DRAFT ENVIRONMENTAL IMPACT ASSESSMENT

&

ENVIRONMENT MANAGEMENT PLAN

FOR OBTAINING

Environmental Clearance under EIA Notification – 2006
Schedule Sl. No. 1 (a) (i): Mining Project

"B1" CATEGORY (Cluster) – MINOR MINERAL – CLUSTER –

PATTA LAND - FRESH QUARRY

THIRU. C.SELVAM ROUGH STONE AND GRAVEL QUARRY

Cluster Extent – 13.52.5 Ha, Lease Period: 10 Years

(1 Proposed + 1 Existing Quarries)

Project Proponent

Thiru. C. Selvam

S/o. Chelladurai,
No.38, Middle Street, Pirathukaranpatti,
Shanmugasundarapuram, Andipatti Taluk,
Theni District – 625 512

PROJECT LOCATION	PROPOSED PRODUCTION
S.F. Nos. 927/2,3,4,5,940/2 & 943/1, Thimmarasanayakkanur Bit – I Village, Andipatti Taluk, Theni District, Tamil Nadu **Extent: 8.76.5 ha**	**Reserves:** For First Five Year – 7,77,155 m^3 of Rough stone & 2,39,412 m^3 of Gravel For Second Five Year – 6,73,935 m^3 of Rough stone & 46,818 m^3 of Gravel Peak Production = 1,66,540 m^3 of Rough Stone 72,180 m^3 of Gravel Proposed Depth = **59 m BGL** Mining Plan Period: 10 years

ToR obtained vide

File No: 11284 ToR Identification: TO24B0108TN5453826N Dated: 29.11.2024

Environmental Consultant

GEO EXPLORATION AND MINING SOLUTIONS
Old No. 260-B, New No. 17,
Advaitha Ashram Road, Alagapuram,
Salem – 636 004, Tamil Nadu, India
Accredited for sector 1 Cat 'A', sector 31 & 38 Cat 'B'
Certificate No : NABET/EIA/2225/RA 0276
Phone: 0427-2431989,
Email: infogeoexploration@gmail.com
Web: www.gemssalem.com

Laboratory

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

Baseline Monitoring Period

October to December 2024

MARCH 2025

UNDERTAKING

I Thiru. C. Selvam given undertaking that this Draft EIA & EMP report prepared for our Rough stone and Gravel quarry situated in S.F. No 927/2,3,4,5,940/2 & 943/1, over an extent of 8.76.5 Ha in Thimmarasanayakkanur Bit – I Village, Andipati Taluk, Theni District, Tamil Nadu State based on the Transfer in ToR obtained vide issued by the State Level Environmental Impact Assessment Authority (SEIAA), Tamil Nadu vide ToR Identification: TO24B0108TN5453826N Dated: 29.11.2024

I hereby assured that the Data's submitted and information given by me is true and correct to the best of my knowledge.

Signature of the Project Proponent



Thiru. C. Selvam

Place : Theni

Dated :

DECLARATION

I Dr. M. Ifthikhar Ahmed – EIA Co Ordinator declare that the Draft EIA & EMP report for the Rough stone and Gravel quarry in S.F.No 927/2,3,4,5,940/2 & 943/1, over an extent of 8.76.5 Ha in Thimmarasanayakkanur Bit – I Village, Andipatti Taluk, Theni District, Tamil Nadu State has been prepared by Geo Exploration and Mining Solutions, Salem, Tamil Nadu.

The Data's provided in the EIA report are true and correct to the best of my knowledge.

Signature of the EIA Co Ordinator



Dr. M. Ifthikhar Ahmed

Managing Partner

M/s. Geo Exploration and Mining Solutions

Place : Salem
Dated :

For easy represantation of Proposed and Existing Quarries in the Cluster are given unique codes and identifies and studied in this EIA/EMP Report.

PROPOSED QUARRY				
CODE	**Name of the Owner**	**S.F. Nos**	**Extent**	**Status**
P1	**Thiru. C.Selvam,** S/o. Chelladurai, No.38, Middle Street, Pirathukaranpatti, Shanmugasundarapuram, Andipatti Taluk. Theni District – 625 512	927/2,3,4,5,940/2 & 943/1,	8.76.5 ha	ToR Identification: TO24B0108TN5453826N Dated: 29.11.2024
TOTAL			**8.76.5 ha**	
EXISTING QUARRY				
CODE	**Name of the Owner**	**S.F. No & Village**	**Extent**	**Status**
E1	**Thiru. T. Sivakumar** S\o.Thanikodi, No.16/5, Sulthan Nagar, Visalam 1st Street, Narimedu, Madurai District.	926/1, 926/2, 945	4.76.00 ha	Lease Period – 06.03.2020 – 05.03.2025
TOTAL			**4.76.00 ha**	
EXPIRED/ABANDONED QUARRIES				
EX1	**Thiru. T. Rajavel Pandian** No.16/5, velmani Illam, Maruthupandian Nagar, Narimedu, Madurai	814 (Part - I)	2.50.0	Lease Period – 26.05.2011 – 25.08.2021
EX2	**Thiru. T. Sivakumar** No.16/5, velmani Illam, Maruthupandian Nagar, Narimedu, Madurai	814 (Part - II)	2.50.0	Lease Period – 08.09.2011 – 07.09.2021
TOTAL			**5.00.0 ha**	
TOTAL CLUSTER EXTENT			**13.52.5 ha**	

Note:-

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

TERMS OF REFERENCE (ToR) COMPLIANCE

Thiru. C. Selvam

ToR Identification No.: TO24B0108TN5453826N Dated: 29.11.2024

SEIAA SPECIFIC CONDITION		
1	From the KML, it is found that the proposed site seems to be sensitive as there is a hillock located nearby (Western side). Hence, the PP shall study impact of mining operations on the same and submit the study report along with EIA report.	Noted and Agreed Detailed in Chapter 4
SEAC CONDITION – SITE SPECIFIC		
1	A Cluster Management Committee (CMC) shall be constituted including all the mines in the cluster as Committee Members for the effective management of the mining operation in the cluster through systematic & scientific approach with appointment of required statutory personnel, appropriate environmental management, system of maintaining the haul roads and village/panchayat roads, authorized blasting operation, Monitoring system of the environmental & other statutory compliances & its reporting status, etc. The PP shall submit the following details in the form of an Affidavit during the EIA appraisal: (i) Copy of the agreement forming CMC. (ii) The Organisation chart of the Committee with defining the role of the members (iii) The 'Standard Operating Procedures' (SoP) executing the planned activities.	Noted and Agreed
2	The PP shall spell out the conservation cost considering the existence of SMTR after consultation with the concerned DFO.	Noted and Agreed Detailed in Chapter 10
3	The PP shall also examine whether the site falls within Eco Sensitive Area considering MoEF &CC Office Memorandum no. FC-11/119/2020-FC dated: 17th May, 2022.	Andipatti North R.F – 240m –East Srivilluputhur – Megamalai Tiger Reserve Sanctuary – 8 km – SouthWest
4	As the proposed site appears to be in valley between hillock mountain range, the PP shall study on the implications of flora, fauna, wind direction & drainage pattern.	Noted and Agreed Detailed in Chapter No.4
5	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. and spell out the mitigation measures to be proposed for the protection of the above structures, if any during the quarrying operations.	Noted and Agreed Detailed in Chapter No.3
6	The proponent shall furnish photographs of adequate fencing, garland drainage built with siltation tank & green belt along the periphery including replantation of existing trees; maintaining the safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan.	Noted and Agreed Barbed wire Fencing has been erected and greenbelt plantations has been carried out and the photos has enclosed in Chapter 2

7	The Proponent shall carry out Bio diversity study as a part of EIA study and the same shall be included in the Report.	Noted and Agreed Detailed in Chapter 3
8	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 Agreed Detailed in Chapter 10
9	The PP shall prepare a conceptual working plan accommodating the inclusion of haul road accessibility keeping the benches intact, by ensuring the slope stability of the working benches to be constructed and existing quarry wall.	Noted and Agreed Conceptual working plan has been detailed in Chapter 2 And the plan has attached as Annexure
SEAC STANDARD CONDITIONS		
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 (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 zonelbenches (ix) Revised/Modified Mining Plan showing the benches ofnot exceeding 6 m height and ultimate depth of not exceeding 50m.	Not Applicable, It is a Fresh Quarry
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.	Detailed in chapter-3 and VAO certificate is incorporated in the Draft EIA/EMP report.
3	The structures within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m & upto 500 m 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.	Detailed in Chapter No.3
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 1km of the proposed quarry.	<table><tr><td>Odai</td><td>North Inside Lease Area</td></tr><tr><td>Odai</td><td>North 50m Safety</td></tr><tr><td>Odai</td><td>1.2km SW</td></tr><tr><td>Canal</td><td>5.3km NW</td></tr><tr><td>Vaigai River</td><td>6.8km NW</td></tr><tr><td>Periyar Main Canal</td><td>7.2km NW</td></tr><tr><td>Varaha River</td><td>7.8km NW</td></tr></table>Detailed EIA study has been carried out considering

		the impact to the water bodies and eco system of the area. Details are covered in the Chapter No.3 and 4. Attached detailed hydrological report in Annexure.
5	The Proponent shall carry out Bio diversity study through reputed Institution and the same shall be included in EIA Report.	The Bio- Diversity report from reputed institution will be submitted during Final EIA/EMP appraisal.
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.	Andipatti North R.F – 240m –East Srivilluputhur – Megamalai Tiger Reserve Sanctuary – 8 km – SouthWest Kodaikanal wildlife Sanctuary – 18.50 km Northwest Obtained DFO letter Proc.No: 11567/2023/D2 Dated:20.05.2024
7	In the case of proposed lease in an existing (or old) quarry where the benches are not formed (or) partially formed as per the approved Mining Plan, the project proponent (pp) shall the PP shall carry out the scientific studies to assess the slope stability of the working benches to be constructed and existing quarry wall, by involving any one of the reputed Research and Academic Institutions - CSIR-Central Institute of Mining & Fuel Research / Dhanbad, NIRM/Bangalore, Division of Geotechnical Engineering-IIT Madras, NIT-Dept of Mining Engg, Surathkal, and Anna university Chennai-CEG Campus. The PP shall submit a copy of the aforesaid report indicating the stability status of the quarry wall and possible mitigation measures during the time of appraisal for obtaining the EC.	Fresh lease application. The altitude of the area is 369m (max) above Mean Sea level
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.	The slope stability report will be submitted when the proposed quarry attain 30m bgl
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/1st Class mines manager appointed by the proponent.	Proponent will be submit Affidavit stating that the blasting operation will be caried out by the competent person as per the MMR 1961 in the Final EIA Appraisal
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 30mfrom the blast site.	The Blasting will be carried out by controlled blasting adopting muffle blasting and line drilling. The cost for the controlled blasting is allotted in the EMP
11	The EIA Coordinators shall obtain and furnish the details of quarry/quarries operated by the proponent ill the past, either in the same location or elsewhere in the State with video and photographic evidences.	No other Quarries in the name of proponent

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	It is a Fresh Lease application.
13	what was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?	It is a Fresh Lease application.
14	Quantity of minerals mined out a) Highest production achieved in any one year b) Detail of approved depth of mining c) Actual depth of the mining achieved earlier d) Name of the person already mined in that leases area e) If EC and CTO already obtained' the copy of the same shall be submitted f) whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches.	Not Applicable, It is a Fresh lease application
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).	Coordinates for all the boundaries are given in the Chapter No.2 Satellite imagery of the project site marked with Lease boundary, Safety area
16	The PP shall carry out Drone video survey covering the cluster, Green belt, fencing etc.,	Drone video survey covering the Cluster, Greenbelt and fencing will be submitted during appraisal.
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.	The area has been fenced and the photographs are given in the Chapter No.2, No trees within the proposed excavation area, No transplantation is required. Water bodies near to the project site is given in the Chapter No.2
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.	As per ToR obtained First Five Year Production: 7,77,155 m^3 of Rough stone, 2,39,412 m^3 of Gravel Second Five Year Production: 6,73,935 m^3 of Rough stone, 46,818 m^3 of Gravel Proposed Depth = 55m Bgl The proposed plantation is 4350 Nos.along the safety barrier, village road and panchayat road Details of Geological Resources and Proposed reserves are discussed under Chapter No. 2.
19	The Project Proponent shall provide the organization chart indicating the appointment of various statutory	Discussed about Organization chart in Chapter 6,

	officials and other competent persons to be appointed as per the provisions of Mines Act'1952 and the MMR, 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the environment.	
20	The project proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1km (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 are this regard may be provided.	The hydro-geological study was conducted to evaluate the possible impact on the ground water table. No significant impacts are anticipated on the water bodies around the project area. Details are discussed under Chapter No. 3.
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.	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 to assess the cumulative impact of the proposed project on the environment is prepared. The details of Baseline study is given in the Chapter No. 3.
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.	The Cumulative impact study due to mining operations is explained in chapter – 7
23	Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted.	The rain water will be collected in the mine pit at the lower point later it will be utilized for the haul road maintenance, Greenbelt development etc.,
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 pre operational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.	Land use Land cover study within the radius of 10km is detailed in the Chapter No. 3
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.	Not applicable, There is no wastages anticipated, the entire quarried out Rough stone material will be utilized..

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.	The area is not declared as Critically polluted area, No court case pending against the project. Proponent obtained Precise area communication letter, Approval for the Mining plan. The Details are enclosed as Annexure .
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.	The rain water collected in the pits after spell of rain will be used for greenbelt development and dust suppression.
28	Impact on local transport infrastructure due to the Project should be indicated.	There is no group of Houses, Schools in the proposed transportation route. Proposed Transportation route with mitigation measures are given in the Chapter No.2
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.	The Flora study in the core zone has been carried out and the details are given in the Chapter No.3
30	A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.	The mine closure plan is detailed in the Chapter No.4 The budget for the mine closure is included in the Environmental Management plan in Chapter No.10 ,
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.	The Flora and Fauna study around the vicinity of the site is carried out by the Functional area experts along with Local School Students.
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 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 io a mixed manner.	The plantation in the project site will be carried out using native and mixed plantation. The recommended species for the plantation is given in the Chapter No.4 Table
33	Taller/one year old Saplings raised in appropriate size of bags; preferably eco-friendly bags should be planted in proper replacement 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 and Agreed. The plantation in the project site will be carried out using native and mixed plantation. The recommended species for the plantation is given in the Chapter No.4

34	A Disaster management Plan shall be prepared and included in the EIA/EMP Report.	Disaster management Plan details in Chapter-7
35	A Risk Assessment and management Plan shall be prepared and included in the EIA/EMP Report.	A Risk Assessment and management Plan Chapter- 7
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.	Occupational Health impacts of the project with mitigation measures are detailed in the Chapter No.7, Details of Periodical Medical Examination given in the Chapter No.10
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.	The details of the population in the impact zone (within 500m radius) is detailed in the Chapter No.3,
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.	Socio Economic study covering 10 km radius is detailed in the Chapter No.3
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.	No court case and litigation pending against the project.
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.	It is explained in Chapter -3- socio economic study
41	If any quarrying operations were carried out in the proposed quarrying site for which now the EC is sought, the Project Proponent shall furnish the detailed compliance to EC conditions given in the previous EC with the site photographs which shall duly be certified by MoEF&CC, Regional Office, Chennai (or) the concerned DEE/TNPCB.	Not applicable, the project is fresh proposal
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.	The EMP has been prepared for the entire life of the mine. Proponent given affidavit stating the EMP will be submitted during the appraisal after completion of Public hearing.
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 Reference besides attracting penal provisions in the Environment (Protection) Act, 1986.	Noted and agreed

STANDARD TERMS OF REFERENCE		
1.1	A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given	The applied land for quarrying is a Patta Land. Document is enclosed along with Approved Mining Plan as Annexure Volume 1.
2	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	Noted and Agreed
3	All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery/ toposheet, topographic sheet, geomorphology and geology of the area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone)	Map showing – Project area is with adjacent quarries details is enclosed in Figure No1.1 Project area boundary coordinates superimposed on Toposheet – Figure No. 1.1A Toposheet of the project area covering 10km radius – Figure No. 1.2 Geology map of the project area covering 10km radius - Figure No. 2.11
4	Information should be provided in Survey of India Toposheet 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	**Map showing –** Geology map of the project area covering 10km radius - Figure No. 2.11 Geomorphological features are incorporated in the Toposheet map covering 10km radius around the project area Figure No. 2.12
5	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	The applied area was inspected by the officers of Department of Geology along with revenue officials and found that the land is fit for quarrying under the policy of State Government.
6	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 noncompliances / 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	The proponent has framed their Environmental Policy and the same is discussed in the Chapter No 10.1.
7	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	It is an opencast quarrying operation proposed to operate in Mechanized method. The rough stone formation is a hard, compact and homogeneous body. The height and width of the bench will be maintained as 5m with 90^0 bench angles. Quarrying activities will be carried out under the supervision of Competent Persons like Mines Manager, Mines Foreman and Mining Mate. Necessary permissions will be obtained from DGMS after obtaining Environmental Clearance.

8	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	**Noted & 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.
9	Land use of the study rea 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 and land cover of the study area is discussed in Chapter No. 3. Land use plan of the project area showing pre-operational, operational and post-operational phases are discussed in Chapter No. 2, Table No 2.3
10	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	**Not Applicable.** There is no waste anticipated during this quarry operation. The entire quarried out rough stone will be transported to the needy customers. No Dumps is proposed outside the lease area.
11	A 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 involved in the proposed project area. PP has obtained the Forest Letter from the DFO Theni Forest Division, Theni Nearest Reserve Forest – Andipatti North R.F – 240m East Nearest Wildlife Sanctuary – Srivilliputhur Megamalai Tiger Reserve – 7km SW Kodaikanal wildlife Sanctuary – 18.50 km NW
12	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.** The proposed project area does not involve any Forest Land.
13	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.** The project doesn't attract Recognition of Forest Rights Act, 2006.
14	The vegetation in the RF / PF areas in the study area, with necessary details, should be given	No Reserve Forest within the Study Area.
15	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	**Not Applicable.** There are No National Parks, Biosphere Reserves, Wildlife Corridors, and Tiger/Elephant Reserves within 10 km Radius from the periphery of the project area.
16	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	**Not Applicable.** There are no National Parks, Biosphere Reserves, Wildlife Corridors, and Tiger/Elephant Reserves within 10 km Radius from the periphery of the project area.

	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 Wildlifeand copy furnished	
17	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 alongwith 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	Detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] was carried out and discussed under Chapter No. 3. There is no schedule I species of animals observed within study area as per Wildlife Protection Act 1972 as well as no species is in vulnerable, endangered or threatened category as per IUCN. There is no endangered red list species found in the study area.
18	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 Dept. Should be secured and furnished to the effect that the proposed mining activities could be considered	**Not Applicable.** Project area / Study area is not declared in 'Critically Polluted' Area and does not come under 'Aravalli Range.
19	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.** The project doesn't attract The C. R. Z. Notification, 2018.
20	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	**Not Applicable.** There are no approved habitations within a radius of 300 meters. Therefore, R&R Plan / Compensation details for the Project Affected People (PAP) is not anticipated and Not Applicable for this project.
21	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	Baseline Data were collected for Summer Season (Oct 2024 – Dec 2024) as per CPCB Notification and MoEF & CC Guidelines. Details in Chapter No. 3.

	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	
22	Air quality modelling 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 modelling 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	Air Quality Modelling for prediction of incremental GLC's of pollutant was carried out using AERMOD Model. Details in Chapter No. 4,
23	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	Total Water Requirement for this project is given in the chapter No 2, Table No 2.13.
24	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 collected in the pits after spell of rain will be used for greenbelt development and dust suppression.
25	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	Impact Studies and Mitigation Measures of Water Quality discussed in Chapter No. 4.
26	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 State Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished	The ground water table is at 60-65m below ground level. The ultimate depth of this projects is 59m from the general ground profile. Maximum depth is proposed in this EIA project is 59m.
27	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	Highest elevation of the project area is 356 - 369m AMSL Ultimate depth of the mine is 59m AMSL Water level in the area is 60 - 65m BGL
28	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	Progressive greenbelt development plan has been prepared and discussed along with Recommended Species details are given in the Chapter 4, Table No.4.9
29	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	Traffic density survey was carried out to analyse the impact of Transportation in the study area as per IRC guidelines 1961 and it is inferred that there is no much significant impact due to the proposed

	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	transportation from the project area. Details in Chapter 2.
30	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.	Infrastructure & other facilities will be provided to the Mine Workers after the grant of quarry lease and the same has been discussed in the Chapter No.2. .
31	Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report	Discussed in chapter No 2.
32	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.	Details in Chapter 10.
33	Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed	Details in Chapter 10.
34	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.	Details in Chapter 4,
35	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	Environment Management Plan Chapter 10.
36	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	The outcome of public hearing will be updated in the final EIA/EMP report
37	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	No litigation is pending in any court against this project.

	provided and also incorporated in the final EIA/EMP Report of the Project	
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	The proposed capital cost for Environmental Monitoring Programme is Rs 3,80,000/- and the recurring cost is Rs 76,000/- per annum. Details in Chapter 6 .
39	The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out	Details in Chapter 10.
40	A Disaster management Plan shall be prepared and included in the EIA/EMP Report	Details in Chapter 7.
41	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	Details in Chapter.8.
42	**Besides the above, the below mentioned general points are also to be followed:**	
A	All documents to be properly referenced with index and continuous page numbering.	All the documents are properly referenced with index and continuous page numbering.
B	Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated.	List of Tables and source of the data collected are given properly.
C	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	Baseline monitoring reports are enclosed with mining plan
D	Where the documents provided are in a language other than English, an English translation should be provided.	Not Applicable.
E	The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.	Will be enclosed along with Final EIA /EMP Report.
F	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.	Instructions issued by MoEF & CC O.M. No. J-11013/41/2006-IA. II (I) Dated: 4th August, 2009 are followed.
G	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	Noted & agreed.
H	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.	Not applicable.
I	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)	Surface Plan – Figure No. 2.2. Geological Plan – Figure No 2.9. Working Plan – Figure No 2.9. Closure Plan – Figure No.2.10.

	sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area.	

SEIAA STANDARD CONDITIONS		
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.	Cluster management committee has been formed with mutual agreement with the proponents including Existing and Proposed quarry at present 2 Nos are members in this CMC
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..	As per the committee agreement proponents will coordinates for the Greenbelt development, Water sprinkling and tree plantation activities combinedly
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.	The formation of committee with list of members has been submitted to the AD mines office, Theni and the same will be update in every year
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.	As per the committee agreement the blasting frequency will be discussed and carryout by the Mines Manager appointed by the proponents and the same will be updated in the committee minutes
5	The committee shall deliberate on risk management plan pertaining to the cluster in a holistic manner especially during natural calamities like intense rain and the mitigation measures considering the inundation of the cluster and evacuation plan	Details discussed in chapter 7 of Final EIA report
6	The Cluster Management Committee shall form Environmental Policy to practice sustainable mining in a scientific and systematic manner in accordance with the law. The role played by the committee in implementing the environmental policy devised shall be given in detail.	Details discussed in chapter 6 of Final EIA report
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.	Noted & agreed
8	The committee shall furnish the Emergency Management within the cluster.	Details discussed in chapter 7.
9	The committee shall deliberate on the health of the workers/staff involved in the mining as well as the health of the public.	Details discussed in chapter 10.
10	The committee shall furnish an action plan to achieve sustainable development goals with reference to water, sanitation & safety.	Noted & agreed
11	The committee shall furnish the fire safety and evacuation plan in the case of fire accidents.	Detailed discussed in chapter 7.
Impact study of mining		

12	Detailed study shall be caried out in regard to impact of mining around the proposed mine lease area covering the entire mine lease period as per precise arca communication order issued from reputed research institutions on the following a) Soil health & bio-diversity 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. 1) 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 steams.	Details of Soil health is given in Chapter No 3 and biodiversity is given in Chapter No 3. The project will not cause any significant changes in the climate Climatic changes and GHG are described in Chapter No 4. Details of water contamination and impact on aquatic ecosystem is given in Chapter No 4. Hydrothermal/ Geothermal effects due to destruction in the environment, Bio geochemical process and sediment geo chemistry given in the Chapter No 7.
Agriculture & Agro-Biodiversity		
13	Impact on surrounding agricultural fields around the proposed mining Area.	Detailed discussed in chapter 4.
14	Impact on soil flora & vegetation around the project site.	Detailed discussed in chapter 4.
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.	Details discussed in chapter 10
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.	The EIA study on biodiversity, natural ecosystem, the soil micro flora, fauna was carried out and discussed in earlier slides. The species overcome periods of un favorable weather conditions by building up large seed stock in the soil, which is known as “soil seed banks”. This strategy protects plant species diversity against local extinction of the species during the disturbance and provides information on the past population dynamics and structure and future regeneration potential of degraded land. The proposed project site is a dry land without any major vegetation and its proposed to remove the top layer of gravelly formation and sold in open market and the 7.5m of safety barrier shall be remained un touched all around the lease applied area.
17	Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.	During Mine Closure the excavated pit will be allowed to collect rain water and shall act as an artificial reservoir and shall prove beneficial for the ecosystem. The proposed greenbelt activity shall also prove beneficial for the ecosystem during mine closure
18	The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands. Horticulture, Agriculture and livestock .	The project area is bounded by Existing quarries on the South side. Proponent proposed to erect green mesh along with fencing on the boundary of the proposed quarry besides, Budgetary allocation given in the Chapter No. 10.
Forest		

19	The project proponent shall detail study on impact of mining on Reserve forests free ranging wildlife.	Andippatti R.F – 240 m – East Srivilliputhur Megamalai Tiger Reserve – 8.70 km – Southwest Kodaikanal wildlife Sanctuary – 18 km Northwest
20	The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.	Ecology and Biodiversity environment deals in Chapter-3
21	The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection.	Ecology and Biodiversity environment deals in Chapter-3
22	The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site.	Anticipated Environment Impact and Mitigation measures are detailed in Chapter No.4
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.	There are 7 open wells and 8 bore wells within the radius of 1km from the project area, Hydrogeological study has been conducted by the resistivity method
24	Erosion Control measures.	Noted & agreed
25	Detailed study shalt 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.	Details in Chapter 2
26	The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.	Details in Chapter 2 and 4 impact of bio diversity
27	The project proponent shall study and furnish the details on potential fragmentation impact on natural Environment by the activities.	Noted & agreed
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.	Noted & agreed. Detailed under Chapter 3.
29	The Terms of Reference should specifically study impact on soil health, soil erosion, the soil, physical, chemical components and microbial components.	Details in Chapter 3 Soil environment.
30	The Environmental impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.	Details in Chapter 3 Water environment.
Energy		
31	The measures taken to control Noise. Air, Water. Dust Control and steps adopted to efficiently utilize the Energy shall be furnished.	Details in Chapter 3 environmental monitoring details.
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.	Details of carbon emission and mitigation activities are given int the Chapter No.4
33	The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock.	Details in Chapter-3 for meteorological and climate/weather data representation of graphs.
Mine Closure Plan		
34	Detailed Mine Closure Plan covering the entire mine lease period as per precise area communication order issued.	Details in Chapter 2 mine closure plan
EMP		
35	Detailed Environment Management Plan along with adaptation, mitigation & remedial strategies covering the entire mine lease period as per precise area communication order issued.	Detailed under Chapter 10
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.	Details in Green belt development in chapter 4
Risk Assessment		
37	To furnish risk assessment and management plan including anticipated vulnerabilities during operational and post operational phases of Mining.	Detailed under Chapter 7
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.	Details in Study 7.3 Disaster Management Plan in Chapter -7
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.,	Noted & agreed. Detailed under Chapter 4
40	As per the MoEF& CC office memorandum tr.No.22-65/2017-lA.lll 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.	Noted and agreed
41	The project proponent shall study and furnish the possible pollution due to plastic and microplastic on the environment. The ecological risks and impacts of plastic & microplastics on aquatic environment and fresh water systems due to activities, contemplated during mining may be investigated and reported.	Details of carbon emission and mitigation activities are given int the Chapter No.4

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.	**Not applicable.** This is not a violation category project. This proposal falls under B1 Category
2	A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given.	The applied land for quarrying is a Patta Land. Document is enclosed along with Approved Mining Plan as Annexure Volume 1.
3	All documents including approved mine plan, EIA and Public Hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management, mining technology etc. and should be in the name of the lessee.	**Noted & agreed.**
4	All corner coordinates of the mine lease area, superimposed on a High-Resolution Imagery/ toposheet, topographic sheet, geomorphology and geology of the area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).	Map showing – Project area is with adjacent quarries details is enclosed in Figure No1.1 Project area boundary coordinates superimposed on Toposheet – Figure No. 1.1A Toposheet of the project area covering 10km radius – Figure No. 1.2 Geology map of the project area covering 10km radius - Figure No. 2.11
5	Information should be provided in Survey of India Toposheet 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.	**Map showing –** Geology map of the project area covering 10km radius - Figure No. 2.11 Geomorphological features are incorporated in the Toposheet map covering 10km radius around the project area Figure No. 2.12
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.	The applied area was inspected by the officers of Department of Geology along with revenue officials and found that the land is fit for quarrying under the policy of State Government.
7	It should be clearly stated whether the proponent Company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA Report with description of the prescribed operating process/procedures to bring into focus any infringement/deviation/ violation of the environmental or forest norms/conditions? The 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.	The proponent has framed their Environmental Policy and the same is discussed in the Chapter No 10.1.
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.	It is an opencast quarrying operation proposed to operate in Mechanized method. The rough stone formation is a hard, compact and homogeneous body. The height and width of the bench will be maintained as 5m with 90^0 bench angles. Quarrying activities will be carried out under the supervision of Competent Persons like

		Mines Manager, Mines Foreman and Mining Mate. Necessary permissions will be obtained from DGMS after obtaining Environmental Clearance.
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.	**Noted & 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. Impact, if any, of change of land use should be given.	Land use and land cover of the study area is discussed in Chapter No. 3. Land use plan of the project area showing pre-operational, operational and post-operational phases are discussed in Chapter No. 2, Table No 2.3
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	**Not Applicable.** There is no waste anticipated during this quarry operation. The entire quarried out rough stone will be transported to the needy customers. No Dumps is proposed outside the lease area.
12	A 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 involved in the proposed project area. The proposed project area is a Patta land. Approved Mining Plan is enclosed as Annexure Volume 1.
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.** The proposed project area does not involve any Forest Land.
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.** The project doesn't attract Recognition of Forest Rights Act, 2006.
15	The vegetation in the RF / PF areas in the study area, with necessary details, should be given.	No Reserve Forest within the Study Area.
16	A study shall be got done to ascertain the impact of the Mining Project on wildlife of the study area and details furnished. Impact of the project on the wildlife in the surrounding and any other protected area and accordingly, detailed mitigative measures required, should be worked out with cost implications and submitted.	**Not Applicable.** There are No National Parks, Biosphere Reserves, Wildlife Corridors, and Tiger/Elephant Reserves within 10 km Radius from the periphery of the project area.
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	**Not Applicable.** There are no National Parks, Biosphere Reserves, Wildlife Corridors, and Tiger/Elephant Reserves within 10 km Radius from the periphery of the project area.

	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.	Detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] was carried out and discussed under Chapter No. 3. There is no schedule I species of animals observed within study area as per Wildlife Protection Act 1972 as well as no species is in vulnerable, endangered or threatened category as per IUCN. There is no endangered red list species found in the study area.
19	Proximity to Areas declared as 'Critically Polluted' or the Project areas likely to come under the 'Aravalli 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.** Project area / Study area is not declared in 'Critically Polluted' Area and does not come under 'Aravalli Range.
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.** The project doesn't attract The C. R. Z. Notification, 2018.
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.	**Not Applicable.** There are no approved habitations within a radius of 300 meters. Therefore, R&R Plan / Compensation details for the Project Affected People (PAP) is not anticipated and Not Applicable for this project.
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	Baseline Data were collected for Summer Season (Oct 2024 – Dec 2024) as per CPCB Notification and MoEF & CC Guidelines. Details in Chapter No. 3.

	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 modelling 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 modelling 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.	Air Quality Modelling for prediction of incremental GLC's of pollutant was carried out using AERMOD Model. Details in Chapter No. 4,
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.	Total Water Requirement for this project is given in the chapter No 2, Table No 2.13.
25	Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.	Water for dust suppression, greenbelt development and domestic use will be obtained from accumulated rainwater/seepage water in mine pits. Drinking water will be sourced from the approved water vendors, No 2, Table No 2.13.
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 collected in the pits after spell of rain will be used for greenbelt development and dust suppression.
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.	Impact Studies and Mitigation Measures of Water Quality discussed in Chapter No. 4.
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.	The ground water table is at 56m below ground level. The ultimate depth of this projects is 32m from the general ground profile. Maximum depth is proposed in this EIA project is 32m.
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.	Highest elevation of the project area is 356 – 369 m AMSL Ultimate depth of the mine is 59m AMSL Water level in the area is 60-65m BGL
30	Information on site elevation, working depth, groundwater table etc. Should be provided both	Progressive greenbelt development plan has been prepared and discussed along with

	in AMSL and BGL. A schematic diagram may also be provided for the same.	Recommended Species details are given in the Chapter 4, Table No.4.9
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.	Traffic density survey was carried out to analyse the impact of Transportation in the study area as per IRC guidelines 1961 and it is inferred that there is no much significant impact due to the proposed transportation from the project area. Details in Chapter 2.
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.	Infrastructure & other facilities will be provided to the Mine Workers after the grant of quarry lease and the same has been discussed in the Chapter No.2. .
33	Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.	Discussed in chapter No 2.
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.	Details in Chapter 10.
35	Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.	Details in Chapter 10.
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.	Details in Chapter 4,
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.	Environment Management Plan Chapter 10.
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.	The outcome of public hearing will be updated in the final EIA/EMP report

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.	No litigation is pending in any court against this 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.	The proposed capital cost for Environmental Monitoring Programme is Rs 3,80,000/- and the recurring cost is Rs 76,000/- per annum. Details in Chapter 6 .
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.	Details in Chapter 10.
42	A Disaster management Plan shall be prepared and included in the EIA/EMP Report.	Details in Chapter 7.
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.	Details in Chapter.8.
44	**Besides the above, the below mentioned general points are also to be followed: -**	
A	Executive Summary of the EIA/EMP Report	Encloses as separate volume
B	All documents to be properly referenced with index and continuous page numbering.	All the documents are properly referenced with index and continuous page numbering.
C	Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated.	List of Tables and source of the data collected are given properly.
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	Baseline monitoring reports are enclosed with mining plan
E	Where the documents provided are in a language other than English, an English translation should be provided.	Not Applicable.
F	The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.	Will be enclosed along with Final EIA /EMP Report.
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.	Instructions issued by MoEF & CC O.M. No. J-11013/41/2006-IA. II (I) Dated: 4th August, 2009 are 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	Noted & agreed.
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.	Not applicable.
J	The EIA report should also include (i) surface plan of the area indicating contours of main	Surface Plan – Figure No. 2.2. Geological Plan – Figure No 2.9.

	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.	Working Plan – Figure No 2.9. Closure Plan – Figure No.2.10.

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1. INTRODUCTION

1.0 PREAMBLE

The project proponent Thiru. C.Selvam Rough Stone and Gravel Quarry Extent 8.76.5 Ha in S.F. No. 927/2,3,4,5,940/2,940/3 & 943/1, Thimmarasanayakkanur Bit - II Village, Andipatti Taluk, Theni District.

- Proponent applied for Rough stone and Gravel quarry lease on 21.09.2023
- Precise area communication letter was issued by District Collector, Theni R.C.No.483/Mines/2023 Dated:22.07.2024
- The Mining Plan was prepared by Recognized Qualified Person and approved by Assistant Director, Geology and Mining, Theni District, vide R.C.No. 483/Mines/2023 Dated:13.08.2024.
- The Mining plan has been approved for the quantity of 14,51,090 m^3 of Rough stone, and 2,86,230 m^3 of Gravel up to the depth of 59 m bgl for the period of Ten years.

As per the EIA Notification, 2006 and subsequent amendments and OM The proposal falls in the B1 Category (Cluster quarries - 1 proposal and 1 Existing quarries forming Cluster Category {Total Extent of the Cluster is 13.52.5 Ha}- Cluster area calculated as per MoEF & CC Notification S.O. 2269(E) Dated 1st July 2016).

- Proponent applied for Transfer Terms of Reference vide Proposal No. SIA/TN/MIN/496070/2024 Dated 21.09.2024 and the Transfer ToR was Granted vide ToR Identification TO24B0108TN5453826N Dated: 29.11.2024
- Based on the ToR Baseline Monitoring study has been carried out for one season i.e., **October - December 2024** and this EIA/EMP report is prepared for considering cumulative impacts arising out of these projects, the Cumulative Environmental Impact Assessment study is undertaken, which is followed by preparation of a detailed Environmental Management Plan (EMP) to minimize those adverse impacts.

Environmental Impact Assessment (EIA) is the management tool to ensure the sustainable development and it is a process, used to identify the environmental, social and economic impacts of a project prior to decision-making. It is a decision-making tool, which guides the decision makers in taking appropriate decisions for any project. EIA systematically examines both beneficial and adverse consequences of the project and ensures that these impacts are taken into account during the project designing. It also reduces conflicts by promoting community participation, information, decision makers, and helps in developing the base for environmentally sound project.

1.1 PURPOSE OF THE REPORT

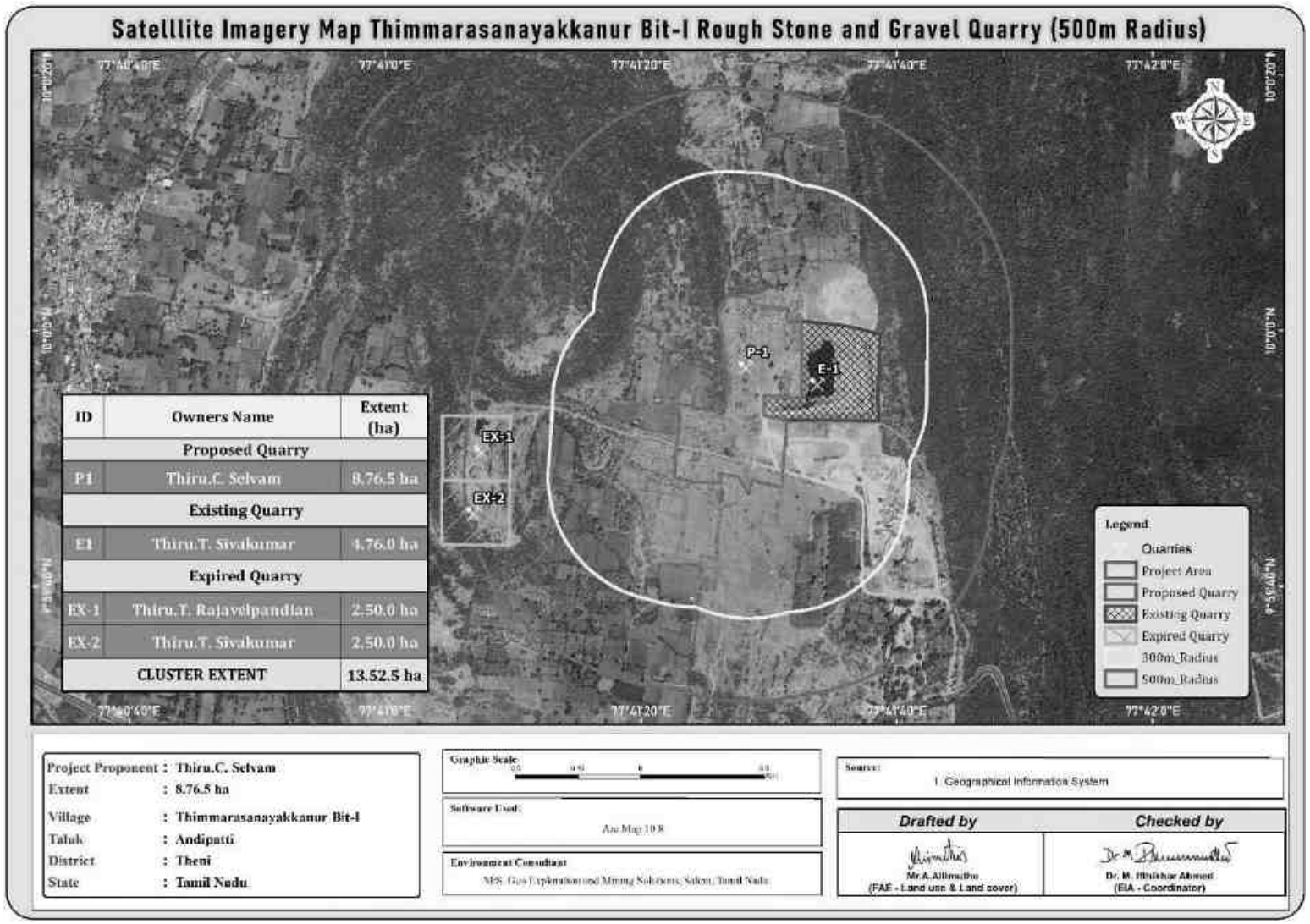
The Ministry of Environment and Forests, Govt. of India, through its EIA notification S.O. 1533(E) of 14th September 2006 and its subsequent amendments as per Gazette Notification S.O. 1889 of 20thApril 2022, Mining Projects are classified under two categories i.e. A (> 250 Ha) and B (≤ 250 Ha), and Schematic Presentation of Requirements on Environmental Clearance of Minor Minerals including cluster situation in Appendix–XI.

Now, as per Order Dated: 04.09.2018 & 13.09.2018 passed by Hon'ble National Green Tribunal, New Delhi in O.A. No. 173 of 2018 & O.A. No, 186 of 2016 and MoEF & CC Office Memorandum F. No. L-11011/175/2018-IA-II (M) Dated: 12.12.2018 clarified the requirement for EIA, EMP and therefore, Public Consultation for all areas from 5 to 25 ha falling in Category B1 and appraised by SEAC/ SEIAA as well as for cluster situation.

The proposed projects are categorized under category "B1" Activity 1(a) (mining lease area in cluster situation) and will be considered at SEIAA – TN after conducting Public Hearing and Submission of EIA/EMP Report for Grant of Environmental Clearance.

"Draft EIA report prepared on the basis of ToR Issued for carrying out public hearing for the grant of Environmental Clearance from SEIAA, Tamil Nadu"

FIGURE 1.1 SATELLITE IMAGERY CLUSTER QUARRIES 500m RADIUS



1.2 IDENTIFICATION OF PROJECT AND PROJECT PROPONENT

1.2.1 Identification of Project Proponent

TABLE 1.1: SALIENT FEATURES OF THE PROPOSED PROJECT

Name of the Project Proponent	Thiru. C. Selvam
Address	S\o. Chelladurai, No.38, Middle Street, Pirathukaranpatti, Shanmugasundarapuram, Andipatti Taluk, Theni District – 625 512
Mobile No	9344753816
Email	Selvamchelladurai27@gmail.com
Status	Individual

Source: Approved Mining Plan.

1.2.2 Identification of Project Proponent

TABLE 1.3: BRIEF DESCRIPTION OF THE PROJECT

Name of the Project	Thiru. C.Selvam Rough Stone & Gravel Quarry	
S.F. No.	927/2,3,4,5,940/3 & 943/1	
Extent	**8.76.5 ha**	
Village Taluk and District	Thimmarasanayakkanur Bit – I Village, Andipatti Taluk, Theni District.	
Land Type	patta land	
Land Ownership	It is a Patta lands. S.F.Nos 927/2,3,4,5,940/3 & 943/1 Registered in the name of Tmt.Pavalakodi W/o T hanikodi vide Patta No.5891 & 6234. the applicant has obtained consent from the Pattadhar for the period of 10 years.	
Toposheet No	58-F/12 & 58G/09	
Latitude between	09°59'47.06115"N to 10°00'02.57733"N	
Longitude between	77°41'22.62023"E to 77°41'32.61712"E	
Highest Elevation	356 - 369m AMSL	
Lease Period	Ten years	
Mining Plan Period	Ten years	
Proposed Depth of Mining	59m bgl (3m Gravel +20 m Rough stone)	
Geological Resources	Rough Stone in m^3	Gravel m^3
	40,95,033	4,11,850
Mineable Reserves	Rough Stone in m^3	Gravel m^3
	14,51,090	2,86,230
Proposed Quantity of Production for this Mining Plan Period First Five Years	7,77,155	2,39,412

Proposed Quantity of Production for this Mining Plan Period Second Five Years	6,73,935	46,818
Peak Production	1,66,540	72,180
Ultimate Pit Dimension	XY-AB - 61 m (L) * 116 m (W) * 55 m (D) Below ground level	
	XY-CD - 66 m (L) * 160 m (W) * 55 m (D) Below ground level	
	XY-EF – 99 m (L) * 68 m (W) * 30 m (D) Below ground level	
	XY- GH - 127 m (L) * 136 m (W) * 55 m (D) Below ground level	
	X1Y1- GH - 153 m (L) * 102 m (W) * 59 m (D) (13m AGL + 46m BGL)	
Water Level in the surrounds area	60 - 65 m bgl	
Method of Mining	Opencast Mechanized Mining Method involving drilling and blasting	
Topography	The lease applied area is exhibits undulated terrain. The area has gentle sloping towards Northern side. The altitude of the area is 356-369 m (max) above mean sea level. The area is situated in foot hill, since rich accumulation of quaternary formation of gravel having an average thickness of 5m and followed by massive charnockite which is clearly inferred from the adjacent existing quarry pit.	
Machinery proposed	Crawler mounted drill machine	2 Nos
	Jack Hammer	4 Nos
	Compressor	1 Nos
	Excavator with Bucket and Rock Breaker	2 No
	Tippers	4 Nos
	Water Sprinkling Tanker	1 Nos
Blasting Method	Controlled Blasting Method by shot hole drilling and small dia of 25mm slurry explosive are proposed to be used for shattering and heaving effect for removal and winning of Rough Stone. No deep hole drilling is proposed.	
Proposed Manpower Deployment	33 Nos	
Project Cost	Rs.3,72,70,000/-	
EMP cost	Rs. 7,60,000/-	
Total Project cost	Rs.3,80,30,000/-	
CER Cost	Rs 5,00,000	
Nearby Water Bodies	Odai	North Inside Lease Area
	Odai	North 50m Safety
	Odai	1.2km SW
	Canal	5.3km NW
	Vaigai River	6.8km NW
	Periyar Main Canal	7.2km NW
	Varaha River	7.8km NW

Greenbelt Development Plan	Proposed to plant 4,350 trees in the 7.5 m Safety Zone, panchayat road etc..
Proposed Water Requirement	4.0 KLD
Nearest Habitation	1.2 km – W
Nearest Reserve Forest	Andipatti North R.F – 240 m – West
Nearest Wild Life Sanctuary	Megamalai wildlife Sanctuary – 8.70 km SouthWest Kodaikanal Wildlife Sanctuary – 18.50 km Northwest

Source: Approved Mining Plan

1.3 BRIEF DESCRIPTION OF THE PROJECT

1.3.1 Nature and Size of the Project

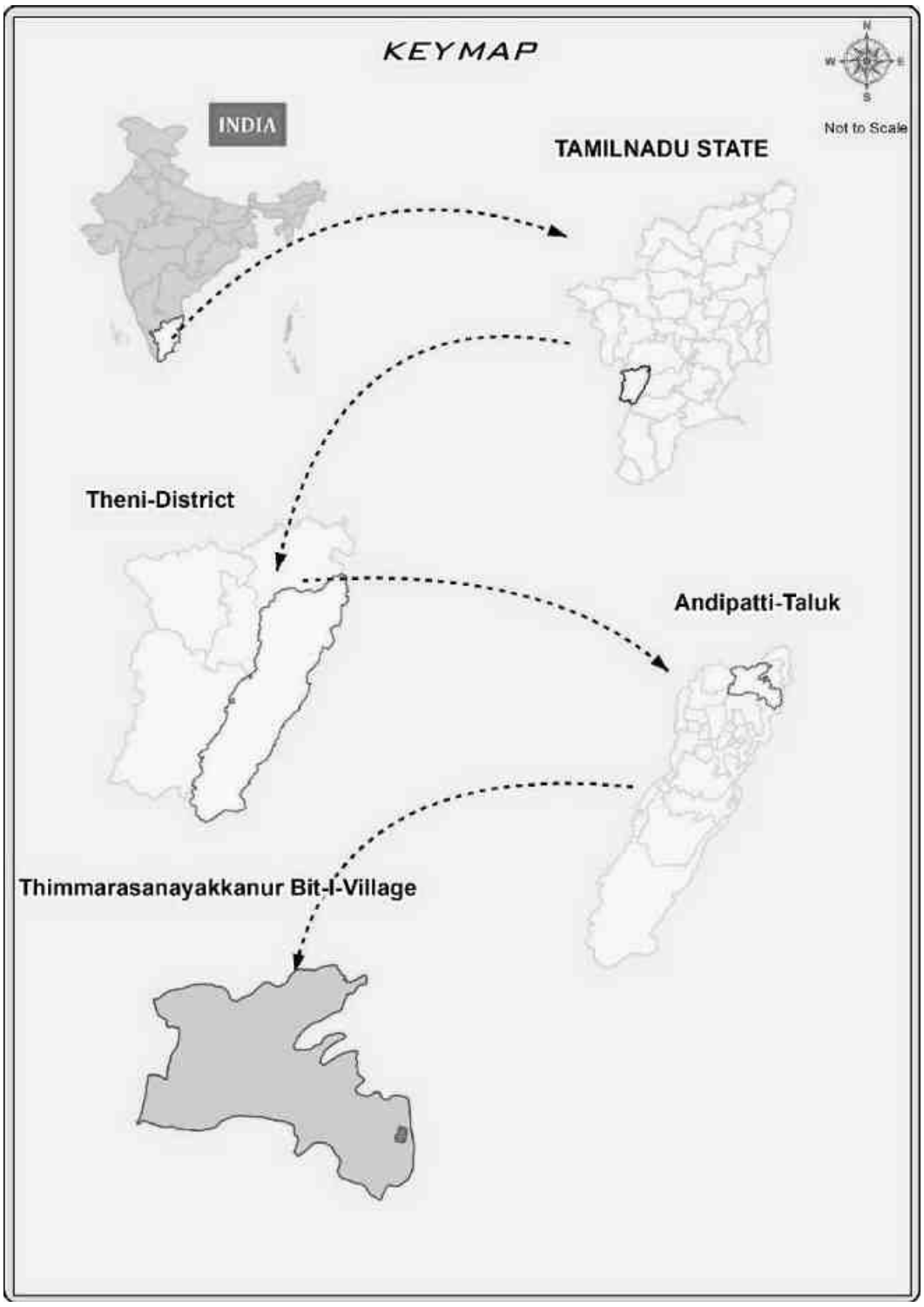
The quarrying operation is proposed to be carried out by Opencast Mechanized Mining method with 5.0m bench height and 5.0m bench width by deploying Jack Hammer Drilling & Slurry Explosive during blasting. Hydraulic Excavator and tippers are used for Loading and transportation. Rock Breakers are deployed to avoid secondary blasting.

The peak production of rough stone is 1,66,540 m^3 maximum in a year (500m^3 per day/46Tippers per day). The depth of the mining is 59m Bgl**.**

1.3.2 Location of the Project

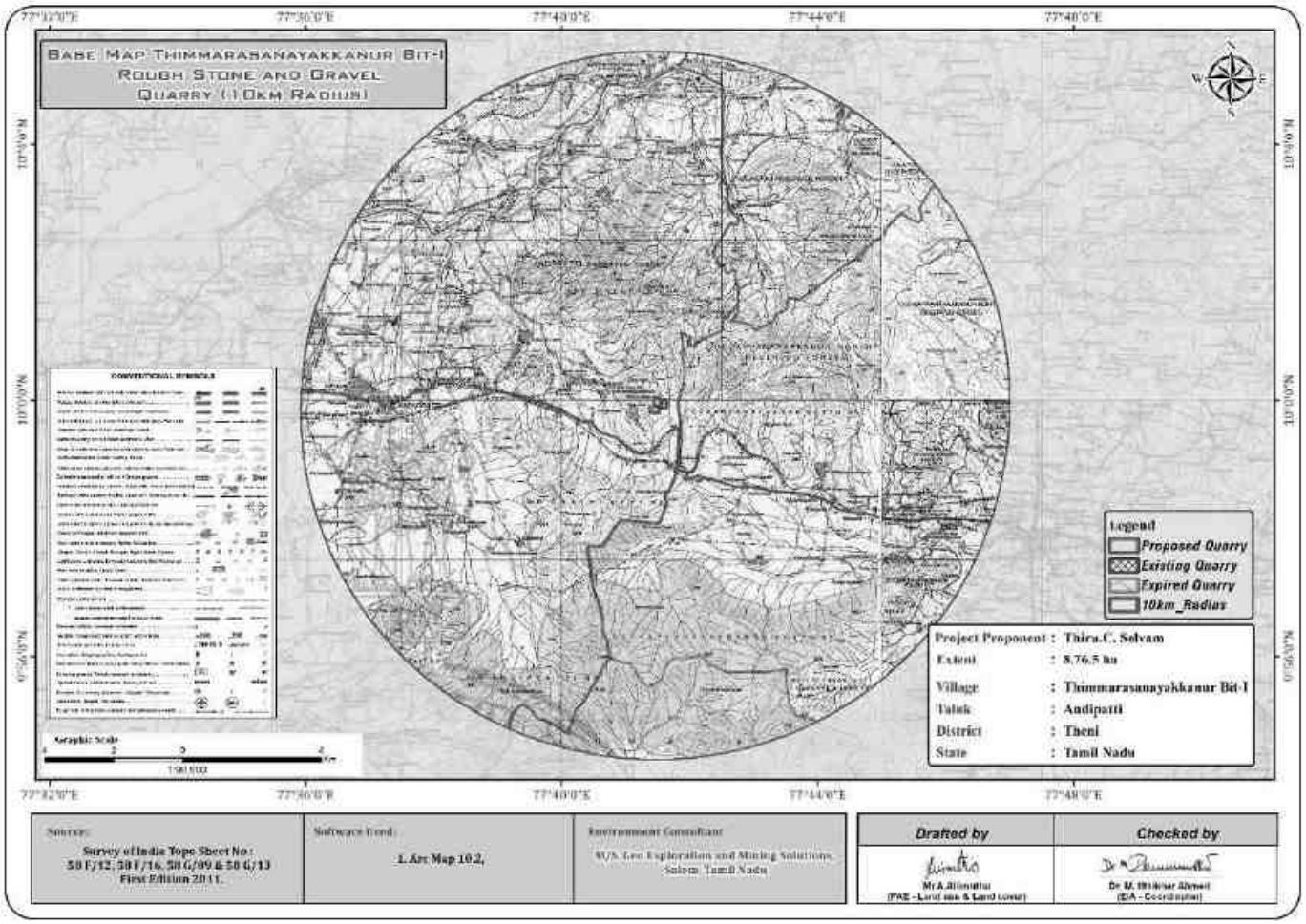
- The proposed quarry project falls in Thimmarasanayakkanur Bit – I Village, Andipatti Taluk and Theni District.
- Proposed quarry is located about 1.45 km East side of Thimmarasanayakkanur Bit – I Village
- The Thimmarasanayakkanur Bit – I Village is located about 6 km East of Vadipatti Taluk.
- The area is marked in the Survey of India, Toposheet No. 58-F/12 & 58-G/09 The area lies between the Latitudes of 09° 59'47.06115"N to 10°00'02.57733"N and Longitudes of 77°41'22.62023"E to 77°41'32.61712"E

FIGURE: 1.2 KEY MAP SHOWING THE LOCATION OF THE CLUSTER SITE



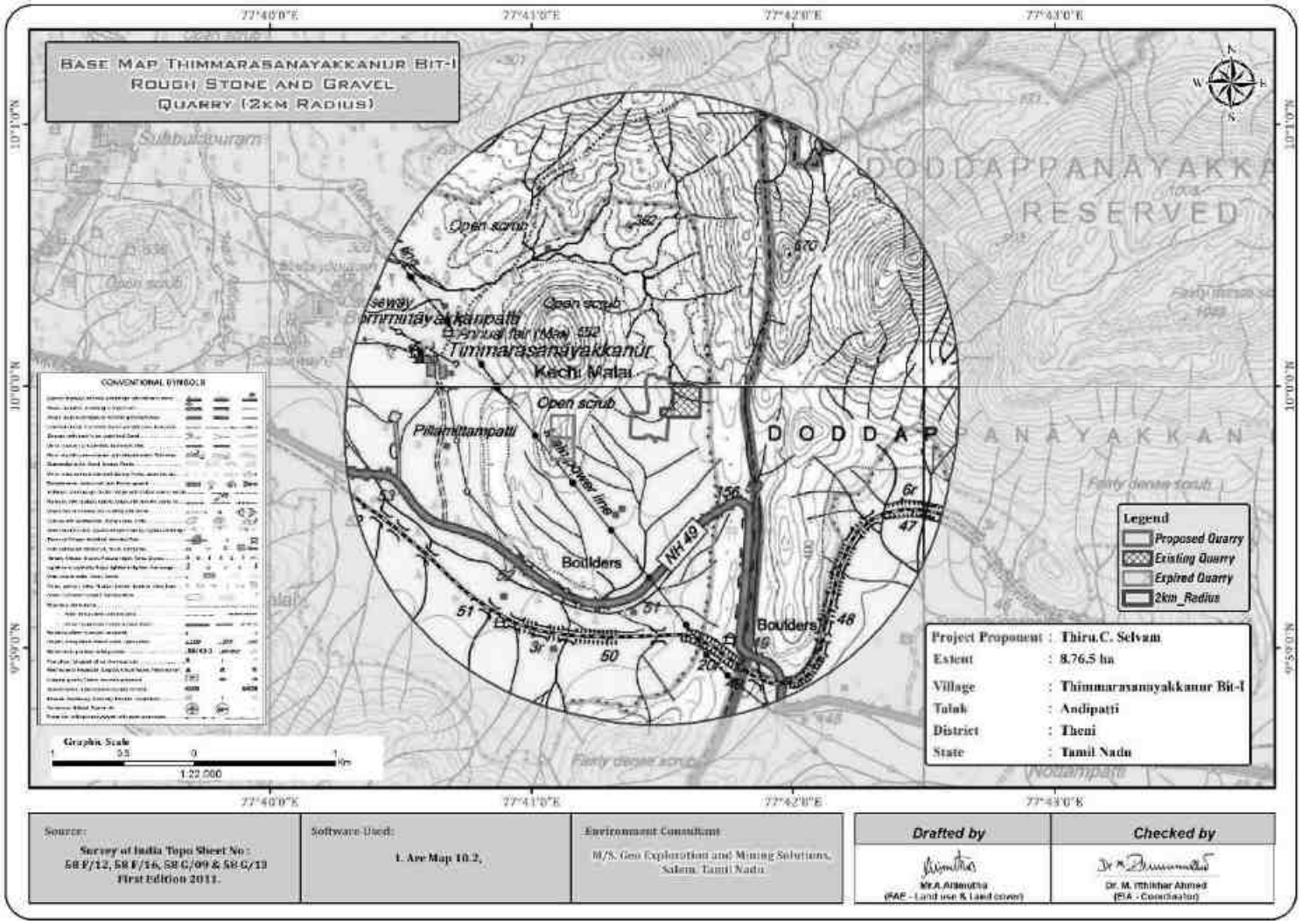
Source: Survey of India Toposheet 58-F/12 & 58-G/09

FIGURE 1.3: TOPOSHEET MAP OF THE STUDY AREA 10 KM RADIUS



Source: Survey of India Toposheet 58-F/12 & 58-G/09

FIGURE 1.4: TOPOSHEET MAP OF THE STUDY AREA 2 KM RADIUS



1.4 ENVIRONMENTAL CLEARANCE

The Environmental Clearance process for the project will comprise of four stages. These stages in sequential order are given below:-

1. Screening,
2. Scoping
3. Public consultation &
4. Appraisal

SCREENING –

- The proponent applied for Rough Stone and Gravel Quarry Lease Dated: 21.09.2023
- Precise Area Communication Letter was issued by the Assistant Director Department of Geology and Mining, Theni R.C.No.483/Mines/2023 Dated:22.07.2024
- The Mining Plan was prepared by Recognized Qualified Person and approved by Assistant Director, Geology and Mining, Theni District, vide R.C.No. 483/Mines/2023 Dated:13.08.2024
- The proposed project falls under "B1" Category as per Order Dated: 04.09.2018 & 13.09.2018 passed by Hon'ble National Green tribunal, New Delhi in O.A. No. 173 of 2018 & O.A. No, 186 of 2016 and MoEF & CC Office Memorandum F. No. L-11011/175/2018-IA-II (M) Dated: 12.12.2018
- Proponent applied for ToR for Environmental Clearance vides online Proposal No. SIA/TN/MIN/496070/2024 Dated: 21.09.2024

SCOPING –

- The proposal was placed in 509th SEAC meeting held on 08.11.2024 and the committee recommended for issue of ToR.
- The proposal was considered in 773th SEIAA meeting held on 25.11.2024 and issued ToR issued by SEIAA-TN vide ToR Identification: TO24B0108TN5453826N Dated: 29.11.2024

PUBLIC CONSULTATION –

Application to The Member Secretary of the Tamil Nadu Pollution Control Board (TNPCB) to conduct Public Hearing in a systematic, time bound and transparent manner ensuring widest possible public participation at the project site or in its close proximity in the district is submitted along with this Draft EIA/ EMP Report and the outcome of public hearing proceedings will be detailed in the Final EIA/EMP Report.

APPRAISAL –

Appraisal is the detailed scrutiny by the State Expert Appraisal Committee (SEAC) of the application and other documents like the final EIA & EMP Report, outcome of the Public Consultations including Public Hearing Proceedings, submitted by the proponent to the regulatory authority concerned for grant of environmental clearance.

1.5 TERMS OF REFERENCE (ToR)

ToR was issued by the SEIAA vide ToR Identification: TO24B0108TN5453826N Dated: 29.11.2024. The Details of the ToR Compliance is given in the Page No. I - XVII

1.6 POST ENVIRONMENT CLEARANCE MONITORING

The proposed project proponents shall submit a half-yearly compliance report in respect of stipulated Environmental Clearance terms and conditions to MoEF & CC Regional Office & SEIAA after grant of EC on 1st June and 1st December of each calendar year as per MoEF & CC Notification S.O. 5845 (E) Dated: 26.11.2018.

1.7 GENERIC STRUCTURE OF EIA DOCUMENT

The overall contents of the EIA report follow the list of contents prescribed in the EIA Notification 2006 and the "Environmental Impact Assessment Guidance Manual for Mining of Minerals" published by MoEF & CC.

1.8 THE SCOPE OF THE STUDY

The main scope of the EIA study is to quantify the cumulative impact in the study area due to cluster quarries and formulate the effective mitigation measures for each individual leases. A detailed account of the emission sources, emissions control equipment, background Air quality levels, Meteorological measurements, Dispersion model and all other aspects of pollution like effluent discharge, Dust generation etc., have been discussed in this report. The baseline monitoring study has been carried out during the summer season (October – December 2024) for various environmental components so as to assess the anticipated impacts of the cluster quarry projects on the environment and suggest suitable mitigation measures for likely adverse impacts due to the proposed project.

TABLE 1.4: ENVIRONMENT ATTRIBUTES

Sl.No.	Attributes	Parameters	Source and Frequency
1	Ambient Air Quality	PM_{10}, $PM_{2.5}$, SO_2, NO_2	Continuous 24-hourly samples twice a week for three months at 7 locations (2 Core & 5 Buffer)
2	Meteorology	Wind speed and direction, temperature, relative humidity and rainfall	Near project site continuous for three months with hourly recording and from secondary sources of IMD station
3	Water quality	Physical, Chemical and Bacteriological parameters	Grab samples were collected at 6 locations – 5 ground water and 1 surface water samples; once during study period.
4	Ecology	Existing terrestrial and aquatic flora and fauna within 10 km radius circle.	Limited primary survey and secondary data was collected from the Forest department.
5	Noise levels	Noise levels in dB(A)	7 locations – data monitored once for 24 hours during EIA study
6	Soil Characteristics	Physical and Chemical Parameters	Once at 6 locations during study period
7	Land use	Existing land use for different categories	Based on Survey of India topographical sheet and satellite imagery and primary survey.

8	Socio-Economic Aspects	Socio-economic and demographic characteristics, worker characteristics	Based on primary survey and secondary sources data like census of India 2011.
9	Hydrology	Drainage pattern of the area, nature of streams, aquifer characteristics, recharge and discharge areas	Based on data collected from secondary sources as well as hydro-geology study report prepared.
10	Risk assessment and Disaster Management Plan	Identify areas where disaster can occur by fires and explosions and release of toxic substances	Based on the findings of Risk analysis done for the risk associated with mining.

Source: Field Monitoring Data

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

1.8.1 Regulatory Compliance & Applicable Laws/Regulations for Proposed Quarry

- Application for Quarrying Lease as per Tamil Nadu Minor Mineral Concession Rules, 1959
- Obtained Precise Area Communication Letter as per Tamil Nadu Minor Mineral Concession Rules, 1959 for Preparation of Mining Plan and obtaining Environmental Clearance
- The Mining Plan has been approved under Rule 41 & 42 as amended of Tamil Nadu Minor Mineral Concession Rules, 1959
- ToR Identification: TO24B0108TN5453826N Dated: 29.11.2024.

****

2. PROJECT DESCRIPTION

2.0 GENERAL

The Proposed Rough Stone and gravel Quarry requires Environmental Clearance. There are One proposed and one existing quarry forming a cluster; calculated as per MoEF & CC Notification S.O. 2269(E) Dated 1st July 2016 and the total extent of cluster is 13.52.5 ha

As the extent of cluster are more than 5 ha, the proposal falls under B1 Category as per the Order Dated: 04.09.2018 & 13.09.2018 passed by Hon'ble National Green Tribunal, New Delhi in O.A. No. 173 of 2018 & O.A. No, 186 of 2016 and MoEF & CC Office Memorandum F. No. L-11011/175/2018-IA-II (M) Dated: 12.12.2018, and requirement for EIA, EMP and Public Consultation for obtaining Environmental Clearance.

2.1 DESCRIPTION OF THE PROJECT

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

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

2.2 LOCATION OF THE PROJECT

- The proposed quarry project falls in Thimmarasanayakkanur Bit – I Village, Andipatti Taluk and Theni District.
- Proposed quarry is located about 1.45 km East side of Thimmarasanayakkanur Bit – I Village
- The Thimmarasanayakkanur Bit – I Village is located about 6 km East of Vadipatti Taluk.
- The area is marked in the Survey of India, Toposheet No. 58-F/12 & 58-G/09 The area lies between the Latitudes of 09° 59'47.06115"N to 10°00'02.57733"N and Longitudes of 77°41'22.62023"E to 77°41'32.61712"E

The project does not fall within 10 km radius of any Eco – sensitive zone, National Park, Tiger Reserve, Elephant Corridor and Biosphere Reserves.

