to reduce their exposure time
- ⊕ Providing earplugs to all employees

By adopting these measures, the noise levels will be maintained well within MoEF & CC limits since the baseline value is low.

11.20 VIBRATION: IMPACT AND MITIGATION MEASURES

Impacts

- ⊕ Though vibration will be only felt by the people working inside the lease area, it is usually undesired.
- ⊕ Vibration may also cause flyrocks
- ⊕ It may frighten the birds and small insects in the lease area. However, it will be felt only for a short period

Mitigation measures

- ⊕ Carrying out blasting on limited scale, only from 12:00 PM to 2:00 PM
- ⊕ Control of fly rock and vibration by maintaining peak particle velocity within standard as prescribed by the DGMS and MOEF & CC.
- ⊕ Shallow depths jackhammer drilling and blasting is proposed to be carried out with minimum use of explosive
- ⊕ Supervising blasting by competent and statutory foreman/ mines manager

11.21 SOCIO ECONOMIC ENVIRONMENT

Impact and Mitigation measures

No land is acquired from anyone. No rehabilitation is needed. Hence, there is no negative impact. The proponent has planned to spend INR 5,00,000 for CER activities. This amount will be subjected to change after public hearing.

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11.22 OCCUPATIONAL HEALTH

Impacts

Dust generation due to drilling and blasting, Noise generation due to drilling and blasting, unexpected accidents. Continuous exposure to dust causes Pneumonia, Tuberculosis, Rheumatic arthritis and Segmental Vibration, Short term impact will be lack of sleep, high blood pressure and heart ailments. Long term exposure may lead to partial or permanent deafness, Risks include fly rocks, cracks or fissures due to improper mining methods

Mitigation measures

- Using dust suppression measures like water spraying on roads to reduce rise of air pollutants
- Providing green belt for air pollutant and noise attenuation
- Ensuring slope stability
- Employing only trained professionals for blasting
- Conducting Pre-Medical Examination for employees before inducting
- Conducting periodical Medical Examination once in 6 months.
- Making all first aid kits available in mines office
- Keeping fire extinguisher in place
- Educating the employees about how to handle unexpected happenings
- Posting information containing emergency contact numbers in mines office
- By adopting all these measures, the safety of the employees working in the quarry will be ensured.

11.23 ENVIRONMENTAL MONITORING PROGRAMME

Monitoring is done to measure the efficiency of control measures implemented. Regular monitoring of various environmental parameters like air, water, noise and soil environments is needed to assess the status of environment during the project operation. A schedule is framed with timeline to monitor various parameters during the operation of the project. To evaluate the effectiveness of environmental management programme, regular monitoring of the important

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environmental parameters will be taken up. Air monitoring will be carried out once in 3 months, water sample will be collected once in a season, noise will be monitored once in 3 months, soil samples will be analyzed once per season.

11.24 PROJECT BENEFITS

Financial benefits

- This project will contribute financially through payment of taxes like royalty, GST, etc
- The project will also contribute via CSR.
- The demands of people during public hearing will also be considered by the project proponent

Social benefits

- This project provides employment for 29 people. Local people will be hired for unskilled labour.
- Through CER, nearby schools, hospitals will be benefited.
- For CER, INR 5,00,000 is allocated.
- Based on the demands of the people during the public hearing, further funds will be allocated, if necessary.

11.25 CONCLUSION

The EIA study was performed as per the approved ToR. Various environmental attributes were studied relating to aspects of mining activities. The related impacts were identified and evaluated. Considering all the possible ways to mitigate the environmental concerns, Environmental Management Plan was prepared. and 205.64 lakhs i.e., Rs. 33.22 Lakhs of Capital + Recurring cost Rs. 172.42 lakhs for the five years have been allocated as EMP cost. The EMP has been dynamic, flexible and subject to periodic review.

The project will increase the revenue of the State Govt. as well as it will help in the social upliftment of the local community. The green belt development

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programme will help to increase the green cover in the area. Thus, the proposed project is not likely to affect the environment or adjacent ecosystem adversely.

The Mine Management will be responsible for the project review of the EMP and its implementation to ensure that the EMP remains effective and appropriate. Thus, the proper steps will be taken to accomplish all the goals mentioned in the EMP and the project will bring a positive impact on the study area.

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CHAPTER 12

DISCLOSURE OF CONSULTANTS

Global Mining Solutions is a NABET Accredited EIA consultant as per NABET certificate NABET/EIA/2326/IA 0110. The registered office of Global Mining Solutions is at Plot No.6, S.F.No.13/2 A2, VS City, RC Chettypatty, Kottamettupatty, Omalur, Salem, Tamilnadu-636455.

Declaration by Experts contributing to the proposed Rough Stone & Gravel Quarry over an extent of 3.78.0 Ha, while the total cluster area of 9.00 Ha at Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu.

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



EIA Coordinator Name: M. Manikandan Manickam

Signature & Date

Period of involvement: October 2023 to December 2023

Contact information:


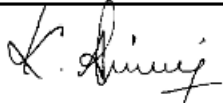



M/s Global Mining Solutions

Plot No.6, SF No. 13/2, A2, VS City, RC Chettypatty,




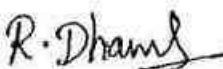
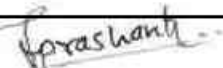
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Salem, Tamil Nadu – 636 455

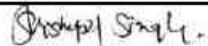

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S. No.	Functional areas	Name of the expert/s	Involvement (period and task**)	Signature and Date
1	AP	Dhanalakshmi Ramanathan	Assessment of existing air quality, Impact of the project on ambient air and suggested mitigation measures for air pollution. <u>Period: October 2023 to December 2023</u>	
2	WP	Abirami Kaliaperumal	Assessment of existing water quality, impact of the project on surface and ground water quality, suggested mitigation measures for minimizing the impact. <u>Period: October 2023 to December 2023</u>	
3	SHW	Ramadoss N	Assessment of waste generated from the project, suggested waste management practices. <u>Period: October 2023 to December 2023</u>	
4	SE	Sarasvathy K	Baseline SE study. Data compilation and assessment. Impact of the project on SE status of the area. Formulation of CER plan. <u>Period: October 2023 to December 2023</u>	
5	EB	Saravanan S	Baseline data collection of related to ecology of the area. <u>Period: October 2023 to December 2023</u>	


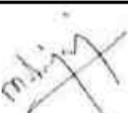
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6	HG	Ravinthiran N	Hydrogeological feature of the area. Ground water depth and impact of project on ground water of the area. <u>Period: October 2023 to December 2023</u>	
7	AQ	Srilatha Thiruveedhula	Air quality modeling utilizing the area source model. Predication of the ground level concentration of the dust. Suggesting suitable mitigation measures. <u>Period: October 2023 to December 2023</u>	
8	NV	Dhanalakshmi Ramanathan	Ambient noise study of the area. Incremental noise generation due to quarry operation and impact of the noise due to the project. <u>Period: October 2023 to December 2023</u>	
9	LU	Dhanalakshmi Ramanathan	Preparation of land use map based on satellite imagery. Land use classification and analysis. Impact prediction of the project on the surrounding land environment. <u>Period: October 2023 to December 2023</u>	
10	RH	S.V. Prashant	Identification of the Risk related to the mining activities. Preparation of emergency disaster management plan. Plan for supply of safety equipment for the worker. <u>Period: October 2023 to December 2023</u>	

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11	SC	Shisupal Sing	Soil monitoring, secondary data collection on soil type, soil management practices, utilization of topsoil. <u>Period: October 2023 to December 2023</u>	
12	GEO	Valliappan Meyyappan	Geological map, stability of quarry and dump, management plan for mine stability, after use of mining quarry and geological feature of the area. <u>Period: October 2023 to December 2023</u>	

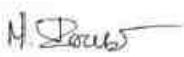

TM-FAE:

S.No	Name of TM (FAE)	Functional Area	Approved FAE (to work under)	Period of involvement	Type of work	Signature
1	M. Prabu	LU	T.Srilatha	October to December 2023	Associated with FAE in preparing Land use map based on satellite imagery, Land use classification and analysis, Impact prediction on surrounding land environment	
		HG	Ashok Kumar		Associated with FAE in studying hydro-geology pattern of study area, studying water and the impact of the project on ground water.	
2	Manikandan Manickam	EB	S.Saravanan	October to December 2023	Associated with the expert in baseline data collection related to ecology of the study area.	
		SC	Shishupal Singh		Associated with the expert in soil monitoring,	

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					secondary data collection on soil type, soil management practices, utilization of top soil.	
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TM-FAE:


S.No	Name of TM (FAE)	Functional Area	Approved FAE (to work under)	Period of involvement	Type of work	Signature
1	M.Prabu	LU	T.Srilatha	<u>March to May 2023</u>	Associated with FAE in preparing Land use map based on satellite imagery, Land use classification and analysis, Impact prediction on surrounding land environment	
		HG	Ashok Kumar		Associated with FAE in studying hydrogeological pattern of study area, Studying ground water and the impact of the project on ground water	
2	M. Manikandan	EB	S.Saravanan	March to May 2023	Associated with the expert in baseline data collection related to ecology of the study area	
		SC	Shishupal		Associated with the expert in	

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			Singh		Soil monitoring, secondary data collection on soil type, soil management practices, utilization of top soil	
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TM-FAA:						
S. No	Name of TM (FAA)	Functional Area	Approved FAE (to work under)	Period of involvement	Type of work	Signature
1	Suresh	WP	<i>Abirami Kaliaperumal</i>	March to May 2023	Associated with the expert in assessing existing water quality, studying impact of the project on surface and ground water quality, suggesting mitigation measures for minimizing impact	<i>M. Suresh</i>
		AP	<i>Dhanalakshmi Ramanathan</i>		Associated with expert in assessing existing air quality, impact of the project on ambient air and suggesting mitigation measures for	

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					air pollution	
2	S. Kamaraj	SC	Shishupal Singh	March to May 2023	Associated with the expert in Soil monitoring, secondary data collection on soil type, soil management practices, utilization of top soil	
		RH	S.V.Prashant		Associated with the expert in Identification of the Risk related to the mining activities. Preparation of emergency disaster management plan. Plan for supply of safety equipment for the workers	
3.	S. Asan Ali	WP	<i>Abirami Kaliaperumal</i>	March to May 2023	Associated with the expert in assessing existing water quality, studying impact of the project on surface and ground water quality, suggesting mitigation measures for minimizing	

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					impact	
		GEO	Valliappan Meyyappan		Associated with the expert in preparing Geological map, assessing stability of quarry slope faces and dump, management plan for mine stability, after use of mining quarry and geological features of the area	S. Asan ali
		AP	Dhanalakshmi Ramanathan		Associated with expert in assessing existing air quality, impact of the project on ambient air and suggesting mitigation measures for air pollution	
		NV	Dhanalakshmi Ramanathan		Associated with the expert in monitoring and analysis of blast induced ground vibration in order to develop the site-specific equation for its prediction,	

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					monitoring of fly rocks & air blast (noise), preparation of SOP's for the safety blasting practice in the mines.	
4.	Mownica. B	AP	Dhanalakshmi Ramanathan	March to May 2023	Associated with expert in assessing existing air quality, impact of the project on ambient air and suggesting mitigation measures for air pollution	Mownica. B
		NV	Dhanalakshmi Ramanathan		Associated with the expert in monitoring and analysis of blast induced ground vibration in order to develop the site-specific equation for its prediction, monitoring of fly rocks & air blast (noise), preparation of SOP's for the safety blasting practice in the mines.	



ANNEXURE-1

ந.க.எண்.818/கனிமம்/ 2022

புவியியல் மற்றும் சுரங்கத்துறை
மாவட்ட ஆட்சியர் அலுவலகம்,
தேனி.

நாள்: 06.01.2023.



குறிப்பாணை:

பொருள் : கனிமங்களும் குவாரிகளும் - சிறுகனிமம் - சாதாரண கற்கள் மற்றும் கிராவல் - தேனி மாவட்டம் - போடிநாயக்கனூர் வட்டம் - கோடாங்கிபட்டி கிராமம் - பட்டா புல எண்.110/3 (0.77.0), 110/4 (0.78.5), 110/5 (0.36.5), 127/1 (1.15.5), 127/2 (0.70.5)-ல் 3.78.0 ஹெக்டேர் பரப்புள்ள நிலத்திலுள்ள சாதாரண கற்கள் / கிராவல் வெட்டியெடுக்க 10 ஆண்டுகளுக்கு குவாரி குத்தகை உரிமம் கோரி திரு.ரா.சீனிவாசன், த/பெ.ராமசுப்பு என்பவர் அளித்த விண்ணப்பம் செய்தது - ஏற்பளிக்கப்பட்ட சுரங்கத்திட்டம் பெற்று சமர்ப்பிக்கக் கோருதல் - தொடர்பாக.

- பார்வை:
1. திரு.ரா.சீனிவாசன், த/பெ.ராமசுப்பு, எண்.2-5-16, ராஜாஜி தெரு, இலட்சுமிபுரம், பெரியகுளம் வட்டம், தேனி மாவட்டம் விண்ணப்பம் நாள்: 09.09.2021 மற்றும் 19.12.2022.
 2. வருவாய் கோட்டாட்சியர், உத்தமபாளையம், கடிதம் ந.க.எண்.2595/2021/அ.4, நாள்:12.04.2022.
 3. உதவி இயக்குநர், புவியியல் மற்றும் சுரங்கத்துறை, தேனி புலத்தணிக்கை அறிக்கை நாள்:04.01.2023.

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1. தேனி மாவட்டம், போடிநாயக்கனூர் வட்டம், கோடாங்கிபட்டி கிராமம், புல எண். 110/3 (077.0), 110/4 (0.78.5), 110/5 (0.36.5.), 127/1 (1.15.5), 127/2 (0.70.5)-இல் 3.78.0 ஹெக்டேர் பட்டா நிலத்தில் இருந்து 10 (பத்து) ஆண்டுகளுக்கு உடைகல் மற்றும் கிராவல் வெட்டியெடுக்க திரு.ரா.சீனிவாசன், த/பெ.ராமசுப்பு என்பவர் பார்வை 1-ல் கண்டுள்ளபடி உரிய ஆவணங்களுடன் விண்ணப்பம் அளித்துள்ளார்.

2. மேற்படி விண்ணப்பங்கள் தொடர்பாக உத்தமபாளையம் வருவாய் கோட்டாட்சியர் மற்றும் உதவி இயக்குநர், புவியியல் மற்றும் சுரங்கத்துறை, தேனி ஆகியோர் புலத்தணிக்கை மேற்கொண்டு தேனி மாவட்டம், போடிநாயக்கனூர் வட்டம், கோடாங்கிபட்டி கிராமம், புல எண். 110/3 (077.0), 110/4 (0.78.5), 110/5 (0.36.5.), 127/1 (1.15.5), 127/2 (0.70.5)-இல் 3.78.0 ஹெக்டேர் பட்டா பரப்பில் திரு.ரா.சீனிவாசன், த/பெ.ராமசுப்பு என்பவருக்கு சாதாரண கற்கள் மற்றும் கிராவல் மண் குவாரி உரிமம் வழங்க கீழ்க்கண்ட நிபந்தனைகளுக்குப்பட்டு அனுமதி வழங்கலாம் என பரிந்துரை செய்துள்ளனர்.

நிபந்தனைகள்:

1. விண்ணப்ப புலங்களில் புல எண்.127/1-ற்கு மேற்கு பகுதியில் வடக்கு தெற்காக செல்லும் பட்டா ஓடை மற்றும் தென்மேற்கு பகுதியில் புல எண்.110/2-ல் செல்லும் அரசு புறம்போக்கு ஓடை ஆகியவற்றிற்கு 50 மீட்டர் பாதுகாப்பு இடைவெளி விடப்பட வேண்டும்.



2. விண்ணப்ப புல எண்.110/3, 110/4, 110/5 கிழக்கு பகுதியில் புல எண்.110/6 மற்றும் விண்ணப்ப புல எண்.127/1, 127/2-ல் வடக்கு பகுதியில் புல எண்.127/3-ல் அமைந்துள்ள அரசு புறம்போக்கு வண்டிப்பாதைக்கு 10 மீட்டர் பாதுகாப்பு இடைவெளி விடப்பட வேண்டும்.
3. அருகில் உள்ள மட்டா நிலங்களுக்கு 7.5 மீட்டர் பாதுகாப்பு இடைவெளி விடப்பட வேண்டும்.
4. 1959-ஆம் வருடத்திய தமிழ்நாடு சிறுகனிம சலுகை விதிகள் விதி எண் 41-ன் படி ஏற்பளிக்கப்பட்ட சுரங்கத்திட்டத்தை 90 நாட்களுக்குள்ளும் அதனைத் தொடர்ந்து 1959-ஆம் வருடத்திய தமிழ்நாடு சிறுகனிம சலுகை விதிகள் விதி எண் 42-ன் படி மாநில சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையத்தின் இசைவு பெற்று சமர்ப்பிக்கப்படவேண்டும்.

3. எனவே, உத்தமபாளையம் வருவாய் கோட்டாட்சியர் மற்றும் உதவி இயக்குநர், புவியியல் மற்றும் சுரங்கத்துறை, தேனி ஆகியோரின் பரிந்துரை மற்றும் நிபந்தனைகளின் அடிப்படையில், தேனி மாவட்டம், போடிநாயக்கனூர் வட்டம், கோடாங்கிபட்டி கிராமம், புல எண். 110/3 (077.0), 110/4 (0.78.5), 110/5 (0.36.5.), 127/1 (1.15.5), 127/2 (0.70.5)-இல் 3.78.0 ஹெக்டேர் பரப்பில் 1959ம் வருட தமிழ்நாடு சிறுகனிம விதிகள், விதி எண்.19-ன் படி மேற்கண்ட நிபந்தனைகளுக்குட்பட்டு 10 (பத்து) வருட காலத்திற்கு திரு.ரா.சீனிவாசன், த/பெ.ராமசுப்பு என்பவருக்கு சாதாரண கற்கள் மற்றும் கிராவல் மணக் குவாரி உரிமம் வழங்குவதற்குரிய தகுதியான நிலப்பரப்பாக கருதப்படுகிறது.