TABLE 2.1: SITE CONNECTIVITY

Nearest Roadway	NH-85 Madurai – Theni – 600m – Southeast SH-154 Usilamapatti - Batlagundu – 10.70 km – East
Nearest Village	Thimmarasanayakkanur Bit – I – 1.2Km -West
Nearest Town	Andipatti – 7.13 km –West
Nearest Railway	Andipatti – 7.13 km –West
Nearest Airport	Madurai Airport – 47 Km –SE
Seaport	Thoothukudi – 143 km – SE

Source: Survey of India Toposheet

TABLE 2.2: CO-ORDINATES – PROJECT BOUNDARY

Boundary Pillar No.	Latitude	Longitude
1	09° 59' 48.46702"N	77° 41' 22.62023"E
2	09° 59' 51.67928"N	77° 41' 22.85511"E
3	09° 59' 54.13805"N	77° 41' 22.92679"E
4	09° 59' 53.98681"N	77° 41' 23.68100"E
5	09° 59' 53.60608"N	77° 41' 25.19172"E
6	09° 59' 53.84917"N	77° 41' 26.61649"E
7	09° 59' 56.27116"N	77° 41' 27.00392"E
8	09° 59' 56.98484"N	77° 41' 26.60385"E
9	09° 59' 58.55001"N	77° 41' 26.50055"E
10	10° 00' 01.7604"N	77° 41' 26.05686"E
11	10° 00' 02.57733"N	77° 41' 26.69412"E
12	10° 00' 02.50763"N	77° 41' 28.28111"E
13	10° 00' 01.94057"N	77° 41' 28.58589"E
14	10° 00' 01.60827"N	77° 41' 31.47087"E
15	10° 00' 01. 09233"N	77° 41' 31.33006"E
16	10° 00' 00.66581"N	77° 41' 31.36677"E
17	10° 00' 00.63290"N	77° 41' 32.49925"E
18	09° 59' 57.36221"N	77° 41' 32.56395"E
19	09° 59' 54.67444"N	77° 41' 32.61712"E
20	09° 59' 54.74863"N	77° 41' 29.72819"E
21	09° 59' 53.17927"N	77° 41' 29.66323"E
22	09° 59' 52.88011"N	77° 41' 31.38858"E
23	09° 59' 52.02498"N	77° 41' 31.41710"E
24	09° 59' 49.06283"N	77° 41' 31.10889"E
25	09° 59' 47.57380"N	77° 41' 31.02245"E
26	09° 59' 48.12356"N	77° 41' 28.65436"E
27	09° 59' 47.06115"N	77° 41' 28.41616"E
28	09° 59' 48.40502"N	77° 41' 27.56882"E
29	09° 59' 48.62304"N	77° 41' 26.14188"E
30	09° 59' 47.97766"N	77° 41' 26.11278"E
31	09° 59' 47.98611"N	77° 41' 23.92125"E

FIGURE 2.1: TOPOGRAPHICAL VIEW OF PROJECT AREA





Fencing and Greenbelt Photographs








FIGURE 2.2: GOOGLE IMAGE OF THE PROJECT AREA

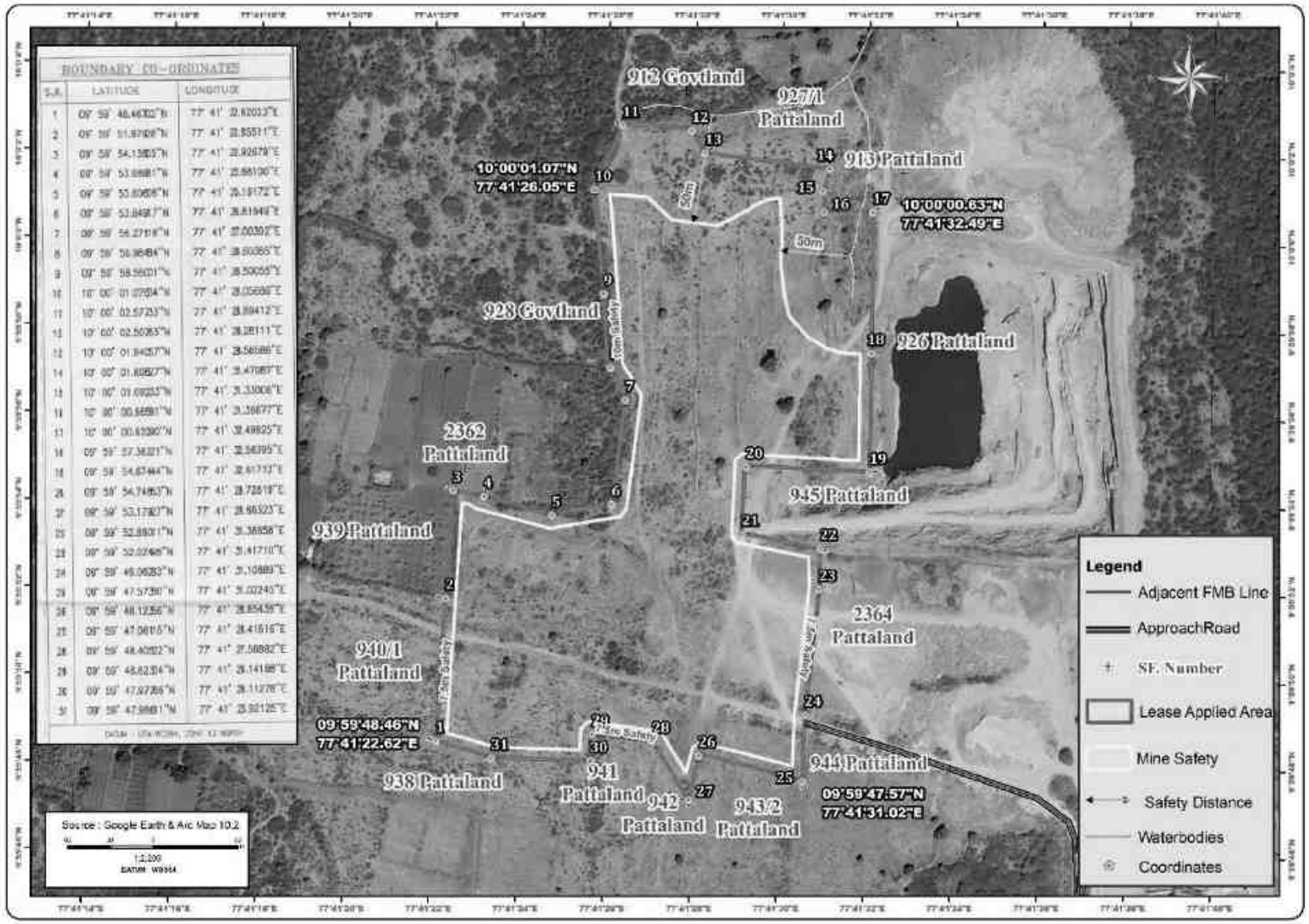


FIGURE 2.3: QUARRY LEASE PLAN / SURFACE PLAN

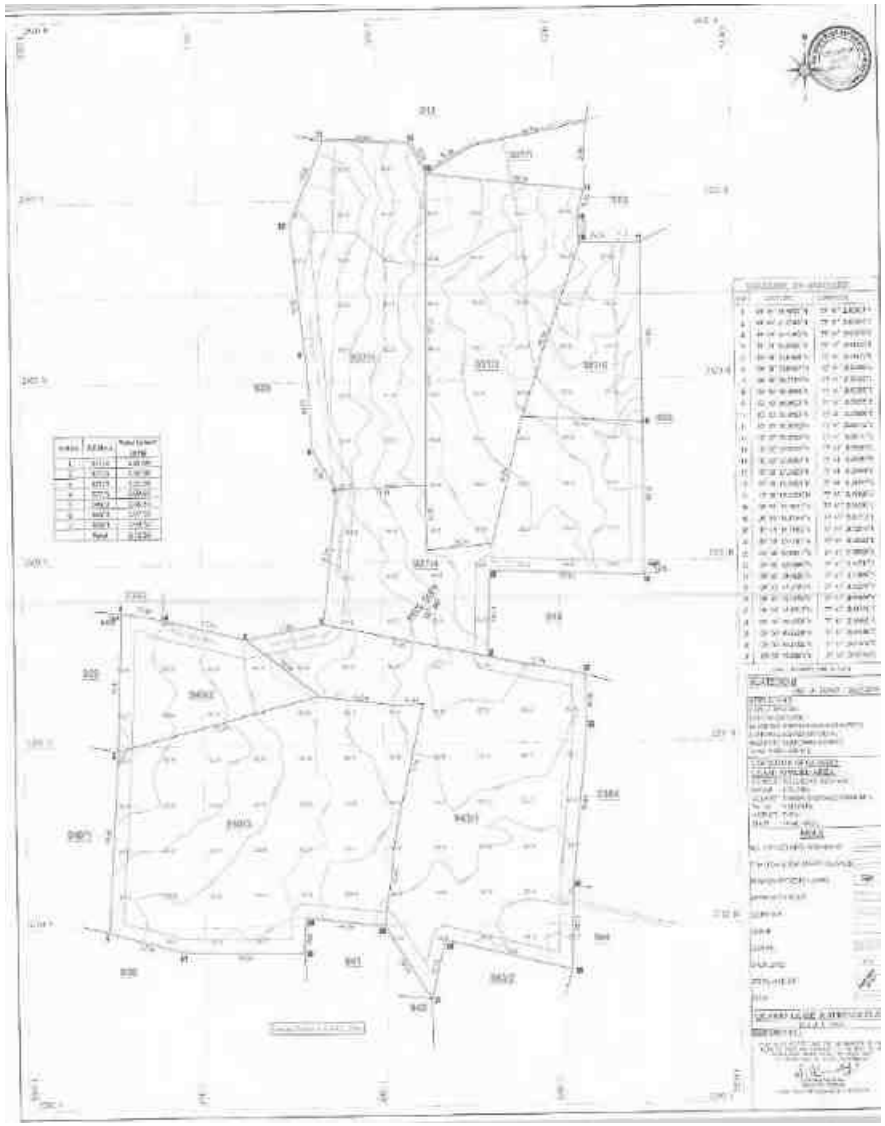


FIGURE 2.4: VILLAGE MAP SUPERIMPOSED ON GOOGLE EARTH IMAGE

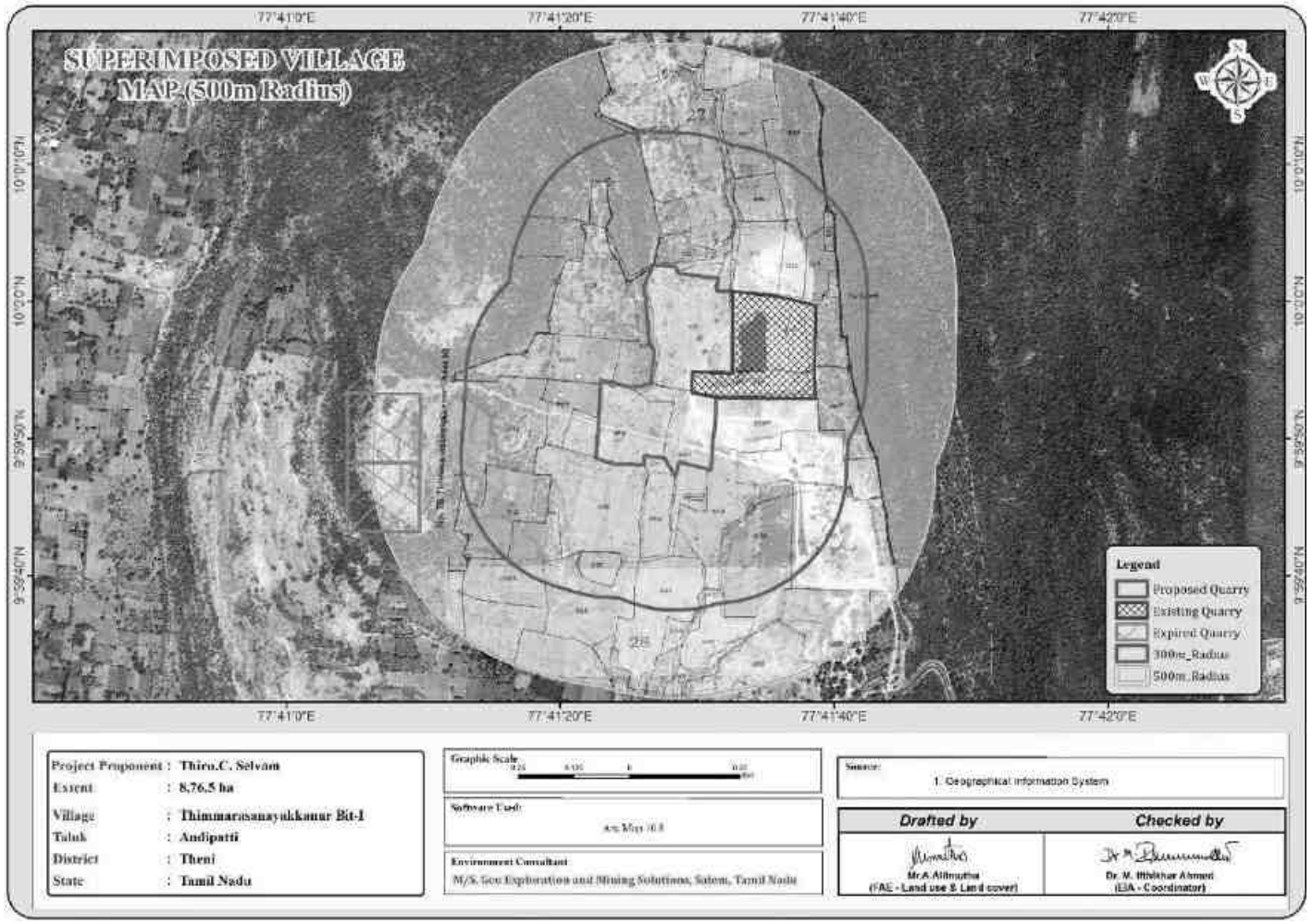


FIGURE 2.5: IMAGE SHOWING SURFACE FEATURES AROUND 10 KM RADIUS

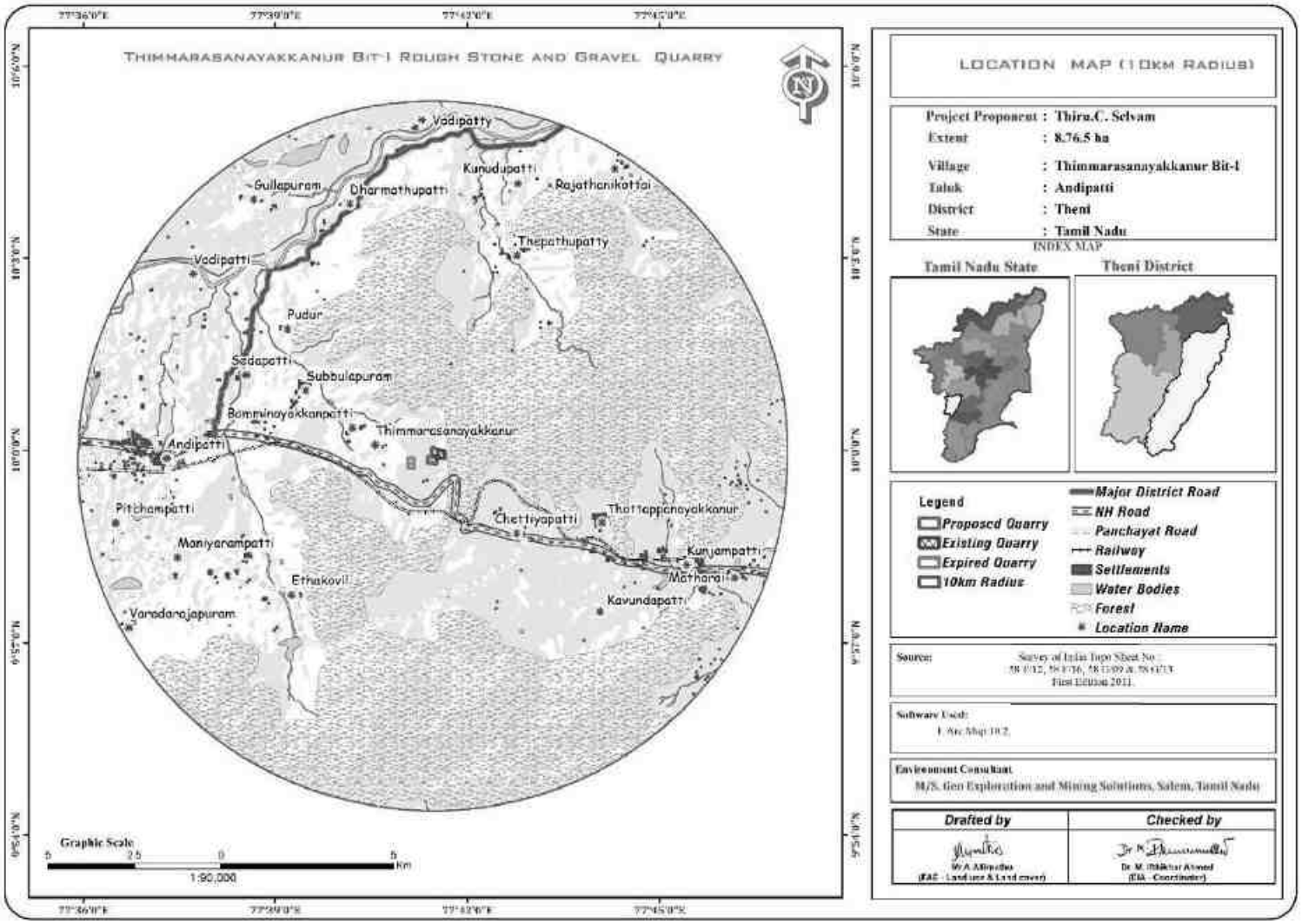


FIGURE 2.6: IMAGE SHOWING SURFACE FEATURES AROUND 5KM RADIUS

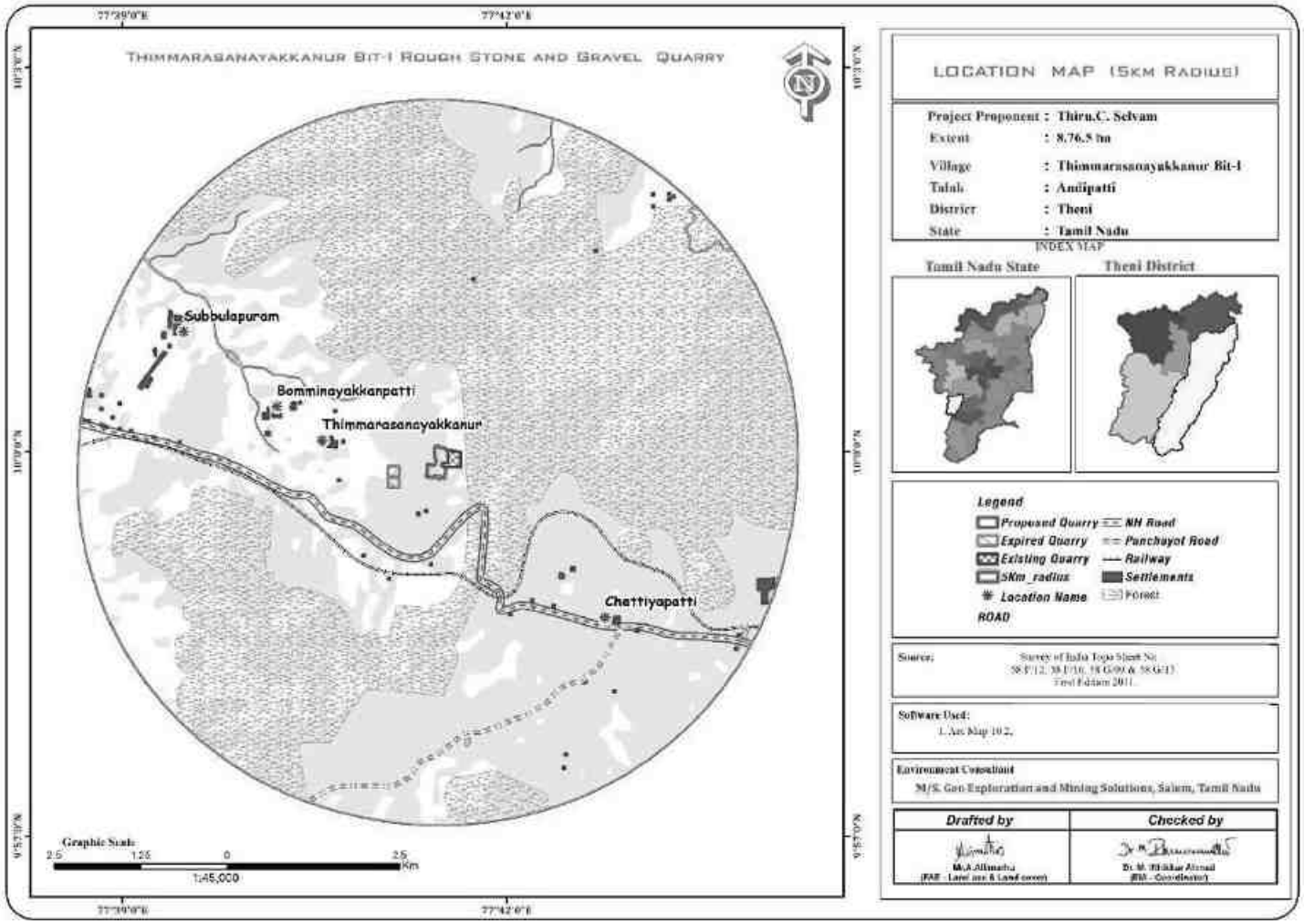
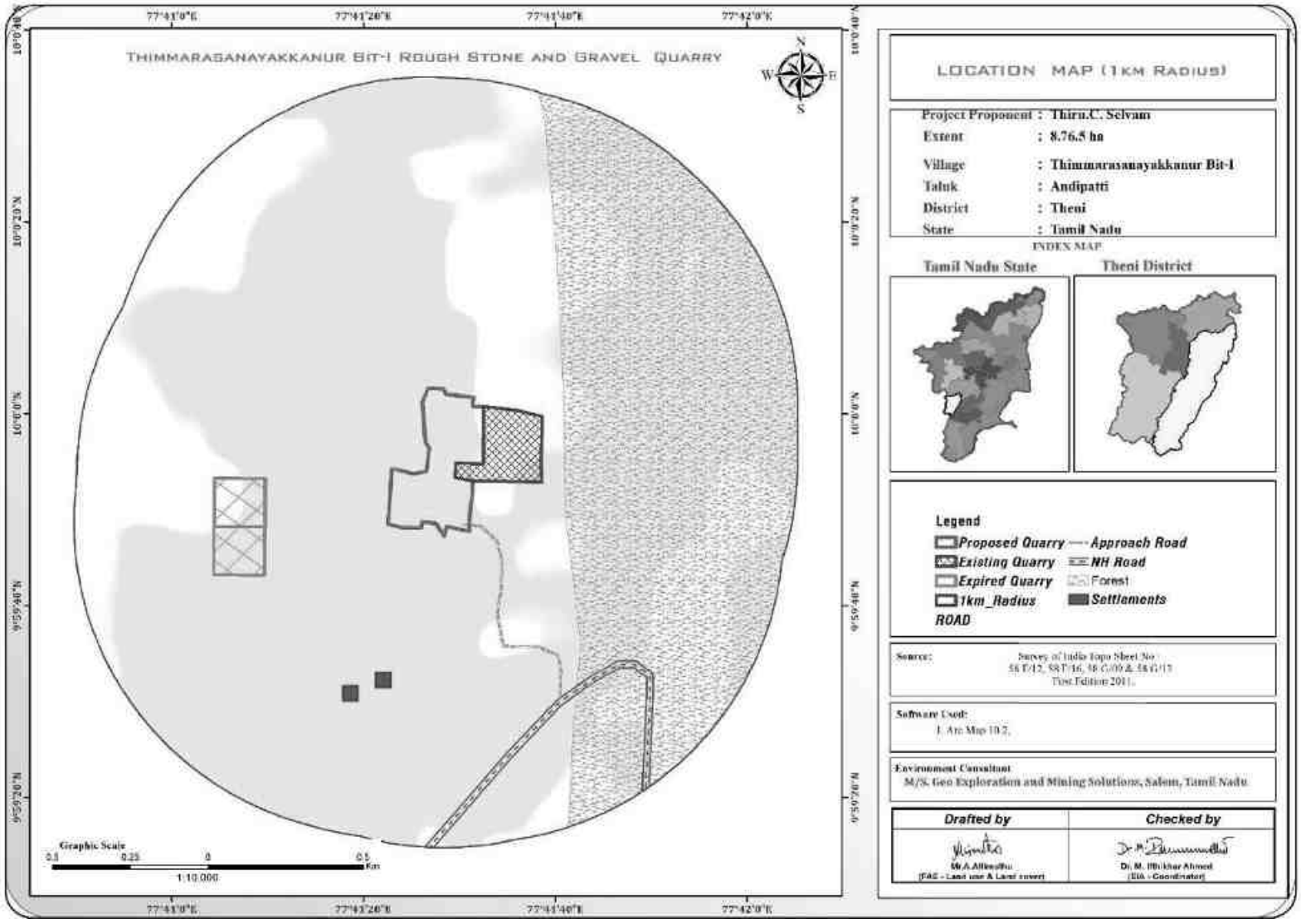


FIGURE 2.7: IMAGE SHOWING SURFACE FEATURES AROUND 1 KM RADIUS



2.2.1 Project Area

- Proposed Project is site specific
- There is No beneficiation or processing proposed inside the project area.
- There is no forest land involved in the proposed project and is devoid of major vegetation and trees.

TABLE 2.3: LAND USE PATTERN

DESCRIPTION	PRESENT AREA IN (HA)	AREA REQUIRED DURING FIRST FIVE YEARS (HA)	AREA AT THE END OF LEASE PERIOD (HA)
Area under quarry	Nil	6.43.54	6.43.54
Infrastructure	Nil	0.02.00	0.02.00
Roads	Nil	0.02.00	0.02.00
Green Belt	Nil	1.14.62	2.27.26
Un – utilized area	8.76.50	1.14.34	0.01.70
TOTAL	**8.76.50**	**8.76.50**	**8.76.50**

Source: Approved Mining Plans

2.2.2 Size or Magnitude of Operation

TABLE 2.4: OPERATIONAL DETAILS

PARTICULARS	DETAILS	
	Rough Stone (10Year Plan period)	**Gravel (10 Years Plan period)**
Geological Resources in m^3	40,95,033	4,11,850
Mineable Reserves in m^3	14,51,090	2,86,230
Year wise production for First Five years	7,77,155	2,39,412
Year wise production for Second Five years	6,73,935	46,818
Mining Plan Period	10 Years	
Number of Working Days	300 Days	
Production per day in m^3	**483**	**95**
No of Lorry loads ($12m^3$ per load)	**40**	**8**
Total Depth of Mining	59 m bgl (3 m Gravel+ 56 m Rough Stone)	

2.3 GEOLOGY

2.3.1 Regional Geology

Theni district is the peninsular gneiss forms the oldest rock formations, in which the massive formation of Charnockite lies over with rich accumulation of recent quaternary formation. On regional scale the Charnockite body N45^{0}E - S45^{0}W with dipping towards S70^{0}E.

The general geological sequences of the rocks in this area are given below:



Age	Formation		
Recent	Quaternary		
	weathered Formation (Gravel)		
.....	Unconformity	Archaean	Charnockite
	Peninsular Gneiss complex		

Theni District holds Nature's beauty with the spicy green ornaments, historical temples and famous water falls. The Theni town in the District Headquarters known as the "Second Manchester of South India" indicates the various cotton trade. It is situated at 295 ft. above the mean sea level. Theni district ranks 2nd in ASIA in banana trading. It is known for the large scale trading of garlic, cotton, cardamom, grapes and chilli.

The Vaigai River, Kottagudi River, Suruliyar River, Varaganathi River, Manjalar River and Varattaru River flow through the district. The important reservoirs in the district are Vaigai Dam, Manjalaru Dam, Sothuparai Dam, Sanmughanathi Dam, Manalaru Dam and Melmanalaru Dam. Three hydropower station projects namely, Periyar, Surliar and Vaigai Micro Hydropower Station generate electricity in the district.

Agriculture, Industry and Trade play an important role for its economic developmental activities. Principal crops like paddy, sugarcane, cotton, coconut, groundnut and various kinds of fruits and vegetables viz. cholam, cumbu, redgram, greengram, blackgram, horsegram, turmeric, mango, bannana, tapiaco and gingelly are being cultivated in this district. Sericulture is another occupation of the people of the district.

Cotton Spinning Mills and sugar Mills are the major industries in this district. Handloom weaving and power looms are found in Andipatti taluk. Plenty of wind mills were erected in this region with the help of Ministry of Non-Conventional Energy and Tamil Nadu Energy Development Agency. In Uthamapalayam taluk, "Highwavis Estate" plays an important role in the production of tea.

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, Bodinayakkanur and Uthamapalayam. At places in Thimmarasanayakkanur Bit-I, charnockite occurs with intercalations of calc granulite and hornblende biotite gneiss. Near E.Kamatchipuram, charnockite is found in association with calc granulite+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.

2.3.2 Local Geology:

The Lease applied area is situated an undulated terrain. The Gradient of the area towards Northern Side and altitude of the area varies from 356m to 369m above from Mean Sea Level. The area is situated in foot hill, Since rich accumulation of quaternary formation of gravel having an average thickness of 5m and followed of gravel having an average thickness of 5m and followed by massive charnockite which is clearly inferred from the adjacent existing quarry pit

2.3.3 Hydrogeology

The important aquifer system in the district can be grouped into two categories. i) Weathered and fissured crystallines comprising charnockites, granite gneiss and granites. ii) Valley fill deposits or colluvium comprising clay, sand, silt and kankar. 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).

Alluvial Formations

In the river alluvium groundwater occurs under water table condition. The maximum thickness is 37 m and the average thickness of the aquifer is approximately 12 m. These formations are porous and permeable which have good water bearing zones.

Cretaceous Formations

Groundwater occurring in the lens shape in the sandy clay lenses and fine sand is underlain by white and black clay beds which constitute phreatic aquifer depth which ranges 10m to 15m below ground level. Phreatic aquifer in Limestone is potential due to the presence of Oolitic Limestone.

Hard Rock Formations

Groundwater occurs under water table conditions but the intensity of weathering, joint, fracture and its development is much less in other type of rocks when compared to gneissic formation. The groundwater potential is low, when compared with the gneissic formations

Granitic Gneiss

Groundwater occurs under water table conditions in weathered, jointed and fractural formations. The pore space developed in the weathered mantle acts as shallow granular aquifers and forms the potential water bearing and yielding zones water table is shallow in canal and tank irrigation regions and it is somewhat deeper in other regions.

Charnockite

Groundwater occurs under water table conditions but the intensity of weathering, joint, fracture and its development is much less when compared to gneissic formations. The groundwater potential is low, when compared with the gneissic formations.

Aquifer Parameters

The pumping tests conducted in the dug wells tapping weathered crystallines indicate that permeability varies from < 1 to 19 m/day. The specific yield of the phreatic aquifer is of the order of 1.5%. The transmissivity of the deeper fractures computed from the pumping tests in the exploratory wells were found to vary from 3 to 770 m2/day, while the storativity range from 8.13 x 10-6 to 1.69 x 10-3.

FIGURE 2.8: REGIONAL GEOLOGY MAP

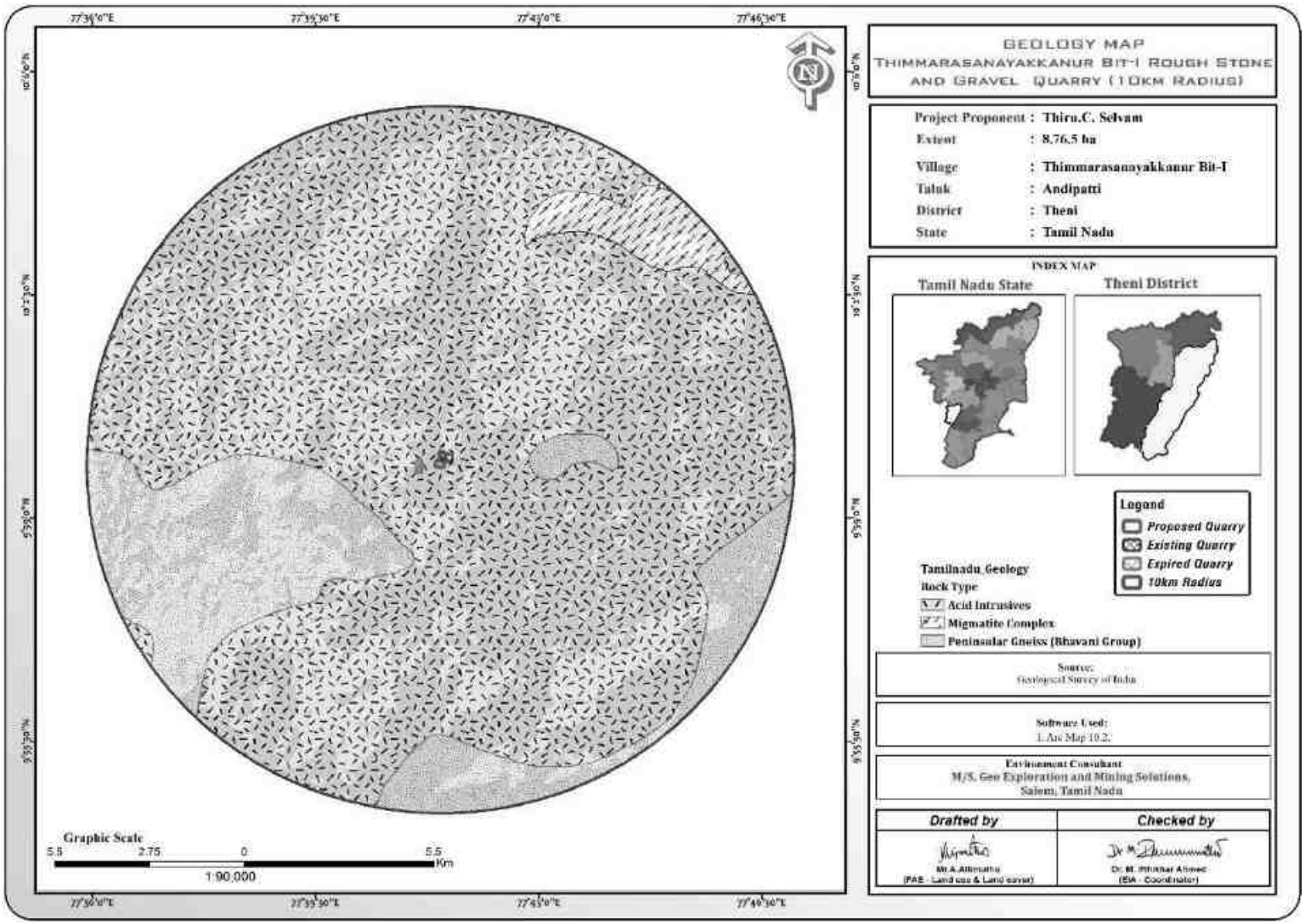


FIGURE 2.9: GEOMORPHOLOGY MAP

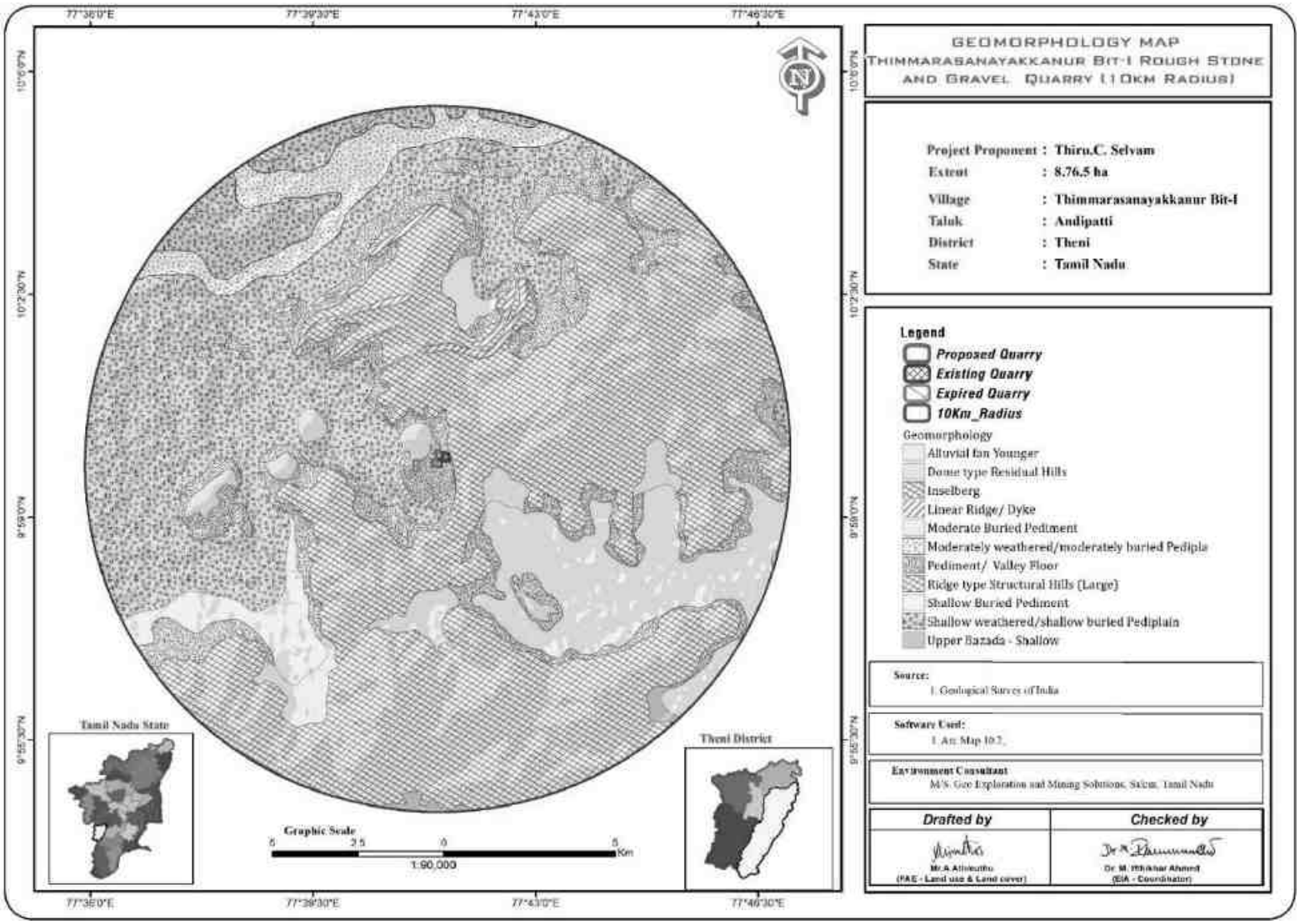
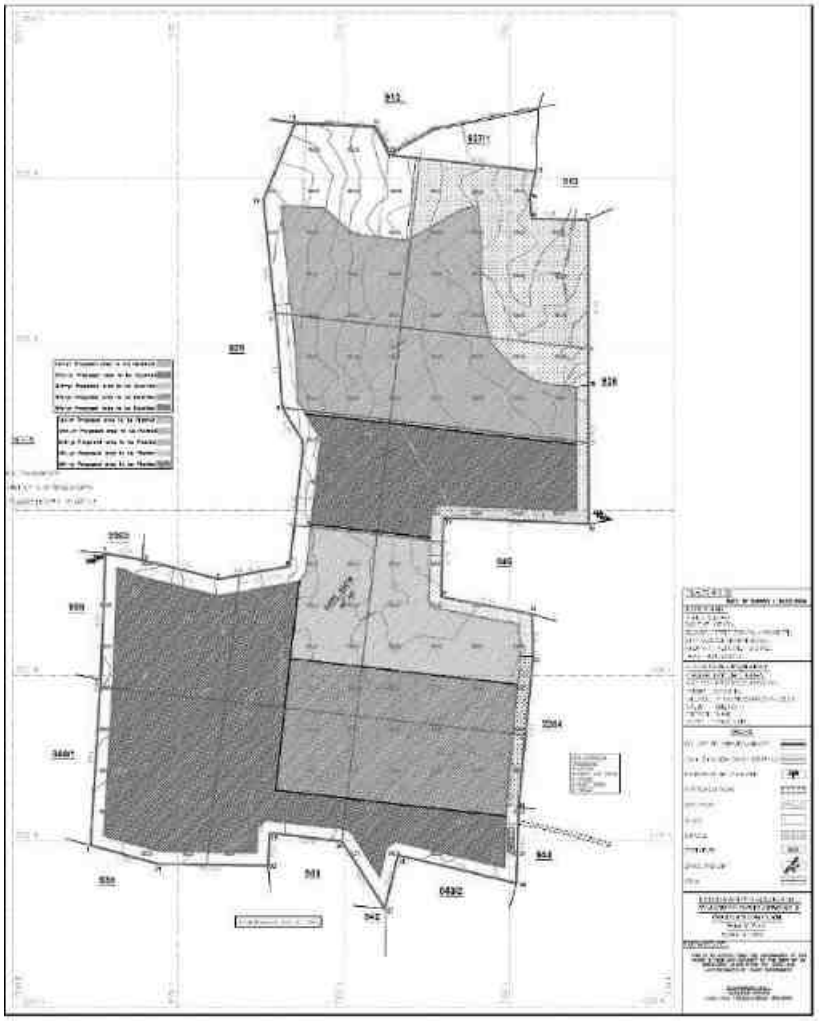


FIGURE 2.10: TOPOGRAPHY, GEOLOGICAL, YEAR-WISE DEVELOPMENT PRODUCTION PLAN AND SECTIONS FOR FIRST FIVE YEAR



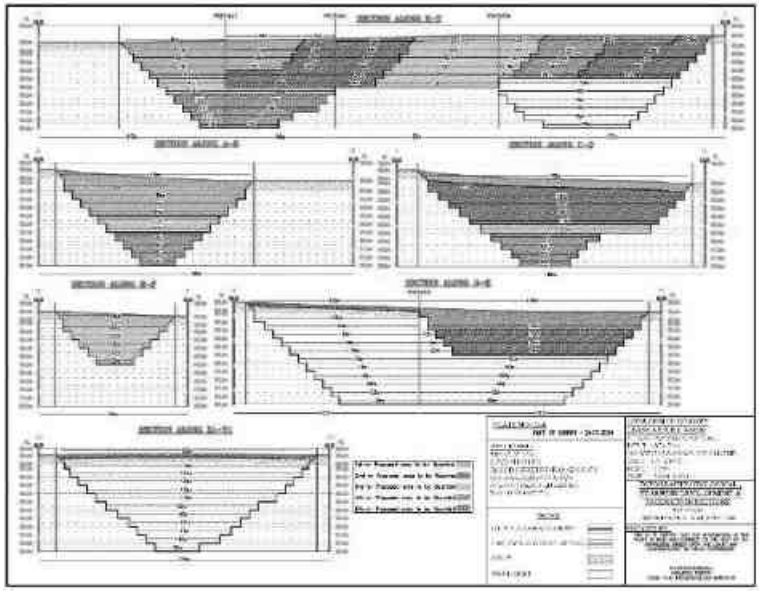
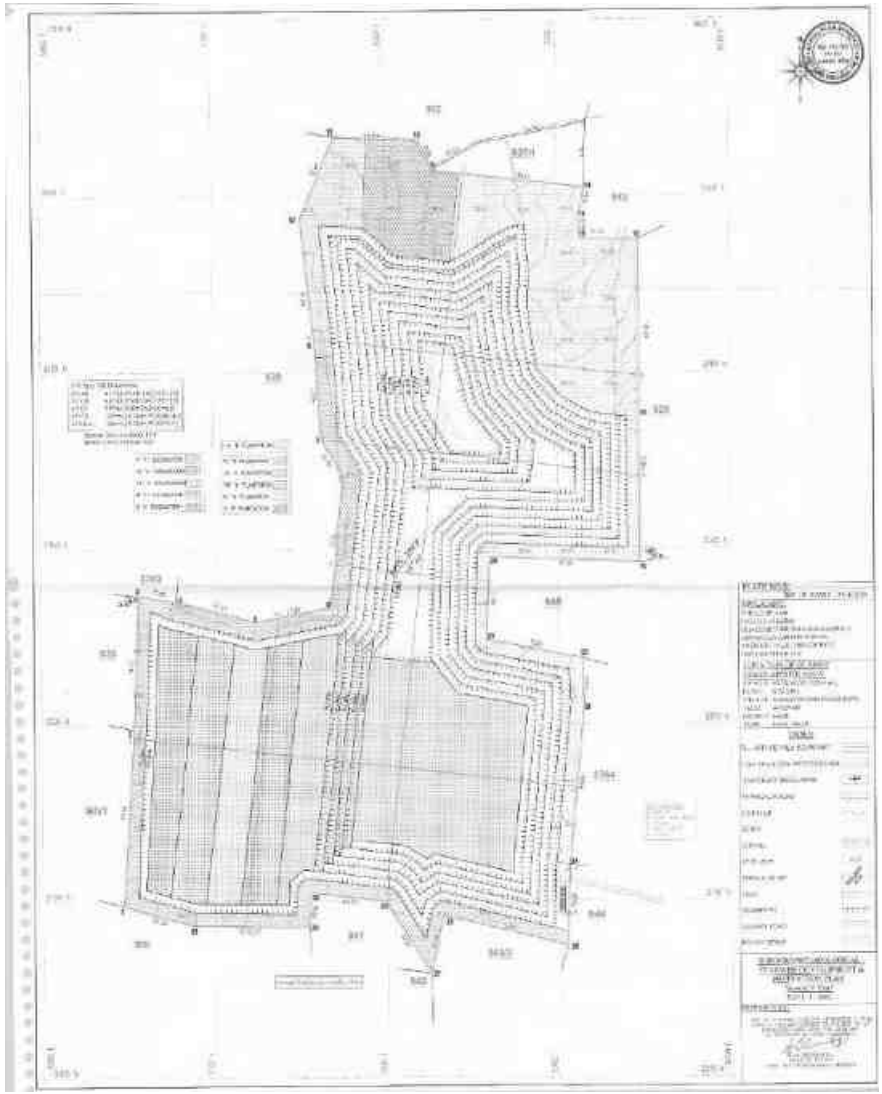
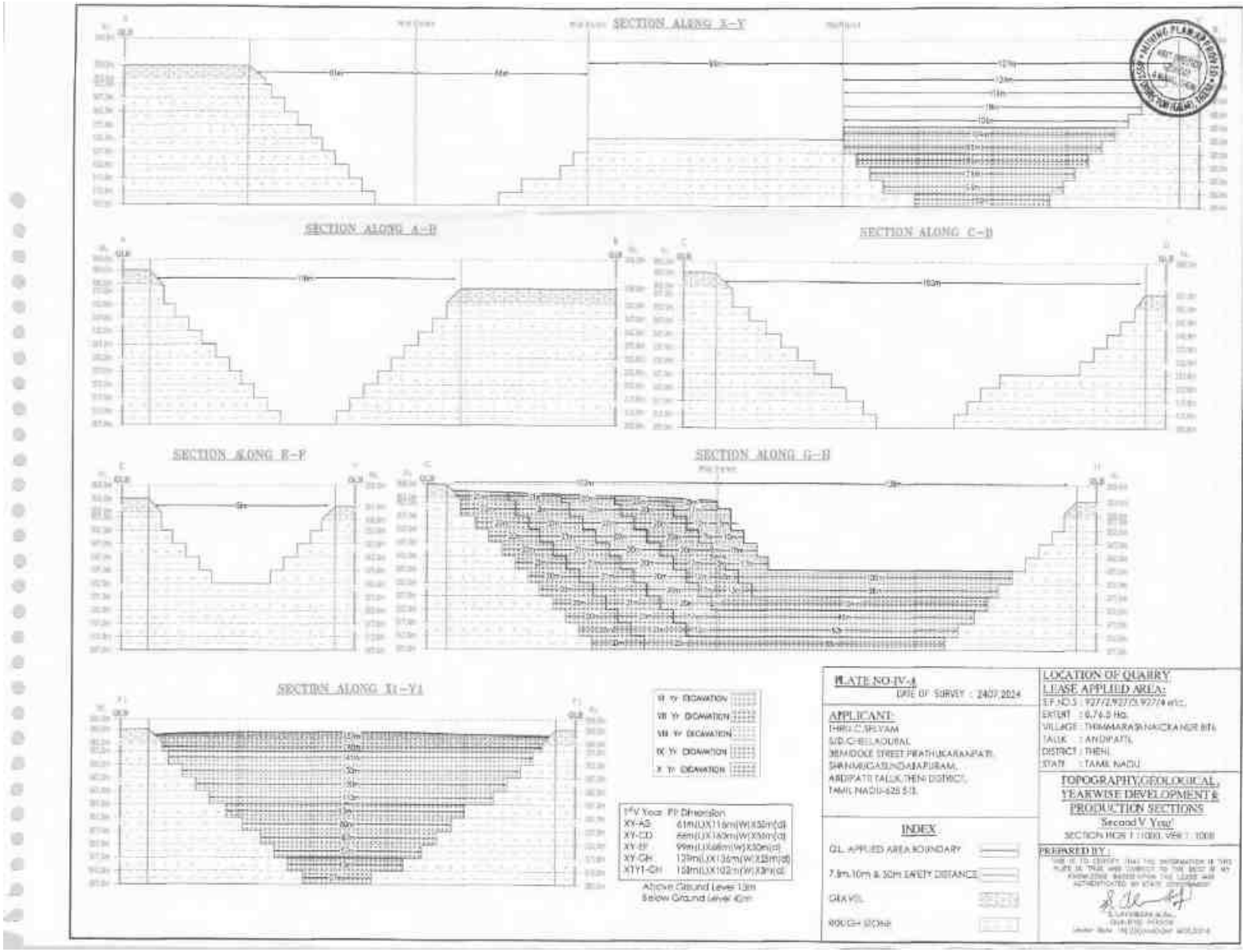


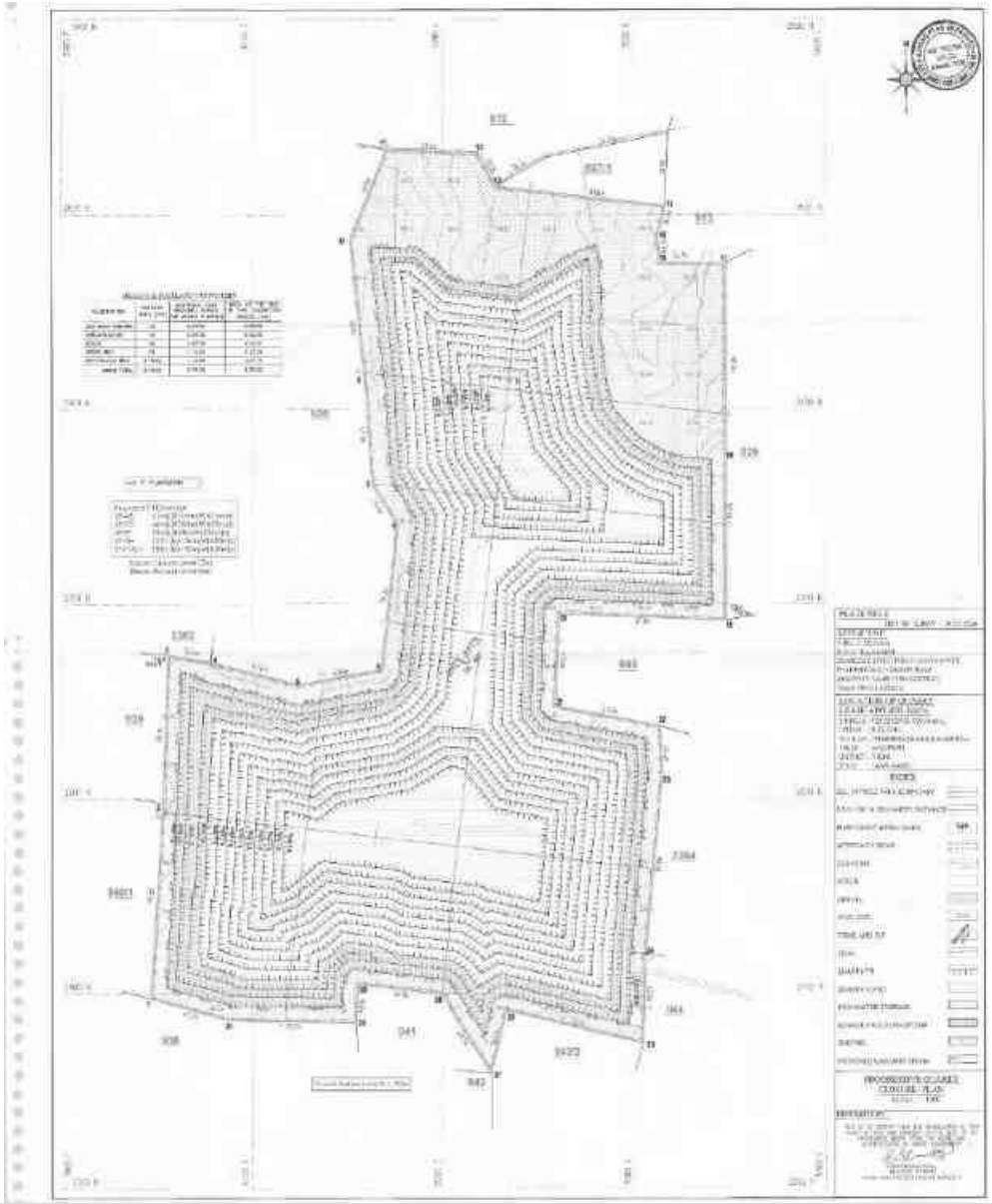
FIGURE 2.10A: TOPOGRAPHY, GEOLOGICAL, YEAR-WISE DEVELOPMENT PRODUCTION PLAN AND SECTIONS FOR SECOND FIVE YEAR

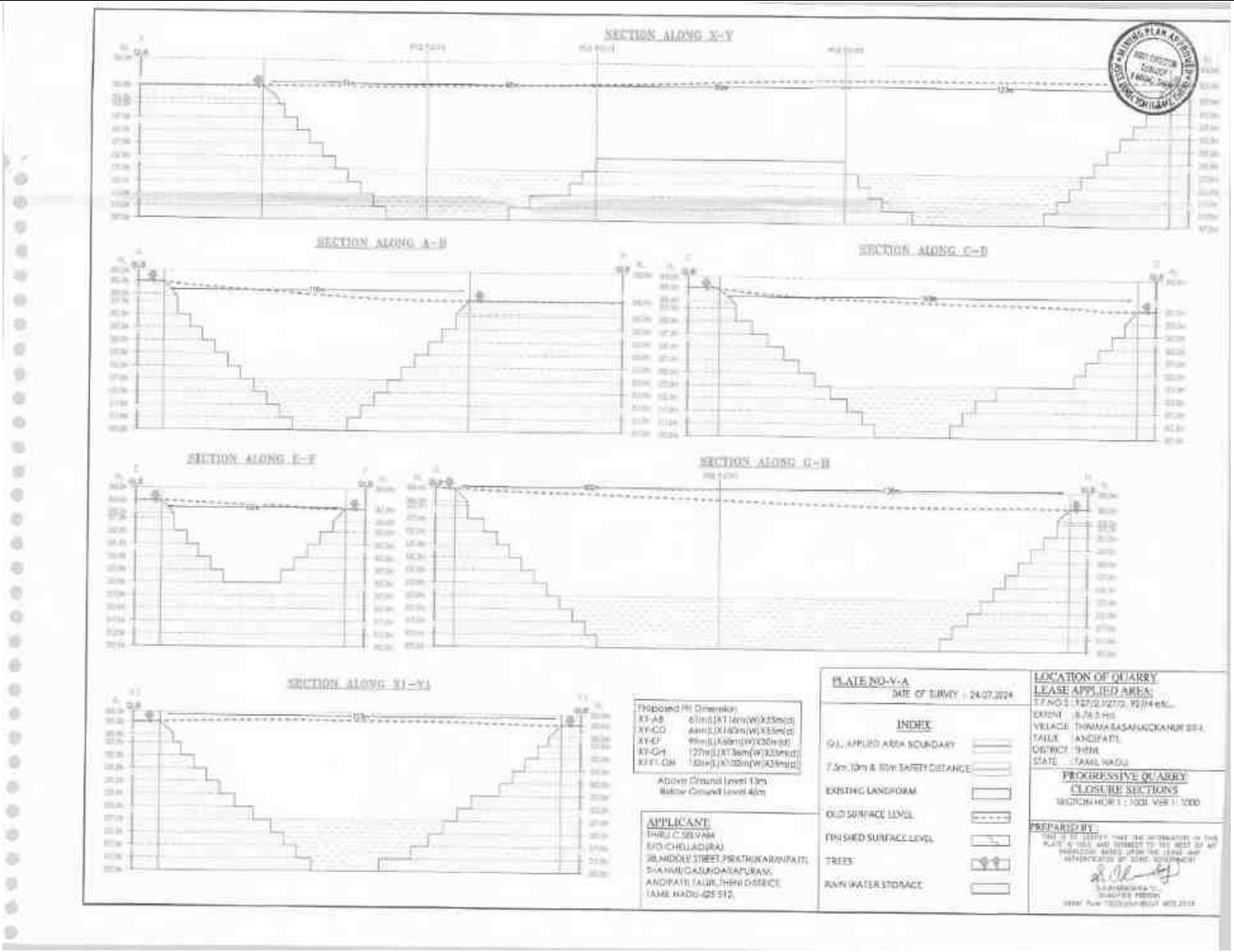




Source: Approved Mining Plan

FIGURE 2.11: CLOSURE PLAN AND SECTIONS





Source: Approved Mining Plan

2.4 RESOURCES AND RESERVES

The Resources and Reserves of Rough Stone and Gravel were calculated based on Cross-Section Method by plotting sections to cover the maximum lease area for all the proposed projects.

Based on the availability of Geological Resources the Mineable Reserves are calculated by considering excavation system of bench formation and leaving essential safety distance of 7.5 m (Safety Barrier all around the applied area) and safety distance as per precise area communication letter and deducting the locked up reserves during bench formation (Also called as Bench Loss) and the Mineable Reserves is calculated considering there is no waste / overburden / side burden (100% Recovery Anticipated) for all the proposed projects.

TABLE 2.5: AVAILABLE GEOLOGICAL RESOURCES OF PROPOSED PROJECT

	ROUGH STONE (m^3)	GRAVEL (m^3)
Geological Resource in m^3	40,95,033	4,11,850
Mineable Resource in m^3	14,51,090	2,86,230

Source: Approved Mining Plan

TABLE 2.6: YEAR-WISE PRODUCTION PLAN FOR FIRST FIVE YEARS

YEAR	ROUGH STONE (m^3)	GRAVEL (m^3)
I	1,52,435	72,180
II	1,64,130	31,640
III	1,66,540	36,380
IV	1,57,250	54,400
V	1,36,800	44,812
TOTAL	**7,77,155**	**2,39,412**

TABLE 2.7: YEAR-WISE PRODUCTION PLAN FOR SECOND FIVE YEARS

YEAR	ROUGH STONE (m^3)	GRAVEL (m^3)
VI	1,53,779	9,180
VII	1,27,850	9,180
VIII	1,64,675	9,180
IX	1,27,607	9,639
X	1,00,024	9,639
TOTAL	**6,73,935**	**46,818**

Source: Approved Mining Plan

Disposal of Waste

There is no waste anticipated in these Rough Stone quarrying operation. The entire quarried out materials will be utilized (100%). Top layer of Gravel formation will be removed and sold to needy customers directly.

Conceptual Mining Plan/ Final Mine Closure Plan

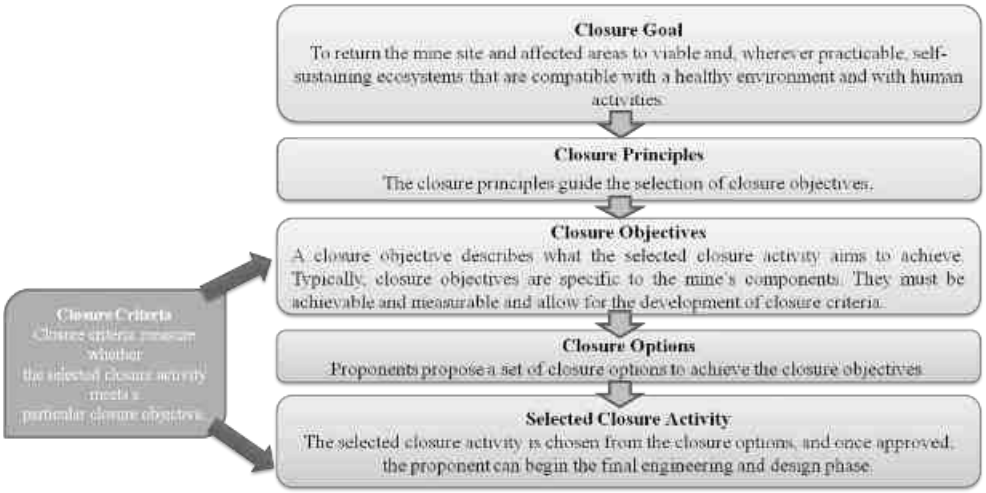
The ultimate pit size is designed based on certain practical parameters such as economical depth of mining, safety zones, permissible area, etc.

TABLE 2.8: ULTIMATE PIT DIMENSION

PROPOSAL			
Sec	**Length (Max) (m)**	**Width (Max) (m)**	**Depth (Max)**
XY-AB	61	116	55 m bgl
XY-CD	66	160	55 m bgl
XY-EF	99	68	30m bgl
XY-GH	127	136	55
X1Y1-GH	153	102	59(13m AGL + 46m BGL)

Source: Approved Mining Plan

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

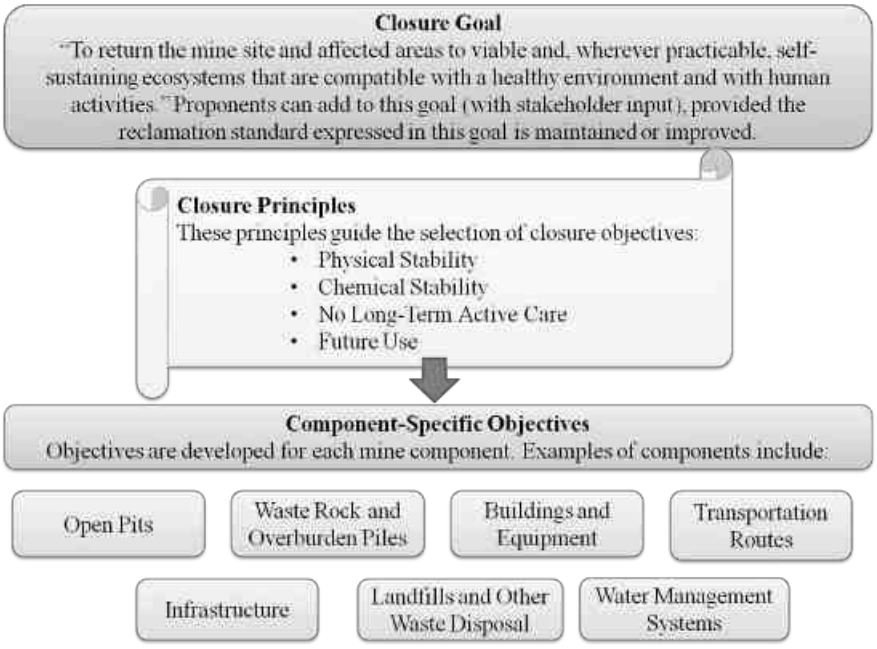


Closure Objectives –

- Access to be limited, for the safety of humans and wildlife.
- The open pit mine workings and pit boundary are physically and geo-technically stable.
- Water quality in flooded pits is safe for humans, aquatic life, and wildlife.
- Discharge of contaminated drainage has been minimized and controlled.
- Original or desired new surface drainage patterns have been established.
- For flooded pits, in-pit aquatic habitat has been established where practical and feasible.
- Emergency access and escape routes from flooded pits for humans and wildlife are in place.
- Dust levels are safe for people, vegetation, aquatic life, and wildlife.

Closure Planning & Options Considerations in Mine Design –

- The closure of mine is well planned at the initial stage of planning & design consideration by the internal and external stake holders
- Construction of 2m height bund all along the mine pit boundary and ensure its stability all time & construction of garland drain along the natural slope to avoid sliding and collection of soil to the pit & surface runoff during rainfall
- After complete exploitation of mineral, the lowest bench foot wall side will be maintained as plain surface without any sump pits to avoid any accidents
- All the sharp edges will be dressed to smoother face before the closure of mine and ensure no loose debris on hanging wall side
- There is a river on southern side of the project area. The river will not be hindered by any of mine closure activities
- The project proponent as a part of social responsibilities assures to supply the stored mine pit water to the nearby villages after effective treatment process as per the standards of TNPCB & TWAD
- Native species will be planted in 3 row patterns on the boundary barriers and 1st bench, a full-time sentry will be appointed at the gate to prevent inherent entry of public & cattle.
- The access road to the quarry will be cut-off immediately after the closure
- The layout design shall be prepared and get approved from Department of Geology and Mining.
- The proponent is instructed to construct as per the layout approved
- Physical and chemical stability of structures left in place at the site, the natural rehabilitation of a biologically diverse, stable environment, the ultimate land use is optimized and is compatible with the surrounding area and the requirements of the local community, and taking the needs of the local community into account and minimizing the socio-economic impact of closure
- There will be a positive change in the environmental and ecology due to the mine closure



Post-Closure Monitoring –

The purpose of post-closure monitoring with respect to open pit mine workings is to ensure the attainment of closure objectives.

- Monitor physical and geotechnical stability of remnant pit walls.
- Monitor the ground regime in pit walls to confirm achievement of design objectives.
- Monitor water level in pit to confirm closure objectives regarding fish, fish habitat, and wildlife safety are being achieved.
- Sample water quality and quantity at controlled pit discharge points.
- Identify and test unanticipated areas where water management is an issue.
- Inspect integrity of barriers such as berms & fences.
- Monitor wildlife interactions with barriers to determine effectiveness.
- Inspect aquatic habitat in flooded pits where applicable.
- Monitor dust levels.

TABLE 2.9: MINE CLOSURE BUDGET

Activity		Years										Cost	Total Cost
		I	**II**	**III**	**IV**	**V**	VI	VII	VIII	IX	X		
Plantation under safety zone	Nos	300	300	300	300	300	300	300	300	300	300	@ 200 Rs/ Saplings including maintenance	Rs 6,00,000
	Cost	60000	60000	60000	60000	60000	60000	60000	60000	60000	60000		
Plantation in quarried out top bench and haul road	Nos	500	-	-	250	250	250	250	-	-	-		Rs 3,00,000
	Cost	100000	-	-	50000	50000	50000	50000					
Renovation of Wire Fencing (1650 meters)		4,95,000										@ 300Rs per meter	Rs 4,95,000
Renovation of Garland Drain (1500 meters)		4,50,000										@ 300Rs per meter	Rs 4,50,000
TOTAL													**Rs 18,45,000**

Source: Proposed by FAE's and EC

2.5 METHOD OF MINING

Proposed Method of Mining is common for the Proposed Project – The method of mining is Opencast Mechanized Mining Method is being proposed by formation of 5.0-meter height bench with a bench width not less than the bench height. However, as far as the quarrying of Rough Stone is concerned, observance of the provisions of Regulation 106 (2) (b) as above is seldom possible due to various inherent petro genetic factors coupled with mining difficulties. Hence it is proposed to obtain relaxation to the provisions of the above regulation from the Director of Mines Safety for which necessary provision is available with the Regulation 106 (2) (b) of MMR-1961, under Mine Act – 1952.

The Rough Stone is a batholith formation and the splitting of rock mass of considerable volume from the parent rock mass will be carried out by deploying jackhammer drilling and Slurry Explosives will be used for blasting. Hydraulic Excavators attached with Rock Breakers unit will be deployed for breaking large boulders to required fragmented sizes to avoid secondary blasting and hydraulic excavators attached with bucket unit will be deployed for loading the Rough Stone into the tippers and then the stone is transported from pithead to the nearby crushers.

2.5.1 Drilling & Blasting Parameters

Drilling & Blasting will be carried out as per parameters given below: -

Spacing	–	1.2m
Burden	–	1.0 m
Depth of hole	–	1.5 m
Charge per hole	–	0.50 – 0.75kg
Powder factor	–	6.0 tonnes/kg
Diameter of hole	–	32 mm
Peak production Capacity	=	555m^3 of Rough stone per day
Spacing X Burden X Depth	=	1.4m X 1.1m X 1.5m = 2.31 m^3
	=	2.31 m^3 X 2.6 (Bulk Density) = 6.0 Ts per ole

hence for the peak production of 555m^3 (6.0 Ts) = 500 Nos of holes to be drilled per day

Explosives per hole = ½ kg hence 250 kg of Explosives will be utilized maximum considering the peak production.

Type of Explosives to be used –

Slurry explosives (An explosive material containing substantial portions of a liquid, oxidizers, and fuel, plus a thickener), NONEL / Electric Detonator &Detonating Fuse

Storage of Explosives –

No proposal for storage of explosives within the project area, the respective project proponents have made agreement with authorized explosives agencies for carrying out blasting activities and competent person as per DGMS guidelines will be employed for safety and supervision of overall quarrying activities.

The explosives will be sourced from the blasting agency on daily basis and the blasting will be carried out under the supervision of competent qualified Blaster and it will be ensured that there shall be no balance of explosive stock; any balance stock will be taken back by the supplier.

2.5.2 Extent of Mechanization

TABLE 2.10 PROPOSED MACHINERY DEPLOYMENT

S.NO.	TYPE	NOS	SIZE/CAPACITY	MOTIVE POWER
1	Crawler mounted drill machine	2	3m to 9m	Diesel Drive
2	Hand Jack hammers	6	1.2m to 2.0m	Compressed air
3	Compressor	1	400psi	Diesel Drive
4	Excavator with Bucket / Rock Breaker Unit 4	1	300 HP	Diesel Drive
5	Trucks	4	30 Tonnes	Diesel Drive
6	Water Sprinkling Tanker	1	10,000 litres	Diesel Drive

Source: Approved Mining Plans

2.6 GENERAL FEATURES

2.6.1 Existing Infrastructures

Infrastructures like Mine office, Temporary Rest shelters for workers, Latrine and Urinal Facilities will be constructed as per the Mine Rule after the grant of quarry lease in all the proposed quarries.

2.6.2 Drainage Pattern

There are no streams, canals or water bodies crossing within the project area. The drainage pattern of the area is dendritic – sub dendritic.

2.6.3 Traffic Density

The traffic survey conducted based on the transportation route of material, the Rough Stone is proposed to be transported mainly through Quarry Road on SouthEast and Thimmarasanayakkanur Village Road on West side

Traffic density measurements were performed at two locations

1. Quarry Approach Road
2. Thimmarasanayakkanur Village Road

Traffic density measurement were made continuously for 24 hours by visual observation and counting of vehicles under three categories, viz., Heavy motor vehicles, light motor vehicles and two/three wheelers. As traffic densities on the roads are high, two skilled persons were deployed simultaneously at each station during each shift- one person on either direction for counting the traffic. At the end of each hour, fresh counting and recording was undertaken.

TABLE.2.11: TRAFFIC SURVEY LOCATIONS

Station Code	Road Name	Distance and Direction	Type of Road
TS1	Quarry Approach Road	860m SE	Quarry Road
TS2	Thimmarasanayakkanur Village Road	1.36 km West	Village Road

Source: On-site monitoring by GEMS FAE & TM

TABLE 2.12: EXISTING TRAFFIC VOLUME

Station code	HMV		LMV		2/3 Wheelers		Total PCU
	No	PCU	No	PCU	No	PCU	
TS1	50	150	40	40	76	38	228
TS2	150	450	85	85	180	90	625

Source: On-site monitoring by GEMS FAE & TM

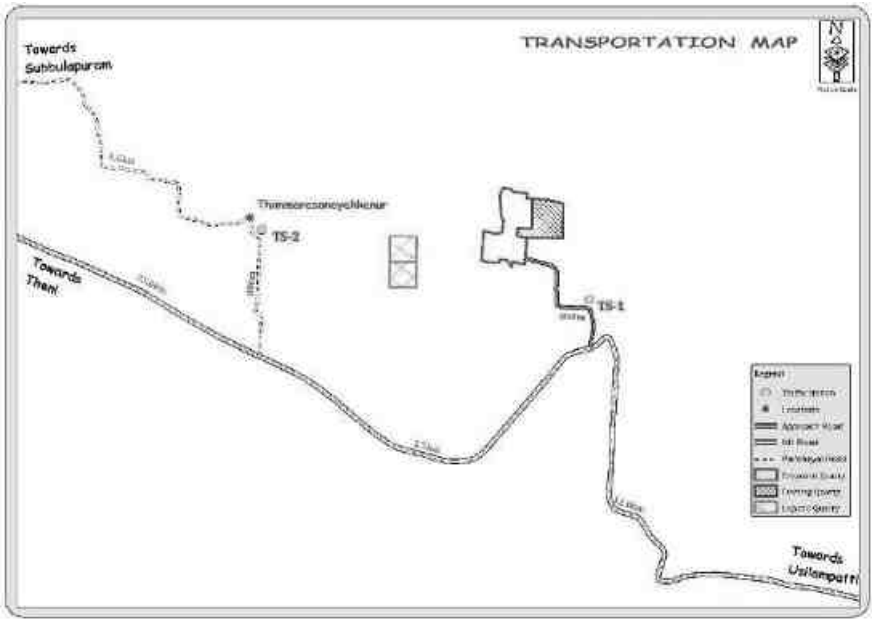
* PCU conversion factor: HMV (Trucks and Bus) = 3, LMV (Car, Jeep and Auto) = 1 and 2/3 Wheelers = 0.5

TABLE 2.13: ROUGH STONE & GRAVEL HOURLY TRANSPORTATION REQUIREMENT

Transportation of Rough Stone & Gravel per day		
Capacity of trucks	No. of Trips per day Cumulatively	Volume in PCU
12 tonnes	40	120

Source: Data analysed from Approved Mining Plan

FIGURE.2.12: MINERAL TRANSPORTATION ROUTE MAP



Proposed Transportation Route:

1. The Rough stone will be transported to the Crusher which is located 1000m Southwest side of the project site.
2. Existing approach road is located on the south side
3. No Major Habitation, Schools in the proposed transportation route.

TABLE 2.14: SUMMARY OF TRAFFIC VOLUME

Route	Existing Traffic volume in PCU	Incremental traffic due to the project	Total traffic volume	Hourly Capacity in PCU as per IRC – 1960guidelines
Quarry Approach Road	228	120	348	1500
Thimmarasanayakkanur Village Road	625	120	745	1500

Source: On-site monitoring analysis summary by GEMS FAE & TM

- Due to these projects the existing traffic volume will not exceed
- As per the IRC 1960 this existing village road can handle 1,200 PCU in hour and Major district road can handle 1500 PCU in hour hence there will not be any conjunction due to this proposed transportation.

2.6.4 Mineral Beneficiation and Processing

There is no proposal for the mineral processing or ore beneficiation in any of the proposed project

2.7 PROJECT REQUIREMENT

2.7.1 Water Source & Requirement

Detail of water requirements in KLD as given below:

TABLE 2.15: WATER REQUIREMENT FOR THE PROJECT

PROPOSAL		
***Purpose**	**Quantity**	**Source**
Dust Suppression	1.5 KLD	From Nearby Existing bore well
Green Belt development	2.0 KLD	From Nearby Existing bore well
Domestic purpose	0.5 KLD	Approved water vendors
Total	**4.0 KLD**	

Source: Prefeasibility report

* Drinking water will be sourced from Approved Water Vendors

2.7.2 Power and Other Infrastructure Requirement

No proposed projects require power supply for the mining operations. The quarrying activity is proposed during day time only (General Shift 8 AM – 5 PM, Lunch Break 1 PM – 2 PM). Electricity for use in office and other internal infrastructure will be obtained from SEB by respective project proponent.

No workshops are proposed inside the project area hence there will not be any process effluent generation from the project area. Domestic effluent from the mine office will be discharged to septic tank and soak pit. There is no toxic effluent expected to generate in the form of solid, liquid or gaseous form hence there is no requirement of waste treatment plant.

2.7.3 Fuel Requirement

High speed Diesel (HSD) will be used for mining machineries. Diesel will be brought from nearby Fuel Stations.

Average diesel consumption is around = 750 Liters of HSD / day per proposed project.

2.7.4 Project Cost

TABLE 2.16: PROJECT COST OF PROPOSED PROJECT

Project Cost	Rs.3,72,70,000/-

Source: Approved Mining Plan &Prefeasibility Report

2.8 EMPLOYMENT REQUIREMENT:

The following manpower's are proposed in the mining plan to carry out the day-to-day quarrying activities, the same employment is maintaining aimed at the proposed production target and also to comply with the statutory provisions of The Metalliferous mines regulations, 1961 for all the proposed projects.

TABLE 2.17: PROPOSED MANPOWER DEPLOYMENT

Mine Manager	1
Geologist	1
Mines Foreman	1
Blaster / Mate	1
Excavator Operator	2
Crawler Mounted Drill Operator	2
Tipper Driver	4
Water sprinklers	1
Jack hammer operator	8
Security	2
Labour & Helper	2
Cleaner & Co-operator	9
Total	**33**

Source: Approved Mining Plan & Pre-Feasibility report.

2.9 PROJECT IMPLEMENTATION SCHEDULE

The mining operation will commence after the grant of Environmental Clearance, Consent to operate (CTO), Execution of Lease Deed and Obtaining permission from the DGMS (Notice of Opening).

TABLE 2.18: EXPECTED TIME SCHEDULE

Sl.No.	Particulars	Time Schedule (In Month)					Remarks if any
		1st	2nd	3rd	4th	5th	
1	Environmental Clearance						
2	Consent to Operate						
3	Execution of Lease deed						
4	Permission from DGMS						

Source: Anticipated based on Timelines framed in EIA Notification & CPCB Guidelines

3. DESCRIPTION OF ENVIRONMENT

3.0 GENERAL

The baseline environment quality represents the background environmental scenario of various environmental components such as Land, Water, Air, Noise, Biological and Socio-economic status of the study area. Field monitoring studies to evaluate the base line status of the project site were carried out covering October to December 2024 with CPCB guidelines for the following attributes –

- Land
- Water
- Air
- Noise
- Biological
- Socio-economic status

Environmental data has been collected with reference to cluster quarries by EHS 360 LABS Private Limited, – An accredited by ISO/IEC 17025:2017 (NABL) Laboratory

Study Area

An area of 10 km radius (aerial distance) from the periphery of the cluster is considered for EIA study. The study area has been divided into two zones viz **core zone** and **buffer zone**.

- Core zone is considered as cluster area
- Buffer zone taken as 10km radius from the periphery of the Cluster. Both Core zone and Buffer zone is taken as the study area.

Study Period

The baseline study was conducted during the summer season i.e., October to December 2024.

Study Methodology

- The project area was surveyed in detail with the help of Total Station Survey instruments and pillars were marked. The boundary coordinates were superimposed on the satellite imagery to understand the relief of the area, besides Land use pattern of the area was studied through the Bhuvan (ISRO)
- Soil samples were collected and analysed for relevant physio-chemical characteristics in order to assess the impact due to mining activities and to recommend saplings for Greenbelt development.
- Ground water samples were collected from the existing bore wells, Surface water was collected from water bodies in the buffer zone and analysed as per CPCB Guidelines.
- An onsite meteorological station was setup in cluster area, to collect data about wind speed, wind direction, temperature, relative humidity, rainfall and general weather conditions were recorded throughout the study period.
- Air quality Data's were collected by installation of Respiratory Dust Samplers (RDS) for Fugitive dust, PM_{10} and SO_2, NO_X with gaseous attachments & Fine Dust Samplers (FDS) for $PM_{2.5}$ and other parameters as per NAAQ norms and analysed for primary air pollutants to work out the existing status of air quality.

- The Noise level measurements were also made at various locations in different intervals of time with the help of sound level meter to establish the baseline noise levels in the impact zone.
- Baseline biological studies were carried out to assess the ecology of the study area to study the existing flora and fauna pattern of the area.
- Socio-Economic survey was conducted at village and household level in the study area to understand the present socio-economic conditions and assess the extent of impact due to the proposed mining project.
  The sampling methodologies for the various environmental parameters required for the study, frequency of sampling, method of samples analysis, etc., are given below Table 3.1.

TABLE 3.1: MONITORING ATTRIBUTES AND FREQUENCY OF MONITORING

Attribute	Parameters	Frequency of Monitoring	No. of Locations	Protocol
Land-use Land cover	Land-use Pattern within 10 km radius of the study area	Data's from census handbook 2011 and from the satellite imagery	Study Area	Satellite Imagery Primary Survey
*Soil	Physio-Chemical Characteristics	Once during the study period	6 (2 core & 4 buffer zone)	IS 2720 Agriculture Handbook - Indian Council of Agriculture Research, New Delhi
*Water Quality	Physical, Chemical and Bacteriological Parameters	Once during the study period	6 (1 surface water & 5 ground water)	IS 10500& CPCB Standards
Meteorology	Wind Speed Wind Direction Temperature Cloud cover Dry bulb temperature Rainfall	1 Hourly Continuous Mechanical/Automatic Weather Station	1	Site specific primary data& Secondary Data from IMD Station
*Ambient Air Quality	PM10 PM2.5 SO2 NOX Fugitive Dust	24 hourly twice a week (Oct 2024 – Dec 2024)	7 (2 core & 5 buffer)	IS 5182 Part 1-23 National Ambient Air Quality Standards, CPCB
*Noise Levels	Ambient Noise	Hourly observation for 24 Hours per location	7 (2 core & 5 buffer zone)	IS 9989 As per CPCB Guidelines
Ecology	Existing Flora and Fauna	Through field visit during the study period	Study Area	Primary Survey by Quadrate & Transect Study Secondary Data – Forest Working Plan
Socio Economic Aspects	Socio–Economic Characteristics, Population Statistics and Existing Infrastructure in the study area	Site Visit & Census Handbook, 2011	Study Area	Primary Survey, census handbook & need based assessments.

Source: On-site monitoring/sampling by EHS 360 Labs Private Limited in association with GEMS

* All monitoring and testing have been carried out as per the Guidelines of CPCB and MoEF & CC.

3.1 LAND ENVIRONMENT

The main objective of this section is to provide a baseline status of the study area covering 10km radius around the proposed mine site so that temporal changes due to the mining activities on the surroundings can be assessed in future.

3.1.1 Land Use/ Land Cover

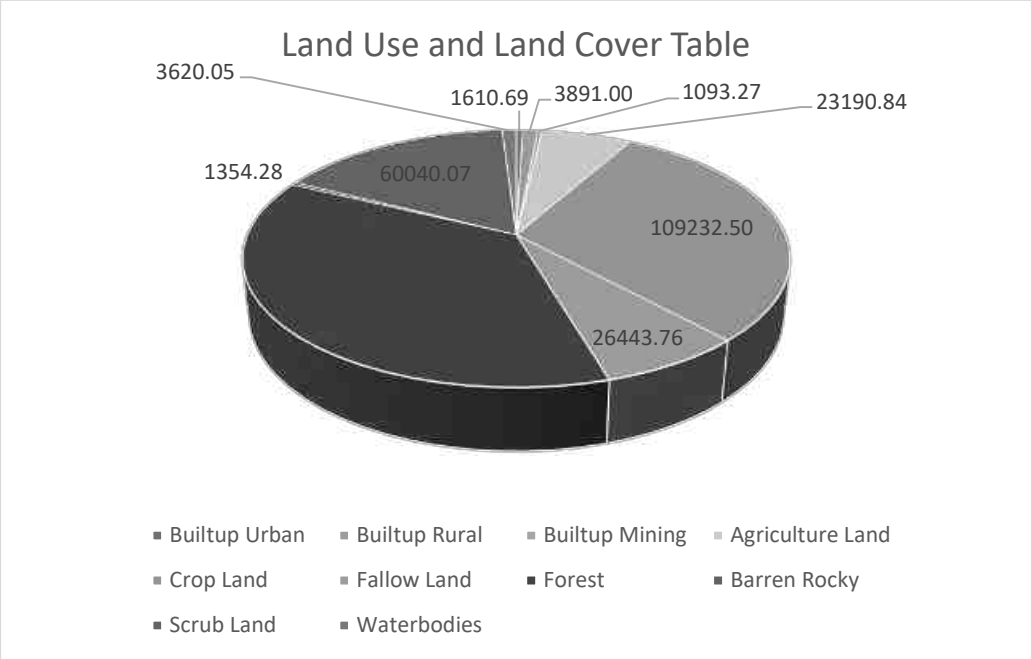
A visual interpretation technique has been adopted for land use classification based on the keys suggested in the chapter – V of the guidelines issued by NNRMS Bangalore & Level III classification with 1:50,000 scale for the preparation of land use mapping. Land use pattern of the area was studied through LISS III imagery of Bhuvan (ISRO). The 10 km radius map of study area was taken for analysis of Land use cover.