4. தமிழ்நாடு சிறு கனிம சலுகை விதிகள்-1959 விதி எண். 41-ன்படி குவாரிப்பணி மேற்கொள்வது தொடர்பாக வரைவு சுரங்க திட்டத்தினை 90 தினங்களுக்குள் சமர்ப்பிக்குமாறு மனுதாரரைக் கேட்டுக்கொள்ளப்படுகிறது. 1959ம் வருடத்திய தமிழ்நாடு சிறுகனிம சலுகை விதிகள், விதி எண்.42-ன் படி சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையத்தின் இசைவினைப் பெற்று சமர்ப்பிக்கும் பட்சத்தில் குவாரி உரிமம் வழங்குவது தொடர்பான நடவடிக்கைகள் எடுக்கப்படும் என இதன் மூலம் தெரிவிக்கப்படுகிறது.

உதவி இயக்குநர்,
புவியியல் மற்றும் சுரங்கத்துறை,
தேனி.

பெறுநர்:
திரு.ரா.சீனிவாசன்,
த/பெ.வெ.ராமசுப்பு,
எண்.2-5-16, ராஜாஜி தெரு, இலட்சுமிபுரம்,
பெரியகுளம் வட்டம், தேனி மாவட்டம்



ANNEXURE-2

From
Thiru.S.Krishna Mohan,
Assistant Director,
Geology and Mining,
Theni.

To,
Thiru R.Seenivasan,
S/o.Ramasubbu,
No.2-5-6,Rajaji Street,
Lakshmipuram,
Periyakulam Taluk,
Theni District.

Roc. No.818/2021/Mines, dated.25.01.2023

Sub: Mines and Minerals - Minor Mineral - Gravel & Rough stone - Theni District - Bodinayakkanur Taluk - Kodangipatti Village - Patta land - in S.F. No.110/3,110/4,110/5,127/1 & 127/2 - Over an extent of 3.78,0 Hects - Quarry lease application preferred by Thiru R.Seenivasan - Precise area communicated - Draft Mining Plan submitted - Approval accorded -Regarding.

- Ref:
1. Quarry lease application preferred by Thiru R.Seenivasan, dated. Nil received by this office on 09.09.2021 and 19.12.2022.
 2. Revenue Divisional Officer, Uthamapalayam letter Roc.No.2595/2021/24,dated.12.04.2022.
 3. The Assistant Director, Theni memo Roc. No.818/Mines/2021, dated.06.01.2023.
 4. Letter dated.Nil received from Thiru R.Seenivasan 12.01.2023

Thiru R.Seenivasan has preferred and submitted an application dated. 09.09.2021 and 19.12.2022 for the grant of quarry lease to quarry Gravel and Rough stone in SF.Nos. 110/3,110/4,110/5,127/1 & 127/2, over a total extent of 3.78.0 Hects of Kodangipatti Village, Bodinayakkanur Taluk under Rule 19 of Tamil Nadu Minor Mineral Concession Rules, 1959.

Based on reports and recommendations of the Revenue Divisional Officer, Uthamapalayam and Assistant Director, Department

of Geology and Mining, Theni precise area was communicated by Assistant Director to Thiru R. Seenivasan with a direction to submit the draft mining plan as stipulated in rule 41 of Tamil Nadu Minor Mineral Concession Rules, 1959.

Accordingly, Thiru R. Seenivasan has submitted the draft Mining Plan and the same has been examined in detail and observed that the applicant has proposed to quarry 3,61,855 cbm of Rough stone and 74,232cbm of Gravel up to a depth of 38 meters from the surface level for a period of 5 years and it is found to be in accordance with the guidelines issued by the Commissioner of Geology and Mining, Chennai vide letter Roc.No.3868/LC/2012 dated 19.11.2012. Therefore, the mining plan submitted by Thiru R. Seenivasan in respect of the subject area is hereby approved subject to the following conditions:

- I. Safety distance of 50 meters should be provided to the Government poramboke odai situated in lease applied S.F.No.127/1 and 50 meters for the Government poramboke odai situated in S.F.No.110/2 which is located on South western side of the lease applied area.
- II. Safety distance of 10 meters should be provided to the Government Poramboke Vandi Pathai situated in S.F.No.110/6 and 127/3 which is located on the East and Northern side of the lease applied area.
- III. Safety distance of 7.5 meters should be provided to the adjoining patta lands.
- IV. That the mining plan is approved without prejudice to any other Law applicable to the quarry lease from time to time whether such Laws are made by the Central

Government, State Government or any other authority.

- V. This 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, Indian Explosives Act, 1884(Central Act IV of 1884) and the rules made there under the Tamil Nadu Minor Mineral Concession Rules, 1959.
- VI. That the mining plan is approved without prejudice to any other order or direction from any court of competent jurisdiction.
- VII. Quarrying shall be done as per the approved Mining Plan and that the mining plan is approved without prejudice to any other law applicable to the quarry lease from time to time whether such laws are made by the Central Government, State Government or any other authority.
- VIII. If anything is found to be concealed as required by the Mines Act in the contents of the Mining Plan and the proposal for rectification has not been made, the approval shall be deemed to have been withdrawn with immediate effect.
- IX. Safety distances mentioned in the precise area has to be maintained for the entire duration of the lease period.

- X. Waste material should be dumped within the lease granted area as earmarked in the Mining Plan.
- XI. 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.
- XII. If any violation is found during quarrying operation, the penal provisions of Tamil Nadu Minor Mineral Concession Rules 1959 and other rules and act in force will attract.
- XIII. The applicant shall strictly adhere to the statutory and safety requirements.

Encl: Approved Mining Plan.

25-01-2011
Assistant Director,
Dept. of Geology and Mining,
Theni.



ANNEXURE-3

From

Thiru.S.Krishna Mohan,
Assistant Director,
Geology and Mining,
Theni.

To

Thiru R.Seenivasan,
S/o.Ramasubbu,
No.2-5-6,Rajaji Street,
Lakshmipuram,
Periyakulam Taluk,
Theni District.

Roc. No.818/2021/Mines, dated.09.02.2023

Sub: Mines and Minerals - Minor Mineral - Gravel & Rough stone - Theni District - Bodinayakkanur Taluk - Kodangipatti Village - Patta land - in S.F. No.110/3,110/4,110/5,127/1 & 127/2 - Over an extent of 3.78.0 Hects - Quarry lease application preferred by Thiru R.Seenivasan - Precise area communicated - Draft Mining Plan submitted - Approval accorded - 500 meter radius quarry details - Requested - Regarding.

- Ref: 1. Quarry lease application preferred by Thiru R.Seenivasan, dated. Nil received by this office on 09.09.2021 and 19.12.2022.
2. The Assistant Director, Theni memo Roc. No.818/Mines/2021, dated.06.01.2023
3. Mining Plan approved Roc No.818/Mines/2021,dated.25.01.2021
4. Requestation letter received from applicant on 06.02.2023

Thiru R.Seenivasan has preferred and submitted an application dated. 09.09.2021 and 19.12.2022 for the grant of quarry lease to quarry Gravel and Rough stone in SF.Nos. 110/3,110/4,110/5,127/1 & 127/2, over a total extent of 3.78.0 Hects of Kodangipatti Village, Bodinayakkanur Taluk under Rule 19 of Tamil Nadu Minor Mineral Concession Rules, 1959.



Based on reports and recommendations of the Revenue Divisional Officer, Uthamapalaym and Assistant Director, Department of Geology and Mining, Theni precise area was communicated by Assistant Director to Thiru R.Seenivasan with a direction to submit the draft mining plan as stipulated in rule 41 of Tamil Nadu Minor Mineral Concession Rules, 1959.

Accordingly, Thiru R.Seenivasan has submitted the draft Mining Plan and the same have been approved on.25.01.2023. In this connection the applicant has requested to furnish the details of quarry lease situated within 500 mts radius from the subject quarry for obtaining Environmental Clearance from the state level Environment Impact Assessment Authority.

In this connection it is stated that the following existing and abandoned quarries are located within 500 radius distance from the proposed area for clearance.

A. Existing Quarries

S. No	Name of the owner	Village and Taluk	S.F.No.	Extent (in Hectrs)	Collector's Proc No.& Date.	Lease Period
1.	Thiru M.Thiyagarajan	Kodangipatti Village & Bodinayakkkanur	156/1, 156/2A,& 156/3A	2.7 3.0	Roc No.158/Mines /2018,dated.08.02.2023	10.02.2023 to 09.02.2033

B. Abandoned/Expired Quarries

S.No.	Name of the owner	Village and Taluk	S.F.No.	Extent (in Hects)	Collector's Proc No.& Date.	Lease Period
1.	NIL					

C. Present Proposed Quarries

S.N o.	Name of the owner	Village and Taluk	S.F.No.	Extent (in Hects)	Collector's Proc No.& Date.	Lea se Peri od
1.	Thiru R.Seenivasan	Kodangipatti Village & Bodinayakanur	110/3,110/4,110/5,127/1 & 127/2	3.78.0	-	-

Assistant Director,
Dept. of Geology and Mining,
Theni.

Copy to,
The Chairman,
State level Environment
Impact Assessment Authority,
3rd floor, Panagal Maligai,
No.1, Jeenis Road,
Saidapet, Chennai.



ANNEXURE-4

Topographical View of Kodangipatti Village Rough

Stone And Gravel Quarry



Name of the Applicant : R.SEENIVASAN

S.F.NO : 110/3,110/4,110/5,127/1,127/2

Extent : 3.78 Hectare

Name of the Village : Kodangipatty

Name of the Taluk : Bodinayakkanur

Name of the District : Theni

Place : kodangipatty

Date : 10/01/2023


10/1/2023
VILLAGE ADMINISTRATIVE OFFICER
KODANGIPATTY VILLAGE
BODINAYAKANUR TALUK
THENI DISTRICT

சான்று

தேனி மாவட்டம் போடிநாயக்கனூர் கோடாங்கிபட்டி கிராமம் பட்டா புல எண்கள் 110/3 , 110/4 , 110/5 , 127/1 , 127/2-ன் விஸ்தீரணம் 3.78 ஹெக்டர் பரப்பில் உடைகல் மற்றும் கிராவல் வெட்டி எடுக்க தேனி மாவட்டம், பெரியகுளம் வட்டம், இலட்சுமிபுரம் எண் 2-5-16 ராஜாஜி தெருவில், வசிக்கும் திரு.ரா. சீனிவாசன் த/பெ. ராமசுப்பு என்பவர் குவாரி குத்தகை உரிமம் கோரி விண்ணப்பித்துள்ளார். மேற்கண்ட விண்ணப்ப புலங்களைச் சுற்றி 300 (முன்னூறு) மீட்டர் சுற்றளவில் பொதுமக்கள் வசிக்கும் குடியிருப்புகளோ அங்கிகரிக்கப்பட்ட மனையிடங்களோ, ஏதுமில்லை. மேலும், புராதன சின்னங்கள், கோயில், மசூதி, சர்ச் போன்ற வழிபாட்டுத்தலங்கள் விலையுயர்ந்த மரங்கள், பள்ளி, கல்லூரிகள், மயானபூமி ஏதுமில்லை என தெரிவிக்கப்படுகிறது.


10/11/2023
VILLAGE ADMINISTRATIVE OFFICER
KODANGIPATTY VILLAGE
BODINAYAKANUR TALUK
THENI DISTRICT



ANNEXURE-5



தமிழ்நாடு தமில்நாடு TAMILNADU 21 APR 2023

CW 696105

R. Seenivasan
Theni District

K. SANKAR
STAMP VENDOR
LICENCE No: 1481/94,
No. 2, MADLEY ROAD,
T. NAGAR, CHENNAI-12

AFFIDAVIT TO SEIAA, TAMIL NADU

I Thiru. R. Seenivasan, S/o.V.Ramasubbu, residing at No.2-5-16, Rajaji Street, Lakshmpuram, Periyakulam Taluk, Theni District. Do hereby solemnly declare and sincerely affirm that, I have applied for getting environment clearance to SEIAA, Tamil Nadu for quarry lease for Rough Stone/Jelly and Gravel quarry over an extent of 3.78.0hectares of Patta land in S.F.Nos. 110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State,

1. I swear to state and confirm that within 10km area of the quarry site, we have applied for environmental clearance, none of the following is situated
 - a. Protected areas notified under the wild life (Protection) Act, 1972 (NBWL).
Wild Life Sanctuary: There is no wild life animal sanctuary within 10Kms radius from the project site area under the Wildlife (Protection) Act, 1972.
 - b. Critically polluted areas as notified by the central pollution control board constituted under water (Prevention and control of Pollution) Act 1974.



c. There are No inter State border within a radius of 10Kms radius from the boundary of the proposed site.

2. I will complete the following Corporate Environment Responsibility (CER) activities before commencement of the quarrying activities.

CER Activity	Project cost (Rs)	CER cost 2.0% of Project cost (Rs)
Carrying out various developmental works in the nearby region based on the need of the locals.	Rs.93,18,000/-	Rs.1,86,360/-
Total cost Allocation	Rs.93,18,000/-	Rs.1,86,360/-

3. Details of quarry within 500m radius from the applied area:

Sl.No	Name of the Quarry Owner	Village and Taluk	S.F.No	Extent in Hectare	Collectors' 's Proceeding No & date	Lease period
Existing Quarries						
1	Thiru.Thiyagarajan	Kodangipatti Village, Bodinaickanur Taluk	156/1, 156/2A, & 156/3A	2.73.0	Roc.No.158/Mines/2018, Dated.08.02.2023	10.02.2023 To 09.02.2033
Abandoned / Expired Quarries						
NIL						
Present Proposed Quarries						
1	R. Seenivasan	Kodangipatti Village Bodinaickanur Taluk	110/3, 110/4, 110/5, 127/1 and 127/2	3.78.0.Ha	--	--

The total lease within the 500m radius (Proposed + Existing + Present Proposed) (0+1+1) works out to 6.51.0ha including this lease area.

4. There will not be hindrance or disturbance to the people living no enrooted/ nearby our quarry site while transporting the mineral and due to quarrying activities.

5. There is no approved habitation within 300m radius from the periphery of our quarry.



(Handwritten signature)

6. I swear that afforestation will be carried out during the course of quarrying operation and maintained.
7. The required insurance will be taken in the name of the laborers working in our quarry site.
8. The existing road from the main road to quarry is in good condition and the same will be maintained and utilized for Transportation of Rough Stone/Jelly and Gravel.
9. I will not engage any child labor in our quarry site and I aware that engaging child labor is punishable under the law.
10. All types of safety / protective equipment will be provided to all the laborers working in our quarry.
11. No permanent structures, temple etc., are located within 500m radius from the periphery of our quarry.

I ensure to do the social and Environment commitment as mentioned in the Mining plan to the best of our knowledge.

Notary Sign & Seal



Quarry owner sign & Seal

Seenivasan
24/4/2023
K. KAMARAJ, M.A., B.L.,
ADVOCATE & NOTARY
Adithya Builders
Res & Office: No. 6, Desanathan Colony,
West Mambalam, Chennai - 600 033
Cell: 93800 46411

R. Seenivasan



ANNEXURE-6



Shrient Analytical and Research Labs Pvt. Ltd.

418/15, Dharga Road, Perungalathur, West Tambaram, Chennai- 600045.
Phone No: 9841074399 / 9698141777 E-mail : Info@shrientanalytical.com
Website : www.shrientanalytical.com

TEST REPORT

Report No.	SARL/23-961	Report Date.	21.10.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		


Sample Location	A1-Within Mine Lease Area
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-961	Sample Received on	16.10.2023
Sample Collected by	LABORATORY	Test Commenced on	16.10.2023
Sample Collected Date	10.10.2023	Test Completed on	21.10.2023
Temperature	33°C	Relative Humidity	45%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	56.8	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	27.4	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.5	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	11.8	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. EDL- Below detectable limit, DL -Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd


Verified 21/10/23




Authorized Signatory

J. GNANAPRAKASAM
Technical Manager

Please Contact:
For any Technical Issues & Complaints: vimalnath@shrientanalytical.com
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Corporate Address: No. 32, SAPTHAGIRI NAGAR, PUZHUTHIVAKKAM, CHENNAI - 600081. ☎: 044 42113369
CIN : U74999TN2017PTC116807 / GST No. 33AA YCS7325R1ZA / Pan No: AAYCS7325R



Shrient Analytical and Research Labs Pvt. Ltd.

416/15, Dharga Road, Perungalathur, West Tambaram, Chennai- 600045.
Phone No: 9841074398 / 9698141777 E-mail : Info@shrientanalytical.com
Website : www.shrientanalytical.com

TEST REPORT

Report No.	SARL/23-962	Report Date.	21.10.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A2-Boothipuram Tp
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-962	Sample Received on	16.10.2023
Sample Collected by	LABORATORY	Test Commenced on	16.10.2023
Sample Collected Date	10.10.2023	Test Completed on	21.10.2023
Temperature	33°C	Relative Humidity	45%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	48.7	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	22.4	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.4	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.6	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit D.L.-Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

Verified
21/10/23



Authorized Signatory

J. GNANAPRAKASAM
Technical Manager

Please Contact:

For any Technical Issues & Complaints: vimalnath@shrientanalytical.com

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Phone No: 9841074398 / 9698141777 E-mail : Info@shrientanalytical.com
Website : www.shrientanalytical.com

TEST REPORT

Report No.	SARL/23-963	Report Date.	21.10.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaikkanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A1-Within Mine Lease Area		
Positioned height of Sampler	1.5 M above Ground Level		

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-963	Sample Received on	16.10.2023
Sample Collected by	LABORATORY	Test Commenced on	16.10.2023
Sample Collected Date	11.10.2023	Test Completed on	21.10.2023
Temperature	26°C	Relative Humidity	82%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	55.5	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	26.4	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.9	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.7	80
5	Carbon Monoxide (CO)	SARL/TOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL - Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

Verified
21/10/23



Authorized Signatory

J. GNANAPRAKASAM
Technical Manager

Please Contact:

For any Technical Issues & Complaints: vimalnath@shrientanalytical.com

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CIN : U74999TN2017PTC116807 / GSTIN: 33AAYCS7325R1ZA / Pan No: AAYCS7325R



Shrient Analytical and Research Labs Pvt. Ltd.

416/15, Dharga Road, Perungalathur, West Tambaram, Chennai- 600045.
Phone No: 9841074398 / 9698141777 E-mail : Info@shrientanalytical.com
Website : www.shrientanalytical.com

TEST REPORT

Report No.	SARL/23-964	Report Date.	21.10.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A2-Boothipuram Tp
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-964	Sample Received on	16.10.2023
Sample Collected by	LABORATORY	Test Commenced on	16.10.2023
Sample Collected Date	11.10.2023	Test Completed on	21.10.2023
Temperature	26°C	Relative Humidity	82%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	43.5	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	20.1	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.5	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	6.5	80
5	Carbon Monoxide (CO)	SARL/OP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL - Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

Verified 21/10/23



J. Gnana Prakasham
Authorized Signatory

J. GNANAPRAKASAM
Technical Manager

Please Contact:

For any Technical Issues & Complaints: vimalnath@shrientanalytical.com

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Phone No: 9841074398 / 9698141777 E-mail : Info@shrientanalytical.com
Website : www.shrientanalytical.com

TEST REPORT

Report No.	SARL/23-965	Report Date.	21.10.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A3-Meenakshipuram Bodi
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-965	Sample Received on	16.10.2023
Sample Collected by	LABORATORY	Test Commenced on	16.10.2023
Sample Collected Date	12.10.2023	Test Completed on	21.10.2023
Temperature	31°C	Relative Humidity	58%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	50.2	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	24.3	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.4	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.7	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL - Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

21/10/23
Verified



21/10/23
Authorized Signatory

END OF THE REPORT

J. GNANAPRAKASAM
Technical Manager

Please Contact:
For any Technical Issues & Complaints: vimalnath@shrientanalytical.com

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CIN : U74999TN2017PTC116807 / GST No. 33AAYCS7325R1ZA / Pan No: AAYCS7325R



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Phone No: 9841074398 / 9698141777 E-mail : Info@shrientanalytical.com
Website : www.shrientanalytical.com

TEST REPORT

Report No.	SARL/23-966	Report Date.	21.10.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS 5182 (Part 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A4-Teni Alinagaram M		
Positioned height of Sampler	1.5 M above Ground Level		

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-966	Sample Received on	16.10.2023
Sample Collected by	LABORATORY	Test Commenced on	16.10.2023
Sample Collected Date	12.10.2023	Test Completed on	21.10.2023
Temperature	31°C	Relative Humidity	58%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	49.9	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	23.1	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.5	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.5	80
5	Carbon Monoxide (CO)	SARL/10P/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL - Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

21/10/23
Verified



END OF THE REPORT

21/10/23
Authorized Signatory

J. GNANAPRAKASAM
Technical Manager

Please Contact:

For any Technical Issues & Complaints: vimalnath@shrientanalytical.com

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Phone No: 9841074398 / 9698141777 E-mail : info@shrientanalytical.com
Website : www.shrientanalytical.com

TEST REPORT

Report No.	SARJ/23-967	Report Date.	21.10.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A3-Meenakshipuram Bodi
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-967	Sample Received on	16.10.2023
Sample Collected by	LABORATORY	Test Commenced on	16.10.2023
Sample Collected Date	13.10.2023	Test Completed on	21.10.2023
Temperature	32°C	Relative Humidity	43%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	51.9	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	24.5	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.4	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.7	80
5	Carbon Monoxide (CO)	SARL/OP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL-Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

Verified 21/10/23



Authorized Signatory

J. GNANAPRAKASAM
Technical Manager

Please Contact:

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TEST REPORT

Report No.	SARL/23-968	Report Date.	21.10.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaikanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A4-Teni Alinagaram M		
Positioned height of Sampler	1.5 M above Ground Level		

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-968	Sample Received on	16.10.2023
Sample Collected by	LABORATORY	Test Commenced on	16.10.2023
Sample Collected Date	13.10.2023	Test Completed on	21.10.2023
Temperature	32°C	Relative Humidity	43%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	51.7	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	22.6	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.7	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.9	80
5	Carbon Monoxide (CO)	SARL/10P/013 (Issue No:01, Issue Date 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL -Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

Verified 21/10/23



Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

Please Contact:
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TEST REPORT

Report No.	SARL/23-969	Report Date.	21.10.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A5-Kodangipatti
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-969	Sample Received on	16.10.2023
Sample Collected by	LABORATORY	Test Commenced on	16.10.2023
Sample Collected Date	14.10.2023	Test Completed on	21.10.2023
Temperature	31°C	Relative Humidity	45%
Sample Condition	Fit for Analysis		


S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	45.4	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	20.8	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.4	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.4	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL -Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd


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J. GNANAPRAKASAM
Technical Manager

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Website : www.shrientanalytical.com

TEST REPORT

Report No.	SARL/23-970	Report Date.	21.10.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaikkanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A5-Kodangipatti		
Positioned height of Sampler	1.5 M above Ground Level		

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-970	Sample Received on	16.10.2023
Sample Collected by	LABORATORY	Test Commenced on	16.10.2023
Sample Collected Date	15.10.2023	Test Completed on	21.10.2023
Temperature	31°C	Relative Humidity	45%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	47.6	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	22.1	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.4	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.7	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL--Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

Verified 21/10/23



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J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/23-971	Report Date.	28.10.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A5-Kodangipatti
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-971	Sample Received on	23.10.2023
Sample Collected by	LABORATORY	Test Commenced on	23.10.2023
Sample Collected Date	17.10.2023	Test Completed on	28.10.2023
Temperature	31°C	Relative Humidity	49%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	55.7	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	26.5	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.2	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	10.4	80
5	Carbon Monoxide (CO)	SARL/10P/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL - Below detectable limit. DL - Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

Verified 26/10/23



Authorized Signatory

J. GNANAPRAKASAM
Technical Manager

Please Contact:

For any Technical Issues & Complaints: vimalnath@shrientanalytical.com

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TEST REPORT

Report No.	SARL/23-972	Report Date.	28.10.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaikkanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A5-Kodangipatti		
Positioned height of Sampler	1.5 M above Ground Level		

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-972	Sample Received on	23.10.2023
Sample Collected by	LABORATORY	Test Commenced on	23.10.2023
Sample Collected Date	18.10.2023	Test Completed on	28.10.2023
Temperature	31°C	Relative Humidity	49%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	51.2	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	23.5	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.7	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.7	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL - Below detectable limit. DL - Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

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28/10/23



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J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/23-973	Report Date.	28.10.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A3-Meenakshipuram Bodi
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-973	Sample Received on	23.10.2023
Sample Collected by	LABORATORY	Test Commenced on	23.10.2023
Sample Collected Date	19.10.2023	Test Completed on	28.10.2023
Temperature	31°C	Relative Humidity	48%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	57.2	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	26.5	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.3	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	11.1	80
5	Carbon Monoxide (CO)	SARL/10P/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL - Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

Verified 28/10/23



Authorized Signatory

J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARI/23-974	Report Date.	28.10.2023
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Customer Name & Address	Thiru.K. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

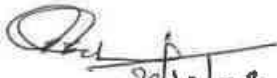
Sample Location	A4-Teni Alinagaram M		
Positioned height of Sampler	1.5 M above Ground Level		

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-974	Sample Received on	23.10.2023
Sample Collected by	LABORATORY	Test Commenced on	23.10.2023
Sample Collected Date	19.10.2023	Test Completed on	28.10.2023
Temperature	31°C	Relative Humidity	48%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	55.5	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	25.2	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.3	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.7	80
5	Carbon Monoxide (CO)	SARL/OP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL - Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

Verified 
28/10/23



Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

Please Contact:

For any Technical Issues & Complaints: vimalnath@shrientanalytical.com

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LAB SERVICES FOR : *Food *Water *Milk *Environment *Academic & Industry Segment

Corporate Address: No. 32, SAPTHAGIRI NAGAR, PUZHUTHIVAKKAM, CHENNAI - 600091, C: 044 42113369

CIN : U74999TN2017PTC116807 / GST 26. 33AAYCS7325R1ZA / Pan No: AAYCS7325R



Shrient Analytical and Research Labs Pvt. Ltd.

416/15, Dharga Road, Perungalathur, West Tambaram, Chennai- 600045.
Phone No: 9841074398 / 9898141777 E-mail : Info@shrientanalytical.com
Website : www.shrientanalytical.com

TEST REPORT

Report No.	SARL/23-975	Report Date.	28.10.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS -- 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A3-Meenakshipuram Bodi
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-975	Sample Received on	23.10.2023
Sample Collected by	LABORATORY	Test Commenced on	23.10.2023
Sample Collected Date	20.10.2023	Test Completed on	28.10.2023
Temperature	31°C	Relative Humidity	47%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	54.6	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	25.0	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.5	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	10.4	80
5	Carbon Monoxide (CO)	SARL/10P/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB, BDL- Below detectable limit, TL--Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd


Verified 28/10/23




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Technical Manager

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GIN : U74999TN2017PTC116807 / GST No. 33AAVCS7325R1ZA / Pan No: AAVCS7325R



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Website : www.shrientanalytical.com

TEST REPORT

Report No.	SARL/23-976	Report Date.	28.10.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaikkanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A4-Teni Alinagaram M		
Positioned height of Sampler	1.5 M above Ground Level		

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CIE-976	Sample Received on	23.10.2023
Sample Collected by	LABORATORY	Test Commenced on	23.10.2023
Sample Collected Date	20.10.2023	Test Completed on	28.10.2023
Temperature	31°C	Relative Humidity	47%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	52.9	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	24.2	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.9	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.1	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (DL - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL -Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

28/10/23
Verified



28/10/23
Authorized Signatory

J. GNANAPRAKASAM
Technical Manager

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Website : www.shrientanalytical.com

TEST REPORT

Report No.	SARL/23-977	Report Date.	28.10.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A1-Within Mine Lease Area		
Positioned height of Sampler	1.5 M above Ground Level		

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-977	Sample Received on	23.10.2023
Sample Collected by	LABORATORY	Test Commenced on	23.10.2023
Sample Collected Date	21.10.2023	Test Completed on	28.10.2023
Temperature	31°C	Relative Humidity	50%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	52.7	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	25.2	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.3	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.6	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL -Detectable limit.

28/10/23
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For Shrient Analytical and Research Labs Pvt. Ltd

28/10/23
Authorized Signatory

J. GNANAPRAKASAM
Technical Manager

Please Contact:

For any Technical Issues & Complaints: vimalnath@shrientanalytical.com

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Website : www.shrientanalytical.com

TEST REPORT

Report No.	SARL/23-978	Report Date.	28.10.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaikkanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A2-Boothipuram Tp		
Positioned height of Sampler	1.5 M above Ground Level		

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-978	Sample Received on	23.10.2023
Sample Collected by	LABORATORY	Test Commenced on	23.10.2023
Sample Collected Date	21.10.2023	Test Completed on	28.10.2023
Temperature	31°C	Relative Humidity	50%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	50.9	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	23.4	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.5	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.9	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL -Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

Verified  28/10/23



Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

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For any Technical Issues & Complaints: vimalnath@shrientanalytical.com

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Website : www.shrientanalytical.com

TEST REPORT

Report No.	SARL/23-979	Report Date.	28.10.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaikkanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A1-Within Mine Lease Area
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-979	Sample Received on	23.10.2023
Sample Collected by	LABORATORY	Test Commenced on	23.10.2023
Sample Collected Date	22.10.2023	Test Completed on	28.10.2023
Temperature	32°C	Relative Humidity	46%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	49.2	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	26.8	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.2	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ²	7.9	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL - Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd


28/10/23
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J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/23-980	Report Date.	28.10.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A2-Boothipuram Tp
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-980	Sample Received on	23.10.2023
Sample Collected by	LABORATORY	Test Commenced on	23.10.2023
Sample Collected Date	22.10.2023	Test Completed on	28.10.2023
Temperature	32°C	Relative Humidity	46%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	47.1	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	21.7	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.2	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.4	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL.-Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

Verified 28/10/23



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TEST REPORT

Report No.	SARL/23-981	Report Date.	04.11.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A1- Within Mine Lease Area
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHF-981	Sample Received on	30.10.2023
Sample Collected by	LABORATORY	Test Commenced on	30.10.2023
Sample Collected Date	24.10.2023	Test Completed on	04.11.2023
Temperature	33°C	Relative Humidity	41%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	52.7	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	25.4	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.8	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.2	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L. - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL - Below detectable limit. DL - Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

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04/11/23



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Website : www.shrientanalytical.com

TEST REPORT

Report No.	SARL/23-982	Report Date.	04.11.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaikkanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A2-Boothipuram Tp		
Positioned height of Sampler	1.5 M above Ground Level		

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-982	Sample Received on	30.10.2023
Sample Collected by	LABORATORY	Test Commenced on	30.10.2023
Sample Collected Date	24.10.2023	Test Completed on	04.11.2023
Temperature	33°C	Relative Humidity	41%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	47.9	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	22.1	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.3	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.5	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL -Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

Verified 04/11/23



Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

Please Contact:
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TEST REPORT

Report No.	SARL/23-983	Report Date.	04.11.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A1-Within Mine Lease Area
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-983	Sample Received on	30.10.2023
Sample Collected by	LABORATORY	Test Commenced on	30.10.2023
Sample Collected Date	25.10.2023	Test Completed on	04.11.2023
Temperature	32°C	Relative Humidity	43%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	50.5	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	24.8	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.1	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.2	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL -Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

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J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/23-984	Report Date.	04.11.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodimaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS 5182 (Part 14:2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A2-Boothipuram Tp
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-984	Sample Received on	30.10.2023
Sample Collected by	LABORATORY	Test Commenced on	30.10.2023
Sample Collected Date	25.10.2023	Test Completed on	04.11.2023
Temperature	32°C	Relative Humidity	43%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	45.9	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	21.1	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.0	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.1	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL – Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

Verified *[Signature]*
A/11/23



Authorized Signatory

J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/23-985	Report Date.	04.11.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3,78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A3-Meenakshipuram Bodi
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-985	Sample Received on	30.10.2023
Sample Collected by	LABORATORY	Test Commenced on	30.10.2023
Sample Collected Date	26.10.2023	Test Completed on	04.11.2023
Temperature	31°C	Relative Humidity	51%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	53.8	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	24.5	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.8	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.4	80
5	Carbon Monoxide (CO)	SARL/ICP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL -Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

Verified 04/11/23



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J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARI/23-986	Report Date.	04.11.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.P.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaikkanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A4-Teni Alinagaram M		
Positioned height of Sampler	1.5 M above Ground Level		

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARI/A/CHE-986	Sample Received on	30.10.2023
Sample Collected by	LABORATORY	Test Commenced on	30.10.2023
Sample Collected Date	26.10.2023	Test Completed on	04.11.2023
Temperature	31°C	Relative Humidity	51%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	50.7	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	23.5	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.6	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.8	80
5	Carbon Monoxide (CO)	SARI/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL. (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL.- Below detectable limit. DL -Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

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Technical Manager

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TEST REPORT

Report No.	SARL/23-987	Report Date.	04.11.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patia land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A3-Meenakshipuram Bodi
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-987	Sample Received on	30.10.2023
Sample Collected by	LABORATORY	Test Commenced on	30.10.2023
Sample Collected Date	27.10.2023	Test Completed on	04.11.2023
Temperature	32°C	Relative Humidity	48%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	56.6	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	26	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.9	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	10.8	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL - Below detectable limit. DL - Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

Verified 04/11/23



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J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/23-988	Report Date.	04.11.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A4-Teni Alinagaram M		
Positioned height of Sampler	1.5 M above Ground Level		

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CIE-988	Sample Received on	30.10.2023
Sample Collected by	LABORATORY	Test Commenced on	30.10.2023
Sample Collected Date	27.10.2023	Test Completed on	04.11.2023
Temperature	32°C	Relative Humidity	48%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	49.9	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	23.7	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.6	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.1	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (DL - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL -Detectable limit

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TEST REPORT

Report No.	SARL/23-989	Report Date.	04.11.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A5-Kodangipatti
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-989	Sample Received on	30.10.2023
Sample Collected by	LABORATORY	Test Commenced on	30.10.2023
Sample Collected Date	28.10.2023	Test Completed on	04.11.2023
Temperature	31°C	Relative Humidity	54%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	50.9	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	24.3	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.5	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.6	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL - Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd


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TEST REPORT

Report No.	SARL/23-990	Report Date.	04.11.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A5-Kodangipatti
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-990	Sample Received on	30.10.2023
Sample Collected by	LABORATORY	Test Commenced on	30.10.2023
Sample Collected Date	29.10.2023	Test Completed on	04.11.2023
Temperature	31°C	Relative Humidity	54%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	52.6	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	25.4	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.8	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.4	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL -Detectable limit.

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For Shrient Analytical and Research Labs Pvt. Ltd

Authorized Signatory

J. GNANAPRAKASAM
Technical Manager

Please Contact:

For any Technical Issues & Complaints: vimalnath@shrientanalytical.com

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Phone No: 9841074398 / 9698141777 E-mail : Info@shrientanalytical.com
Website : www.shrientanalytical.com

TEST REPORT

Report No.	SARL/23-991	Report Date.	11.11.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A5-Kodangipatti		
Positioned height of Sampler	1.5 M above Ground Level		

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-991	Sample Received on	06.11.2023
Sample Collected by	LABORATORY	Test Commenced on	06.11.2023
Sample Collected Date	31.10.2023	Test Completed on	11.11.2023
Temperature	29°C	Relative Humidity	66%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	49.7	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	22.6	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.6	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.5	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL - Detectable limit.