No	CLASSIFICATION	AREA_HA	AREA_%
BUILTUP			
1	Builtup Urban	144.96	0.44
2	Builtup Rural	350.19	1.07
3	Builtup Mining	98.39	0.30
AGRICULTURAL LAND			
4	Agriculture Land	2087.18	6.37
5	Crop Land	9830.93	29.98
6	Fallow Land	2379.94	7.26
FOREST			
7	Forest	12047.71	36.74
BARREN/WASTE LANDS			
8	Barren Rocky	121.89	0.37
9	Scrub Land	5403.61	16.48
WETLANDS/ WATER BODIES			
10	Waterbodies	325.80	0.99
TOTAL		32790.59	100.00

TABLE 3.2: LAND USE / LAND COVER TABLE 10 KM RADIUS

Source: Survey of India Toposheet and Landsat Satellite Imagery

FIGURE 3.1: PIE DIAGRAM OF LAND USE AND LAND COVER ANALYSIS



Source: Table 3.2

FIGURE 3.2: PHYSIOGRAPHIC MAP 10KM RADIUS

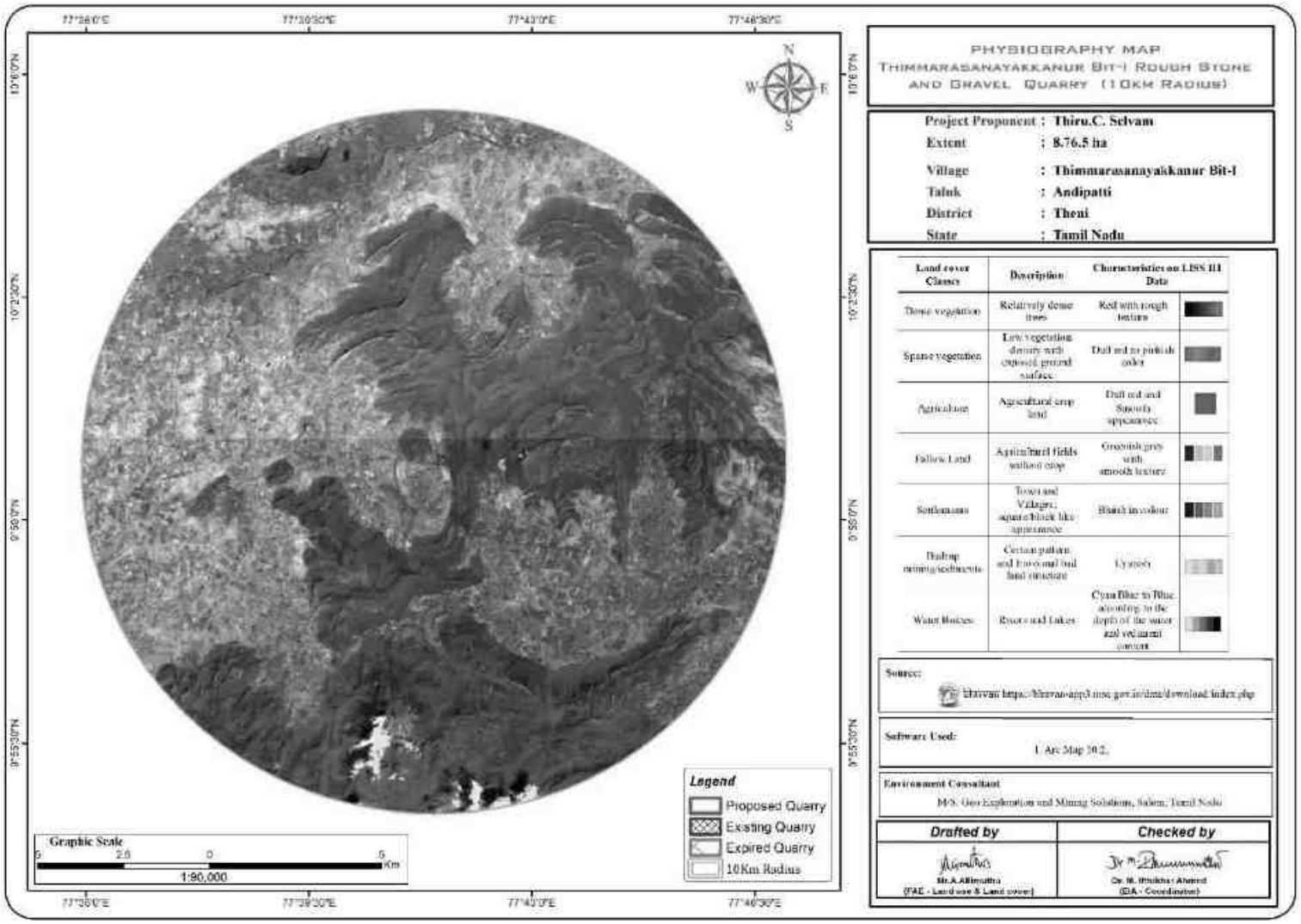
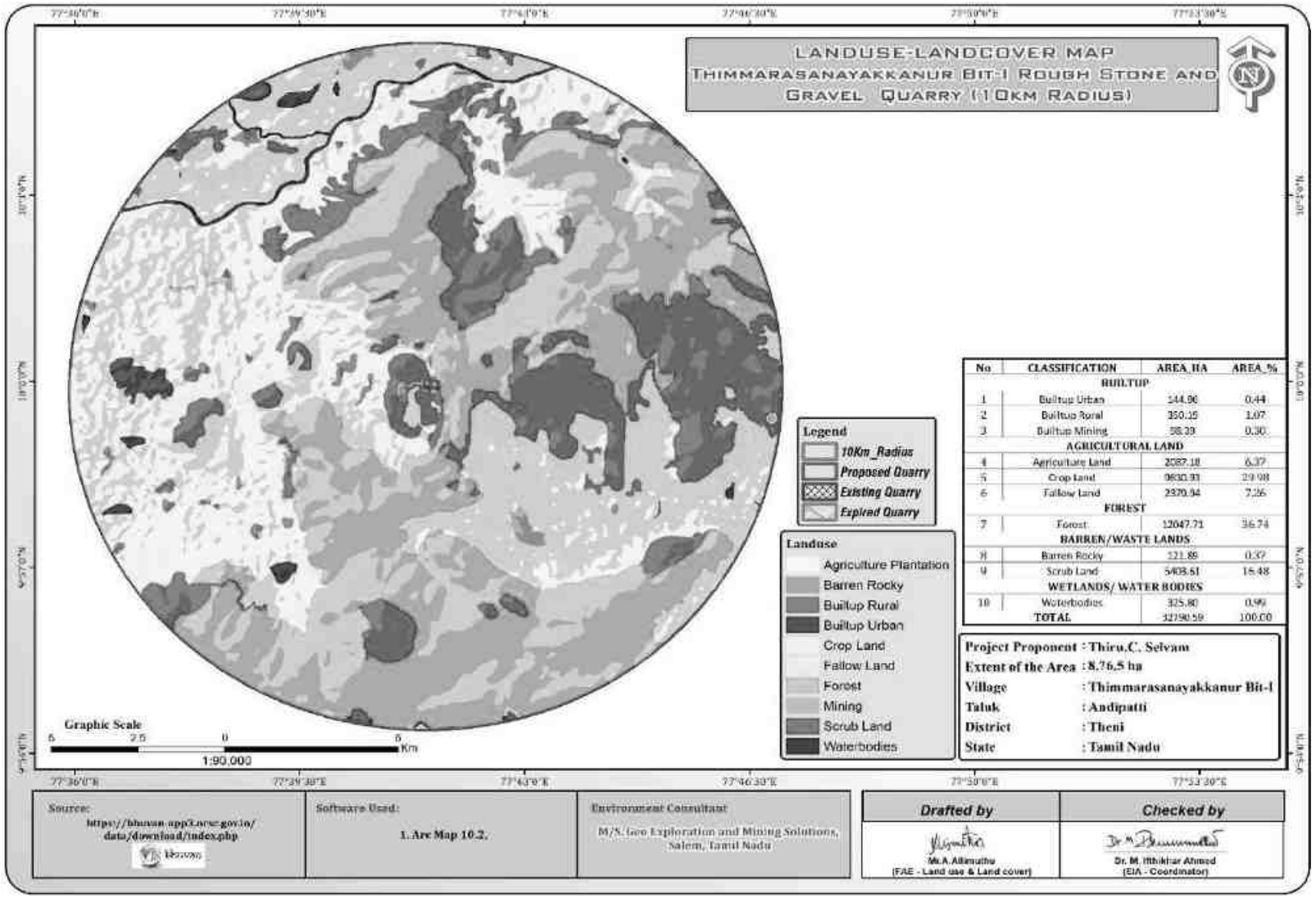


FIGURE 3.3: LAND USE LAND COVER MAP 10KM RADIUS



No	CLASSIFICATION	AREA_HA	AREA_%
	BUILTUP		
1	Builtup Urban	144.96	0.44
2	Builtup Rural	350.15	1.07
3	Builtup Mining	98.39	0.30
	AGRICULTURAL LAND		
4	Agriculture Land	2087.18	6.37
5	Crop Land	9830.93	29.98
6	Fallow Land	2370.94	7.26
	FOREST		
7	Forest	12047.71	36.74
	BARREN/WASTE LANDS		
8	Barren Rocky	121.89	0.37
9	Scrub Land	5408.61	16.48
	WETLANDS/ WATER BODIES		
10	Waterbodies	325.80	0.99
	TOTAL	32790.59	100.00

From the above table, pie diagram and land use map it is inferred that the majority of the land in the study area is Agriculture land (includes crop land, plantation and fallow land) 43.1% followed by Built-up Lands 1.51%, Scrub Land 16.85%; Water bodies 0.99% and Mining – 0.30%.

The total mining area within the study area is 98.39ha i.e., 0.30%. The cluster area of 13.52.5 ha contributes about 13.74 % of the total mining area within the study area. This small percentage of Mining Activities shall not have any significant impact on the environment.

3.1.2 Topography

The project area is exhibits plain terrain having gentle slope towards Southeast side, the southwest of the area is existing Rough stone and gravel quarry. to utilize temporary storage of Crushed materials.

3.1.3 Drainage Pattern of the Area

The drainage pattern of the area is dendritic – sub dendritic. Drainage pattern is the pattern formed by the streams, rivers, and lakes in a particular drainage basin. They are governed by the topography of the land, whether a particular region is dominated by hard or soft rocks, and the gradient of the land. There are no streams, canals or water bodies crossing within the project area.

3.1.4 Seismic Sensitivity

The proposed project site falls in the seismic Zone III, low damage risk zone as per BMTPC, Vulnerability Atlas of Seismic zone of India IS: 1893 – 2002. The project area falls in the hard rock terrain on the peninsular shield of south India which is highly stable.

(Source: https://moes.gov.in/writereaddata/files/LS_EN_20032020_385.pdf)

3.1.5 Environmental Features in the Study Area

There is no Wildlife Sanctuaries, National Park and Archaeological monuments within project area. No Protected and Reserved Forest area is involved in the project area. Therefore, there will be no need to acquisition/diversion of forest land. The details related to the environment sensitivity around the proposed mine lease area i.e. 10 km radius, are given in the below Table 3.3.

FIGURE 3.4: RESERVE FOREST MAP

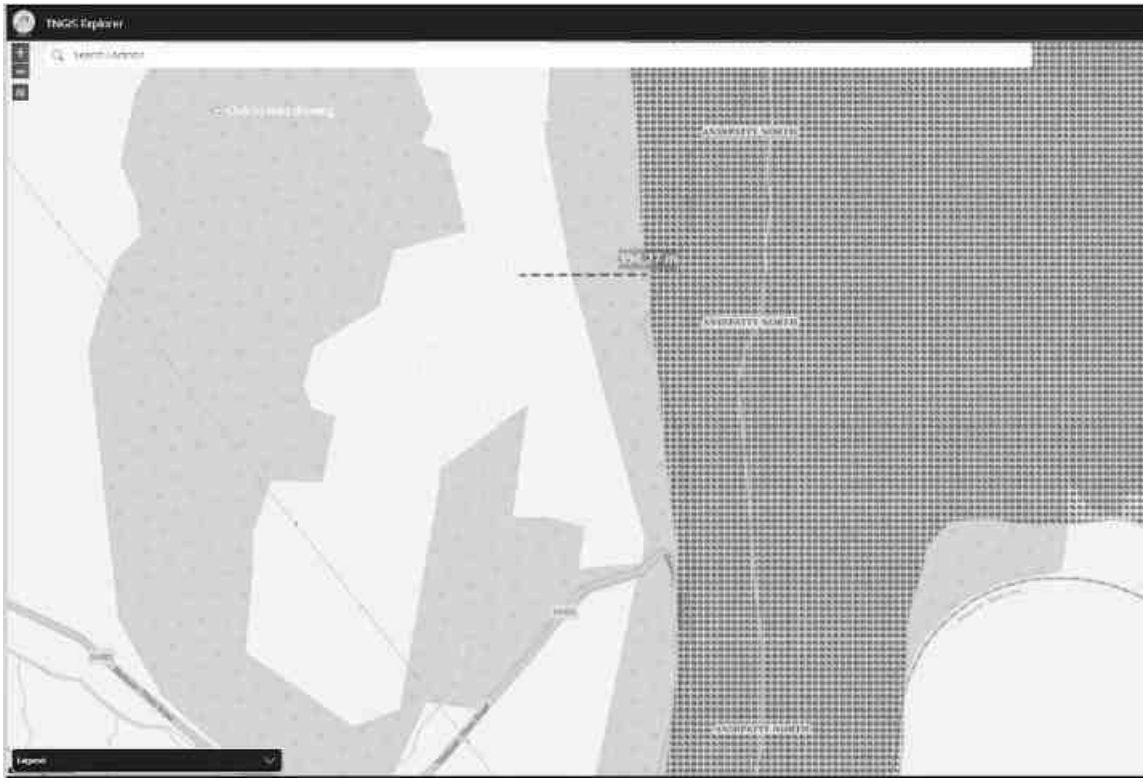


FIGURE 3.5: WILDLIFE SANCTUARY MAP

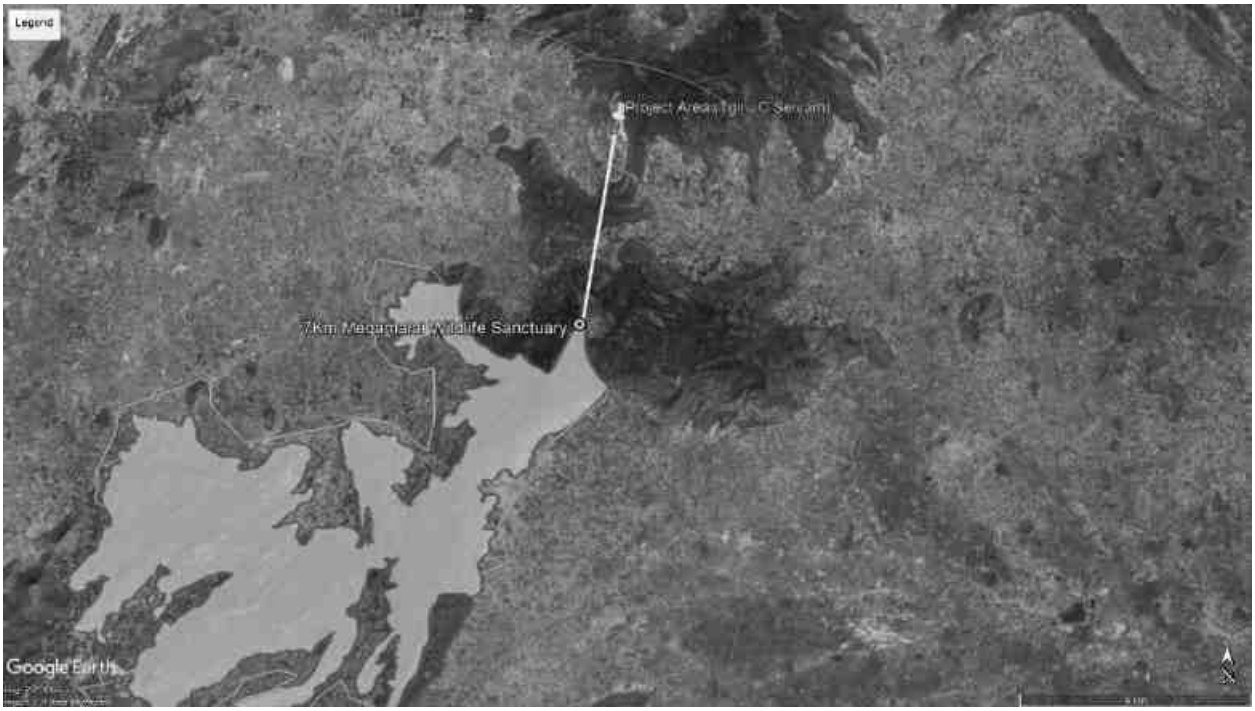


TABLE 3.3: DETAILS OF ENVIRONMENT SENSITIVITY AROUND THE CLUSTER

Sl.No	Sensitive Ecological Features	Name	Arial Distance in km from Cluster
1	National Park / Wild life Sanctuaries	Kodaikanal Wildlife Sanctuary Boundary	18.50 km NW
2	Reserve Forest	Andipatti North R.F.	240m E
3	Lakes/Reservoir/ Dams/Stream/Rivers	Vaigai River Periyar Main Canal Varaha River	6.8 km NW 7.2 km NW 7.8 km NW
4	Tiger Reserve/ Elephant Reserve/ Biosphere Reserve	Srivilliputhur – Megamalai Tiger Reserve Boundary	8.70 km -SW
5	Critically Polluted Areas	None	Nil within 10km Radius
6	Mangroves	None	Nil within 10km Radius
7	Mountains/Hills	None	Nil within 10km Radius
8	Notified Archaeological Sites	Vaigai River – Vaigai Dam - Kondhagai Excavation site	7.0km – North West 12.0km – North West 56.0km – South East
9	Industries/ Thermal Power Plants	None	Nil within 10km Radius
10	Defence Installation	None	Nil within 10km Radius

Source: Survey of India Toposheet

TABLE 3.4: NEARBY WATER BODIES FROM THE PROPOSED PROJECT SITE

Sl.No	NAME	DISTANCE & DIRECTION
1	Odai	Adjacent to the lease applied area on Northern side, hence 50m safety distance provided
2	Odai	190m North
3	Mullai Periyar Channel	3.6 Km SW
4	Tank	5.7 km SW
5	Santhaiyar River	7.0 km NE
6	Santhaiyar Dam	7.7 km NE
7	Vaigai River	9.0 km SW

Source: Village Cadastral Map and Field Survey

3.1.6 Soil Environment

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 analysed for different parameters. The locations of the monitoring sites are detailed in Table 3.5 and Figure 3.3.

The objective of the soil sampling is -

- To determine the baseline soil characteristics of the study area; study the impact of proposed activity on soil characteristics and study the impact on soil more importantly agriculture production point of view.

TABLE 3.5: SOIL SAMPLING LOCATIONS

S. No	Location Code	Monitoring Locations	Distance & Direction	Coordinates
1	S-1	Project Area	Core Zone	9°59'49.45"N 77°41'26.30"E
2	S-2	Near Project Area	300m SE	9°59'38.36"N 77°41'38.31"E
3	S-3	Timmarasanayakkanur	1.3km West	10° 0'5.14"N 77°40'40.11"E
4	S-4	Mekalpatty	5.5km SW	9°58'28.23"N 77°38'37.74"E
5	S-5	Thottappanayakkanur	5.0km SE	9°58'38.79"N 77°43'58.92"E
6	S-6	Theppathupatty	5.8km NE	10° 2'56.99"N 77°42'39.87"E

Source: On-site monitoring/sampling by EHS 360 Labs Private Limited in association with GEMS

Methodology –

For studying soil quality, sampling locations were selected to assess the existing soil conditions in and around the project site representing various land use conditions. The samples were collected by auger boring into the soil up to 90-cm depth. Six (6) locations were selected for soil sampling on the basis of soil types, vegetative cover, industrial & residential activities including infrastructure facilities, which would accord an overall idea of the soil characteristics. The samples were analysed for physical and chemical characteristics. The samples were sent to laboratory for analysis. The samples were filled in Polythene bags, coded and sent to laboratory for analysis and the details of methodology in respect are given in below Table 3.6.

TABLE 3.6: METHODOLOGY OF SAMPLING COLLECTION

Particulars	Details
Frequency	One grab sample from each station-once during the study period
Methodology	Composite grab samples of the topsoil were collected from 3 depths, and mixed to provide a representative sample for analysis. They were stored in airtight Polythene bags and analysed at the laboratory.

Source: On-site monitoring/sampling by EHS 360 Labs Private Limited in association with GEMS

Soil Testing Result –

The samples were analysed as per the standard methods prescribed in "Soil Chemical Analysis (M.L. Jackson, 1967) & Department of Agriculture, Cooperation & Farmers Welfare, Ministry of Agriculture & Farmers Welfare, Government of India". The important properties analysed for soil are bulk density, porosity, infiltration rate, pH and Organic matter, kjeldahi Nitrogen, Phosphorous and Potassium. The standard classifications of soil and physico-chemical characteristics of the soils are presented below in Table 3.6 & Test Results in Table 3.7.

FIGURE 3.6: SOIL SAMPLING LOCATIONS AROUND 10 KM RADIUS

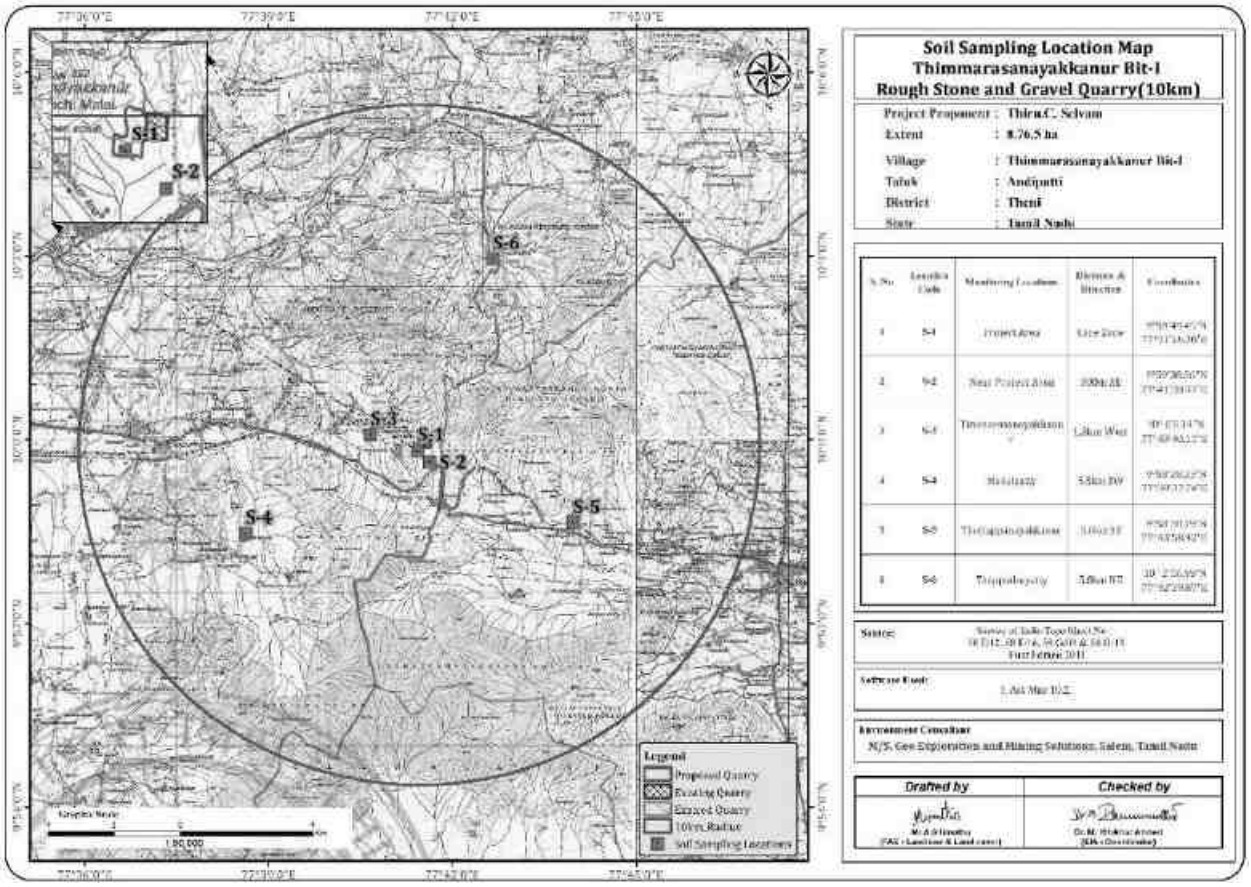


FIGURE 3.7: SOIL MAP

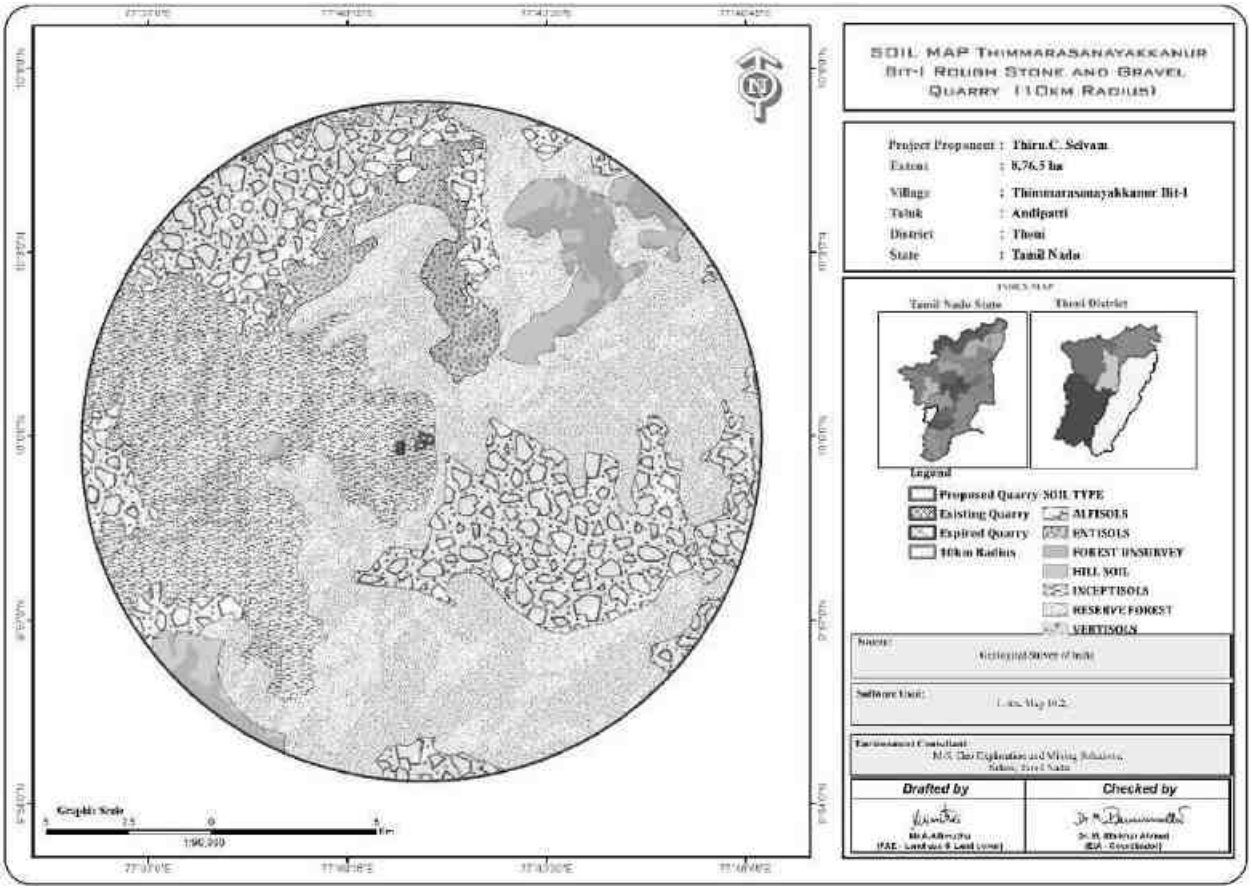


TABLE 3.7: SOIL QUALITY OF THE STUDY AREA

S.No	Test Parameters	Protocols	S1 Project Area	S2 Near Project Area	S3 Timmarasanayakkanur	S4 Mekalpatty	S5 Thottappanayakkanur	S6 Theppathupatty
01	pH @ 25°C	IS 2720 Part 26 - 1987 (Reaff:2016)	8.17	8.50	8.31	8.09	8.22	8.66
02	Conductivity @ 25°C	IS 14767 - 2000 (Reaff : 2016)	481 µmhos/cm	373 µmhos/cm	428 µmhos/cm	503 µmhos/cm	359 µmhos/cm	349 µmhos/cm
03	Water Holding Capacity	By Gravimetric Method	48.4 %	46.9 %	47.1 %	48.5. %	48.0 %	48.4 %
04	Bulk Density	By Cylindrical Method	1.03 g/cm^3	1.01 g/cm^3	1.02 g/cm^3	1.01 g/cm^3	1.04 g/cm^3	1.0 g/cm^3
05	Porosity	By Gravimetric Method	47.2 %	48.1 %	47.7 %	47.4 %	46.1 %	47.9 %
06	Calcium as Ca	Food and Agriculture organization of the united Nation Rome 2007 : 2018	32.1 mg/kg	27.7 mg/kg	20.1 mg/kg	20 mg/kg	23.4 mg/kg	16.4 mg/kg
07	Magnesium as Mg		26.4 mg/kg	15.4 mg/kg	17.4 mg/kg	5.68 mg/kg	12.2 mg/kg	12.6 mg/kg
08	Chloride as Cl	APHA 23rd Edn 2019 4500 Cl B	40.6 mg/kg	14.9 mg/kg	28.54 mg/kg	15 mg/kg	18 mg/kg	8.7 mg/kg
09	Soluble Sulphate as SO_4	IS 2720 Part 27 : 1977 (Reaff:2015)	0.0022 %	0.0011 %	0.0028 %	0.0025 %	0.0015 %	0.0010 %
10	Total Phosphorus as P	IS 10158 : 1982 (Reaff: 2019)	5.37 mg/kg	3.3 mg/kg	2.86 mg/kg	5.02 mg/kg	3.9 mg/kg	7.61 mg/kg
11	Total Nitrogen as N	IS 14684 : 1999 (Reaff:2019)	410.5 mg/kg	380.8 mg/kg	546.2 mg/kg	342 mg/kg	502 mg/kg	671.2 mg/kg
12	Organic Matter	IS : 2720 Part 22: 1972 (Reaff: 2015)	2.05 %	1.84 %	1.67 %	1.81 %	2.34 %	2.38 %
13	Organic Carbon	IS : 2720 Part 22: 1972 (Reaff: 2015)	1.19 %	1.07 %	1.19 %	1.05 %	1.36 %	1.38 %
14	**Texture :**							
	Clay	Gravimetric Method	29.2 %	27.9 %	25.6 %	31.0 %	24.9 %	30.9 %
	Sand		31.9 %	35.7 %	32.0 %	28.6 %	32.8 %	33.1 %
	Silt		38.9 %	36.4 %	42.4 %	40.4 %	42.3 %	36.0 %
15	Manganese as Mn	USEPA 3050 B – 1996 & USEPA 6010 C - 2000	12.7 mg/kg	12.4 mg/kg	17.0 mg/kg	8.1 mg/kg	4.5 mg/kg	8.3 mg/kg
16	Zinc as Zn		2.22 mg/kg	4.06 mg/kg	2.14 mg/kg	3.2 mg/kg	1.26 mg/kg	5.45 mg/kg
17	Boron as B		1.09 mg/kg	3.2 mg/kg	5.13 mg/kg	2.4 mg/kg	4.9 mg/kg	1.71 mg/kg
18	Potassium as K		30.8 mg/kg	31.61 mg/kg	30.45 mg/kg	20.5 mg/kg	30 mg/kg	22.4 mg/kg
19	Cadmium as Cd		BDL (DL : 1.0 mg/kg)	BDL (DL : 1.0 mg/kg)	BDL (DL : 1.0 mg/kg)	BDL (DL : 1.0 mg/kg)	BDL (DL : 1.0 mg/kg)	BDL (DL : 1.0 mg/kg)
20	Total Chromium as Cr		2.57	2.97	3.19	3.08	3.56	6.69
21	Copper as Cu		BDL (DL : 1.0 mg/kg)	BDL (DL : 1.0 mg/kg)	BDL (DL : 1.0 mg/kg)	BDL (DL : 1.0 mg/kg)	BDL (DL : 1.0 mg/kg)	BDL (DL : 1.0 mg/kg)

22	Lead as Pb		0.67 mg/kg	BDL (DL : 1.0 mg/kg)	0.71 mg/kg	2.6 mg/kg	0.88 mg/kg	BDL (DL : 1.0 mg/kg)
23	Iron as Fe		46.7 mg/kg	24.9 mg/kg	41.6 mg/kg	28.7 mg/kg	19.4 mg/kg	37.02 mg/kg
24	Cation Exchange Capacity	USEPA 9080 – 1986	35.1 meq/100g of soil	40.1 meq/100g of soil	42.11 meq/100g of soil	41.9 meq/100g of soil	46.5 meq/100g of soil	39.4 meq/100g of soil

Source: Sampling Results by EHS 360 Labs Private Limited

Interpretation & Conclusion

Physical Characteristics –

The physical properties of the soil samples were examined for texture, bulk density, porosity and water holding capacity. The soil texture found in the study area is Clay Loam Soil and Bulk Density of Soils in the study area varied between 1.01-1.04 g/cc. The Water Holding Capacity ranging from 46.9 - 48.5 % and Porosity of the soil samples is found to be medium i.e. ranging from 46.1 – 48.1%.

Chemical Characteristics –

- The nature of soil is slightly alkaline to strongly alkaline with pH range 8.09 – 8.66
- The available Nitrogen content range between 342 – 671.2 mg/kg
- The available Phosphorus content range between 20.5 to mg/kg
- The available Potassium range between 20.5 to 43.4 mg/kg

3.2 WATER ENVIRONMENT

The water resources, both surface and groundwater play a significant role in the development of the area. The purpose of this study is to assess the water quality characteristics for critical parameters and evaluate the impacts on agricultural productivity, domestic community usage, recreational resources and aesthetics in the vicinity. The water samples were collected and transported as per the norms in pre-treated sampling cans to laboratory for analysis.

3.2.1 Surface Water Resources:

Vaigai River is the major surface water body in the study area and the rainfall over the area is moderate, the rainwater storage in open wells and trenches are in practice over the area and the stored water acts as source of drinking water for few months after rainy season.

3.2.2 Ground Water Resources:

Groundwater occurs in all the crystalline formations of oldest Achaeans and Recent Alluvium. The occurrence and behaviour of groundwater are controlled by rainfall, topography, geomorphology, geology, structures etc.

Ground water is occurring in phreatic conditions in weathered and fractured gneiss rock formation. The weathering is controlled by the intensity of weathering and fracturing. Dug wells as wells as bore wells are more common ground water abstraction structures in the area. The diameter of the dug well is in the range of 7 to 10 m and depth of dug wells range from 7.6 to 13m bgl. The dug wells yield up to 1 lps in summer months and few wells remains dry. The yield is adequate for irrigation for one or two crops in monsoon period.

3.2.3 Methodology

Reconnaissance survey was undertaken and monitoring locations were finalized based on;

- Drainage pattern;
- Location of Residential areas representing different activities/likely impact areas; and
- Likely areas, which can represent baseline conditions

One (1) surface water 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 surface and ground water. The samples were analysed as per the procedures specified by CPCB, IS-10500:2012 and 'Standard methods for the Examination of Water and Wastewater' published by American Public Health Association (APHA). The water sampling locations are given in Table 3.9 and shown as Figure 3.6.

TABLE 3.8: WATER SAMPLING LOCATIONS

S.NO	CODE	LOCATIONS	DISTANCE & DIRECTION	COORDINATES
GROUND WATER				
1	WW-1	Near Project Area	300m South	9°59'38.83"N 77°41'22.39"E
2	WW-2	Mekalpatty	5.3km SW	9°58'32.04"N 77°38'39.89"E
3	WW-3	Thottappanayakkanur	5.0km SE	9°58'38.52"N 77°43'59.93"E
4	BW-1	Near Project Area	480m South	9°59'32.93"N 77°41'21.79"E
5	BW-2	Theppathupatty	5.8km NE	10° 2'57.01"N 77°42'37.44"E
SURFACE WATER				
5	SW-1	"Vaigai River Anaikaraipatti"	7km NW	10° 2'53.01"N 77°38'53.26"E

Source: On-site monitoring/sampling by EHS 360 Labs Private Limited in association with GEMS

FIGURE 3.8: WATER SAMPLING LOCATIONS AROUND 10 KM RADIUS

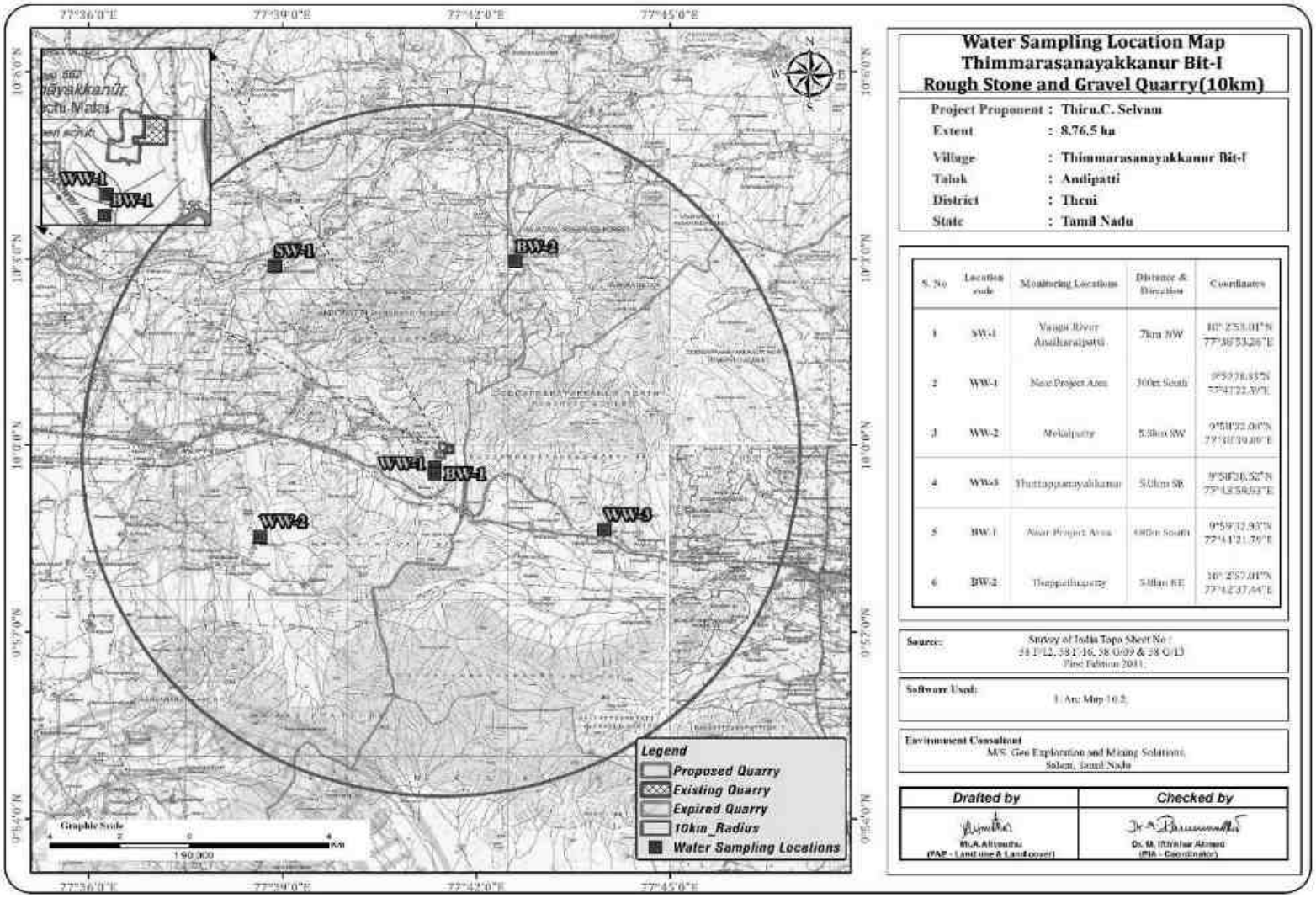


TABLE 3.9: GROUND WATER SAMPLING RESULTS

S.No.	Parameters	Test Method	WW1- Near Project Area	WW2- Mekalpatty	WW-3 Thottappanayakkanur	BW-1 Near Project Area	BW-2 Theppathupatty
	Discipline: Chemical	**Group:** Water					
1	Colour	IS 3025 Part 4:1983 (Reaff:2017)	5	5	5	5	5
2	Odour	IS 3025 Part 5:2018	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
3	pH at 25°C	IS 3025 Part 11:1983 (Reaff:2017)	6.97	7.08	7.55	7.65	7.59
4	Conductivity @ 25°C	IS 3025 Part 14:2013 (Reaff:2019)	915 µmhos/cm	785 µmhos/cm	890 µmhos/cm	983 µmhos/cm	1034 µmhos/cm
5	Turbidity	IS 3025 Part 10:1984 (Reaff:2017)	1 NTU	1.0 NTU	1.0 NTU	1 NTU	1 NTU
6	Total Dissolved Solids	IS 3025 Part 16:1984 (Reaff:2017)	540 mg/l	463 mg/l	525 mg/l	580 mg/l	610 mg/l
7	Total Hardness as $CaCO_3$	IS 3025 Part 21:2009 (Reaff:2019)	203.2 mg/l	168.02 mg/l	176.18 mg/l	202.16 mg/l	210.97 mg/l
8	Calcium as Ca	IS 3025 Part 40:1991 (Reaff:2019)	35.8 mg/l	30.1 mg/l	30.9 mg/l	36.7 mg/l	36.6 mg/l
9	Magnesium as Mg	IS 3025 Part 46:1994 (Reaff:2019)	27.7 mg/l	22.6 mg/l	24.1 mg/l	26.9 mg/l	29.1 mg/l
10	Total Alkalinity as $CaCO_3$	IS 3025 Part 23:1986 (Reaff:2019)	201 mg/l	144.2 mg/l	174 mg/l	206 mg/l	225 mg/l
11	Chloride as Cl	IS 3025 Part 32:1988 (Reaff:2019)	115.3 mg/l	99 mg/l	122 mg/l	120 mg/l	140.2 mg/l
12	Sulphate as SO_4	IS 3025 Part 24:1986 (Reaff:2019)	59 mg/l	58.4 mg/l	72.5 mg/l	67.5 mg/l	70 mg/l
13	Iron as Fe	IS 3025 Part 53:2003 (Reaff:2019)	0.29 mg/l	0.17 mg/l	0.31 mg/l	0.31 mg/l	0.16 mg/l
14	Residual Free Chlorine	IS 3025 Part 26:1986 (Reaff:2019)	BDL (DL:0.1 mg/l)				
15	Fluoride as F	APHA 23rd Edn. 2017:4500 F,D	0.24 mg/l	0.22 mg/l	0.12 mg/l	0.26 mg/l	0.23 mg/l
16	Nitrate as NO_3	IS 3025 Part 34:1988 (Reaff:2019)	3.15 g/l	4.52 mg/l	5.15 mg/l	6.15 mg/l	7.55 mg/l
17	Copper as Cu	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.01 mg/l)				
18	Manganese as Mn	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)				
19	Mercury as Hg	USEPA 200.8	BDL (DL:0.0005 mg/l)				
20	Cadmium as Cd	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.001 mg/l)				
21	Selenium as Se	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)				
22	Aluminium as Al	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)				
23	Lead as Pb	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)				
24	Zinc as Zn	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.05 mg/l)				
25	Total Chromium as Cr	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.02 mg/l)				
26	Boron as B	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.05 mg/l)				
27	Mineral Oil	IS 3025 Part 39-1991 (Reaff. 2019)	BDL(DL : 0.01 mg/l)				
28	Phenolic compounds as C_6H_5OH	IS 3025 Part 43-1992(Reaff: 2019)	BDL (DL:0.0005 mg/l)				
29	Anionic Detergents (as MBAS)	IS 13428 – 2005 (Reaff:2019) (Annex K)	BDL (DL:0.01 mg/l)				
30	Cyanide as CN	IS 3025 Part 27-1986 (Reaff. 2019)	BDL (DL:0.01 mg/l)				
31	Barium as Ba	IS 3025 Part 44:1993 (Reaff:2019)	BDL(DL:0.05 mg/l)				
32	Ammonia (as total ammonia-N)	IS 3025 Part 58:2006 (Reaff:2017)	BDL (DL:0.01 mg/l)				
33	Sulphide as H_2S	IS 3025 Part 38:1989 (Reaff:2019)	BDL (DL:0.01 mg/l)				
34	Molybdenum as Mo	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)				
35	Total Arsenic as As	IS 3025 Part 34-1988 (Reaff. 2019)	BDL (DL:0.005 mg/l)				
36	Total Suspended Solids	IS 3025 Part 29-1986 (Reaff: 2019)	BDL (DL:1.0 mg/l)				
	Discipline: Biological **Group:** Water						
37	Total Coliform	APHA 23rd Edn. 2017:9221B	180 MPN/100ml	124 MPN/100ml	110 MPN/100ml	150 MPN/100ml	135 MPN/100ml

38	*Escherichia coli*	APHA 23rd Edn. 2017:9221F	< 1.8 MPN/100ml	< 1.8 MPN/100ml	< 1.8 MPN/100ml	< 1.8 MPN/100ml	< 1.8 MPN/100ml

Source: On-site monitoring/sampling by EHS 360 Labs Private Limited in association with GEMS

TABLE 3.10: SURFACE WATER SAMPLING RESULTS

S.No.	Parameters	Test Method	SW-1- Vaigai River
	Discipline: Chemical		
1	Colour	IS 3025 Part 4:1983	10 Hazen
2	Odour	IS 3025 Part 5:2018	Agreeable
3	pH at 25°C	IS 3025 Part 11:1983	7.29
4	Conductivity @ 25°C	IS 3025 Part 14:2013	813 µmhos/cm
5	Turbidity	IS 3025 Part 10:1984	3.5 NTU
6	Total Dissolved Solids	IS 3025 Part 16:1984	480 mg/l
7	Total Hardness as $CaCO_3$	IS 3025 Part 21:2009	175.18 mg/l
8	Calcium as Ca	IS 3025 Part 40:1991	30.5 mg/l
9	Magnesium as Mg	IS 3025 Part 46:1994	24.1 mg/l
10	Total Alkalinity as $CaCO_3$	IS 3025 Part 23:1986	156 mg/l
11	Chloride as Cl	IS 3025 Part 32:1988	115.5 mg/l
12	Sulphate as SO_4	IS 3025 Part 24:1986	39.4 mg/l
13	Iron as Fe	IS 3025 Part 53:2003	0.19 mg/l
14	Residual Free Chlorine	IS 3025 Part 26:1986	BDL (DL:0.1 mg/l)
15	Fluoride as F	APHA 23rd Edn. 2017:4500 F,D	0.33 mg/l
16	Nitrate as NO_3	IS 3025 Part 34:1988	5.15 mg/l
17	Copper as Cu	IS 3025 Part 65:2014	BDL (DL:0.01 mg/l)
18	Manganese as Mn	IS 3025 Part 65:2014	BDL (DL:0.02 mg/l)
19	Mercury as Hg	USEPA 200.8	BDL (DL:0.0005 mg/l)
20	Cadmium as Cd	IS 3025 Part 65:2014	BDL (DL:0.001 mg/l)
21	Selenium as Se	IS 3025 Part 65:2014	BDL (DL:0.005 mg/l)
22	Aluminium as Al	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
23	Lead as Pb	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
24	Zinc as Zn	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.05 mg/l)
25	Total Chromium as Cr	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.02 mg/l)
26	Boron as B	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.05 mg/l)
27	Mineral Oil	IS 3025 Part 39-1991 (Reaff. 2019)	BDL(DL : 0.01 mg/l)
28	Phenolic compounds as C_6H_5OH	IS 3025 Part 43-1992(Reaff: 2019)	BDL (DL:0.0005 mg/l)
29	Anionic Detergents (as MBAS)	IS 13428 – 2005 (Reaff:2019) (Annex K)	BDL (DL:0.01 mg/l)
30	Cyanide as CN	IS 3025 Part 27-1986 (Reaff. 2019)	BDL (DL:0.01 mg/l)
31	BOD @ 27°C for 3 days	IS 3025 Part 44:1993 (Reaff:2019)	13.1 mg/l
32	Chemical Oxygen Demand	IS 3025 Part 58:2006 (Reaff:2017)	40 mg/l
33	Dissolved Oxygen	IS 3025 Part 38:1989 (Reaff:2019)	5.4 mg/l
34	Barium as Ba	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL:0.05 mg/l)
35	Ammonia (as total ammonia-N)	IS 3025 Part 34-1988 (Reaff. 2019)	1.19 mg/l
36	Sulphide as H_2S	IS 3025 Part 29-1986 (Reaff: 2019)	BDL (DL:0.01 mg/l)
37	Molybdenum as Mo	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)
38	Total Arsenic as As	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
39	Total Suspended Solids	IS 3025 Part 17 -1984 (Reaff:2017)	20.5 mg/l
	Discipline: Biological **Group:** Water		
40	Total Coliform	APHA 23rd Edn. 2017:9221B	440 MPN/100ml
41	*Escherichia coli*	APHA 23rd Edn. 2017:9221F	130 MPN/100ml

Source: On-site monitoring/sampling by EHS 360 Labs Private Limited in association with GEMS

3.2.4 Interpretation& Conclusion

Surface Water

Ph: The pH varied from 7.29 while turbidity found within the standards (Optimal pH range for sustainable aquatic life is 6.5 to 8.5 pH).

Total Dissolved Solids:

Total Dissolved Solids varied from 480 mg/l, the TDS mainly composed of carbonates, bicarbonates, Chlorides, phosphates and nitrates of calcium, magnesium, sodium and other organic matter.

Other parameters:

Chloride content is 115.5 mg/l. Nitrates varied from 5.15 mg/l, while sulphates varied from 39.4 mg/l.

Ground Water

The pH of the water samples collected ranged from 6.97 – 7.65 and within the acceptable limit of 6.5 to 8.5. PH, Sulphates and Chlorides of water samples from all the sources are within the limits as per the Standard. On Turbidity, the water samples meet the requirement. The Total Dissolved Solids were found in the range of 463-610 mg/l in all samples. The Total hardness varied between 168.02 - 210.97 mg/l for all samples.

On Microbiological parameters, the water samples from all the locations meet the requirement. The parameters thus analysed were compared with IS 10500:2012 and are well within the prescribed limits.

3.2.5 Hydrology and Hydrogeological studies

The district is underlain by hard rock formation fissured and fractured crystalline rocks constitute the important aquifer systems in the district. Geophysical prospecting was carried out in that area by SSRMP-80 Instrument by qualified Geo physicist with the help of IGIS software and it was inferred that the low resistance encountered at the depth between 57m. The maximum depth proposed out of proposed project is 21m BGL. Hence there is no possibilities of water table intersection during the entire mine life period besides it is also inferred topographically that there are no major water bodies intersecting the project area. There is no necessity of stream, channel diversion due to these proposed projects.

During the rainy season there is a possibility of collection of seepage water from the subsurface levels which will be collected and stored in the mine sump pits and will be used for dust suppression and greenbelt development and during the end of the life of the mine this collected water will act as a temporary reservoir.

TABLE 3.11: SUMMER SEASON WATER LEVEL OF OPEN WELLS 1 KM RADIUS

S. No	LABEL	LONGITUDE	LATITUDE	Oct-24	Nov-24	Dec-24
1	OW-1	77° 41' 22.3679" E	9° 59' 38.8280" N	11.2	11.8	12.4
2	OW-2	77° 41' 28.6716" E	9° 59' 15.3254" N	11.9	12.5	13.1
3	OW-3	77° 40' 43.7282" E	9° 59' 52.6057" N	11.6	12.2	12.8
4	OW-4	77° 40' 50.0639" E	10° 00' 20.9180" N	11.8	12.4	13

Source: Onsite monitoring data

TABLE 3.12: SUMMER SEASON WATER LEVEL OF BOREWELLS 1 KM RADIUS

S.No	Name	LONGITUDE	LATITUDE	Oct-24	Nov-24	Dec-24
1	BW-1	77° 41' 21.6614" E	9° 59' 32.7187" N	63.6	64.2	64.8
2	BW-2	77° 41' 39.4260" E	9° 59' 34.2664" N	62.9	63.5	64.1
3	BW-3	77° 41' 29.1000" E	9° 59' 15.5496" N	62.4	63	63.6
4	BW-4	77° 40' 43.7439" E	10° 00' 02.5263" N	63.2	63.8	64.4

Source: Onsite monitoring data

FIGURE 3.9: DRAINAGE MAP AROUND 10 KM RADIUS FROM PROJECT SITE

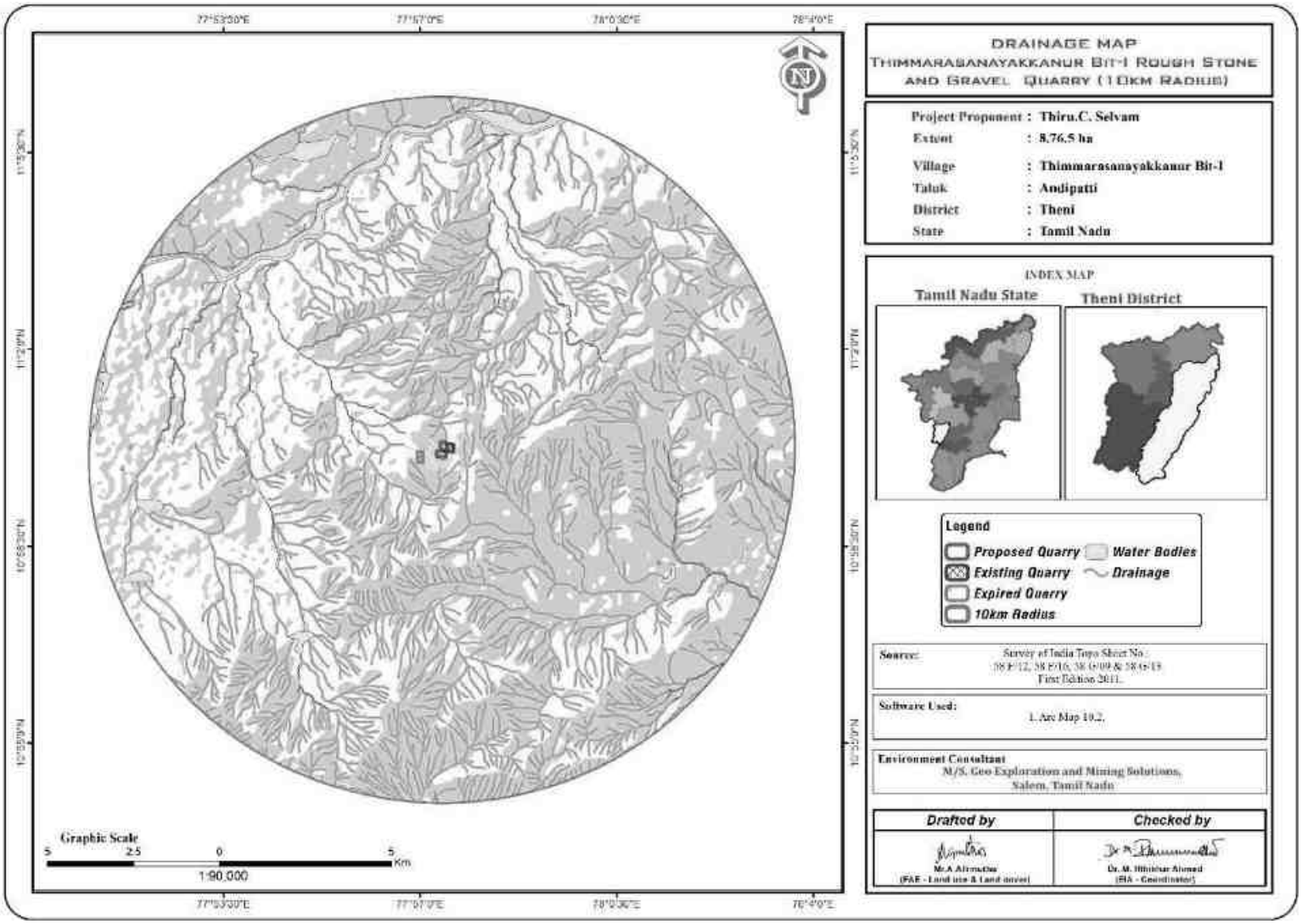
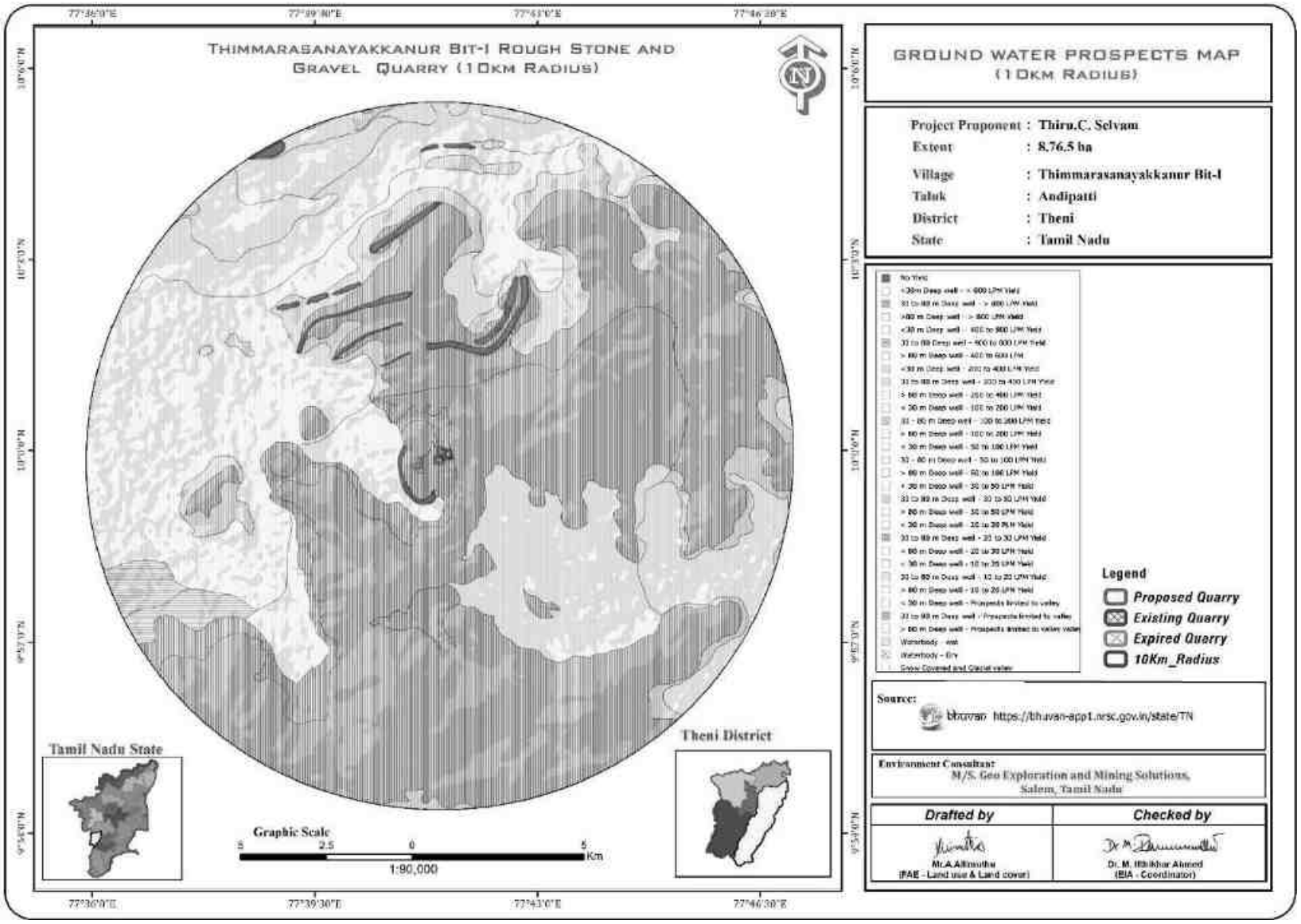


FIGURE 3.10: GROUND WATER PROSPECT MAP



3.2.5.1 Methodology and Data Acquisition

Electric Resistivity Method is well established for delineating lateral as well vertical discontinuities in the resistive structure of the Earth's subsurface. The present study makes use of vertical electric sounding (VES) to delineate the Vertical Resistivity structure at depth. Schlumberger electrode set up was employed for making sounding measurements. Since it is least influenced by lateral in homogeneities and is capable of providing higher depth of investigation. This is four electrodes collinear set up where in the outer electrodes send current into the ground and the inner electrodes measure the potential difference.

The present study utilizes maximum current electrode separation AB/2. The data from this survey are commonly arranged and contoured in the farm of Pseudo-section that gives an approximate of the subsurface resistivity. This technique is used for the inversion of Schlumberger VES data to predict the layer parameter namely layer resistivity and Geo electric layer thickness. The main goal of the present study is to search the vertical in homogeneities that is consistent with the measured data.

For a Schlumberger among the Apparent resistivity can be calculated as follows

$$\rho_a = \frac{G\Delta V}{I}$$

ΔV = potential difference between receiving electrodes

G = Geometric Factor.

Rocks show wide variation in resistivity ranging from 10-8 more than 10+14 ohmmeter. On a broad classification, one can group the rocks falling in the range of 10-8 to 1 ohmmeter as good conductors. 1 to 106 ohmmeter as intermediate conductors and 106 to 1012 ohmmeter as more as poor conductor. The resistivity of rocks and subsurface lithology, which is mostly dependent on its porosity and the pore fluid resistivity is defined by Archie's Law,

$$\rho_r = F\rho_w = a\,\emptyset^m\rho_w$$

ρr = Resistivity of Rocks

ρw = Resistivity of water in pores of rock

F = Formation Factor

$\emptyset$ = Fractional pore volume

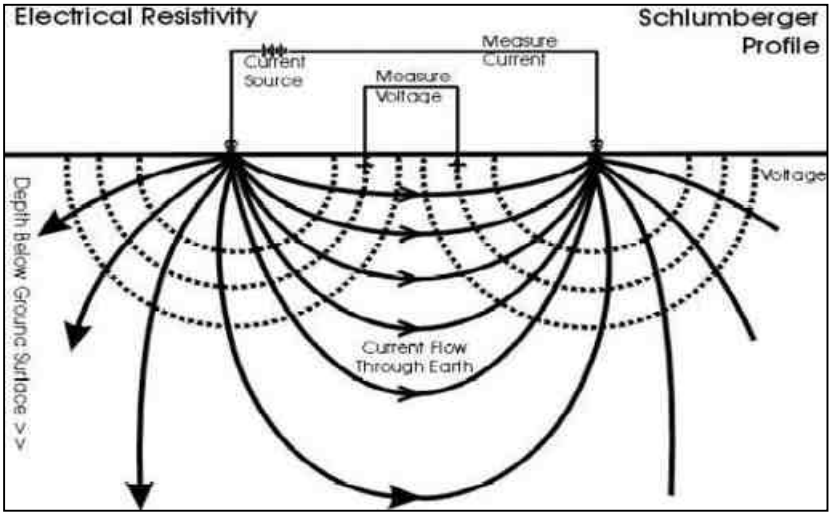
A = Constants with values ranging from 0.5 to 2.5

3.2.5.2 Survey Layout

The layout for a resistivity survey depends on the choice of the current and potential electrode arrangement, which is called electrode array. Here the present study is considered with Schlumberger array. In which the distance may be used for current electrode separation while potential electrode separation is kept on third to one fifth of the same. One interesting aspect in VES is the principle of reciprocity, which permits interchange of the potential and current electrode without any effect on the measured apparent resistivity.

The field equipment deployed for the study is in a deep resistivity meter with a model of SSR – MP – AT. This Signal stacking Resistivity meter is a high-quality data acquisition system incorporating several innovation features for Earth resistivity. In the presence of random earth Noises the signal to nose ration can be enhanced by $\sqrt{N}$ where N is the number of stacked readings. This SSR meter in which running averages of measurements [1, (1+2)/2, (1+2+3)/3 … (1+2...+16/16)] up to the chosen stacks are displayed and the final average is stored automatically, in memory utilizing the principles of stacking to achieve the benefit of high signals to noise ratio. Based on these above significations the signal stacking resistivity meter was used for (VES) Vertical Electric Resistivity Sounding.

RESISTIVITY SURVEY PROFILE



Measurements of ground Resistivity is essentially done by sending a current through two electrodes called current electrodes (C_1& C_2) and measuring the resulting potential by two other electrodes called potential electrode (P_1& P_2). The amount of current required to be sent into the ground depends on the contact resistance at the current electrode, the ground resistivity and the depth of interest.

3.2.5.3 Data Presentation

It was inferred that the low resistance encountered at the depth between 57m. The maximum depth proposed out of proposed project is 21m BGL. Hence there is no possibilities of water table intersection during the entire mine life period besides it is also inferred topographically that there are no major water bodies intersecting the project area.

3.2.5.4 Geophysical Data Interpretation

The geophysical data was obtained to study the lateral variations, vertical in homogeneities in the sub – surface with respect to the availability of groundwater. From the interpreted data, it has inferred that the area has moderate groundwater potential in the investigated area. This small quarrying operation will not have any significant impact on the natural water bodies.

3.3 AIR ENVIRONMENT

The existing ambient air quality of the area is important for evaluating the impact of mining activities on the ambient air quality.

The baseline studies on air environment include identification of specific air pollution parameters and their existing levels in ambient air. The ambient air quality with respect to the study zone of 10 km radius around the cluster forms the baseline information. The sources of air pollution in the region are mostly due to vehicular traffic, dust arising from unpaved village road and domestic & agricultural activities. The prime objective of the baseline air quality study was to establish the existing ambient air quality of the study area. These will also be useful for assessing the conformity to standards of the ambient air quality during the operation of proposed projects in cluster.

This section describes the identification of sampling locations, methodology adopted during the monitoring period and sampling frequency.

3.3.1 Meteorology & Climate

Meteorology is the key to understand the Air quality. The essential relationship between meteorological condition and atmospheric dispersion involves the wind in the broadest sense. Wind fluctuations over a very wide range of time, accomplish dispersion and strongly influence other processes associated with them.

A temporary meteorological station was installed at project site by covering cluster quarries. The station was installed at a height of 3 m above the ground level in such a way that there are no obstructions facilitating flow of wind, wind speed, wind direction, humidity and temperature are recorded on hourly basis.

Climate –

- The climatic conditions in this region are characterized by a tropical climate. When compared with winter, the summers have much more rainfall. As per the Köppen-Geiger classification, the prevailing weather conditions in this region are categorized under Aw. The average annual temperature in Theni is 26.5 °C | 79.7 °F. The rainfall here is around 883 mm | 34.8 inch per year.
- This region, situated near the equator line, is characterized by difficult-to-define summer seasons. It is recommended that the optimal period for embarking on a journey would be during April, May.
- During February, the amount of precipitation is at its lowest, with only 17 mm | 0.7 inch recorded. In November, the precipitation reaches its peak, with an average of 168 mm | 6.6 inch.
- The month of maximum warmth in a year is April. The average temperature during this period reaches up to 29.8 °C | 85.6 °F, making it the hottest time of the year. At 23.9 °C | 75.0 °F on average, December is the coldest month of the year.

Source: https://en.climate-data.org/asia/india/tamil-nadu/theni-24004/

Rainfall –

TABLE 3.13: RAINFALL DATA

Actual Rainfall in mm						Normal Rainfall in mm
2019	**2020**	**2021**	**2022**	**2023**	**2024**	
786.0	967.9	1251.4	1280	1031.1	658.4	720

Source: https://www.twadboard.tn.gov.in/content/theni

TABLE 3.14: METEOROLOGICAL DATA RECORDED AT SITE

S.No	Parameters		Oct–2024	Nov–2024	Dec-2024
1	Temperature (^{0}C)	Max	25	23.77	24.01
		Min	22.11	20.52	20.65
		Avg	23.55	22.14	22.33
2	Relative Humidity (%)	Avg	84.82	85.59	84.93
3	Wind Speed (m/s)	Max	2.77	2.67	1.75

		Min	0.79	1.35	0.66
		Avg	1.78	2.01	1.20
4	Cloud Cover (OKTAS)		0-8	0-8	0-8
5	Wind Direction		W,WSW	NE,NNW	NE,ENE

Source: On-site monitoring/sampling by EHS 360 Labs Private Limited in association with GEMS

Correlation between Secondary and Primary Data

The meteorological data collected at the site is almost similar to that of secondary data collected from IMD Theni Agro. A comparison of site data generated during the three months with that of IMD, Theni_Agro reveals the following:

- The average maximum and minimum temperatures of IMD, Theni_Agro showed a higher in respect of on-site data i.e. in Thimmarasanayakkanur Bit - I village.
- The relative humidity levels were lesser at site as compared to IMD, Theni Agro.
- The wind speed and direction at site shows similar trend that of IMD, Theni Agro.

Wind rose diagram of the study site is depicted in Figure. 3.8. Predominant downwind direction of the area during study season is South East to North West.

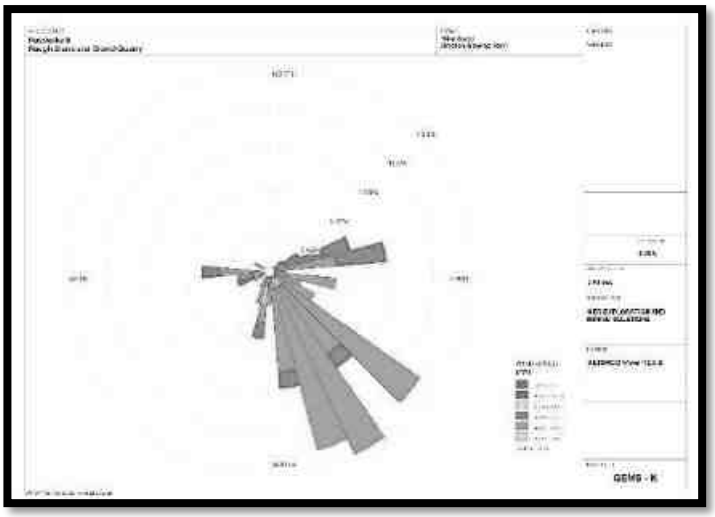


FIGURE. 3.11 WIND ROSE

In the abstract of collected data wind rose were drawn on presented in figure No.3.14 during the monitoring period in the study area

1. Predominant winds were from SE & NE
2. Wind velocity readings were recorded between 2.10 to 3.60 m/s
3. Calm conditions prevail of about 0.00 % of the monitoring period
4. Temperature readings ranging from 23.77 to 25 °C
5. Relative humidity ranging from 84.82 to 85.59 %
6. The monitoring was carried out continuously for three months

3.3.2 Methodology and Objective

The prime objective of the ambient air quality study is to assess the existing air quality of study area and its conformity to NAAQS. The observed sources of air pollution in the study area are industrial, traffic and domestic activities. The baseline status of the ambient air quality has been established through a scientifically designed ambient air quality monitoring network considering the followings:

- Meteorological condition on synoptic scale;
- Topography of the study area;
- Representatives of regional background air quality for obtaining baseline status;
- Location of residential areas representing different activities;
- Accessibility and power availability; etc

3.3.3 Sampling and Analytical Techniques

TABLE 3.15: METHODOLOGY AND INSTRUMENT USED FOR AAQ ANALYSIS

Parameter	Method	Instrument
PM2.5	Gravimetric Method Beta attenuation Method	Fine Particulate Sampler Make – Thermo Environmental Instruments – TEI 121
PM10	Gravimetric Method Beta attenuation Method	Respirable Dust Sampler Make –Thermo Environmental Instruments – TEI 108
SO2	IS-5182 Part II (Improved West & Gaeke method)	Respirable Dust Sampler with gaseous attachment
NOx	IS-5182 Part II (Jacob & Hochheiser modifiedmethod)	Respirable Dust Sampler with gaseous attachment
Free Silica	NIOSH – 7601	Visible Spectrophotometry

Source: Sampling Methodology followed by EHS360 Labs Private Limited & CPCB Notification

TABLE 3.16: NATIONAL AMBIENT AIR QUALITY STANDARDS

Sl. No.	Pollutant	Time Weighted Average	Concentration in ambient air	
			Industrial, Residential, Rural & other areas	Ecologically Sensitive area (Notified by Central Govt.)
1	Sulphur Dioxide (µg/m3)	Annual Avg.* 24 hours**	50.0 80.0	20.0 80.0
2	Nitrogen Dioxide (µg/m3)	Annual Avg. 24 hours	40.0 80.0	30.0 80.0

3	Particulate matter (size less than 10µm) PM10 (µg/m3)	Annual Avg. 24 hours	60.0 100.0	60.0 100.0
4	Particulate matter (size less than 2.5 µm PM2.5 (µg/m3)	Annual Avg. 24 hours	40.0 60.0	40.0 60.0

Source: NAAQS CPCB Notification No. B-29016/20/90/PCI-I Dated: 18th Nov 2009

*Annual Arithmetic mean of minimum 104 measurements in a year taken twice a Week 24 hourly at uniform interval,

** 24 hourly / 8 hourly or 1 hourly monitored values as applicable shall be complied with 98 % of the time in a year. However, 2% of the time, they may exceed the limits but not on two consecutive days of monitoring.

3.3.4 Frequency & Parameters for Sampling

Ambient air quality monitoring has been carried out with a frequency of two samples per week at seven (7) locations, adopting a continuous 24 hourly (3 shift of 8-hour) schedule for the period March to May 2024. The baseline data of ambient air has been generated for PM_{10}, $PM_{2.5}$, Sulphur Dioxide (SO_2) & Nitrogen Dioxide (NO_2) Monitoring has been carried out as per the CPCB, MoEF guidelines and notifications.

It was ensured that the equipment was placed preferably at a height of at least 3 ± 0.5m above the ground level at each monitoring station, for negating the effects of wind-blown ground dust. The equipment was placed at open space free from trees and vegetation which otherwise act as a sink of pollutants resulting in lower levels in monitoring results.

3.3.5 Ambient Air Quality Monitoring Stations

Seven monitoring stations were set up in the study area as depicted in Figure 3.6.1 for assessment of the existing ambient air quality. Details of the sampling locations are as per given below.

TABLE 3.17: AMBIENT AIR QUALITY (AAQ) MONITORING LOCATIONS

S. No	Location Code	Monitoring Locations	Distance & Direction	Coordinates
1	AAQ-1	Project Area	Core Zone	10° 0'0.48"N 77°41'32.35"E
2	AAQ-2	Project Area	Core Zone	9°59'49.02"N 77°41'22.71"E
3	AAQ-3	Near Project Area	280m SE	9°59'40.47"N 77°41'37.10"E
4	AAQ-4	Timmarasanayakkanur	1.3km West	10° 0'3.07"N 77°40'39.72"E
5	AAQ-5	Mekalpatty	5.6km SW	9°58'27.86"N 77°38'34.94"E
6	AAQ-6	Thottappanayakkanur	4.8km SE	9°58'38.99"N 77°43'56.91"E
7	AAQ-7	Theppathupatty	5.8km NE	10° 2'59.18"N 77°42'39.57"E

Source: On-site monitoring/sampling by EHS 360 Labs Private Limited in association with GEMS.

FIGURE 3.12: AMBIENT AIR QUALITY LOCATIONS AROUND 10 KM RADIUS

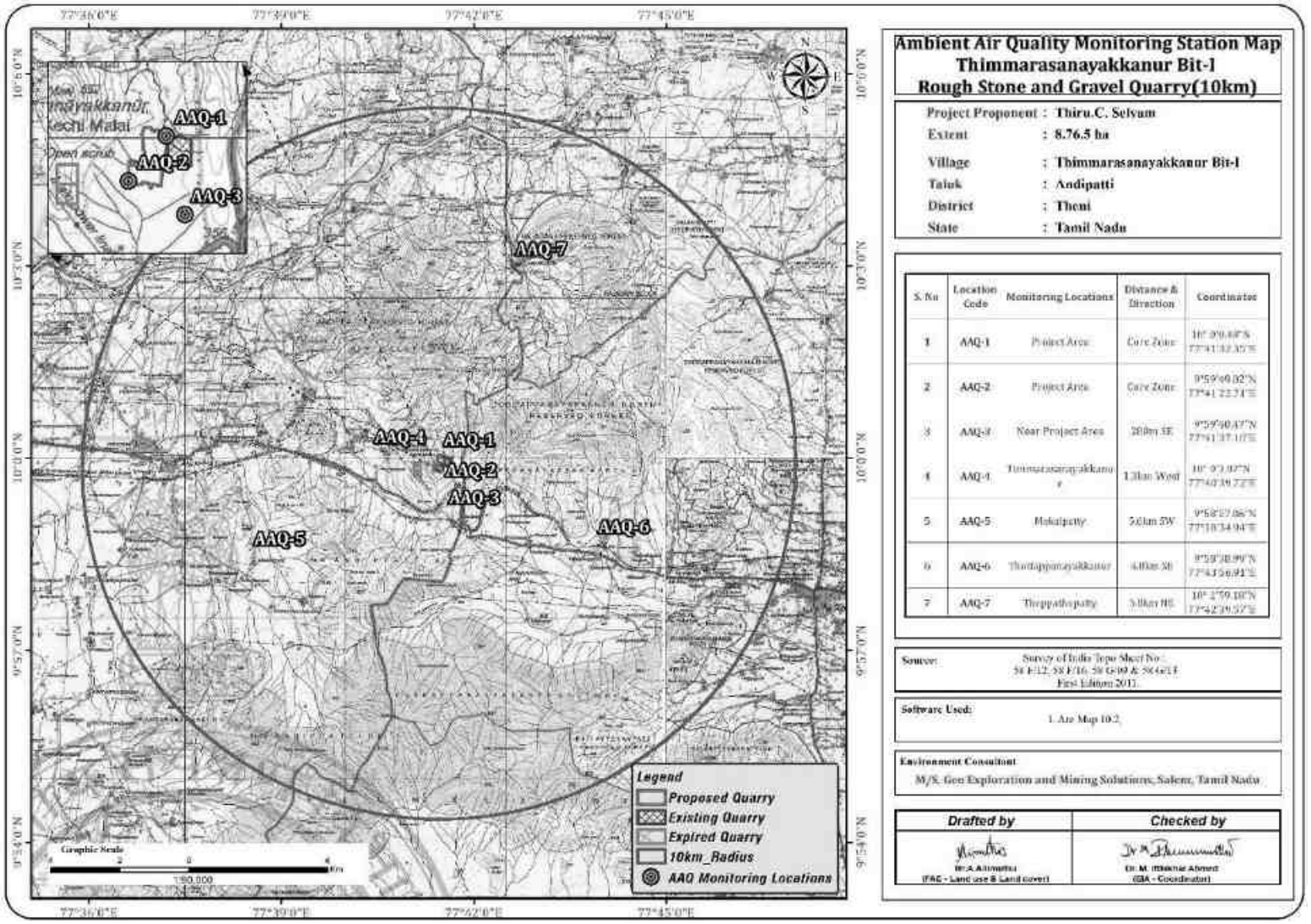


TABLE 3.18: SUMMARY OF AAQ – 1 to AAQ – 7

PM10	AAQ1	AAQ2	AAQ3	AAQ4	AAQ5	AAQ6	AAQ7
Arithmetic Mean	46.0	46.3	42.4	42.8	43.4	41.0	43.0
Minimum	45.0	44.2	40.1	41.7	41.2	39.1	41.5
Maximum	47.7	48.5	45.9	43.9	44.9	42.9	44.3
NAAQ Norms	100.0	100.0	100.0	100.0	100.0	100.0	100.0

PM2.5	AAQ1	AAQ2	AAQ3	AAQ4	AAQ5	AAQ6	AAQ7
Arithmetic Mean	20.5	20.3	20.7	19.9	20.0	20.4	20.2
Minimum	18.6	18.2	19.3	18.3	18.3	19.1	19.1
Maximum	21.9	21.7	21.7	21.5	21.9	21.8	21.8
NAAQ Norms	60.0	60.0	60.0	60.0	60.0	60.0	60.0

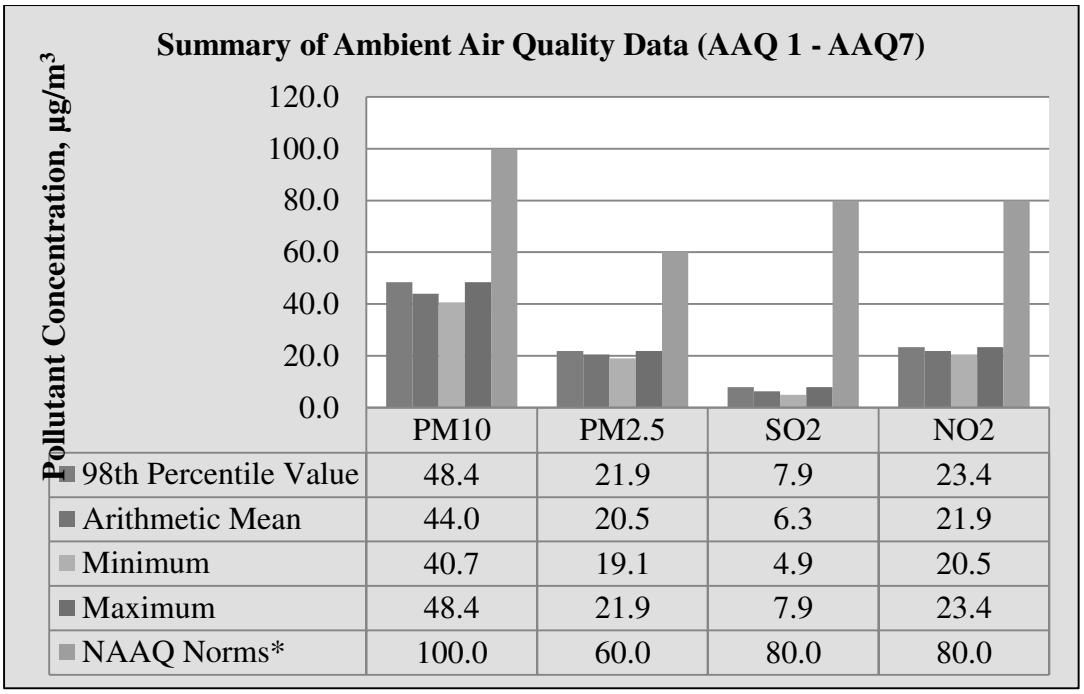
SO_2	AAQ1	AAQ2	AAQ3	AAQ4	AAQ5	AAQ6	AAQ7
Arithmetic Mean	5.3	6.0	6.0	5.4	6.8	6.2	6.2
Minimum	4.2	5.1	5.1	4.2	6.1	5.2	5.1
Maximum	6.8	6.8	6.9	6.5	8.0	7.9	7.9
NAAQ Norms	80.0	80.0	80.0	80.0	80.0	80.0	80.0

NO_2	AAQ1	AAQ2	AAQ3	AAQ4	AAQ5	AAQ6	AAQ7
Arithmetic Mean	21.7	22.0	21.6	22.0	20.9	21.3	21.6
Minimum	20.5	21.1	20.2	20.3	20.1	20.1	20.1
Maximum	23.1	23.1	23.3	23.7	21.8	22.5	22.9
NAAQ Norms	80.0	80.0	80.0	80.0	80.0	80.0	80.0

TABLE 3.19: ABSTRACT OF AMBIENT AIR QUALITY DATA

1	**Parameter**	**PM10**	**PM2.5**	**SO_2**	**NO_2**
2	No. of Observations	260	260	260	260
3	10th Percentile Value	40.7	19.1	4.9	20.5
4	20th Percentile Value	41.5	19.4	5.3	20.9
5	30th Percentile Value	42.2	19.6	5.5	21.2
6	40th Percentile Value	42.6	20.1	5.7	21.4
7	50th Percentile Value	42.9	20.3	6.0	21.5
8	60th Percentile Value	43.5	20.5	6.2	21.7
9	70th Percentile Value	43.8	20.7	6.5	21.9
10	80th Percentile Value	44.6	20.9	6.7	22.4
11	90th Percentile Value	46.5	21.6	6.9	22.7
12	95th Percentile Value	47.5	21.7	7.5	22.8
13	98th Percentile Value	48.4	21.9	7.9	23.4
14	Arithmetic Mean	44.0	20.5	6.3	21.9
15	Geometric Mean	43.9	20.5	6.2	21.8
16	Standard Deviation	2.5	0.9	0.9	0.9
17	Minimum	40.7	19.1	4.9	20.5
18	Maximum	48.4	21.9	7.9	23.4
19	**NAAQ Norms***	**100.0**	**60.0**	**80.0**	**80.0**
	% Values exceeding Norms*	0.0	0.0	0.0	0.0

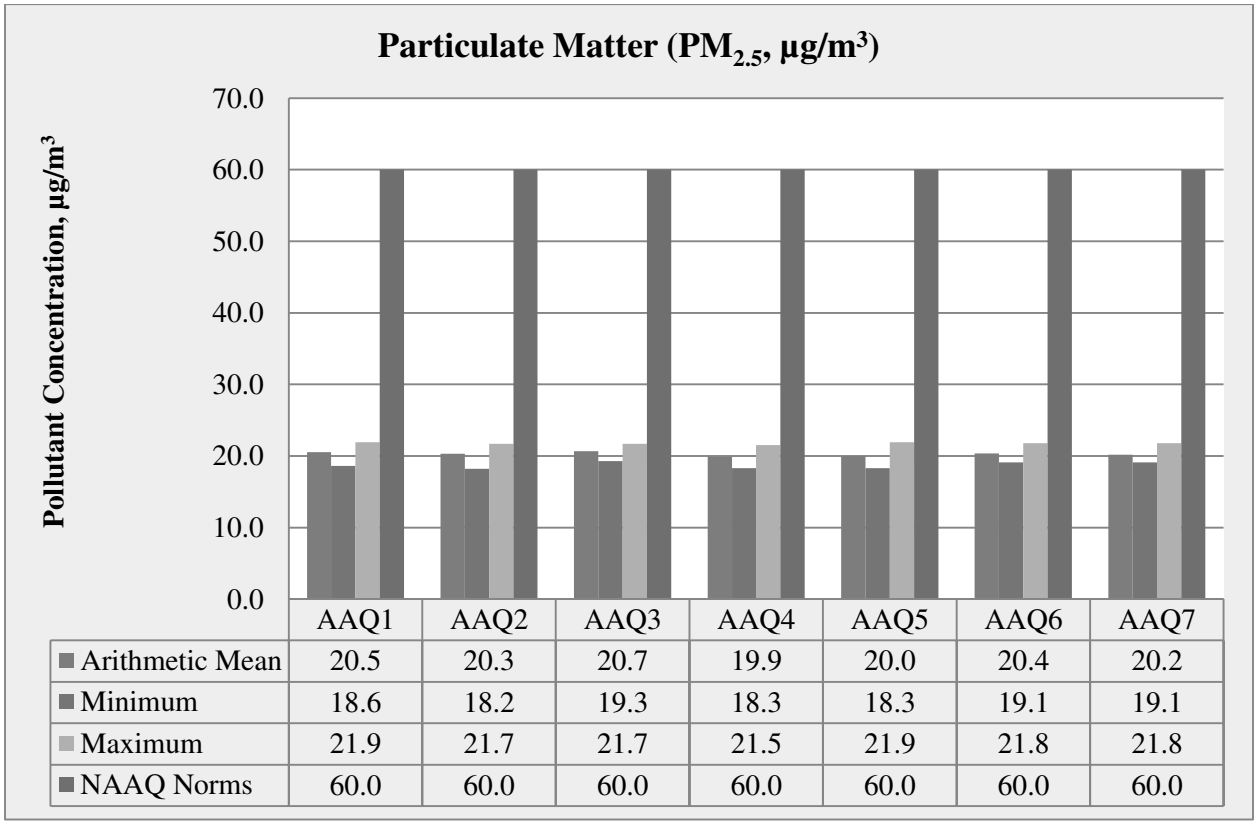
FIGURE 3.13: BAR DIAGRAM OF SUMMARY OF AAQ 1 – AAQ 7



	PM10	PM2.5	SO2	NO2
98th Percentile Value	48.4	21.9	7.9	23.4
Arithmetic Mean	44.0	20.5	6.3	21.9
Minimum	40.7	19.1	4.9	20.5
Maximum	48.4	21.9	7.9	23.4
NAAQ Norms*	100.0	60.0	80.0	80.0

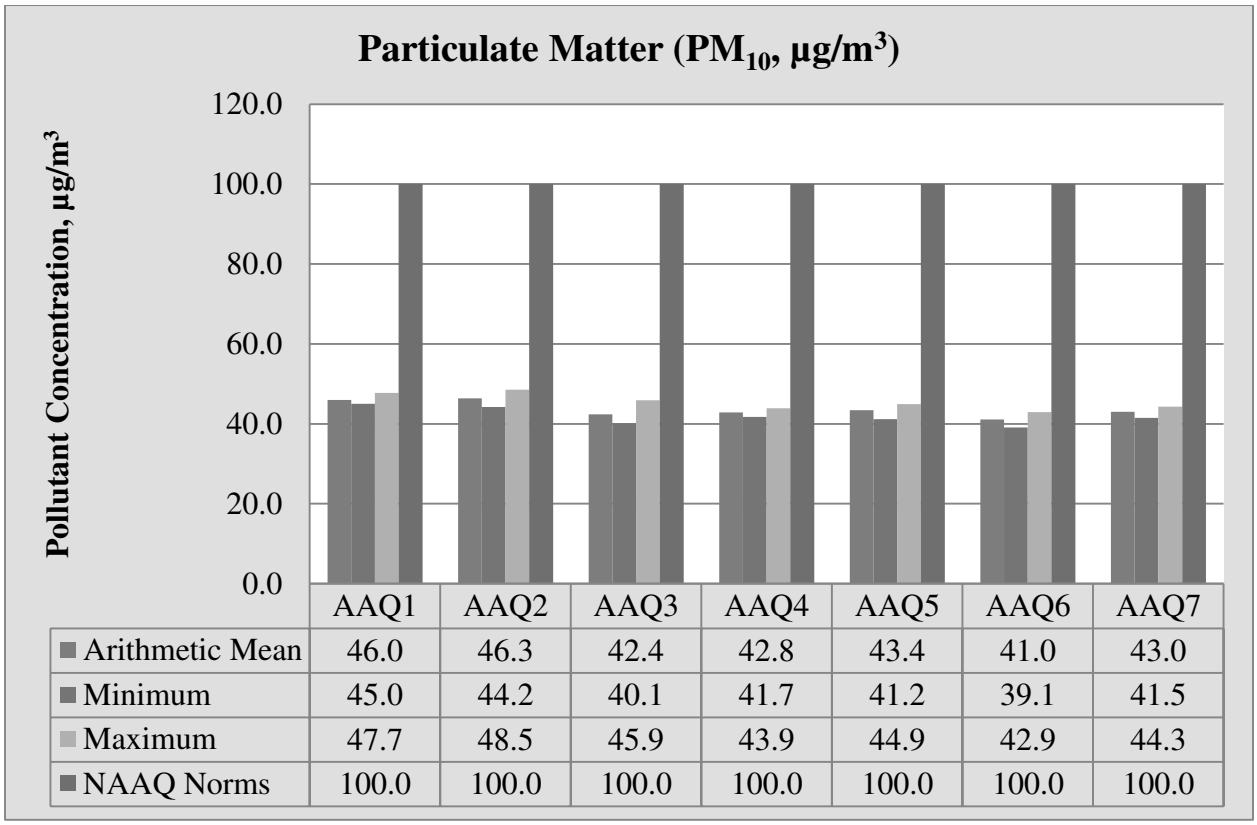
Source: Table 3.26

FIGURE 3.14: BAR DIAGRAM OF PARTICULATE MATTER $PM_{2.5}$



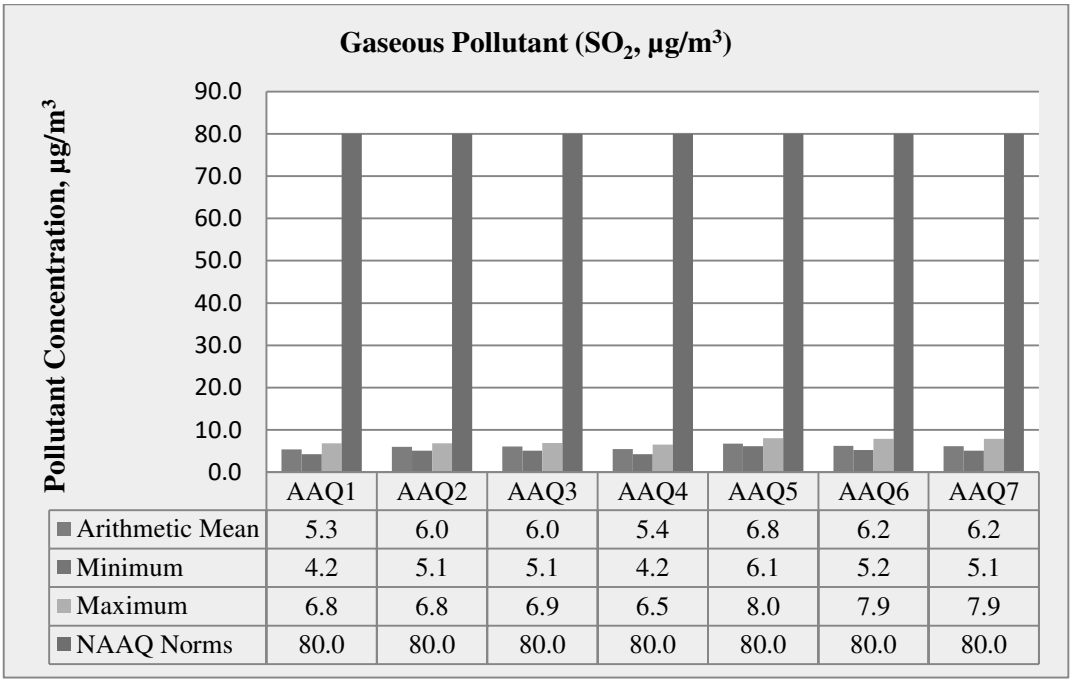
	AAQ1	AAQ2	AAQ3	AAQ4	AAQ5	AAQ6	AAQ7
Arithmetic Mean	20.5	20.3	20.7	19.9	20.0	20.4	20.2
Minimum	18.6	18.2	19.3	18.3	18.3	19.1	19.1
Maximum	21.9	21.7	21.7	21.5	21.9	21.8	21.8
NAAQ Norms	60.0	60.0	60.0	60.0	60.0	60.0	60.0

FIGURE 3.15: BAR DIAGRAM OF PARTICULATE MATTER PM_{10}



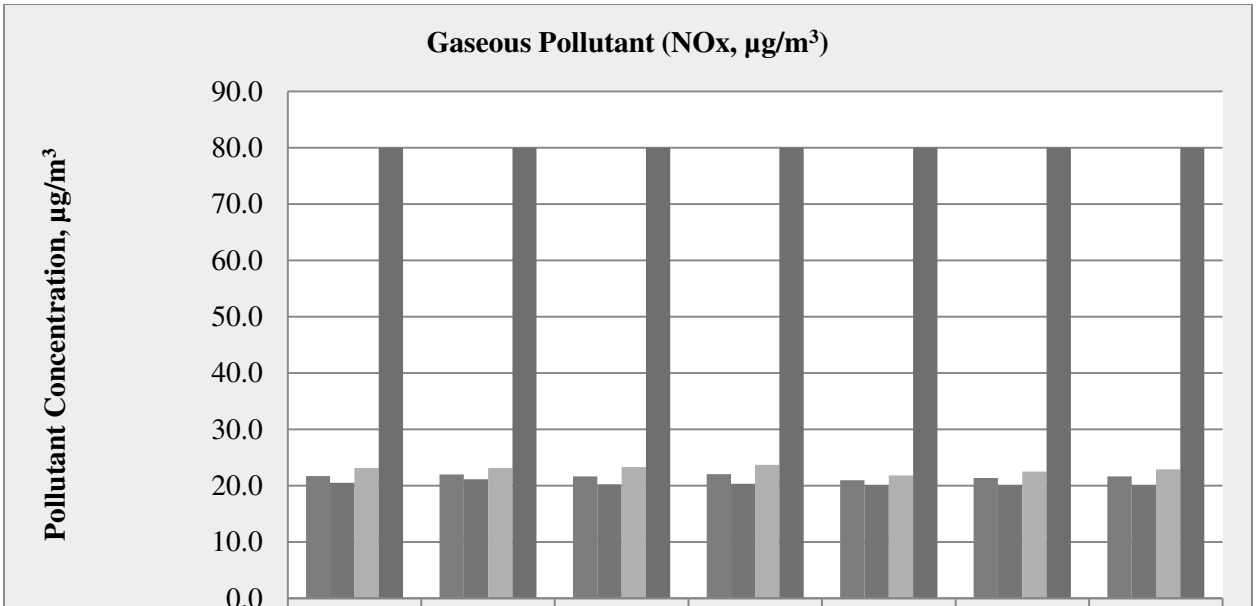
	AAQ1	AAQ2	AAQ3	AAQ4	AAQ5	AAQ6	AAQ7
Arithmetic Mean	46.0	46.3	42.4	42.8	43.4	41.0	43.0
Minimum	45.0	44.2	40.1	41.7	41.2	39.1	41.5
Maximum	47.7	48.5	45.9	43.9	44.9	42.9	44.3
NAAQ Norms	100.0	100.0	100.0	100.0	100.0	100.0	100.0

FIGURE 3.16: BAR DIAGRAM OF GASEOUS POLLUTANT SO_2



	AAQ1	AAQ2	AAQ3	AAQ4	AAQ5	AAQ6	AAQ7
Arithmetic Mean	5.3	6.0	6.0	5.4	6.8	6.2	6.2
Minimum	4.2	5.1	5.1	4.2	6.1	5.2	5.1
Maximum	6.8	6.8	6.9	6.5	8.0	7.9	7.9
NAAQ Norms	80.0	80.0	80.0	80.0	80.0	80.0	80.0

FIGURE 3.17: BAR DIAGRAM OF GASEOUS POLLUTANT NO_x



	AAQ1	AAQ2	AAQ3	AAQ4	AAQ5	AAQ6	AAQ7
Arithmetic Mean	21.7	22.0	21.6	22.0	20.9	21.3	21.6
Minimum	20.5	21.1	20.2	20.3	20.1	20.1	20.1
Maximum	23.1	23.1	23.3	23.7	21.8	22.5	22.9
NAAQ Norms	80.0	80.0	80.0	80.0	80.0	80.0	80.0

3.3.6 Interpretations & Conclusion

As per monitoring data, PM_{10} ranges from 40.7 µg/m^3 to 48.4 µg/m^3, $PM_{2.5}$ data ranges from 19.1 µg/m^3 to 21.9 µg/m^3, SO_2 ranges from 4.9 µg/m^3 to 7.9 µg/m^3 and NO_x data ranges from 20.5 µg/m^3 to 23.4 µg/m^3. The concentration levels of the above criteria pollutants were observed to be well within the limits of NAAQS prescribed by CPCB.

3.4 NOISE ENVIRONMENT

The vehicular movement on road and mining activities is the major sources of noise in study area, the environmental assessment of noise from the mining activity and vehicular traffic can be undertaken by taking into consideration various factors like potential damage to hearing, physiological responses, and annoyance and general community responses.

The main objective of noise monitoring in the study area is to establish the baseline noise level and assess the impact of the total noise expected to be generated during the project operations around the project site.

3.4.1 Identification of Sampling Locations

In order to assess the ambient noise levels within the study area, noise monitoring was carried out at Seven (7) locations. The noise level monitoring locations were carried out by covering commercial, residential, rural areas within the radius of 10km. A noise monitoring methodology was chosen such that it best suited the purpose and objectives of the study.

TABLE 3.20: DETAILS OF SURFACE NOISE MONITORING LOCATIONS

S. No	Location Code	Monitoring Locations	Distance & Direction	Coordinates
1	**N-1**	Project Area	Core Zone	10° 0'0.96"N 77°41'30.62"E
2	**N-2**	Project Area	Core Zone	9°59'48.58"N 77°41'23.76"E
3	**N-3**	Near Project Area	300m SE	9°59'39.52"N 77°41'39.81"E
4	**N-4**	Timmarasanayakkanur	1.3km West	10° 0'3.84"N 77°40'40.20"E
5	**N-5**	Mekalpatty	5.6km SW	9°58'29.49"N 77°38'34.73"E
6	**N-6**	Thottappanayakkanur	4.8km SE	9°58'38.24"N 77°43'57.09"E
7	**N-7**	Theppathupatty	5.8km NE	10° 2'58.18"N 77°42'38.91"E

Source: On-site monitoring/sampling by EHS 360 Labs Private Limited in association with GEMS

3.4.2 Method of Monitoring

Digital Sound Level Meter was used for the study. All reading was taken on the 'A-Weighting' frequency network, at a height of 1.5 meters from ground level. The sound level meter does not give a steady and consistent reading and it is quite difficult to assess the actual sound level over the entire monitoring period. To mitigate this shortcoming, the Continuous Equivalent Sound level, indicated by Leq, is used. Equivalent sound level, 'Leq', can be obtained from variable sound pressure level, 'L', over a time period by using following equation. The equivalent noise level is defined mathematically as

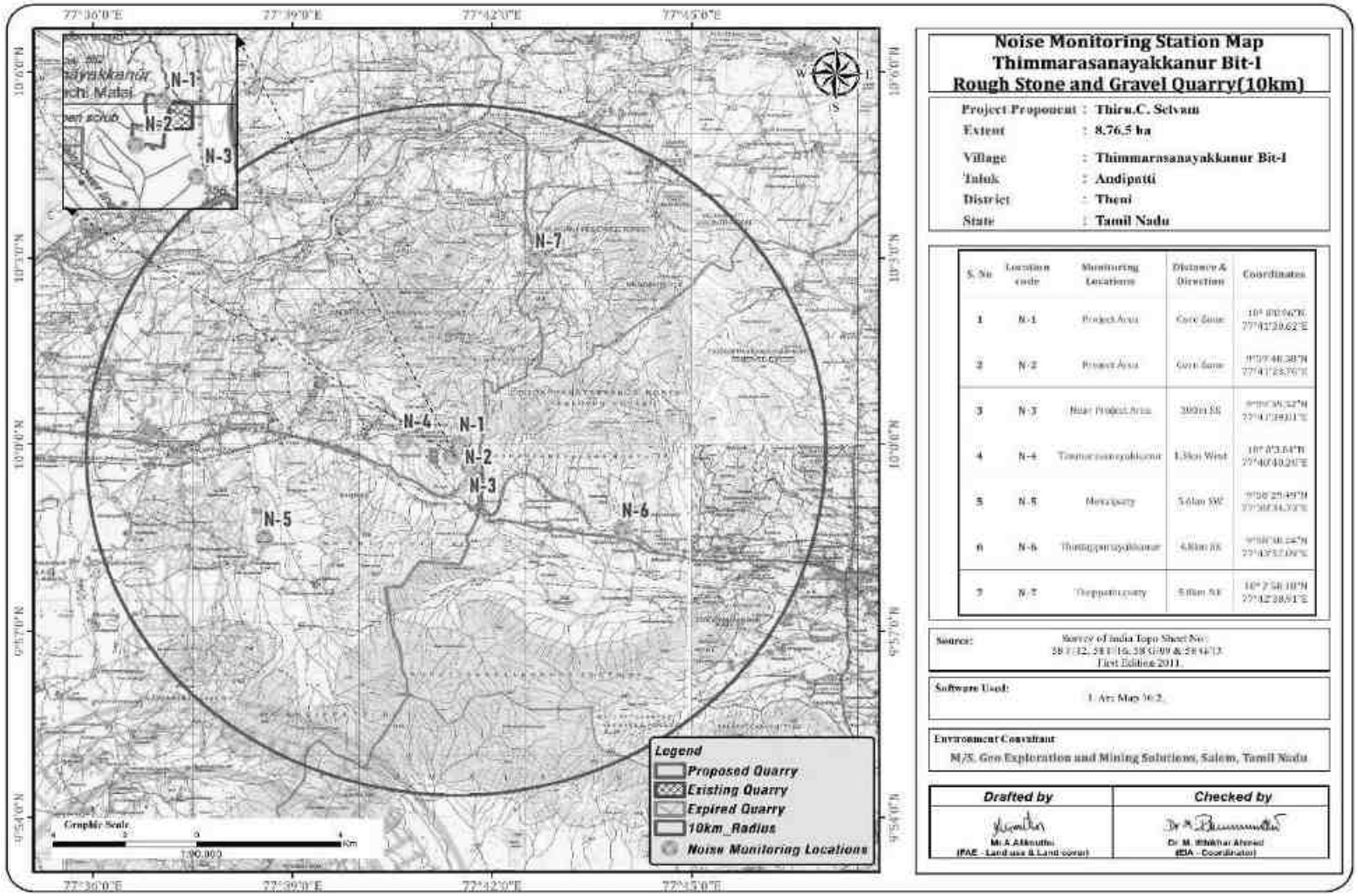
Measured noise levels, displayed as a function of time, is useful for describing the acoustical climate of the community. Noise levels recorded at each station with a time interval of about 60 minutes are computed for equivalent noise levels. Equivalent noise level is a single number descriptor for describing time varying noise levels.

$Leq = 10 \text{ Log } L / T\sum (10Ln/10)$

Where L = Sound pressure level at function of time dB (A)

T = Time interval of observation

FIGURE 3.18: NOISE MONITORING STATIONS AROUND 10 KM RADIUS



3.4.3 Analysis of Ambient Noise Level in the Study Area

The Digital Sound pressure level has been measured by a sound level meter (Model: HTC SL-1352)
An analysis of the different Leq data obtained during the study period has been made. Variation was noted during the day-time as well as night-time. The results are presented in below Table 3.31

Day time: 6:00 hours to 22.00 hours.

Night time: 22:00 hours to 6.00 hours.

TABLE 3.21: AMBIENT NOISE QUALITY RESULTS

S. No	Locations	Noise level (dB (A) Leq)		Ambient Noise Standards
		Day Time	Night Time	
1	Project Area	43.1	36.1	**Industrial** **Day Time- 75 dB (A)** **Night Time- 70 dB (A)**
2	Project Area	38.9	35.8	**Residential** **Day Time– 55 dB (A)** **Night Time- 45 dB (A)**
3	Near Project Area	37.8	35.4	
4	Timmarasanayakkanur	39.7	37.1	
5	Mekalpatty	41.0	38.2	
6	Thottappanayakkanur	38.0	36.4	
7	Theppathupatty	39.3	36.6	

Source: On-site monitoring/sampling by EHS 360 Labs Private Limited in association with GEMS

FIGURE 3.19: DAY TIME NOISE LEVELS IN CORE AND BUFFER ZONE

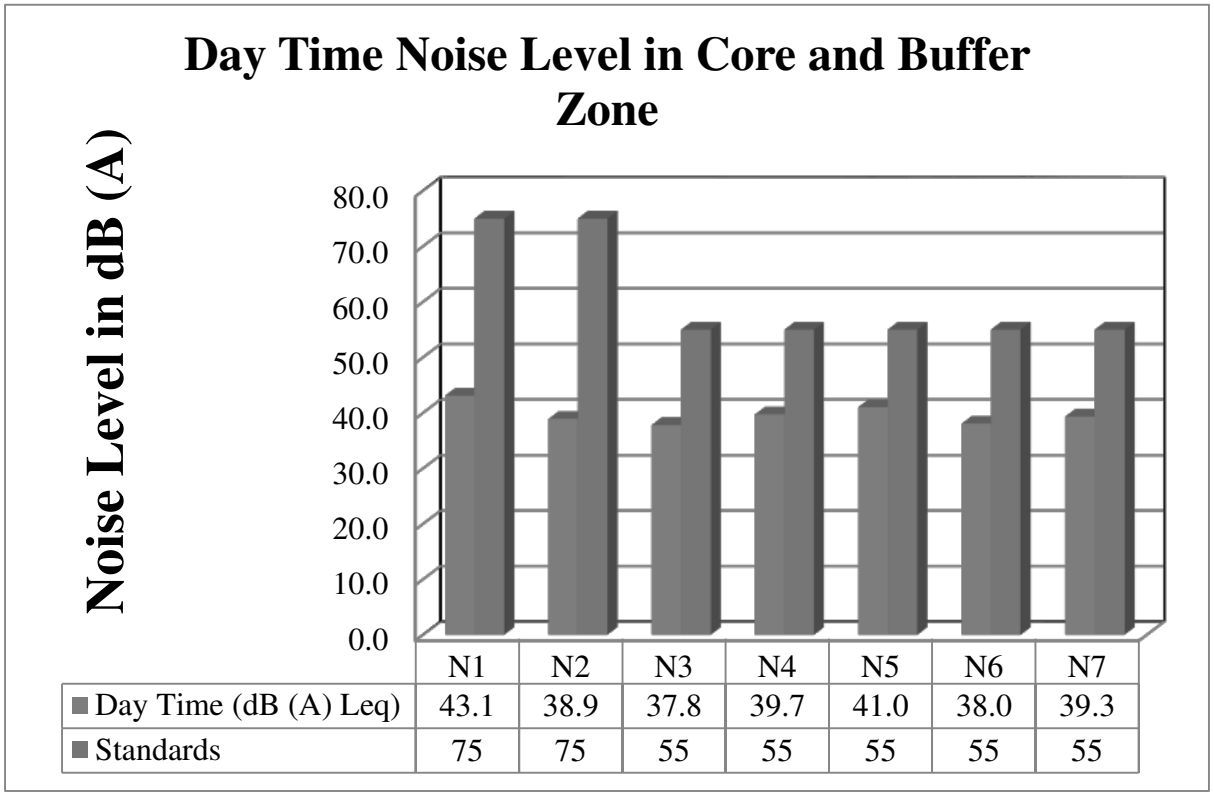
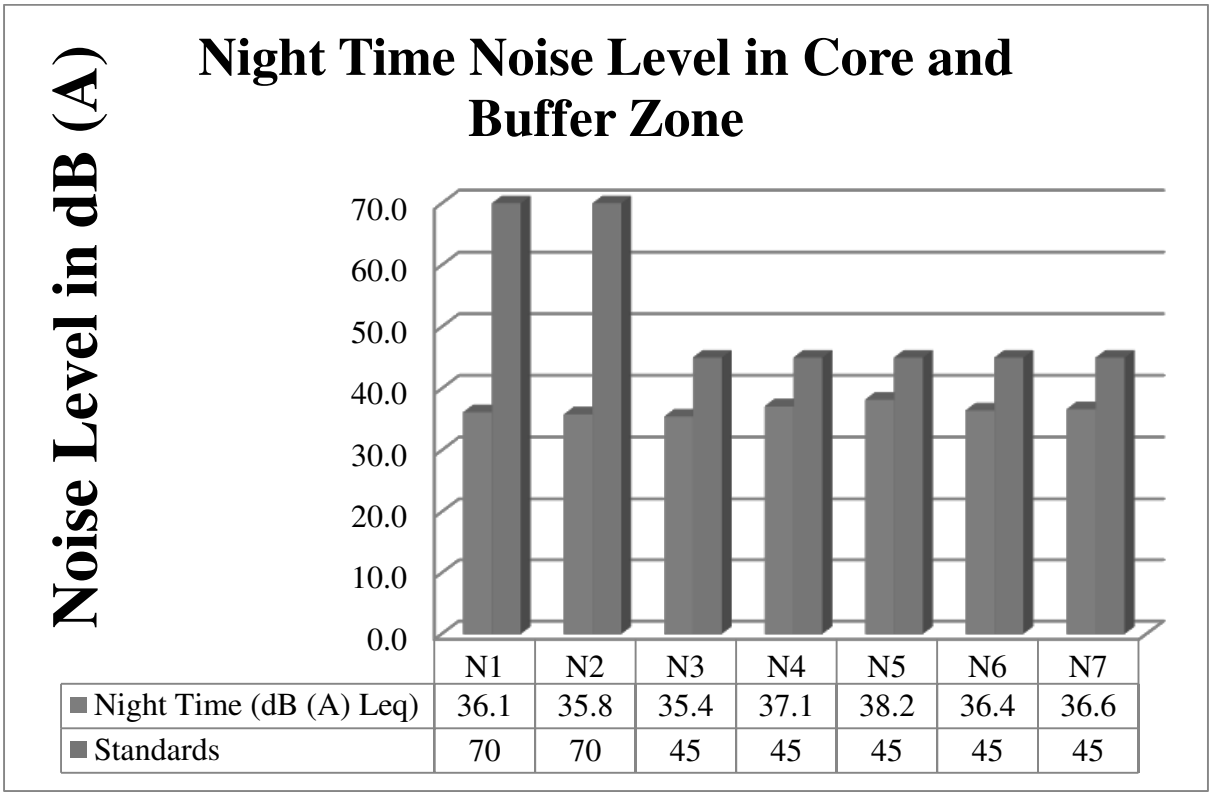


FIGURE 3.20: NIGHT TIME NOISE LEVELS IN CORE AND BUFFER ZONE



	N1	N2	N3	N4	N5	N6	N7
Night Time (dB (A) Leq)	36.1	35.8	35.4	37.1	38.2	36.4	36.6
Standards	70	70	45	45	45	45	45

3.4.4 Interpretation & Conclusion:

Ambient noise levels were measured at 7 (Seven) locations around the proposed project area. Noise levels recorded in core zone during day time were from 38.9 – 43.1 (A) Leq and during night time were from 35.8 – 36.1 dB (A) Leq. Noise levels recorded in buffer zone during day time were from 37.8 – 41.0 dB (A) Leq and during night time were from 35.4 – 38.2 dB (A) Leq.

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

3.5 ECOLOGICAL ENVIRONMENT

Ecology is a branch of science which dealing the relations and interactions between organisms and their environment. An ecological survey of the study area was conducted, particularly with reference to listing of species and assessment of the existing baseline ecological conditions in the study area. The main objective of biological study is to collect the baseline data regarding flora and fauna in the study area. Data has been collected through extensive survey of the area with reference to flora and fauna. Information is also collected from different sources i.e. government departments such as District Forest Office, Government of Tamil Nadu. On the basis of onsite observations as well as forest department records the checklist of flora and fauna was prepared

3.5.1.Study area Ecology

Biodiversity, or biological diversity, refers to the variety of life forms on Earth, encompassing all species of plants, animals, fungi, and microorganisms, as well as the ecosystems they create. This diversity can be broadly measured by the number of species in a given area. Biodiversity is crucial for maintaining ecosystem resilience, as each species plays a vital role in essential functions such as pollination, nutrient cycling, and climate regulation. Moreover, biodiversity is crucial to human well-being, providing resources like food, medicine, and clean water.

Unfortunately, human activities-including deforestation, pollution, climate change, and mining threatening biodiversity at an alarming rate, leading to habitat destruction and biodiversity loss. The preservation of biodiversity is therefore critical for sustaining natural systems and ensuring the health and stability of our planet for future generations.

Rough stone open-cast mining involves extensive land use, removing vegetation, topsoil, and large portions of the earth's surface to extract stones, leading directly to habitat loss. Many species are forced to relocate or remove if they cannot adapt to the changes. Furthermore, open-cast mining exacerbates soil erosion, disrupts water flow, and releases dusts pollutants, all of which harm the surrounding land and water systems, making it increasingly stress on native flora and fauna. Additionally, mining often fragments habitats, creating isolated populations of species that struggle to reproduce and thrive.

Baseline studies are critical before granting environmental clearance for mining projects, as they provide a comprehensive understanding of the existing environmental, ecological, and social conditions of a given area. These studies assess biodiversity, air and water quality, soil composition, and the presence of sensitive habitats or endangered species. By collecting this baseline data, we can accurately predict the potential environmental impacts of mining and develop strategies to minimize and mitigate the negative impact. Furthermore, baseline studies serve as a benchmark to monitor changes over time, ensuring accountability and adherence to environmental regulations. In the context of mining, it is essential to protect and conserve rare, endangered, endemic, or threatened (REET) species of flora and fauna in both the core and buffer zones to ensure the conservation these species.

3.5.2. Project Description

The proponent, Thiru. C.Selvam involved in the undertaking of establishment, construction, development, and closure of opencast mines. he, through the exploration phase, identified the proposed project site as the one that has a great potential of producing an economically viable quantity of rough stone and gravel. The proposed quarry project is located in Thimmarasanayakkanur Bit-1 Village, Andipatti Taluk, Theni District, 72 Mean Sea level.

3.5.3. Study Area

The applied lease area is situated an undulated terrain and around the buffer zones area is situated in foot hill, open land. The core zone is 8.76.5 Ha Rough Stone and Gravel Quarry located at S.F.No 927/2, 927/3, 927/4, 927/5, 940/2, 940/3 & 943/1 of Thimmarasanayakkanur Bit-1 Village, Andipatti Taluk, Theni District. Buffer zone is covered by mainly rainfed agriculture land as well as irrigated agriculture farms with diverse crops.

3.5.4. Scope of the Assessment

This rapid biodiversity assessment for the Rough Stone and Gravel Quarry involves a comprehensive baseline survey of the existing flora, fauna, and other ecological features, including rare, endemic, or threatened species within the project site and surrounding areas. The assessment employs rapid visual surveys, quadrat sampling, and targeted sampling of key habitats. Additionally, secondary data is collected from existing literature, reports, online biodiversity databases, and expert discussions. The study estimates population sizes and distributions of key species, particularly those with conservation status (e.g., endangered species), and evaluates population trends if historical data is available. It also identifies breeding sites, migration routes, and nesting areas critical to species' life cycle processes. The study predicts the potential direct and indirect impacts of mining on biodiversity, including habitat loss, pollution, noise, dust, and soil degradation, and recommends measures to minimize, mitigate, and, where possible, restore or offset biodiversity loss. This detailed biodiversity report has been prepared on behalf of the stakeholders involved in the Rough Stone and Gravel Quarry and is submitted to the Tamil Nadu State Environment Impact Assessment Authority (TN-SEIAA) for review and approval.

3.5.5. Objectives of Biodiversity Study

- To conduct field surveys in the proposed rough stone and gravel quarry area to document qualitative and quantitative analysis of flora and fauna in core mining and buffer zones.
- To identify and list out the flora and fauna, and check the existence of species categorized under IUCN Red List and Wildlife Protection Act Schedules.
- To calculating the species diversity and evenness index for biodiversity (flora) in core and buffer zones of the proposed quarry site.
- To identify the impacts of mining activities on local ecosystems, including agricultural lands, and evaluate how these changes may affect biodiversity.
- To recommend biodiversity conservation and management plans for the proposed mining site.

3.5.5.1. Field survey

Field survey study was conducted twice in the month Dec 2024 to survey the existing flora and fauna in the core area (actual mining place) (8.76.5 hectares) as well as the buffer area (1000-meter radius from the core zone). The study was conducted by a team consisting of experts in Biodiversity assessment, NABET certified Functional Area Expert (FAE) in Ecology and Biodiversity, and local residents for guidance. The study team visited the mining site twice to collect the field data on floral and faunal species in the study areas.

3.5.6. Methodology

3.5.6.1. Primary data collection

Identification of vegetation in relation to the natural flora and crops was conducted through reconnaissance field surveys and onsite observations in core and buffer zone. The plant species identification was done based on the reference materials and also by examining the morphological characteristics and reproductive parts of plants. Land use pattern in relation to agriculture crop varieties were identified through physical verification of land and interaction with local villagers.

The faunal elements (animal species) of core and buffer zone were identified by direct sightings or indirect evidences viz. pug marks, skeletal remains, scats and droppings etc. (Jayson and Easa 2004).

Standard binocular was used for the observations. The authenticity of faunal elements occurrence was confirmed by interaction with the local people. Avifauna identification was done with pictorial descriptions of published literature. Information pertaining to existence of any migratory corridors and paths were obtained from local inhabitants. The status of each faunal element was determined and the Wildlife schedule category was ascertained as per the IUCN-Red Data Book and Indian wildlife (Protection) Act, 1972.

Plot method is used in the floral documentation in the core and buffer zone. For trees (10x10-m), shrubs (5x5-m) and herbs (1x1-m) plots were taken. Birds and butterflies were mainly focused during faunal assessment, transect method was employed for birds and butterflies. Transect is a path along which one counts and records the occurrence of an individual for study. A straight-line walk covering desired distance, within a time span of one hour to 30 minutes was carried out in the proposed region. Bird species were recorded during the hours of peak activity. 0700 to 1100 Hrs and 1430 to 1730 Hrs (Bibby et al. 2000).

Direct observations and bird calls were used for bird documentation. Same transects were used for counting butterflies. Opportunistic observations were made for Amphibians, reptiles and ordinates. Presence of mammals was recorded by direct and indirect signs. All possible transects were taken for birds and butterflies. Birds and butterflies were classified into species level. Recorded bird species were identified to species level using standard books (Ali & Ripley 1987, Grimmett et al., 2016).

Known species of flora and fauna were recorded and identified in the field. Doubtful plant specimens were photographed and collected and further identified in the lab using appropriate guides, literature, online resources.

Quadrat method was used to estimate the floral count in core and buffer zones within 1000-meter periphery from the core area. Sampling locations were selected with reference to topography, land use, vegetation pattern, etc. In this study, quadrats of 10 m × 10 m were laid down to assess trees, and sub quadrats of 5 m × 5 m were laid down for shrubs, 1 m x 1 m were laid done for herbs (Figure 3 and 4). Field observation data were recorded in filed note book/data sheets. Photographs and videos were taken for ecological components, flora and available fauna species.

3.5.6.2. Secondary data

The secondary baseline data such as the morphological features, flowering and fruiting phenology, habitat and distribution of flora and fauna have been collected from various data sources:

1. Forest working plan.
2. Schedule I to V: Indian Wildlife (Protection) Act, 1972
3. Vivek Menon, Indian Mammals: A Field Guide. Hachette Book publishing India Pvt.Ltd., India.
4. Daniel J.C. The Book of Indian Reptiles and Amphibians, Bombay Natural History Society., India.
5. Ali, S and Ripley. Handbook of the Birds of India and Pakistan together with those of Nepal, Sikkim and Bhutan, Oxford University Press, Bombay.
6. ENVIS Centre on Wildlife and Protected Area.
7. Birds Life Data Zone
8. Ebird.org
9. Global Biodiversity Information Facility
10. http://tnenvis.nic.in/Content/1_2878.aspx
11. Endemic Birds in Tirupur, tirupur Ornithological

3.5.6.3. Data compilation and analysis

Based on the collected data, analysis was done for species identification, habit distribution pattern analysis, and phytosociological relationship, and ecological index and identify the REET categories. Endemic species were analysed using distribution in the regional and local floras and online databases. Rare or Endangered or Endemic or Threatened species were analysed based on the IUCN Red List database and threated plants of BSI (India database of Botanical Survey of India)
https://bsi.gov.in/uploads/documents/research-program/Threatened-plants-of%20India.pdf)

https://www.iucnredlist.org/

3.5.7. Phytosociological Studies

Phyto sociological parameters, such as Density, Frequency, Abundance and Importance Value Index of individual species were determined in randomly placed quadrat of different sizes in the study area, as shown in Table No 3.20. Relative frequency, and relative density were calculated and the sum of these three represented Importance Value Index (IVI) for various species. For shrubs, herbs and grasses, Density, Frequency, Relative Density & Relative Frequency were found. Sample plots were selected in such a way to get maximum representation of different types of vegetation and plots were laid out in different part of the study area of 10 km radius. Analysis of the vegetation will help in determining the relative importance of each species in the study area and to reveal if any economically valuable species is threatened in the process.

Table No . 01 - Calculation of Density, Frequency (%), Dominance, Relative Density, Relative Frequency, Relative Dominance & Important Value Index

Parameters	Formula
Density	Total No. of individuals of species/ Total No. of Quadrats used in sampling
Frequency (%)	(Total No. of Quadrats in which species occur/ Total No. of Quadrats studied)100
Abundance	Total No. of individuals of species/ No. of Quadrats in which they occur
Relative Density	(Total No. of individuals of species/Sum of all individuals of all species) * 100
Relative Frequency	(Total No. of Quadrats in which species occur/ Total No. of Quadrats occupied by all species) * 100
Important Value Index	Relative Density + Relative Frequency

3.5.7.1. Shannon – Wiener Index, Evenness and Richness

Biodiversity index is a quantitative measure that reflects how many different types of species, there are in a dataset, and simultaneously considers how evenly the basic entities (such as individuals) are distributed among those types of species. The value of biodiversity index increases both when the number of types increases and when evenness increases. For a given number of type of species, the value of a biodiversity index is maximized when all type of species is equally abundant. The corresponding formulas are given below.

Shannon-Wien Index $H= \sum[(pi)*In(pi)]$

Where pi: Proportion of total sample represented by species
i: number of individuals of species i/ total number samples

Evenness H/H max

Where Hmax = ln(s)= maximum diversity possible; S=No. of species

Species Richness by Margalef $RI = S-1/\ln N$

Where S = Total Number of species in the community
N = Total Number of individuals of all species in the community

3.5.7.2. Data compilation:

Based on the collected data, exclusive checklists were prepared for both endemic and REET plants of Tamil Nadu.

3.6. Floral Diversity Analysis

3.6.1. Flora Composition in the Core Zone

Identification of plant species for the natural flora and cultivated crops was conducted through field surveys and onsite observations. The plant species identification was done based on the reference materials and also by examining the plant morphological and reproductive characteristics of the plants i.e. flowers, fruits and seeds. Unidentified and double samples were photographed and minimally collected for further investigation in the laboratory. Land use pattern in relation to agriculture crop varieties were identified through physical verification of agriculture field

Core zone flora samplings were conducted between 8.00 am to 10.00 am in three locations. The applied lease area is situated an undulated terrain. we used with quadrate sampling methods. This land is fit for vegetation and cultivation. Taxonomically a total of 23 species belonging to 18 families have been recorded from the core mining lease area. Based on the habitat classification of the enumerated plants the majority of species were Herbs 10 followed by Shrubs 8, Trees 4 and Creeper/Climbers 1. Details of flora with the scientific name were mentioned in Table No. 3.54. The result of the core zone of flora studies shows that Fabaceae Apocynaceae and Lamiaceae are the main dominating species in the study area mentioned in Table No.3.54. No species found as threatened category.

Table No: 02. Flora in the Core Zone of Thimmarasanayakkanur Bit-1 Village, Rough stone and gravel quarry (Primary data)

SI.No	Vernacular Name	Scientific Name	Family Name	IUCN Conservation Status
Trees				
1.	Mullu Maram	*Prosopis juliflora*	Fabaceae	NL
2.	Vembu maram	*Azadirachta indica*	Meliaceae	NL
3.	Karuvelam	*Vachellia nilotica*	Fabaceae	NL
4.	Ved Paalai	*Wrightia tinctoria*	Apocynaceae	NL
Shrubs				
1.	Virali chad	*Dodonaea viscosa*	Sapindaceae	LC
2.	Nagathali	*Opuntia*	Cactaceae	NL
3.	Erukku	*Calotropis gigantea*	Apocynaceae	NL
4.	Suraimullu	*Ziziphus oenopolia*	Rhamnaceae	NL
5.	Vellaikaattukottai	*Jatropha gossypiifolia L*	Euphorbiaceae	NL
6.	Anaikathalai	*Agave americana*	Asparagaceae	NL
7.	Karaichadi	*Canthium coromandelicum*	Rubiaceae	NL
8.	Hedge cactus	*cereus hildmannianus*	Cactaceae	NL
Herbs				
1.	Thumbai	*Leucas aspera*	Lamiaceae	NL
2.	Communist pacha	*Chromolaena odorata*	Asteraceae	NL
3.	Seemai nayaroovi	*Stachytarpheta indica*	Verbenaceae	NL
4.	Kolinchi	*Tephrosia purpurea*	Fabaceae	NL
5.	Thatha poo	*Tridax procumbens*	Asteraceae	NL
6.	Nerunji	*Tribulus terrestris*	Zygophyllales	NL
7.	Arugampul	*Cynodon dactylon*	Poaceae	NL
8.	Nayuruvi	*Achyranthes aspera*	Amaranthaceae	NL
9.	Nattapoochedi	*Hyptis suaveolens*	Lamiaceae	NL
10.	Parttiniyam	*Parthenium hysterophorus*	Asteraceae	NL
Creeper/Climbers				
1.	Perandai	*Cissus quadrangularis*	Vitaceae	NL

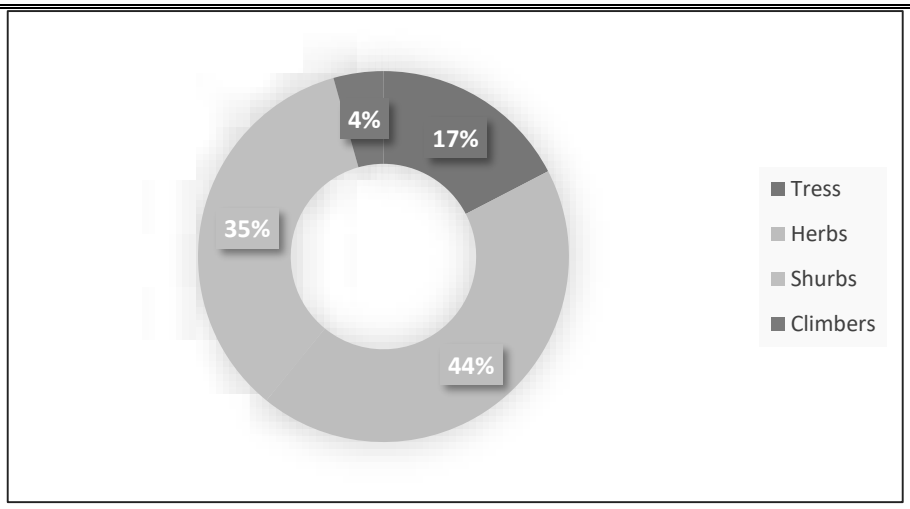


Fig No: 01. Habit analyses of the species recorded from core zone of the study area.

3.6.2. Tree survey around 300m radius

The trees surveys were conducted around 300m radius from the proposed project site cluster are of Thimmarasanayakkanur Bit-1 Village. This is the standard scientific method followed by various workers in respect of phytosociological studies (Cottom and Curtis 1956; Ralhan et al. 1982; Saxena and Sing 1982; Nayak et al. 2000; Lu et al. 2004; Nautiyal 2008). While sampling, circumference at breast Height (CBH) of tree species was measured at 1.36m from ground level, along with the name of the species, phenology (flowering, fruiting, and flushes), and uses. After surveying areas, a detailed trees inventory has been compiled. A list of all plants from the study area was prepared and their habitats were recorded. The species of trees were documented during this base line survey. The dominant plant species growing in this area were Prosopis juliflora, etc. Please refer the Table No.3.55.

Table No: 03 Tree survey around 300m radius from the proposed project site (Primary data)

S. No	English Name	Vernacular Name	Scientific Name	No of trees
Trees				
1.	Acacia Nilotica	Karuvelammaram	*Vachellianilotica*	80
2.	Mesquite	Mullumaram	*Prosopis juliflora*	90
3.	Neem	Vembu	*Azadirachta indica*	30
4.	Pala indigo	Ved Paalai	*Wrightia tinctoria*	21
5.	Palm tree	Panai maram	*Borassus flabellifer*	12

(**Sources**: Species observation in the field study)

3.7. Analysis of Flora (Buffer Zone)

Buffer zone flora samplings were conducted between 10.00 am to 4.00 pm in six different locations in 10 km radius as per the ToR. The most important and widely used methods for a general assessment is belt transect/quadrate methods. The study area was divided according to habitat types followed the random sampling methods in the selected area. For plant biodiversity study in the ecosystems, the quadrate methods were followed. Similar habitats may be found in the buffer area as well, although there is a wider variety of plants there than in the core zone area. The buffer zone was fully dominated by species like Prosopis juliflora, Azadirachta indica, and Hyptis suaveolens, etc. The buffer zone study area contains a total of 69 species that have been recorded from the buffer zone. The floral (69) varieties among them Trees 17, Herbs 22, Shrubs 12, Climbers/ Creepers 13 and Grasses 5 were identified. The result of the buffer zone of flora studies shows that Fabaceae and Solanaceae, Euphorbiaceae is the main dominating species in the study area mentioned in Table No.3.55. There are no impacts due to this mining activity. There are no Rare, Endangered, and Threatened Flora species in the mining area and

their surrounding study area. Apart from the proposed project area, there is agricultural land. Horticulture and agricultural land are untouched. There are no Rare, Endangered, and Threatened Flora species in the mining area and their surrounding study area. A list of floral species has been prepared based on primary survey (site observations) and discussion with local people. The total number of different plant life forms under trees, shrubs, herbs, and climbers is shown in Table No 3.56 and their % distribution is shown in Fig No 3.34.

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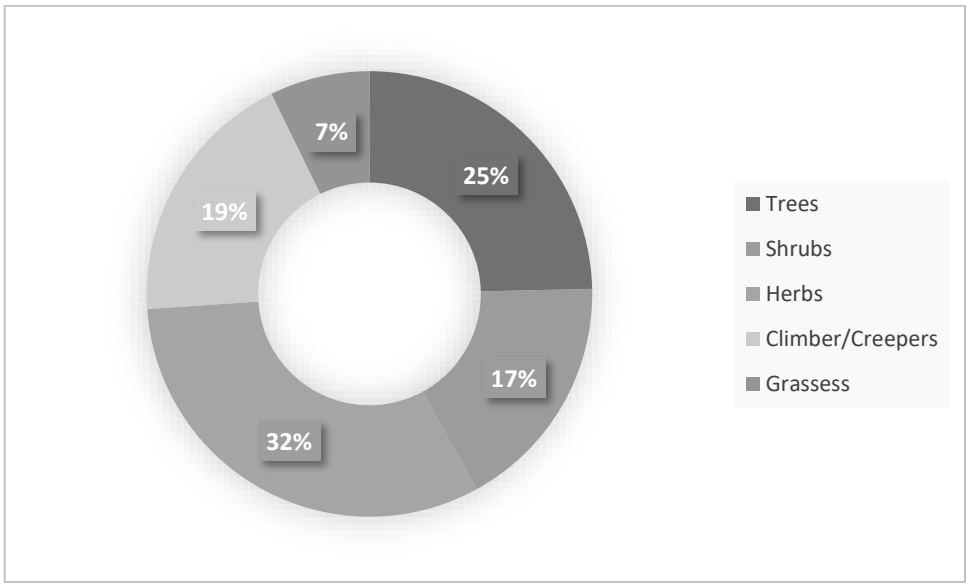


Fig No: 02. Habit analyses of the species recorded from buffer zone of the study area.



A.Jatropha curcas



B.Ocimum tenuiflorum



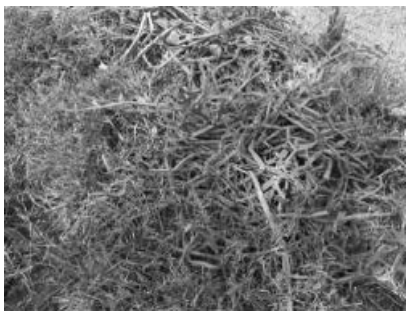
C.Mangifera indica



D. Ricinus communis



E.Momordica charantia



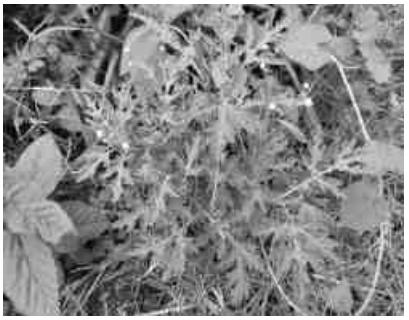
F.Cissus quadrangularis



G.Eucalyptus tereticornis



H.Euphorbia antiquorum



I.Parthenium hysterophorus



J.Cocos nucifera



K.Tribulus terrestris



L.Coccinia grandis



M.Tridax procumbens



N.Tecoma stans



O.Vitex negundo



P.Opuntia dillenii Q.Pithecellobium dulce R.Prosopis juliflora



S.Borassus flabellifert T.Lantana camara U.Calotropis gigantea

Fig No: 03. Flora species observation in the Buffer zone area

3.7.1. The vegetation in the RF / PF areas, ecologically sensitive areas

Andipatti North Reserve forest located about 240m on east side. Proceedings of the forest officer certificate attached. Megamalai Wildlife Sancturay is located about 8.7 km on the southwest (Eco sensitive zone is 8.01km on SW). Kodaikanal Wildlife Sancturay is located about 18.5km on northwest (Eco sensitive zone 17.50km on Northwest side. There are no impacts due to this mining activity. There are no Important Bird Areas (IBAs), or Wetlands or migratory routes of fauna or water bodies or human settlements within the proposed mine lease area. There are no Biosphere reserves or wildlife sanctuaries or National parks or Important Bird Areas (IBAs), or migratory routes of fauna. Thus, the area under study (Mine lease area) is not ecologically sensitive. It is away from the proposed project site. There are neither forests nor forest dwellers nor forest-dependent communities in the mine lease area. There shall be no forest-impacted families (PF) or people (PP). Thus, the rights of Traditional Forest Dwellers will not be compromised on account of the project. There is no invasive species present in the study area.

Table No: 04. Flora recorded from the study area (Buffer zones) of the proposed rough stone and gravel quarry.

S.No	Local name	Scientific Name	Family Name	Total No Counts	Quadrats with species	Total Quadrats	Density	Frequency	Abundance	Relative Density (RD)	Relative Frequency (RF)	IVI	IUCN Conservation Status
Trees													
1	Karuvealan	*Prosopis juliflor*	Fabaceae	6	3	6	1.0	50	2.0	13.0	5.0	18.0	Not Listed
2	Palm tree	*Borassus flabellifer*	Fabaceae	3	2	6	0.5	33	1.5	6.5	3.3	9.9	Not Listed
3	Vembu	*Azadirachta indica*	Meliaceae	5	4	6	0.8	67	1.3	10.9	6.7	17.5	Not Listed
4	Vealli vealan	*Vachellia leucophloea*	Babesiae	4	3	6	0.7	50	1.3	8.7	5.0	13.7	Not Listed
5	Manga maram	*Mangifera indica*	Anacardiaceae	5	4	6	0.8	67	1.3	10.9	6.7	17.5	Not Listed
6	Vathanarayani	*Delonix elata*	Fabaceae	3	2	6	0.5	33	1.5	6.5	3.3	9.9	Not Listed
7	Ilavapanju maram	*Ceiba pentandra*	Malvaceae	2	3	6	0.3	50	0.7	4.3	5.0	9.3	Not Listed
8	Unjai maram	*Albizia amara*	Fabaceae	3	2	6	0.5	33	1.5	6.5	3.3	9.9	Not Listed
9	Vetpalai	*Wrightia tinctoria*	Apocynaceae	4	3	6	0.7	50	1.3	8.7	5.0	13.7	Not Listed
10	Allamaram	*Ficus benghalensis*	Morassie	2	1	6	0.3	17	2.0	4.3	1.7	6.0	Not Listed
11	Teke	*Tectona grandi*	Verbenacea	2	2	10	0.2	20	1.0	4.3	3.3	7.7	Not Listed
12	Piliyamaram	*Tamarindus indica*	Fabaceae	4	3	6	0.7	50	1.3	8.7	5.0	13.7	Not Listed
13	Theannaimaram	*Cocos nucifera*	Arecaceae	5	4	6	0.8	67	1.3	10.9	6.7	17.5	Not Listed
14	Porinjamara	*Chloroxylon swietienia*	Flindersiaceae	3	2	6	0.5	33	1.5	6.5	3.3	9.9	Not Listed
15	Indian almond	*Terminalia catappa*	Combretaceae	3	2	6	0.5	33	1.5	6.5	3.3	9.9	Not Listed
16	Indian Blackberry	*Syzygium cumini*	Myrtaceae	2	3	6	0.3	50	0.7	4.3	5.0	9.3	Not Listed
17	Indian jujube	*Ziziphus mauritiana*	Elanthaimaram	4	3	6	0.7	50	1.3	8.7	5.0	13.7	Not Listed
Shrubs													
1	Virali chadi	*Dodonaea viscosa*	Sapindaceae	6	5	10	0.6	50	1.2	2.1	5.5	7.6	Not Listed
2	Avaram chad	*Senna auriculata*	Fabaceae	7	6	10	0.7	60	1.2	2.4	6.6	9.0	Not Listed
3	Earuku	*Calotropis gigantea*	Apocynaceae	8	7	10	0.8	70	1.1	2.8	7.7	10.5	Not Listed
4	Unichadi	*Lantana camara*	Verbenaceae	9	8	10	0.9	80	1.1	3.1	8.8	11.9	Not Listed
5	Sapathikalli	*Opuntia ficus-indica*	Cactaceae	8	7	10	0.8	70	1.1	2.8	7.7	10.5	Not Listed

6	Katralai	*Agave americana*	Asparagaceae	7	6	10	0.7	60	1.2	2.4	6.6	9.0	Not Listed
7	Karaichadi	*Canthium coromandelicum*	Rubiaceae	8	6	10	0.8	60	1.3	2.8	6.6	9.4	Not Listed
8	Suraimullu	*Ziziphus oenopolia*	Rhamnaceae	8	6	10	0.8	60	1.3	2.8	6.6	9.4	Not Listed
9	Kari indu mullu	*Acacia caesia*	Fabaceae	9	7	10	0.9	70	1.3	3.1	7.7	10.8	Not Listed
10	Hedge cactus	*cereus hildmannianus*	Cactaceae	6	5	10	0.6	50	1.2	2.1	5.5	7.6	Not Listed
11	Communist pacha	*Chromolaena odorata*	Asteraceae	7	6	10	0.7	60	1.2	2.4	6.6	9.0	Not Listed
12	Indian Mallow	*Abutilon indicum*	Malvaceae	8	6	10	0.8	60	1.3	2.8	6.6	9.4	Not Listed
Herbs													
1	Nayuruvi	*Achyranthes aspera*	Amaranthaceae	8	7	15	0.5	47	0.5	2.1	4.4	6.5	Not Listed
2	Nearunji mull	*Tribulus zeyheri Sond*	Zygophyllaceae	9	8	15	0.5	53	0.5	2.4	5.0	7.5	Not Listed
3	Kollukattai	*Cenchrus ciliaris*	Poaceae	7	11	15	0.7	73	0.7	3.3	6.9	10.3	Not Listed
4	Pulapoo	*Aerva lanata*	Amaranthaceae	7	6	15	0.4	40	0.4	1.8	3.8	5.6	Not Listed
5	Kapok bush	*Aerva javani*	Amaranthaceae	6	5	15	0.3	33	0.3	1.5	3.1	4.7	Not Listed
6	Rail poondu	*Croton bonplandianus*	Euphorbiaceae	8	7	15	0.5	47	0.5	2.1	4.4	6.5	Not Listed
7	Yanai neariji	*Pedalium murex*	Pedaliaceae	9	8	15	0.5	53	0.5	2.4	5.0	7.5	Not Listed
8	Perandai	*Cissus quadrangularis*	Vitaceae	11	10	15	0.7	67	0.7	3.0	6.3	9.3	Not Listed
9	Thumbai chadi	*Leucas aspera*	Lamiaceae	8	7	15	0.5	47	0.5	2.1	4.4	6.5	Not Listed
10	Umathai	*Datura metel*	Solanaceae	9	8	15	0.5	53	0.5	2.4	5.0	7.5	Not Listed
11	Sethamutti	*Sida cordata*	Malvaceae	7	6	15	0.4	40	0.4	1.8	3.8	5.6	Not Listed
12	Annanm	*Iva annua*	Asteraceae	6	5	15	0.3	33	0.3	1.5	3.1	4.7	Not Listed
13	Kolunji	*Tephrosia purpurea*	Fabaceae	9	8	15	0.5	53	0.5	2.4	5.0	7.5	Not Listed
14	Vealiparuthi	*Pergularia daemia*	Apocynaceae	8	7	15	0.5	47	0.5	2.1	4.4	6.5	Not Listed
15	Seppu nerinji	*Indigofera linnaei Ali*	Fabaceae	6	5	15	0.3	33	0.3	1.5	3.1	4.7	Not Listed
16	Sapathikalli	*Opuntia ficus-indica*	Cactaceae	10	9	15	0.6	60	0.6	2.7	5.7	8.4	Not Listed
17	Pal kodi	*Cynanchum viminale*	Apocynaceae	7	6	15	0.4	40	0.4	1.8	3.8	5.6	Not Listed
18	Ilia perandai	*Cissus rotundifolia*	Vitaceae	9	8	15	0.5	53	0.5	2.4	5.0	7.5	Not Listed
19	Katralai	*Aloe vera*	Asphodelaceae	8	7	15	0.5	47	0.5	2.1	4.4	6.5	Not Listed
20	Seammulli	*Barleria prionitis*	Acanthaceae	6	5	15	0.3	33	0.3	1.5	3.1	4.7	Not Listed
21	Thuthi	*Abutilon indicum*	Malvaceae	8	7	15	0.5	47	0.5	2.1	4.4	6.5	Not Listed

22	Thulasi	*Ocimum tenuiflorum*	Lamiaceae	10	9	15	0.6	60	0.6	2.7	5.7	8.4	Not Listed

Table No: 05. Calculation of Species Diversity in study area

Species	Number in sample Count	Pi	Pi ^2	lnPi	Pi x ln (Pi)
Trees					
Prosopis juliflor	6	0.1	0.316228	-1	-0.1
Borassus flabellifer	3	0.05	0.223607	-1.30103	-0.065051
Azadirachta indica	5	0.083333	0.288675	-1.07918	-0.089932
Vachellia leucophloea	4	0.066667	0.258199	-1.17609	-0.078406
Mangifera indica	5	0.083333	0.288675	-1.07918	-0.089932
Delonix elata	3	0.05	0.223607	-1.30103	-0.065051
Ceiba pentandra	2	0.033333	0.182574	-1.47712	-0.049237
Albizia amara	3	0.05	0.223607	-1.30103	-0.065051
Wrightia tinctoria	4	0.066667	0.258199	-1.17609	-0.078406
Ficus benghalensis	2	0.033333	0.182574	-1.47712	-0.049237
Tectona grandi	2	0.033333	0.182574	-1.47712	-0.049237
Tamarindus indica	4	0.066667	0.258199	-1.17609	-0.078406
Cocos nucifera	5	0.083333	0.288675	-1.07918	-0.089932
Chloroxylon swietienia	3	0.05	0.223607	-1.30103	-0.065051
Terminalia catappa	3	0.05	0.223607	-1.30103	-0.065051
Syzygium cumini	2	0.033333	0.182574	-1.47712	-0.049237
Ziziphus mauritiana	4	0.066667	0.258199	-1.17609	-0.078406
H (Shannon Diversity Index) =2.78					
Shrubs					
Species	Number in sample Count	Pi	Pi ^2	lnPi	Pi x ln (Pi)
Dodonaea viscosa	6	0.029126	0.170664	-1.53572	-0.04473
Senna auriculata	7	0.033981	0.184338	-1.46877	-0.04991
Calotropis gigantea	8	0.038835	0.197066	-1.41078	-0.05479
Lantana camara	9	0.043689	0.20902	-1.35962	-0.0594
Opuntia ficus-indica	8	0.038835	0.197066	-1.41078	-0.05479
Agave americana	7	0.033981	0.184338	-1.46877	-0.04991
Canthium coromandelicum	8	0.038835	0.197066	-1.41078	-0.05479
Ziziphus oenopolia	8	0.038835	0.197066	-1.41078	-0.05479
Acacia caesia	9	0.043689	0.20902	-1.35962	-0.0594
cereus hildmannianus	6	0.029126	0.170664	-1.53572	-0.04473
Chromolaena odorata	7	0.033981	0.184338	-1.46877	-0.04991
Abutilon indicum	8	0.038835	0.197066	-1.41078	-0.05479
H (Shannon Diversity Index) =2.48					
Species	Number in sample Count	Pi	Pi ^2	lnPi	Pi x ln (Pi)
Herbs					
Achyranthes aspera	8	0.024096	0.15523	-1.61805	-0.03899

Tribulus zeyheri Sond	9	0.027108	0.164646	-1.5669	-0.04248
Cenchrus ciliaris	7	0.021084	0.145204	-1.67604	-0.03534
Aerva lanata	7	0.021084	0.145204	-1.67604	-0.03534
Aerva javani	6	0.018072	0.134433	-1.74299	-0.0315
Croton bonplandianus	8	0.024096	0.15523	-1.61805	-0.03899
pedalium murex	9	0.027108	0.164646	-1.5669	-0.04248
Cissus quadrangularis	11	0.033133	0.182023	-1.47975	-0.04903
Leucas aspera	8	0.024096	0.15523	-1.61805	-0.03899
Datura metel	9	0.027108	0.164646	-1.5669	-0.04248
Sida cordata	7	0.021084	0.145204	-1.67604	-0.03534
Iva annua	6	0.018072	0.134433	-1.74299	-0.0315
Tephrosia purpurea	9	0.027108	0.164646	-1.5669	-0.04248
Pergularia daemia	8	0.024096	0.15523	-1.61805	-0.03899
Indigofera linnaei Ali	6	0.018072	0.134433	-1.74299	-0.0315
Opuntia ficus-indica	10	0.03012	0.173553	-1.52114	-0.04582
Cynanchum viminale	7	0.021084	0.145204	-1.67604	-0.03534
Cissus rotundifolia	9	0.027108	0.164646	-1.5669	-0.04248
Aloe vera	8	0.024096	0.15523	-1.61805	-0.03899
Barleria prionitis	6	0.018072	0.134433	-1.74299	-0.0315
Abutilon indicum	8	0.024096	0.15523	-1.61805	-0.03899
Ocimum tenuiflorum	10	0.03012	0.173553	-1.52114	-0.04582
H (Shannon Diversity Index) =3.08					

Table No: 06 Species Richness (Index)

Shannon-Weiner Index (H)	H Max	Evenness	Richness
2.78	2.83	0.98	3.91
2.48	2.48	1.00	2.44
3.08	3.09	1.00	4.14

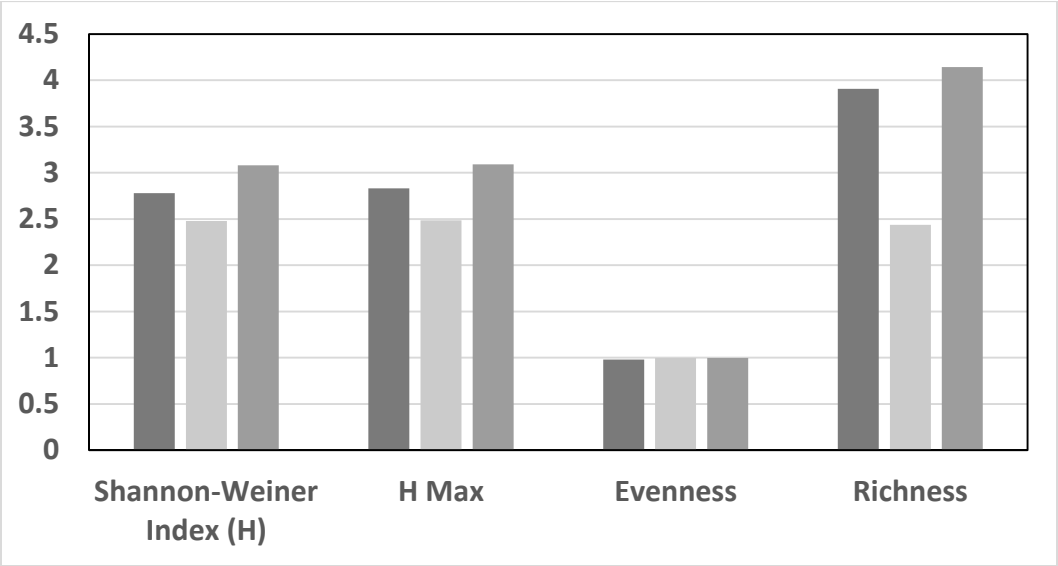


Figure. 05 Species Richness (Index) in study area

3.7.2. Result of Phytosociological analysis of floral community

For quantitative phytosociological analysis of floral community of the study area, the quadrat sampling technique was used for sampling vegetation. Sampling quadrats of the regular shape of dimensions 10 × 10 m, 5 × 5 m, and 1 × 1 m, were nested within each other and were defined as the units for sampling the area and measuring the diversity of trees, shrubs, and herbs, respectively. Phyto-sociological parameters, such as Density, Frequency, and Abundance individual species of wild Trees were determined in randomly placed quadrat of different sizes in the study area, as shown in Table No.3.58. Species Diversity index such as Shannon-Wiener Index, Evenness and Richness were calculated for 17 trees, 12 shrubs and 22 herbs. The results of above phyto-sociological parameters are given in Table No.3.58 and Fig No.3.36. The Shannon-Weiner Index (H) value 3.08 indicates that the trees are rich in diversity in the study area.

3.7.3. Forest details

Forests types in the district include Tropical West Coast semi-evergreen forests, Tropical moist mixed deciduous forests, Tropical secondary moist mixed deciduous forests, Tropical dry mixed deciduous forests, Tropical Carnatic Umbrella thorn forests and dry deciduous scrub. According to forest department of Tamil Nadu, the forest area in Theni district is about 27.6% to their total geographical area of the district.

There are no National Parks, Sanctuaries, Biosphere Reserves, RAMSAR Wetland sites, Wildlife Corridors, Ramsar sites, Tiger/Elephant Reserves / (existing as well as proposed) within 10 km of the mine lease area. The Andipatti North R.F located about 240m on east. Proceedings of the forest officer letter attached. No Wildlife Sanctuary in the study area. In addition, No Biosphere Reserves, Wildlife corridors, or, Tiger / Elephant reserves within 10 km of the project area. No protected (PF) forests either in the mine lease area or in the buffer zone. Thus, no forest land is involved in any manner.

https://wiienvis.nic.in/Database/Tamil_Nadu_7838.aspx
https://wiienvis.nic.in/Database/ramsar_wetland_sites_8224.aspx
https://dfe.gov.in/uploads/documents/ramsar-sites-pub.pdf

3.7.4. Agriculture & Horticulture flora in the study area

3.7.4.1. Agriculture

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

3.7.4.2. Horticulture

Major horticulture crops cultivated in this district are fruits crops like mango, banana, grapes, guava and aonla, tropical vegetables like bhendi, tomato, brinjal, onion, temperate vegetables like cauliflower, beetroot and knol-khol, spices and condiments like pepper and cardamom and plantation crops like coffee and tea. https://tnmines.tn.gov.in/pdf/dsr/23.pdf

3.8. Fauna diversity

The baseline information of the proposed project site helps predict potential impacts on wildlife and habitats in the region. Field faunal survey was conducted to gather the existing mammals, birds, reptiles, amphibians, and butterflies in core and buffer zones of the proposed project. The methodologies used included random walks, opportunistic observations (for birds and insects), visual encounter surveys (for reptiles), and tracking signs (for mammals). Additionally, during the field survey, information was collected from local residents, using images and videos as tools to know the occurrence of faunal species in the study area. Our study team engaged in discussions and consultations with locals from nearby villages, as well as with herders and farmers to get more details. To identify and analyze the data, thoroughly searched and referred the secondary literature on flora, fauna, protected areas, natural habitats, and wildlife species. Species identification was conducted and online databases. Finally, cross cheeked the list of identified fauna with the IUCN Red List database to determine the presence of any REET species in the study area.

3.8.1. Fauna Composition in the Core Zone

Core zone fauna samplings were conducted between 6.00 am to 8.00 am in three locations. During the study, it was found that the faunal diversity in the core site was limited to Butterflies, insects, and some species of mammals & reptiles among them numbers Insects/Butterflies 7 (29%), Reptiles 5 (21%), Mammals 3 (12%), and Avian 9 (38%). The core site has avifauna species like crow, Black drongo, Koel, etc. None of these species are threatened or endemic in the study area and surroundings. All these species were cross-checked against the IUCN Red List Database version 3.1 to identify any threatened species. There is no Schedule I species and 8 species are

under Schedule IV according to the Indian Wildlife Act 1972. There are no critically endangered, endangered, vulnerable, and endemic species were observed.