Verified  11/11/23



For Shrient Analytical and Research Labs Pvt. Ltd

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END OF THE REPORT

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TEST REPORT

Report No.	SARL/23-992	Report Date.	11.11.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A5-Kodangipatti
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-992	Sample Received on	06.11.2023
Sample Collected by	LABORATORY	Test Commenced on	06.11.2023
Sample Collected Date	01.11.2023	Test Completed on	11.11.2023
Temperature	32°C	Relative Humidity	54%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	46.6	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	22.7	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.4	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.1	80
5	Carbon Monoxide (CO)	SARL/IOF/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL.-Detectable limit.

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TEST REPORT

Report No.	SARL/23-993	Report Date.	11.11.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipati Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A3-Meenakshipuram Bodi
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CIE-993	Sample Received on	06.11.2023
Sample Collected by	LABORATORY	Test Commenced on	06.11.2023
Sample Collected Date	02.11.2023	Test Completed on	11.11.2023
Temperature	30°C	Relative Humidity	66%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	48.7	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	21.9	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.3	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.1	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL – Detectable limit.

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TEST REPORT

Report No.	SARL/23-994	Report Date.	11.11.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaikkanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A4-Teni Alinagaram M		
Positioned height of Sampler	1.5 M above Ground Level		

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-994	Sample Received on	06.11.2023
Sample Collected by	LABORATORY	Test Commenced on	06.11.2023
Sample Collected Date	02.11.2023	Test Completed on	11.11.2023
Temperature	30°C	Relative Humidity	66%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	53.5	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	25.5	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.9	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.2	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL -Detectable limit.

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Technical Manager

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TEST REPORT

Report No.	SARL/23-995	Report Date.	11.11.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A3-Meenakshipuram Bodi
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-995	Sample Received on	06.11.2023
Sample Collected by	LABORATORY	Test Commenced on	06.11.2023
Sample Collected Date	03.11.2023	Test Completed on	11.11.2023
Temperature	30°C	Relative Humidity	68%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	45.5	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	20.8	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.4	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.9	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL -Detectable limit.

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For Shrient Analytical and Research Labs Pvt. Ltd

Authorized Signatory

J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/23-996	Report Date.	11.11.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A4-Teni Alinagaram M		
Positioned height of Sampler	1.5 M above Ground Level		

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-996	Sample Received on	06.11.2023
Sample Collected by	LABORATORY	Test Commenced on	06.11.2023
Sample Collected Date	03.11.2023	Test Completed on	11.11.2023
Temperature	30°C	Relative Humidity	68%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	52.8	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	24.3	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.7	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.9	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1,1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. TL. –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/23-997	Report Date.	11.11.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 heclares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A1-Within Mine Lease Area		
Positioned height of Sampler	1.5 M above Ground Level		

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-997	Sample Received on	06.11.2023
Sample Collected by	LABORATORY	Test Commenced on	06.11.2023
Sample Collected Date	04.11.2023	Test Completed on	11.11.2023
Temperature	28°C	Relative Humidity	75%
Sample Condition	Fit for Analysis		


S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	58.8	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	27.9	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.7	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	12.3	80
5	Carbon Monoxide (CO)	SARL/10P/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL - Detectable limit.

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TEST REPORT

Report No.	SARL/23-998	Report Date.	11.11.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A2-Boothipuram Tp		
Positioned height of Sampler	1.5 M above Ground Level		

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-998	Sample Received on	06.11.2023
Sample Collected by	LABORATORY	Test Commenced on	06.11.2023
Sample Collected Date	04.11.2023	Test Completed on	11.11.2023
Temperature	28°C	Relative Humidity	75%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	41.1	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	18.9	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.0	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	6.0	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	02

Remarks: Limits: *National ambient air quality standards from CPCB. BDL- Below detectable limit. DL -Detectable limit.

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Phone No: 9841074398 / 9698141777 E-mail : Info@shrientanalytical.com
Website : www.shrientanalytical.com

TEST REPORT

Report No.	SARL/23-999	Report Date.	11.11.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 heclares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines.		

Sample Location	AI-Within Mine Lease Area
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-999	Sample Received on	06.11.2023
Sample Collected by	LABORATORY	Test Commenced on	06.11.2023
Sample Collected Date	05.11.2023	Test Completed on	11.11.2023
Temperature	26°C	Relative Humidity	81%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	57.4	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	26.6	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.6	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.9	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL -Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd


Verified 11/11/23




Authorized Signatory

J. GNANAPRAKASAM
Technical Manager

Please Contact:

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TEST REPORT

Report No.	SARL/23-1000	Report Date.	11.11.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A2-Boothipuram Tp
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1000	Sample Received on	06.11.2023
Sample Collected by	LABORATORY	Test Commenced on	06.11.2023
Sample Collected Date	05.11.2023	Test Completed on	11.11.2023
Temperature	26°C	Relative Humidity	81%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	45.1	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	20.7	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.8	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.0	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL - Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

Verified 11/11/23



Authorized Signatory

J. GNANAPRAKASAM
Technical Manager

Please Contact:
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TEST REPORT

Report No.	SARL/23-1001	Report Date.	18.11.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaikkanur Taluk, Theni District, Tamil Nadu State.
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A1-Within Mine Lease Area
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1001	Sample Received on	13.11.2023
Sample Collected by	LABORATORY	Test Commenced on	13.11.2023
Sample Collected Date	07.11.2023	Test Completed on	18.11.2023
Temperature	28°C	Relative Humidity	77%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	60.7	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	28.6	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.8	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	12.6	80
5	Carben Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL - Below detectable limit. DL - Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

Verified 18/11/23



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J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/23-1002	Report Date.	18.11.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaikkanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A2-Boothipuram Tp
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1002	Sample Received on	13.11.2023
Sample Collected by	LABORATORY	Test Commenced on	13.11.2023
Sample Collected Date	07.11.2023	Test Completed on	18.11.2023
Temperature	28°C	Relative Humidity	77%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	44.3	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	20.4	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.6	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	6.8	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL.-Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd


Verified 18/11/23




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J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/23-1003	Report Date.	18.11.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangiparti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	AI-Within Mine Lease Area
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1003	Sample Received on	13.11.2023
Sample Collected by	LABORATORY	Test Commenced on	13.11.2023
Sample Collected Date	08.11.2023	Test Completed on	18.11.2023
Temperature	26°C	Relative Humidity	86%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	64.9	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	29.9	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.9	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	13.3	80
5	Carbon Monoxide (CO)	SARL/OP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL - Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

Verified 12/11/23



Authorized Signatory

END OF THE REPORT

J. GNANAPRAKASAM
Technical Manager

Please Contact:

For any Technical Issues & Complaints: vimalnath@shrientanalytical.com

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TEST REPORT

Report No.	SARL/23-1004	Report Date.	18.11.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A2-Boothipuram Tp
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1004	Sample Received on	13.11.2023
Sample Collected by	LABORATORY	Test Commenced on	13.11.2023
Sample Collected Date	08.11.2023	Test Completed on	18.11.2023
Temperature	26°C	Relative Humidity	86%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	41.9	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	19.3	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.1	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	6.2	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date 01.03.2023)	mg/m ³	BDL (DL - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL - Below detectable limit. DL - Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

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Authorized Signatory

Please Contact:
For any Technical Issues & Complaints: yimalnath@shrientanalytical.com

J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/23-1005	Report Date.	18.11.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A3-Meenakshipuram Bodi
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1005	Sample Received on	13.11.2023
Sample Collected by	LABORATORY	Test Commenced on	13.11.2023
Sample Collected Date	09.11.2023	Test Completed on	18.11.2023
Temperature	30 °C	Relative Humidity	64%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	52.9	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	24.4	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.5	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.2	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL -Detectable limit.

For Shrient Analytical and Research Labs Pvt Ltd

Verified 18/11/23



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J. GNANAPRAKASAM
Technical Manager

Please Contact:

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TEST REPORT

Report No.	SARL/23-1006	Report Date.	18.11.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A4-Teni Alinagaram M		
Positioned height of Sampler	1.5 M above Ground Level		

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1006	Sample Received on	13.11.2023
Sample Collected by	LABORATORY	Test Commenced on	13.11.2023
Sample Collected Date	09.11.2023	Test Completed on	18.11.2023
Temperature	30°C	Relative Humidity	64%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	57.6	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	27.7	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.4	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.3	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL - Below detectable limit. DL - Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

Verified 18/11/23



Authorized Signatory

J. GNANAPRAKASAM
Technical Manager

Please Contact:

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Website : www.shrientanalytical.com

TEST REPORT

Report No.	SARL/23-1007	Report Date.	18.11.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A3-Meenakshipuram Bodi
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1007	Sample Received on	13.11.2023
Sample Collected by	LABORATORY	Test Commenced on	13.11.2023
Sample Collected Date	10.11.2023	Test Completed on	18.11.2023
Temperature	28°C	Relative Humidity	75%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	50.4	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	23.1	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.3	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.1	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL -Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

Verified 18/11/23



Authorized Signatory

J. GNANAPRAKASAM
Technical Manager

Please Contact:

For any Technical Issues & Complaints: vimalnath@shrientanalytical.com

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TEST REPORT

Report No.	SARL/23-1008	Report Date.	18.11.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A4-Teni Alinagaram M
Positioned height of Sampler	1.5 M above Ground Level

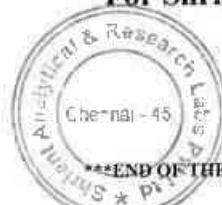
Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CIE-1008	Sample Received on	13.11.2023
Sample Collected by	LABORATORY	Test Commenced on	13.11.2023
Sample Collected Date	10.11.2023	Test Completed on	18.11.2023
Temperature	28°C	Relative Humidity	75%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	54.8	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	26.2	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.6	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.2	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL -Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

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J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/23-1009	Report Date.	18.11.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaikkanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A5-Kodangipatti
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1009	Sample Received on	13.11.2023
Sample Collected by	LABORATORY	Test Commenced on	13.11.2023
Sample Collected Date	11.11.2023	Test Completed on	18.11.2023
Temperature	29°C	Relative Humidity	64%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	48.5	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	23.7	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.8	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.3	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL - Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd


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J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/23-1010	Report Date.	18.11.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A5-Kodangipatti
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1010	Sample Received on	13.11.2023
Sample Collected by	LABORATORY	Test Commenced on	13.11.2023
Sample Collected Date	12.11.2023	Test Completed on	18.11.2023
Temperature	29°C	Relative Humidity	64%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	51.6	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	25.2	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.7	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.9	80
5	Carbon Monoxide (CO)	SARL/TOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL - Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

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18/11/23



J. Gnanaprakasam
18/11/23
Authorized Signatory

J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/23-1011	Report Date.	26.11.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A5-Kodangipatti
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1011	Sample Received on	20.11.2023
Sample Collected by	LABORATORY	Test Commenced on	20.11.2023
Sample Collected Date	14.11.2023	Test Completed on	26.11.2023
Temperature	25°C	Relative Humidity	79%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	50.8	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	24.7	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.4	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.8	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	B.D.L. (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB B.D.L.- Below detectable limit. DL - Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

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J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/23-1012	Report Date.	26.11.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A5-Kodangipatti
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1012	Sample Received on	20.11.2023
Sample Collected by	LABORATORY	Test Commenced on	20.11.2023
Sample Collected Date	15.11.2023	Test Completed on	26.11.2023
Temperature	29°C	Relative Humidity	60%
Sample Condition	Fit for Analysis		


S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	53.3	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	25.3	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.8	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.4	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL - Below detectable limit. DL - Detectable limit.


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TEST REPORT

Report No.	SARL/23-1013	Report Date.	26.11.2023
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Customer Name & Address	Thiru R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaikkanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A3-Meenakshipuram Bodi
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1013	Sample Received on	20.11.2023
Sample Collected by	LABORATORY	Test Commenced on	20.11.2023
Sample Collected Date	16.11.2023	Test Completed on	26.11.2023
Temperature	32°C	Relative Humidity	51%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	47.6	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	21.5	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.5	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.8	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (DL - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit DL-Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

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Technical Manager

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TEST REPORT

Report No.	SARL/23-1014	Report Date.	26.11.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaikkanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A4-Teni Alinagaram M		
Positioned height of Sampler	1.5 M above Ground Level		

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1014	Sample Received on	20.11.2023
Sample Collected by	LABORATORY	Test Commenced on	20.11.2023
Sample Collected Date	16.11.2023	Test Completed on	26.11.2023
Temperature	32°C	Relative Humidity	51%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	61.4	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	28.9	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.6	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	12.5	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL - Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

Verified



Authorized Signatory

J. GNANAPRAKASAM
Technical Manager

Please Contact:

For any Technical Issues & Complaints: vimalnath@shrientanalytical.com

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Website : www.shrientanalytical.com

TEST REPORT

Report No.	SARL/23-1015	Report Date.	26.11.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		


Sample Location	A3-Meenakshipuram Bodi		
Positioned height of Sampler	1.5 M above Ground Level		

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CIE-1015	Sample Received on	20.11.2023
Sample Collected by	LABORATORY	Test Commenced on	20.11.2023
Sample Collected Date	17.11.2023	Test Completed on	26.11.2023
Temperature	31°C	Relative Humidity	57%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	49.5	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	20.9	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.5	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.5	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL -Detectable limit


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For Shrient Analytical and Research Labs Pvt. Ltd

Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/23-1016	Report Date.	26.11.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaikkanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A4-Teni Alinagaram M
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1016	Sample Received on	20.11.2023
Sample Collected by	LABORATORY	Test Commenced on	20.11.2023
Sample Collected Date	17.11.2023	Test Completed on	26.11.2023
Temperature	31°C	Relative Humidity	57%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	58.4	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	25.5	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.4	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	12.1	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL. (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL - Below detectable limit. DL - Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd


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Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

Please Contact:

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TEST REPORT

Report No.	SARL/23-1017	Report Date.	26.11.2023
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Customer Name & Address	Thiru.R. Secnivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaikkanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A1-Within Mine Lease Area
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1017	Sample Received on	20.11.2023
Sample Collected by	LABORATORY	Test Commenced on	20.11.2023
Sample Collected Date	18.11.2023	Test Completed on	26.11.2023
Temperature	30°C	Relative Humidity	61%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182; Part 23:2006	µg/m ³	61.7	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	29.5	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.5	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	12.9	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks. Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL - Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

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J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/23-1018	Report Date.	26.11.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodimaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A2-Boothipuram Tp
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1018	Sample Received on	20.11.2023
Sample Collected by	LABORATORY	Test Commenced on	20.11.2023
Sample Collected Date	18.11.2023	Test Completed on	26.11.2023
Temperature	30°C	Relative Humidity	61%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182; Part 23:2006	µg/m ³	49.1	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	22.6	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.4	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.7	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB, BDL= Below detectable limit, DL - Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd


26/11/23
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J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/23-1019	Report Date.	26.11.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangiparti Village, Bodinaikkanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A1-Within Mine Lease Area		
Positioned height of Sampler	1.5 M above Ground Level		

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1019	Sample Received on	20.11.2023
Sample Collected by	LABORATORY	Test Commenced on	20.11.2023
Sample Collected Date	19.11.2023	Test Completed on	26.11.2023
Temperature	27°C	Relative Humidity	80%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	59.2	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	29.0	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.3	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	10.6	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB, BDL- Below detectable limit. DL - Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

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J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/23-1020	Report Date.	26.11.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Thenn District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A2-Boothipuram Tp
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1020	Sample Received on	20.11.2023
Sample Collected by	LABORATORY	Test Commenced on	20.11.2023
Sample Collected Date	19.11.2023	Test Completed on	26.11.2023
Temperature	27°C	Relative Humidity	80%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	46.7	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	21.5	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.1	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.3	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL -Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

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Technical Manager

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TEST REPORT

Report No.	SARL/23-1021	Report Date.	02.12.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaikkanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A1-Within Mine Lease Area
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1021	Sample Received on	27.11.2023
Sample Collected by	LABORATORY	Test Commenced on	27.11.2023
Sample Collected Date	21.11.2023	Test Completed on	02.12.2023
Temperature	32°C	Relative Humidity	54%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	54.6	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	26.3	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.4	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.7	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit, DL-Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd


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TEST REPORT

Report No.	SARL/23-1022	Report Date.	02.12.2023
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Customer Name & Address	Thiru R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A2-Boothipuram Tp
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1022	Sample Received on	27.11.2023
Sample Collected by	LABORATORY	Test Commenced on	27.11.2023
Sample Collected Date	21.11.2023	Test Completed on	02.12.2023
Temperature	32°C	Relative Humidity	54%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	40.7	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	18.7	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.9	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	5.9	80
5	Carbon Monoxide (CO)	SARL/TOF/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L. - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL - Below detectable limit. DL - Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

Verified 02/12/23



Authorized Signatory

J. GNANAPRAKASAM
Technical Manager

Please Contact:

For any Technical Issues & Complaints: vimalath@shrientanalytical.com

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Website : www.shrientanalytical.com

TEST REPORT

Report No.	SARL/23-1023	Report Date.	02.12.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodungipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	AI-Within Mine Lease Area		
Positioned height of Sampler	1.5 M above Ground Level		

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1023	Sample Received on	27.11.2023
Sample Collected by	LABORATORY	Test Commenced on	27.11.2023
Sample Collected Date	22.11.2023	Test Completed on	02.12.2023
Temperature	30°C	Relative Humidity	69%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	55.8	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	27.5	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.9	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	11.9	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL - Detectable limit

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For Shrient Analytical and Research Labs Pvt. Ltd



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J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/23-1024	Report Date.	02.12.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A2-Boothipuram Tp
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1024	Sample Received on	27.11.2023
Sample Collected by	LABORATORY	Test Commenced on	27.11.2023
Sample Collected Date	22.11.2023	Test Completed on	02.12.2023
Temperature	30°C	Relative Humidity	69%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	43.1	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	19.8	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.4	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	6.5	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL - Below detectable limit. DL - Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

02/12/23
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Authorized Signatory

J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/23-1025	Report Date.	02.12.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaikkanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14; 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A3-Meenakshipuram Bodi		
Positioned height of Sampler	1.5 M above Ground Level		

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1025	Sample Received on	27.11.2023
Sample Collected by	LABORATORY	Test Commenced on	27.11.2023
Sample Collected Date	23.11.2023	Test Completed on	02.12.2023
Temperature	29°C	Relative Humidity	69%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	53.2	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	24.8	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.8	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.8	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL -Detectable limit.