Table No: 07 Fauna in Core Zone

S.No	Common Name/English Name	Family Name	Scientific Name	Schedule list WPA 1972	IUCN Red List data
Insects					
1	Common Tiger	Nymphalidae	*Danaus genutia*	NL	NL
2	Red-veined darter	Libellulidae	*Sympetrum fonscolombii*	NL	LC
3	Grasshopper	Acrididae	*Hieroglyphus sp*	NL	LC
4	Mottled emigrant	Peridae	*Catopsilia pyranthe*	NL	LC
5	Striped tiger	Nymphalidae	*Danaus plexippus*	Schedule IV	LC
6	Stick insect	Lonchodidae	*carausius morosus*	NL	LC
7	Praying mantis	Mantidae	*Mantis religiosa*	NL	NL
Reptiles					
1	Common house gecko	Gekkonidae	Hemidactylus frenatus	NL	LC
2	Garden lizard	Agamidae	Calotes versicolor	NL	LC
3	Fan-Throated Lizard	Agamidae	Sitanaponticeriana	NL	LC
4	Common skink	Scincidae	Mabuya carinatus	NL	LC
5	Brahminy skink	Scincidae	Eutropis carinata	NL	LC
Mammals					
1	Indian Field Mouse	Muridae	Mus booduga	Schedule IV	NL
2	Common rat	Muridae	Rattus rattus	Schedule IV	LC
3	Asian Small Mongoose	Herpestidae	Herpestes javanicus	Schedule (Part II)	LC
Aves					
1	Common myna	Sturnidae	Acridotheres tristis	NL	LC
2	Koel	Cucalidae	Eudynamys	Schedule IV	LC
3	Rose-ringed parkeet	Psittaculidae	Psittacula krameri	NL	
4	Two-tailed Sparrow	Dicruridae	Dicrurus macrocercus	Schedule IV	LC
5	Cattle egret	Ardeidae	Bubulcus ibis	NL	LC
6	Black drongo	Dicruridae	Dicrurus macrocercus	Schedule IV	LC
7	House crow	Corvidae	Corvussplendens	NL	LC
8	Red-vented Bulbul	Pycnonotidae	Pycnonotuscafer	Schedule IV	LC
9	Common quail	Phasianidae	Coturnix coturnix	Schedule IV	LC

***NE- Not Evaluated; LC- Least Concern, NT –Near Threatened, T-Threatened**

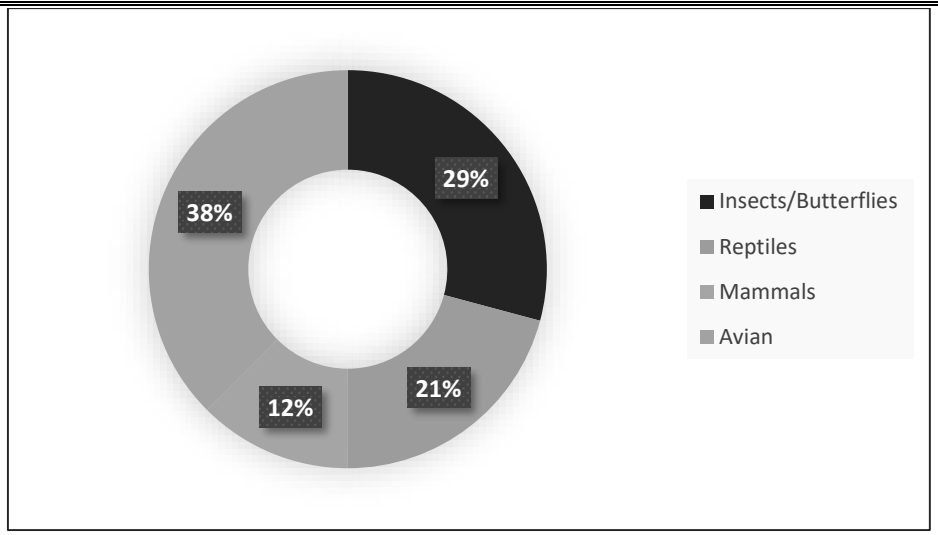


Fig No:06. Distribution of Faunal Communities (Core Zone)

3.8.2. Fauna Composition in the Buffer Zone

Taxonomically a total of 53 species recorded were from the buffer zone area. Based on habitat classification the majority of species were Insects/Butterflies 17 (32%), followed by birds 19 (36%), Reptiles 9 (17%), Mammals 8 (17%) (Fig No.3.41). All these species were cross-checked against the IUCN Red List Database version 3.1 to identify any threatened species. Data analysis revealed that 35 species belong to IUCN categorized list as Least Concern, while 15 species were not listed. A total of 19 species of bird were sighted in the study area. There are no critically endangered, endangered, vulnerable, and endemic species were observed. The analysis indicates that there are no REET species in the buffer zones of the proposed colour rough stone and gravel quarry. There are no impacts on nearby fauna species.

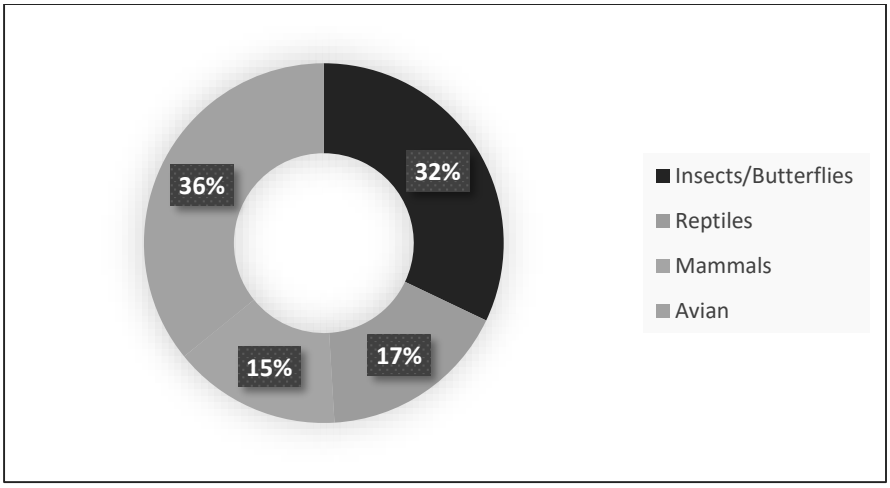


Fig No: 07. Occurrence of fauna in buffer zone

3.8.2.1. Mammals

The list of mammals observed including domesticated animals observed in the study areas are listed, a total 8 species were identified. Mammals traced from the site are common. There was no threatened species identified (Table No.3.60).

Table No: 08. diversity of mammal's species observed in the study area.

SI. No	Scientific Name	Common Name	IUCN Conservation Status
1.	*Funambulus palmarum*	Indian palm squirrel	LC
2.	*Mus booduga*	Indian Field Mouse	LC
3.	*Herpestes javanicus*	Asian Small Mongoose	LC
4.	*Lepus nigricollis*	Indian hare	LC
5.	*Rattus norwegicus*	Brown rat	LC
6.	*Bos taurus*	Cow	NL
7.	*Bandicota indica*	Greater bandicoot rat	LC
8.	*Felis catus*	Cat	NL

3.8.2.2. Aves

A total of 19 species of birds were identified by direct observations and voice-calls from the field. Also the expert opinion was sought to list the number of birds probably occurred in the area using the photographic field guide. There was no threatened species identified from the proposed site as per the IUCN status (Table No.3.61)

Table No: 09. Diversity of aves species observed in the study area.

S.No	Common Name	Scientific name	Family Name	IUCN Status
1	Black Drongo	*Dicrurus macrocercus*	Dicruridae	LC
2	Rose-ringed Parakeet	*Alexandrinus krameri*	Psittaculidae	LC
3	Oriental Darter	*Anhinga melanogaster*	Anhingidae	LC
4	House Crow	*Corvus splendens*	Corvidae	LC
5	Purple Sunbird	*Cinnyris asiaticus*	Nectariniidae	LC
6	Rock Pigeon	*Columba livia*	Columbidae	LC
7	Indian robin	*Copsychus fulicatus*	Muscicapidae	LC
8	Indian Roller	*Coracias benghalensis*	Coraciidae	LC
9	Large-billed crow	*Corvus macrorhynchos*	Corvidae	LC
10	Asian koel	*Eudynamys scolopaceus*	Cuculidae	LC
11	Lesser Whistling-Duck	*Dendrocygna javanica*	Anatidae	LC
12	Indian myna	*Acridotheres tristis*	Sturnidae	LC
13	Eastern Cattle-Egret	*Ardea coromanda*	Ardeidae	NE
14	Purple-rumped Sunbird	*Leptocoma zeylonica*	Nectariniidae	LC
15	Scaly-breasted Munia	*Lonchura punctulata*	Estrildidae	LC
16	Black Kite	*Milvus migrans*	Accipitridae	LC

17	White browed Wagtail	*Motacilla maderaspatensis*	Motacillidae	LC
18	House Sparrow	*Passer domesticus*	Passeridae	LC
19	Asian green bee-eater	*Meropsorientalis*	Meropidae	LC

3.8.2.3. Insects / Butterflies

Among invertebrate, Butterflies were the most dominant category identified from the field. A total of 17 species were identified from the field and one species is in the least concerned category (Table No.3.62).

Table No: 010. Diversity of insects' species observed in the study area.

S.No	common Name	Scientific name	Family name	IUCN Status
1	Tawny coster	*Acraea terpsicore*	Nymphalidae	NL
2	Yellow crazy ant	*Anoplolepis gracilipes*	Formicidae	NL
3	Grasshopper	*Hieroglyphus sp*	Acrididae	LC
4	Red dwarf honey bee	*Apis florea*	Apidae	NL
5	Indian black ant	*Camponotus compressus*	Formicidae	NL
6	Lemon emigrant	*Catopsilia pomona*	Pieridae	NL
7	Praying mantis	*Mantis religiosa*	Mantidae	NL
8	Mottled emigrant	*Catopsilia pyranthe*	Pieridae	NL
9	Common Tiger	*Danaus genutia*	Nymphalidae	NL
10	Oriental latrine fly	*Chrysomya megacephala*	Calliphoridae	NL
11	Cotton tipworm moth	*Crocidosema plebejana*	Tortricidae	NL
12	Plain Tiger butterfly	*Danaus chrysippus*	Nymphalidae	LC
13	Potter wasps	*Delta esuriens*	Vespidae	NL
14	Blue-eyed ensign wasp	*Evania appendigaster*	Evaniidae	NL
15	Chocolate pansy	*Junonia iphita*	Nymphalidae	NL
16	Lemon pansy	*Junonia lemonias*	Nymphalidae	NL
17	Termite	*Odontotermes assmuthi*	Termitidae	NL

3.8.2.4. Reptiles

There were 9 different reptile species were spotted in the study area. All the species are least concern category.

Table No: 011 Diversity of reptile's species observed in the study area.

S.No	Common Name	Scientific name	Family name	IUCN Status
1	Oriental garden lizard	*Calotes versicolor*	Agamidae	LC
2	Indian chameleon	*Chamaeleo zeylanicus*	Chamaeleonidae	LC
3	House lizards	*Hemidactylus flaviviridis*	Gekkonidae	LC
4	White-spotted supple skink	*Lygosoma albopunctata*	Scincidae	LC
5	Common skink	*Mabuya carinatus*	Scincidae	LC

6	Streaked kukri snake	*Oligodon taeniolatus*	Colubridae	LC
7	Snake eyed lizard	*Ophisops leschenaultii*	Lacertidae	LC
8	South Indian rock agama	*Psammophilus dorsalis*	Agamidae	LC
9	Green keelback	*Rhabdophis plumbicolor*	Colubridae	LC

3.9. Aquatic Vegetation

The study area intersected by few natural drainage and lakes. A number of samples were investigated for enumeration of aquatic fauna. In order to study aquatic flora and faunal life one-time survey was conducted. Major component of the aquatic life under the study area are listed below

- Phytoplankton
- Zooplankton
- Aquatic vertebrates like fish, amphibians etc.

To assess the planktonic profile of Phytoplankton and Zooplankton, few water samples from the nearby water bodies, project side were collected at sub-surface level in the study area. The aquatic ecological study was conducted in different water bodies of the study area and the flora and fauna were recorded.

Table No: 012 Aquatic Fauna and Flora

Sl. No	Common Name	Scientific Name	Family Name	IUCN Red List of Threatened Species
Flora				
1	Cross Grass	Carex cruciata	Cyperaceae	NA
2	Water hyacinth	Eichornia crassipes	Pontederiaceae	NA
3	Blue waterlily	Nymphaea nouchali	Nymphaeaceae	LC
Fauna				
1	Catla	Catla catla	Cyprinidae	LC
2	Thilopia	Oreochromis niloticus	Cichlidae	LC
3	Koravi meen	Channa striata	Channidae	LC
4	Roghu	Labeo rohita	Cyprinidae	LC

*LC- Least Concern, NA-Not yet assessed

3.9.1. Phytoplankton's:

Microcystis, Nitzschia, Oscillatoria, Navicula and Pediastrum sps.

3.9.2. Zooplanktons:

These consist of microscopic organisms from groups Protozoa, Rotifers, Cladocera and Copepoda etc. Some common species of zooplanktons are; Deflandre, Arcella vulgaris, Centropyxis spinosa Arcella discoides, Arcella hemispherica, Centropyxis aculeate, Trigonopyxis arcula, Brachionus calyciflorus, Lecane curvicornis, Brachionus angularis, Polyarthra vulgaris, Filinia longiseta.

3.9.3. Food chain

The food chain in aquatic ecosystems often begins with the algae or phytoplankton producers, and then the zooplankton that feed on them. This type of food chain is found in nearby lakes and rivers with phytoplankton, zooplankton, fish Artiola gray and humans.

Example: Phytoplankton→Zooplankton→small fish→large fish → Human

3.10. Findings/Results

The details of the flora and fauna observed are given below.

S.No	Ecological sensitive habitat	Direction and Distance from the project site
1.	National Parks/ Wildlife Sanctuary/ Biosphere reserves/ Elephant Reserve/ Any Other Reserve	Andipatti North R.F. – 240m – East. Forest Letter is enclosed.
2.	Reserved Forests	Megamalai Wildlife Sanctuary- 8.7km – SW (Eco sensitive zone-8.01km SW) Kodaikanal Wildlife Sanctuary -18.5km-NW (Eco sensitive zone-17.50km NW)
3.	Wildlife Corridors & Routes	No notified wildlife corridors are present in 10 km vicinity.
4.	Wetlands / Water bodies	-
5.	Ramsar Site	Nil
6.	Important Bird Habitats	Nil
7.	Breeding/nesting areas of endangered species	Not present
8.	Mangroves	None

There are no critically endangered, endangered, vulnerable and endemic species were observed. As the rainfall in the area is scanty and as no toxic wastes are produced or discharged on account of mining, the proposed mining activity is not going to have any additional and adverse impacts on these RET species. There are no ecologically sensitive areas or protected areas within the 10 Km radius. Hence no specific conservation for conservation of any RET species or Wildlife is envisaged.

There is no endangered, endemic and RET Species. There is no Schedule I species in study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] The proposed project is not going to have any direct or indirect adverse impact on the species mentioned above.

3.11. Conclusion

Biological assessment of the site was done to identify ecologically sensitive areas and whether there are any rare, endangered, endemic or threatened (REET) species of flora & fauna in the core area as well its buffer zone to be impacted. The study has also been designed to suggest suitable mitigation measures, if necessary, for protection of wildlife habitats and conservation of

REET species if any. The study found that there is no endemic, endangered migratory fauna found in the core zone. This area is not also a migratory path of any faunal species. Hence, this small mining operation over short period of time will not have any significant impact on the surrounding flora and fauna. The adoption of green mining strategies to minimize environmental impact, Development of a green belt with native trees to reduce dust movement from mining activities and increase the biodiversity.

3.6 SOCIO ECONOMIC ENVIRONMENT

Socio-economic study is an essential part of environmental study. It includes demographic structure of the area, provision of basic amenities viz., housing, education, health and medical services, occupation, water supply, sanitation, communication, transportation, prevailing diseases pattern as well as feature like temples, historical monuments etc., at the baseline level. This will help in visualizing and predicting the possible impact depending upon the nature and magnitude of the project.

It is expected that the Socio-Economic Status of the area will substantially improve because of this proposed project. As the proposed project will provide direct and indirect employment and improve the infrastructural facilities in that area and, thus, improve their standard of living.

3.6.1 Objectives of the Study

The objectives of the socio-economic study are as follows:

- To study the socio-economic status of the people living in the study area of the proposed mining project.
- To assess the impact of the project on Quality of life of the people in the study area.
- To recommend Community Development measures needs to be taken up in the study Area.

3.6.2 Scope of Work

- To study the Socio-economic Environment of the area from the secondary sources;
- Data Collection & Analysis
- Prediction of project impact
- Mitigation Measures

3.6.3 District Profile

Theni District is one of the 38 districts of Tamil Nadu state in India. Well protected by the scenic hill locks, the district is located besides Madurai district. The town of Theni is the district headquarters. The district is divided into two natural divisions: The hilly areas are constituted by parts of the five taluk's Theni, Bodinayakanur, Periyakulam, Uthamapalayam and Andipatti with thick vegetation and perennial streams from the hills on the western side and Cumbum valley which lies in Uthamapalayam taluk.[6] As of 2011, Theni district had a population of 1,245,899 with a sex ratio of 980 females for every 1,000 males.

3.6.4 Study area:

THIMMARSANAYAKKANUR VILLAGE

Timmarasanayakkanur village is situated in Teshil Andipatti, District Theni and in State of Tamil Nadu India. Village has population of 20218 as per census data of 2011, in which male population is 10354 and female population

is 9864. Total geographical area of Timmarasanayakkanur village is 4802.69 Hectares. Population density of Timmarasanayakkanur is 4 persons per Hectares. Total number of house hold in village is 5552. Gram Panchayat name of the Timmarasanayakkanur village is Timmarasanayakkanur , T.subbalapuram, Rajagopalanpatty. CD Block name is Andipatti and Teshil/Taluk or sub-district is Andipatti. Data Reference year is 2009 of Census 2011. Sub District HQ Name is ANDIPATTI and Sub District HQ Distance is 3 Km from the village. District Head Quarter name is THENI ALLINAGARAM and it's distance from the village is 15KM. Nearest Town of the Timmarasanayakkanur village is ANDIPATTI JAKKAMPATTI and nearest town distance is 3 km. Pincode of Timmarasanayakkanur village is 625536. As per census 2011 village code of village Timmarasanayakkanur is 641147.

TABLE 3.22: THIMMARSANAYAKKANUR VILLAGE POPULATION FACTS

Population	20,218
Male Population	10,354
Female Population	9,864
Literate Population	13,431
Male Literate Population	7,718
Female Literate Population	5,713
Illiterate Population	6,787
Male Illiterate Population	2,636
Female Illiterate Population	4,151

Source: https://etrace.in/census/village/timmarasanayakkanur-andipatti-district-theni-tamil-nadu-641147/

TABLE 3.23: POPULATION DATA OF STUDY AREA

SI.No.	Village Name	No of HH	Total Population	Male	Female	Total Literate Population	Male Literate	Female Literate	Total Illiterate Population	Male Illiterate	Female Illiterate
1	Andipatti	4805	17959	9020	8939	11752	6632	5120	6207	2388	3819
2	Doddappanaickanur	2619	10006	5143	4863	6012	3507	2505	3994	1636	2358
3	Gullapuram	3004	11732	6087	5645	7176	4074	3102	4556	2013	2543
4	Kodaluthu	1060	4049	2008	2041	2541	1425	1116	1508	583	925
5	Kottapatti	897	3128	1538	1590	2251	1230	1021	877	308	569
6	Nadupatti	959	3506	1766	1740	2128	1234	894	1378	532	846
7	Nakkalapatti	2529	9402	4776	4626	5874	3409	2465	3528	1367	2161
8	Nallathevanpatti	615	2197	1115	1082	1418	809	609	779	306	473
9	Pulimancombai	951	3607	1826	1781	1967	1124	843	1640	702	938
10	Rengappanaickanpatti	1024	4078	2133	1945	2419	1444	975	1659	689	970
11	Sandaiyur	982	3830	1892	1938	2191	1222	969	1639	670	969
12	Seemanuthu	1235	4689	2380	2309	2931	1646	1285	1758	734	1024
13	Tadayampatti	812	3227	1677	1550	1747	1045	702	1480	632	848
14	Timmarasanayakkanur	5552	20218	10354	9864	13431	7718	5713	6787	2636	4151
15	Uthappanaickanur	1729	6879	3522	3357	4085	2339	1746	2794	1183	1611

Source: www.censusindia.gov.in - Tamilnadu Census of India – 2011

TABLE 3.24: WORKERS PROFILE OF STUDY AREA

SI.No.	Village Name	Total Workers Population	Male Workers	Female Workers	Total Main Workers	Main Workers Male	Main Workers Female	Main Cultivation Workers	Main Agriculture Workers	Main Other Workers	Non-Worker Population
1	Andipatti	9913	5505	4408	7769	4525	3244	678	3977	2959	8046
2	Doddappanaickanur	5812	3250	2562	4927	2768	2159	417	3469	996	4194
3	Gullapuram	6210	3738	2472	4968	3194	1774	919	3035	932	5522
4	Kodaluthu	1884	1143	741	1840	1125	715	262	1179	376	2165
5	Kottapatti	1886	938	948	1822	914	908	409	1082	298	1242
6	Nadupatti	2138	1071	1067	1562	865	697	416	759	324	1368
7	Nakkalapatti	5383	2907	2476	3820	2185	1635	767	1967	1009	4019
8	Nallathevanpatti	1388	716	672	1294	688	606	693	414	162	809
9	Pulimancombai	2256	1160	1096	1666	877	789	82	1326	148	1351
10	Rengappanaickanpatti	2511	1367	1144	1960	1101	859	510	1186	208	1567
11	Sandaiyur	2280	1200	1080	1655	876	779	381	1123	135	1550
12	Seemanuthu	2704	1484	1220	1856	1065	791	182	872	779	1985
13	Tadayampatti	1990	1060	930	1226	690	536	417	674	126	1237
14	Timmarasanayakkanur	11016	6112	4904	9580	5406	4174	832	4132	3951	9202
15	Uthappanaickanur	3803	2164	1639	3044	1811	1233	613	1837	516	3076

Source: www.censusindia.gov.in - Tamilnadu Census of India – 2011

TABLE 3.25: COMMUNICATION & TRANSPORT FACILITIES IN THE STUDY AREA

Sl	Village Name	PO	SPO	PTO	T	PCO	MP	IC / CSC	PCF	BS	PBS	RS	NH	SH	MDR	BTR	GR	NWR	FP
1	Andipatti	1	1	1	1	1	1	1	1	1	1	1	2	2	1	1	1	2	1
2	Doddappanaickanur	2	1	2	1	1	1	1	2	1	1	1	1	2	2	1	1	2	1
3	Gullapuram	1	1	1	1	1	1	2	2	1	1	2	2	2	2	1	1	2	1
4	Kodaluthu	2	1	2	1	1	1	2	2	1	1	2	2	2	1	1	1	2	1
5	Kottapatti	2	1	2	1	1	1	2	2	1	1	2	2	2	1	1	1	2	1
6	Nadupatti	2	2	2	1	1	1	2	2	1	1	2	2	1	1	1	1	2	1
7	Nakkalapatti	2	1	2	1	1	1	1	2	1	1	2	1	2	2	1	1	2	1
8	Nallathevanpatti	2	2	2	1	1	1	2	2	2	2	2	2	2	2	1	1	2	1
9	Pulimancombai	2	1	2	1	1	1	2	2	1	2	2	2	2	1	1	1	2	1
10	Rengappanaickanpatti	2	1	2	1	1	1	2	2	1	2	2	2	2	2	1	1	2	1
11	Sandaiyur	2	1	2	1	2	1	2	2	1	2	2	2	2	2	1	1	2	1
12	Seemanuthu	2	2	2	1	1	1	2	2	2	2	2	2	2	2	1	1	2	1
13	Tadayampatti	2	1	2	1	1	1	2	2	1	1	2	2	2	2	1	1	2	1
14	Timmarasanayakkanur	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	2	1
15	Uthappanaickanur	1	2	1	1	1	1	2	1	1	1	2	2	1	1	1	1	2	1
41	Vayalur	2	1	2	1	2	1	2	2	1	1	2	2	2	1	1	1	2	1
42	Viralipatti	2	2	2	1	1	1	2	2	2	2	2	2	2	2	1	1	2	1
43	Vittankulam	2	2	2	2	2	1	2	2	1	1	2	2	2	1	1	1	2	1

Abbreviations: PO - Post Office; MP - Mobile Phone Coverage; RS - Railway Station; GR - Gravel Roads; SPO - Sub Post Office; IC / CSC - Internet Cafe/Common Service Centre; NH - National Highways; NWR - Navigate waterways River; PTO - Post & Telegraph office; PCF - Private Courier Facility; SH - State Highways; FP - Foot path; T- Telephone (Landline); BS Public Bus Service; MDR - Major District Road; PCO - Public call office / Mobile; PBS - Private Bus Service; BTR - Black Topped (Pucca Roads). Note: 1 - Available within the village 2 - Not available

TABLE 3.26: WATER & DRAINAGE FACILITIES IN THE STUDY AREA

Sl	Village Name	TP	CW	UCW	HP	TW/BH	S	R/C	T/P/L	CD	OD	CT
1	Andipatti	1	1	1	1	1	2	1	1	2	1	2
2	Doddappanaickanur	1	1	2	1	1	2	2	2	1	1	1
3	Gullapuram	1	1	1	1	1	2	2	2	2	1	2
4	Kodaluthu	1	2	2	2	1	2	2	2	2	1	1
5	Kottapatti	1	1	2	2	1	2	2	2	2	1	1
6	Nadupatti	1	2	1	2	1	2	2	2	1	1	2
7	Nakkalapatti	1	2	2	2	1	2	2	2	1	1	1
8	Nallathevanpatti	1	2	1	2	2	1	2	2	1	1	2
9	Pulimancombai	1	1	2	1	1	2	2	2	2	1	2
10	Rengappanaickanpatti	1	2	2	2	2	2	1	2	1	1	2
11	Sandaiyur	1	1	1	2	1	2	2	2	1	1	2
12	Seemanuthu	1	2	1	2	1	1	2	2	1	1	2
13	Tadayampatti	1	2	2	2	2	2	2	2	1	1	1
14	Timmarasanayakkanur	1	2	1	1	1	2	2	2	2	1	2
15	Uthappanaickanur	1	2	1	1	1	1	2	2	1	1	2

Abbreviations: T - Tap Water; R / C - River / Canal; CW - Covered Well; T/P/L - Tank / Pond / Lake; UCW - Uncovered Well; CD - Covered Drainage; HP - Hand Pump; OD - Open Drainage; TW/BH - Tube / Bore Well; CT - Community Toilet Complex for General public; S - Spring

Note – 1 - Available within the village; 2 - Not available

TABLE 3.27: OTHER FACILITIES IN THE STUDY AREA

Sl	Village Name	ATM	CB	COB	ACS	SHG	PDS	RM	AMS	NC	NC-AC	CC	SF	PL		NPS	APS	BDRO	PS
1	Andipatti	1	1	1	1	1	1	2	2	1	1	1	1	1		1	1	1	1
2	Doddappanaickanur	2	2	1	1	1	1	2	2	1	1	1	1	1		1	1	1	1
3	Gullapuram	2	2	1	1	1	1	2	2	1	1	1	1	1		1	1	1	1
4	Kodaluthu	2	2	2	2	1	1	2	2	1	1	1	2	1		1	1	1	1
5	Kottapatti	2	2	2	1	1	1	2	2	1	1	1	1	1		1	1	1	1
6	Nadupatti	2	2	2	2	1	1	2	2	1	1	1	1	1		1	1	1	1
7	Nakkalapatti	2	2	1	1	1	1	2	2	1	1	1	1	1		1	1	1	1
8	Nallathevanpatti	2	2	2	2	1	1	1	2	1	1	1	2	2		1	1	1	1
9	Pulimancombai	2	2	2	2	1	1	2	2	1	1	1	1	1		1	1	1	1
10	Rengappanaickanpatti	2	2	2	2	1	1	2	2	1	1	1	2	2		1	1	1	1
11	Sandaiyur	2	2	2	2	1	1	2	2	1	1	2	2	2		1	1	1	1
12	Seemanuthu	2	2	2	2	1	1	2	2	1	1	2	1	1		1	1	1	1
13	Tadayampatti	2	2	2	1	1	1	2	2	1	1	1	1	1		1	1	1	1
14	Timmarasanayakkanur	1	1	2	1	1	1	2	1	1	1	1	1	1		1	1	1	1
15	Uthappanaickanur	2	2	1	2	1	1	2	2	1	1	1	1	1		1	1	1	1

Abbreviations: ATM - Automatic Teller Machine; PDS - Public Distribution System (Shop); CB - Commerical Bank; RM - Regular Market; COB - Co-operative Bank; AMS - Agricultural Market Society; ACS - Agricultural Credit Societies; NC - Nutritional Centres; SHG - Self Help Group; NC-AC - Nutritional Centres - Anganwadi Centre; DBRO - Birth & Death Registration Office; PS - Power Supply Note – 1 - Available within the village; 2 - Not available

TABLE 3.28: EDUCATIONAL FACILITIES IN THE STUDY AREA

		PPS		PS		MS		SS		SSS		DC		EC		MC		MI		PT		VTS		SSD	
Sl	**Village Name**	**G**	**P**	**G**	**P**	**G**	**P**	**G**	**P**	**G**	**P**	**G**	**P**	**G**	**P**	**G**	**P**	**G**	**P**	**G**	**P**	**G**	**P**	**G**	**P**
1	Andipatti	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	1	2	2
2	Doddappanaickanur	1	2	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
3	Gullapuram	1	2	1	2	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
4	Kodaluthu	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
5	Kottapatti	1	2	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
6	Nadupatti	1	2	1	2	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
7	Nakkalapatti	1	1	1	1	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
8	Nallathevanpatti	1	2	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
9	Pulimancombai	1	2	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
10	Rengappanaickanpatti	1	2	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
11	Sandaiyur	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
12	Seemanuthu	1	1	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
13	Tadayampatti	1	2	1	2	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
14	Timmarasanayakkanur	1	1	1	2	1	2	1	2	1	2	1	2	2	1	2	2	2	2	2	1	2	2	2	2
15	Uthappanaickanur	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2

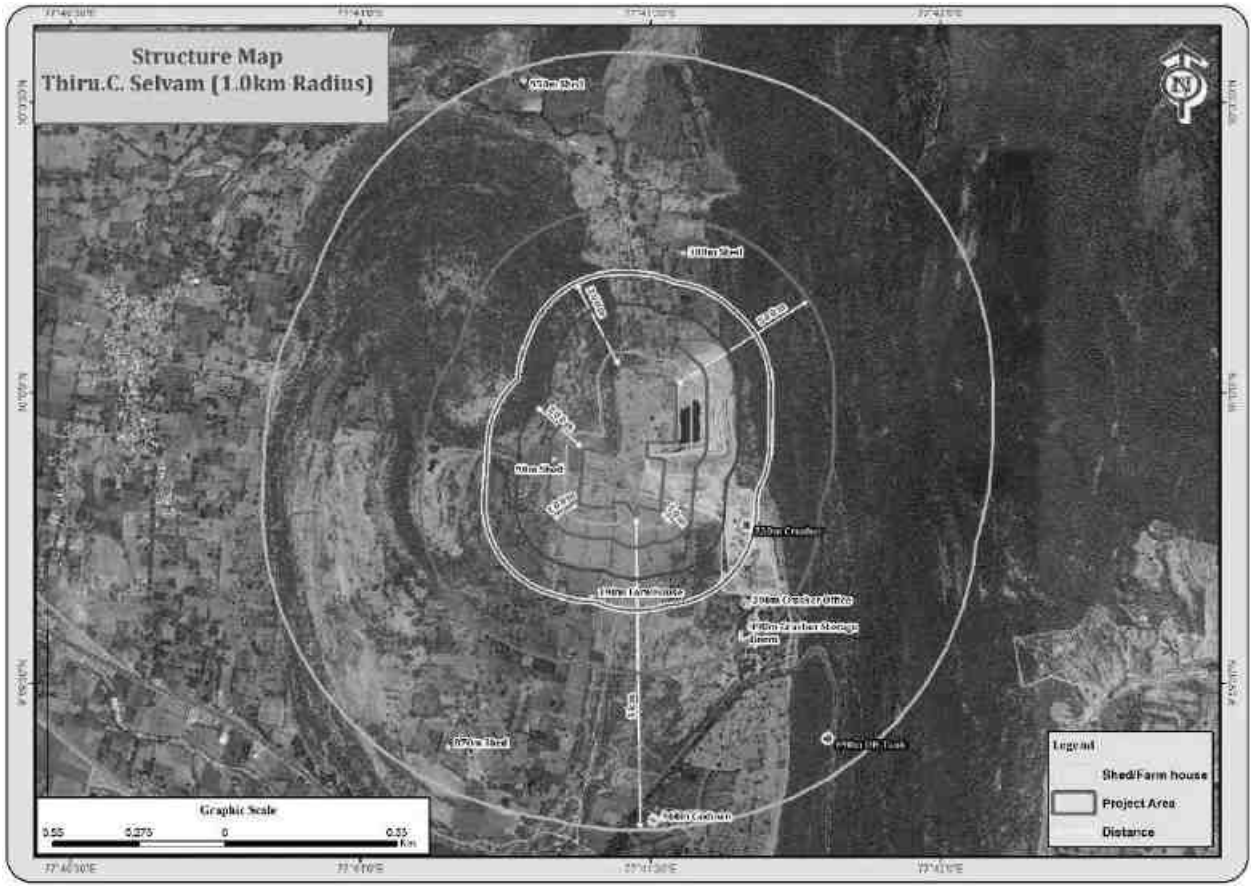
TABLE 3.29: MEDICAL FACILITIES IN THE STUDY AREA

Sl. No.	**Village Name**	**CHC**	**PHC**	**PHSC**	**MCW**	**TBC**	**HA**	**HAM**	**D**	**VH**	**MHC**	**FWC**	**NGM-I/O**
1	Andipatti	0	0	3	0	0	0	0	0	2	0	0	b
2	Doddappanaickanur	1	1	1	1	1	0	0	1	1	0	1	a
3	Gullapuram	0	1	2	2	1	0	0	1	1	0	1	
4	Kodaluthu	0	0	1	0	0	0	0	0	0	0	0	a
5	Kottapatti	0	0	1	0	0	0	0	0	0	0	0	a
6	Nadupatti	0	0	1	0	0	0	0	0	0	0	0	a
7	Nakkalapatti	0	0	2	0	0	0	0	0	1	0	0	a
8	Nallathevanpatti	0	0	1	0	0	0	0	0	0	0	0	
9	Pulimancombai	0	0	1	0	0	0	0	0	0	0	0	c
10	Rengappanaickanpatti	0	0	1	0	0	0	0	0	0	0	0	b
11	Sandaiyur	0	0	1	0	0	0	0	0	0	0	0	b
12	Seemanuthu	0	0	1	0	0	0	0	0	0	0	0	
13	Tadayampatti	0	0	1	0	0	0	0	0	0	0	0	a
14	Timmarasanayakkanur	0	1	4	1	1	0	0	1	1	0	1	
15	Uthappanaickanur	0	1	1	1	1	0	0	1	1	0	1	b

Abbreviations: CHC-Community Health Centre; TBC-TB Clinic; VH- Veternity Hospital; PHC-Primary Health Centre; HA-Aallopathic Hospital; FWC-Family Welfare Centre; PHSC-Primary Health Sub Centre ; HAM-Alternative Medicine Hospital; MH-Mobile Health Clinic; MCW-Maternity and Child Welfare Centre; D-Dispensary; NGM-I/O-Non Government Medical Facilities In & Out Patient

Note – 1 - Available within the village; 2 - Not available a-facility available at <5kms b-facility available at>10kms

STRUCTURE MAP WITHIN 1KM RADIUS



Enumeration of Structures from 0 – 1km Radius						
Structure Numbers	**Distance & Direction from the project site**	**Structure Details and Usage Purpose**	**Type of Structure Structures (Kutcha/ Brick/ Cement/ RCC/ Framed Structures)**	**No. of Occupants**	**Structure belongs to owner (Yes/No)**	**Remarks**
1	90m – West	Shed	Sheet structure	Nil	No	Used to store agriculture products
2	190m – South	Farm House	Sheet structure	Nil	No	Used to store agriculture products
3	250m – SE	Crusher	Framed structure	5 Nos	Yes	Used for the production of M sand , P Sand and Jelly
4	380m – N	Shed	Sheet structure	Nil	No	Used to store Waste Materials
5	390m –SE	Crusher Office	Brick Structure	Nil	Yes	Used for the Maintenance of Records
6	490m- SE	Crusher Storage Room	Brick Structure	Nil	No	Used for the storage of Crusher Spare Parts

7	870m – S	Shed	Sheet Structure	Nil	No	Used for the Storage of Agriculture Goods
8	890m – SE	OH Tank	Cement Structure	Nil	No	Used for the Storage of Water and supply water to local villages
9	960m – S	Godown	Sheet Structure	Nil	No	Used for the storage of goods

3.6.6 Recommendation and Suggestion

- Awareness program to be conducted to make the population aware to get education and a better livelihood.
- Vocational training programme can be organized to make the people self - employed, particularly for women and unemployed youth.
- On the basis of qualification and skills local community may be preferred. Long term and short-term employments can be generated.
- Health care centre and ambulance facility can be provided to the population to get easy access to medical facilities. Maternity facility should be made available at the place to avoid going to distant places for treatment which involves risks. Apart from that as these areas are prone to various diseases a hospital with modern facilities should be opened on a priority basis in a central place to provide better health facilities to the villagers around the project.
- While developing an Action Plan, it is very important to identify the population who falls under the marginalized and vulnerable groups. So that special attention can be given to these groups with special provisions while making action plans.

3.6.7 Summary & Conclusion

The socio-economic study of surveyed villages gives a clear picture of its population, average household size, literacy rate and sex ratio etc. It is also found that a part of population is suffering from lack of permanent job to run their day-to-day life. Their expectation is to earn some income for their sustainability on a long-term basis. The proposed project will aim to provide preferential employment to the local people there by improving the employment opportunity in the area and in turn the social standards will improve.

4. ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

4.0 GENERAL

Environmental impacts both direct and indirect on various environmental attributes due to proposed mining activity will be created in the surrounding environment, during the operational and post–operational phases. The occurrence of mineral deposits, being site specific, their exploitation, often, does not allow for any choice except adoption of eco-friendly operation. The methods are required to be selected in such a manner, so as to maintain environmental equilibrium ensuring sustainable development.

In order to maintain the environmental commensuration with the mining operation, it is essential to undertake studies on the existing environmental scenario and assess the impact on different environmental components. This would help in formulating suitable management plans sustainable resource extraction.

Several scientific techniques and methodologies are available to predict impacts of physical environment. Mathematical models are the best tools to quantitatively describe the cause-and-effect relationships between sources of pollution and different components of environment. In cases where it is not possible to identify and validate a model for a particular situation, predictions have been arrived at based on logical reasoning / consultation / extrapolation.

The following parameters are of significance in the Environmental Impact Assessment and are being discussed in detail

- Land environment
- Soil environment
- Water Environment
- Air Environment
- Noise Environment
- Socio economic environment
- Biological Environment

Based on the baseline environmental status at the project site, the environmental factors that are likely to be affected (Impacts) are identified, quantified and assessed.

4.1 LAND ENVIRONMENT:

4.1.2 Anticipated Impact

- 13.52.5 Ha of the land will be under mining since the Permanent or temporary change on land use and land cover will occur
- Movement of heavy vehicles sometimes cause problems to agricultural land, human habitations due to dust, noise and it also causes traffic hazards.
- Due to degradation of land by pitting the aesthetic environment of the core zone may be affected.
- Earthworks during the rainy season increase the potential for soil erosion and sediment laden water entering the water ways.

If no due care is taken wash off from the exposed working area may choke the water course & can also causes the siltation of water course

4.1.2 Mitigation Measures

- The 13.52.5 Ha of the land will be converted into temporary reservoir which will full fill the water scarcity in the drought season and the nearby agriculture land will benefitted by the supply of water
- About 4350 Nos of trees will be planted in the lease area and approach road will retain the eco system
- The mining activity will be gradual confined in blocks and excavation will be undertaken progressively along with other mitigative measures like phase wise development in the production
- Construction of garland drains all around the quarry pits and construction of silt trap at strategic location in lower elevations to prevent erosion due to surface runoff during rainfall and also to collect the storm water for various uses within the proposed area.
- Green belt development along the boundary within safety zone. The small quantity of water stored in the mined-out pit will be used for greenbelt.
- Thick plantation will be carried out on unutilized area, top benches of mined out pits, on safety barrier, etc.,
- Fencing will be constructed before starting the mining operation and it will be maintained in the conceptual stage Security will be posted round the clock, to prevent inherent entry of the public and cattle.

4.1.3 Soil Environment

4.1.4 Impact on Soil Environment

- Removal of vegetation cover
- Soil Erosion in the project site during rainy season due to quarry operation

4.1.5 Mitigation Measures

- Garland drains will be constructed all around the project boundary to prevent surface flows from entering the quarry. And will be discharged into vegetated natural drainage lines, or as distributed flow across an area stabilised against erosion.
- Sedimentation ponds - Run-off from working areas will be routed towards sedimentation ponds (Silt pond). These trap sediment and reduce suspended sediment loads before runoff is discharged from the quarry site. Sedimentation ponds should be designed based on runoff, retention times, and soil characteristics. There may be a need to provide a series of sedimentation ponds to achieve the desired outcome.
- Retain vegetation – Retain existing or re-plant the vegetation at the site wherever possible.
- Monitoring and maintenance – Weekly monitoring and daily maintenance of erosion control systems so that they perform as specified specially during rainy season.

4.1.6 Waste Dump Management

There is no waste anticipated in this Rough Stone and gravel quarrying operation. The entire quarried out materials will be utilized (100%).

4.2 WATER ENVIRONMENT

4.2.1 Anticipated Impact

- The major sources of water pollution normally associated due to mining and allied operations are:
    - Generation of waste water from vehicle washing.
    - Washouts from surface exposure or working areas
    - Domestic sewage
    - Disturbance to drainage course in the project area
    - Mine Pit water discharge
- Increase in sediment load during monsoon in downstream of lease area
- This being a mining project, there will be no process effluent. Waste from washing of machinery may result in discharge of Oil & grease, suspended solids.
- The sewage from soak pit may percolate to the ground water table and contaminate it.

- Surface drainage may be affected due to Mining
- Abstraction of water may lead to depletion of water table
- 4.0 KLD water will be utilized for the quarrying operation

4.2.2 Mitigation Measures

- Water for the quarrying operation such as sprinkling on haul roads, Greenbelt development will be sourced from the lower part of the mine pit which is specifically allotted to collect the rain water.
- 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 out to the natural drainage
- Rainwater will be collected in sump in the mining pits and will be allowed to store and pumped out to surface setting tank of 15 m x 10m x 3m to remove suspended solids if any. This collected water will be judiciously used for dust suppression and such sites where dust likely to be generated and for developing green belt. The proponent will collect and judicially utilize the rainwater as part of rainwater harvesting system.
- Periodic (every 6 month once) analysis of quarry pit water and ground water quality in nearby villages.
- Domestic sewage from site office & urinals/latrines provided in ML is discharged in septic tank followed by soak pits.
- Waste water discharge from mine will be treated in settling tanks before using for dust suppression and tree plantation purposes.
- De-silting will be carried out before and immediately after the monsoon season.

4.3 AIR ENVIRONMENT

4.3.1. Anticipated Impact

- During mining, at various stages activities such as excavation, drilling, blasting, and transportation of materials, particular matter (PM), gases such as Sulphur dioxide, oxides of Nitrogen from vehicular exhaust are the main air pollutants.
- Emissions of noxious gases due to incomplete detonation of explosive may sometimes pollute the air.
- The fugitive dust released from the mining operations may cause effect on the mine workers who are directly exposed to the fugitive dust.
- Simultaneously, the air-borne dust may travel to longer distances and settle in the villages located near the mine lease area.

4.3.1.1. Modelling of Incremental Concentration from all Proposed Projects

Wind erosion of the exposed areas and the air borne particulate matter generated by quarrying operation, and transportation are mainly PM_{10} & $PM_{2.5}$ and emissions of Sulphur dioxide (SO_2) & Oxides of Nitrogen (NOx) due to excavation/loading equipment and vehicles plying on haul roads are the cause of air pollution in the project area.

Similarly, loading - unloading and transportation of Rough Stone, wind erosion of the exposed area and movement of light vehicles causes of pollution. This leads to an impact on the ambient air environment around the project area.

Anticipated incremental concentration due to this quarrying activity and net increase in emissions due to quarrying activities within 500 meters around the project area is predicted by Open Pit Source modelling using

AERMOD Software.

Prediction of impacts on air environment has been carried out taking into consideration cumulative production all the quarries fall in the Cluster. Air environment and net increase in emissions by Open pit source modelling in AERMOD Software AERMOD 12.

4.3.2.1 Emission Estimation

An emissions factor is a representative value that attempts to relate the quantity of a pollutant released to the atmosphere with an activity associated with the release of that pollutant.

The general equation for emissions estimation is:

$$E = A \times EF \times (1-ER/100)$$

Where:
E = emissions;
A = activity rate;
EF = emission factor, and
ER =overall emission reduction efficiency, %

The proposed mining activity includes various activities like ground preparation, excavation, handling and transport of Rough Stone. These activities have been analysed systematically basing on USEPA-Emission Estimation Technique Manual, for Mining AP-42, to arrive at possible emissions to the atmosphere and estimated emissions are given in Table 4-2.

4.3.2 Frame work of Computation & Model details

Suspended Particulate Matter (SPM) is the major pollutant occurred during quarrying activities. The prediction included the impact of Excavation, Drilling, Blasting (Occasionally), loading and movement of vehicles during transportation and meteorological parameters such as wind speed, wind direction, temperature, rainfall, humidity and Cloud cover.

Impact was predicted over the distance of 10 km around the source to assess the impact at each receptor separately at the various locations and maximum incremental GLC value at the project site. Maximum impact of PM_{10} was observed close to the source due to low to moderate wind speeds. Incremental value of PM_{10} was superimposed on the base line data monitored at the proposed site to predict total GLC of PM_{10} due to combined impacts

TABLE 4.1: ESTIMATED EMISSION RATE

PM_{10}			
Activity	**Source type**	**Value**	**Unit**
Drilling	Point Source	0.120411997	g/s
Blasting	Point Source	0.006122986	g/s
Mineral Loading	Point Source	0.048420054	g/s
Haul Road	Line Source	0.002519208	g/s/m
Overall Mine	Area Source	0.103343812	g/s
SO_2			
Activity	**Source type**	**Value**	**Unit**
Overall Mine	Area Source	0.00264353	g/s
NO_X			
Overall Mine	Area Source	0.000483912	g/s

FIGURE 4.1: AERMOD TERRAIN MAP

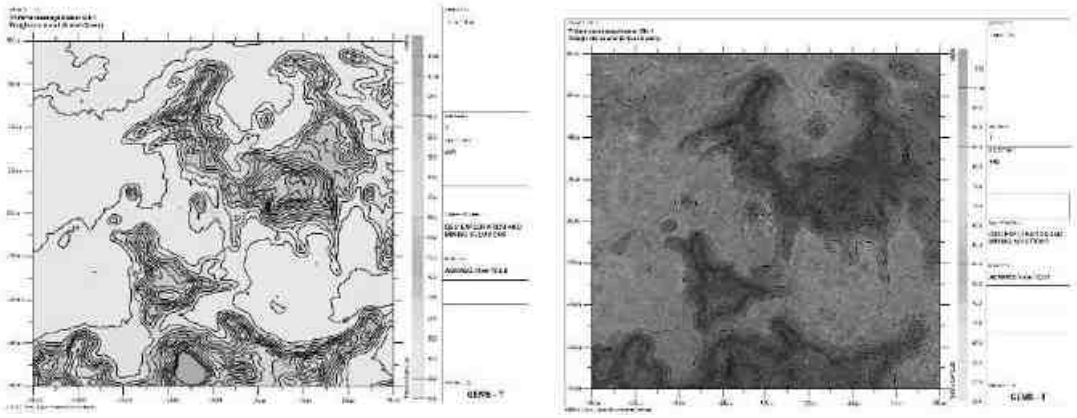


FIGURE 4.2: PREDICTED INCREMENTAL CONCENTRATION OF PM_{10}

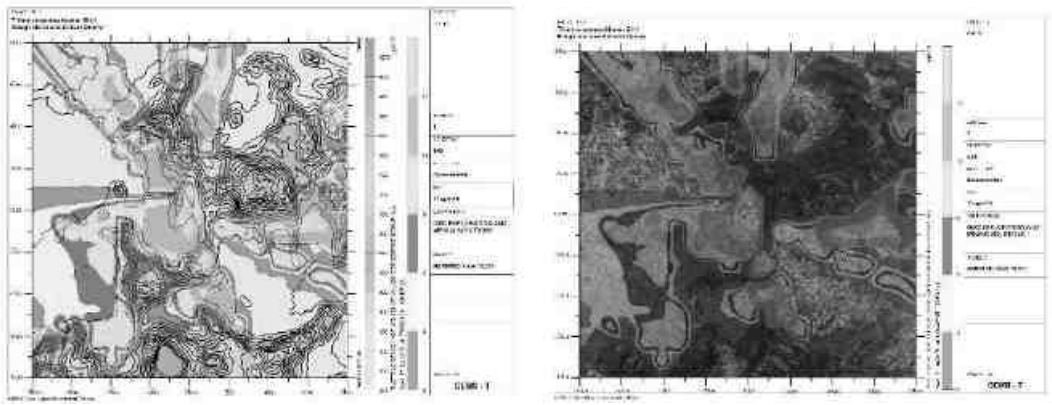


FIGURE 4.3: PREDICTED INCREMENTAL CONCENTRATION OF $PM_{2.5}$

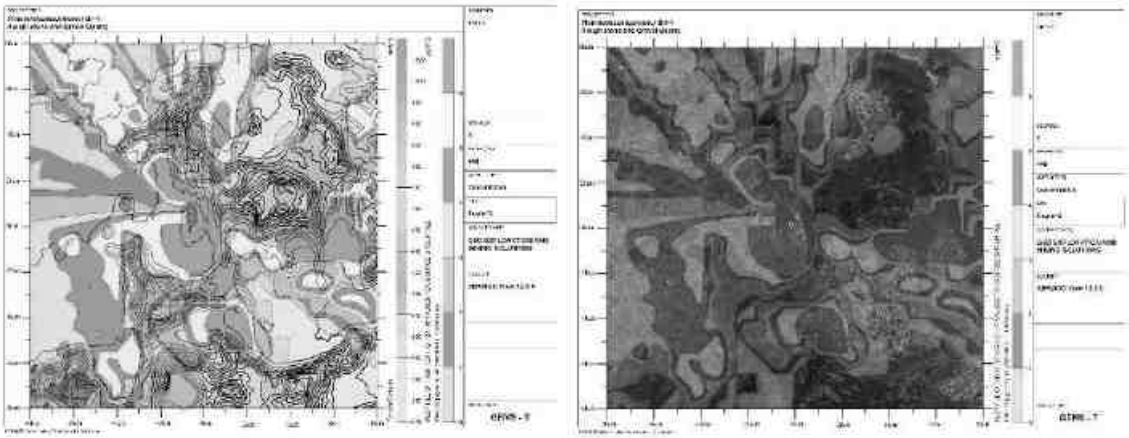


FIGURE 4.4: PREDICTED INCREMENTAL CONCENTRATION OF NO_X

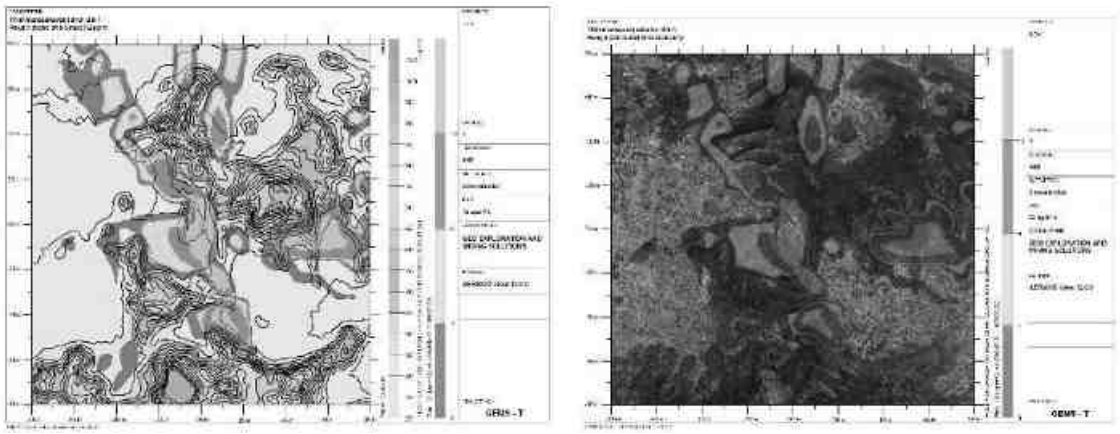


FIGURE 4.5: PREDICTED INCREMENTAL CONCENTRATION OF SO2

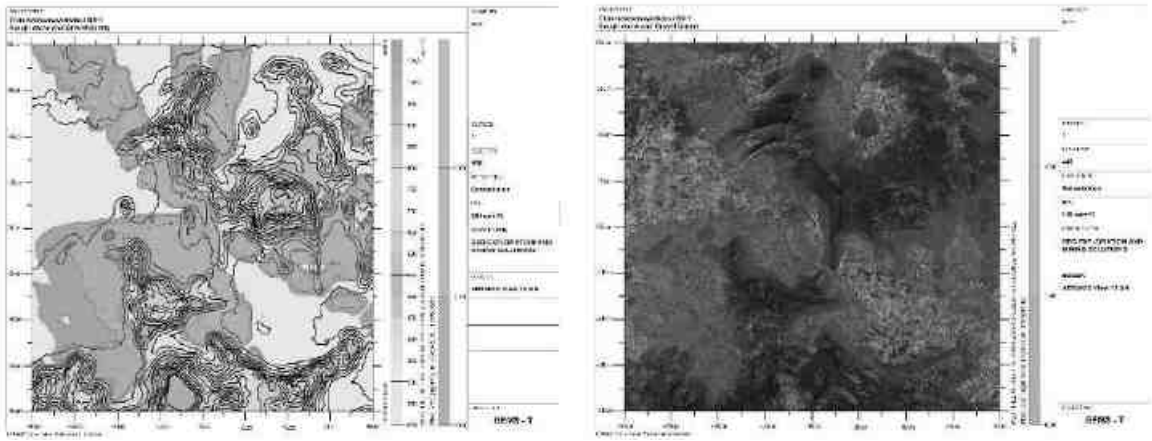
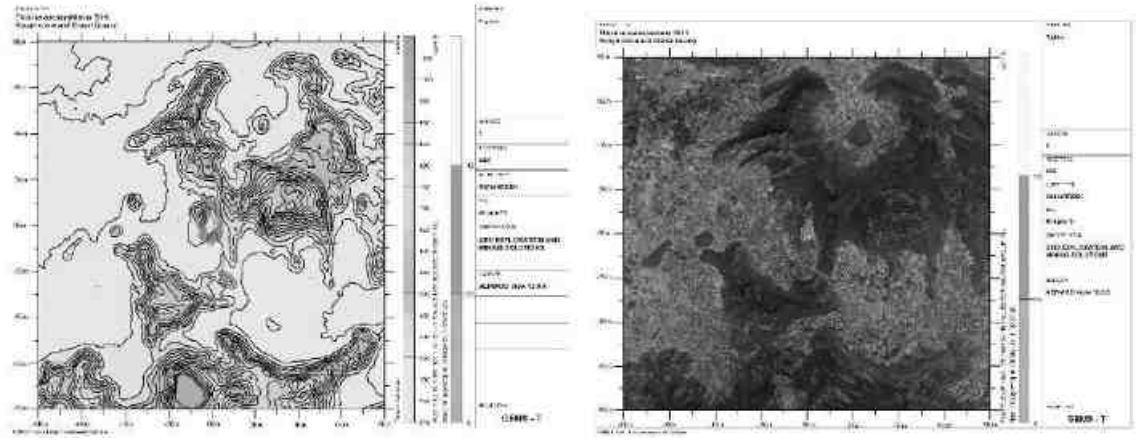


FIGURE 4.6: PREDICTED INCREMENTAL CONCENTRATION OF FUGITIVE DUST



4.3.2.1 Model Results

The post project Resultant Concentrations of PM_{10}, $PM_{2.5}$, SO_2 & NO_X (GLC) is given in Table below:

TABLE 4.2: INCREMENTAL & RESULTANT GLC OF PM_{10}

Station Code	Location	X Coordinate (m)	Y Coordinate (m)	Average Baseline PM_{10} ($\mu g/m^3$)	Incremental value of PM_{10} due to mining ($\mu g/m^3$)	Total PM_{10} ($\mu g/m^3$)
AAQ1	10° 0'0.48"N 77°41'32.32"E	126	177	46.0	17.92	63.91
AAQ2	9°59'49.01"N 77°41'22.68"E	-170	-176	46.3	17.64	63.94
AAQ3	9°59'40.47"N 77°41'37.08"E	274	-442	42.4	17.00	59.4
AAQ4	10° 0'3.05"N 77°40'39.71"E	-1487	258	42.8	12.00	54.8
AAQ5	9°58'27.86"N 77°38'34.94"E	-5319	-2694	43.4	8.15	51.55
AAQ6	9°58'38.99"N 77°43'56.91"E	4566	-2344	41.0	10.83	51.83
AAQ7	10° 2'59.18"N 77°42'39.57"E	2194	5716	43.0	0	43

TABLE 4.3: INCREMENTAL & RESULTANT GLC OF PM2.5

Station Code	Location	X Coordinate (m)	Y Coordinate (m)	Average Baseline $PM_{2.5}$ ($\mu g/m^3$)	Incremental value of $PM_{2.5}$ due to mining ($\mu g/m^3$)	Total $PM_{2.5}$ ($\mu g/m^3$)
AAQ1	10° 0'0.48"N 77°41'32.32"E	126	177	20.5	8.90	29.4
AAQ2	9°59'49.01"N 77°41'22.68"E	-170	-176	20.3	8.49	28.79
AAQ3	9°59'40.47"N 77°41'37.08"E	274	-442	20.7	8.00	28.7
AAQ4	10° 0'3.05"N 77°40'39.71"E	-1487	258	19.7	7.30	27
AAQ5	9°58'27.86"N 77°38'34.94"E	-5319	-2694	20.0	4.85	24.85
AAQ6	9°58'38.99"N 77°43'56.91"E	4566	-2344	20.4	5.71	26.11
AAQ7	10° 2'59.18"N 77°42'39.57"E	2194	5716	20.2	1.00	21.2

TABLE 4.4: INCREMENTAL & RESULTANT GLC OF SO2

Station Code	Location	X Coordinate (m)	Y Coordinate (m)	Average Baseline SO_2 ($\mu g/m^3$)	Incremental value due to mining ($\mu g/m^3$)	Total SO_2 ($\mu g/m^3$)
AAQ1	10° 0'0.48"N 77°41'32.32"E	126	177	5.3	2.89	8.19
AAQ2	9°59'49.01"N 77°41'22.68"E	-170	-176	6.0	2.85	8.85
AAQ3	9°59'40.47"N 77°41'37.08"E	274	-442	6.0	2.80	8.80
AAQ4	10° 0'3.05"N 77°40'39.71"E	-1487	258	5.4	2.45	7.85
AAQ5	9°58'27.86"N 77°38'34.94"E	-5319	-2694	6.8	1.62	7.70
AAQ6	9°58'38.99"N 77°43'56.91"E	4566	-2344	6.2	2.08	8.28
AAQ7	10° 2'59.18"N 77°42'39.57"E	2194	5716	6.2	0	6.2

TABLE 4.5: INCREMENTAL & RESULTANT GLC OF NOX

Station Code	Location	X Coordinate (m)	Y Coordinate (m)	Average Baseline NOx ($\mu g/m^3$)	Incremental value due to mining ($\mu g/m^3$)	Total NOx ($\mu g/m^3$)
AAQ1	10° 0'0.48"N 77°41'32.32"E	126	177	21.7	12.84	34.54
AAQ2	9°59'49.01"N 77°41'22.68"E	-170	-176	22.0	12.41	34.41
AAQ3	9°59'40.47"N 77°41'37.08"E	274	-442	21.6	12.06	33.66
AAQ4	10° 0'3.05"N 77°40'39.71"E	-1487	258	22.0	5.63	27.63
AAQ5	9°58'27.86"N 77°38'34.94"E	-5319	-2694	20.9	0	20.9
AAQ6	9°58'38.99"N 77°43'56.91"E	4566	-2344	21.3	2.00	23.3
AAQ7	10° 2'59.18"N 77°42'39.57"E	2194	5716	21.6	0	21.6

From the resultant of cumulative concentration i.e., Background + Incremental Concentration of pollutant in all the receptor locations without effective mitigation measures are still within the prescribed NAAQ limits of 100, 80 & 80 µg/m3 for PM10, SO2 & NOX respectively. By adopting suitable mitigation measures, the pollutant levels in the atmosphere can be further being controlled.

4.3.4. Mitigation Measures

Drilling – To control dust at source, wet drilling will be practiced. Where there is a scarcity of water, suitably designed dust extractor will be provided for dry drilling along with dust hood at the mouth of the drill-hole collar.

Advantages of Wet Drilling: -

- In this system dust gets suppressed close to its formation. Dust suppression become very effective and the work environment will be improved from the point of occupational comfort and health.
- Due to dust free atmosphere, the life of engine, compressor etc., will be increased.
- The life of drill bit will be increased.
- The rate of penetration of drill will be increased.
- Due to the dust free atmosphere visibility will be improved resulting in safer working conditions.

Blasting –

- Establish time of blasting to suit the local conditions and water sprinkling on blasting face
- Avoid blasting i.e., when temperature inversion is likely to occur and strong wind blows towards residential areas
- Controlled blasting includes Adoption of suitable explosive charge and short delay detonators, adequate stemming of holes at collar zone and restricting blasting to a particular time of the day i.e. at the time lunch hours, controlled charge per hole as well as charge per round of hole
- Before loading of material water will be sprayed on blasted material
- Dust mask will be provided to the workers and their use will be strictly monitored

Haul Road & Transportation –

- Water will be sprinkled on haul roads twice a day to avoid dust generation during transportation
- Transportation of material will be carried out during day time and material will be covered with taurpaulin
- The speed of tippers plying on the haul road will be limited below 20 km/hr to avoid generation of dust.

- Water sprinkling on haul roads & loading points will be carried out twice a day
- Main source of gaseous pollution will be from vehicle used for transportation of mineral; therefore, weekly maintenance of machines improves combustion process & makes reduction in the pollution.
- The un-metaled haul roads will be compacted weekly before being put into use.
- Over loading of tippers will be avoided to prevent spillage.
- It will be ensured that all transportation vehicles carry a valid PUC certificate
- Grading of haul roads and service roads to clear accumulation of loose materials

Green Belt –

- 680 Nos of trees will be planted through this project in the lease area and village roads (Approach Road) to prevent the generation of dust due to movement of dumpers/trucks
- Green belt of adequate width will be developed around the project areas

Occupational Health –

- Dust mask will be provided to the workers and their use will be strictly monitored
- Annual medical checkups, trainings and campaigns will be arranged to ensure awareness about importance of wearing dust masks among all mine workers & tipper drivers
- Ambient Air Quality Monitoring will be conducted six months once to assess effectiveness of mitigation measures proposed

4.4 NOISE ENVIRONMENT

Noise pollution is mainly due to operation like drilling & blasting and plying of trucks & HEMM. These activities will not cause any problem to the inhabitants of this area because there is no human settlement within 300m radius from the project site. Noise modelling has been carried out considering blasting and compressor operation (drilling) and transportation activities.

Predictions have been carried out to compute the noise level at various distances around the working pit due to these major noise-generating sources. Noise modelling has been carried out to assess the impact on surrounding ambient noise levels.

Basic phenomenon of the model is the geometric attenuation of sound. Noise at a point generates spherical waves, which are propagated outwards from the source through the air at a speed of 1,100 ft/sec, with the first wave making an ever-increasing sphere with time. As the wave spreads the intensity of noise diminishes as the fixed amount of energy is spread over an increasing surface area of the sphere. The assumption of the model is based on point source relationship i.e., for every doubling of the distance the noise levels are decreased by 6 dB (A).

For hemispherical sound wave propagation through homogeneous loss free medium, one can estimate noise levels at various locations at different sources using model based on first principle.

$$Lp_2 = Lp_1 - 20 \log (r_2/r_1) - Ae_{1,2}$$

Where:

Lp_1 & Lp_2 are sound levels at points located at distances r_1 & r_2 from the source.

$Ae_{1,2}$ is the excess attenuation due to environmental conditions. Combined effect of all sources can be determined at various locations by logarithmic addition.

$$Lp_{total} = 10 \log \{10^{(Lp1/10)} + 10^{(Lp2/10)} + 10^{(Lp3/10)} + \ldots\ldots\}$$

4.4.1 Anticipated Impact

Attenuation due to Green Belt has been taken to be 4.9 dB (A). The inputs required for the model are:

- Source data
- Receptor data
- Attenuation factor

Source data has been computed taking into account of all the machinery and activities used in the mining process. Same has been listed in Table 4-8.

TABLE 4.7: ACTIVITY AND NOISE LEVEL PRODUCED BY MACHINERY

Sl.No.	Machinery / Activity	Impact on Environment?	Noise Produced in dB(A) at 50 ft from source*
1	Blasting	Yes	94
2	Jack Hammer	Yes	88
3	Compressor	No	81
4	Excavator	No	85
5	Tipper	No	84
Total Noise Produced			95.8

Source: U.S. Department of Transportation (Federal Highway Administration) – Construction Noise Handbook

The total noise to be produced by mining machineries 95.8 dB (A). Generally, most mining operations produce noise between 100-109 dB (A). We have considered equipment and operation noise levels (max) to be approx. 109 dB (A) for nose prediction modelling.

TABLE 4.8: PREDICTED NOISE INCREMENTAL VALUES

Location ID	**N1**	**N2**	**N3**	**N4**	**N5**	**N6**	**N7**
Maximum Monitored Value (Day) dB(A)	47.9	38.9	37.8	39.7	41	38	39.9
Incremental Value dB(A)	60.1	52.5	45.1	36.4	24.6	25.9	24.2
Total Predicted Noise level dB(A)	60.4	52.7	45.9	41.4	41.1	38.3	40.0

The incremental noise level is found within the range of 52.7 – 60.4 dB (A) in Core Zone and 38.3 – 45.9 dB (A) in Buffer zone. The noise level at different receptors in buffer zone is lower due to the distance involved and other topographical features adding to the noise attenuation. The resultant Noise level due to monitored values and calculated values at the receptors are based on the mathematical formula considering attenuation due to Green Belt as 4.9 dB (A) the barrier effect. From the above table, it can be seen that the ambient noise levels at all the locations are within permissible limits of Industrial area (core zone) & Residential area (buffer zone) as per THE NOISE POLLUTION (REGULATION AND CONTROL) RULES, 2000 (The Principal Rules were published in the Gazette of India, vide S.O. 123(E), dated 14.2.2000 and subsequently amended vide S.O. 1046(E), dated 22.11.2000, S.O. 1088(E), dated 11.10.2002, S.O. 1569 (E), dated 19.09.2006 and S.O. 50 (E) dated 11.01.2010 under the Environment (Protection) Act, 1986.).

4.4.2 Mitigation Measures

The following noise mitigation measures are proposed for control of Noise

- Usage of sharp drill bits while drilling which will help in reducing noise;
- Secondary blasting will be totally avoided and hydraulic rock breaker will be used for breaking boulders;
- Controlled blasting with proper spacing, burden, stemming and optimum charge/delay will be maintained;
- Proper maintenance, oiling and greasing of machines will be done every week to reduce generation of noise;
- Provision of sound insulated chambers for the workers working on machines (HEMM) producing higher levels of noise;
- Silencers / mufflers will be installed in all machineries;
- Green Belt/Plantation will be developed around the project area and along the haul roads. The plantation minimizes propagation of noise;
- Personal Protective Equipment (PPE) like ear muffs/ear plugs will be provided to the operators of HEMM and persons working near HEMM and their use will be ensured though training and awareness.

- Regular medical check–up and proper training to personnel to create awareness about adverse noise level effects

4.4.3 Ground Vibrations

Ground vibrations due to the proposed mining activities are anticipated due to operation of Mining Machines like Excavators, drilling and blasting, transportation vehicles, etc., However, the major source of ground vibration from the quarry is blasting. The major impact of the ground vibrations is observed on the domestic houses located in the villages nearby the mine lease area. The kuchha houses are more prone to cracks and damage due to the vibrations induced by blasting whereas RCC framed structures can withstand more ground vibrations. Apart from this, the ground vibrations may develop a fear factor in the nearby settlements.

Another impact due to blasting activities is fly rocks. These may fall on the houses or agricultural fields nearby the mining lease area and may cause injury to persons or damage to the structures. Nearest habitation from the proposed project areas is listed in below table. The ground vibrations due to the blasting in the quarry are calculated using the empirical equation.

The empirical equation for assessment of peak particle velocity (PPV) is:

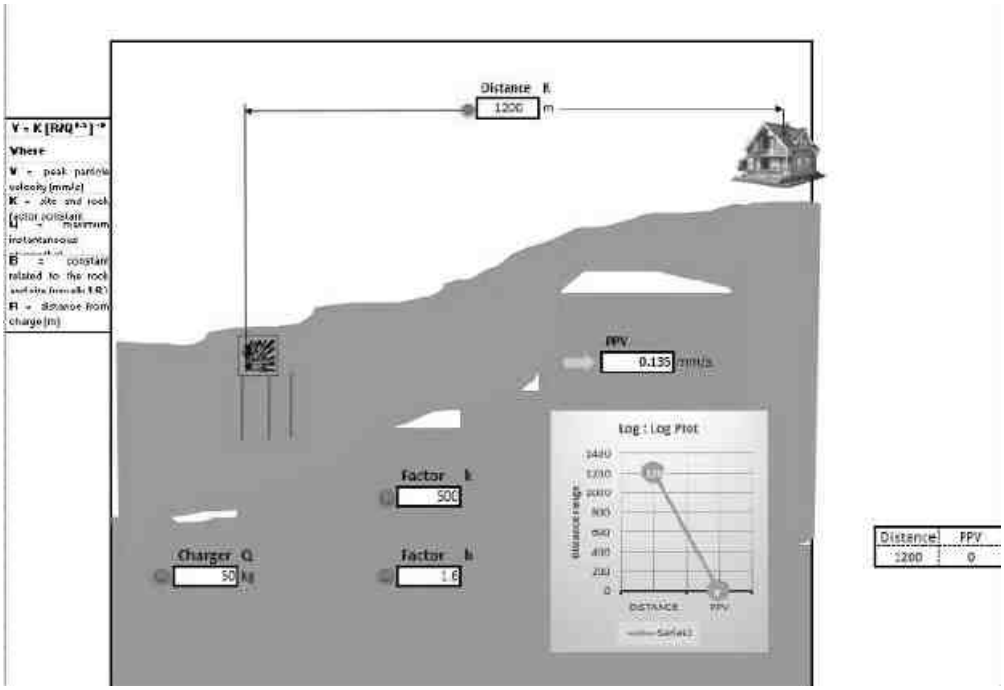
$$V = K\,[R/Q^{0.5}]^{-B}$$

Where –
V = peak particle velocity (mm/s)
K = site and rock factor constant
Q = maximum instantaneous charge (kg)
B = constant related to the rock and site (usually 1.6)
R = distance from charge (m)

TABLE 4.9: PREDICTED PPV VALUES DUE TO BLASTING

Location ID	Maximum Charge in kgs	Nearest Habitation in m		PPV in m/m
P1	50	1.2 km-SW		0.135

FIGURE 4.7: GROUND VIBRATION PREDICTION



From the above graph, the charge per blast 50 kg is well below the Peak Particle Velocity of 8 mm/s as per Directorate General of Mines Safety for safe level criteria through Circular No. 7 dated 29/8/1997. But the all the project proponents ensure that the charge per blast shall be less than 20kg and carry out blasting twice or thrice a day based on the onsite conditions under the supervision of competent person employed. However, as per statutory requirement control measures will be adopted to avoid the impacts due to ground vibrations and fly rocks due to blasting**.**

4.4.3.1 Mitigation Measures

- It is proposed to carry out blasting operation 50 kg per round so that the vibration will be minimal
- The mining operation will be carried out without deep hole drilling, 25mm small dia cartridge will be utilized for the blasting
- The blasting operations in the project site without deep hole drilling and blasting using delay detonators, which reduces the ground vibrations;
- Proper quantity of explosive, suitable stemming materials and appropriate delay system will be adopted to avoid overcharging and for safe blasting;
- Adequate safe distance from blasting will be maintained as per DGMS guidelines;
- Blasting shelter will be provided as per DGMS guidelines;
- Blasting operations will be carried out only during day time;
- The charge per delay will be minimized and preferably a greater number of delays will be used per blasts;
- During blasting, other activities in the immediate vicinity will be temporarily stopped;
- Drilling parameters like depth, diameter and spacing will be properly designed to give proper blast;
- A fully trained explosives blast man (Mining Mate, Mines Foreman, 2nd Class Mines Manager/ 1st Class Mines Manager) will be appointed.
- A set of shot firing rules will be drawn up and blasting shall commence outlining the detailed operating procedures that will be followed to ensure that shot firing operations on site take place without endangering the workforce or public.
- The detonators will be connected in a predetermined sequence to ensure that only one charge is detonated at any one time and a NONEL or similar type initiation system will be used.
- The detonation delay sequence shall be designed so as to ensure that firing of the holes is in the direction of free faces so as to minimise vibration effects.
- Appropriate blasting techniques shall be adopted such that the predicted peak particle velocity shall not exceed 8 mm/s.
- Vibration monitoring will be carried out every 6 months to check the efficacy of blasting practices

4.5. Impact on the Biological Environment

4.5.1. Anticipated Impact on agricultural land associated with flora

1. Dust particle settle on neighbouring agricultural land it is located about 100m on West side. Mostly dust emission from nearby crusher unit (300m Southeast side) and during operation and minerals are transported in approach roads.
2. There shall be negligible air emissions or effluents from the project site. During the loading of the truck, dust generation will be likely. This shall be a temporary effect and not anticipated to affect the surrounding vegetation significantly.

4.5.2 Mitigation Measures

4.5.2.1. General Guidelines for Green Belt Development

Drone survey was covered the green belt and fencing as per the terms of references. The green belt and plantation purposes in and around the proposed mine lease area native

species, fruit-bearing trees, medicinal plants, and dense canopy trees should be selected. These species should be tolerant to pollution levels as per Bio- Geography zones of India.

After the operation of mining production capacity, green belt and Plantation species should be in accordance with the Terms and Conditions of the Environmental Clearance Green belt is created not only for the purpose of protecting sensitive areas or maintaining the ecological balance but because they also act as efficient biological filters or sinks for particulate and gaseous emissions, generated by vehicular movements and various industrial and mining activities. Optimally designed green belts can be effective in reducing the impact of fugitive emissions and pollutants accidentally or otherwise released at ground levels.

4.5.2.2. Proposed Green Belt

Extensive green belt development will be started during the construction phase, which will continue till the operation of the plant. About 1500-2000 trees will be planted per hectare all around the plant, approach roads, and township premises. Locally available types of trees that are resistant to pollutants will be planted. In addition to the above, all open spaces available within the premises will be developed as nurseries, parks, gardens, and other forms of greenery. 5 m wide greenbelt will be developed along the plant premises, as per land available.

4.5.2.3. Development of Green Belt

The plantation matrix adopted for the green belt development includes pit of 0.3 m x 0.3 m in size with a spacing of 2 m x 2 m. In addition, earth filling and manure may also be required for the proper nutritional balance and nourishment of the sapling. It is also recommended that the plantation has to be taken up randomly and the landscaping aspects could be taken into consideration. Multi-layered plantations comprising of medium height trees (7 m to 10 m) and shrubs (5 m height) are proposed for the green belt.

4.5.3.4. Selection of Plant Species for Green Belt Development

It is also recommended that the plantation has to be taken up randomly and the landscaping aspects could be taken into consideration. Multi-layered plantations comprising of medium height trees (7 m to 10 m) and shrubs (5 m height) are proposed for the green belt. Green belt is plantation of trees for reducing the air pollution as they absorb both gaseous and particulate pollutant, thus removing them from atmosphere. Green plants form a surface capable of absorbing air pollutants and forming sinks for pollutants. It improves the aesthetic value of local environment. Under present project, green belts have been planned with emphasis on creating biodiversity; enhance natural surroundings and mitigating pollution. Regional tree saplings in eco-friendly bags like Pterocarpus marsupium, Pongamia pinnata, Limonia acidissima, and Cassia roxburghii will be planted along the Lease boundary and avenues as well as over non-active dumps with intervals 3m in between with the GPS Coordinates. The greenbelt development plan aims to overall improvement in the environmental conditions of the region Native plant species will be preferred.

- The species should be wind-firm and deep-rooted.
- The species should form a dense canopy.
- Fast-growing plants will be planted
- Species tolerance to air pollution like SO2 and NO2 should be preferred.
- Plants having large leaf area index will be considered
- Soil improving plants (Nitrogen fixing rapidly decomposable leaf litter).
- Attractive appearance with good flowering and fruit-bearing.
- Birds and insects attract tree species.
- Roadsides will be planted with local vegetation.

Table No 01. List of plant species proposed for Greenbelt development

S. No	Scientific name	Tamil Name
1	Aegle marmelos	Vilva maram
2	Albizia lebbeck	Vaagai maram
3	Cassia fistula	Konrai tree
4	Lannea coromandelica	Othiyam
5	Limonia acidissima	Vila maram
6	Syzygium cumini	Naval maram
7	Toona ciliata	Santhana Vembu
8	Ficus hispida	Aththi maram
9	Borassus flabellifer	Panai-maram
10	Madhuca longifolia	Illupai maram

(***Source:** Term of Reference-ToR)

Table No 02. Species suitable for abatement of noise and dust pollution

S. No	Botanical name	Common name
1	Azadirachta indica	Vembhu maram
2	Ficus religiosa	Arasan maram
3	Ficus hispida	Aththi maram
4	Bombax ceiba	Mul Elavu
5	Syzygium cumini	Naval maram
6	Tamarindus indica	Puliyamaram
7	Mangifera indica	Manga maram
8	Harwickia binata	Anjan maram
9	Delonix regia	Neruppu Kondrai
10	Cassia Fistula	Sara Kondrai

(***Source:** Guidance for Developing Green belts Manual, CPCB 2000)

The above-suggested list covers species with thick canopy cover, perennial green nature, native origin, and a large leaf area index. The proposed species will help in forming an effective barrier between the mine site area and the surroundings.

These species need to be planted along the periphery of the lease area for absorb fugitive emissions and noise levels which is generated during mining activities. All the open spaces, where tree plantation may not be possible, should be covered with shrubs and grass to prevent erosion of topsoil.

4.5.4. Anticipated Impact on Fauna

- Noise generation due to vehicle may affect avifauna.
- The lease area is not inhabited by any wild life, as there is no forest cover, hence there will not be any effect on migration or extinction of wildlife.
- There is no National Park, Biosphere Reserve, Wildlife corridors, and Tiger/Elephant Reserve found within 10 km radius of the project site.

4.5.4.1. Measures for protection and conservation of wildlife species

- Topsoil has a large number of seeds of native plant species in the mining area.
- Topsoil will be used for restoration and suitable surfaces for planted seedlings.
- Checks and controls the movement of vehicles in and out of the mine.
- Undertaking mitigative measures for a conducive environment to the flora and fauna in consultation with Forest Department.
- A dust suppression system will be installed within the mine and periphery of the mine.
- Plantation around the mine area will help in creating habitats for small faunal species and create a better environment for various fauna. Creating and developing awareness for nature and wildlife in the adjoining villages.

4.5.3. Impact on Aquatic Biodiversity

- The major lake along the project sites doesn't have a rich biodiversity and almost all the species of both fauna and flora listed are either least concerned or not evaluated.
- There is no impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.

Table No. 03. Overall Ecological impact assessments of Thimmarasanayakkanur Bit-1 Village, Rough stone and gravel quarry, Andipatti Taluk, Theni District.

S. No	Attributes	Assessment
	Activities of the project affect the breeding/nesting sites of birds and animals	No breeding and nesting site was identified in the mining lease site. The fauna sighted mostly migrated from the buffer area.
2	Located near an area populated by rare or endangered species	No Endangered, Critically Endangered, or vulnerable species were sighted in the core mining lease area.
3	Proximity to national park/wildlife sanctuary/reserve forest /mangroves/ coastline/estuary/sea	Andipatti North R.F. – 240m – East. Forest Letter is enclosed. Megamalai Wildlife Sanctuary- 8.7km – SW (Eco sensitive zone-8.01km SW) Kodaikanal Wildlife Sanctuary -18.5km-NW (Eco sensitive zone-17.50km NW)
4	The proposed project restricts access to waterholes for wildlife	'No '

5	Proposed mining project impact surface water quality that also provides water to wildlife	'No 'scheduled or threatened wildlife animals are sighted regularly core in the core area.
6	Proposed mining project increase siltation that would affect nearby biodiversity areas.	Surface runoff management such as drains is constructed properly so there will be no siltation effect in the nearby mining area.
7	Risk of fall/slip or cause death to wild animals due to project activities.	'No'
8	The project release effluents into a water body that also supplies water to a wildlife.	No water body near to core zone so the chances of water becoming polluted is low.
9	Mining projects affect the forest-based livelihood/ any specific forest product on which local livelihood depended.	'No'
10	The project likely to affect migration routes.	'No 'migration route was observed during the monitoring period.
11	The project is likely to affect the flora of an area, which have medicinal value	'No'
12	Forestland is to be diverted, has carbon high sequestration.	'No 'There was no forest land diverted.
13	The project is likely to affect wetlands, Fish breeding grounds, and marine ecology.	'No'. Wetland was not present in the near core Mining lease area. No breeding and nesting ground is present in the core mining area.

(***Source:** EIA Guidance Manual-Mining and Minerals, 2010)

Table No. 04. Anticipated impact of Ecology and Biodiversity in Thimmarasanayakkanur Bit-1 Village, Rough stone and gravel quarry, Andipatti Taluk, Theni District

Sl. No	Aspect Description	Likely Impacts on Ecology and Biodiversity (EB)	Impact Consequence Probability Description / Justification	Significance	Mitigation Measures
Pre-Mining Phase					
1	Uprooting of vegetation of lease area	-Site specific loss of common floral diversity (Direct impact)	Site possesses Common floral (not trees) species. Clearance of these species will not result in loss of flora	Less severe	No immediate action required. However Greenbelt /plantation will be developed in project site and in periphery of the project boundary, which will improve flora and fauna diversity of the project area.
		Site specific loss of associated faunal diversity (Partial impact)	Site supports only common species, which use wide variety of habitats of the buffer zone reserve forest area. So there is no threat of faunal diversity.		
		-Loss of Habitat (Direct impact)	Site does not form unique / critical habitat structure for unique flora or fauna.		
Mining phase					
2	Excavation of mineral using machine and labors, Transportation on activities will generate noise.	Site-specific Disturbance to normal faunal movements at the site due to noise. (Partial impact)	Site does not form unique / critical habitat structure for unique flora or fauna.	Less severe	Mining activity should not be operated after 5PM. -Excavation of dump and transportation work should stop before 7PM.
3	Vehicular Movement for transportation of materials will result in generation of dust (SPM) due to haul roads and emission of SO2,NO2,CO etc.	Impact on Surrounding agriculture and associated fauna due to deposition of dust and emission of CO. (Indirect impact)	Impact is less as the agricultural land far from core area.	Less severe	-All vehicles will be certified for appropriate Emission levels. -More plantation have been suggested -Upgrade the vehicles with alternative fuel such biodiesel, methanol and biofuel around the mining area.

TABLE 4.10: GREENBELT DEVELOPMENT PLAN

Year	No. of tress proposed to be planted	Area to be covered in m^2	Name of the species
I	4350	The safety zone along the boundary barrier has been identified to be utilized for Greenbelt development and along village roads.	Vilvam, Aathi, Puvarasu & Pungam

4.6 SOCIO ECONOMIC

4.6.1 Anticipated Impact

- Dust generation from mining activity can have negative impact on the health of the workers and people in the nearby area.
- Approach roads can be damaged by the movement of tippers
- Increase in Employment opportunities both direct and indirect thereby increasing economic status of people of the region

4.6.2 Mitigation Measures

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

4.7 OCCUPATIONAL HEALTH AND SAFETY

Occupational health and safety hazards occur during the operational phase of mining and primarily include the following:

- Respiratory hazards
- Noise
- Physical hazards
- Explosive storage and handling

4.7.1 Respiratory Hazards

Long-term exposure to silica dust may cause silicosis the following measures are proposed:

- Cabins of excavators and tippers will be enclosed with AC and sound proof
- Use of personal dust masks will be made compulsory

4.7.2 Noise

Workers are likely to get exposed to excessive noise levels during mining activities. The following measures are proposed for implementation

- No employee will be exposed to a noise level greater than 85 dB(A) for a duration of more than 8 hours per day without hearing protection
- The use of hearing protection will be enforced actively when the equivalent sound level over 8 hours reaches 85 dB(A), the peak sound levels reach 140 dB(C), or the average maximum sound level reaches 110 dB(A)
- Ear muffs provided will be capable of reducing sound levels at the ear to at least 85 dB(A)
- Periodic medical hearing checks will be performed on workers exposed to high noise levels

4.7.3 Physical Hazards

The following measures are proposed for control of physical hazards

- Specific personnel training on work-site safety management will be taken up;
- Work site assessment will be done by rock scaling of each surface exposed to workers to prevent accidental rock falling and / or landslide, especially after blasting activities;

- Natural barriers, temporary railing, or specific danger signals will be provided along rock benches or other pit areas where work is performed at heights more than 2m from ground level;
- Maintenance of yards, roads and footpaths, providing sufficient water drainage and preventing slippery surfaces with an all-weather surface, such as coarse gravel will be taken up

4.7.4 Occupational Health Survey

All the persons will undergo pre-employment and periodic medical examination. Employees will be monitored for occupational diseases by conducting the following tests

- General physical tests
- Audiometric tests
- Full chest, X-ray, Lung function tests, Spirometric tests
- Periodic medical examination – yearly
- Lung function test – yearly, those who are exposed to dust
- Eye test

Essential medicines will be provided at the site. The medicines and other test facilities will be provided at free of cost. The first aid box will be made available at the mine for immediate treatment. First aid training will be imparted to the selected employees regularly. The lists of first aid trained members shall be displayed at strategic places.

4.8 MINE WASTE MANAGEMENT

No waste is anticipated, the entire mined out material will be sold to needy crushers and customers.

4.9 MINE CLOSURE

The ultimate depth of the mine is 59m bgl and the life of the mine is 5 years, after completion of mining operation the following action will be taken in the project site as a part of Mine closure plan

- The total Mined out land would be around 8.76.5 Ha this land will be converted into temporary water reservoir which will facilitate to collect the rain water
- The stagnant water will be supplied to the nearby agriculture land during drought seasons
- Fencing will be re constructed around the pit after closure, the warning/ danger display board will be placed on all the sides of the project site
- The un utilized area and haul roads will be converted as plantation area, fruit bearing trees will be planted to retain the eco system of the area
- Final Mine closure plan will be prepared and submitted to the concerned authority

Mine closure plan is the most important environmental requirement in mining project. The mine closure plan should cover technical, environmental, social, legal and financial aspects dealing with progressive and post closure activities. The closure operation is a continuous series of activities starting from the decommissioning of the project.

As progressive mine closure is a continuous series of activities, it is obvious that the proposals of scientific mining have included most of the activities to be included in the closure plan. While formulating the closure objectives for the site, it is important to consider the existing or the pre-mining land use of the site; and how the operation will affect this activity.

The primary aim is to ensure that the following broad objectives along with the abandonment of the mine can be successfully achieved:

- To create a productive and sustainable after-use for the site, acceptable to mine owners, regulatory agencies, and the public
- To protect public health and safety of the surrounding habitation
- To minimize environmental damage
- To conserve valuable attributes and aesthetics
- To overcome adverse socio-economic impacts.

4.9.1 Mine Closure Criteria

The criteria involved in mine closure are discussed below:

4.9.1.1 Physical Stability

All anthropogenic structures, which include mine workings, buildings, rest shelters etc., remaining after mine decommissioning should be physically stable. They should present no hazard to public health and safety as a result of failure or physical deterioration and they should continue to perform the functions for which they were designed. The design periods and factors of safety proposed should take full account of extreme events such as floods, hurricane, winds or earthquakes, etc. and other natural perpetual forces like erosion, etc.,

4.9.1.2 Chemical Stability

The solid wastes on the mine site should be chemically stable. This means that the consequences of chemical changes or conditions leading to leaching of metals, salts or organic compounds should not endanger public health and safety nor result in the deterioration of environmental attributes. If the pollutant discharge likely to cause adverse impacts is predicted in advance, appropriate mitigation measures like settling of suspended solids or passive treatment to improve water quality as well as quantity, etc., could be planned. Monitoring should demonstrate that there is no adverse effect of pollutant concentrations exceeding the statutory limits for the water, soil and air qualities in the area around the closed mine.

4.9.1.3 Biological Stability

The stability of the surrounding environment is primarily dependent upon the physical and chemical characteristics of the site, whereas the biological stability of the mine site itself is closely related to rehabilitation and final land use. Nevertheless, biological stability can significantly influence physical or chemical stability by stabilizing soil cover, prevention of erosion/wash off, leaching, etc.,

A vegetation cover over the disturbed site is usually one of the main objectives of the rehabilitation programme, as vegetation cover is the best long-term method of stabilizing the site. When the major earthwork components of the rehabilitation programme have been completed, the process of establishing a stable vegetation community begins. For re-vegetation, management of soil nutrient levels is an important consideration. Additions of nutrients are useful under three situations.

- Where the nutrient level of spread topsoil is lower than material in-situ e.g., for development of social forestry
- Where it is intended to grow plants with a higher nutrient requirement than those occurring naturally e.g., planning for agriculture
- Where it is desirable to get a quick growth response from the native flora during those times when moisture is not a limiting factor e.g., development of green barriers

The Mine closure plan should be as per the approved mine plan. The mine closure is a part of approved mine plan and activities of closure shall be carried out as per the process described in mine closure plan.

5. ANALYSIS OF ALTERNATIVES (TECHNOLOGY AND SITE)

5.1 INTRODUCTION

Consideration of alternatives to a project proposal is a requirement of EIA process. During the scoping process, alternatives to a proposal can be considered or refined, either directly or by reference to the key issues identified. A comparison of alternatives helps to determine the best method of achieving the project objectives with minimum environmental impacts or indicates the most environmentally friendly and cost-effective options.

5.2 FACTORS BEHIND THE SELECTION OF PROJECT SITE

Thiru C.Selvam Rough Stone and gravel quarry Project at Thimmarasanayakkanur Bit - 1 Village is a mining project for excavation of Rough Stone, which is site specific. All the proposed mining lease areas have following advantages: -

- The mineral deposit occurs in a non-forest area.
- There is no habitation within the project area; hence no R & R issues exist.
- There is no river, stream, nallah and water bodies in the applied mine lease areas.
- Availability of skilled, semi-skilled and unskilled workers in this region.
- All the basic amenities such as medical, firefighting, education, transportation, communication and infrastructural facilities are well connected and accessible.
- The mining operations will not intersect the ground water level. Hence, no impact on ground water environment.
- Study area falls in seismic zone – III, there is no major history of landslides, earthquake, subsidence etc., recorded in the past history

5.3 ANALYSIS OF ALTERNATIVE SITE

No alternatives are suggested as all the mine sites are mineral specific

5.4 FACTORS BEHIND SELECTION OF PROPOSED TECHNOLOGY

Mechanized open cast mining operation with drilling and blasting method will be used to extract Rough Stone in the area. All the applied mining lease areas have following advantages –

- As the mineral deposition is homogeneous and batholith formation, therefore opencast method of working is preferred over underground method
- The material will be loaded with the help of excavators into dumpers / trippers and transported to the needy customers.
- Blasting and availability of drills along with controlled blasting technology gives desired fragmentation so that the mineral is handled safely and used without secondary blasting.
- Semi-skilled labours fit for quarrying operations are easily available around the nearby villages

5.5 ANALYSIS OF ALTERNATIVE TECHNOLOGY

Open cast mechanized method has been selected for these projects. This technology is having least gestation period, economically viable, safest and less labour intensive. The method has inbuilt flexibility for increasing or decreasing the production as per market condition.

6. ENVIRONMENTAL MONITORING PROGRAMME

6.0 GENERAL

The monitoring and evaluation of environmental parameters indicates potential changes occurring in the environment, which paves way for implementation of rectifying measures wherever required to maintain the status of the natural environment. Evaluation is also a very effective tool to judge the effectiveness or deficiency of the measures adopted and provides insight for future corrections.

The main objective of environmental monitoring is to ensure that the obtained results in respect of environmental attributes and prevailing conditions during operation stage are in conformity with the prediction during the planning stage. In case of substantial deviation from the earlier prediction of results, this forms as base data to identify the cause and suggest remedial measures. Environmental monitoring is mandatory to meet compliance of statutory provisions under the Environment (Protection) Act, 1986, relevant conditions regarding monitoring covered under EC orders issued by the SEIAA as well as the conditions set forth under the order issued by Tamil Nadu Pollution Control Board while granting CTO.

6.1 METHODOLOGY OF MONITORING MECHANISM

Implementation of EMP and periodic monitoring will be carried out by Respective Project Proponents. A comprehensive monitoring mechanism has been devised for monitoring of impacts due to proposed projects; Environmental protection measures like dust suppression, control of noise and blast vibrations, maintenance of machinery and vehicles, housekeeping in the mine premises, plantation, implementation of Environmental Management Plan and environmental clearance conditions will be monitored by the Respective Mine Management. On the other hand, implementation of area level protection measures like green belt development, environmental quality monitoring etc., are taken up by a senior executive who reports to their Mine Management.

An Environment monitoring cell (EMC) will be constituted to monitor the implementation of EMP and other environmental protection measures in all the proposed quarries.

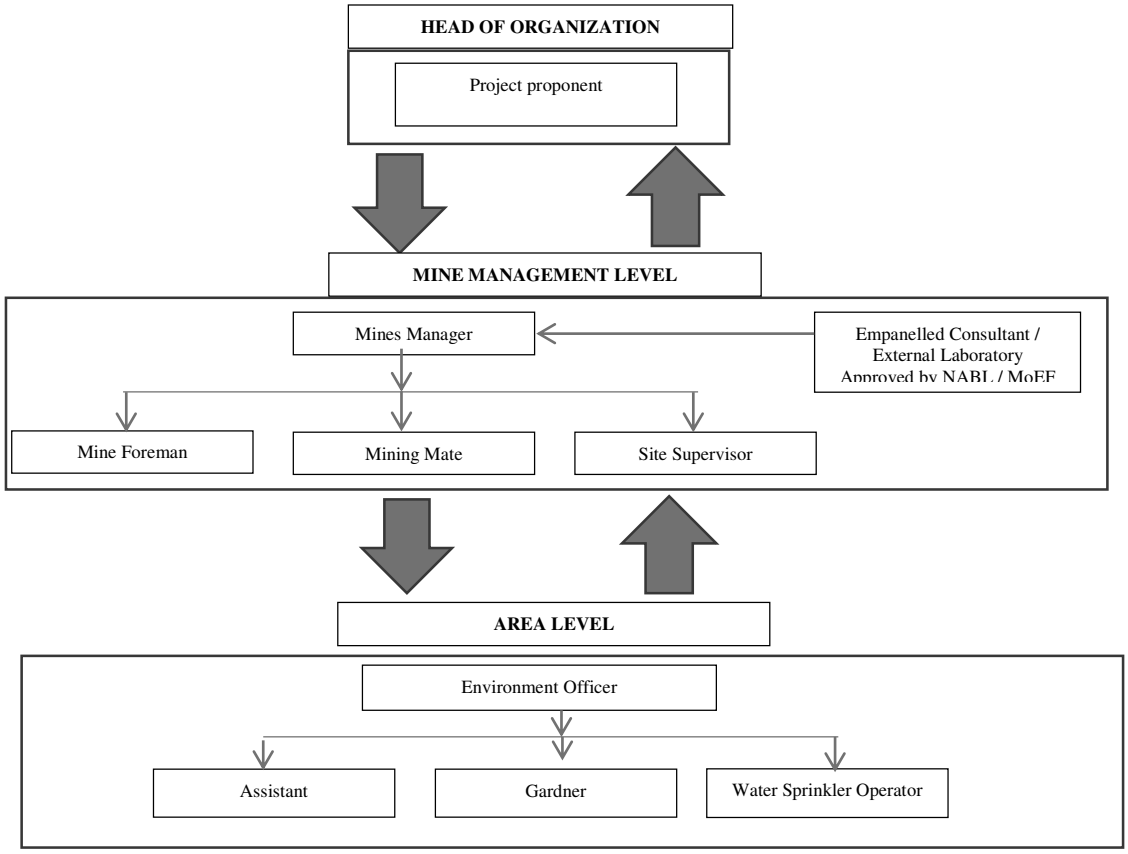
The responsibilities of this cell will be:

- Implementation of pollution control measures
- Monitoring programme implementation
- Post-plantation care
- To check the efficiency of pollution control measures taken
- Any other activity as may be related to environment
- Seeking expert's advice when needed.

The environmental monitoring cell will co-ordinate all monitoring programs at site and data thus generated will be regularly furnished to the State regulatory agencies as compliance status reports.

The sampling and analysis report of the monitored environmental attributes will be submitted to the Tamil Nadu Pollution Control Board (TNPCB) at a frequency of half-yearly and yearly by each proposed project proponent. The half-yearly reports are submitted to Ministry of Environment and Forest, Regional Office and SEIAA as well. The sampling and analysis of the environmental attributes will be as per the guidelines of Central Pollution Control Board (CPCB)/Ministry of Environment, Forest and Climate Change (MoEF & CC).

FIGURE 6.1: PROPOSED ENVIRONMENTAL MONITORING CELL



* The Environmental Monitoring Cell will be formed in all the proposed projects

6.2 IMPLEMENTATION SCHEDULE OF MITIGATION MEASURES

The mitigation measures proposed in Chapter-4 will be implemented so as to reduce the impact on the environment due to the operations of the proposed project. Implementation schedule of mitigation measures is given in Table 6.1.

TABLE 6.1 IMPLEMENTATION SCHEDULE

Sl No.	Recommendations	Time Period	Schedule
1	Land Environment Control Measures	Before commissioning of the project	Immediately after the commencement of project
2	Soil Quality Control Measures	Before commissioning of the project	Immediately after the commencement of project
3	Water Pollution Control Measures	Before commissioning of the project and along with mining operation	Immediately and as project progress
4	Air Pollution Control Measures	Before commissioning of the project and along with mining operation	Immediately and as project progress
5	Noise Pollution Control Measures	Before commissioning of the project and along with mining operation	Immediately and as project progress

6	Ecological Environment	Phase wise implementation every year along with mine operations	Immediately and as project progress

6.3 MONITORING SCHEDULE AND FREQUENCY

Monitoring shall confirm that commitments are being met. This may take the form of direct measurement and recording of quantitative information, such as amounts and concentrations of discharges, emissions and wastes, for measurement against statutory standards. Monitoring may include socio-economic interaction, through local liaison activities or even assessment of complaints.

The environmental monitoring will be conducted in the mine operations as follows:

- Air quality;
- Water and wastewater quality;
- Noise levels;
- Soil Quality; and
- Greenbelt Development

The details of monitoring is detailed in Table 6.2

TABLE 6.2: PROPOSED MONITORING SCHEDULE POST EC

S.No.	Environment Attributes	Location	Monitoring		Parameters
			Duration	Frequency	
1	Air Quality	2 Locations (1 Core & 1 Buffer)	24 hours	Once in 6 months	Fugitive Dust, $PM_{2.5}$, PM_{10}, SO_2 and NO_x.
2	Meteorology	At mine site before start of Air Quality Monitoring & IMD Secondary Data	Hourly / Daily	Continuous online monitoring	Wind speed, Wind direction, Temperature, Relative humidity and Rainfall
3	Water Quality Monitoring	2 Locations (1SW & 1 GW)	-	Once in 6 months	Parameters specified under IS:10500, 1993 & CPCB Norms
4	Hydrology	Water level in open wells in buffer zone around 1 km at specific wells	-	Once in 6 months	Depth in bgl
5	Noise	2 Locations (1 Core & 1 Buffer)	Hourly – 1 Day	Once in 6 months	Leq, Lmax, Lmin, Leq Day & Leq Night
6	Vibration	At the nearest habitation (in case of reporting)	–	During blasting Operation	Peak Particle Velocity
7	Soil	2 Locations (1 Core & 1 Buffer)	–	Once in six months	Physical and Chemical Characteristics
8	Greenbelt	Within the Project Area	Daily	Monthly	Maintenance

Source: Guidance of manual for mining of minerals, February 2010

6.4 BUDGETARY PROVISION FOR EMP

The cost in respect of monitoring of environmental attributes, parameter to be monitored, sampling/monitoring locations with frequency and cost provision against each proposal is shown in Table 6.3. Monitoring work will be outsourced to external laboratory approved by NABL / MoEF.

The proposed capital cost for Environmental Monitoring Programme is Rs 76,000/- and the recurring cost is Rs 76,000/- per annum for each Proposed Project.

TABLE 6.3 ENVIRONMENT MONITORING BUDGET

Sl.No.	Parameter	Capital Cost	Recurring Cost per annum
1	Air Quality	Rs. 76,000/-	Rs. 76,000/-
2	Meteorology		
3	Water Quality		
4	Hydrology		
5	Soil Quality		
6	Noise Quality		
7	Vibration Study		
Total		**Rs 76,000/-**	**Rs 76,000/-**

Source: Approved Mining Plan

6.5 REPORTING SCHEDULES OF MONITORED DATA

The monitored data on air quality, water quality, noise levels and other environmental attributes will be periodically examined by the Cluster Mine Management Coordinator and Respective Head of Organization for taking necessary corrective measures. The monitoring data will be submitted to Tamil Nadu State Pollution Control Board in the Compliance to CTO Conditions & environmental audit statements every year to MoEF & CC and Half-Yearly Compliance Monitoring Reports to MoEF & CC Regional Office and SEIAA.

Periodical reports to be submitted to: -

- MoEF & CC – Half yearly status report
- TNPCB - Half yearly status report
- Department of Geology and Mining: quarterly, half yearly annual reports

Besides the Mines Manager/Agent of respective project will submit the periodical reports to –

- Director of mines safety,
- Labour enforcement officer,
- Controller of explosives as per the norms stipulated by the department.

7. ADDITIONAL STUDIES

7.0 GENERAL

The following Additional Studies were done as per items identified by project proponent and items identified by regulatory authority. And items identified by public and other stakeholders will be incorporated after Public Hearing.

- Public Consultation
- Risk Assessment
- Disaster Management Plan
- Cumulative Impact Study
- Plastic Waste Management

7.1. PUBLIC CONSULTATION

Application to The Member Secretary of the Tamil Nadu Pollution Control Board (TNPCB) to conduct Public Hearing in a systematic, time bound and transparent manner ensuring widest possible public participation at the project site or in its close proximity in the district is submitted along with this Draft EIA / EMP Report and the outcome of public hearing proceedings will be detailed in the Final EIA/EMP Report.

7.2 RISK ASSESSMENT

The methodology for the risk assessment has been based on the specific risk assessment guidance issued by the Directorate General of Mine Safety (DGMS), Dhanbad, vide Circular No.13 of 2002, dated 31st December, 2002. The DGMS risk assessment process is intended to identify existing and probable hazards in the work environment and all operations and assess the risk levels of those hazards in order to prioritize those that need immediate attention. Further, mechanisms responsible for these hazards are identified and their control measures, set to timetable are recorded along with pinpointed responsibilities.

The whole quarry operation will be carried out under the direction of a Qualified Competent Mine Manager holding certificate of competency to manage a metalliferous mine granted by the DGMS, Dhanbad for all proposed projects. Risk Assessment is all about prevention of accidents and to take necessary steps to prevent it from happening.

Factors of risks involved due to human induced activities in connection with these proposed mining & allied activities with detailed analysis of causes and control measures for the mine is given in below Table 7.1.

TABLE 7.1 RISK ASSESSMENT& CONTROL MEASURES

S. No	Risk factors	Causes of risk	Control measures
1	Accidents due to explosives and heavy mining machineries	Improper handling and unsafe working practice	All safety precautions and provisions of Mine Act, 1952, Metalliferous Mines Regulation, 1961 and Mines Rules, 1955 will be strictly followed during all mining operations; Workers will be sent to the Training in the nearby Group Vocational Training Centre Entry of unauthorized persons will be prohibited; Fire-fighting and first-aid provisions in the mine office complex and mining area; ㄱ

			Provisions of all the safety appliances such as safety boot, helmets, goggles etc. will be made available to the employees and regular check for their use Working of quarry, as per approved plans and regularly updating the mine plans; Cleaning of mine faces on daily basis shall be daily done in order to avoid any overhang or undercut; Handling of explosives, charging and firing shall be carried out by competent persons only under the supervision of a Mine Manager; Maintenance and testing of all mining equipment as per manufacturer 's guidelines.
2	Drilling	Improper and unsafe practices Due to high pressure of compressed air, hoses may burst Drill Rod may break	Safe operating procedure established for drilling (SOP) will be strictly followed. Only trained operators will be deployed. No drilling shall be commenced in an area where shots have been fired until the blaster/blasting foreman has made a thorough Examination of all places, Drilling shall not be carried on simultaneously on the benches at places directly one above the other. Periodical preventive maintenance and replacement of worn-out accessories in the compressor and drill equipment as per operator manual. All drills unit shall be provided with wet drilling shall be maintained in efficient working in condition. Operator shall regularly use all the personal protective equipment.
4	Blasting	Fly rock, ground vibration, Noise and dust. Improper charging, stemming & Blasting/ fining of blast holes Vibration due to movement of vehicles	Restrict maximum charge per delay as per regulations and by optimum blast hole pattern, vibrations will be controlled within the permissible limit and blasting can be conducted safely. SOP for Charging, Stemming & Blasting/Firing of Blast Holes will be followed by blasting crew during initial stage of operation Shots are fired during daytime only. All holes charged on any one day shall be fired on the same day. The danger zone will be distinctly demarcated (by means of red flags)

5	Transportation	Potential hazards and unsafe workings contributing to accident and injuries Overloading of material While reversal & overtaking of vehicle Operator of truck leaving his cabin when it is loaded.	Before commencing work, drivers personally check the dumper/truck/tipper for oil(s), fuel and water levels, tyre inflation, general cleanliness and inspect the brakes, steering system, warning devices including automatically operated audio-visual reversing alarm, rear view mirrors, side indicator lights etc., are in good condition. Not allow any unauthorized person to ride on the vehicle nor allow any unauthorized person to operate the vehicle. Concave mirrors should be kept at all corners All vehicles should be fitted with reverse horn with one spotter at every tipping point Loading according to the vehicle capacity Periodical maintenance of vehicles as per operator manual
6	Natural calamities	Unexpected happenings	Escape Routes will be provided to prevent inundation of storm water Fire Extinguishers & Sand Buckets
7	Failure of Mine Benches and Pit Slope	Slope geometry, Geological structure	Ultimate or over all pit slope shall be below 60° and each bench height shall be 5m height.

Source: Analysed and Proposed by FAE & EC

7.3 DISASTER MANAGEMENT PLAN

Natural disasters like Earthquake, Landslides have not been recorded in the past history as the terrain is categorized under seismic zone III. The area is far away from the sea hence the disaster due to heavy floods and tsunamis are not anticipated

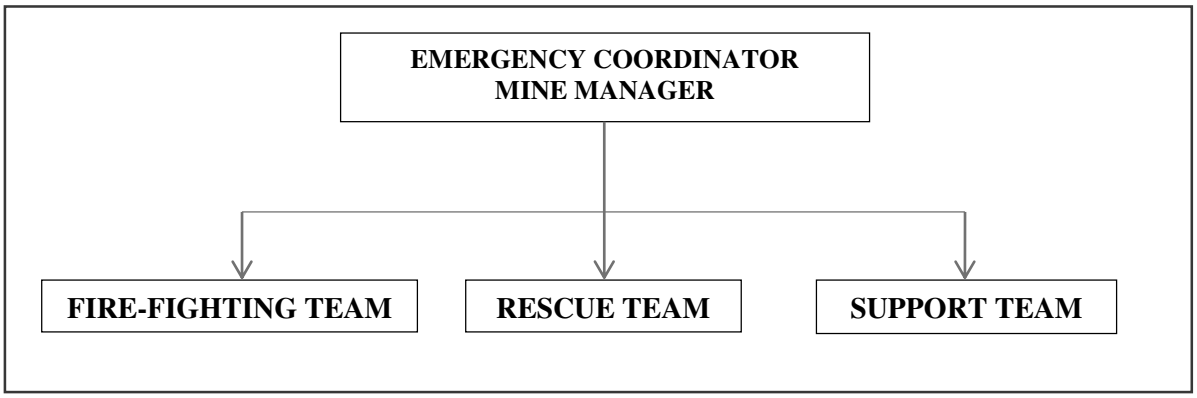
The Disaster Management Plan is aimed to ensure safety of life, protection of environment, protection of installation, restoration of production and salvage operations in this same order of priorities.

The objective of the Disaster Management Plan is to make use of the combined resources of the mine and the outside services to achieve the following:

- Rescue and medical treatment of casualties;
- Safeguard other people;
- Minimize damage to property and the environment;
- Initially contain and ultimately bring the incident under control;
- Secure the safe rehabilitation of affected area; and
- Preserve relevant records and equipment for the subsequent inquiry into the cause and circumstances of the emergency.

In case a disaster takes place, despite preventive actions, disaster management will have to be done in line with the descriptions below. There is an organization proposed for dealing with the emergency situations and the coordination among key personnel and their team has been shown in Fig 7.1.

FIGURE 7.1: DISASTER MANAGEMENT TEAM LAYOUT



The emergency organization shall be headed by emergency coordinator who will be qualified competent mines manager. In his absence senior most people available at the mine shall be emergency coordinator till arrival of mines manager. There would be three teams for taking care of emergency situations – Fire-Fighting Team, Rescue Team and Support Team. The proposed composition of the teams is given in Table 7.2.

TABLE 7.2: PROPOSED TEAMS TO DEAL WITH EMERGENCY SITUATION

DESIGNATION	QUALIFICATION
FIRE-FIGHTING TEAM	
Team Leader/ Emergency Coordinator (EC)	Mines Manager
Team Member	Mines Foreman
Team Member	Mining Mate
RESCUE TEAM	
Team Leader/ Emergency Coordinator (EC)	Mines Manager
Team Member/ Incident Controller (IC)	Environment Officer
Team Member	Mining Foreman
SUPPORT TEAM	
Team Leader/ Emergency Coordinator (EC)	Mines Manager
Assistant Team Leader	Environment Officer
Team Member	Mining Mate
Security Team Leader/ Emergency Security Controller	Mines Foreman

Once the mine becomes operational, the above table along with names of personnel will be prepared and made easily available to workers for respective proposed quarries. A mobile communication network and wireless shall connect Mine Emergency Control Room (MECR) to control various departments of the mine, fire station and neighbouring industrial units/mines.

Roles and responsibilities of emergency team –

(a) Emergency coordinator (EC)

The emergency coordinator shall assume absolute control of site and shall be located at MECR.

(b) Incident controller (IC)

Incident controller shall be a person who shall go to the scene of emergency and supervise the action plan to overcome or contain the emergency. Shift supervisor or Environmental Officer shall assume the charge of IC.

(c) Communication and advisory team

The advisory and communication team shall consist of heads of Mining Departments i.e., Mines Manager

(d) Roll call coordinator

The Mine Foreman shall be Roll Call Coordinator. The roll call coordinator will conduct the roll call and will evacuate the mine personnel to assembly point. His prime function shall be to account for all personnel on duty.

(e) Search and rescue team

There shall be a group of people trained and equipped to carryout rescue operation of trapped personnel. The people trained in first aid and fire-fighting shall be included in search and rescue team.

(f) Emergency security controller

Emergency Security Controller shall be senior most security person located at main gate office and directing the outside agencies e.g. fire brigade, police, doctor and media men etc.,

Emergency control procedure –

The onset of emergency, will in all probability, commence with a major fire or explosion or collapse of wall along excavation and shall be detected by various safety devices and also by members of operational staff on duty. If located by a staff member on duty, he (as per site emergency procedure of which he is adequately briefed) will go to nearest alarm call point, break glass and trigger off the alarms. He will also try his best to inform about location and nature of accident to the emergency control room. In accordance with work emergency procedure the following key activities will immediately take place to interpret and take control of emergency.

- On site fire crew led by a fireman will arrive at the site of incident with fire foam tenders and necessary equipment.
- Emergency security controller will commence his role from main gate office
- Incident controller shall rush to the site of emergency and with the help of rescue team and will start handling the emergency.
- Site main controller will arrive at MECR with members of his advisory and communication team and will assume absolute control of the site.
    - He will receive information continuously from incident controller and give decisions and directions to:
        - Incident controller
        - Mine control rooms
        - Emergency security controller

Proposed fire extinguishers at different locations –

The following type of fire extinguishers has been proposed at strategic locations within the mine.

TABLE 7.3: PROPOSED FIRE EXTINGUISHERS AT DIFFERENT LOCATIONS

LOCATION	TYPE OF FIRE EXTINGUISHERS
Electrical Equipment's	CO_2 type, foam type, dry chemical powder type
Fuel Storage Area	CO_2 type, foam type, dry chemical powder type, Sand bucket
Office Area	Dry chemical type, foam type

Alarm system to be followed during disaster –

On receiving the message of disaster from Site Controller, fire-fighting team, the mine control room attendant will sound siren wailing for 5 minutes. Incident controller will arrange to broadcast disaster message through public address system. On receiving the message of "Emergency Over" from Incident Controller the emergency control room attendant will give "All Clear Signal", by sounding alarm straight for 2 minutes.

The features of alarm system will be explained to one and all to avoid panic or misunderstanding during disaster. In order to prevent or take care of hazard / disasters if any the following control measures have been adopted.

- All safety precautions and provisions of Metalliferous Mines Regulations (MMR), 1961 is strictly followed during all mining operations.
- Observance of all safety precautions for blasting and storage of explosives as per MMR 1961.
- Entry of unauthorized persons into mine & allied areas is completely prohibited.

- Fire-fighting and first-aid provisions in the mines office complex and mining area are provided.
- Provisions of all the safety appliances such as safety boot, helmets, goggles, dust masks, ear plugs and ear muffs etc. are made available to the employees and the use of same is strictly adhered to through regular monitoring.
- Training and refresher courses for all the employees working in hazardous premises.
- Working of mine, as per approved plans and regularly updating the mine plans.
- Cleaning of mine faces is regularly done.
- Handling of explosives, charging and blasting are carried out only by qualified persons following SOP.
- Checking and regular maintenance of garland drains and earthen bunds to avoid any inflow of surface water in the mine pit.
- Provision of high-capacity standby pumps with generator sets with enough quantity of diesel for emergency pumping especially during monsoon.
- A blasting SIREN is used at the time of blasting for audio signal.
- Before blasting and after blasting, red and green flags are displayed as visual signals.
- Warning notice boards indicating the time of blasting and NOT TO TRESPASS are displayed at prominent places.
- Regular maintenance and testing of all mining equipment were carried out as per manufacturer's guidelines.

7.4 CUMULATIVE IMPACT STUDY

For easy representation of Proposed and Existing Quarries in the Cluster are given unique codes and identifies and studied in this EIA/EMP Report.

TABLE 7.4: LIST OF QUARRIES WITHIN 500 METER RADIUS

PROPOSED QUARRY				
CODE	**Name of the Owner**	**S.F. Nos**	**Extent**	**Status**
P1	**Thiru. C.Selvam,** S/o. Chelladurai, No.38, Middle Street, Pirathukaranpatti, Shanmugasundarapuram, Andipatti Taluk. Theni District – 625 512	927/2,3,4,5,940/2 & 943/1,	8.76.5 ha	ToR Identification: TO24B0108TN5453826N Dated: 29.11.2024
TOTAL			**8.76.5 ha**	
EXISTING QUARRY				
CODE	**Name of the Owner**	**S.F. No & Village**	**Extent**	**Status**
E1	**Thiru. T. Sivakumar** S\o.Thanikodi, No.16/5, Sulthan Nagar,	926/1, 926/2, 945	4.76.00 ha	Lease Period – 06.03.2020 – 05.03.2025

	Visalam 1st Street, Narimedu, Madurai District.			
TOTAL			**4.76.00 ha**	
EXPIRED/ABANDONED QUARRIES				
EX1	**Thiru. T. Rajavel Pandian** No.16/5, velmani Illam, Maruthupandian Nagar, Narimedu, Madurai	814 (Part - I)	2.50.0	Lease Period – 26.05.2011 – 25.08.2021
EX2	**Thiru. T. Sivakumar** No.16/5, velmani Illam, Maruthupandian Nagar, Narimedu, Madurai	814 (Part - II)	2.50.0	Lease Period – 08.09.2011 – 07.09.2021
TOTAL			**5.00.0 ha**	
TOTAL CLUSTER EXTENT			**13.52.5 ha**	

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

TABLE 7.5: SALIENT FEATURES OF PROPOSAL -P1

Name of the Project	Thiru. C.Selvam Rough Stone & Gravel Quarry	
S.F. No.	927/2,3,4,5,940/3 & 943/1	
Extent	**8.76.5 ha**	
Village Taluk and District	Thimmarasanayakkanur Bit – I Village, Andipatti Taluk, Theni District.	
Land Type	patta land	
Land Ownership	It is a Patta lands. S.F.Nos 927/2,3,4,5,940/3 & 943/1 Registered in the name of Tmt.Pavalakodi W/o T hanikodi vide Patta No.5891 & 6234. the applicant has obtained consent from the Pattadhar for the period of 10 years.	
Toposheet No	58-F/12 & 58G/09	
Latitude between	09°59'47.06115"N to 10°00'02.57733"N	
Longitude between	77°41'22.62023"E to 77°41'32.61712"E	
Highest Elevation	356 - 369m AMSL	
Lease Period	Ten years	
Mining Plan Period	Ten years	
Proposed Depth of Mining	59m bgl (3m Gravel +20 m Rough stone)	
Geological Resources	Rough Stone in m^3	Gravel m^3
	40,95,033	4,11,850
Mineable Reserves	Rough Stone in m^3	Gravel m^3
	14,51,090	2,86,230

Proposed Quantity of Production for this Mining Plan Period First Five Years	7,77,155	2,39,412
Proposed Quantity of Production for this Mining Plan Period Second Five Years	6,73,935	46,818
Peak Production	1,66,540	72,180
Ultimate Pit Dimension	XY-AB - 61 m (L) * 116 m (W) * 55 m (D) Below ground level	
	XY-CD - 66 m (L) * 160 m (W) * 55 m (D) Below ground level	
	XY-EF – 99 m (L) * 68 m (W) * 30 m (D) Below ground level	
	XY- GH - 127 m (L) * 136 m (W) * 55 m (D) Below ground level	
	X1Y1- GH - 153 m (L) * 102 m (W) * 59 m (D) (13m AGL + 46m BGL)	
Water Level in the surrounds area	60 - 65 m bgl	
Method of Mining	Opencast Mechanized Mining Method involving drilling and blasting	
Topography	The lease applied area is exhibits undulated terrain. The area has gentle sloping towards Northern side. The altitude of the area is 356-369 m (max) above mean sea level. The area is situated in foot hill, since rich accumulation of quaternary formation of gravel having an average thickness of 5m and followed by massive charnockite which is clearly inferred from the adjacent existing quarry pit.	
Machinery proposed	Crawler mounted drill machine	2 Nos
	Jack Hammer	4 Nos
	Compressor	1 Nos
	Excavator with Bucket and Rock Breaker	2 No
	Tippers	4 Nos
	Water Sprinkling Tanker	1 Nos
Blasting Method	Controlled Blasting Method by shot hole drilling and small dia of 25mm slurry explosive are proposed to be used for shattering and heaving effect for removal and winning of Rough Stone. No deep hole drilling is proposed.	
Proposed Manpower Deployment	33 Nos	
Project Cost	Rs.3,72,70,000/-	
EMP cost	Rs. 7,60,000/-	
Total Project cost	Rs.3,80,30,000/-	
CER Cost	Rs 5,00,000	
Nearby Water Bodies	Odai	North Inside Lease Area
	Odai	North 50m Safety

	Odai	1.2km SW
	Canal	5.3km NW
	Vaigai River	6.8km NW
	Periyar Main Canal	7.2km NW
	Varaha River	7.8km NW
Greenbelt Development Plan	Proposed to plant 4,350 trees in the 7.5 m Safety Zone, panchayat road etc..	
Proposed Water Requirement	4.0 KLD	
Nearest Habitation	1.2 km – W	
Nearest Reserve Forest	Andipatti North R.F – 240 m – West	
Nearest Wild Life Sanctuary	Megamalai wildlife Sanctuary – 8.70 km SouthWest Kodaikanal Wildlife Sanctuary – 18.50 km Northwest	

Source: Approved Mining Plan

TABLE 7.6: SALIENT FEATURES OF PROPOSAL "E1"

Name of the Quarry	Thiru. T. Sivakumar Rough Stone abd Gravel Quarry Project		
Toposheet No	58-F/12 & 58-G/09		
Latitude between	09°59'52.83"N to 10°00'00.67"N		
Longitude between	77°41'29.57"E to 77°41'38.67"E		
Proposed Depth of Mining	60m (20m Agl + 40m Bgl)		
Geological Resources	Rough Stone in m^3	Gravel m^3	Topsoil m^3
	22,58,664	1,42,788	95,192
Mineable Reserves	Rough Stone in m^3	Gravel m^3	Topsoil m^3
	7,32,118	97,920	70,966
Method of Mining	Opencast Mechanized Mining Method involving drilling and blasting		
Blasting Method	Controlled Blasting Method by shot hole drilling and small dia of 25mm slurry explosive are proposed to be used for shattering and heaving effect for removal and winning of Rough Stone. No deep hole drilling is proposed.		
Proposed Manpower Deployment	42 Nos		
Project Cost	Rs. 81,23,600/-		
CER Cost	Rs 5,00,000 /-		

The Cumulative Impact is mainly anticipated due to drilling & blasting and excavation and transportation activities in all the quarries (proposed and existing) within the cluster and major impact anticipated is on Air & Noise Environment and Ground Vibrations due to blasting.

Air Environment –

Calculating the Cumulative Load of Mining within the cluster is as shown in table 7.7, 7.8 & 7.9

TABLE 7.7: CUMULATIVE PRODUCTION LOAD OF ROUGH STONE

	PROPOSED PRODUCTION DETAILS			
Quarry	**5 /10 Years in m^3**	**Per Year in m^3**	**Per Day in m^3**	**Number of Lorry Load Per Day**
P1	14,51,090	1,45,109	483	40
Total	**14,51,090**	**1,45,109**	**483**	**40**
E1	7,32,118	1,46,423	488	40
Total	**7,32,118**	**1,46,423**	**488**	**40**
Grand Total	**21,83,208**	**2,91,532**	**971**	**80**

TABLE 7.8: CUMULATIVE PRODUCTION LOAD OF GRAVEL

	PROPOSED PRODUCTION DETAILS			
Quarry	**3-10 Years in m^3**	**Per Year in m^3**	**Per Day in m^3**	**Number of Lorry Load Per Day**
P1	2,83,230	28,323	94	8
Total	**2,83,230**	**28,323**	**94**	**8**
E1	97,920	32,640	108	9
Total	97,920	32,640	108	9
Grand Total	**3,81,150**	**60,963**	**202**	**17**

TABLE 7.9: CUMULATIVE PRODUCTION LOAD OF TOPSOIL

	PROPOSED PRODUCTION DETAILS			
Quarry	**2 - 3 Years in m^3**	**Per Year in m^3**	**Per Day in m^3**	**Number of Lorry Load Per Day**
P1	-	-	-	-
Total	**-**	**-**	**-**	**-**
E1	70,966	23,655	79	7
Total	**70,966**	**23,655**	**79**	**7**
Grand Total	**70,966**	**23,655**	**79**	**7**

On a cumulative basis considering the 2 quarries it can be seen that the overall production of Rough Stone is 971 m^3 per day, overall production of Gravel is 202 m^3 per day and overall production of Topsoil is 79 $m^3$with a capacity of 80 trips of Rough Stone per day, 17 Trips per day of Gravel and 7 Trips per day of Topsoil from the cluster. Note: Per day production of Rough Stone is calculated for 5/10 Years Lease Period and for Gravel production with 1, 2 or 3 or 5 or 10 years of production period. And the load of existing quarries is covered under existing environment of the cluster.

Based on the above production quantities the emissions due to various activities in all the 2 mines includes various activities like ground preparation, excavation, handling and transport of ore. These activities have been analysed systematically basing on USEPA-Emission Estimation Technique Manual, for Mining AP-42, to arrive at possible emissions to the atmosphere and estimated emissions are given in Table 7.10.

TABLE 7.10: EMISSION ESTIMATION FROM QUARRIES WITHIN 500 METER RADIUS

EMISSION ESTIMATION FOR QUARRY "P1"				
	Activity	**Source type**	**Value**	**Unit**
Estimated Emission Rate for PM_{10}	Drilling	Point Source	0.120411997	g/s
	Blasting	Point Source	0.006122986	g/s
	Mineral Loading	Point Source	0.048420054	g/s
	Haul Road	Line Source	0.002519208	g/s/m
	Overall Mine	Area Source	0.103343812	g/s
Estimated Emission Rate for SO_2	Overall Mine	Area Source	0.00264353	g/s
Estimated Emission Rate for NOx	Overall Mine	Area Source	0.000483912	g/s
EMISSION ESTIMATION FOR QUARRY "E1"				
	Activity	**Source type**	**Value**	**Unit**
Estimated Emission Rate for PM_{10}	Drilling	Point Source	0.125194407	g/s
	Blasting	Point Source	0.007439420	g/s
	Mineral Loading	Point Source	0.048210974	g/s
	Haul Road	Line Source	0.002517639	g/s/m
	Overall Mine	Area Source	0.080797799	g/s
Estimated Emission Rate for SO_2	Overall Mine	Area Source	0.002451636	g/s
Estimated Emission Rate for NOx	Overall Mine	Area Source	0.000258731	g/s

Source: Emission Calculations

Noise Environment –

Noise pollution is mainly due to operation like drilling & blasting and plying of trucks & HEMM. Cumulative Noise modelling has been carried out considering blasting and compressor operation (drilling) and transportation activities. Predictions have been carried out to compute the noise level at various distances around the different quarries within the 500 m radius.

For hemispherical sound wave propagation through homogeneous loss free medium, one can estimate noise levels at various locations at different sources using model based on first principle.

$$\mathbf{Lp_2 = Lp_1 - 20 \log (r_2/r_1) - Ae_{1,2}}$$

Where:

Lp_1 & Lp_2 are sound levels at points located at distances r_1 & r_2 from the source.

$Ae_{1,2}$ is the excess attenuation due to environmental conditions. Combined effect of all sources can be determined at various locations by logarithmic addition.

$$\mathbf{Lp_{total} = 10 \log \{10^{(Lp1/10)} + 10^{(Lp2/10)} + 10^{(Lp3/10)} + \ldots\ldots\}}$$

Attenuation due to Green Belt has been taken to be 4.9 dB (A). The inputs required for the model are:

Source data has been computed taking into account of all the machinery and activities used in the mining process.

TABLE 7.11: PREDICTED NOISE INCREMENTAL VALUES FROM CLUSTER

Location ID	**Background Value (Day) dB(A)**	**Incremental Value dB(A)**	**Total Predicted dB(A)**	**Residential Area Standards dB(A)**

Habitation Near P1	43.1	38.5	44.4	55
Habitation Near E1	44.5	36.6	45.1	

Source: Lab Monitoring Data

The incremental noise level is found within the range of 44.4 – 45.1 dB (A) in Buffer zone. The noise level at different receptors in buffer zone is lower due to the distance involved and other topographical features adding to the noise attenuation. The resultant Noise level due to monitored values and calculated values at the receptors are based on the mathematical formula considering attenuation due to Green Belt as 4.9 dB (A)the barrier effect. From the above table, it can be seen that the ambient noise levels at all the locations near habitations are within permissible limits of Residential Area (buffer zone) as per THE NOISE POLLUTION (REGULATION AND CONTROL) RULES, 2000 (The Principal Rules were published in the Gazette of India, vide S.O.123(E), dated 14.2.2000 and subsequently amended vide S.O. 1046(E),dated 22.11.2000, S.O. 1088(E), dated 11.10.2002, S.O. 1569 (E), dated19.09.2006 and S.O. 50 (E) dated 11.01.2010 under the Environment(Protection) Act, 1986.).

Ground Vibrations

Ground vibrations due to mining activities in the all the 2 Mines within cluster are anticipated due to operation of Mining Machines like Excavators, drilling and blasting, transportation vehicles, etc. However, the major source of ground vibration from the all the 2 mines is blasting. The major impact of the ground vibrations is observed on the domestic houses located in the villages nearby the mine lease area. The kuchha houses are more prone to cracks and damage due to the vibrations induced by blasting whereas RCC framed structures can withstand more ground vibrations. Apart from this, the ground vibrations may develop a fear factor in the nearby settlements.

Another impact due to blasting activities is fly rocks. These may fall on the houses or agricultural fields nearby the mining areas and may cause injury to persons or damage to the structures.

Nearest Habitations from 2 mines respectively are as in below Table 7.13

TABLE 7.12: NEAREST HABITATION FROM EACH MINE

Location ID	Distance in Meters
Habitation Near P1	1200
Habitation Near E1	1500

The ground vibrations due to the blasting in all the mines are calculated using the empirical equation for assessment of peak particle velocity (PPV) is:

$$V = K [R/Q^{0.5}]^{-B}$$

Where –

V = peak particle velocity (mm/s)

K = site and rock factor constant

Q = maximum instantaneous charge (kg)

B = constant related to the rock and site (usually 1.6)

R = distance from charge (m)

TABLE 7.13: GROUND VIBRATIONS AT 2 MINES

Location ID	Maximum Charge in kgs	Nearest Habitation in m	PPV in m/ms
P1	50	1200	0.135
E1	45	1500	0.087

Source: Blasting Calculations

From the above table, the charge per blast is considered as maximum in each mine and the resultant PPV is well below the Peak Particle Velocity of 8 mm/s as per Directorate General of Mines Safety for safe level criteria through Circular No. 7 dated 29/8/1997.

Socio Economic Environment –

The 5mines shall contribute towards CER and the community shall develop.

TABLE 7.14: SOCIO ECONOMIC BENEFITS FROM 2 MINES

Code	Project Cost	CER Cost
P1	Rs.3,80,30,000	Rs 5,00,000/-
Total	**Rs.3,80,30,000**	**Rs 5,00,000/-**
E1	Rs. 85,03,600/-	Rs 5,00,000/-
Total	**Rs. 85,03,600/-**	**Rs 5,00,000/-**
Grand Total	**Rs. 4,65,33,600/-**	**Rs.10,00,000/-**

As per para 6 (II) of the office memorandum, all the mines being a green field project & Capital Investment is ≤ 100 crores, they shall contribute 2% of Capital Investment towards CER as per directions of EAC/SEAC.

- Proposed project shall fund towards CER – **Rs 5,00,000/-**
- Existing project shall fund towards CER – **Rs 5,00,000/-**
- 2 Projects in Cluster shall fund towards CER – **Rs 10,00,000/-**

TABLE 7.15: EMPLOYMENT BENEFITS FROM 2 MINES

Code	Employment
P1	33
Total	**33**
E1	42
Total	**42**
Grand Total	**75**

A total of 33 people will get employment due to 1 proposed mine in cluster and 42 people are already employed at existing mines.

TABLE 7.16: GREENBELT DEVELOPMENT BENEFITS FROM 2 MINES

CODE	No of Trees proposed to be planted	Survival %	Name of the Species
P1	4350	80%	Neem, Pongam,Vilvam

Total	**4350**		
E1	2350	80%	Neem, Pongam,Vilvam
Total	**2350**		

Based on the Proposed Mining Plans it's anticipated that there shall growth of native species of Neem, Pinnata et., in the Cluster at a rate of 6,700 Trees Planted over a period of 5 Years with Survival Rate of 80% by proposed quarry.

7.5 PLASTIC WASTE MANAGEMENT PLAN

All the Project Proponent shall comply with Tamil Nadu Government Order (Ms) No. 84 Environment and Forest (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.

Objective –

- To investigate the actual supply chain network of plastic waste.
- To identify and propose a sustainable plastic waste management by installing bins for collection of recyclables with all the plastic waste
- Preparation of a system design layout, and necessary modalities for implementation and monitoring.

TABLE 7.17: ACTION PLAN TO MANAGE PLASTIC WASTE

Sl.No.	Activity	Responsibility
1	Framing of Layout Design by incorporating provision of the Rules, user fee to be charged from waste generators for plastic waste management, penalties/fines for littering, burning plastic waste or committing any other acts of public nuisance	Mines Manager
2	Enforcing waste generators to practice segregation of bio-degradable, recyclable and domestic hazardous waste	Mines Manager
3	Collection of plastic waste	Mines Foreman
4	Setting up of Material Recovery Facilities	Mines Manager
5	Segregation of Recyclable and Non-Recyclable plastic waste at Material Recovery Facilities	Mines Foreman
6	Channelization of Recyclable Plastic Waste to registered recyclers	Mines Foreman
7	Channelization of Non-Recyclable Plastic Waste for use either in Cement kilns, in Road Construction	Mines Foreman
8	Creating awareness among all the stakeholders about their responsibility	Mines Manager
9	Surprise checking's of littering, open burning of plastic waste or committing any other acts of public nuisance	Mine Owner

7.6 CLUSTER MANAGEMENT COMMITTEE

The cluster management committee is proposed to form including of 1 Proposed quarry and 1 existing quarry total extent of the cluster is 13.52.5 Ha

In the cluster management committee, the following Environmental Management plan will be followed the activities such as

- Transportation of Minerals and blasting activities with the coordination between the individual quarry owners.
- Sprinkling of water regularly thrice a day in the mutual understanding with the quarry owners
- Carrying out blasting operation as specified times by the Mines Managers and as per the EIA report
- Usage of Haul roads in a time specified by the Cluster Management Committee
- Following Safe operating procedure prescribed by the Mines Manager during natural calamities
- Planting Trees in the Government Land, School and within the project site
- Celebrating Safety month, Environmental Month along with the Mines Managers in every six months once
- Regularly follow the health of the workers and take medical examination as per the DGMS norms under the guidance of Mines Manager
- Meet at Association Hall monthly once to review the Environmental Management and Safety activities prescribed by the Cluster Management Committee
- We have read and understood all the above steps and we ensure to follow these specific steps Quarry owners in the Cluster management committee

Quarries in the Cluster Management Committee

PROPOSED QUARRY				
CODE	**Name of the Owner**	**S.F. Nos**	**Extent**	**Status**
P1	**Thiru. C.Selvam,** S/o. Chelladurai, No.38, Middle Street, Pirathukaranpatti, Shanmugasundarapuram, Andipatti Taluk. Theni District – 625 512	927/2,3,4,5,940/2 & 943/1,	8.76.5 ha	ToR Identification: TO24B0108TN5453826N Dated: 29.11.2024
TOTAL			**8.76.5 ha**	
EXISTING QUARRY				
CODE	**Name of the Owner**	**S.F. No & Village**	**Extent**	**Status**
E1	**Thiru. T. Sivakumar** S\o.Thanikodi, No.16/5, Sulthan Nagar, Visalam 1st Street, Narimedu, Madurai District.	926/1, 926/2, 945	4.76.00 ha	Lease Period – 06.03.2020 – 05.03.2025
TOTAL			**4.76.00 ha**	
EXPIRED/ABANDONED QUARRIES				
EX1	**Thiru. T. Rajavel Pandian**	814 (Part - I)	2.50.0	Lease Period – 26.05.2011 – 25.08.2021

	No.16/5, velmani Illam, Maruthupandian Nagar, Narimedu, Madurai			
EX2	**Thiru. T. Sivakumar** No.16/5, velmani Illam, Maruthupandian Nagar, Narimedu, Madurai	814 (Part - II)	2.50.0	Lease Period – 08.09.2011 – 07.09.2021
TOTAL			**5.00.0 ha**	
TOTAL CLUSTER EXTENT			**13.52.5 ha**	

STANDARD OPERATING PROCEDURE FOR THIMMARASANAYAKKANUR BIT – I CLUSTER MANAGEMENT COMMITTEE

1. Maintenance of Haul Roads and Village Roads:

- Water will be sprinkled on haul roads twice a day to avoid dust generation during transportation
- Transportation of material will be carried out during day time and material will be covered with tarpaulin
- The speed of tippers plying on the haul road will be limited below 20 km/hr to avoid generation of dust.
- Water sprinkling on haul roads & loading points will be carried out twice a day
- Main source of gaseous pollution will be from vehicle used for transportation of mineral; therefore, weekly maintenance of machines improves combustion process & makes reduction in the pollution.
- The un-metaled haul roads will be compacted weekly before being put into use.
- Over loading of tippers will be avoided to prevent spillage.
- It will be ensured that all transportation vehicles carry a valid PUC certificate
- Grading of haul roads and service roads to clear accumulation of loose materials

2. Maintenance of Drilling Activities

- In this system dust gets suppressed close to its formation. Dust suppression become very effective and the work environment will be improved from the point of occupational comfort and health.
- Due to dust free atmosphere, the life of engine, compressor etc., will be increased.
- The life of drill bit will be increased.
- The rate of penetration of drill will be increased.
- Due to the dust free atmosphere visibility will be improved resulting in safer working conditions.
- Usage of sharp drill bits while drilling which will help in reducing noise;
- Secondary blasting will be totally avoided and hydraulic rock breaker will be used for breaking boulders;
- Controlled blasting with proper spacing, burden, stemming and optimum charge/delay will be maintained;
- The blasting will be carried out during favourable atmospheric condition and less human activity timings by using nonelectrical initiation system;
- Proper maintenance, oiling and greasing of machines will be done every week to reduce generation of noise;

- Provision of sound insulated chambers for the workers working on machines (HEMM) producing higher levels of noise;
- Silencers / mufflers will be installed in all machineries;
- Green Belt/Plantation will be developed around the project area and along the haul roads. The plantation minimizes propagation of noise;
- Personal Protective Equipment (PPE) like ear muffs/ear plugs will be provided to the operators of HEMM and persons working near HEMM and their use will be ensured though training and awareness.
- Regular medical check–up and proper training to personnel to create awareness about adverse noise level effects

3. Maintenance of Blasting Activities

- Establish time of blasting to suit the local conditions and water sprinkling on blasting face
- Avoid blasting i.e., when temperature inversion is likely to occur and strong wind blows towards residential areas
- Controlled blasting includes Adoption of suitable explosive charge and short delay detonators, adequate stemming of holes at collar zone and restricting blasting to a particular time of the day i.e., at the time lunch hours (1.00 PM to 2.00 PM), controlled charge per hole as well as charge per round of hole
- Before loading of material water will be sprayed on blasted material
- Dust mask will be provided to the workers and their use will be strictly monitored
- The blasting operations in the cluster quarries are carried out without deep hole drilling and blasting using delay detonators, which reduces the ground vibrations;
- Proper quantity of explosive, suitable stemming materials and appropriate delay system will be adopted to avoid overcharging and for safe blasting;
- Adequate safe distance from blasting will be maintained as per DGMS guidelines;
- Blasting shelter will be provided as per DGMS guidelines;
- Blasting operations will be carried out only during day time;
- The charge per delay will be minimized and preferably a greater number of delays will be used per blasts;
- During blasting, other activities in the immediate vicinity will be temporarily stopped;
- Drilling parameters like depth, diameter and spacing will be properly designed to give proper blast;
- A fully trained explosives blast man (Mining Mate, Mines Foreman, 2nd Class Mines Manager/ 1st Class Mines Manager) will be appointed.
- A set of shot firing rules will be drawn up and blasting shall commence outlining the detailed operating procedures that will be followed to ensure that shot firing operations on site take place without endangering the workforce or public.
- Sufficient angular stemming material will be used to confine the explosive force and minimise environmental disturbance caused by venting / misfire.
- The detonators will be connected in a predetermined sequence to ensure that only one charge is detonated at any one time and a NONEL or similar type initiation system will be used.
- The detonation delay sequence shall be designed so as to ensure that firing of the holes is in the direction of free faces so as to minimise vibration effects.
- Appropriate blasting techniques shall be adopted such that the predicted peak particle velocity shall not exceed 8 Hz.
- Vibration monitoring will be carried out every 6 months to check the efficacy of blasting practices

4. Maintenance of Greenbelt Activities

- Planting of trees all along main mine haul roads and regular grading of haul roads will be practiced to prevent the generation of dust due to movement of dumpers/trucks
- Green belt of adequate width will be developed around the project areas
- Suitable plan for conservation of Schedule-I Species have prepared and necessary fund for implement for the same will be made.
- All the preventive measures will be taken for growth & development of fauna.
- Creating and development awareness for nature and wildlife in the adjoin villages.
- The workers shall be trained to not harm any wildlife, should it come near the project site. No work shall be carried out after 6.00 pm

5. Maintenance of Occupational Health

- Dust mask will be provided to the workers and their use will be strictly monitored
- Annual medical checkups, trainings and campaigns will be arranged to ensure awareness about importance of wearing dust masks among all mine workers & tipper drivers
- Ambient Air Quality Monitoring will be conducted six months once to assess effectiveness of mitigation measures proposed
- Specific personnel training on work-site safety management will be taken up;
- Work site assessment will be done by rock scaling of each surface exposed to workers to prevent accidental rock falling and / or landslide, especially after blasting activities;
- Natural barriers, temporary railing, or specific danger signals will be provided along rock benches or other pit areas where work is performed at heights more than 2m from ground level;
- Maintenance of yards, roads and footpaths, providing sufficient water drainage and preventing slippery surfaces with an all-weather surface, such as coarse gravel will be taken up

Occupational health and safety hazards occur during the operational phase of mining and primarily include the following:

- Respiratory hazards
- Noise
- Physical hazards
- Explosive storage and handling

All the persons will undergo pre-employment and periodic medical examination. Employees will be monitored for occupational diseases by conducting the following tests

- General physical tests
- Audiometric tests
- Full chest, X-ray, Lung function tests, Spirometric tests
- Periodic medical examination – yearly
- Lung function test – yearly, those who are exposed to dust
- Eye test

Essential medicines will be provided at the site. The medicines and other test facilities will be provided at free of cost. The first aid box will be made available at the mine for immediate treatment.

First aid training will be imparted to the selected employees regularly. The lists of first aid trained members shall be displayed at strategic places.

6. Cluster Management Committee Policy

- Meet the requirements of all laws, acts, regulations, and standards relevant to its operations and activities

- Implement a program to train employees in general environmental issues and individual workplace environmental responsibilities
- Allocate necessary resources to ensure the implementation of the environmental policy
- Ensure that an effective closure strategy is in place at all stages of project development and that progressive reclamation is undertaken as early as possible to reduce potential long-term environmental and community impacts
- Implement monitoring programme to provide early warning of any deficiency or unanticipated performance in environmental safeguards
- Conduct periodic reviews to verify environmental performance and to continuously strive towards improvement
- 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.

8. PROJECT BENEFITS

8.0 GENERAL

The Proposed Project for Quarrying Rough Stone and gravel quarry at Thimmarasanayakkanur Bit – I Village aims to produce 21,83,208 m^3 Rough Stone, 3,81,150 m^3 of Gravel & 70,966 m^3 of Topsoil over a period of 5 Years & 10 years for Rough Stone. This will enhance the socio-economic activities in the adjoining areas and will result in these following benefits

- Increase in Employment Potential
- Improvement in Socio-Economic Welfare
- Improvement in Physical Infrastructure
- Improvement in Social infrastructure

8.1 EMPLOYMENT POTENTIAL

It is proposed to provide employment to about 75 persons for carrying out mining operations and give preference to the local people in providing employment in this cluster. In addition, there will be opportunity for indirect employment to many people in the form of contractual jobs, business opportunities, service facilities etc. the economic status of the local people will be enhanced due to mining project.

8.2 SOCIO-ECONOMIC WELFARE MEASURES PROPOSED

The impact of mining activity in the area will be more positive on the socio-economic environment in the immediate project impact area. The employment opportunities both direct and indirect will contribute to enhanced money incomes to job seekers with minimal skill sets especially among the local communities.

8.3 IMPROVEMENT IN PHYSICAL INFRASTRUCTURE

The proposed quarries are located in Thimmarasanyakkanur Bit - I Village, Andipatti Taluk and Theni District of Tamil Nadu and the area have communications, roads and other facilities already well established. The following physical infrastructure facilities will further improve due to proposed mine.

- Road Transport facilities
- Communications
- Medical, Educational and social benefits will be made available to the nearby civilian population in addition to the workmen employed in the mine.

8.4 IMPROVEMENT IN SOCIAL INFRASTRUCTURE

Employment is expected during civil construction period, in trade, garbage lifting, sanitation and other ancillary services, Employment in these sectors will be primarily temporary or contractual and involvement of unskilled labour will be more. A major part of the labour force will be mainly from local villagers who are expected to engage themselves both in agriculture and mining activities. This will enhance their income and lead to overall economic growth of the area.

8.5 OTHER TANGIBLE BENEFITS

The proposed mine is likely to have other tangible benefits as given below.

- Indirect employment opportunities to local people in contractual works like construction of infrastructural facilities, transportation, sanitation, for supply of goods and services to the mine and other community services.
- Additional housing demand for rental accommodation will increase
- Cultural, recreation and aesthetic facilities will also improve
- Improvement in communication, transport, education, community development and medical facilities and overall change in employment and income opportunity
- The State Government will also benefit directly from the proposed mine, through increased revenue from royalties, cess, DMF, GST etc.,

CORPORATE SOCIAL RESPONSIBILITY

Project Proponent will take responsibility to develop awareness among all levels of their staff about CSR activities and the integration of social processes with business processes. Those involved with the undertaking of CSR activities will be provided with adequate training and re-orientation.

Under this programme, the project proponent will take-up following programmes for social and economic development of villages within 10 km of the project site. For this purpose, separate budget will be provided every year. For finalization of these schemes, proponent will interact with LSG. The schemes will be selected from the following broad areas –

- Health Services
- Social Development
- Infrastructure Development
- Education & Sports
- Self-Employment

CSR Cost Estimation

- CSR activities will be taken up in the Thimmarasanyakkanur Bit - I village mainly contributing to education, health, training of women self-help groups and contribution to infrastructure etc., CSR budget is allocated as 2.5% of the profit.

CORPORATE ENVIRONMENT RESPONSIBILITY

For the existing quarries Allocation for Corporate Environment Responsibility (CER) shall be made as per Government of India, MoEF & CC Office Memorandum F.No.22-65/2017-IA.III, Dated: 01.05.2018.

As per para 6 (II) of the office memorandum, all the mines being a green field project & Capital Investment is ≤ 100 crores, they shall contribute 2% of Capital Investment towards CER.

For the proposed projects it is recommended to spent Rs 5,00,000/- towards CER Activities in the nearby Government School for Renovation or reconstruction of Existing Toilet, Providing Note books to the school library, Plantation in the school ground & any other recommendations by the School Head masters.

TABLE 8.1 CER – ACTION PLAN

Code	CER
P1	Rs 5,00,000/-

Source: Field survey conducted by FAE, consultation with project proponent

9. ENVIRONMENTAL COST BENEFIT ANALYSIS

Not Applicable, Since Environmental Cost Benefit Analysis not recommended at the Scoping stage.

10. ENVIRONMENTAL MANAGEMENT PLAN

10.0 GENERAL

Environment Management Plan (EMP) aims at the preservation of ecological system by considering in-built pollution abatement facilities at the proposed site. Good practices of Environmental Management plan will ensure to keep all the environmental parameters of the project in respect of Ambient Air quality, Water quality, Socio – economic improvement standards.

Mitigation measures at the source level and an overall environment management plan at the study area are elicited so as to improve the supportive capacity of the receiving bodies. The EMP presented in this chapter discusses the administrative aspects of ensuring that mitigative measures are implemented and their effectiveness monitored after approval of the EIA.

10.1 ENVIRONMENTAL POLICY

The Project Proponent is committed to conduct all its operations and activities in an environmentally responsible manner and to continually improve environmental performance.

The Proponent Thiru. C.Selvam will –

- Meet the requirements of all laws, acts, regulations, and standards relevant to its operations and activities
- Implement a program to train employees in general environmental issues and individual workplace environmental responsibilities
- Allocate necessary resources to ensure the implementation of the environmental policy
- Ensure that an effective closure strategy is in place at all stages of project development and that progressive reclamation is undertaken as early as possible to reduce potential long-term environmental and community impacts
- Implement monitoring programmes to provide early warning of any deficiency or unanticipated performance in environmental safeguards
- Conduct periodic reviews to verify environmental performance and to continuously strive towards improvement.

Description of the Administration and Technical Setup –

The Environment Monitoring Cell discussed under Chapter 6 will ensure effective implementation of environment management plan and to ensure compliance of environmental statutory guidelines through Mine Management Level of each Proposed Quarry.

The said team will be responsible for:

- Monitoring of the water/ waste water quality, air quality and solid waste generated
- Analysis of the water and air samples collected through external laboratory
- Implementation and monitoring of the pollution control and protective measures/ devices which shall include financial estimation, ordering, installation of air pollution control equipment, waste water treatment plant, etc.

- Co-ordination of the environment related activities within the project as well as with outside agencies
- Collection of health statistics of the workers and population of the surrounding villages
- Green belt development
- Monitoring the progress of implementation of the environmental monitoring programme
- Compliance to statutory provisions, norms of State Pollution Control Board, Ministry of Environment and Forests and the conditions of the environmental clearance as well as the consents to establish and consents to operate.

10.2 LAND ENVIRONMENT MANAGEMENT

Landscape of the area will be changed due to the quarrying operation, restoration of the land by converting the quarry pit into temporary reservoir and the remaining part of the area (un utilized areas, infrastructure, haul Roads) will be utilized for greenbelt development. Aesthetic of the Environment will not be affected. There is no major vegetation in the project area during the course of quarrying operation and after completion of the quarrying operation thick plantation will be developed under greenbelt development programme.

TABLE 10.1: PROPOSED CONTROLS FOR LAND ENVIRONMENT

CONTROL	RESPONSIBILITY
Design vehicle wash-down areas so that all runoff water is captured and passed through oil water separators and sediment catchment devices.	Mines Manager
Refueling to be undertaken in a safe location, away from vehicle movement pathways&100 m away of any watercourse Refueling activity to be under visual observation at all times. Drainage of refueling areas to sumps with oil/water separation	Mine Foreman & Mining Mate
Soil and groundwater testing as required following up a particular incident of contamination.	Mines Manager
At conceptual stage, the mining pits will be converted into Rain Water Harvesting. Remaining area will be converted into greenbelt area	Mines Manager
No external dumping i.e., outside the project area	Mine Foreman
Garland drains with catch pits / settlement traps to be provided all around the project area to prevent run off affecting the surrounding lands.	Mines Manager
The periphery of Project area will be planted with thick plantation to arrest the fugitive dust, which will also act as acoustic barrier.	Mines Manager

Source: Proposed by FAE's & EIA Coordinator

10.3 SOIL MANAGEMENT

There is no overburden or waste anticipated from proposed project.

TABLE 10.2: PROPOSED CONTROLS FOR SOIL MANAGEMENT

CONTROL	RESPONSIBILITY

Surface run-off from the project boundary via garland drains will be diverted to the mine pits	Mine Foreman & Mining Mate
Design haul roads and other access roads with drainage systems to minimize concentration of flow and erosion risk	Mines Manager
Empty sediment from sediment traps Maintain, repair or upgrade garland drain system	Mines Manager
Test soils for pH, EC, chloride, size & water holding capacity	Manager Mines

Source: Proposed by FAE's & EIA Coordinator

10.4 WATER MANAGEMENT

In the proposed quarrying project, no process is involved for the effluent generation, only oil & grease from the machinery wash is anticipated and domestic sewage from mine office. The quarrying operation is proposed upto a depth of 59m (13m Agl + 46m Bgl), the water table in the area is 60-65 m below ground level, hence the proposed projects will not intersect the Ground water table during entire quarry period.

TABLE 10.3: PROPOSED CONTROLS FOR WATER ENVIRONMENT

CONTROL	RESPONSIBILITY
To maximize the reuse of pit water for water supply	Mines Foreman
Temporary and permanent garland drain will be constructed to contain the catchments of the mining area and to divert runoff from undisturbed areas through the mining areas	Mines Manager
Natural drains/nallahs/brooklets outside the project area should not be disturbed at any point of mining operations	Mines Manager
Ensure there is no process effluent generation or discharge from the project area into water bodies	Mines Foreman
Domestic sewage generated from the project area will be disposed in septic tank and soak pit system	Mines Foreman
Monthly or after rainfall, inspection for performance of water management structures and systems	Mines Manager
Conduct ground water and surface water monitoring for parameters specified by CPCB	Manager Mines

Source: Proposed by FAE's & EIA Coordinator

10.5 AIR QUALITY MANAGEMENT

The proposed quarrying activity would result in the increase of particulate matter concentrations due to fugitive dust. Daily water sprinkling on the haul roads, approach roads in the vicinity would be undertaken and will be continued as there is possibility for dust generation due to truck mobility. It will be ensured that vehicles are properly maintained to comply with exhaust emission requirements.

TABLE 10.4: PROPOSED CONTROLS FOR AIR ENVIRONMENT

CONTROL	RESPONSIBILITY

Generation of dust during excavation is minimized by daily (twice) water sprinkling on working face and daily (twice) water sprinkling on haul road	Mines Manager
Wet drilling procedure /drills with dust extractor system to control dust generation during drilling at source itself is implemented	Mines Manager
Maintenance as per operator manual of the equipment and machinery in the mines to minimizing air pollution	Mines Manager
Ambient Air Quality Monitoring carried out in the project area and in surrounding villages to access the impact due to the mining activities and the efficacy of the adopted air pollution control measures	Mines Manager
Provision of Dust Mask to all workers	Mines Manager
Greenbelt development all along the periphery of the project area	Mines Manager

Source: Proposed by FAE's & EIA Coordinator

10.6 NOISE POLLUTION CONTROL

There will be intermittent noise levels due to vehicular movement, trucks loading, drilling and blasting and cutting activities. No mining activities are planned during night time.

TABLE 10.5: PROPOSED CONTROLS FOR NOISE ENVIRONMENT

CONTROL	RESPONSIBILITY
Development of thick greenbelt all along the Buffer Zone (7.5 Meters) of the project area to attenuate the noise and the same will be maintained	Mines Manager
Preventive maintenance of mining machinery and replacement of worn-out accessories to control noise generation	Mines Foreman
Deployment of mining equipment with an inbuilt mechanism to reduce noise	Mines Manager
Provision of earmuff / ear plugs to workers working in noise prone zones in the mines	Mining Mate
Provision of effective silencers for mining machinery and transport vehicles	Mines Manager
Provision of sound proof AC operator cabins to HEMM	Mines Manager
Sharp drill bits are used to minimize noise from drilling	Mines Foreman
Controlled blasting technologies are adopted by using delay detonators to minimize noise from blasting	Mines Manager
Annual ambient noise level monitoring shall be carried out in the project area and in surrounding villages to access 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	Mines Manager
Reduce maximum instantaneous charge using delays while blasting	Mining Mate
Change the burden and spacing by altering the drilling pattern and/or delay layout, or altering the hole inclination	Mines Manager
Undertake noise or vibration monitoring	Mines Manager

Source: Proposed by FAE's & EIA Coordinator

10.7 GROUND VIBRATION AND FLY ROCK CONTROL

The Rough stone quarry operation creates vibration due to the blasting and movement of Heavy Earth moving machineries, fly rocks due to the blasting.