For Shrient Analytical and Research Labs Pvt Ltd


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Technical Manager

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TEST REPORT

Report No.	SARI/23-1026	Report Date.	02.12.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaikanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A4-Teni Alinagaram M		
Positioned height of Sampler	1.5 M above Ground Level		

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1026	Sample Received on	27.11.2023
Sample Collected by	LABORATORY	Test Commenced on	27.11.2023
Sample Collected Date	23.11.2023	Test Completed on	02.12.2023
Temperature	29°C	Relative Humidity	69%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	52.7	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	23.4	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.9	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.3	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issuc Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL - Below detectable limit. DL - Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd


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J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/23-1027	Report Date.	02.12.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A3-Meenakshipuram Bodi
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1027	Sample Received on	27.11.2023
Sample Collected by	LABORATORY	Test Commenced on	27.11.2023
Sample Collected Date	24.11.2023	Test Completed on	02.12.2023
Temperature	30°C	Relative Humidity	59%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part: 23:2006	µg/m ³	44.4	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	20.8	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.7	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.5	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL - Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

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Technical Manager

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TEST REPORT

Report No.	SARL/23-1028	Report Date.	02.12.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A4-Teni Alinagaram M		
Positioned height of Sampler	1.5 M above Ground Level		

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1028	Sample Received on	27.11.2023
Sample Collected by	LABORATORY	Test Commenced on	27.11.2023
Sample Collected Date	24.11.2023	Test Completed on	02.12.2023
Temperature	30°C	Relative Humidity	59%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	51.7	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	23.9	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.6	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.2	80
5	Carbon Monoxide (CO)	SARL/TOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL - Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

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J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/23-1029	Report Date.	02.12.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS 5182 (Part 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A5-Kodangipatti
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1029	Sample Received on	27.11.2023
Sample Collected by	LABORATORY	Test Commenced on	27.11.2023
Sample Collected Date	25.11.2023	Test Completed on	02.12.2023
Temperature	29°C	Relative Humidity	70%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	47.6	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	22.4	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.7	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.6	80
5	Carbon Monoxide (CO)	SARL/10P/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L. - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

Verified 02/12/23



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J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/23-1030	Report Date.	02.12.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Parta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A5-Kodangipatti
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1030	Sample Received on	27.11.2023
Sample Collected by	LABORATORY	Test Commenced on	27.11.2023
Sample Collected Date	26.11.2023	Test Completed on	02.12.2023
Temperature	29°C	Relative Humidity	68%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	42.2	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	20.6	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.6	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.3	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL -Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd


Verified 02/12/23



Authorized Signatory

J. GNANAPRAKASAM
Technical Manager

Please Contact:

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Website : www.shrientanalytical.com

TEST REPORT

Report No.	SARL/23-1031	Report Date.	09.12.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaikkanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A5-Kodangipatti		
Positioned height of Sampler	1.5 M above Ground Level		

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1031	Sample Received on	04.12.2023
Sample Collected by	LABORATORY	Test Commenced on	04.12.2023
Sample Collected Date	28.11.2023	Test Completed on	09.12.2023
Temperature	29°C	Relative Humidity	67%
Sample Condition	Fit for Analysis		


S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	40.8	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	19.5	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.4	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.2	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL - Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd


Verified 09/12/23




Authorized Signatory

Please Contact:

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Technical Manager

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TEST REPORT

Report No.	SARL/23-1032	Report Date.	09.12.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A5-Kodangipatti
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1032	Sample Received on	04.12.2023
Sample Collected by	LABORATORY	Test Commenced on	04.12.2023
Sample Collected Date	29.11.2023	Test Completed on	09.12.2023
Temperature	28°C	Relative Humidity	72%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	39.4	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	17.5	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.1	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	6.7	80
5	Carbon Monoxide (CO)	SARL/10P/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL-Detectable limit.

Verified 09/12/23

For Shrient Analytical and Research Labs Pvt. Ltd



Authorized Signatory

J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/23-1033	Report Date.	09.12.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 heclares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A3-Meenakshipuram Bodi
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1033	Sample Received on	04.12.2023
Sample Collected by	LABORATORY	Test Commenced on	04.12.2023
Sample Collected Date	30.11.2023	Test Completed on	09.12.2023
Temperature	24°C	Relative Humidity	91%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	45.9	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	21.7	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.5	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.5	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L. - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL - Below detectable limit. DL - Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

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J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/23-1034	Report Date.	09.12.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A4-Teni Alinagaram M		
Positioned height of Sampler	1.5 M above Ground Level		

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1034	Sample Received on	04.12.2023
Sample Collected by	LABORATORY	Test Commenced on	04.12.2023
Sample Collected Date	30.11.2023	Test Completed on	09.12.2023
Temperature	24°C	Relative Humidity	91%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	56.6	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	26.5	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.8	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	10.7	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit DL.-Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

Verified *[Signature]* 09/12/23



Authorized Signatory

J. GNANAPRAKASAM
Technical Manager

Please Contact:

For any Technical Issues & Complaints: vimalnath@shrientanalytical.com

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TEST REPORT

Report No.	SARL/23-1035	Report Date.	09.12.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaikkanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A3-Meenakshipuram Bodi		
Positioned height of Sampler	1.5 M above Ground Level		

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1035	Sample Received on	04.12.2023
Sample Collected by	LABORATORY	Test Commenced on	04.12.2023
Sample Collected Date	01.12.2023	Test Completed on	09.12.2023
Temperature	29°C	Relative Humidity	64%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	51.7	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	23.2	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.3	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.5	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL.-Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

Verified 09/12/23



Authorized Signatory

J. GNANAPRAKASAM
Technical Manager

Please Contact:

For any Technical Issues & Complaints: vimalnath@shrientanalytical.com

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TEST REPORT

Report No.	SARL/23-1036	Report Date.	09.12.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS – 5182 (Part – 14. 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A4-Teni Alinagaram M		
Positioned height of Sampler	1.5 M above Ground Level		

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1036	Sample Received on	04.12.2023
Sample Collected by	LABORATORY	Test Commenced on	04.12.2023
Sample Collected Date	01.12.2023	Test Completed on	09.12.2023
Temperature	29°C	Relative Humidity	64%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	57.4	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	27.3	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.2	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	10.7	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL. (D.L – 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL-Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

Verified 09/12/23



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J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/23-1037	Report Date.	09.12.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A1-Within Mine Lease Area		
Positioned height of Sampler	1.5 M above Ground Level		

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1037	Sample Received on	04.12.2023
Sample Collected by	LABORATORY	Test Commenced on	04.12.2023
Sample Collected Date	02.12.2023	Test Completed on	09.12.2023
Temperature	28°C	Relative Humidity	64%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	51.7	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	25.4	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.1	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.8	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL - Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

Verified 
09/12/23




Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/23-1038	Report Date.	09.12.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A2-Boothipuram Tp
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1038	Sample Received on	04.12.2023
Sample Collected by	LABORATORY	Test Commenced on	04.12.2023
Sample Collected Date	02.12.2023	Test Completed on	09.12.2023
Temperature	28°C	Relative Humidity	64%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	48.3	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	22.2	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.3	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.5	80
5	Carbon Monoxide (CO)	SARL/TOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL - Detectable limit.

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09/12/23



For Shrient Analytical and Research Labs Pvt. Ltd

Authorized Signatory

J. GNANAPRAKASAM
Technical Manager

Please Contact:

For any Technical Issues & Complaints: vimalnath@shrientanalytical.com

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Website : www.shrientanalytical.com

TEST REPORT

Report No.	SARL/23-1039	Report Date.	09.12.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A1-Within Mine Lease Area		
Positioned height of Sampler	1.5 M above Ground Level		

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1039	Sample Received on	04.12.2023
Sample Collected by	LABORATORY	Test Commenced on	04.12.2023
Sample Collected Date	03.12.2023	Test Completed on	09.12.2023
Temperature	27°C	Relative Humidity	71%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	52.6	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	24.7	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.8	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.3	80
5	Carbon Monoxide (CO)	SARL/KOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L. - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL -Detectable limit.

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For Shrient Analytical and Research Labs Pvt. Ltd



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J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARI/23-1040	Report Date.	09.12.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A2-Boothipuram Tp
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1040	Sample Received on	04.12.2023
Sample Collected by	LABORATORY	Test Commenced on	04.12.2023
Sample Collected Date	03.12.2023	Test Completed on	09.12.2023
Temperature	27°C	Relative Humidity	71%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	46.3	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	21.3	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.1	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.2	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL - Below detectable limit. DL - Detectable limit.

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For Shrient Analytical and Research Labs Pvt. Ltd



Authorized Signatory

J. GNANAPRAKASAM
Technical Manager

END OF THE REPORT

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TEST REPORT

Report No.	SARL/23-1041	Report Date.	16.12.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	AI-Within Mine Lease Area		
Positioned height of Sampler	1.5 M above Ground Level		

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1041	Sample Received on	11.12.2023
Sample Collected by	LABORATORY	Test Commenced on	11.12.2023
Sample Collected Date	05.12.2023	Test Completed on	16.12.2023
Temperature	30°C	Relative Humidity	60%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	54.7	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	25.2	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.3	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	10.7	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd


Verified 16/12/23




Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/23-1042	Report Date.	16.12.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A2-Boothipuram Tp
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1042	Sample Received on	11.12.2023
Sample Collected by	LABORATORY	Test Commenced on	11.12.2023
Sample Collected Date	05.12.2023	Test Completed on	16.12.2023
Temperature	30°C	Relative Humidity	60%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	42.7	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	19.6	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.3	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	6.4	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL - Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

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TEST REPORT

Report No.	SARL/23-1043	Report Date.	16.12.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A1-Within Mine Lease Area
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1043	Sample Received on	11.12.2023
Sample Collected by	LABORATORY	Test Commenced on	11.12.2023
Sample Collected Date	06.12.2023	Test Completed on	16.12.2023
Temperature	30°C	Relative Humidity	57%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	53.3	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	25.1	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.2	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.0	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL -Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd


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Technical Manager

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TEST REPORT

Report No.	SARL/23-1044	Report Date.	16.12.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A2-Boothipuram Tp
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1044	Sample Received on	11.12.2023
Sample Collected by	LABORATORY	Test Commenced on	11.12.2023
Sample Collected Date	06.12.2023	Test Completed on	16.12.2023
Temperature	30°C	Relative Humidity	57%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	45.5	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	20.9	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.9	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.1	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL - Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

Verified  16/12/23



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TEST REPORT

Report No.	SARL/23-1045	Report Date.	16.12.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS 5182 (Part - 14: 2000 & Part - V; Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A3-Meenakshipuram Bodi
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1045	Sample Received on	11.12.2023
Sample Collected by	LABORATORY	Test Commenced on	11.12.2023
Sample Collected Date	07.12.2023	Test Completed on	16.12.2023
Temperature	31°C	Relative Humidity	54%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	56.6	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	26.4	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.8	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	10.8	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L. - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL - Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

16/12/23
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Technical Manager

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TEST REPORT

Report No.	SARL/23-1046	Report Date.	16.12.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A4-Teni Alinagaram M		
Positioned height of Sampler	1.5 M above Ground Level		

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1046	Sample Received on	11.12.2023
Sample Collected by	LABORATORY	Test Commenced on	11.12.2023
Sample Collected Date	07.12.2023	Test Completed on	16.12.2023
Temperature	31°C	Relative Humidity	54%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	50.5	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	24.2	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.9	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.4	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL - Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd


Verified 16/12/23




Authorized Signatory

J. GNANAPRAKASAM
Technical Manager

Please Contact:

For any Technical Issues & Complaints: vimalnath@shrientanalytical.com

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Website : www.shrientanalytical.com

TEST REPORT

Report No.	SARL/23-1047	Report Date.	16.12.2023
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Customer Name & Address	Thiru.R. Sccnivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A3-Meenakshipuram Bodi
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHF-1047	Sample Received on	11.12.2023
Sample Collected by	LABORATORY	Test Commenced on	11.12.2023
Sample Collected Date	08.12.2023	Test Completed on	16.12.2023
Temperature	30°C	Relative Humidity	63%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	54.8	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	25.2	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.6	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.9	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL - Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

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J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/23-1048	Report Date.	16.12.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodimaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A4-Teni Alinagaram M
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1048	Sample Received on	11.12.2023
Sample Collected by	LABORATORY	Test Commenced on	11.12.2023
Sample Collected Date	08.12.2023	Test Completed on	16.12.2023
Temperature	30°C	Relative Humidity	63%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	48.8	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	23.5	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.4	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.2	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL - Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

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J. GNANAPRAKASAM
Technical Manager

Please Contact:

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TEST REPORT

Report No.	SARJ/23-1049	Report Date.	16.12.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A5-Kodangipatti		
Positioned height of Sampler	1.5 M above Ground Level		

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1049	Sample Received on	11.12.2023
Sample Collected by	LABORATORY	Test Commenced on	11.12.2023
Sample Collected Date	09.12.2023	Test Completed on	16.12.2023
Temperature	29°C	Relative Humidity	63%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	44.4	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	21.0	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.5	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.7	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL--Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

Verified 8/12/23



Authorized Signatory

J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/23-1050	Report Date.	16.12.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A5-Kodangipatti		
Positioned height of Sampler	1.5 M above Ground Level		

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1050	Sample Received on	11.12.2023
Sample Collected by	LABORATORY	Test Commenced on	11.12.2023
Sample Collected Date	10.12.2023	Test Completed on	16.12.2023
Temperature	29°C	Relative Humidity	62%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	47.5	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	23.5	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.7	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.5	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits. *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL -Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

Verified 16/12/23



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J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/23-1051	Report Date.	23.12.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A5-Kodangipatti		
Positioned height of Sampler	1.5 M above Ground Level		

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1051	Sample Received on	18.12.2023
Sample Collected by	LABORATORY	Test Commenced on	18.12.2023
Sample Collected Date	12.12.2023	Test Completed on	23.12.2023
Temperature	28°C	Relative Humidity	59%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	51.4	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	24.3	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.8	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.5	80
5	Carbon Monoxide (CO)	SARL/TOP/013 (Issue No:01, Issue Date 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB BDL- Below detectable limit. DL - Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

23/12/23
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END OF THE REPORT
J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/23-1052	Report Date.	23.12.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A5-Kodangipatti
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1052	Sample Received on	18.12.2023
Sample Collected by	LABORATORY	Test Commenced on	18.12.2023
Sample Collected Date	13.12.2023	Test Completed on	23.12.2023
Temperature	27°C	Relative Humidity	63%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	53.7	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	25.5	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.8	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.8	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL -Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

Verified 23/12/23



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Technical Manager

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TEST REPORT

Report No.	SARL/23-1053	Report Date.	23.12.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A3-Meenakshipuram Bodi		
Positioned height of Sampler	1.5 M above Ground Level		

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1053	Sample Received on	18.12.2023
Sample Collected by	LABORATORY	Test Commenced on	18.12.2023
Sample Collected Date	14.12.2023	Test Completed on	23.12.2023
Temperature	28°C	Relative Humidity	54%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	41.1	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	19.4	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.3	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.3	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB BDL- Below detectable limit. DL - Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd


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Technical Manager

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TEST REPORT

Report No.	SARL/23-1054	Report Date.	23.12.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide Lines		

Sample Location	A4-Teni Alinagaram M
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1054	Sample Received on	18.12.2023
Sample Collected by	LABORATORY	Test Commenced on	18.12.2023
Sample Collected Date	14.12.2023	Test Completed on	23.12.2023
Temperature	28°C	Relative Humidity	54%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	44.6	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	21.7	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.2	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.8	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL - Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

Verified 23/12/23



Authorized Signatory

Please Contact:

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J. GNANAPRAKASAM
Technical Manager

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Website : www.shrientanalytical.com

TEST REPORT

Report No.	SARL/23-1055	Report Date.	23.12.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A3-Meenakshipuram Bodi
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1055	Sample Received on	18.12.2023
Sample Collected by	LABORATORY	Test Commenced on	18.12.2023
Sample Collected Date	15.12.2023	Test Completed on	23.12.2023
Temperature	24°C	Relative Humidity	76%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	45.4	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	20.4	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.4	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.5	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL - Below detectable limit. DL - Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

23/12/23
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23/12/23
Authorized Signatory

J. GNANAPRAKASAM
Technical Manager

Please Contact:

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TEST REPORT

Report No.	SARL/23-1056	Report Date.	23.12.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A4-Teni Alinagaram M		
Positioned height of Sampler	1.5 M above Ground Level		

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1056	Sample Received on	18.12.2023
Sample Collected by	LABORATORY	Test Commenced on	18.12.2023
Sample Collected Date	15.12.2023	Test Completed on	23.12.2023
Temperature	24°C	Relative Humidity	76%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	43.3	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	21.5	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.4	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.7	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits *National Ambient air quality standards from CPCB. BDL- Below detectable limit, DL - Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

Verified 23/12/23



Authorized Signatory

J. GNANAPRAKASAM
Technical Manager

Please Contact:
For any Technical Issues & Complaints: vimalnath@shrientanalytical.com

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TEST REPORT

Report No.	SARL/23-1057	Report Date.	23.12.2023
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Customer Name & Address	Thiru.K. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A1-Within Mine Lease Area
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1057	Sample Received on	18.12.2023
Sample Collected by	LABORATORY	Test Commenced on	18.12.2023
Sample Collected Date	16.12.2023	Test Completed on	23.12.2023
Temperature	29°C	Relative Humidity	58%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	48.3	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	19.5	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.4	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.5	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL -Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

Verified
23/12/23



Authorized Signatory

J. GNANAPRAKASAM
Technical Manager

Please Contact:

For any Technical Issues & Complaints: winalnath@shrientanalytical.com

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TEST REPORT

Report No.	SARL/23-1058	Report Date.	23.12.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - I: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A2-Boothipuram Tp		
Positioned height of Sampler	1.5 M above Ground Level		

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1058	Sample Received on	18.12.2023
Sample Collected by	LABORATORY	Test Commenced on	18.12.2023
Sample Collected Date	16.12.2023	Test Completed on	23.12.2023
Temperature	29°C	Relative Humidity	58%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	44.7	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	20.6	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.7	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	6.9	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L. - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL - Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

Verified 23/12/23



END OF THE REPORT

Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

Please Contact:

For any Technical Issues & Complaints: vimalnath@shrientanalytical.com

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TEST REPORT

Report No.	SARL/23-1059	Report Date.	23.12.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14; 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A1-Within Mine Lease Area
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1059	Sample Received on	18.12.2023
Sample Collected by	LABORATORY	Test Commenced on	18.12.2023
Sample Collected Date	17.12.2023	Test Completed on	23.12.2023
Temperature	22°C	Relative Humidity	89%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	52.9	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	24.9	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.9	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.1	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL - Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

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J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/23-1060	Report Date.	23.12.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3,78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 und 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

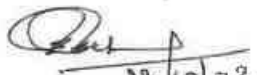
Sample Location	A2-Boothipuram Tp		
Positioned height of Sampler	1.5 M above Ground Level		

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1060	Sample Received on	18.12.2023
Sample Collected by	LABORATORY	Test Commenced on	18.12.2023
Sample Collected Date	17.12.2023	Test Completed on	23.12.2023
Temperature	22°C	Relative Humidity	89%
Sample Condition	Fit for Analysis		


S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	42.3	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	19.5	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.2	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	6.3	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL -Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd


Verified 23/12/23




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J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/23-1061	Report Date.	30.12.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipati Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A1-Within Mine Lease Area		
Positioned height of Sampler	1.5 M above Ground Level		

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1061	Sample Received on	25.12.2023
Sample Collected by	LABORATORY	Test Commenced on	25.12.2023
Sample Collected Date	19.12.2023	Test Completed on	30.12.2023
Temperature	28°C	Relative Humidity	54%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	50.9	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	23.8	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.7	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.6	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits. *National Ambient air quality standards from CPCB. BDL- Below Detectable limit, DL -Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

Verified 30/12/23



Authorized Signatory

Please Contact:

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Technical Manager

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TEST REPORT

Report No.	SARL/23-1062	Report Date.	30.12.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 heclares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A2-Boothipuram Tp		
Positioned height of Sampler	1.5 M above Ground Level		

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1062	Sample Received on	25.12.2023
Sample Collected by	LABORATORY	Test Commenced on	25.12.2023
Sample Collected Date	19.12.2023	Test Completed on	30.12.2023
Temperature	28°C	Relative Humidity	54%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	41.5	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	19.1	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.0	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	6.1	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit DL.-Detectable limit.