TABLE 10.6: PROPOSED CONTROLS FOR GROUND VIBRATIONS & FLY ROCK

CONTROL	RESPONSIBILITY
Controlled blasting using delay detonators will be carried out to maintain the PPV value (below 8Hz) well within the prescribed standards of DGMS	Mines Manager
Drilling and blasting will be carried under the supervision of qualified persons	Mines Manager
Proper stemming of holes should be carried out with statutory competent qualified blaster under the supervision of statutory mines manager to avoid any anomalies during blasting	Mines Manager
Suitable spacing and burden will be maintained to avoid misfire / fly rocks	Manager Mines
Number of blast holes will be restricted to control ground vibrations	Manager Mines
Blasting will be carried out only during noon time	Mining Mate
Undertake noise or vibration monitoring	Mines Manager
ensure blast holes are adequately stemmed for the depth of the hole and stemmed with suitable angular material	Mines Foreman

Source: Proposed by FAE's & EIA Co-ordinator

10.8 BIOLOGICAL ENVIRONMENT MANAGEMENT

The proponent will take all necessary steps to avoid the impact on the ecology of the area by adopting suitable management measures in the planning and implementation stage. During mining, thick plantation will be carried out around the project periphery, on safety barrier zone, on top benches of quarried out area etc.,

Following control measures are proposed for its management and will be the responsibility of the Mines Manager.

- Greenbelt development all along the safety barrier of the project area
- It is also proposed to implement the greenbelt development programme and post plantation status will be regularly checked for every season.
- The main attributes that retard the survival of sapling 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.
- Year wise greenbelt development will be recorded and monitored
    - Based on the area of plantation.
    - Period of plantation
    - Type of plantation
    - Spacing between the plants
    - Type of manuring and fertilizers and its periods
    - Lopping period, interval of watering
    - Survival rate
    - Density of plantation

- The ultimate reclamation planned leaves a congenial environment for development of flora & immigration of small fauna through green belt and water reservoir. The green belt and water reservoir developed within the Project at the end of mine life will attract the birds and animals towards the project area in the post mining period.

10.8.1 Green Belt Development Plan

About 680 nos. of saplings is proposed to be planted for the Mining plan period in safety barrier of applied mine lease area with survival rate 80%. The greenbelt development plan has been prepared keeping in view the land use changes that will occur due to mining operation in the area.

TABLE 10.7 PROPOSED GREENBELT ACTIVITIES FOR 5 YEAR PLAN PERIOD

Year	No. of tress proposed to be planted	Area to be covered in m^2	Name of the species
I	4350	The safety zone along the boundary barrier has been identified to be utilized for Greenbelt development and along village roads.	Neem, Pongamia, vilvam etc.,

Source: proposed by FAE's & EIA Coordinator

The objectives of the greenbelt development plan are –

- Provide a green belt around the periphery of the quarry area to combat the dispersal of dust in the adjoining areas,
- Protect the erosion of the soil, Conserve moisture for increasing ground water recharging,
- Restore the ecology of the area, restore aesthetic beauty of the locality and meet the requirement of fodder, fuel and timber of the local community.

A well-planned Green Belt with multi rows (three tiers) preferably with long canopy leaves shall be developed with dense plantations around the boundary and haul roads to prevent air, dust noise propagation to undesired places and efforts will be taken for the enhancement of survival rate.

10.8.2 Species Recommended for Plantation

Following points have been considered while recommending the species for plantation:

- Creating of bio-diversity.
- Fast growing, thick canopy cover, perennial and evergreen large leaf area,
- Efficient in absorbing pollutants without major effects on natural growth

TABLE 10.8: RECOMMENDED SPECIES TO PLANT IN THE GREENBELT

S.No	Botanical Name	Local Name	Importance
1.	Azadirachta indica	Neem, Vembu	Neem oil & neem products
2.	Tamarindus indica	Tamarind	Edible & Medicinal and other Uses
3.	Polyalthia longifolia	Nettilinkam	Tall and evergreen tree
4.	Borassus Flabellifer	Palmyra Palm	Tall Wind breaker tree and its fruits are edible

Source: Proposed by FAE's & EIA Coordinator

10.9 OCCUPATIONAL SAFETY & HEALTH MANAGEMENT

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

10.9.1 Medical Surveillance and Examinations

- Identifying workers with conditions that may be aggravated by exposure to dust & noise and establishing baseline measures for determining changes in health.
- Evaluating the effect of noise on workers
- Enabling corrective actions to be taken when necessary
- Providing health education

The health status of workers in the mine shall be regularly monitored under an occupational surveillance program. Under this program, all the employees are subjected to a detail medical examination at the time of employment. The medical examination covers the following tests under mines act 1952.

- General Physical Examination and Blood Pressure
- X-ray Chest and ECG
- Sputum test
- Detailed Routine Blood and Urine examination

The medical histories of all employees will be maintained in a standard format annually. Thereafter, the employees will be subject to medical examination annually. The below tests keep upgrading the database of medical history of the employees.

TABLE 10.9: MEDICAL EXAMINATION SCHEDULE

S. No	Activities	1st Year	2nd Year	3rd Year	4th Year	5th Year
1	Initial Medical Examination (Mine Workers)					
A	Physical Check-up					
B	Psychological Test					
C	Audiometric Test					
D	Respiratory Test					
2	Periodical Medical Examination (Mine Workers)					
A	Physical Check – up					
B	Audiometric Test					
C	Eye Check – up					
D	Respiratory Test					
3	Medical Camp (Mine Workers & Nearby Villagers)					
4	Training (Mine Workers)					

Medical Follow ups:- Work force will be divided into three targeted groups age wise as follows:-		
Age Group	**PME as per Mines Rules 1955**	**Special Examination**
Less than 25 years	Once in a Three Years	In case of emergencies
Between 25 to 40 Years	Once in a Three Years	In case of emergencies
Above 40 Years	Once in a Three Years	In case of emergencies
Medical help on top priority immediately after diagnosis/ accident is the essence of preventive aspects.		

10.9.2 Proposed Occupational Health and Safety Measures

- The mine site will have adequate drinking water supply so that workers do not get dehydrated.
- Lightweight and loose-fitting clothes having light colours will be preferred to wear.
- Noise exposure measurements will be taken to determine the need for noise control strategies.
- The personal protective equipment will be provided for mine workers.
- Supervisor will be instructed for reporting any problems with hearing protectors or noise control equipment.
- At noisy working activity, exposure time will be minimized.
- Dust generating sources will be identified and proper control measure will be adopted.
- Periodic medical examinations will be provided for all workers.
- Strict observance of the provisions of DGMS Acts, Rules and Regulations in respect of safety both by management and the workers.
- The width of road will be maintained more than thrice the width of the vehicle. A code of traffic rules will be implemented.
- In respect of contract work, safety code for contractors and workers will be implemented. They will be allowed to work under strict supervision of statutory person/officials only after they will impart training at vocational training centres. All personal protective equipment's will be provided to them.
- A safety committee meeting every month will be organized to discuss the safety of the mines and the persons employed.
- Celebration of annual mines safety week and environmental week in order to develop safety awareness and harmony amongst employees and co quarry owners.

FIGURE 10.1: PERSONAL PROTECTIVE EQUIPMENT TO THE MINE WORKERS



10.9.3 Health and Safety Training Programme

The Proponents will provide special induction program along with machinery manufacturers for the operators and co-operators to run and maintain the machinery effectively and efficiently. The training program for the supervisors and office staffs will be arranged in the Group Vocational Training Centres in the State and engage Environmental Consultants to provide periodical training to all the employees to carry out the mining operation in and eco-friendly manner.

TABLE 10.10: LIST OF PERIODICAL TRAININGS PROPOSED FOR EMPLOYEES

Course	Personnel	Frequency	Duration	Instruction
New-Employee Training	All new employees exposed to mine hazards	Once	One week	Employee rights Supervisor responsibilities Self-rescue Respiratory devices Transportation controls Communication systems Escape and emergency evacuation Ground control hazards Occupational health hazards Electrical hazards First aid Explosives
Task Training Like Drilling, Blasting, Stemming, safety, Slope stability, Dewatering, Haul road maintenance,	Employees assigned to new work tasks	Before new Assignments	Variable	Task-specific health &safety procedures and SOP for various mining activity. Supervised practice in assigned work tasks.
Refresher Training	All employees who received new-hire training	Yearly	One week	Required health and safety standards Transportation controls Communication systems Escape ways, emergency evacuations Fire warning Ground control hazards First aid Electrical hazards Accident prevention Explosives Respirator devices
Hazard Training	All employees exposed to mine hazards	Once	Variable	Hazard recognition and avoidance Emergency evacuation procedures Health standards Safety rules Respiratory devices

Source: Proposed by FAE's & EIA Coordinator as per DGMS Norms

10.9.4.: Budgetary Provision for Environmental Management –

Adequate budgetary provision has been made by the Company for execution of Environmental Management Plan. The Table 10.11 gives overall investment on the environmental safeguards and recurring expenditure for successful monitoring and implementation of control measures.

TABLE 10.11: EMP BUDGET FOR PROPOSED PROJECT

Activities	Mitigation Measure	Provision for Implementation	Capital	Recurring
Air Environment	Compaction, gradation and drainage on both sides for Haulage Road	Rental Dozer & drainage construction on haul road @ Rs. 10,000/- per hectare; and yearly maintenance @ Rs. 10,000/- per hectare	87650	87650
	Fixed Water Sprinkling Arrangements + Water sprinkling by own water tankers	Fixed Sprinkler Installation and New Water Tanker Cost for Capital; and Water Sprinkling (thrice a day) Cost for recurring	800000	50000
	Muffle blasting – To control fly rocks during blasting	Blasting face will be covered with sand bags / steel mesh / old tyres / used conveyor belts	0	5000
	Wet drilling procedure / latest eco-friendly drill machine with separate dust extractor unit	Dust extractor @ Rs. 25,000/- per unit deployed as capital & @ Rs. 2500 per unit recurring cost for maintenance - 4 Units	100000	10000
	No overloading of trucks/tippers/tractors	Manual Monitoring through Security guard	0	5000
	Stone carrying trucks will be covered by tarpaulin	Monitoring if trucks will be covered by tarpaulin	0	10000
	Enforcing speed limits of 20 km/hr within ML area	Installation of Speed Governers @ Rs. 5000/- per Tipper/Dumper deployed - 4 Units	20000	1000
	Regular monitoring of exhaust fumes as per RTO norms	Monitoring of Exhaust Fumes by Manual Labour	0	5000
	Regular sweeping and maintenance of approach roads for at least about 200 m from ML Area	Provision for 2 labours @ Rs.10,000/labour (Contractual) per Hectare	0	175300
	Installing wheel wash system near gate of quarry	Installation + Maintenance + Supervision	50000	20000

Noise Environment	Source of noise will be during operation of transportation vehicles, HEMM for this proper maintenance will be done at regular intervals.	Provision made in Operating Cost	0	0
	Oiling & greasing of Transport vehicles and HEMM at regular interval will be done	Provision made in Operating Cost	0	0
	Adequate silencers will be provided in all the diesel engines of vehicles.	Provision made in Operating Cost	0	0
	It will be ensured that all transportation vehicles carry a fitness certificate.	Provision made in Operating Cost	0	0
	Safety tools and implements that are required will be kept adequately near blasting site at the time of charging.	Provision made in OHS part	0	0
	Line Drilling all along the boundary to reduce the PPV from blasting activity and implementing controlled blasting.	Provision made in Operating Cost	0	0
	Proper warning system before blasting will be adopted and clearance of the area before blasting will be ensured.	Blowing Whistle by Mining Mate / Blaster / Compentent Person	0	0
	Provision for Portable blaster shed	Installation of Portable blasting shelter	50000	2000
	NONEL Blasting will be practiced to control Ground vibration and fly rocks	Rs. 30/- per 6 Tonnes of Blasted Material	0	3772834
Waste Management	Waste management (Spent Oil, Grease etc.,)	Provision for domestic waste collection and disposal through authorized agency	5000	20000
		Installation of dust bins	5000	2000
	Bio toilets will be made available outside mine lease on the land of owner itself	Provision made in Operating Cost	0	0

Mine Closure	1. Progressive Closure Activity - Surface Runoff management	Provision for garland drain @ Rs. 10,000/- per Hectare with maintenance of Rs. 5,000/- per annum	87650	5000
	2. Progressive Closure Activity Barbed Wire Fencing to quarry area will be provisioned.	Per Hectare fencing Cost @ Rs. 2,00,000/- with Maintenance of Rs 10,000/- per annum	1753000	10000
	3. Progressive Closure Activity Green belt development - 500 trees per one hectare - Proposal for 4350Trees - (3000 Inside Lease Area & 1350 Outside Lease Area)	Site clearance, preparation of land, digging of pits / trenches, soil amendments, transplantation of saplings @ 200 per plant (capital) for plantation inside the lease area and @ 30 per plant maintenance (recurring)	600000	90000
		Avenue Plantation @ 300 per plant (capital) for plantation outside the lease area and @ 30 per plant maintenance (recurring)	405000	40500
	4. Implementation of Final Mine Closure Activity as per Approved Mining Plan on Last Year	Few activities already covered as progressive closure activities as greenbelt development, wire fencing, garland drain. *For Final Closure Activities 15% of the proposed closure cost will be spent during the final mine closure stage - Last Year	276750	0
	5. Contribution towards Green Fund. As per TNMMCR 1959, Rule 35 A	The Contribution towards Green Funds @ 10% of Seigniorage fee are indicated	13059810	0

		as part of EMP Budge and not necessarily implemented in the Project Site		
Implementation of EC, Mining Plan & DGMS Condition	Size 6' X 5' with blue background and white letters as mentioned in MoM Appendix II by the SEAC TN	Fixed Display Board at the Quarry Entrance as permanent structure mentioning Environmental Conditions	10000	1000
	Air, Water, Noise and Soil Quality Sampling every 6 Months for Compliance Report of EC Conditions	Submission of 2 Half Yearly Compliance - Lab Monitoring Report as per CPCB norms	0	50000
	Workers will be provided with Personal Protective Equipment's	Provision of PPE @ Rs. 4000/- per employee with recurring based on wear and tear (say, @ Rs. 1000/- per employee) - 33 Employees	132000	33000
	Health check up for workers will be provisioned	IME & PME Health check up @ Rs. 1000/- per employee	0	33000
	First aid facility will be provided	Provision of 2 Kits per Hectare @ Rs. 2000/-	0	17530
	To control the dust emission to the nearby structures	Erection of Sheet fencing along the West side of the project site	200000	10000
	Mine will have safety precaution signages, boards.	Provision for signages and boards made	10000	2000
	No parking will be provided on the transport routes. Separate provision on the south side of the hill will be made for vehicles /HEMMs. Flaggers will be deployed for traffic management	Parking area with shelter and flags @ Rs. 50,000/- per hectare project and Rs. 10,000/- as maintenance cost	438250	10000

	Installation of CCTV cameras in the mines and mine entrance	Camera 4 Nos, DVR, Monitor with internet facility	30000	5000
	Implementation as per Mining Plan and ensure safe quarry working	Mines Manager (1st Class / 2nd Class / Mine Foreman) under regulation 34 / 34 (6) of MMR, 1961 and Mining Mate under regulation 116 of MMR,1961 @ 40,000/- for Manager & @ 25,000/- for Foreman / Mate	0	780000
CER	Through the Chief Wildlife Warden Chennai Funds for Expenditure on conservation measures to make water hole ponds at Srivilliputhu Megamalai Wildlife Sanctuary	Funds will remitted in form of DD to the respective DFO account	500000	0
TOTAL			**5283550**	**5252814**

*Marked cost is already discussed in the mining plan hence that is not included in the total Environmental Management plan cost Total Cost for the five years

Year	Total Cost	Year	Total Cost
1st	₹ 1,05,36,364	**6th**	₹ 93,45,845
2nd	₹ 55,15,455	**7th**	₹ 71,71,362
3rd	₹ 57,91,227	**8th**	₹ 75,29,930
4th	₹ 60,80,789	**9th**	₹ 79,06,426
5th	₹ 63,84,828	**10th**	₹ 85,78,498
Total	**748 LAKHS**		

Cost inflation 5% per annum

Note: This Environmental Management plan cost will vary according to the public consultation comments

10.10 CONCLUSION –

Various aspects of mining activities were considered and related impacts were evaluated. Considering all the possible ways to mitigate the environmental concerns Environmental Management Plan was prepared and fund has been allocated for the same. The EMP is dynamic, flexible and subjected to periodic review. For project where the major environmental impacts are associated, EMP will be under regular review. Senior Management responsible for the project will conduct a

review of 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 the positive impact in the study area.

11. SUMMARY AND CONCLUSION

Thiru. C.Selvam Rough Stone and Gravel Quarry Extent:8.76.5 Ha consisting of 1 Proposed, 1 Existing Quarries falls under "B" category as per MoEF & CC Notification S.O. 3977 (E).

Now, as per Order Dated: 04.09.2018 & 13.09.2018 passed by Hon'ble National Green Tribunal, New Delhi in O.A. No. 173 of 2018 & O.A. No, 186 of 2016 and MoEF & CC Office Memorandum F. No. L-11011/175/2018-IA-II (M) Dated: 12.12.2018 clarified the requirement for EIA, EMP and therefore, Public Consultation for all areas from 5 to 25 ha falling in Category B-1 and appraised by SEAC/ SEIAA as well as for cluster situation.

The proposed projects are categorized under category "B1" Activity 1(a) (mining lease area in cluster situation) and will be considered at SEIAA – TN after conducting Public Hearing and Submission of EIA/EMP Report for Grant of Environmental Clearance. **"**Draft EIA report prepared on the basis of ToR issued for carrying out public hearing for the grant of Environmental Clearance from SEIAA, Tamil Nadu".

Environmental monitoring and audit mechanism have been recommended before and after commencement of the project, where necessary, to verify the accuracy of the EIA predictions and the effectiveness of recommended mitigation measures.

The main scope of the EIA study is to quantify the cumulative impact in the study area due to cluster quarries and formulate the effective mitigation measures for each individual leases. A detailed account of the emission sources, emissions control equipment, background Air quality levels, Meteorological measurements, Dispersion model and all other aspects of pollution like effluent discharge, Dust generation etc., have been discussed in this report. The baseline monitoring study has been carried out during the months October to December 2024 for various environmental components so as to assess the anticipated impacts of quarry project on the environment and suitable mitigation measures for likely adverse impacts due to the proposed project is suggested individually for the respective proposed project under Chapter 10.

The project proponent ensures to obtain necessary clearances and quarrying will be carried out as per rules and regulations. The Mining Activity will be carried out in a phased manner as per the approved mining plan after obtaining EC, CTO from TNPCB, execution of lease deed and obtaining DGMS Permission and working will be carried out under the supervision of Competent Persons employed.

Overall, the EIA report has predicted that the project will comply with all environment standards and legislation after commencement of the project and operational stage mitigation measures are implemented.

Mining operations has positive impact on environment and socio economy such as landscape improvement, water as by-product, economy development and better public services, providing and supply of Rough Stone as per market demand.

Sustainable and modern mining leads us to see positive impact of mining operation and providing consistent employment for nearly 34 people directly in the proposed projects and indirectly around 50 people.

As discussed, it is safe to say that the proposed quarries are not likely to cause any significant impact to the ecology of the area, as adequate preventive measures will be adopted to keep the various pollutants within the permissible limits. Green belt development around the area will also be taken up as an effective pollution mitigate technique, as well as to serve as biological indicators for the pollutants released from the Thiru. C.Selvam Rough Stone and Gravel Quarry Extent:8.76.5 Ha.

12. DISCLOSURE OF CONSULTANT

The Project Proponent –

Thiru. C.Selvam have engaged M/s Geo Exploration and Mining Solutions, an Accredited Organization under Quality Council of India – National Accreditation Board for Education & Training, New Delhi, for carrying out the EIA Study as per the ToR Issued.

Name and address of the consultancy:

GEO EXPLORATION AND MINING SOLUTIONS
No 17, Advaitha Ashram Road,
Alagapuram, Salem – 636 004
Tamil Nadu, India
Email:infogeoexploration@gmail.com
Web: **www.gemssalem.com**
Phone: 0427 2431989.

The Accredited Experts and associated members who were engaged for this EIA study as given below –

Sl.No.	Name of the expert	In house/ Empanelled	EIA Coordinator		FAE	
			Sector	Category	Sector	Category
1	**Dr. M. Ifthikhar Ahmed**	**In-house**	**1**	**A**	WP GEO SC	B A A
2	Dr. P. Thangaraju	In-house	**-**	**-**	HG GEO	A A
3	Mr. A. Jagannathan	In-house	**-**	**-**	AP NV SHW	B A B
4	Mr. N. Senthilkumar	Empanelled	38 28	B B	AQ WP RH	B B A
5	Mrs. Jisha parameswaran	In-house	-	**-**	SW	B
6	Mr. Govindasamy	In-house	-	**-**	WP	B
7	Mrs. K. Anitha	In-house	-	**-**	SE	A
8	Mrs. Amirtham	In-house	-	**-**	EB	B
9	Mr. Alagappa Moses	Empanelled	-	**-**	EB	A
10	Mr. A. Allimuthu	In-house	-	**-**	LU	B
11	Mr. S. Pavel	Empanelled	-	**-**	RH	B
12	Mr. J. R. Vikram Krishna	Empanelled	-	**-**	SHW	A

					RH	A

Abbreviations			
EC	EIA Coordinator	EB	Ecology and bio-diversity
AEC	Associate EIA Coordinator	NV	Noise and vibration
FAE	Functional Area Expert	SE	Socio economics
FAA	Functional Area Associates	HG	Hydrology, ground water and water conservation
TM	Team Member	SC	Soil conservation
GEO	Geology	RH	Risk assessment and hazard management
WP	Water pollution monitoring, prevention and control	SHW	Solid and hazardous wastes
AP	Air pollution monitoring, prevention and control	MSW	Municipal Solid Wastes
LU	Land Use	ISW	Industrial Solid Wastes
AQ	Meteorology, air quality modeling, and prediction	HW	Hazardous Wastes

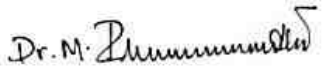
DECLARATION BY EXPERTS CONTRIBUTING TO THE EIA/EMP

Declaration by experts contributing to the Draft EIA & EMP report prepared for our Rough Stone and Gravel quarry situated in S.F. No 927/2,3,4,5,940/2 & 943/1, over an extent of 8.76.5 Ha in Thimmarasanayakkanur Bit – I Village, Andipatti Taluk, Theni District, Tamil Nadu State. It is also certified that information furnished in the above EIA study are true and correct to the best of our knowledge.

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

Name**:** **Dr. M. Ifthikhar Ahmed**

Designation**:** **EIA Coordinator**

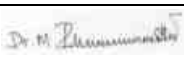
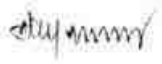
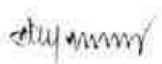
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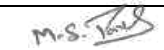
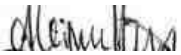
Period of Involvement: **January 2024 to till date**

Associated Team Member with EIA Coordinator:

1. **Mr. Viswanathan**
2. **Mr. Santhoshkumar**
3. **Mr. S. Ilavarasan**

FUNCTIONAL AREA EXPERTS ENGAGED IN THE PROJECT

Sl. No.	Functional Area	Involvement	Name of the Expert/s	Signature
1	AP	▪ Identification of different sources of air pollution due to the proposed mine activity ▪ Prediction of air pollution and propose mitigation measures / control measures	Mr. A. Jagannathan	
2	WP	▪ Suggesting water treatment systems, drainage facilities ▪ Evaluating probable impacts of effluent/waste water discharges into the receiving environment/water bodies and suggesting control measures.	Dr. M. Ifthikhar Ahmed	
			Mr. N. Senthilkumar	
3	HG	▪ Interpretation of ground water table and predict impact and propose mitigation measures. ▪ Analysis and description of aquifer Characteristics	Dr. P. Thangaraju	
4	GEO	▪ Field Survey for assessing the regional and local geology of the area. ▪ Preparation of mineral and geological maps. ▪ Geology and Geo morphological analysis/description and Stratigraphy/Lithology.	Dr. M. Ifthikhar Ahmed	
			Dr. P. Thangaraju	

5	SE	▪ Revision in secondary data as per Census of India, 2011. ▪ Impact Assessment & Preventive Management Plan ▪ Corporate Environment Responsibility.	Mrs. K. Anitha	
6	EB	▪ Collection of Baseline data of Flora and Fauna. ▪ Identification of species labelled as Rare, Endangered and threatened as per IUCN list. ▪ Impact of the project on flora and fauna. ▪ Suggesting species for greenbelt development.	Mrs. Amirtham	
			Mr. Alagappa Moses	
7	RH	▪ Identification of hazards and hazardous substances ▪ Risks and consequences analysis ▪ Vulnerability assessment ▪ Preparation of Emergency Preparedness Plan ▪ Management plan for safety.	Mr. N. Senthilkumar	
			Mr. S. Pavel	
			Mr. J. R. Vikram Krishna	
8	LU	▪ Construction of Land use Map ▪ Impact of project on surrounding land use ▪ Suggesting post closure sustainable land use and mitigative measures.	Mr. A. Allimuthu	
9	NV	▪ Identify impacts due to noise and vibrations ▪ Suggesting appropriate mitigation measures for EMP.	Mr. A. Jagannathan	
10	AQ	▪ Identifying different source of emissions and propose predictions of incremental GLC using AERMOD. ▪ Recommending mitigations measures for EMP	Mr. N. Senthilkumar	
11	SC	▪ Assessing the impact on soil environment and proposed mitigation measures for soil conservation	Dr. M. Ifthikhar Ahmed	
12	SHW	▪ Identify source of generation of non-hazardous solid waste and hazardous waste. ▪ Suggesting measures for minimization of generation of waste and how it can be reused or recycled.	Mr. A. Jagannathan	
			Mr. J. R. Vikram Krishna	

LIST OF TEAM MEMBERS ENGAGED IN THIS PROJECT

Sl.No.	Name	Functional Area	Involvement	Signature

1	Mr. S. Nagamani	AP; GEO; AQ	▪ Site Visit with FAE ▪ Provide inputs & Assisting FAE with sources of Air Pollution, its impact and suggest control measures ▪ Provide inputs on Geological Aspects ▪ Analyse & provide inputs and assist FAE with meteorological data, emission estimation, AERMOD modelling and suggesting control measures	
2	Mr. Viswathanan	AP; WP; LU	▪ Site Visit with FAE ▪ Provide inputs & Assisting FAE with sources of Air Pollution, its impact and suggest control measures ▪ Assisting FAE on sources of water pollution, its impacts and suggest control measures ▪ Assisting FAE in preparation of land use maps	
3	Mr. Santhoshkumar	GEO; SC	▪ Site Visit with FAE ▪ Provide inputs on Geological Aspects ▪ Assist in Resources & Reserve Calculation and preparation of Production Plan & Conceptual Plan ▪ Provide inputs & Assisting FAE with soil conservation methods and identifying impacts	
4	Mr. Umamahesvaran	GEO	▪ Site Visit with FAE ▪ Provide inputs on Geological Aspects ▪ Assist in Resources & Reserve Calculation and preparation of Production Plan & Conceptual Plan	
5	Mr. A. Allimuthu	SE	▪ Site Visit with FAE ▪ Assist FAE with collection of data's ▪ Provide inputs by analysing primary and secondary data	
6	Mr. S. Ilavarasan	LU; SC	▪ Site Visit with FAE ▪ Assisting FAE in preparation of land use maps ▪ Provide inputs & Assisting FAE with soil conservation methods and identifying impacts	
7	Mr. E. Vadivel	HG	▪ Site Visit with FAE ▪ Assist FAE & provide inputs on aquifer characteristics, ground water level/table ▪ Assist with methods of ground water recharge and conduct pump test, flow rate	

8	Mr. D. Dinesh	NV	▪ Site Visit with FAE ▪ Assist FAE and provide inputs on impacts due to proposed mine activity and suggest mitigation measures ▪ Assist FAE with prediction modelling	
9	Mr. Panneer Selvam	EB	▪ Site Visit with FAE ▪ Assist FAE with collection of baseline data ▪ Provide inputs and assist with labelling of Flora and Fauna	
10	Mrs. Nathiya	EB	▪ Site Visit with FAE ▪ Assist FAE with collection of baseline data ▪ Provide inputs and assist with labelling of Flora and Fauna	

DECLARATION BY THE HEAD OF THE ACCREDITED CONSULTANT ORGANIZATION

I, Dr. M. Ifthikhar Ahmed, Managing Partner, Geo Exploration and Mining Solutions, hereby, confirm that the above-mentioned Functional Area Experts and Team Members prepared the Draft EIA & EMP report prepared for our Rough stone and Gravel quarry situated in S.F. No 927/2,3,4,5,940/2 & 943/1, over an extent of 8.76.5 Ha in Thimmarasanayakkanur Bit – I Village, Andipatti Taluk, Theni District, Tamil Nadu State. It is also certified that information furnished in the EIA study are true and correct to the best of our knowledge.

Signature& Date:



Name: **Dr. M. Ifhikhar Ahmed**

Designation: **Managing Partner**

Name of the EIA Consultant Organization: **M/s. Geo Exploration and Mining Solutions**

NABET Certificate No & Issue Date: **NABET/EIA/2225/RA 0276 Dated: 20-2-2023**
Validity: **Valid till 06.08.2025**

ANNEXURE

THIRU. C. SELVAM ROUGH STONE AND GRAVEL QUARRY

THIMMARASANAYAKKANUR BIT- I Village,

ANDIPATTI Taluk,

THENI District

CLUSTER EXTENT: 13.52.5 Ha

ToR obtained

TO24B0108TN5453826N Dated: 29.11.2024

Code	P1
PROJECT LOCATION	Thiru. C. Selvam Extent: 8.76.5ha S.F. Nos. 927/2,3,4,5,940/2 & 943/1, Thimmarasanayakkanur Bit – I Village, Andipatti Taluk, Theni District.

LIST OF ANNEXURES

ANNEXURES	DESCRIPTION	PAGE NOS
P1 Thiru. C. Selvam	COPY OF TERMS OF REFERENCE	1A-24A
	COPY OF 500M RADIUS QUARRIES DETAILS LETTER	25-27A
	COPY OF MINING PLAN APPROVED LETTER	28A-30A
	COPY OF APPROVED MINING PLAN WITH PLATES	31A-118A
	COPY OF HYDROGEOLOGICAL REPORT	119A-137A
	COPY OF AGREEMENT OF DEED	138A-140A
	COPY OF EXPLOSIVE CERTIFICATE	141A
	COPY OF INSPECTION REPORT	142A-163A
	COPY OF DFO LETTER	164A
	COPY OF BASE LINE MONITORING DATA	165A-206A
	COPY OF CONSULTANT ACCREDITATION CERTIFICATE	207A

File No: 11284
Government of India
Ministry of Environment, Forest and Climate Change
(Issued by the State Environment Impact Assessment Authority(SEIAA), TAMIL NADU)
***

Dated **29/11/2024**

To,

Thiru.Celladurai selvam
No. 38, Middle Street, Pirathukaranpatti, Shanmugasundarapuram, Andipatti Taluk, Theni District. , Andipatti, THENI, TAMIL NADU, 625515
selvamchelladurai27@gmail.com

Subject: Grant of **ToR issued along with Public Hearing** under the provision of the EIA Notification 2006-as amended regarding.

Sir/Madam,

SEIAA, Tamil Nadu - Proposed Rough stone and Gravel quarry over an Extent of 8.76.5 Ha at SF.Nos. 927/2, 927/3, 927/4, 927/5, 940/2, 940/3 & 943/1 of Thimmarasanayakkanur Bit-1 Village, Andipatti Taluk, Theni District, Tamil Nadu by Thiru. C. Selvam - 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/496070/2024, Dated: 21.09.2024.
2. Your application submitted for Terms of Reference dated: 27.09.2024.
3. Minutes of the 509th Meeting of SEAC held on 08.11.2024.
4. Minutes of the 773rd Authority meeting held on 25.11.2024.

2. The particulars of the proposal are as below :

(i) TOR Identification No.	TO24B0108TN5453826N
(ii) File No.	11284
(iii) Clearance Type	TOR
(iv) Category	B1
(v) Project/Activity Included Schedule No.	1(a) Mining of minerals
(vii) Name of Project	C. Selvam, Rough Stone and Gravel Quarry, Extent: 8.76.5ha, S.F.Nos. 927/2, 927/3, 927/4, 927/5, 940/2, 940/3 and 943/1 of Thimmarasanayakkanur Bit-1 Village, Andipatti Taluk, Theni District.
(viii) Name of Company/Organization	chelladurai selvam

(ix) Location of Project (District, State)	THENI, TAMIL NADU
(x) Issuing Authority	SEIAA
(xii) Applicability of General Conditions	no
(xiii) Applicability of Specific Conditions	no

1.In view of the particulars given in the Para 1 above, the project proposal interalia including Form-1(Part A and B) were submitted to the SEIAA for an appraisal by the SEAC under the provision of EIA notification 2006 and its subsequent amendments.
2.The above-mentioned proposal has been considered by SEIAA in the meeting held on 25/11/2024. The minutes of the meeting and all the Application and documents submitted [(viz. Form-1 Part A, Part B,] are available on PARIVESH portal which can be accessed by scanning the QR Code above.
3.The State Expert Appraisal Committee (SEAC), based on the information & clarifications provided by the project proponent and after detailed deliberations on all technical aspects recommended the proposal for grant of Terms of Reference with public hearing under the provision of EIA Notification, 2006 and as amended thereof subject to the stipulation of specific and general conditions as detailed in Annexure (2).
4.The SEIAA has examined the proposal in accordance with the Environment Impact Assessment (EIA) Notification, 2006 & further amendments thereto and after accepting the recommendations of the SEAC hereby decided to issue the following Terms of Reference with public hearing for instant proposal of Thiru. C. Selvam under the provisions of EIA Notification, 2006 and as amended thereof.
5.The Ministry/SEIAA-TN reserves the right to stipulate additional conditions, if found necessary.
6.The Terms of Reference with public hearing to the aforementioned project is under provisions of EIA Notification, 2006. It does not tantamount to approvals/consent/permissions etc. required to be obtained under any other Act/Rule/regulation. The Project Proponent is under obligation to obtain approvals /clearances under any other Acts/ Regulations or Statutes, as applicable, to the project.
7.This issues with the approval of the Competent Authority.
8.The TORs with public hearing prescribed shall be **valid for a period of three years** from the date of issue, for submission of the EIA/EMP report as per OMNo.J-11013/41/2006-IA-II(I)(part) dated 29th August, 2017.

Copy To

1.. The Secretary, Ministry of Mines, Government of India, Shastri Bhawan, New Delhi.
2. The Principal Secretary to Government, Environment and Forests Department, Tamil Nadu.
3. The Additional Chief Secretary to Government, Natural Resources Department, Tamil Nadu.
4. The Chairman, Central Pollution Control Board, Parivesh Bhawan, CBD-Cum-Office Complex, East Arjun Nagar, New Delhi-110 032.
5. The Chair Person, TNPC Board,76, Mount Salai, Guindy, Chennai-32
6. The District Collector, Theni District
7. The Commissioner of Geology and Mines, Guindy, Chennai-32
8. The Assistant Director, Department of Geology & Mining, Theni District
9. EI Division, Ministry of Environment & Forests, Paryavaran Bhawan, New Delhi.
10. Integrated Regional office of MoEF&CC, Sasthri Bhawan, Nungambakkam, Chennai
11. File Copy

Annexure 1

Specific Terms of Reference for (Mining Of Minerals)

1. Seiaa Specific Conditions :

S. No	Terms of Reference
1.1	The Authority noted that the subject was appraised in the 509th meeting of SEAC held on

S. No	Terms of Reference
	08.11.2024. SEAC has furnished its recommendations for granting Terms of Reference along with Public Hearing subject to the conditions stated therein. 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 the production should not exceed 14,51,090 m3 of Rough stone & 2,86,230 m3 of Gravel and the annual peak production should not exceed 1,66,540 m3 of Rough Stone & 72,180 m3 of Gravel up to depth of mining 59m (13m AGL + 46m BGL), 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** of this minutes in addition to the following conditions. 1. From the KML, it is found that the proposed site seems to be sensitive as there is a hillock located nearby (Western side). Hence, the PP shall study impact of mining operations on the same and submit the study report along with EIA report.

2. Seac Conditions - Site Specific

S. No	Terms of Reference
2.1	1. **A Cluster Management Committee (CMC) shall be constituted including all the mines in the cluster as Committee Members for the effective management of the mining operation in the cluster through systematic & scientific approach with appointment of required statutory personnel, appropriate environmental management, system of maintaining the haul roads and village/panchayat roads, authorized blasting operation, Monitoring system of the environmental & other statutory compliances & its reporting status, etc. The PP shall submit the following details in the form of an Affidavit during the EIA appraisal:** **(i) Copy of the agreement forming CMC.** **(ii) The Organisation chart of the Committee with defining the role of the members** **(iii) The 'Standard Operating Procedures' (SoP) executing the planned activities**. 2. The PP shall spell out the conservation cost considering the existence of SMTR after consultation with the concerned DFO. 3. The PP shall also examine whether the site falls within Eco Sensitive Area considering MoEF &CC Office Memorandum no. FC-11/119/2020-FC dated: 17th May, 2022. 4. As the proposed site appears to be in valley between hillock mountain range, the PP shall study on the implications of flora, fauna, wind direction & drainage pattern. 5. 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. and spell out the mitigation measures to be proposed for the protection of the above structures, if any during the quarrying operations. 6. The proponent shall furnish photographs of adequate fencing, garland drainage built with siltation tank & green belt along the periphery including replantation of existing trees; maintaining the safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan. 7. The Proponent shall carry out Bio diversity study as a part of EIA study and the same shall be included in the Report. 8. 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. 9. The PP shall prepare a conceptual working plan accommodating the inclusion of haul road accessibility keeping the benches intact, by ensuring the slope stability of the working benches to be constructed and existing quarry wall.

3. Seac Standard Conditions

S. No	Terms of Reference
3.1	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 (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, Surathkal, and Anna University Chennai-CEG Campus. The PP shall submit a copy of the aforesaid report indicating the stability status of the quarry wall and possible mitigation measures during the time of appraisal for obtaining the EC. 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/I Class mines manager appointed by the proponent. 10. The PP shall present a conceptual design for carrying out only controlled blasting operation involving line drilling and muffle blasting in the proposed quarry such that the blast-induced ground vibrations are controlled as well as no fly rock travel beyond 30 m from the blast site. 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,

S. No	Terms of Reference
	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). 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. 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

S. No	Terms of Reference
	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. 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/TNPCB. 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

S. No	Terms of Reference
	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.

Standard Terms of Reference for (Mining of minerals)

1.

S. No	Terms of Reference
1.1	A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given
1.2	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
1.3	All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery/ toposheet, topographic sheet, geomorphology and geology of the areashould 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)
1.4	Information should be provided in Survey of India Toposheet 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
1.5	Details about the land proposed for mining activities should be givenwith 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
1.6	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
1.7	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
1.8	The study rea 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
1.9	Land use of the study rea 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

S. No	Terms of Reference
	land use should be given
1.10	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
1.11	A 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
1.12	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
1.13	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
1.14	The vegetation in the RF / PF areas in the study area, with necessary details, should be given
1.15	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
1.16	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 Wildlifeand copy furnished
1.17	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 alongwith 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
1.18	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 Dept. Should be secured and furnished to the effect that the proposed mining activities could be considered
1.19	Similarly, for coastal Projects, A CRZ map duly authenticated by one of the authorized agencies

S. No	Terms of Reference
	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)
1.20	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
1.21	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
1.22	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
1.23	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
1.24	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
1.25	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
1.26	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 State Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished
1.27	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

S. No	Terms of Reference
1.28	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
1.29	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
1.30	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
1.31	Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report
1.32	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
1.33	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
1.34	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
1.35	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
1.36	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
1.37	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
1.38	Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given
1.39	The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation

S. No	Terms of Reference
	of EMP should be clearly spelt out
1.40	A Disaster management Plan shall be prepared and included in the EIA/EMP Report
1.41	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
1.42	Besides the above, the below mentioned general points are also to be followed:- a) All documents to be properly referenced with index and continuous page numbering. b) Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated. c) 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. d) Where the documents provided are in a language other than English, an English translation should be provided. e) The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted. f) While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF 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. g) 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. h) 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. i) 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

SEIAA STANDARD CONDITIONS:

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 & emergency management plan, fire safety & evacuation plan and sustainable development goals pertaining to the cluster in a holistic manner especially during natural calamities like intense rain and the mitigation measures considering the inundation of the cluster and evacuation plan.
6. The Cluster Management Committee shall form Environmental Policy to practice sustainable mining in a scientific and systematic manner in accordance with the law. The role played by the committee in implementing the environmental policy devised shall be given in detail in the EIA Report.
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 deliberate on the health of the workers/staff involved in the mining as well as the health of the public in the vicinity.

Agriculture & Agro-Biodiversity

9. Impact on surrounding agricultural fields around the proposed mining Area.
10. Impact on soil flora & vegetation around the project site.
11. Details of type of vegetation including no. of trees & shrubs within the proposed mining area and. If so, transplantation of such vegetation all along the boundary of the proposed mining area shall committed mentioned in EMP.

12. The Environmental Impact Assessment should study the agro-biodiversity, agro-forestry, horti-cultural plantations, the natural ecosystem, the soil micro flora, fauna and soil seed banks and suggest measures to maintain the natural Ecosystem.
13. Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.
14. The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock.

Forests

15. The project proponent shall detailed study on impact of mining on Reserve forests and free ranging wildlife.
16. The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.
17. The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection.
18. The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site.

Water Environment

19. 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.
20. Erosion Control measures.
21. 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.
22. The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.
23. The project proponent shall study and furnish the details on potential fragmentation impact on natural environment, by the activities.
24. 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.

25. The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.
26. The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.
27. The EIA shall include the impact of mining activity on the following:
    a) Hydrothermal/Geothermal effect due to destruction in the Environment.
    b) Bio-geochemical processes and its foot prints including environmental stress.
    c) Sediment geochemistry in the surface streams.

Energy

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

Climate Change

29. 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.
30. The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock, soil health and physical, chemical & biological soil features.
31. Impact of mining on pollution leading to GHGs emissions and the impact of the same on the local livelihood.

Mine Closure Plan

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

EMP

33. Detailed Environment Management Plan along with adaptation, mitigation & remedial strategies covering the entire mine lease period as per precise area communication order issued and the scope for achieving SDGs.
34. 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

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

Disaster Management Plan

36. 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

37. 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.
38. 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.
39. The project proponent shall study and furnish the possible pollution due to plastic and microplastic on the environment. The ecological risks and impacts of plastic & microplastics on aquatic environment and fresh water systems due to activities, contemplated during mining may be investigated and reported

A. STANDARD TERMS OF REFERENCE

1) Year-wise production details since 1994 should be given, clearly stating the highest production achieved in any one year prior to 1994. It may also be categorically informed whether there had been any increase in production after the EIA Notification 1994 came into force, w.r.t. the highest production achieved prior to 1994.
2) A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given.
3) All documents including approved mine plan, EIA and Public Hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management, mining technology etc. and should be in the name of the lessee.
4) All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery/ topo sheet, topographic sheet, geomorphology and geology of the area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).

5) Information should be provided in Survey of India Topo sheet in 1:50,000 scale indicating geological map of the area, geomorphology of land forms of the area, existing minerals and mining history of the area, important water bodies, streams and rivers and soil characteristics.
6) Details about the land proposed for mining activities should be given with information as to whether mining conforms to the land use policy of the State; land diversion for mining should have approval from State land use board or the concerned authority.
7) It should be clearly stated whether the proponent Company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA Report with description of the prescribed operating process/procedures to bring into focus any infringement/deviation/ violation of the environmental or forest norms/ conditions? The hierarchical system or administrative order of the Company to deal with the environmental issues and for ensuring compliance with the EC conditions may also be given. The system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large, may also be detailed in the EIA Report.
8) Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided.
9) The study area will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc. should be for the life of the mine / lease period.
10) Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.
11) Details of the land for any Over Burden Dumps outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be given.
12) Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this

regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the Expert Appraisal Committees.

13) Status of forestry clearance for the broken up area and virgin forestland involved in the Project including deposition of Net Present Value (NPV) and Compensatory Afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished.
14) Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated.
15) The vegetation in the RF / PF areas in the study area, with necessary details, should be given.
16) A study shall be got done to ascertain the impact of the Mining Project on wildlife of the study area and details furnished. Impact of the project on the wildlife in the surrounding and any other protected area and accordingly, detailed mitigative measures required, should be worked out with cost implications and submitted.
17) Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger/ Elephant Reserves/(existing as well as proposed), if any, within 10 km of the mine lease should be clearly indicated, supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects due to proximity of the ecologically sensitive areas as mentioned above, should be obtained from the Standing Committee of National Board of Wildlife and copy furnished.
18) A detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] shall be carried out. Details of flora and fauna, endangered, endemic and RET Species duly authenticated, separately for core and buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any scheduled-I fauna found in the study area, the necessary plan along with budgetary provisions for their conservation should be prepared in consultation with State Forest and Wildlife Department and details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost.
19) Proximity to Areas declared as 'Critically Polluted' or the Project areas likely to come under the 'Aravali Range', (attracting court restrictions for mining operations), should

also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Department should be secured and furnished to the effect that the proposed mining activities could be considered.

20) Similarly, for Coastal Projects, a CRZ map duly authenticated by one of the authorized agencies demarcating LTL. HTL, CRZ area, location of the mine lease with respect to CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority).

21) R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation & Resettlement Policy should be kept in view. In respect of SCs /STs and other weaker sections of the society in the study area, a need based sample survey, family-wise, should be undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoral programmes of line departments of the State Government. It may be clearly brought out whether the village(s) located in the mine lease area will be shifted or not. The issues relating to shifting of village(s) including their R&R and socio-economic aspects should be discussed in the Report.

22) One season (non-monsoon) [i.e. March-May (Summer Season); October-December (post monsoon season) ; December-February (winter season)]primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report. Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-dominant downwind direction. The mineralogical composition of PM10, particularly for free silica, should be given.

23) Air quality modeling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of Vehicles for transportation of mineral. The details of the model used and input parameters used for modeling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing pre-dominant wind

direction may also be indicated on the map.

24) The water requirement for the Project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the Project should be indicated.
25) Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.
26) Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.
27) Impact of the Project on the water quality, both surface and groundwater, should be assessed and necessary safeguard measures, if any required, should be provided.
28) Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. The Report inter-alia, shall include details of the aquifers 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 cle arly indicating the area to be covered under plantation and the species to be planted. The details of plantation already done should be given. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerant to pollution.
32) Impact on local transport infrastructure due to the Project should be indicated. Projected

increase in truck traffic as a result of the Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of handling the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress Guidelines.

33) Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.
34) Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report.
35) Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.
36) Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.
37) Measures of socio economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.
38) Detailed Environmental Management Plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project.
39) Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project.
40) Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.
41) The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.
42) A Disaster management Plan shall be prepared and included in the EIA/EMP Report.
43) Benefits of the Project if the Project is implemented should be spelt out. The benefits

of the Project shall clearly indicate environmental, social, economic, employment potential, etc.

44) Besides the above, the below mentioned general points are also to be followed:-

a) Executive Summary of the EIA/EMP Report

b) All documents to be properly referenced with index and continuous page numbering.

c) Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated.

d) Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF&CC/NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the Project.

e) Where the documents provided are in a language other than English, an English translation should be provided.

f) The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.

g) While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF&CC vide O.M. No. J-11013/41/2006-IA.II(I) dated 4th August, 2009, which are available on the website of this Ministry, should be followed.

h) Changes, if any made in the basic scope and project parameters (as submitted in Form-I and the PFR for securing the TOR) should be brought to the attention of MoEF&CC with reasons for such changes and permission should be sought, as the ToR may also have to be altered. Post Public Hearing changes in structure and content of the draft EIA/EMP (other than modifications arising out of the P.H. process) will entail conducting the PH again with the revised documentation.

i) As per the circular no. J-11011/618/2010-IA.II(I) dated 30.5.2012, certified report of the status of compliance of the conditions stipulated in the Environment Clearance for the existing operations of the project, should be obtained from the Regional Office of Ministry of Environment, Forest and Climate Change, as may be applicable.

j) The EIA report should also include (i) surface plan of the area indicating contours of main topographic features, drainage and mining area, (ii) geological maps and sections and (iii) sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area.

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

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

1. Project name and location (Village, District, State, Industrial Estate (if applicable).
2. Process description in brief, specifically indicating the gaseous emission, liquid effluent and solid and hazardous wastes.
3. Measures for mitigating the impact on the environment and mode of discharge or disposal.
4. Capital cost of the project, estimated time of completion.
5. The proponent shall furnish the contour map of the water table detailing the number of wells located around the site and impacts on the wells due to mining activity.
6. A detailed study of the lithology of the mining lease area shall be furnished.
7. Details of village map, "A" register and FMB sketch shall be furnished.
8. Detailed mining closure plan for the proposed project approved by the Geology of Mining department shall be 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, with in 10km other industries, forest , eco-sensitive zones, accessibility, (note - in case of industrial estate this information may not be necessary)

18. Baseline environmental data - air quality, surface and ground water quality, soil characteristic, flora and fauna, socio-economic condition of the nearby population
19. Identification of hazards in handling, processing and storage of hazardous material and safety system provided to mitigate the risk.
20. Likely impact of the project on air, water, land, flora-fauna and nearby population
21. Emergency preparedness plan in case of natural or in plant emergencies
22. Issues raised during public hearing (if applicable) and response given
23. CER plan with proposed expenditure.
24. Occupational Health Measures
25. Post project monitoring plan
26. The project proponent shall carry out detailed hydro geological study through intuitions/NABET Accredited agencies.
27. A detailed report on the green belt development already undertaken is to be furnished and also submit the proposal for green belt activities.
28. The proponent shall propose the suitable control measure to control the fugitive emissions during the operations of the mines.
29. A specific study should include impact on flora & fauna, disturbance to migratory pattern of animals.
30. Reserve funds should be earmarked for proper closure plan.
31. A detailed plan on plastic waste management shall be furnished. Further, the proponent should strictly comply with, Tamil Nadu Government Order (Ms) No.84 Environment and forests (EC.2) Department dated 25.06.2018 regarding ban on one time use and throw away plastics irrespective of thickness with effect from 01.01.2019 under Environment (Protection) Act, 1986. In this connection, the project proponent has to furnish the action plan.

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

a. A note confirming compliance of the TOR, with cross referencing of the relevant sections / pages of the EIA report should be provided.
b. All documents may be properly referenced with index, page numbers and continuous page numbering.
c. Where data are presented in the report especially in tables, the period in which the data were collected and the sources should be indicated.
d. While preparing the EIA report, the instructions for the proponents and instructions for the consultants issued by MoEF& CC vide O.M. No. J-11013/41/2006-IA.II (I) dated

4th August, 2009, which are available on the website of this Ministry should also be followed.

e. The consultants involved in the preparation of EIA/EMP report after accreditation with Quality Council of India (QCI)/National Accreditation Board of Education and Training (NABET) would need to include a certificate in this regard in the EIA/EMP reports prepared by them and data provided by other organization/Laboratories including their status of approvals etc. In this regard circular no F. No.J -l1013/77/2004-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 willtake 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.

Signature Not Verified

Digitally Signed by : A R Rahul Nadh IAS
Member Secretary, SEIAA

Date: 29/11/2024

From

Assistant Director,
Geology and Mining,
Theni.

To

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

Roc. No.483/Mines/2023, dated.13.08.2024

sir,

Sub: Mines and Minerals - Minor Mineral – Rough Stone and Gravel - Theni District – Andipatty Taluk - Thimmarasanayakkanur Bit-1 Village - Patta land - in S.F. Nos. 927/2 (1.33.50), 927/3 (1.26.50), 927/4 (1.21.50), 927/5 (0.50.50), 940/2 (0.48.50), 940/3 (1.97.50), 943/1 (1.98.50)- Over an extent of 8.76.50 Hects - Quarry lease application preferred by Thiru.C.Selvam, S/o.Chelladurai – Precise area communicated –Draft Mining Plan submitted– Precise area communicated – Draft Mining Plan submitted - Approval accorded – 500 meter radius quarry details – Requested - Regarding..

Ref:
1. Quarry lease application preferred by Thiru.C.Selvam, S/o.Chelladurai, No.38, Middle Street, Pirathukaranpatti, Shanmugasundarapuram, Andipatty Taluk, Theni District dated.21.09.2023 and 21.05.2024.
2. Revenue Divisional Officer, Periyakulam, letter Roc.No.8719/2023/A5, Dated:19.12.2023.
3. The District Forest Officer, Theni Proceedings order Rc.No.11567/2023/D2, Dated:20.05.2024.
4. The Assistant Director, Theni Field Inspection report Roc. No.483/Mines/2023, Dated:23.05.2024.
5. Letter dated. 09.08.2024 received from Thiru.C.Selvam on 09.08.2024.

******

In the reference 1st cited, Thiru.C.Selvam, S/o.Chelladurai has preferred an application for the grant of quarry lease to quarry Rough Stone and Gravel in S.F.Nos.927/2 (1.33.50), 927/3 (1.26.50), 927/4 (1.21.50), 927/5 (0.50.50), 940/2 (0.48.50), 940/3 (1.97.50), 943/1 (1.98.50) over an extent of 8.76.50 Hects of Thimmarasanayakkanur Bit-1

Village, Andipatty Taluk under Rule 19 of Tamil Nadu Minor Mineral Concession Rules, 1959.

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

Accordingly, Thiru.C.Selvam, S/o.Chelladurai has submitted the draft Mining Plan and the same has been approved on 13.08.2024. 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 informed 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 Hects)	Collector's / Assistant Director, (Mines) Proc No.& Date.	Lease Period
1.	T.Sivakumar, S/o.Thanikodi, No.16/5, Sulthan Nagar, Visalam 1st Street, Narimedu, Madurai District.	Andipatty Taluk - Thimmarasa nayakkanur Bit-I Village	926/1, 926/2 , 945	4.76.00	District Collector Proceedings Roc.No. 81/Mines/2019, dated:06.03.2020	06.03.2020 to 05.03.2025

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.	T. Rajavel pandian, No.16/5, Velmani Illam, Maruthupandian Nagar, Narimedu, Madurai	Andipatty Taluk - Thimmarasana yakkanur Bit-I Village	814 Part-I	2.50.0	District Collector Proceedings Roc.No. 54/2011/Mines, dated 07.03.2011	26.08.2011 to 25.08.2021
2.	T. Sivakumar, No.16/5, Velmani Illam, Maruthupandian Nagar, Narimedu, Madurai	Andipatty Taluk - Thimmarasana yakkanur Bit-I Village	814 Part-II	2.50.0	District Collector Proceedings Roc.No. 55/2011/Mines, dated 07.03.2011	08.09.2011 to 07.09.2021

C.Present Proposed Quarries

S. No.	Name of the owner	Village and Taluk	S.F.No.	Extent (in Hects)
1.	Thiru.C.Selvam, S/o.Chelladurai, No.38, Middle Street, Pirathukaranpatti, Shanmugasundarapuram, Andipatty Taluk, Theni District	Andipatty Taluk - Thimmarasanayakkanur Bit-I Village	927/2, 927/3, 927/4, 927/5, 940/2, 940/3, 943/1	8.76.50 Hects.

12-8-2021

Assistant Director,
Geology and Mining,
Theni.

13/08/21.

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

To,
Thiru.C.Selvam,
S/o.Chelladurai,
No.38, Middle Street,
Pirathukaranpatti,
Shanmugasundarapuram,
Andipatty Taluk, Theni District.

Roc. No.483/Mines/2023, dated. 13.08.2024

Madam,

Sub: Mines and Minerals - Minor Mineral – Rough Stone and Gravel - Theni District – Andipatty Taluk - Thimmarasanayakkanur Bit-1 Village - Patta land - in S.F. Nos. 927/2 (1.33.50), 927/3 (1.26.50), 927/4 (1.21.50), 927/5 (0.50.50), 940/2 (0.48.50), 940/3 (1.97.50), 943/1 (1.98.50)- Over an extent of 8.76.50 Hects - Quarry lease application preferred by Thiru.C.Selvam, S/o.Chelladurai – Precise area communicated –Draft Mining Plan submitted - Approval accorded -Regarding.

Ref:
1. Quarry lease application preferred by Thiru.C.Selvam, S/o.Chelladurai, No.38, Middle Street, Pirathukaranpatti, Shanmugasundarapuram, Andipatty Taluk, Theni District dated.21.09.2023 and 21.05.2024.
2. Revenue Divisional Officer, Periyakulam, letter Roc.No.8719/2023/A5, Dated:19.12.2023.
3. The District Forest Officer, Theni Proceedings order Rc.No.11567/2023/D2, Dated:20.05.2024.
4. The Assistant Director, Theni Field Inspection report Roc. No.483/Mines/2023, Dated:23.05.2024.
5. Letter dated. 09.08.2024 received from Thiru.C.Selvam on 09.08.2024.

*****

Thiru.C.Selvam has preferred and submitted an application dated: 21.09.2023 for the grant of quarry lease to quarry Rough Stone and Gravel in S.F.Nos. 927/1 (0.18.00), 927/2 (1.33.50), 927/3 (1.26.50), 927/4 (1.21.50), 927/5 (0.50.50), 938/1A (0.85.50), 938/2 (1.94.50), 939/2 (0.45.50), 940/1 (0.65.00), 940/2 (0.48.50), 940/3 (1.97.50), 941 (0.20.50), 942 (1.19.50), 943/1 (1.98.50), 943/2 (0.89.00)over a total extent of 15.14.00 Hects.

The applicant reduced the total extent from 15.14.00 to 8.76.50 Hects. in S.F.Nos. 927/2 (1.33.50), 927/3 (1.26.50), 927/4 (1.21.50), 927/5 (0.50.50), 940/2 (0.48.50), 940/3 (1.97.50), 943/1 (1.98.50) of Thimmarasanayakkanur Bit-1 Village, Andipatty Taluk and Theni District vide her letter dated:21.05.2024. Under Rule 19 of Tamil Nadu Minor Mineral Concession Rules, 1959.

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

Accordingly, Thiru.C.Selvam has submitted the draft Mining Plan and the same has been examined in detail and observed that the applicant has proposed to quarry 7,77,155 cbm of Rough Stone and 2,39,412 cbm of Gravel up to a depth of 59 meters from the surface level for a period of 5 years and it is found 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.C.Selvam in respect of the subject area is hereby approved subject to the following conditions:

I. Safety distance of 7.5 meters should be provided to the adjacent patta lands.

II. A safety distance of 50 meters should be provided on the north side in S.F.No.927/3 and 927/2 and on the north and east side of the stream in S.F.No.927/5.

III. 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.

IV. 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.'

V. That the mining plan is approved without prejudice to any other order or direction from any court of competent jurisdiction.

VI. 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.

VII. 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.

VIII. Safety distances mentioned in the precise area has to be maintained for the entire duration of the lease period.

IX. Waste material should be dumped within the lease granted area as earmarked in the Mining Plan.

X. 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.

XI. 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.

XII. The applicant shall strictly adhere to the statutory and safety requirements.

Encl: Approved Mining Plan.

13-8-24

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

13/08/24.

MINING PLAN AND PROGRESSIVE QUARRY CLOSURE PLAN FOR THIMMARASANAYAKKANUR BIT-1 ROUGH STONE AND GRAVEL QUARRY

(PREPARED UNDER RULES 41 & 42 AS PER THE AMENDED UNDER TAMIL NADU MINOR MINERAL CONCESSION RULES, 1959)

Patta Land / Lease Period = Ten Years

IN

LOCATION OF THE QUARRY LEASE APPLIED AREA

EXTENT	:	8.76.5 Ha
S.F.NOS.	:	927/2, 3, 4, 5, 940/2, 940/3 and 943/1
VILLAGE	:	THIMMARASANAYAKKANUR BIT-1
TALUK	:	ANDIPATTI
DISTRICT	:	THENI
STATE	:	TAMIL NADU

FOR

APPLICANT

THIRU. C. SELVAM,
S/o. Chelladurai
No. 38, Middle Street, Pirathukaranpatti,
Shanmugasundarapuram, Andipatti Taluk,
Theni District,
Tamil Nadu State – 625 512.

PREPARED BY

S. ILAVARASAN, M.Sc.,
Qualified Person

No.289, Shanthi Nagar 1st Cross.
Chinnakollapatti,
Salem District,
Tamil Nadu – 636 008.
Mobile No. : +91 94880 69569.
E-mail ID : ilageo.s@gmail.com

MINING PLAN APPROVED
ASST. DIRECTOR GEOLOGY & MINING, THENI
ASST. DIRECTOR (G&M), THENI



ABBREVIATIONS

- EIA - Environment Impact Assessment.
- EMP - Environment Management Plan.
- SEIAA - State Level Environment Impact Assessment Authority.
- SEAC - State Expert Appraisal Committee
- MoEF&CC - Ministry of Environment, Forest and Climate changes.
- CPCB - Central Pollution control board.
- TNPCB - Tamil Nadu Pollution control board.
- DMS - Director of Mines Safety.
- DGMS - Director of General Mines Safety.
- CRZ - Coastal Regulatory Zone.
- HACA - Hill Area Conservation Authority.
- S.F.No. - Survey Field Number.
- MMR - Metalliferous Mines Regulations.
- MCR - Minerals (Other than Atomic and Hydro Carbons Energy Minerals) Concession Rules.
- TNMMCR - Tamil Nadu Minor Mineral Concession Rules.
- PPV - Peak Particle Velocity.
- DGPS - Differential Global Positioning System.
- QP - Qualified Person.
- MSL - Mean Sea Level
- AGL - Above Ground Level
- BGL - Below Ground Level

C. SELVAM,
S/o. Chelladurai
No. 38, Middle Street, Pirathukaranpatti,
Shanmugasundarapuram, Andipatti Taluk,
Theni District,
Tamil Nadu State – 625 512.

MINING PLAN APPROVED
ASST. DIRECTOR GEOLOGY & MINING, THENI
ASST. DIRECTOR (G&M), THENI

CONSENT LETTER FROM THE APPLICANT

The Mining Plan and Progressive Quarry Closure Plan in Respect of Thimmarasanayakkanur Bit-1 Rough Stone and Gravel Quarry over an extent 8.76.5 Hectares of patta lands in S.F.Nos. 927/2, 927/3, 927/4, 927/5, 940/2, 940/3 and 943/1 of Thimmarasanayakkanur Bit-1 Village, Andipatti Taluk, Theni District, Tamil Nadu State has been prepared by

S. ILAVARASAN, M.Sc.,

Qualified Person

I have entrusted the works to prepare the Mining plan based upon the production requirements to me as per the Mines Acts, Rules, Regulations and Amendments as on date. I request to the Assistant Director, Department of Geology and Mining, Theni District, Tamil Nadu State to make further correspondence regarding the modification of the Mining plan with the said Qualified Person at his following address.

S. ILAVARASAN, M.Sc.,
No.289, Shanthi Nagar 1st Cross,
Chinnakollapatti,
Salem District,
Tamil Nadu – 636 008.
Mobile No. : +91 94880 69569.

I hereby undertake that all the responsibilities of contents in the Mining plan and if any corrections made in the Mining plan by the Qualified Person may be deemed to have been made with my knowledge and consent and shall be acceptable to me and binding on me in all respects. If there is any substantial change during operation. I will carried out a Modified Mining plan and seek its approval from concerned Authorities.

Signature of the Applicant

(C. SELVAM)

Place: Theni
Date: 23.07.2024

C. SELVAM,
S/o. Chelladurai
No. 38, Middle Street, Pirathukaranpatti,
Shanmugasundarapuram, Andipatti Taluk,
Theni District,
Tamil Nadu State – 625 512.

MINING PLAN APPROVED
ASST. DIRECTOR
GEOLOGY
& MINING, THENI
ASST. DIRECTOR (GEOM), THENI

DECLARATION OF THE APPLICANT

The Mining plan and Progressive Quarry Closure Plan in Respect of Thimmarasanayakkanur Bit-1 Rough Stone and Gravel Quarry over an extent 8.76.5 Hectares of patta lands in S.F.Nos. 927/2, 927/3, 927/4, 927/5, 940/2, 940/3 and 943/1 of Thimmarasanayakkanur Bit-1 Village, Andipatti Taluk, Theni District, Tamil Nadu State has been prepared in full consultation with me by.

S. ILAVARASAN, M.Sc.,
Qualified Person

I have understood its contents and agree to implement the same in accordance with Laws applicable to Mines and I will take all the responsibility for working the quarry in a manure under Rule 23 of Tamil Nadu Minor Mineral Concession Rules, 1959.

Signature of the Applicant

(C. SELVAM)

Place: Theni
Date: 26.07.2024

CERTIFICATE



Certified that I am, **S. ILAVARASAN, M.Sc.,** residing at No.289, Shan[illegible] Cross, Chinnakollapatti, Salem District, Tamil Nadu – 636 008, Mobile No. : 91 94880 69569, holding a Post Graduate Degree in Geology (M.Sc. Applied Geology) from Bharathidasan University, Tiruchirappalli and I worked in the field of Mining in a role of Geologist.

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

Accordingly, I prepared this Mining plan and Progressive Quarry Closure Plan in Respect of Thimmarasanayakkanur Bit-1 Rough Stone and Gravel Quarry over an extent 8.76.5 Hectares of patta lands in S.F.Nos. 927/2, 927/3, 927/4, 927/5, 940/2, 940/3 and 943/1 of Thimmarasanayakkanur Bit-1 Village, Andipatti Taluk, Theni District, Tamil Nadu State for **THIRU. C. SELVAM**, S/o. Chelladurai residing at No. 38, Middle Street, Pirathukaranpatti, Shanmugasundarapuram, Andipatti Taluk, Theni District, Tamil Nadu State – 625 512. Since the Mining Plan is prepared as per the provisions contained in Rule 15(I)(a) and (I)(b) of Minerals (Other than Atomic and Hydro Carbons Energy Minerals) Concession Rules, 2016.

Signature of the Qualified Person

(S. ILAVARASAN, M.Sc.,)

Place: Salem

Date: 26.07.2024

S. ILAVARASAN, M.Sc.,
No.289, Shanthi Nagar 1st Cross,
Chinnakollapatti,
Salem District,
Tamil Nadu – 636 008.
Mobile No. : +91 94880 69569.

MINING PLAN APPROVED
ASST. DIRECTOR
GEOLOGY
& MINING, THENI
ASST. DIRECTOR (GEOLOGY), THENI

CERTIFICATE FROM THE QUALIFIED PERSON

This is to certify that the Provisions of Prepared under Rules 41 & 42 as Amended in Tamil Nadu Minor Mineral Concession Rules, 1959. The preparation of Mining plan and Progressive Quarry Closure Plan for Thimmarasanayakkanur Bit-1 Rough Stone and Gravel Quarry over an extent 8.76.5 Hectares of patta lands in S.F.Nos. 927/2, 927/3, 927/4, 927/5, 940/2, 940/3 and 943/1 of Thimmarasanayakkanur Bit-1 Village, Andipatti Taluk, Theni District, Tamil Nadu State has been prepared for

THIRU. C. SELVAM,
S/o. Chelladurai
No. 38, Middle Street, Pirathukaranpatti,
Shanmugasundarapuram, Andipatti Taluk,
Theni District,
Tamil Nadu State – 625 512.

Whenever specific permissions/ exemptions/ relaxations and approvals are required, the Applicant will approach the concerned authorities of the Assistant Director, Department of Geology and Mining, Theni District, Tamil Nadu for such permissions/ exemptions/ relaxations and approvals.

It is also certified that information furnished in the above Mining plan are true and correct to the best of my knowledge.

Signature of the Qualified Person

(S. ILAVARASAN, M.Sc.,)

Place: Salem
Date: 26.07.2024

S. ILAVARASAN, M.Sc.,
No.289, Shanthi Nagar 1st Cross,
Chinnakollapatti,
Salem District,
Tamil Nadu – 636 008.
Mobile No. : +91 94880 69569.

MINING PLAN APPROVED
ASST. DIRECTOR
GEOLOGY
ASST. DIRECTOR (GEOL.), THENI

CERTIFICATE FROM THE QUALIFIED PERSON

Certified that the Provisions of Mines Act, Rules and Regulations or Orders made there under have been observed in the preparation of Mining plan and Progressive Quarry Closure Plan for Thimmarasanayakkanur Bit-1 Rough Stone and Gravel Quarry over an extent 8.76.5 Hectares of patta lands in S.F.Nos. 927/2, 927/3, 927/4, 927/5, 940/2, 940/3 and 943/1 of Thimmarasanayakkanur Bit-1 Village, Andipatti Taluk, Theni District, Tamil Nadu State has been prepared for

THIRU. C. SELVAM,
S/o. Chelladurai
No. 38, Middle Street, Pirathukaranpatti,
Shanmugasundarapuram, Andipatti Taluk,
Theni District,
Tamil Nadu State – 625 512.

Whenever specific permissions/ exemptions/ relaxations and approvals are required, the Applicant will approach the concerned authorities of Director of Mines Safety (DMS), No.5, II Street, Block–AA, Anna Nagar, Chennai-40, Tamil Nadu for such permissions / exemptions / relaxations and approvals.

It is also certified that information furnished in the Mining plan are true and correct to the best of my knowledge.

Signature of the Qualified Person

(S. ILAVARASAN, M.Sc.,)

Place: Salem
Date: 26.07.2024



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MINING PLAN APPROVED
ASST. DIRECTOR
GEOLOGY
& MINING, THENI
ASSISTANT DIRECTOR (GEOLOGY), THENI

MINING PLAN ALONG WITH PROGRESSIVE QUARRY CLOSURE PLAN FOR THIMMARASANAYAKKANUR BIT-1 ROUGH STONE AND GRAVEL QUARRY.

(PREPARED UNDER RULES 41 & 42 AS PER THE AMENDED TAMIL NADU MINOR MINERAL CONCESSION RULES, 1959)

INTRODUCTION AND EXECUTIVE SUMMARY

The applicant **Thiru. C. Selvam**, S/o. Chelladurai residing at No. 38, Middle Street, Pirathukaranpatti, Shanmugasundarapuram, Andipatti Taluk, Theni District, Tamil Nadu – 625 512 has entrust and given consent to preparation of Mining plan and Progressive Mine Closure Plan as per the provisions of Mines Act, Rules, Regulations and as amended till date.

The applicant (Thiru. C. Selvam) has applied for Rough stone and Gravel quarry lease for over an extent 8.76.5 Hectares of patta lands in S.F.Nos. 927/2 (1.33.50), 927/3 (1.26.50), 927/4 (1.21.50), 927/5 (0.50.50), 940/2 (0.48.50), 940/3 (1.97.50) and 943/1 (1.98.50) of Thimmarasanayakkanur Bit-1 Village, Andipatti Taluk, Theni District for the period of Ten years under rule 19(1) and 20 of Tamil Nadu Minor Mineral Concession Rules, 1959.

The application was examined, Scrutinized, Inspected and processed by the Assistant Director, Department of Geology and Mining, Theni District and passed a precise area communication letter vide **Rc.No.483/Mines/2023, Dated: 22.07.2024** under rule 19 and 20 of Tamil Nadu Minor Mineral Concession Rules, 1959 for submission of draft Mining plan under Rules 41 and 42 of Tamil Nadu Minor Mineral Concession Rules, 1959 and obtain approval and obtain Environmental Clearance from the State Level Environment Impact Assessment Authority, Tamil Nadu to quarrying Rough stone for the period of Ten years with following conditions (Refer Annexure No. I):

General Condition:

1) A safety distance of 7.5 meters should be provided to the adjacent patta lands while quarrying operation.
2) No hindrance shall be caused to the adjacent patta lands and Village peoples while quarrying operation.

Special Conditions:

1) A safety distance of 50 meters should be provided to the Odai passing on the Northern side of S.F.Nos. 927/2, 927/3 and North and Eastern side in S.F.No. 927/5.

This Mining Plan along with Progressive quarry closure Plan is prepared in full consultation with **Thiru. C. Selvam**, S/o. Chelladurai residing at No. 38, Middle Street, Pirathukaranpatti, Shanmugasundarapuram, Andipatti Taluk, Theni District, Tamil Nadu – 625 512 for his proposed Rough stone and Gravel quarry over an extent 8.76.5 Hectares of patta lands in S.F.Nos. 927/2, 927/3, 927/4, 927/5, 940/2, 940/3 and 943/1 of Thimmarasanayakkanur Bit-1 Village, Andipatti Taluk, Theni District, Tamil Nadu State under amended Rule 41 of Tamil Nadu Minor Mineral Concession Rules, 1959 with obtained full consent as per the application and Production schedule in preparation of Mining plan as per the provisions of Mines Act, Rules, Regulations as on date.

The Mining plan has been prepared after carrying the field survey, collection of Primary & secondary data, environmental setting, geological features and tentatively estimated the Resources & Reserves, depth of mining as identified in the field with best our knowledge and experience. This present mining plan is prepared by considering the Rule 41 & 42 as amended in Tamil Nadu Minor Mineral Concession Rules, 1959 and as per the EIA Notification 2006 and its subsequent amendments.

In order to ensure compliance of the order of the Honourable Supreme Court Dated: 27.02.2012 in I.A.No.12.13.2011 in Special Leave Petition SLP (C) No 19628-19629/2009, it has been now decided that all mining projects of minor minerals including their renewal is require prior environmental clearance. As per amendment in EIA Notification 2006 vide S.O. 1886(E), Dated:20.04.2022 "All mining lease area in respect of minor mineral mining leases and ≤ 250 ha mining lease area in respect of major mineral mining lease other than coal" would be treated as category B1 and will be considered by the state notified by Ministry of Environment, Forest and Climate Change as prescribed procedure under EIA notification 2006.

The field survey carried out by the Qualified Person and Team as on 24.07.2024.

Short Notes of Mining plan:

a. Village Panchayat - Thimmarasanayakkanur Bit-1
b. Panchayat Union - Andipatti
c. Total extent of the lease applied area is 8.76.5Ha.
d. Topography of the area - Undulated topography.
e. The Estimated Geological Resources are **40,95,033m³** of Rough stone and **4,11,850m³** of Gravel in the entire area.
f. Tentative Mineable Reserves are **14,51,090m³** of Rough stone and **2,86,230m³** of Gravel in the entire area.
g. The proposed quantity of reserves/ (level of production) to be mined are **14,51,090m³** of Rough stone and **2,86,230m³** of Gravel for **ten years** (**7,77,155m³** of Rough stone and **2,39,412m³** of Gravel for **first five years** and **6,73,935m³** of Rough stone and **46,818m³** of Gravel for **second five years**) in the entire area.
h. Mineral Reserves locked up under safety zone and benches on the proposed working common mine boundary on the Eastern side is **2,12,990m³** of Rough stone and **6,750m³** of Gravel.

i. Proposed Depth of mining = 59m [Gravel 5m + Rough stone 54m], (R.L. 360m – R.L. 307m) (AGL 13m + BGL 46m).

j. Lease Period = Ten Years

k. Mining Plan period = Five Years

l. It is a fresh lease applied area, at present the area is virgin. Hence no existing pit.

m. Method of mining / level of mechanization.

Opencast mechanized method, the quarry operation involves Crawler Mounted Drilling machine and Hand Jack hammer is proposed to drilling and slurry blasting with NONEL initiation,

n. Type of machineries proposed in the quarrying operation is given below.

Excavators attached with 0.90m³ Bucket and rock breaker.
Crawler Mounted Drill machine - 110mm diameter drill,
Jack hammer, Compressor (Diesel drive) (4 Jack hammer capacity)
Trucks.

o. No trees will be uprooted due to this quarry operation.

p. The approach road from the main road to quarry is already existence; the same will be maintain in good condition for the haulage of quarry materials and machineries.

q. There is No Export of this Rough stone and Gravel.

r. Topo sketch covering 10km and 1km radius around the proposed area with markings of habitations, water bodies including streams, rivers, roads, major structure like bridges, wells, archaeological importance and places of worships is marked and enclosed as Plate Nos. IA & IC.

s. The lease applied area is about 8.76.5Ha bounded by thirty one corners; the corners are designated as 1 – 31 clock-wise from the Southwestern side and Co-ordinates for all the corners are clearly marked in the Quarry Lease Plan and Surface Plan enclosed as Plate No. II.

t. The plans of proposed quarrying area showing the dimensions of the pit, their proposed depth and maximum area of proposed quarrying are enclosed as Plate Nos. III, III-A, IV and IV-A and V.

u. General conditions will not applicable for the proposed area. The area applied for lease is 10Km away from the,

i) Critically polluted areas as identified by CPCB,

ii) Interstate Boundary.

v. Megamalai Wild life Sanctuary is situated at 8.7km and its Eco Sensitive zone is situated at 8.01km on the Southern side of the lease applied area.

w. There is no waste anticipated during this quarry operation. Hence, waste dump is not proposed in the lease applied area.

x. Around 33 employees are proposed to deploying the quarrying operation.

y. Total Cost of the project is about **Rs.3,87,91,000/-**.



1.0 GENERAL INFORMATION

1.1 Name of the Applicant with Address:

Name	:	**Thiru. C. Selvam,**
		S/o. Chelladurai
Address	:	No. 38, Middle Street, Pirathukaranpatti
		Shanmugasundarapuram, Andipatti Taluk
		Theni District
State with PIN Code	:	Tamil Nadu – 625 512.
Mobile No	:	+91 93447 53816
Aadhaar No	:	4997 2297 7755 (Refer Annexure No. IX)
E-mail	:	selvamchelladurai27@gmail.com

1.2 Status of the Applicant (Individual / Company / Firm):

The applicant is an Individual.

1.3 Mineral which the Applicant intends to mine:

The Applicant intends to quarry Rough stone and Gravel.

1.4 Period of permission / lease to be granted:

Ten Years as mentioned in Precise area Communication letter.

1.5 Name and address of the Qualified Person who preparing the Mining Plan:

Name	:	**S. ILAVARASAN, M.Sc.,**
		Qualified Person (As per Rule 15(I)(a) and (I)(b) of MCR, 2016)
Address	:	No. 289, Shanthi Nagar First Cross,
		Chinnakollapatti,
		Salem District,
State with PIN Code	:	Tamil Nadu – 636 008.
Mobile	:	+91 94880 69569
Email	:	ilageo.s@gmail.com

(Refer Annexure Nos. X and X-A).