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For Shrient Analytical and Research Labs Pvt. Ltd

Authorized Signatory

J. GNANAPRAKASAM
Technical Manager

Please Contact:

For any Technical Issues & Complaints: vimalnath@shrientanalytical.com

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TEST REPORT

Report No.	SARL/23-1063	Report Date.	30.12.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14; 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A1-Within Mine Lease Area		
Positioned height of Sampler	1.5 M above Ground Level		

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1063	Sample Received on	25.12.2023
Sample Collected by	LABORATORY	Test Commenced on	25.12.2023
Sample Collected Date	20.12.2023	Test Completed on	30.12.2023
Temperature	24°C	Relative Humidity	76%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	49.7	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	24.1	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.3	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.3	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL -Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

Verified
29/12/23



Authorized Signatory
28/12/23

J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/23-1064	Report Date.	30.12.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		


Sample Location	A2-Boothipuram Tp		
Positioned height of Sampler	1.5 M above Ground Level		

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1064	Sample Received on	25.12.2023
Sample Collected by	LABORATORY	Test Commenced on	25.12.2023
Sample Collected Date	20.12.2023	Test Completed on	30.12.2023
Temperature	24°C	Relative Humidity	76%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	43.9	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	20.2	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.5	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	6.7	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L. - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit, DL - Detectable limit.


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For Shrient Analytical and Research Labs Pvt. Ltd

Authorized Signatory
J. GNANAPRAKASAM
Technical Manager
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TEST REPORT

Report No.	SARL/23-1065	Report Date.	30.12.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaikkanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A3-Meenakshipuram Bodi
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1065	Sample Received on	25.12.2023
Sample Collected by	LABORATORY	Test Commenced on	25.12.2023
Sample Collected Date	21.12.2023	Test Completed on	30.12.2023
Temperature	29°C	Relative Humidity	58%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	47.9	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	22.0	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.3	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.6	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L. - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL - Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

20/12/23
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J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/23-1066	Report Date.	30.12.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A4-Teni Alinagaram M		
Positioned height of Sampler	1.5 M above Ground Level		

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1066	Sample Received on	25.12.2023
Sample Collected by	LABORATORY	Test Commenced on	25.12.2023
Sample Collected Date	21.12.2023	Test Completed on	30.12.2023
Temperature	29°C	Relative Humidity	58%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	42.7	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	19.8	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.1	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.3	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL - Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

Verified *[Signature]* 30/12/23



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Authorized Signatory

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Technical Manager

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TEST REPORT

Report No.	SARL/23-10617	Report Date.	30.12.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS 5182 (Part - 14: 2000 & Part V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A3-Meenakshipuram Bodi		
Positioned height of Sampler	1.5 M above Ground Level		

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1067	Sample Received on	25.12.2023
Sample Collected by	LABORATORY	Test Commenced on	25.12.2023
Sample Collected Date	22.12.2023	Test Completed on	30.12.2023
Temperature	22°C	Relative Humidity	89%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	45.9	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	21.3	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.4	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.9	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL - Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

Verified 30/12/23



Authorized Signatory

J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/23-1068	Report Date.	30.12.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A4-Teni Alinagaram M		
Positioned height of Sampler	1.5 M above Ground Level		

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1068	Sample Received on	25.12.2023
Sample Collected by	LABORATORY	Test Commenced on	25.12.2023
Sample Collected Date	22.12.2023	Test Completed on	30.12.2023
Temperature	22°C	Relative Humidity	89%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	52.6	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	24.3	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.8	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.5	80
5	Carbon Monoxide (CO)	SARL/TOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit, DL - Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

Verified 30/12/23



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TEST REPORT

Report No.	SARL/23-1069	Report Date.	30.12.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A5-Kodangipatti
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1069	Sample Received on	25.12.2023
Sample Collected by	LABORATORY	Test Commenced on	25.12.2023
Sample Collected Date	23.12.2023	Test Completed on	30.12.2023
Temperature	25°C	Relative Humidity	72%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	52.2	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	24.7	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.5	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.3	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL - Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

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Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/23-1070	Report Date.	30.12.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A5-Kodangipatti		
Positioned height of Sampler	1.5 M above Ground Level		

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1070	Sample Received on	25.12.2023
Sample Collected by	LABORATORY	Test Commenced on	25.12.2023
Sample Collected Date	24.12.2023	Test Completed on	30.12.2023
Temperature	25°C	Relative Humidity	72%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	51.8	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	23.6	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.6	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.8	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL -Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

Verified  30/12/23



 30/12/23
Authorized Signatory

Please Contact:
For any Technical Issues & Complaints: vimalnath@shrientanalytical.com

J. GNANAPRAKASAM
Technical Manager

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Website : www.shrientanalytical.com

TEST REPORT

Report No.	SARL/23-1071	Report Date.	06.01.2024
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A5-Kodangipatti		
Positioned height of Sampler	1.5 M above Ground Level		

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1071	Sample Received on	01.01.2024
Sample Collected by	LABORATORY	Test Commenced on	01.01.2024
Sample Collected Date	26.12.2023	Test Completed on	06.01.2024
Temperature	28°C	Relative Humidity	60%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	54.4	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	25.7	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.8	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.6	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL -Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

Verified 06/01/24



Authorized Signatory

J. GNANAPRAKASAM
Technical Manager

Please Contact:
For any Technical Issues & Complaints: vimalnath@shrientanalytical.com

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Website : www.shrientanalytical.com

TEST REPORT

Report No.	SARL/23-1072	Report Date.	06.01.2024
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A5-Kodangipatti		
Positioned height of Sampler	1.5 M above Ground Level		

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1072	Sample Received on	01.01.2024
Sample Collected by	LABORATORY	Test Commenced on	01.01.2024
Sample Collected Date	27.12.2023	Test Completed on	06.01.2024
Temperature	28°C	Relative Humidity	57%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	50.6	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	23.7	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.7	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.3	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL -Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

Verified 06/01/24



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J. GNANAPRAKASAM
Technical Manager

Please Contact:

For any Technical Issues & Complaints: vimalnath@shrientanalytical.com

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Website : www.shrientanalytical.com

TEST REPORT

Report No.	SARL/23-1073	Report Date.	06.01.2024
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A3-Meenakshipuram Bodi		
Positioned height of Sampler	1.5 M above Ground Level		

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1073	Sample Received on	01.01.2024
Sample Collected by	LABORATORY	Test Commenced on	01.01.2024
Sample Collected Date	28.12.2023	Test Completed on	06.01.2024
Temperature	27°C	Relative Humidity	66%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	51.9	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	23.7	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.5	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.3	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL -Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

06/01/24
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J. GNANAPRAKASAM
Technical Manager

Please Contact:

For any Technical Issues & Complaints: vimalnath@shrientanalytical.com

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Website : www.shrientanalytical.com

TEST REPORT

Report No.	SARL/23-1074	Report Date.	06.01.2024
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaikkanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A4-Teni Alinagaram M		
Positioned height of Sampler	1.5 M above Ground Level		

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1074	Sample Received on	01.01.2024
Sample Collected by	LABORATORY	Test Commenced on	01.01.2024
Sample Collected Date	28.12.2023	Test Completed on	06.01.2024
Temperature	27°C	Relative Humidity	66%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	58.7	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	24.4	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.5	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	11.7	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL -Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

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Authorized Signatory

END OF THE REPORT J. GNANAPRAKASAM
Technical Manager

Please Contact:

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Website : www.shrientanalytical.com

TEST REPORT

Report No.	SARL/23-1075	Report Date.	06.01.2024
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaikkanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A3-Meenakshipuram Bodi		
Positioned height of Sampler	1.5 M above Ground Level		

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1075	Sample Received on	01.01.2024
Sample Collected by	LABORATORY	Test Commenced on	01.01.2024
Sample Collected Date	29.12.2023	Test Completed on	06.01.2024
Temperature	29°C	Relative Humidity	58%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	52.2	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	24.1	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.6	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.5	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL -Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

Verified 06/01/24



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Please Contact:

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END OF THE REPORT
J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/23-1076	Report Date.	06.01.2024
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A4-Teni Alinagaram M		
Positioned height of Sampler	1.5 M above Ground Level		

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1076	Sample Received on	01.01.2024
Sample Collected by	LABORATORY	Test Commenced on	01.01.2024
Sample Collected Date	29.12.2023	Test Completed on	06.01.2024
Temperature	29°C	Relative Humidity	58%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	56.6	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	26.3	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.3	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	11.1	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L. - 1.1)	02

Remarks: Limits *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL - Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

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Authorized Signatory

END OF THE REPORT J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/23-1077	Report Date.	06.01.2024
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Customer Name & Address	Thiru R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaikkanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	AI-Within Mine Lease Area		
Positioned height of Sampler	1.5 M above Ground Level		

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1077	Sample Received on	01.01.2024
Sample Collected by	LABORATORY	Test Commenced on	01.01.2024
Sample Collected Date	30.12.2023	Test Completed on	06.01.2024
Temperature	28°C	Relative Humidity	57%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	52.6	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	25.4	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	3.8	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.4	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL -Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

06/01/24
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06/01/24
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TEST REPORT

Report No.	SARL/23-1078	Report Date.	06.01.2024
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A2-Boothipuram Tp		
Positioned height of Sampler	1.5 M above Ground Level		

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1078	Sample Received on	01.01.2024
Sample Collected by	LABORATORY	Test Commenced on	01.01.2024
Sample Collected Date	30.12.2023	Test Completed on	06.01.2024
Temperature	28°C	Relative Humidity	57%
Sample Condition	Fit for Analysis		


S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	49.5	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	22.8	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.5	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.8	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL -Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd


Verified
06/01/24




Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

Please Contact:

For any Technical Issues & Complaints: vimalnath@shrientanalytical.com

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TEST REPORT

Report No.	SARL/23-1079	Report Date.	06.01.2024
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaikkanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A1-Within Mine Lease Area		
Positioned height of Sampler	1.5 M above Ground Level		

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CIIE-1079	Sample Received on	01.01.2024
Sample Collected by	LABORATORY	Test Commenced on	01.01.2024
Sample Collected Date	31.12.2023	Test Completed on	06.01.2024
Temperature	29°C	Relative Humidity	52%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	53.8	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	25.4	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.2	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.9	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date 01.03.2023)	mg/m ³	BDL (D.L. – 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

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Technical Manager

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TEST REPORT

Report No.	SARL/23-1080	Report Date.	06.01.2024
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS - 5182 (Part - 14: 2000 & Part - V: Reaffirmed - 2003), CPCB Guide lines		

Sample Location	A2-Boothipuram Tp		
Positioned height of Sampler	1.5 M above Ground Level		

Customer Reference	As per work order	Sampling Procedure	24 hrs
Sample Reference No	SARL/A/CHE-1080	Sample Received on	01.01.2024
Sample Collected by	LABORATORY	Test Commenced on	01.01.2024
Sample Collected Date	31.12.2023	Test Completed on	06.01.2024
Temperature	29°C	Relative Humidity	52%
Sample Condition	Fit for Analysis		


S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10 micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	47.5	100
2	Particulate Matter less than 2.5 micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	21.9	60
3	Sulphur Dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.2	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.4	80
5	Carbon Monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date - 01.03.2023)	mg/m ³	BDL (D.L - 1.1)	02

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL - Detectable limit.

For Shrient Analytical and Research Labs Pvt. Ltd

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06/01/24




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Technical Manager

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TEST REPORT

Report No.	SARL/23-1081	Report Date.	21.10.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.
Sample Description	WATER
Sample Mark	SW1 Boothipuram Pond water

Customer Reference	As per work order	Sampling Procedure	IS 17614: Part 23: 2021
Sample Reference No.	SARL/W/CHE-1081	Sample Received on	15.10.2023
Sample Collected by	LABORATORY	Test Commenced on	15.10.2023
Sample Collected Date	14.10.2023	Test Completed on	21.10.2023
Sample Condition	Fit for Analysis		

Sl. No.	Parameters	Protocol	Unit	Result
A. Physical parameters				
1	Odour	IS 3025 (Part 5): 2018	-	Agreeable
2	Turbidity	APHA 24 th Edition 2130 B: 2023	NTU	<1.0
3	pH at 25 °C	APHA 24 th Edition 4500 – H+ B: 2023	-	8.25
4	Electrical Conductivity	APHA 24 th Edition 2510 B: 2023	(µmhos/cm)	350.2
5	Temperature	APHA 24 th Edition 2550 B: 2023	°C	28.5
B. Chemical parameters				
6	Total Dissolved Solids	APHA 24 th Edition 2540-C: 2023	mg/L	212
7	Total Hardness (as CaCO ₃)	APHA 24 th Edition 2340 C: 2023	mg/L	92.4
8	Calcium (as Ca)	IS 3025 (Part 40): 1991	mg/L	19.9
9	Magnesium (as Mg)	IS 3025 (Part 46): 1994	mg/L	10.20
10	Calcium Hardness (as CaCO ₃)	APHA 24 th Edition 3500 Ca B: 2023	mg/L	49.8
11	Magnesium Hardness (as CaCO ₃)	APHA 24 th Edition 3500 Mg B: 2023	mg/L	42.6
12	Total Alkalinity (as CaCO ₃)	APHA 24 th Edition 2320 B: 2023	mg/L	67.5

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TEST REPORT

Report No. SARL/23-1081

Report Date: 21.10.2023

Sl. No.	Parameters	Protocol	Unit	Result
13	Chloride (as Cl)	APHA 24th Edition 4500 Cl- B: 2023	mg/L	80.2
14	Free Residual chlorine	APHA 24th Edition 4500 Cl- B: 2023	mg/L	BDL (D.L - 0.2)
15	Sulphate as (SO ₄ ²⁻)	APHA 24th Edition 4500 SO ₄ ²⁻ - E: 2023	mg/L	40.6
16	Iron (as Fe)	APHA 24th Edition 3500 Fe B: 2023	mg/L	0.12
17	Nitrate (as NO ₃)	IS 3025 (Part 34): 1988	mg/L	1.94
18	Fluoride (as F)	APHA 24th Edition 4500 F- D: 2023	mg/L	0.32
19	Manganese (as Mn)	APHA 24th Edition 3500 Mn B: 2023	mg/L	BDL (D.L - 0.05)
20	Total suspended solids	APHA 24th Edition 2540-D: 2023	mg/L	BDL (D.L - 2.0)
21	Chemical Oxygen Demand	APHA 24th Edition 5220 B: 2023	mg/L	BDL (D.L - 4.0)
22	Biochemical oxygen demand (3 days at 27°C)	IS 3025 (Part 44): 1993	mg/l.	BDL (D.L - 2.0)
23	Dissolved Oxygen	IS 3025 (Part 38): 1989	mg/L	5.8

Remarks: BDL - Below Detectable limit (DL - Detectable limit).

For Shrient Analytical and Research Labs Pvt. Ltd

Verified 21/10/23

END OF THE REPORT

Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/23-1082	Report Date.	21.10.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.
Sample Description	WATER
Sample Mark	SW2 Merusamuthiram River Upstream

Customer Reference	As per work order	Sampling Procedure	IS 17614: Part 23: 2021
Sample Reference No.	SARL/W/CHE-1082	Sample Received on	15.10.2023
Sample Collected by	LABORATORY	Test Commenced on	15.10.2023
Sample Collected Date	14.10.2023	Test Completed on	21.10.2023
Sample Condition	Fit for Analysis		

Sl. No.	Parameters	Protocol	Unit	Result
A.	Physical parameters			
1	Odour	IS 3025 (Part 5): 2018	-	Agreeable
2	Turbidity	APHA 24 th Edition 2130 B: 2023	NTU	<1.0
3	pH at 25 °C	APHA 24 th Edition 4500 – H+ B: 2023	-	7.49
4	Electrical Conductivity	APHA 24 th Edition 2510 B: 2023	(µmhos/cm)	151.5
5	Temperature	APHA 24 th Edition 2550 B: 2023	°C	29.0
B.	Chemical parameters			
6	Total Dissolved Solids	APHA 24 th Edition 2540-C: 2023	mg/L	92.0
7	Total Hardness (as CaCO ₃)	APHA 24 th Edition 2340 C: 2023	mg/L	43.2
8	Calcium (as Ca)	IS 3025 (Part 40): 1991	mg/L	9.36
9	Magnesium (as Mg)	IS 3025 (Part 46): 1994	mg/L	4.75
10	Calcium Hardness (as CaCO ₃)	APHA 24 th Edition 3500 Ca B: 2023	mg/L	23.4
11	Magnesium Hardness (as CaCO ₃)	APHA 24 th Edition 3500 Mg B: 2023	mg/L	19.8
12	Total Alkalinity (as CaCO ₃)	APHA 24 th Edition 2320 B: 2023	mg/L	35.5

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TEST REPORT

Report No. SARI/23-1082

Report Date. 21.10.2023

Sl. No.	Parameters	Protocol	Unit	Result
13	Chloride (as Cl)	APHA 24th Edition 4500 Cl- B: 2023	mg/L	28.9
14	Free Residual chlorine	APHA 24 th Edition 4500 Cl- B: 2023	mg/l.	BDL (D.L - 0.2)
15	Sulphate as (SO ₄ ²⁻)	APHA 24 th Edition 4500 SO ₄ ²⁻ - E: 2023	mg/L	8.74
16	Iron (as Fe)	APHA 24 th Edition 3500 Fe B: 2023	mg/L	0.08
17	Nitrate (as NO ₃)	IS 3025 (Part 34): 1988	mg/L	BDL (D.L-1.0)
18	Fluoride (as F)	APHA 24 th Edition 4500 F- D: 2023	mg/L	0.15
19	Manganese (as Mn)	APHA 24 th Edition 3500 Mn B: 2023	mg/L	BDL (D.L - 0.05)
20	Total suspended solids	APHA 24 th Edition 2540-D: 2023	mg/L	BDL (D.L-2.0)
21	Chemical Oxygen Demand	APHA 24 th Edition 5220 B: 2023	mg/L	BDL (D.L - 4.0)
22	Biochemical oxygen demand (3 days at 27°C)	IS 3025 (Part 44): 1993	mg/L	BDE (D.L - 2.0)
23	Dissolved Oxygen	IS 3025 (Part 38): 1989	mg/l.	6.5

Remarks: BDL - Below Detectable limit (DL - Detectable limit).

For Shrient Analytical and Research Labs Pvt. Ltd


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TEST REPORT

Report No.	SARL/23-1083	Report Date.	21.10.2023
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Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.
Sample Description	WATER
Sample Mark	SW3 Mullaiperiyar River Downstream

Customer Reference	As per work order	Sampling Procedure	IS 17614: Part 23: 2021
Sample Reference No.	SARL/W/CHE-1083	Sample Received on	15.10.2023
Sample Collected by	LABORATORY	Test Commenced on	15.10.2023
Sample Collected Date	14.10.2023	Test Completed on	21.10.2023
Sample Condition	Fit for Analysis		

Sl. No.	Parameters	Protocol	Unit	Result
A.	Physical parameters			
1	Odour	IS 3025 (Part 5): 2018	-	Agreeable
2	Turbidity	APHA 24 th Edition 2130 B: 2023	NTU	<1.0
3	pH at 25 °C	APHA 24 th Edition 4500 – H+ B: 2023	-	8.20
4	Electrical Conductivity	APHA 24 th Edition 2510 B: 2023	(µmhos/cm)	174.2
5	Temperature	APHA 24 th Edition 2550 B: 2023	°C	29.5
B.	Chemical parameters			
6	Total Dissolved Solids	APHA 24 th Edition 2540-C: 2023	mg/L	105
7	Total Hardness (as CaCO ₃)	APHA 24 th Edition 2340 C: 2023	mg/L	54.6
8	Calcium (as Ca)	IS 3025 (Part 40): 1991	mg/L	12.4
9	Magnesium (as Mg)	IS 3025 (Part 46): 1994	mg/L	5.64
10	Calcium Hardness (as CaCO ₃)	APHA 24 th Edition 3500 Ca B: 2023	mg/L	31.1
11	Magnesium Hardness (as CaCO ₃)	APHA 24 th Edition 3500 Mg B: 2023	mg/L	23.5
12	Total Alkalinity (as CaCO ₃)	APHA 24 th Edition 2320 B: 2023	mg/L	44.2

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Website : www.shrientanalytical.com

TEST REPORT

Report No. SARL/23-1083

Report Date. 21.10.2023

Sl. No.	Parameters	Protocol	Unit	Result
13	Chloride (as Cl)	APHA 24th Edition 4500 Cl- B: 2023	mg/L	35.6
14	Free Residual chlorine	APHA 24 th Edition 4500 Cl- B: 2023	mg/L	BDL (D.L - 0.2)
15	Sulphate as (SO ₄ ²⁻)	APHA 24 th Edition 4500 SO ₄ ²⁻ - E: 2023	mg/L	12.4
16	Iron (as Fe)	APHA 24 th Edition 3500 Fe B: 2023	mg/L	0.09
17	Nitrate (as NO ₃)	IS 3025 (Part 34): 1988	mg/L	BDL (D.L-1.0)
18	Fluoride (as F)	APHA 24 th Edition 4500 F- D: 2023	mg/L	0.17
19	Manganese (as Mn)	APHA 24 th Edition 3500 Mn B: 2023	mg/l.	BDL (D.L. 0.05)
20	Total suspended solids	APHA 24 th Edition 2540-D: 2023	mg/L	BDL (D.L-2.0)
21	Chemical Oxygen Demand	APHA 24 th Edition 5220 B: 2023	mg/L	BDL (D.L - 4.0)
22	Biochemical oxygen demand (3 days at 27°C)	IS 3025 (Part 44): 1993	mg/L	BDL (D.L - 2.0)
23	Dissolved Oxygen	IS 3025 (Part 38): 1989	mg/L	6.7

Remarks: BDL - Below Detectable limit (DL - Detectable limit).

For Shrient Analytical and Research Labs Pvt. Ltd


Verified 21/10/23


Authorized Signatory

END OF THE REPORT

Please Contact:

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TEST REPORT

Report No.	SARL/23-1084	Report Date.	21.10.2023
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Customer Name & Address	Thiru.R.Sreenivasan Over an extent of 3.78.0hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.
Sample Description	WATER
Sample Mark	GW1 Within lease area

Customer Reference	As per work order	Sampling Procedure	IS 17614: Part 14: 2021
Sample Reference No.	SARL/W/CHE-1084	Sample Received on	15.10.2023
Sample Collected by	LABORATORY	Test Commenced on	15.10.2023
Sample Collected Date	14.10.2023	Test Completed on	21.10.2023
Sample Condition	Fit for Analysis		

Sl. No.	Parameters	Protocol	Unit	Result	*Limits Permissible
A. Physical parameters					
1	Odour	IS 3025 (Part 5): 2018	-	Agrecable	Agreeable
2	Turbidity	APHA 24 th Edition 2130 B: 2023	NTU	<1.0	5.0
3	pH at 25 °C	APHA 24 th Edition 4500 – H+ B: 2023	-	7.32	6.50-8.50
4	Electrical Conductivity	APHA 24 th Edition 2510 B: 2023	(µmhos/cm)	1092	-
B. Chemical parameters					
5	Total Dissolved Solids	APHA 24 th Edition 2540-C: 2023	mg/L	660	2000
6	Total Hardness (as CaCO ₃)	APHA 24 th Edition 2340 C: 2023	mg/L	333	600
7	Calcium (as Ca)	IS 3025 (Part 40): 1991	mg/L	81.5	200
8	Magnesium (as Mg)	IS 3025 (Part 46): 1994	mg/L	31.0	100
9	Calcium Hardness (as CaCO ₃)	APHA 24 th Edition 3500 Ca B: 2023	mg/L	204	-

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Page 1 of 2



Shrient Analytical and Research Labs Pvt. Ltd.

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Website : www.shrientanalytical.com

TEST REPORT

Report No. SARI/23-1084

Report Date. 21.10.2023

Sl. No.	Parameters	Protocol	Unit	Result	*Limits
					Permissible
10	Magnesium Hardness (as CaCO ₃)	APHA 24 th Edition 3500 Mg B: 2023	mg/L	129	-
11	Total Alkalinity (as CaCO ₃)	APHA 24 th Edition 2320 B: 2023	mg/L	447	600
12	Chloride (as Cl)	APHA 24 th Edition 4500 Cl- B: 2023	mg/l.	124	1000
13	Free Residual chlorine	APHA 24 th Edition 4500 Cl- B: 2023	mg/L	BDL (D.L. 0.2)	1.0
14	Sulphate as (SO ₄ ²⁻)	APHA 24 th Edition 4500 SO ₄ ²⁻ - E: 2023	mg/L	142	400
15	Iron (as Fe)	APHA 24 th Edition 3500 Fe B: 2023	mg/L	BDL (D.L-0.01)	0.3
16	Nitrate (as NO ₃)	IS 3025 (Part 34): 1988	mg/L	3.26	45
17	Fluoride (as F)	APHA 24 th Edition 4500 F- D: 2023	mg/L	0.32	1.5
18	Manganese (as Mn)	APHA 24 th Edition 3500 Mn B: 2023	mg/L	BDL (D.L - 0.05)	0.3

Remarks: Permissible Limit in the Absence of Alternate Source of Drinking Water Specifications IS: 10500:2012
BDL - Below Detectable limit (DL - Detectable limit).

For Shrient Analytical and Research Labs Pvt. Ltd


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Authorized Signatory

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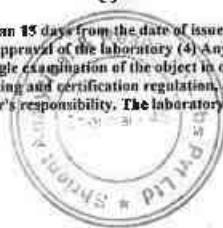
J. GNANAPRAKASAM
Technical Manager

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Phone No: 9841074398 / 9898141777 E-mail : Info@shrientanalytical.com
Website : www.shrientanalytical.com

TEST REPORT

Report No.	SARL/23-1085	Report Date.	21.10.2023
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Customer Name & Address	Thiru.R.Seenivasan Over an extent of 3.78.0hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.
Sample Description	WATER
Sample Mark	GW2 Boothipuram Tp

Customer Reference	As per work order	Sampling Procedure	IS 17614: Part 14: 2021
Sample Reference No.	SARL/W/CHE-1085	Sample Received on	15.10.2023
Sample Collected by	LABORATORY	Test Commenced on	15.10.2023
Sample Collected Date	14.10.2023	Test Completed on	21.10.2023
Sample Condition	Fit for Analysis		

Sl. No.	Parameters	Protocol	Unit	Result	*Limits
					Permissible
A. Physical parameters					
1	Odour	IS 3025 (Part 5): 2018	-	Agreeable	Agreeable
2	Turbidity	APHA 24 th Edition 2130 B: 2023	NTU	<1.0	5.0
3	pH at 25 °C	APHA 24 th Edition 4500 – H+ B: 2023	-	7.17	6.50-8.50
4	Electrical Conductivity	APHA 24 th Edition 2510 B: 2023	(µmhos/cm)	961.3	-
B. Chemical parameters					
5	Total Dissolved Solids	APHA 24 th Edition 2540-C: 2023	mg/L	580	2000
6	Total Hardness (as CaCO ₃)	APHA 24 th Edition 2340 C: 2023	mg/L	349	600
7	Calcium (as Ca)	IS 3025 (Part 40): 1991	mg/L	86.2	200
8	Magnesium (as Mg)	IS 3025 (Part 46): 1994	mg/L	32.0	100
9	Calcium Hardness (as CaCO ₃)	APHA 24 th Edition 3500 Ca B: 2023	mg/l	216	-

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Website : www.shrientanalytical.com

TEST REPORT

Report No. SARI/23-1085

Report Date. 21.10.2023

Sl. No.	Parameters	Protocol	Unit	Result	*Limits
					Permissible
10	Magnesium Hardness (as CaCO ₃)	APHA 24 th Edition 3500 Mg B: 2023	mg/L	133	-
11	Total Alkalinity (as CaCO ₃)	APHA 24 th Edition 2320 B: 2023	mg/L	225	600
12	Chloride (as Cl)	APHA 24 th Edition 4500 Cl- B: 2023	mg/L	109	1000
13	Free Residual chlorine	APHA 24 th Edition 4500 Cl- B: 2023	mg/L	BDL (D.L - 0.2)	1.0
14	Sulphate as (SO ₄ ²⁻)	APHA 24 th Edition 4500 SO ₄ ²⁻ E: 2023	mg/L	84.3	400
15	Iron (as Fe)	APHA 24 th Edition 3500 Fe B: 2023	mg/L	0.05	0.3
16	Nitrate (as NO ₃)	IS 3025 (Part 34): 1988	mg/L	2.73	45
17	Fluoride (as F)	APHA 24 th Edition 4500 F- D: 2023	mg/L	0.32	1.5
18	Manganese (as Mn)	APHA 24 th Edition 3500 Mn B: 2023	mg/L	BDL (D.L - 0.05)	0.3

Remarks: Permissible Limit in the Absence of Alternate Source of Drinking Water Specifications IS: 10500:2012.
BDL - Below Detectable limit (DL - Detectable limit).

For Shrient Analytical and Research Labs Pvt. Ltd


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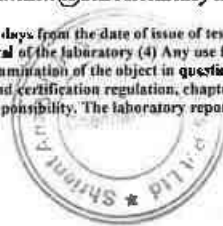
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TEST REPORT

Report No.	SARL/23-1086	Report Date.	21.10.2023
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Customer Name & Address	Thiru.R.Seenivasan Over an extent of 3.78.0hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.
Sample Description	WATER
Sample Mark	GW3 Meenakshipuram Bodi

Customer Reference	As per work order	Sampling Procedure	IS 17614: Part 14: 2021
Sample Reference No.	SARL/W/CHIE-1086	Sample Received on	15.10.2023
Sample Collected by	LABORATORY	Test Commenced on	15.10.2023
Sample Collected Date	14.10.2023	Test Completed on	21.10.2023
Sample Condition	Fit for Analysis		

Sl. No.	Parameters	Protocol	Unit	Result	*Limits
					Permissible
A. Physical parameters					
1	Odour	IS 3025 (Part 5): 2018	-	Agreeable	Agreeable
2	Turbidity	APHA 24 th Edition 2130 B: 2023	NTU	<1.0	5.0
3	pH at 25 °C	APHA 24 th Edition 4500 - H+ B: 2023	-	7.73	6.50-8.50
4	Electrical Conductivity	APHA 24 th Edition 2510 B: 2023	(µmhos/cm)	1006	-
B. Chemical parameters					
5	Total Dissolved Solids	APHA 24 th Edition 2540-C: 2023	mg/L	610	2000
6	Total Hardness (as CaCO ₃)	APHA 24 th Edition 2340 C: 2023	mg/L	172	600
7	Calcium (as Ca)	IS 3025 (Part 40): 1991	mg/L	40.8	200
8	Magnesium (as Mg)	IS 3025 (Part 46): 1994	mg/L	16.9	100
9	Calcium Hardness (as CaCO ₃)	APHA 24 th Edition 3500 Ca B: 2023	mg/L	102	-

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Website : www.shrientanalytical.com

TEST REPORT

Report No. SARL/23-1086

Report Date. 21.10.2023

Sl. No.	Parameters	Protocol	Unit	Result	*Limits
					Permissible
10	Magnesium Hardness (as CaCO ₃)	APHA 24 th Edition 3500 Mg B: 2023	mg/L	70.6	-
11	Total Alkalinity (as CaCO ₃)	APHA 24 th Edition 2320 B: 2023	mg/L	176	600
12	Chloride (as Cl)	APHA 24 th Edition 4500 Cl- B: 2023	mg/L	380	1000
13	Free Residual chlorine	APHA 24 th Edition 4500 Cl- B: 2023	mg/L	BDL (D.L - 0.2)	1.0
14	Sulphate as (SO ₄ ²⁻)	APHA 24 th Edition 4500 SO ₄ ²⁻ B: 2023	mg/L	74.1	400
15	Iron (as Fe)	APHA 24 th Edition 3500 Fe B: 2023	mg/L	0.08	0.3
16	Nitrate (as NO ₃)	IS 3025 (Part 34): 1988	mg/L	1.89	45
17	Fluoride (as F)	APHA 24 th Edition 4500 F- D: 2023	mg/L	0.19	1.5
18	Manganese (as Mn)	APHA 24 th Edition 3500 Mn B: 2023	mg/L	BDL (D.L - 0.05)	0.3

Remarks: Permissible Limit in the Absence of Alternate Source of Drinking Water Specifications IS: 10500.2012.
BDL - Below Detectable limit (DL - Detectable limit).

For Shrient Analytical and Research Labs Pvt. Ltd

Verified
21/10/23

Authorized Signatory
21/10/23

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J. GNANAPRAKASAM
Technical Manager

Please Contact:

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Website : www.shrientanalytical.com

TEST REPORT

Report No.	SARL/23-1087	Report Date.	21.10.2023
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Customer Name & Address	Thiru.R.Sreenivasan Over an extent of 3.78.0hectares of Partha land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.
Sample Description	WATER
Sample Mark	GW4 Teni Alinagarani M

Customer Reference	As per work order	Sampling Procedure	IS 17614: Part 14: 2021
Sample Reference No.	SARL/W/CHE-1087	Sample Received on	15.10.2023
Sample Collected by	LABORATORY	Test Commenced on	15.10.2023
Sample Collected Date	14.10.2023	Test Completed on	21.10.2023
Sample Condition	Fit for Analysis		

Sl. No.	Parameters	Protocol	Unit	Result	*Limits
					Permissible
A.	Physical parameters				
1	Odour	IS 3025 (Part 5): 2018	-	Agreeable	Agreeable
2	Turbidity	APHA 24 th Edition 2130 B: 2023	NTU	<1.0	5.0
3	pH at 25 °C	APHA 24 th Edition 4500 – H+ B: 2023	-	7.12	6.50-8.50
4	Electrical Conductivity	APHA 24 th Edition 2510 B: 2023	(µmhos/cm)	1325	-
B.	Chemical parameters				
5	Total Dissolved Solids	APHA 24 th Edition 2540-C: 2023	mg/L	802	2000
6	Total Hardness (as CaCO ₃)	APHA 24 th Edition 2340 C: 2023	mg/L	580	600
7	Calcium (as Ca)	IS 3025 (Part 40): 1991	mg/L	132	200
8	Magnesium (as Mg)	IS 3025 (Part 46): 1994	mg/L	60.2	100
9	Calcium Hardness (as CaCO ₃)	APHA 24 th Edition 3500 Ca B: 2023	mg/L	329	-

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TEST REPORT

Report No. SARL/23-1087

Report Date. 21.10.2023

Sl. No.	Parameters	Protocol	Unit	Result	*Limits
					Permissible
10	Magnesium Hardness (as CaCO ₃)	APHA 24 th Edition 3500 Mg B: 2023	mg/L	251	-
11	Total Alkalinity (as CaCO ₃)	APHA 24 th Edition 2320 B: 2023	mg/L	378	600
12	Chloride (as Cl)	APHA 24 th Edition 4500 Cl- B: 2023	mg/l.	245	1000
13	Free Residual chlorine	APHA 24 th Edition 4500 Cl- B: 2023	mg/L	BDL (D.L - 0.2)	1.0
14	Sulphate as (SO ₄ ²⁻)	APHA 24 th Edition 4500 SO ₄ ²⁻ - E: 2023	mg/L	99.6	400
15	Iron (as Fe)	APHA 24 th Edition 3500 Fe B: 2023	mg/L	0.04	0.3
16	Nitrate (as NO ₃)	IS 3025 (Part 34): 1988	mg/L	2.50	45
17	Fluoride (as F)	APIA 24 th Edition 4500 F- D: 2023	mg/L	0.49	1.5
18	Manganese (as Mn)	APHA 24 th Edition 3500 Mn B: 2023	mg/L	BDL (D.L - 0.05)	0.3

Remarks: Permissible Limit in the Absence of Alternate Source of Drinking Water Specifications IS- 10500:2012.
BDL - Below Detectable limit (DL - Detectable limit)

For Shrient Analytical and Research Labs Pvt. Ltd


21/10/23
Verified

END OF THE REPORT


21/10/23
Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

Please Contact:

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TEST REPORT

Report No.	SARL/23-1088	Report Date.	21.10.2023
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Customer Name & Address	Thiru.R.Secnavasan Over an extent of 3.78.0hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipati Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.
Sample Description	WATER
Sample Mark	GW5 Kodangipatti.

Customer Reference	As per work order	Sampling Procedure	IS 17614: Part 14: 2021
Sample Reference No.	SARL/W/CHE-1088	Sample Received on	15.10.2023
Sample Collected by	LABORATORY	Test Commenced on	15.10.2023
Sample Collected Date	14.10.2023	Test Completed on	21.10.2023
Sample Condition	Fit for Analysis		

Sl. No.	Parameters	Protocol	Unit	Result	*Limits
					Permissible
A. Physical parameters					
1	Odour	IS 3025 (Part 5): 2018	-	Agreeable	Agreeable
2	Turbidity	APHA 24 th Edition 2130 B: 2023	NTU	<1.0	5.0
3	pH at 25 °C	APHA 24 th Edition 4500 – H+ B: 2023	-	7.28	6.50-8.50
4	Electrical Conductivity	APHA 24 th Edition 2510 B: 2023	(µmhos/cm)	1416	-
B. Chemical parameters					
5	Total Dissolved Solids	APIA 24 th Edition 2540-C: 2023	mg/L	856	2000
6	Total Hardness (as CaCO ₃)	APHA 24 th Edition 2340 C: 2023	mg/L	478	600
7	Calcium (as Ca)	IS 3025 (Part 40): 1991	mg/L	108	200
8	Magnesium (as Mg)	IS 3025 (Part 46): 1994	mg/L	49.9	100
9	Calcium Hardness (as CaCO ₃)	APHA 24 th Edition 3500 Ca B: 2023	mg/L	270	-

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21/10/23



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TEST REPORT

Report No. SARI /23-1088

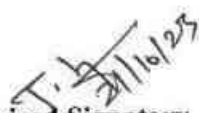
Report Date. 21.10.2023

Sl. No.	Parameters	Protocol	Unit	Result	*Limits
					Permissible
10	Magnesium Hardness (as CaCO ₃)	APHA 24 th Edition 3500 Mg B: 2023	mg/L	208	-
11	Total Alkalinity (as CaCO ₃)	APHA 24 th Edition 2320 B: 2023	mg/L	438	600
12	Chloride (as Cl)	APHA 24 th Edition 4500 Cl- B: 2023	mg/L	212	1000
13	Free Residual chlorine	APHA 24 th Edition 4500 Cl- B: 2023	mg/L	BDL (D.L - 0.2)	1.0
14	Sulphate as (SO ₄ ²⁻)	APHA 24 th Edition 4500 SO ₄ ²⁻ - E: 2023	mg/L	154	400
15	Iron (as Fe)	APHA 24 th Edition 3500 Fe B: 2023	mg/L	0.07	0.3
16	Nitrate (as NO ₃)	IS 3025 (Part 34): 1988	mg/L	2.32	45
17	Fluoride (as F)	APHA 24 th Edition 4500 F- D: 2023	mg/L	0.33	1.5
18	Manganese (as Mn)	APHA 24 th Edition 3500 Mn B: 2023	mg/L	BDL (D.L - 0.05)	0.3

Remarks: Permissible Limit in the Absence of Alternate Source of Drinking Water Specifications IS: 10500:2012
BDL - Below Detectable limit (DL - Detectable limit)

For Shrient Analytical and Research Labs Pvt. Ltd


Verified 21/10/23


Authorized Signatory

J. GNANAPRAKASAM
Technical Manager

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Website : www.shrientanalytical.com

TEST REPORT

Report No.	SARL/23-1089	Report Date.	21.10.2023
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Customer Name & Address	Thiru.R.Seenivasan Over an extent of 3.78.0hectares of Patta land in S.F.Nos 110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.
Sample Description	SOIL
Sample Mark	S1 Within Mine Lease area

Customer Reference	As per work order	Sampling Procedure	EPA/600/R-92/128
Sample Reference No.	SARL/W/CHE-1089	Sample Received on	15.10.2023
Sample Collected by	LABORATORY	Test Commenced on	15.10.2023
Sample Collected Date	14.10.2023	Test Completed on	21.10.2023
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results
1	pH at 25 °C	IS 2720: Part 26: 1987	-	7.28
2	Electrical Conductivity	IS 14767: 2000	µmhos/cm	38.57
3	Dry matter content	IS 15106: 2002	%	98.54
4	Water Content	IS 15106: 2002	%	1.46
5	Organic Matter	IS 2720: Part 22: 1972	%	0.65
6	Nitrogen and Nitrogenous compounds	IS 14684: 1999	mg/kg	204
7	Soil Texture	Methods Manual - Soil testing in India - P. No-67: 2011	%	SILTY CLAY LOAM
8	<u>Grain Size Distribution</u>	Methods Manual - Soil testing in India - P. No-67: 2011	%	18.36
	i. Sand	Methods Manual - Soil testing in India - P. No-67: 2011	%	42.15
	ii. Silt	Methods Manual - Soil testing in India - P. No-67: 2011	%	39.49
	iii. Clay	Methods Manual - Soil testing in India - P. No-67: 2011	%	
9	Phosphorus as P	IS 10158: 1982	mg/kg	1.54
10	Sodium as Na	USEPA 3050 B: 1996	mg/kg	456
11	Potassium as K	USEPA 3050 B: 1996	mg/kg	1210
12	Total soluble sulphates	IS 2720: Part 27: 1977	%	BDL (D.L - 0.02)
13	Porosity	SARL/SOP/SO/001 (Issue No:01, Issue Date - 01.03.2023): 2023	%	18.7
14	Water holding capacity	Methods Manual - Soil testing in India - P. No-76: 2011	Inches/foot	3.4

Remarks: BDL - Below Detectable limit (DL - Detectable limit).


Verified 21/10/23

For Shrient Analytical and Research Labs Pvt. Ltd


Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

END OF THE REPORT

Please Contact:

For any Technical Issues & Complaints: vimalnath@shrientanalytical.com

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CIN : U74999TN2017PTC116807 / GST No: 33AAVCS7325R1ZA / Pan No: AAVCS7325R



Shrient Analytical and Research Labs Pvt. Ltd.

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Phone No: 9841074398 / 9698141777 E-mail : Info@shrientanalytical.com
Website : www.shrientanalytical.com

TEST REPORT

Report No.	SARL/23-1090	Report Date.	21.10.2023
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Customer Name & Address	Thiru.R.Seenivasan Over an extent of 3.78.Hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	SOIL		
Sample Mark	S2 Meenakshipuram Bodi		

Customer Reference	As per work order	Sampling Procedure	EPA/600/R-92/128
Sample Reference No.	SARI/W/CHE-1090	Sample Received on	15.10.2023
Sample Collected by	LABORATORY	Test Commenced on	15.10.2023
Sample Collected Date	14.10.2023	Test Completed on	21.10.2023
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results
1	pH at 25 °C	IS 2720: Part 26: 1987	-	7.62
2	Electrical Conductivity	IS 14767: 2000	µmhos/cm	45.82
3	Dry matter content	IS 15106: 2002	%	97.66
4	Water Content	IS 15106: 2002	%	2.34
5	Organic Matter	IS 2720: Part 22: 1972	%	1.32
6	Nitrogen and Nitrogenous compounds	IS 14684: 1999	mg/kg	285
7	Soil Texture	Methods Manual - Soil testing in India - P. No-67: 2011	%	CLAY LOAM
8	<u>Grain Size Distribution</u>	Methods Manual - Soil testing in India - P. No-67: 2011	%	25.67
	i. Sand	Methods Manual - Soil testing in India - P. No-67: 2011	%	40.32
	ii. Silt	Methods Manual - Soil testing in India - P. No-67: 2011	%	34.01
	iii. Clay	Methods Manual - Soil testing in India - P. No-67: 2011	%	
9	Phosphorus as P	IS 10158: 1982	mg/kg	2.13
10	Sodium as Na	USEPA 3050 B: 1996	mg/kg	548
11	Potassium as K	USEPA 3050 B: 1996	mg/kg	920
12	Total soluble sulphates	IS 2720: Part 27: 1977	%	BDL (D.L - 0.02)
13	Porosity	SARL/SOP/SO/001 (Issue No:01, Issue Date - 01.03.2023): 2023	%	17.6
14	Water holding capacity	Methods Manual - Soil testing in India - P. No-76: 2011	Inches/foot	3.7

Remarks: BDL - Below Detectable limit (DL - Detectable limit)


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For Shrient Analytical and Research Labs Pvt. Ltd

END OF THE REPORT


Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

Please Contact:

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Website : www.shrientanalytical.com

TEST REPORT

Report No	SARL/23-1091	Report Date.	21.10.2023
-----------	--------------	--------------	------------

Customer Name & Address	Thiru.R.Seenivasan Over an extent of 3.78.0hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	SOIL		
Sample Mark	S3 Kodangipatti.		

Customer Reference	As per work order	Sampling Procedure	EPA/600/R-92/128
Sample Reference No.	SARL/W/CHE-1091	Sample Received on	15.10.2023
Sample Collected by	LABORATORY	Test Commenced on	15.10.2023
Sample Collected Date	14.10.2023	Test Completed on	21.10.2023
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results
1	pH at 25 °C	IS 2720: Part 26: 1987	-	7.78
2	Electrical Conductivity	IS 14767: 2000	µmhos/cm	80.59
3	Dry matter content	IS 15106: 2002	%	96.82
4	Water Content	IS 15106: 2002	%	3.18
5	Organic Matter	IS 2720: Part 22: 1972	%	0.86
6	Nitrogen and Nitrogenous compounds	IS 14684: 1999	mg/kg	452
7	Soil Texture	Methods Manual - Soil testing in India - P. No-67: 2011	%	SILT LOAM
8	Grain Size Distribution	Methods Manual - Soil testing in India - P. No-67: 2011	%	22.69
	i. Sand	Methods Manual - Soil testing in India - P. No-67: 2011	%	53.14
	ii. Silt	Methods Manual - Soil testing in India - P. No-67: 2011	%	24.17
	iii. Clay	Methods Manual - Soil testing in India - P. No-67: 2011	%	
9	Phosphorus as P	IS 10158: 1982	mg/kg	1.65
10	Sodium as Na	USEPA 3050 B: 1996	mg/kg	362
11	Potassium as K	USEPA 3050 B: 1996	mg/kg	670
12	Total soluble sulphates	IS 2720: Part 27: 1977	%	BDL (D.L - 0.02)
13	Porosity	SARL/SOP/SO/001 (Issue No:01, Issue Date - 01.03.2023): 2023	%	18.2
14	Water holding capacity	Methods Manual - Soil testing in India - P. No-76: 2011	Inches/foot	3.5

Remarks: BDL - Below Detectable limit (DL - Detectable limit).


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Technical Manager

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Phone No: 9841074398 / 9698141777 E-mail : Info@shrientanalytical.com
Website : www.shrientanalytical.com

TEST REPORT

Report No.	SARL/23-1092	Report Date.	21.10.2023
------------	--------------	--------------	------------

Customer Name & Address	Thiru.R. Seenivasan Over an extent of 3.78.0 hectares of Patta land in S.F.Nos.110/3, 110/4, 110/5, 127/1 and 127/2 of Kodangipatti Village, Bodinaikkanur Taluk, Theni District, Tamil Nadu State.		
Sample Description	NOISE LEVEL DATA		

Customer Reference	As per work order	Sampling Method	SARL/IOP/023
Sample Reference No	SARL/N/CHE-1092	Date of Monitoring	14.10.2023
Sample Collected by	LABORATORY		

Level in dB (A)

Time in hrs	N1	N2	N3	N4	N5
06.00	44.0	48.2	49.7	48.8	48.8
07.00	50.5	49.3	50.8	51.1	52.3
08.00	44.5	47.4	49.1	49.4	53.3
09.00	46.8	52.0	48.4	49.4	51.9
10.00	45.8	48.5	47.6	48.4	52.4
11.00	42.9	47.2	47.0	47.6	50.6
12.00	43.0	45.8	44.7	45.4	47.1
13.00	43.0	51.4	45.0	47.7	46.5
14.00	45.8	46.3	44.8	53.3	49.4
15.00	50.3	52.6	47.1	47.1	52.6
16.00	42.6	49.9	49.1	49.1	53.5
17.00	40.7	48.9	48.4	48.4	53.3
18.00	46.4	49.9	49.8	49.8	48.7
19.00	48.9	49.1	51.5	51.5	43.4
20.00	46.8	44.1	46.1	46.1	41.0
21.00	44.9	41.6	46.5	46.5	37.3
22.00	43.7	35.6	47.9	50.5	39.0
23.00	41.1	35.0	39.6	39.6	39.6
24.00	40.4	35.5	39.6	39.6	38.6
01.00	37.9	36.1	37.9	37.9	38.9
02.00	38.1	35.3	38.5	38.5	38.1
03.00	37.6	36.9	37.2	37.2	39.4
04.00	38.4	38.8	38.4	38.4	39.7
05.00	40.7	41.1	40.2	37.9	38.4

[Signature]
21/10/23



[Signature]
21/10/23 Page 1 of 2

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Website : www.shrientanalytical.com

TEST REPORT

Report No. SARL/23-1092

Report Date. 21.10.2023

	N1	N2	N3	N4	N5
DAY EQUIVALENT	46.3	49.0	48.3	49.2	50.6
NIGHT EQUIVALENT	40.2	37.3	41.6	43.1	39.0
DAY & NIGHT EQUIVALENT	45.1	47.4	47.0	48.0	48.9

Remarks:

LOCATIONS:

- N1 - Within Mine Lease Area
- N2 - Boothipuram Tp
- N3 - Meenakshipuram Bodi
- N4 - Teni Alinagaram M
- N5 - Palani Chettipatti
- N6 - Kodangipatti


21/10/23
Verified

For Shrient Analytical and Research Labs Pvt. Ltd


21/10/23
Authorized Signatory

END OF THE REPORT

J. GNANAPRAKASAM
Technical Manager

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National Accreditation Board for
Testing and Calibration Laboratories

CERTIFICATE OF ACCREDITATION

**SHRIENT ANALYTICAL & RESEARCH LABS PRIVATE
LIMITED**

has been assessed and accredited in accordance with the standard

ISO/IEC 17025:2017

**"General Requirements for the Competence of Testing &
Calibration Laboratories"**

for its facilities at

416/15, DHARGAS ROAD, PERUNGALATHUR, WEST TAMBARAM, CHENNAI, KANCHIPURAM, TAMIL
NADU, INDIA

in the field of

TESTING

Certificate Number: TC-12339

Issue Date: 30/09/2023

Valid Until:

29/09/2025

This certificate remains valid for the Scope of Accreditation as specified in the annexure subject to continued
satisfactory compliance to the above standard & the relevant requirements of NABL.

(To see the scope of accreditation of this laboratory, you may also visit NABL website www.nabl-india.org)

Name of Legal Entity: SHRIENT ANALYTICAL AND RESEARCH LABS PRIVATE LIMITED

Signed for and on behalf of NABL



N. Venkateswaran
Chief Executive Officer