1.6 Name and Address of the Prospecting Agency:

State Geology and Mining Department, Government of Tamil Nadu, has carried out the regional prospecting and exploration in these areas during 1992 to 1993.

Geological Survey of India has carried out detailed regional exploration studies and geological mapping in Tamil Nadu. Besides, the Qualified Person and his team members made a detailed geological study of the proposed area and the Rough stone is clearly inferred from the outcrops and adjacent existing quarry pit situated on the Eastern side. No detailed Exploration has carried out.

1.7 Reference no. Date of grant/ Precise Area Communication received form the State Government:

The precise area communication letter was received from the Assistant Director, Department of Geology and Mining, Theni District vide **Rc.No.483/Mines/2023, Dated: 22.07.2024** (Refer Annexure No. I) and was given to us for the preparation of mining plan to meet out the applicant's production schedule.

MINING PLAN APPROVED
ASST. DIRECTOR
GEOLOGY & MINING, THENI
ASST. DIRECTOR (G&M), THENI

2.0 LOCATION AND ACCESSIBILITY:

2.1. Details of the area with location map:

The lease applied area is located about 23km Eastern side of Theni town, 7km Eastern side of Andipatti town and 1.4km Eastern side of Thimmarasanayakkanur Village.

	16km		5.6km		1.5km	
Theni	⟶ East	Andipatti	⟶ East	Thimmarasanayakkanur	⟶ East	Lease applied area

Location Map of the Lease Applied area





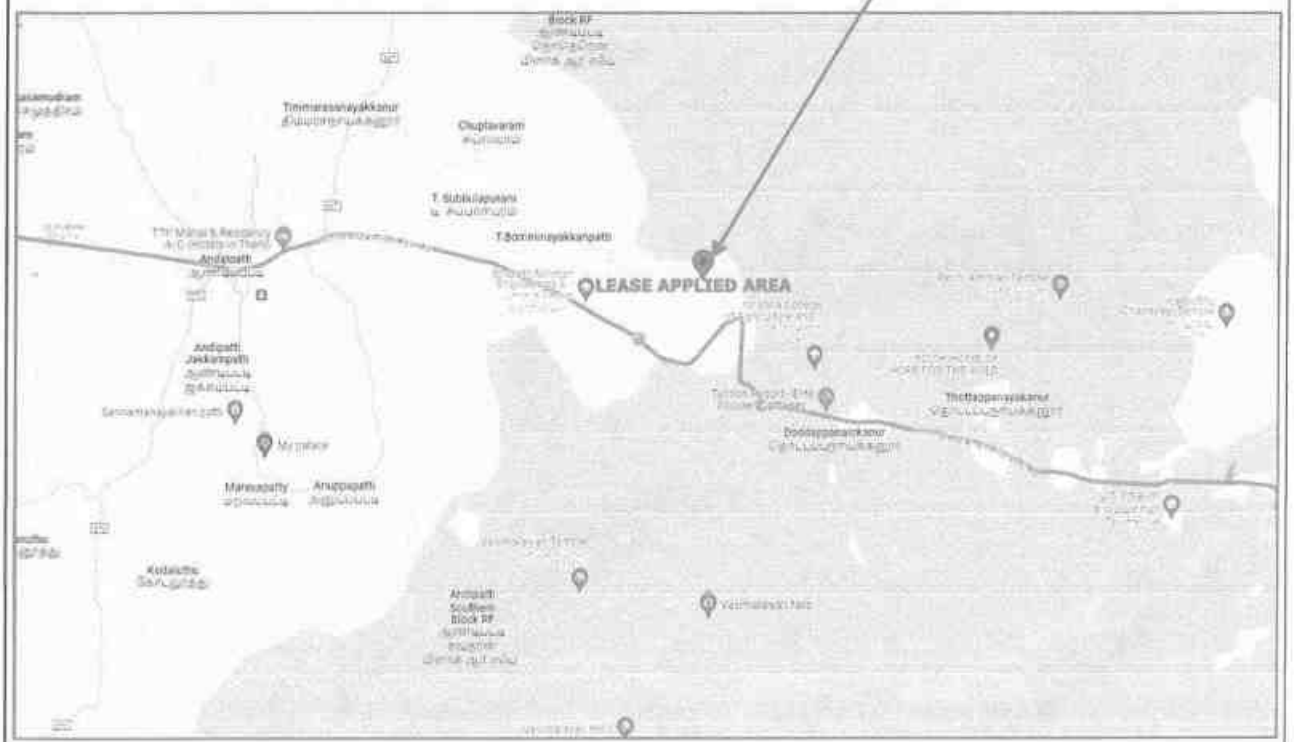


Table – 1

District	Taluk	Village	S.F. No.	Area (Ha.)	Patta no.
Theni	Andipatti	Thimmarasanayakkanur Bit-1	927/2	1.33.5	6234
			927/3	1.26.5	2653
			927/4	1.21.5	5891
			927/5	0.50.5	
			940/2	0.48.5	9147
			940/3	1.97.5	5894
			943/1	1.98.5	9156
			Total	**8.76.5**	

Source: As per the FMB and 'A' register record furnished by the applicant.

2.2. Classification of the area (Ryotwari/ Poramboke / others):

It is a patta lands (classified as punsei) which is not fit for vegetation/ Cultivation.

2.3. Ownership / Occupancy of the applied area (surface right):

It is patta lands, registered in the name of Thiru. T. Thanikkodi and Tmt. T. Pavalakkodi vide patta Nos. 6234, 2653, 5891, 9147, 5894 and 9156 (Refer Annexure Nos. IV to VI). The applicant has obtained consent from the pattdars (Refer Annexure No. VII)

2.4. Existence of public road / Railway line, if any nearby and approximate distance:

The approach (cart track) road is situated on the Southeastern side, which is connects to the Theni – Madurai (NH-85) Road situated at 600m on the Southeastern side of the lease applied area.

Road access is available from the quarry to National Highway, no towns are enrooted hence the traffic density is not much more due to the transportation of Rough stone and Gravel.

The approach road from the quarry is already existence on the Southeastern side and the same has been utilized for haulage and maintained during the entire lease period.

The Nearest Railway line is Theni – Madurai which is located at 1.4km on the Southern side of the area as per the GSI Toposheet and Google Map.

2.5. Toposheet No. with latitude and longitude:

The lease applied area falls in the Toposheet No: **58F/12** and **58G/09** Latitude between: **09°59'47.06115"N to 10°00'02.57733"N** and Longitude between: **77°41'22.62023"E to 77°41'32.61712"E** on WGS datum-1984 as per the GSI Toposheet (Refer Plate Nos. I to II).

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ASST. DIRECTOR
GEOLOGY
& MINING, THENI
DEPUTY DIRECTOR (G&M), THENI

PART – A

3.0 GEOLOGY AND MINERAL RESERVES:

3.1 Brief description of the Topography and general Geology of the area (with plans):

The lease applied area is situated an undulated terrain. The gradient of the area towards Northern side and altitude of the area varies from 356m to 369m above from Mean Sea Level. The area is situated in foot hill, since rich accumulation of quaternary formation of gravel having an average thickness of 5m and followed by Massive Charnockite which is clearly inferred from the adjacent existing quarry pit.

The Water level in the surrounding area is 60m - 65m below from general ground profile which is observed from the nearby bore wells. Average annual rainfall is about 985mm.

Peninsular gneiss forms the oldest rock formations, in which the massive formation of Charnockite lies over with accumulation of recent quaternary formation. On regional scale of the Charnockite body is N40°E – S40°W with dipping towards SE40°.

The general geological sequences of the rocks in this area are given below:

AGE		FORMATION
Recent	-	Quaternary formation (Gravel)
---------Unconformity----------		
Archaean	-	Charnockite
		Peninsular Gneissic complex

3.2 Details of exploration already carried out if any:

State Geology and Mining Department, Govt. of Tamil Nadu, has carried out the regional prospecting and exploration in these areas during 1992 to 1993.

Geological Survey of India has carried out detailed mapping in Theni District. Besides, the Qualified Person and his team members made a detailed geological study of the proposed area. The Rough stone is clearly inferred from the outcrops and adjacent existing quarry pit.

3.3 Estimation of Reserves:

a) Geological Resources with geological sections on a scale of 1:1000 / 1:2000

As far as Rough stone (Charnockite) is concerned, the only practical method is the systematic geological mapping and delineation of Rough stone within the field and careful evaluation of body luster, physical properties, engineering properties, commercial aspects etc.,

Totally six sections have been drawn, two sections drawn along the strike direction as (X-Y and X1-Y1) Length wise and other four cross sections are drawn perpendicular to strike as (A-B, C-D, E-F and G-H) Width wise to cover the maximum area considered for lease upto 59m depth below from the existing ground profile.

The Topographical, Geological plan and sections demarcated the commercial marketable Rough stone and Gravel deposit has been prepared in the scale of 1:1000 (please refer the Geological plan and sections Plate No. III and III-A). As the sale of Rough stone and Gravel are in terms of cubic metres (Volume) only and not in terms of tonnage. No Exploration has been carried out.

Estimation of Geological Resources (Plate No. III and III-A):

The Geological Resources of Rough stone and Gravel are calculated upto a depth of 5m below from the existing ground profile of the area. The total geological resources are given below:

TABLE – 2

Section	Bench	Length (m)	Width (m)	Depth (m)	Rough stone @ 100% Recovery (m^3)	Gravel (m^3)
XY-AB	i	113	190	5	-	107350
	iii	113	79	5	44635	-
	iv	113	190	5	107350	-
	v	113	190	5	107350	-
	vi	113	190	5	107350	-
	vii	113	190	5	107350	-
	viii	113	190	5	107350	-
	ix	113	190	5	107350	-
	x	113	190	5	107350	-
	xi	113	190	5	107350	-
	xii	113	190	5	107350	-
Total					**1010785**	**107350**
XY-CD	i	66	186	5	-	61380
	iii	66	66	5	21780	-
	iv	66	186	5	61380	-
	v	66	186	5	61380	-
	vi	66	186	5	61380	-
	vii	66	186	5	61380	-
	viii	66	186	5	61380	-
	ix	66	186	5	61380	-
	x	66	186	5	61380	-
	xi	66	186	5	61380	-
	xii	66	186	5	61380	-
Total					**574200**	**61380**
XY-EF	i	99	90	5	-	44550
	iii	99	90	5	44550	-
	iv	99	90	5	44550	-
	v	99	90	5	44550	-
	vi	99	90	5	44550	-
	vii	99	90	5	44550	-
	viii	99	90	5	44550	-
	ix	99	90	5	44550	-
	x	99	90	5	44550	-
	xi	99	90	5	44550	-
	xii	99	90	5	44550	-
Total					**445500**	**44550**



	XY-GH	i	137	146	5	-	100010
		iii	137	146	5	100010	-
		iv	137	146	5	100010	-
		v	137	146	5	100010	-
		vi	137	146	5	100010	-
		vii	137	146	5	100010	-
		viii	137	146	5	100010	-
		ix	137	146	5	100010	-
		x	137	146	5	100010	-
		xi	137	146	5	100010	-
		xii	137	146	5	100010	-
	Total					**1000100**	**100010**
	X1Y1-GH	i	176	112	5	-	98560
		ii	176	112	4	78848	-
		iii	176	112	5	98560	-
		iv	176	112	5	98560	-
		v	176	112	5	98560	-
		vi	176	112	5	98560	-
		vii	176	112	5	98560	-
		viii	176	112	5	98560	-
		ix	176	112	5	98560	-
		x	176	112	5	98560	-
		xi	176	112	5	98560	-
		xii	176	112	5	98560	-
	Total					**1064448**	**98560**
	Grand Total					**4095033**	**411850**

The Geological Resources of Rough Stone : **40,95,033m³**

The Geological Resources of Gravel : **4,11,850m³**

Geological Resources has been computed based on the physical investigation and filed survey data.

Tentative Mineable Reserves:

The mineable reserves are calculated after leaving the safety distance and Bench loss.

TABLE – 3

Section	Bench	Length (m)	Width (m)	Depth (m)	Rough stone @ 100% Recovery (m^3)	Gravel (m^3)
XY-AB	ii	61	116	5	-	35380
	iii	51	63	5	16065	-
	iv	56	105	5	29400	-
	v	51	94	5	23970	-
	vi	46	84	5	19320	-
	vii	41	73	5	14965	-
	viii	36	63	5	11340	-
	ix	31	52	5	8060	-
	x	26	42	5	5460	-
	xi	21	32	5	3360	-
	xii	16	22	5	1760	-
Total					**133700**	**35380**

XY-CD	ii	66	160	5	-	52800
	iii	66	47	5	15510	-
	iv	66	148	5	48840	-
	v	66	137	5	45210	-
	vi	66	126	5	41580	-
	vii	66	114	5	37620	-
	viii	66	103	5	33990	-
	ix	61	66	5	20130	-
	x	56	51	5	14280	-
	xi	41	40	5	8200	-
	xii	32	30	5	4800	-
Total					**270160**	**52800**
XY-EF	ii	99	68	5	-	33660
	iii	99	63	5	31185	-
	iv	99	53	5	26235	-
	v	99	43	5	21285	-
	vi	99	33	5	16335	-
	vii	99	23	5	11385	-
Total					**106425**	**33660**
XY-GH	ii	127	136	5	-	86360
	iii	124	134	5	83080	-
	iv	119	129	5	76755	-
	v	114	124	5	70680	-
	vi	109	119	5	64855	-
	vii	104	114	5	59280	-
	viii	99	109	5	53955	-
	ix	89	104	5	46280	-
	x	79	99	5	39105	-
	xi	69	93	5	32085	-
	xii	52	88	5	22880	-
Total					**548955**	**86360**
X1Y1-GH	i	153	102	5	-	78030
	ii	148	100	4	59200	-
	iii	141	93	5	65565	-
	iv	130	88	5	57200	-
	v	120	83	5	49800	-
	vi	110	78	5	42900	-
	vii	93	73	5	33945	-
	viii	80	68	5	27200	-
	ix	67	63	5	21105	-
	x	57	58	5	16530	-
	xi	45	53	5	11925	-
	xii	27	48	5	6480	-
Total					**391850**	**78030**
Grand Total					**1451090**	**286230**

Tentative Mineable Reserves of Rough Stone : **14,51,090m³**

Tentative Mineable Reserves of Gravel : **2,86,230m³**

The Tentative mineable reserves have been computed as **14,51,090m³** of Rough stone and **2,86,230m³** of Gravel at the rate of 100% recovery upto a depth of 59m below from the existing ground profile.

The applicant intends to apply and obtain permission from Director of Mines Safety, Chennai Under Regulation 111(3) of Metalliferous Mines Regulations, 1961 for working Common Mine boundaries with adjacent existing quarry lease held by Thiru. T. Sivakumar, S/o Thamikodi over an extent of 4.76.0 hectares of patta lands in S.F.Nos. 926/1, 926/2 and 945 of Thimmarasanayakkanur Bit-1 village situated on the Eastern side of this applied area. This relaxation will be applied and obtained after execution of lease deed. The mineral reserves locked up under safety distance and benches will be removed only after obtained permission and approval from the competent authority.

The estimated Reserves locked up under safety distance and benches for proposed to working Common Mine boundaries on the Eastern side is given table below (Refer Plate No. VI).

Table – 3A

Mineral Reserves Locked Up under safety distance and Benches for proposed Common Mine Boundaries on the Eastern side

Section	Bench	Length (m)	Width (m)	Depth (m)	Rough Stone @ 100% recovery (m^3)	Gravel (m^3)
XY-CD	iii	82	10	5	-	4100
	iv	77	13	5	5005	-
	v	73	18	5	6570	-
	vi	68	23	5	7820	-
	vii	63	28	5	8820	-
	viii	59	33	5	9735	-
	ix	55	64	5	17600	-
	x	51	72	5	18360	-
	xi	46	77	5	17710	-
	xii	42	82	5	17220	-
Total					**108840**	**4100**
XY-EF	ii	53	10	5	-	2650
	iii	56	13	5	3640	-
	iv	56	18	5	5040	-
	v	59	23	5	6785	-
	vi	61	28	5	8540	-
	vii	63	33	5	10395	-
	viii	61	50	5	15250	-
	ix	66	45	5	14850	-
	x	71	40	5	14200	-
	xi	76	35	5	13300	-
	xii	81	30	5	12150	-
Total					**104150**	**2650**
Grand Total					**212990**	**6750**

Rough stone locked up under safety zone and Benches on the Eastern side : **2,12,990m^3**

Gravel locked up under safety zone and Benches on the Eastern side : **6,750m^3**

MINING PLAN APPROVED ASST. DIRECTOR (GRM), THENI

4.0 MINING:

4.1 Method of mining (opencast / underground):

Open cast Mechanized Mining is being carried out with 5.0 meter vertical bench with a bench width is not less than the bench height.

However, as far as the quarrying of Rough Stone is concerned, observance of the provisions of Regulation 106 (2) (b) is available with Director General of Mines Safety. If the applicant/lessee intends to modify the dimensions of benches, relaxation and permission are available with Director General of Mines Safety under 106 (2) (b) of Metalliferous Mines Regulations, 1961.

The applicant intends to apply and obtain permission from Director of Mines Safety, Chennai for working on Common mine boundaries with adjacent existing quarry lease under Regulation 111(3) of Metalliferous Mines Regulations, 1961. The relaxation will be applied and obtained after execution of lease deed/ commencement of quarry operation. In such a scenario if there is any drastic change in the Resources and Reserves a modified plan will be submitted to the concerned authority for necessary relaxation, clearance and permission.

4.2 Mode of working (mechanized/ manual):

The Rough Stone is proposed to quarry at 5m bench height & width with conventional Opencast Mechanized Method.

The quarry operation involves Drilling, Blasting, Rock breaking, Excavation, Loading and Transportation of Rough Stone to the needy crusher.

The production of Rough Stone in this quarry involves the following method which is typical for Rough Stone quarrying in contrast to other major mineral mining.

Splitting of rock mass by considerable volume from the parent rock mass by drilling with Crawler Mounted drill machine, Hand Jack Hammer drilling and blasting, the liberated Rough stone will be loaded into the Trucks by hydraulic excavators are used for loading the Rough Stone from pithead to the needy crushers.

Hydraulic excavators are attached with rock breakers for fragmentation of large boulders to avoid secondary blasting and easy handling of material. The primary boulders thus splitted are removed from the pits by excavators and further made to smaller sizes by rock breakers attached in excavators. It is a conventional opencast mechanized method of mining.

4.3 Proposed Bench Height and Width:

The bench height is proposed 5.0 meter vertical bench the width of the bench is not less than the Height as per 106 2(b) and 111(3) of Metalliferous Mines Regulations, 1961 from the DMS, the realignment of benches will be carried out.

4.4 Indicate the overburden / mineral production expected pit wise as detailed below (composite plan and section showing pit layout, dumps, disposal of waste if any etc.):

The overburden in the form of gravel, the gravel will be directly loaded into Truck for the filling and levelling of low-lying areas, this will be done only after obtaining permission and paying necessary seigniorage fees to the Government. The excavated Rough stone will be directly loaded into Truck to the needy customers. The Composite year wise Development and production plan and sections indicating the pit lay out and green belt development are shown in Plate No. III, III-A, IV and IV-A given tables below.

Year wise Development and Production

TABLE – 4

YEARWISE DEVELOPMENT AND PRODUCTION FOR 1st FIVE YEARS							
Year	**Section**	**Bench**	**Length (m)**	**Width (m)**	**Depth (m)**	**Rough stone @ 100% recovery (m^3)**	**Gravel (m^3)**
I	XY-AB	i	61	116	5	-	35380
		iii	51	63	5	16065	-
		iv	56	105	5	29400	-
		v	51	94	5	23970	-
		vi	46	84	5	19320	-
	XY-CD	i	46	160	5	-	36800
		iii	43	47	5	10105	-
		iv	40	148	5	29600	-
		v	35	137	5	23975	-
	Total					**152435**	**72180**
II	XY-CD	i	20	160	5	-	16000
		iii	23	47	5	5405	-
		iv	26	148	5	19240	-
		v	31	137	5	21235	-
		vi	66	126	5	41580	-
		vii	66	114	5	37620	-
	XY-EF	ii	46	68	5	-	15640
		iii	44	63	5	13860	-
		iv	39	53	5	10335	-
		v	34	43	5	7310	-
		vi	29	33	5	4785	-
		vii	24	23	5	2760	-
	Total					**164130**	**31640**
III	XY-EF	i	53	68	5	-	18020
		iii	55	63	5	17325	-
		iv	60	53	5	15900	-
		v	65	43	5	13975	-
		vi	70	33	5	11550	-
		vii	75	23	5	8625	-



	XY-GH	i	27	136	5	-	48360
		iii	24	129	5	15480	-
		iv	19	119	5	11305	-
		v	14	109	5	7630	-
		vi	9	99	5	4455	-
	XY-AB	vii	41	73	5	14965	-
		viii	36	63	5	11340	-
	XY-CD	viii	66	103	5	33990	-
	Total					**166540**	**36380**
IV	XY-AB	ix	31	52	5	8060	-
		x	26	42	5	5460	-
		xi	21	32	5	3360	-
		xii	16	22	5	1760	-
	XY-CD	ix	61	66	5	20130	-
		x	56	51	5	14280	-
		xi	41	40	5	8200	-
		xii	32	30	5	4800	-
	XY-GH	i	80	136	5	-	54400
		iii	40	129	5	25800	-
		iv	40	119	5	23800	-
		v	40	109	5	21800	-
		vi	40	99	5	19800	-
	Total					**157250**	**54400**
V	XY-GH	i	20	136	5	-	13600
		iii	60	129	5	38700	-
		iv	60	119	5	35700	-
		v	60	109	5	32700	-
		vi	60	99	5	29700	-
	X1Y1-GH	i	153	102	2	-	31212
	Total					**136800**	**44812**
Grand Total						**777155**	**239412**

The Recoverable reserves have been computed as **7,77,155m³** of Rough stone and **2,39,412m³** of Gravel at 100% recovery for first five years upto a depth of 59m (R.L.366m to R.L.307m) below from the existing ground profile (Refer Plate No. III and III-A).

TABLE – 4A

YEARWISE DEVELOPMENT AND PRODUCTION FOR 2nd FIVE YEARS							
Year	**Section**	**Bench**	**Length (m)**	**Width (m)**	**Depth (m)**	**Rough stone @ 100% recovery (m^3)**	**Gravel (m^3)**
VI	X1Y1-GH	i	153	20	3	-	9180
		ii	148	17	4	10064	-
		iii	141	12	5	8460	-
		iv	130	7	5	4550	-
		v	120	2	5	1200	-
	XY-GH	iii	124	5	5	3100	-



		iv	119	10	5	5950	-
		v	114	15	5	8550	-
		vi	109	17	5	9265	-
		vii	104	106	5	55120	-
		viii	99	96	5	47520	-
	Total					**153779**	**9180**
VII	X1Y1-GH	i	153	20	3	-	9180
		ii	148	20	4	11840	-
		iii	141	20	5	14100	-
		iv	130	20	5	13000	-
		v	120	20	5	12000	-
		vi	110	17	5	9350	-
		vii	93	12	5	5580	-
		viii	80	7	5	2800	-
		ix	67	2	5	670	-
	XY-GH	vi	109	3	5	1635	-
		vii	104	8	5	4160	-
		viii	99	13	5	6435	-
		ix	89	104	5	46280	-
	Total					**127850**	**9180**
VIII	X1Y1-GH	i	153	20	3	-	9180
		ii	148	20	4	11840	-
		iii	141	20	5	14100	-
		iv	130	20	5	13000	-
		v	120	20	5	12000	-
		vi	110	20	5	11000	-
		vii	93	20	5	9300	-
		viii	80	20	5	8000	-
		ix	67	20	5	6700	-
		x	57	17	5	4845	-
		xi	45	12	5	2700	-
	XY-GH	x	79	99	5	39105	-
		xi	69	93	5	32085	-
	Total					**164675**	**9180**
IX	X1Y1-GH	i	153	21	3	-	9639
		ii	148	21	4	12432	-
		iii	141	21	5	14805	-
		iv	130	21	5	13650	-
		v	120	21	5	12600	-
		vi	110	21	5	11550	-
		vii	93	21	5	9765	-
		viii	80	21	5	8400	-
		ix	67	21	5	7035	-
		x	57	21	5	5985	-
		xi	45	21	5	4725	-
		xii	27	28	5	3780	-
	XY-GH	xii	52	88	5	22880	-
	Total					**127607**	**9639**

		i	153	21	3	-	9639
		ii	148	22	4	13024	-
		iii	141	20	5	14100	-
		iv	130	20	5	13000	-
		v	120	20	5	12000	-
		vi	110	20	5	11000	-
X	X1Y1-GH	vii	93	20	5	9300	-
		viii	80	20	5	8000	-
		ix	67	20	5	6700	-
		x	57	20	5	5700	-
		xi	45	20	5	4500	-
		xii	27	20	5	2700	-
	Total					**100024**	**9639**
Grand Total						**673935**	**46818**

The Recoverable reserves have been computed as **6,73,935m³** of Rough stone and **46,818m³** of Gravel at 100% recovery to a depth of 59m below from existing ground profile for **remaining five years of the lease period** (Refer Plate No. IV and IV-A). The proposed depth of quarrying considered for 59m for the entire lease period. Total excavation will be proposed **14,51,090m³** of Rough stone and **2,86,230m³** of Gravel for the period of ten years.

The peak production capacity in the quarry is 1,66,540m³ of Rough stone on 3rd year and 72,180m³ of gravel on 1st year of the plan period and the proposed production schedule is arrived as per applicant's requirement and the EIA & EMP will be prepared an annual peak production. If the applicant obtained permission for working common mine boundary from DGMS, Chennai, the production schedule will be increase.

The applicant ensures the total quantity proposed in the benches will not exceed during the quarrying operation. Besides the rough stone locked up in benches will be exploited after obtaining necessary permission from the office of Director of Mine Safety, Chennai region by submitting relevant documents, appropriate safety plans and its Mitigation measures.

One lorry load	=	12m³ (approximate)
Total Number of Working days	=	300 days per year
Total Rough stone to be removed during the lease period	=	14,51,090m³
Peak production capacity during the 3rd year	=	1,66,540m³
Hence total Lorry loads per day	=	1,66,540m³/12m³
	=	13,878 Lorry loads
	=	13,878/300 days
Rough Stone (Maximum)	=	**46 Lorry loads per day**
Total Gravel to be removed during the lease period	=	2,86,230m³
Peak production capacity during the 1st year	=	72,180m³
Hence total Lorry loads per day	=	72,180m³/12m³
	=	6,015 Lorry loads
	=	6,015/300 days
Gravel (Maximum)	=	**20 Lorry loads per day**

Working hours = 8.00 am to 5.00 pm (with 12.00-1.00 P.M. lunch break).

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4.5 Machineries to be used:

For Mining:

The following machineries are utilized for the development and production work at this quarry.

TABLE – 5

I. DRILLING MACHINE:

S. No.	Type	Nos.	Dia Hole mm	Size Capacity	Motive power
1	Crawler mounted drill machine	2	110	3m to 9m	Diesel Drive
2	Hand Jackhammer	4	32	1.2m to 2.0m	Air Compression
3	Compressor	1	-	400 psi	Diesel Drive

II. EXCAVATION & LOADING EQUIPMENT:

S. No.	Type	Nos.	Capacity	Motive Power
1	Excavator with Bucket and Rock Breaker	2	300	Diesel Drive

III. HAULAGE WITHIN THE MINE & TRANSPORT EQUIPMENT:

S. No.	Type	Nos.	Capacity	Motive Power
1	Truck	4	30 tonnes	Diesel Drive
2	Water Sprinkling Tanker	1	10,000 litres	Diesel Drive

4.6 Brief note on conceptual mining plan for the entire lease period base on the geological, mining and environmental considerations:

Conceptual mining plan is prepared with an object of long-term systematic development of benches, layouts, selection of permanent structures, depth of quarrying and ultimate pit dimensions, selection of sites for construction of infrastructure, etc.,

The ultimate pit size is designed based on certain practical parameters such as economical depth of mining, safety zones, permissible area, etc.,

As the applicant has awarded quarry lease for ten years, the ultimate pit limit (dimension) at the end of this lease period is given below:

TABLE – 6

Section	Length (m)	Width (m)	Depth (m)
XY-AB	61	116	55
XY-CD	66	160	55
XY-EF	99	68	30
XY-GH	127	136	55
X1Y1-GH	153	102	59 (AGL 13m + BGL 46m)

All the base line information studies like Air quality monitoring, Noise and vibration monitoring, Water analysis studies will be carried out every year as per the MoEF & CC Norms. Please refer Plate Nos. III, IV and V. As per the NGT orders the applicant is directed to plant 500 tree saplings per hectares along the quarry site either at the regular or the phased manner by planting native species.

There is no waste anticipated during the entire life of quarry. Hence, there is no proposal for backfilling. After completion of quarry operations, the quarry pit will be allowed to collect the seepage and rain water, the water storage will be kept as temporary reservoir to charging the nearby wells and will be utilized for greenbelt development. When the quarry reaches its ultimate pit limit or at the end of life of quarry, greenbelt development will be carried out over the quarried out top bench. The Conceptual Mining is based upon the entire ROM proposed for the life of the Mine.

The quarry area will be fenced with barbed wire fencing also safety bund constructed around the quarry to prevent inadvertent entry of public and cattle (Refer Plate No. V, VI and VII).

5.0 BLASTING:

5.1 Blasting pattern:

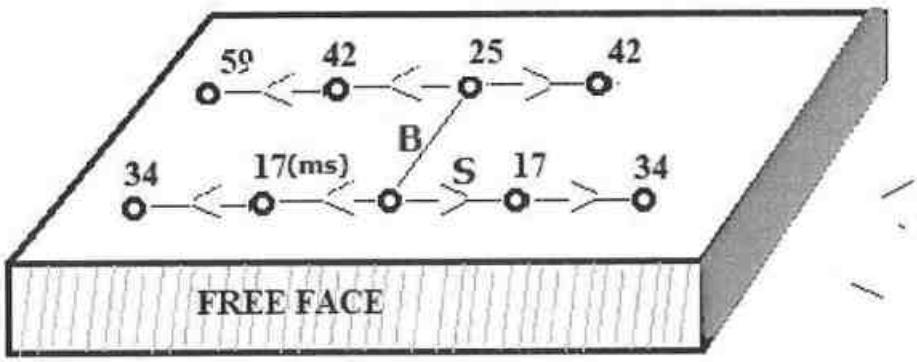
Selection of drilling pattern for blasting varies with the type and size of the drills used, depth of hole, kind of rock, quantity, rapidity of the explosives and amount of steaming. The quarrying operation is proposed to carried out by Crawler mounted drill machine and Jack hammer drilling and blasting of shattering effect for loosen the Rough Stone with NONEL initiation. Crawler mounted machine drilling will be proposed for primary Drilling and blasting for splitting the boulders from parent rock mass followed by rock breaker attached with excavator for secondary fragmentation of large size boulders to avoid secondary blasting. Nonel initiation provides reasonably good solution to fly rock problem. The main objectives of Nonel Blasting are to reduce the ground vibration, noise, flyrocks generated due to blasting operations. The overall cost of blasting in NONEL is very less compared to electrical blasting hence it optimizes the cost of blasting.

Drilling and blasting parameters are as follows:

Depth of Each hole	:	5m
Spacing between holes	:	3.5m
Burden for hole	:	2.75m
Diameter of hole	:	110mm
Pattern of hole	:	Staggered pattern
Inclination of holes	:	80°from horizontal
Use of delay detonators	:	NONEL
Hole to Hole	:	17 milli second delay (ms)
Row to Row	:	25 milli second delay (ms)

Staggered Pattern of Blasting Design

NONEL DELAY PATTERN



Spacing (S)	=	**3.5m**
Burden (B)	=	**2.75m**
Depth of the hole	=	**5m**
No. of holes proposed per day (Peak Production)	=	**12 Holes**

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5.2 Type of explosives to be used:

85mm Slurry explosives are proposed to be used for shattering and heaving effect for removal and winning of Rough stone. No secondary blasting is proposed. NONEL blasting and muffle blasting may be adopted after permission from DGMS.

5.3 Measures proposed to minimize ground vibration due to blasting:

The quarry is situated more than 300m away from the nearby villages, Controlled blasting measures by NONEL initiation is being adopt for minimizing ground vibration and fly rock.

Crawler mounted machine and jackhammer drilling with blasting is proposed to be carried out with minimum use of explosive mainly to give heaving effect in Rough stone for easy excavation and to control fly rock.

NONEL Delay detonators:

NONEL blasting permits for bottom initiation and lesser charge per delay.

The major advantages of NONEL blasting are:

- Reduction of ground vibration.
- Reduction in air blast.
- Reduction in over break.
- Improved fragmentation.
- Better control of fly-rock.

Blasting program for the production per day (As per Peak production capacity):

The Hydraulic excavators are attached with rock breakers for breaking the rock mass to reduce the blasting and explosive usage also to avoid secondary blasting. Anyhow, as per day's production schedule the maximum blasting program proposed as given below.

Peak production (3rd Year)	= 1,66,540m^3 x 2.6(Bulk Density) = 4,33,004 Tons
No of Holes	= 12 Holes
Yield	= 1500 Tons
Powder factor	= 5 Tons/ Kg of explosives
Maximum explosive required	= 300 Kg-Slurry explosives
Charge/ hole	= 25 Kg
Blasting at day time only	= 12.00 – 12.30 P.M. (whenever required)

Anticipated theoretical calculation of PPV

The empirical equation for assessment of peak particle velocity (PPV) is:

$$V = K\,[R/Q^{0.5}]^{-B}$$

Where –

V = peak particle velocity (mm/s)

K = site and rock factor constant

Q = maximum instantaneous charge (kg)

B = constant related to the rock and site (usually 1.6)

R = distance from charge (m)

PREDICTED PPV VALUES DUE TO BLASTING

Table – 7

Maximum Charge per day (kg)	Number of Round Blast per day	Maximum Charge per Round (kg)	Number of holes blasted per round	Number of holes blasted per day	Maximum Charge blast at a time by NONEL (kg)	Nearest Infrastructure (m)	PPV (mm/s)
300	1	300	12	12	1 (2 Holes)	1250	0.532

From the above table, the charge per blast of 300kg is well below the Peak Particle Velocity of 8 mm/s as per Directorate General of Mines Safety for safe level criteria through Circular No. 7 dated 29/8/1997. Anyhow, the applicant ensures that carry out the blasting **twice or thrice a day based on the site condition** under the supervision of competent qualified statutory personnel employed. However, as per statutory requirement control measures will be adopted to avoid the impacts due to ground vibrations and fly rocks due to blasting.

5.4 Storage and safety measures to be taken while blasting:

The applicant will engage authorized explosive agency to carry out the small amount of blasting and it will be supervised by competent and statutory foreman/Permit Mines Manager. The explosives agencies should be having the valid Blaster certificate. He will blast holes in the quarry site. After completion of Blasting the explosive Agency will take it out back the remaining quantity of Explosives. The Competent Qualified Statutory personnel appointed by the applicant will maintain the records of Explosives as per the Indian Explosives Act.

6.0 MINE DRAINAGE:

6.1 Depth of water table (based on nearby wells and water bodies):

The lease applied area consist dendritic drainage pattern. The water table in the area is about 60m - 65m which is observed from the existing private boreholes. The lease applied area is fully covered by Massive Charnockite. The quarry operation confined to well above the water table hence, the Ground Water problem will not arise. Anyhow, Garland drain will be constructed along the boundary to prevent surface run-off water entering into the quarry.

TABLE – 8

Type	Distance & Direction	Location
Bore Well	260m Southwestern side	09°59'39.94"N 77°41'22.39"E

6.2 Arrangements and places where the mine water is finally proposed to be discharged:

The quarry operations are confined to well above the water table during the entire lease period. If water is encountered at quarry due to rain water and seepage, the same will be pumped out by 5HP water pump and discharge to the Green belt development areas. Besides, the water will also be used for dust suppression on haul roads during Haulage of machineries.

7.0 STACKING OF MINERAL WASTE AND DISPOSAL OF WASTE:

There is no mineral waste anticipated during entire life of the quarry hence, disposal of waste does not arise.

8.0 USE OF THE MINERAL:

The excavated rough stone (100%) will be directly loaded into Trucks as raw form to the needy nearby crushing unit to making Road metals and construction materials. The quarried out gravel will be directly loaded into Tippers for filling and levelling of low-lying areas, this will be done only after obtaining permission and paying necessary seigniorage fee to the Government.

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9.0 OTHERS:

9.1 Other Permanent Structure (also shown in the map)

TABLE – 9

S.No.	Description-Nearest	Particulars	Aerial Distance & Direction
1	National Highway	(NH-85) Theni – Madurai	600m – SE
2	State Highways	(SH-154) Usilampatti – Vattalagundu	10.8km – East
3	Railway station	Andipatti Railway Station	7.0km – West
4	Airport	Madurai Airport	47km – SE
5	Town	Andipatti	7 km – West
6	Government School	Thimmarasanayakkanur - Govt. Hr.Sec. School	2.5km – West
7	Government Hospital	Andipatti	7.8km – West
8	Habitation	1.25km – West	
9	Reserved Forest	Andipatti North R.F. – 240m – East (Refer Annexure VIII)	
10	Defence Installation/ Historical Monuments/ Archaeological	Nil within 500m radius.	
11	Nearby Water Bodies	Odai – in S.F.No. 927/5 -NE - 50m safety Provided	
12	Interstate Boundary	Around 46km –West (Kerala state border)	
13	Critically Polluted areas identified by the CPCB	Around 130km – NW (Kurichi – SIDCO, Coimbatore)	
14	Protected areas Notified under wildlife (Protection) Act, 1972.	8.7 km – SW (Megamalai Wildlife Sanctuary) 8.01km SW its Eco sensitive zone	
15	Applicability of CRZ, Notification 2011 as amended.	Not Applicable	
16	Applicability of Hill Area Conservation Authority (HACA) Clearance.	Not Applicable	
17	Housing area, EB line (HT & LT Line)	There is no EB-LT/HT line or Housing area located within 50m radius from the lease applied area.	
18	Boundaries of the permitted area.	The boundaries of the permitted areas are as follows (Refer Plate No. II): North - S.F.Nos. 912, 913 and 927/1 East - S.F.Nos. 926, 944, 945 and 2364 South - S.F.Nos. 938, 941, 942 and 943/2 West - S.F.Nos. 928, 2362, 939 and 940/1.	
19	Adjacent Patta lands / Govt. Land	(Refer Plate No. II):	

Direction	Classification	Safety Distance
North	Government land and Patta land	50m to the Odai
East	Patta land	7.5m
South	Patta land	7.5m
West	Govt. land	10m
	Patta land	7.5m

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TABLE – 10

STRUCTURE WITHIN **50 - 100m** Number of Structures – 2 Nos.					
Number of Structure	**Type of Structure**	**Usage Purpose**	**Commercial / industry/ residential/ farm house/ Govt. building**	**Occupants of Building/ Structure**	**Remarks**
2	Shed	Storage for Agriculture goods	Farm House	No resident	Applicant
STRUCTURE WITHIN **100 - 200m** Number of Structures - Nil					
Nil	-	-	-	-	Nil
STRUCTURE WITHIN **200 - 300m** Number of Structures – 2 Nos.					
1	Shed	Motor room shed	Non residential	Private	Nil
1	Crusher plant	Rough stone crusher	Non residential	Private	Nil

9.2 Employment potential (skilled, semi-skilled, un skilled):

TABLE – 11

Designation	Present Employment position	Employees Requirement	Total
a) Supervisory category			
Mine Manager	-	1	1
Geologist	-	1	1
b) Skilled labour			
Mine Foreman	-	1	1
Blaster/Mate	-	1	1
Excavator – Operator	-	2	2
Crawler mounted drill operator	-	2	2
Truck Driver	-	4	4
Water sprinkler Driver	-	1	1
Jack-Hammer Drillers	-	8	8
c) Unskilled			
Security	-	1	1
Labour & Helper	-	2	2
Co-operator and Cleaner	-	9	9
Total	-	**33**	**33**

The proposed output per man shift:

TABLE – 12

Peak Production at 3rd year		1,66,540m^3
No. of days likely to be worked		300 days
Average production per day		555m^3
OMS =	Average Production per day / Average employment per day	555m^3 / 33 = 16.8m^3

The above manpower is adequate to meet out the production schedule and the machinery strength envisaged in the mining plan and to comply with the statutory provisions of the Mines Safety Regulations. It is been ensured that the labour will not be employed less than 18 years, **No child labour** will engaged or entertained for any kind of quarrying operations. All the labours engaged for quarrying operations will be insured during the quarry lease period.

9.3 Welfare Measures:

a) Drinking Water:

Packaged drinking water is available from the nearby water vendors in Andipatti which is located about 7km on the Western side of the lease applied area.

b) Sanitary Facilities:

Hygienic modern Sanitary Facilities will be constructed as semi-permanent structure within the applied area and it will be maintained periodically.

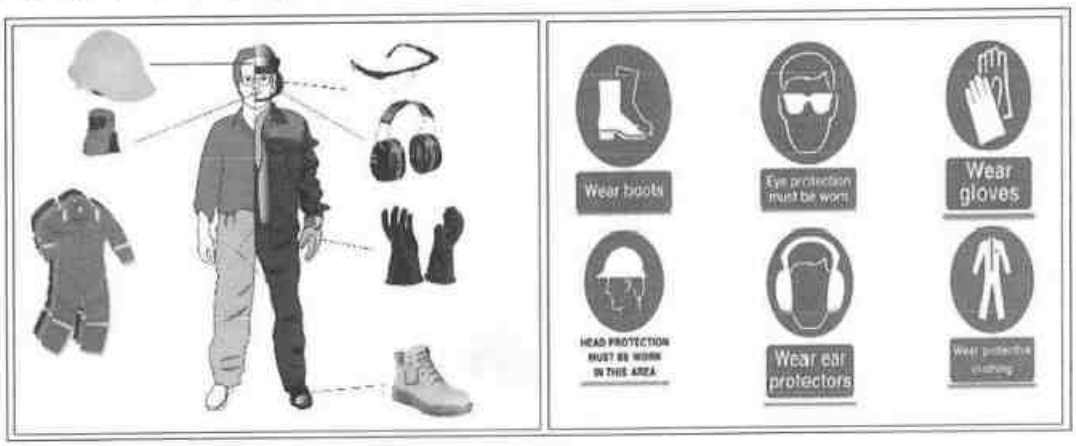
c) First aid facility:

First aid kits are kept in Mines office room, in case of such eventuality is the victim will be given first aid immediately at the site by the competent and statutory foreman/permit manager/mate will be in charge of first aid and injured person will be taken to the hospital by the applicant's vehicle. Hospital is available in Andipatti located at 7km on the Western side of the area.

d) Labour Health:

Periodically medical check-up related to occupational health safety will be conducted to all the workers in applicant own cost.

e) Precautionary safety measures to the labourers:



- Helmets,
- Reflector Jackets
- Dust mask
- Mine Goggles,
- Ear plugs,
- Ear muffs
- Safety Shoes

All personnel protective equipment as per the DGMS standard will be provided as per the specification approved by Director of mines safety. Periodically medical check-up will be conducted for all workers for any mine health related problems. Proper training and vocational education will be given by qualified and experienced safety officer to all the employees about the safety and systematic Rough stone quarrying operations. The drillers and workers will be sent for vocational training periodically, to carry out the quarrying operations scientifically and to safe guard the men and machinery and to create awareness about conventional opencast quarrying operations.

10.0 MINERAL PROCESSING:

No mineral processing/beneficiation involved.

PART – B

11.0 ENVIRONMENT MANAGEMENT PLAN

The EMP is prepared based on the Mines act, Rules & amendment from by state & central government. If the SEIAA/SEAC instructed the modification and alter the EMP the outcome of their recon would be final and the applicant is instructed to follow the EIA / EMP for its compliance as per the CPCB / TNPCB Norms.

Environment	Anticipated impact	Mitigation measure
Land Environment	i. Topography of the area will change due to mining activity.	i. Backfilling is the only source for mitigation measure for topographical changes, but no waste will be anticipated during entire life of the Rough stone and Gravel quarrying operation hence, backfilling is not proposed. ii. The Mining benches will not exceed beyond the approved height and width. iii. At the end of life of mine, the pit will be allowed to collect the seepage and rain water and the water storage will be kept as temporary reservoir for charging the nearby wells also the water utilized for greenbelt development purpose.
	ii. Soil quality and agriculture land on surrounding land environment will impact due to; a) Dust propagation during quarry operation like drilling, blasting, loading, unloading and movement of men, Vehicle and machineries. b) Vehicular and machineries emissions	i. Regular water sprinkling on dust prone area like haul road and other active area to arrest the dust generation. ii. Additional greenbelt will be developed in the safety zone with thick long leave plants to arrest the fugitive dust and vehicular emissions propagation. iii. Wet drilling with dust extractor unit by proper drilling pattern and controlled blasting with NONEL initiation will be carried out to minimize the dust generation. iv. Excavated benches shall be developed by planting with grasses, herbs and shrubs

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	and spillage of oil and grease. c) Propagation of foreign material like polythene bag, jute bag, Plastic water and cool drink containers and undecomposed waste materials dumping.	of local species to prevent soil erosion and landslide. v. PUC (Pollution under control) certified vehicles will be used for transportation and all vehicles and their exhausts would be well maintained and regularly tested for pollutant concentrations. vi. Oiling and greasing will be managed in respective places at vehicle maintenance shed and oil tray will be use to collect the spillage during maintenance and the same will be disposed in manner. vii. Leftover foreign material like polythene bag, jute bag, undecomposed materials or ill managed dumping will not be allowed.
Water Environment	Surface Mining can have direct impact on physico-chemical characteristics of the local drainage and groundwater resources. The detrimental effects, if any, to water resources resulting from surface mining are caused by following: i. Flow direction of Surface run off water and catchment of odai will interrupting during rainy season due to modification of topography. ii. Surface water will contaminated due to dust propagation and vehicle emission.	i. Garland drain with check dam will be constructed all along the boundary barrier to collect the surface run off rain water and to prevent the water entering into the pit. The same will be discharge into the Odai to balancing the catchment in manure as prescribed by TNPCB standards. ii. Green belt will be developed in the safety zone with thick long leaves plants to arrest the fugitive dust and vehicular emissions. iii. Further mining will be completely stopped during the monsoon for free flow of surface run off and allowing natural recharge of groundwater. iv. No wastewater will be generated from the quarry activity. Proper drainage will be Maintained to eliminate inundation of working pit during rain from run-off water. v. The pit water due to rain and seepage will be utilized for water sprinkling on haul Roads and plantations. vi. Septic tanks and soak pits will be provided for the disposal of domestic washroom effluents, the same will be disposed in manner.

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Air Environment	In surface mining operations, the source of air pollution may cause deterioration of air quality due to; a) The fugitive dust emissions from drilling/blasting, scooping, loading-unloading operation of extracted mineral and its transportation. Drilling/blasting and loading of quarry material would be associated with the fugitive dust emission in the active area whereas fugitive emission during transportation would affect the areas/villages situated adjacent to the road side. Another source of air pollution would be emission from the drilling machinery and excavators/tippers vehicles to be used for loading.	i. Regular water sprinkling on haul road and dust prone area to arrest the dust generation. ii. Green belt will be developed in the safety zone with thick long leaves plants to arrest the fugitive dust and vehicular emissions. iii. Wet drilling with dust extractor unit by proper drilling pattern and controlled blasting with NONEL initiation will be carried out to minimize the dust generation. iv. Quarry material will be handled under wet condition during scooping, loading and unloading to minimize the dust propagation, besides loaded materials are covered by Tarpaulin until to reaches its destination. v. Provision of dust filters/ Nose mask to workers working at dust prone areas. vi. Vehicular emission as a result of combustion of diesel generates particulate matter (PM_{10} & $PM_{2.5}$), Nitrogen oxides and Sulphur dioxide (NO_2 & SO_2). High quality diesel will be used in the motor vehicles to control these pollutants. vii. PUC (Pollution under control) certified vehicles will be used for transportation and all vehicles and their exhausts would be well maintained and regularly tested the pollutant concentrations. viii. CPCB Prescribed emission standards for the vehicles would be followed.
Noise Environment	In the present mining activity for building material, noise will be generated from drilling machinery, blasting and vehicular movement. Noise level in the working environment is compared with the standards prescribed by Central Pollution Control Board as adopted and enforced by the Govt. of India through Noise Pollution (Regulation and Control) Rules, 2000.	i. Selection of innovative low – noise equipments for the quarry operation. ii. The noise levels shall be maintained within the permissible levels by involving all the noise regulating measures in vehicles and drilling/blasting operations. iii. To ensure minimum vibrations and noise due to blasting, Non-electric detonators in continuous sequence is proposed. iv. Personnel Protective Equipment (PPE) like earmuffs and earplugs shall be provided to the employees whose in critical operation like drilling, blasting and excavation as occupational safety measures. v. Proper maintenance done with regular interval by the Oiling and greasing for the machineries and vehicles to control the Source of noise during operation and

		transportation. vi. Regular and proper maintenance of machinery and transportation vehicles shall be ensured. vii. Transporting vehicles are enforcing the speed limits of 20km/hour within quarry area and not exceed 40km per hour from quarry to destination to reduce Noise and vibration. viii. There would be restrictions on mining activity and vehicular movement during night hours.
Biological Environment	The area having main floras are Neem, Cocos nucifera, Palm, Casuarina, Senna auriculata, Albizia Amara, Teak, Senna auriculata, Drumstick, Chilli, Maize, Bushes, veld grape, Cactus, and shrubs. No plants of botanical interest or animals of zoological interest recorded within 500m radius. The anticipated impacts on biological environment as follows: i. Cattles may die by entering the pit. ii. Diversity of living insects and faunas due to vibration. iii. Natural habitats of the existing faunas and its breeding will change due to the noise and vibration during operation. iv. The mining activities can also disrupt the ecological diversity. v. Deposition of dust on the plant and crop leaves is affecting the photosynthesis, Pollination, growth ratio and reduction in agriculture productivity.	i. Barbed wire fencing with screen is already constructed also safety bund will be constructed around the quarry to prevent inadvertent entry of public and cattle. ii. The natural habitats of the existing flora and fauna will not be disturbed. iii. No mining will be carried out during the monsoon season to minimize impact on aquatic life which is mainly breeding season for many species. iv. Fruit bearing trees will be planted to survive the existing faunas. v. No clearance of vegetation will be done during the entire mining operations. vi. Regular Water sprinkling on haul roads would be reduces the dust propagation, thus avoiding damage to the crops and plants. vii. No night hour mining will be carried out which may catch the attention of faunas.



Socio – Economic Environment	Any activity during mining will have adverse impact on Environment, careful mitigation measures are proposed to balance the impact on the existing environment and the applicant is always instruct to carry out safe, sustainable, eco-friendly mining operations at all times. The following positive impact on the society due to this mining activity. i. It is proposed to provide employment to about 33 persons for carrying out mining operations and give preference to the local people in providing employment in this cluster. In addition, there will be opportunity for indirect employment to many people in the form of contractual jobs, business opportunities, service facilities etc. the economic status of the local people will be enhanced due to mining project. ii. The employment opportunities both direct and indirect will contribute to enhanced money incomes to job seekers with minimal skill sets especially among the local communities. iii. Improvement of Physical structure like Road Transport facilities, Communications, Medical, Educational and social benefits will be made available to the nearby civilian population in addition to the workmen employed in the mine. iv. The continuation of opportunity for the employments, the nearby villages, living peoples and their life style would be improved. v. The applicant is advised to invest the CER cost (@ 2% from the total Project Cost) to develop the local Panchayat.	Does not arise.



11.1 Environmental impact assessment statement describing impact of mining on the next Ten years:

In the mining plan proposed for a small production of Rough stone and gravel. Such limited mining activity is not likely to cause any impact adversely on the environment. As far as pollution of air, water and noise concerned, the environmental impact studies will be conducted as per EIA notification issued by MoEF& CC. It is B Category mine. The compliance monitoring will be carried out for every six months as prescribed by the MOEF&CC and with state concerned authorities.

11.2 Proposal for waste management:

There is no waste anticipated in this Rough stone and Gravel quarrying operation. The entire quarried out materials will be utilized (100%). The maintenance of machineries & fuelling will be carried out as per the TNPCB Norms and the waste will be disposed in the Norms.

11.3 Proposal for reclamation of land affected during mining activities and at the end of mining (refilling / fencing etc.):

In the mining plan only to a maximum depth of 59m below from the existing ground profile has been envisaged as workable depth for safe & economic quarrying operation during entire life of quarry. There is no waste anticipated during entire life of the quarry hence, backfilling is not proposed. After completion of quarry operations, the quarry pit will be allowed to collect the seepage and rain water, the water storage will be kept as temporary reservoir to charging the nearby wells and will be utilized for greenbelt development. When the quarry reaches its ultimate pit limit or at the end of life of quarry, greenbelt development will be carried out over the quarried out top bench. The quarry area will be fenced with Barbed wire fencing also safety bund constructed around the quarry to prevent inadvertent entry of public and cattle.

11.4 Programme of Greenbelt development (indicate extend, number, name of species to be afforested):

The safety zone all along the boundary barrier has been identified to be utilized for greenbelt development by planting 3,000 tree saplings also the applicant proposed to plant 1,000 tree saplings in the quarried out top benches and 500 saplings on haul road during this Plan period and maintain at least 3,600 plants at the end of the lease period at a survival rate of 80%. Manuring and tree guards will be provided by the applicant to safeguard and maintain the plants. The plantation will be carried out as recommended by the SEIAA based on the output Environmental Clearance and the recommended species will be planted in a phased manner as described below (Refer Plate No. III).

Table – 13

Year	No. of tress proposed to be planted	Survival %	Area to be covered sq.m.	Name of the species	No. of trees expected to be grown
I	300	80%	2,294	Neem, Pongamia Pinnata, Cordia dichotoma, Mango, Thespesia populnea, Senkondrai, Mookusali maram, Mantharai, etc.,	240
II	300	80%	2,292		240
III	300	80%	2,292		240
IV	300	80%	2,292		240
V	300	80%	2,292		240
VI	300	80%	2,253		240
VII	300	80%	2,253		240
VIII	300	80%	2,253		240
IX	300	80%	2,253		240
X	300	80%	2,252		240

11.5 Proposed financial estimate / budget for the project:

Budget Provision for the Mining Plan period:

TABLE – 14

A. Operational Cost / Project Cost / Investment:		Cost (Rs.)
i) Land cost	The Land value as per the Government Guideline land cost is calculated as follows,	44,25,000

S.F. No.	Area (Ha)	Cost / Ha.	Total/Rs.
927/2	1.33.5	4,94,500	6,60,157.5
927/3	1.26.5	4,94,500	6,25,542.5
927/4	1.21.5	4,94,500	6,00,817.5
927/5	0.50.5	4,94,500	2,49,722.5
940/2	0.48.5	6,80,000	3,29,800.0
940/3	1.97.5	4,94,500	9,76,637.5
943/1	1.98.5	4,94,500	9,81,582.5
Total	**8.76.5**	-	**44,24,260**

Total Land Cost = Rs.44,25,000/-

(source : https://tnreginet.gov.in/portal/)

ii) Machinery cost	The following machineries are proposed to meet out the productions.	
	i. Excavator (2 Nos.)	1,00,00,000
	ii. Crawler Mounted Drill Machine (2Nos.)	60,00,000
	iii. Rock breaker (2 Nos.)	2,00,000
	iv. Trucks (4 Nos.)	1,20,00,000
	v. Compressor (1 No.)	7,50,000
	vi. Hand jack hammer and loose tools (4 Nos)	2,00,000
	Total	2,91,50,000
iii) Refilling/ Fencing	Fencing will be constructed around the quarry pit to prevent the inadvertent entry of public and cattle cost would be around (Total Peripheral length 1,650m x Rs. 300/meter).	4,95,000
iv) Labourers shed	Labour shed will be constructed as semi-permanent structure. The cost is around	5,00,000
v) Sanitary facility	Adequate latrine and urinal accommodation has provided at conveniently accessible places the cost would be around.	1,00,000
vi) Others items	First aid room & accessories	50,000
vii) Drinking water facility for the labourers	Packaged drinking water will be provided for all the Labours. Drinking water will be readily available at conveniently accessible points during the whole of the working shift the cost would be around.	1,00,000
viii) Sanitary arrangement	The latrine and urinal will keep clean and sanitary condition. The maintenance cost would be around.	50,000
ix) Safety kit	All the Safety kit such as Helmet, Earmuffs, Goggles, Reflector Jackets, Safety shoes etc., will be provided to the workers by the applicant own cost which would be around.	50,000



x) Water sprinkling	Water will be sprinkled in the haul roads by own water sprinkler. The cost would be around.	10,00,000
xi) Garland drain	Construction of Garland drain with check dam to prevent surface run-off rain water entering to the quarry pit, the construction cost is around (Total Peripheral length 1500m x Rs. 300/meter).	4,50,000
xii) Greenbelt etc.	Greenbelt development will be carried out along the safety barrier; the cost would be around (3,000 saplings x Rs. 200/sapling).	6,00,000
	Greenbelt development will be carried out along the quarried out top benches; the cost would be around (1,000 saplings x Rs. 200/sapling).	2,00,000
	Greenbelt development will be carried out on haul road; the cost would be around (500 saplings x Rs. 200/sapling).	1,00,000
	Total Cost	**3,72,70,000**

B. EMP Cost: (Per year)	
Air Quality monitoring	Rs. 52,000/-
Water Quality Sampling	Rs. 18,000/-
Noise Monitoring	Rs. 2,000/-
Ground vibration test	Rs. 4,000/-
Total Cost	**Rs. 76,000/-**
Total EMP Cost for the Ten years period is **Rs.7,60,000/-**	

Description	**Amount (Rs.)**
A. Operational Cost	**3,72,70,000/-**
B. EMP Cost	**7,60,000/-**
Total Project Cost (A+ B)	**3,80,30,000/-**
C. The applicant Indents to involve corporate environment responsibilities (CER) activity like Water Purifier, Plantation, Books to Library, Smart class board, class room renovation, painting, sanitary facility and as per requirement to the Thimmarasanayakkanur - Govt. Hr.Sec. School at 2.0% from the total project cost. The Cost would be around **Rs.7,61,000/.** If the concerned authority is directed to modify the CER cost and mode of utilization of the cost, the same will be implement by the applicant.	**7,61,000/-**
Total Cost (A+B+C)	**3,87,91,000/-**
The total cost would be around three crore eighty seven lakh and ninety one thousand only.	

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12.0 PROGRESSIVE QUARRY CLOSURE PLAN

12.1 Introduction:

As per guidelines for preparation of mining plan prescribed under Mineral Conservation and Development Rules, 2010 also the entire area is proposed for a short period of Ten years only hence, the progressive quarry closure plan may not be applicable to this quarry. Anyhow, during temporary discontinuance of quarry the following measures will be taken.

a. Barbed wire fencing will be constructed around the quarry.
b. Benches will be smoothening.
c. Quarry will be closed & sentries will be posted round the clock.
d. Green belt development will be maintained.
e. Machineries will be removed from pit and engaged in another site.

12.2 Present and Post Land use pattern:

TABLE – 15

Description	Present area (Ha)	Area required during first five years (Ha)	Area at the end of the lease period (Ha)
Area Under Quarrying	Nil	6.43.54	6.43.54
Infrastructure	Nil	0.02.00	0.02.00
Roads	Nil	0.02.00	0.02.00
Green Belt	Nil	1.14.62	2.27.26
Unutilized Area	8.76.50	1.14.34	0.01.70
Grand Total	**8.76.50**	**8.76.50**	**8.76.50**

12.3 Statutory obligations:

The applicant ensures to comply all the conditions stipulated in the precise area communication letter before grant of quarry lease and during the course of quarry operations as per the DGMS, Department of Geology and Mines, Labour Enforcement officer, controller of Explosives etc., circulars, Norms, Rules, Regulations and Act.

12.4 Progressive quarry closure plan preparation:

Name and address of the Qualified Person who prepared the progressive closure plan and name and address of the executing agency who is involved in the Preparation of progressive quarry closure plan.

Name	:	**S. ILAVARASAN,** M.Sc.,
		Qualified Person (Under Rule 15(I)(a) and (I)(b) of MCR, 2016)
Address	:	No. 289, Shanthi Nagar First Cross,
		Chinnakollapatti,
		Salem District
State with PIN Code	:	Tamil Nadu – 636 008.
Mobile No.	:	+91 94880 69569
Email ID	:	ilageo.s@gmail.com

The applicant will himself implement the closure plan; no outside agency will be involved.

(i) Safety & Security:

Safety measures will be implemented to prevent access in the excavation area an unauthorized persons as per Mine Act 1952, MMR 1961.

- Safety measures will be implemented as per Mine Act 1952, MMR 1961 and Mines Rules 1955.
- Provisions of MMR 1961 shall be strictly followed and all roads shall be wider than the height of the bench or equal to the height of the bench and have a gradient of not more than 1 in 16.
- The bench height will be 5.0m.
- Width of working bench will be kept about 5.0 m for ease of operations and provide sufficient room for the movement of machineries and vehicles.
- Protective equipment like dust masks, ear-plugs/ muffs and other equipment shall be provided for use by the work persons.
- Notices giving warning to prevent inadvertent entry of persons shall be displayed at all conspicuous places and in particular near mine entries.
- Danger signs shall be displayed near the excavations and proper signal by siren alarm will be given to the public before blasting to prevent accident.
- Security guards will be posted.
- In the event of temporary closer, approaches will be fenced off and notice displayed.
- Installation of CCTV cameras in the quarry and entrance of the quarry.
- Monitoring of Quarrying operation by external agency as directed by authorities.

(ii) Disaster Management and Risk Assessment:

This should deal with action plan for high risk accidents like landslides, subsidence, flood, fire, seismic activities, tailing dam failures etc. and emergency plan proposed for quick evacuation, ameliorative measures to be taken etc. The capability of applicant to meet such eventualities and the assistance to be required from the local authorities should be described.

- The mechanized mining activities in the area may involve any high risk accident due to side falls/collapse, flying stones due to blasting etc.
- The complete mining operation will be carried out under the Management and control of experienced and qualified Mines Manager having Certificate of Competency to manage the mines granted by DGMS.
- All the provisions of Mines Act 1952, MMR 1961 and Mines Rules 1955, TNMMCR 1959 and other laws applicable to mine will be strictly complied with.
- During heavy rainfall the mining activities will be suspended.
- All persons in supervisory capacity will be provided with proper communication facilities.
- Competent persons will be provided FIRST AID kits which they will always carry.
- The Greenbelt Development will be formed in around the quarried out top benches and panchayat road of the lease applied area.

Environmental Monitoring Cell:

A dedicated team nominated by the mine manager or Agent will monitor and maintain the environmental compliances of the quarry as per the approved Environment Management Plan and report the Compliance to the Mine Manager half yearly.

Disaster Management Cell:

The Competent Qualified Statutory managers appointed by the applicant as per the Director of Mines Safety will be responsible for Disaster Management. It care any eventualities his mobile number will be displayed and he will take all the precautions and safety measures as per Mines and Minerals (Development and Regulations) Act, 1957.

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(iii) Disposal of mining machinery

All the Machineries will be purchased fresh, the same has been maintained in good condition during entire life of quarry. After completion of quarry operation all machineries will be utilized at another quarry area or sold out to the second hand. Hence, disposal of decommissioning of mining machinery does not arise.

(iv) Care and Maintenance during Temporary Discontinuance:

In case of any temporary discontinuance due to court order or due to statutory requirement or any other unforeseen circumstance following measures shall be taken for care, maintenance and monitoring of conditions.

- Notice of temporary discontinuance of work in mine shall be given to the DGMS as per the MMR 1961.
- All the mining machinery shall be shifted to a safe place.
- Entrance to the mine or part of the mine, to be discontinued shall be fenced off. Fencing shall be as per the circular 11/1959 from DGMS.
- Security Guards shall be posted for the safety and to prevent any unauthorized entry to the area.
- Carry out regular maintenance of the facilities/area detailed below in such a way as would have been done as if the mines were operation:

  Quarry roads and approach roads,

  Fencing on approach roads,

  Checking and maintenance of machines and equipment,

  Drinking water arrangements,

  Quarry office, first aid stations etc.
- Competent persons shall inspect the area regularly.
- Air, water and other environmental monitoring shall be carried out as per CPCB and IBM Guideline.
- Care and upkeep of plantation shall be carried out on regular basis.
- Status of the working and status monitoring for re-opening of the mines shall be discussed daily.

In case of discontinuance due to any natural calamities/abnormal conditions, mining operation will be restarted as early as possible after completing rescue work, restoring safety and security, repairs of roads etc.

(v) Economic Repercussion of Closure of Quarry and manpower Retrenchments:

The quarry lease is granted for a period of Ten years only. As per the production Programme envisaged, there will be no effect on the man power as the majority persons belong to nearby villages and will have an option either to be available for employment for the next contract/ lease or do the agriculture in their fields.

(vi) Abandonment Cost:

As at present mining is not going to be closed so abandonment cost could not be assessed. However, based on the progressive quarry closure activities during the plan period, cost is assessed as given below at present scenario:

TABLE – 15

ACTIVITY		YEARS										RATE	COST (Rs.)
		I	II	III	IV	V	VI	VII	VIII	IX	X		
Plantation under safety zone	Nos	300	300	300	300	300	300	300	300	300	300		6,00,000
	Cost	60000	60000	60000	60000	60000	60000	60000	60000	60000	60000		
Plantation in quarried out top bench and Haul road	Nos	Haul Road			Quarried out top bench							Rs.200 Per sapling	3,00,000
		500	-	-	250	250	250	250	-	-	-		
	Cost	100000	-	-	50000	50000	50000	50000	-	-	-		
Barbed Wire Fencing (1650 Mtrs)		4,95,000	-	-	-	-	-	-	-	-	-	Rs300 Per Meter	4,95,000
Garland Drain (1500 Mtrs)		4,50,000	-	-	-	-	-	-	-	-	-	Rs300 Per Meter	4,50,000
Total													**18,45,000**

13.0 ANY OTHER DETAILS INTEND TO FURNISH BY THE APPLICANT:

This Mining plan for Rough stone (Charnockite) and Gravel is under Rules 41 & 42 as per the Amended under Tamil Nadu Minor Mineral Concession Rules, 1959. The provisions of the Mines Act, Rules and Regulations and orders made there under shall be complied within the quarrying operation, so that the safety of the mine, machinery and person will be well protected. Permission, relaxation or exemption wherever required for the safe and scientific quarrying of the deposit will be obtained from the Department of Mines Safety. Any violation pointed out by the inspecting authorities shall be rectified and modified after scrutiny comments as per the guidelines of the Concerned Department and Authorities.

This Mining Plan and mine design is prepared based on the requirement instructed by the applicant to me. If there is any change in the production schedule, change of technology, change in product mix during the course of operations, the applicant is advice to prepare a modified mining plan and get approval by the concerned authority for subsequent clearance and approval. The same will be monitored by the inspecting authority of Department of Geology and mining and other Concerned Departments under Rule 25 and sub rule (5)(d) in Rule 36 of Tamil Nadu Minor Mineral Concession Rules, 1959.

I hereby ensure that the information provided is correct to best of my knowledge and experience, some of the information contained in this report has been provided by external sources and by the applicant and is presented as the form as submitted by the applicant. The information is not intended to serve as legal advice related to the individual situation. I do not owe and specifically disclaim any liability resulting from the use during the course of quarrying operations after the grant of lease. The document may be scrutinized by the competent authority before approval.

Prepared by

S. ILAVARASAN, M.Sc.,
Qualified Person

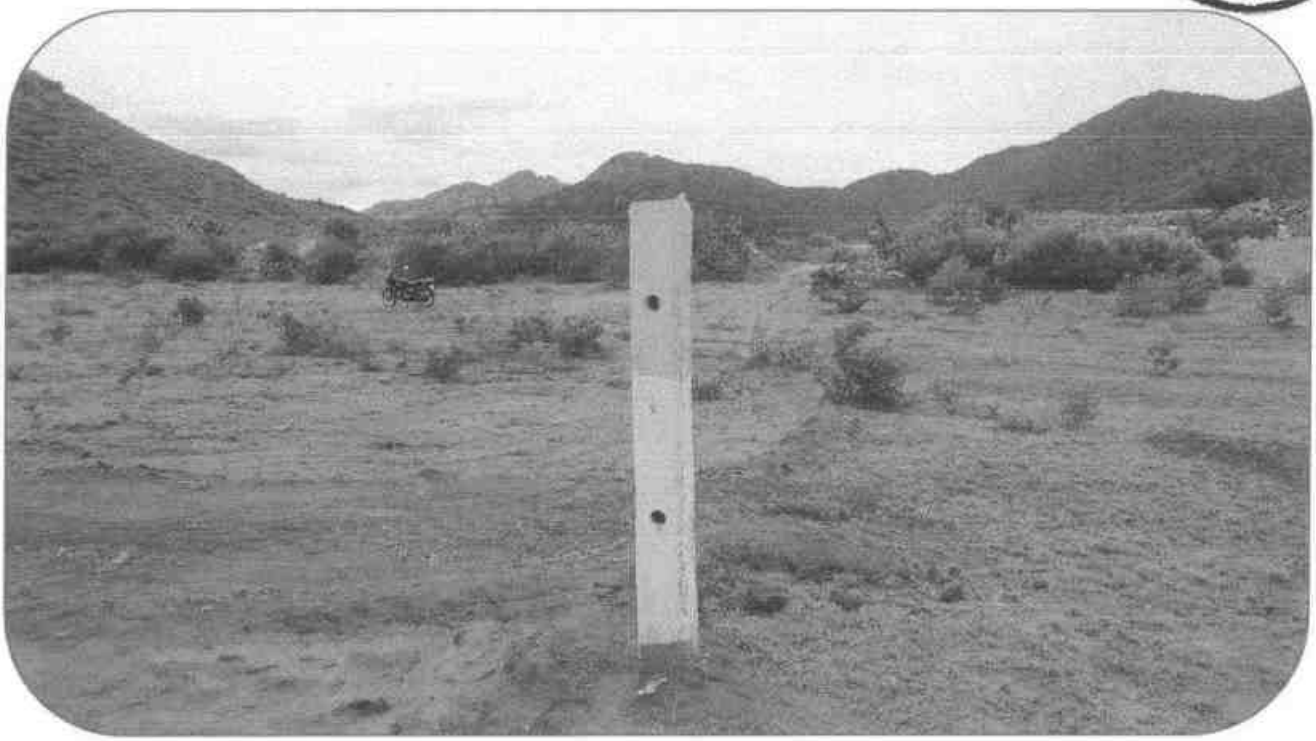
Place: Salem
Date: 26.07.2024

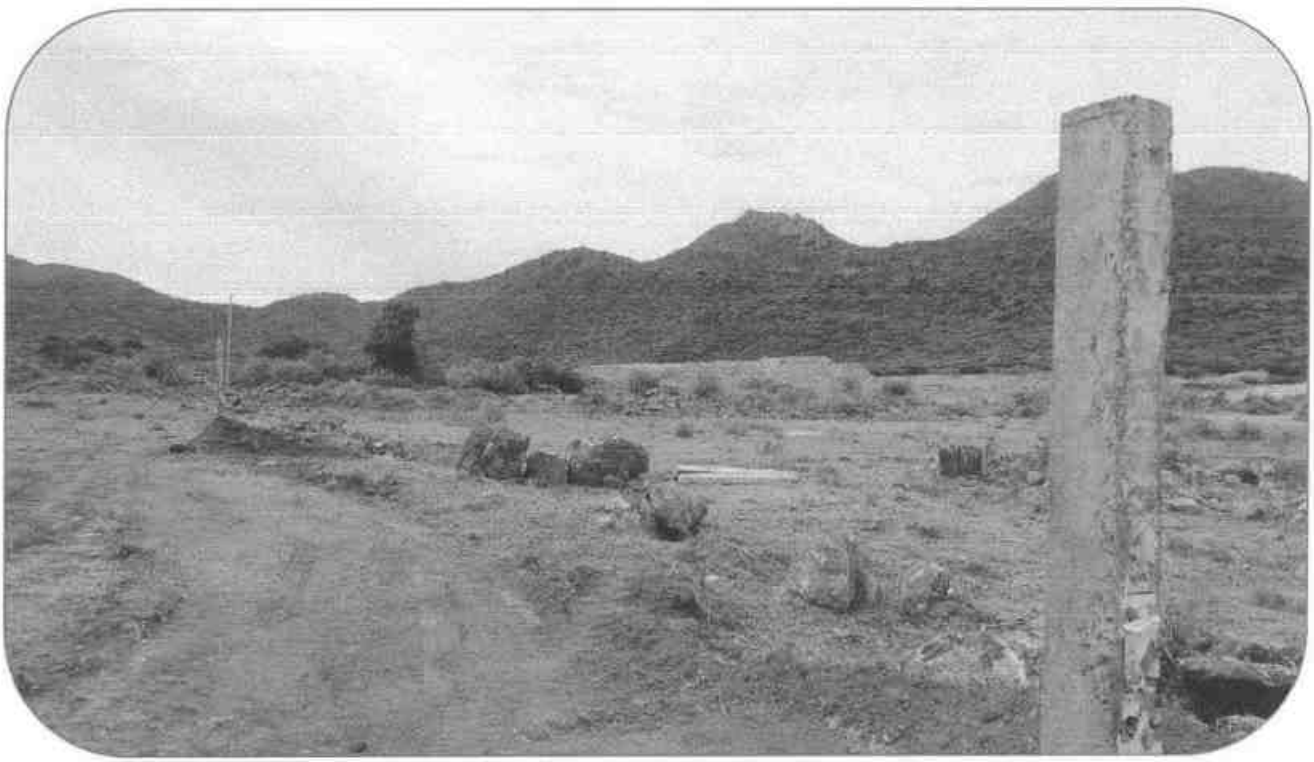
This Mining Plan is approved based on incorporation of the particulars specified under ... given by the commissioner ... and Mining ... LC/2012 Dated ...

Assistant Director
Geology and Mining
Theni

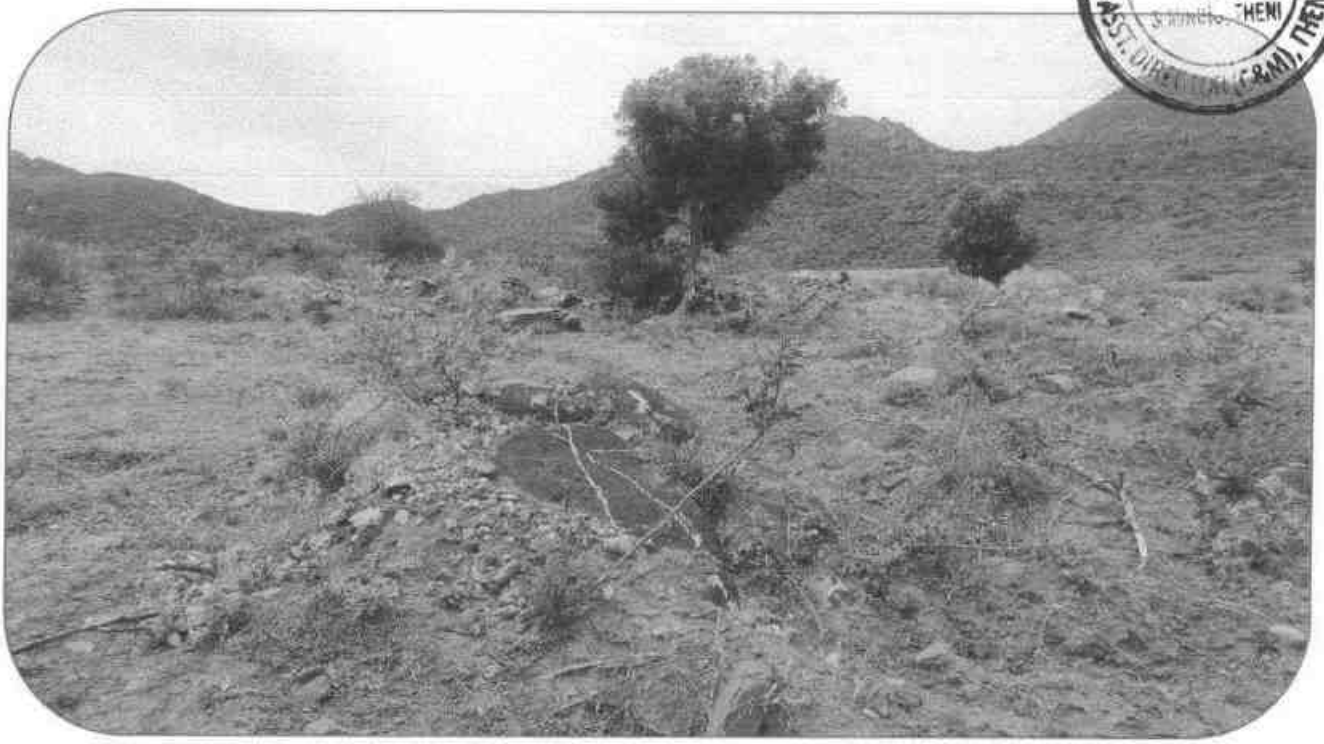
This Mining Plan is approved subject to the condition / Stipulated and indicated in the Mining Plan Approval Roc. No: 480/mines/2023 Dated: 13/08/2024

PHOTOGRAPHS OF THE THIMMARASANAYAKKANUR R
ROUGH STONE AND GRAVEL QUARRY LEASE APPLIED A



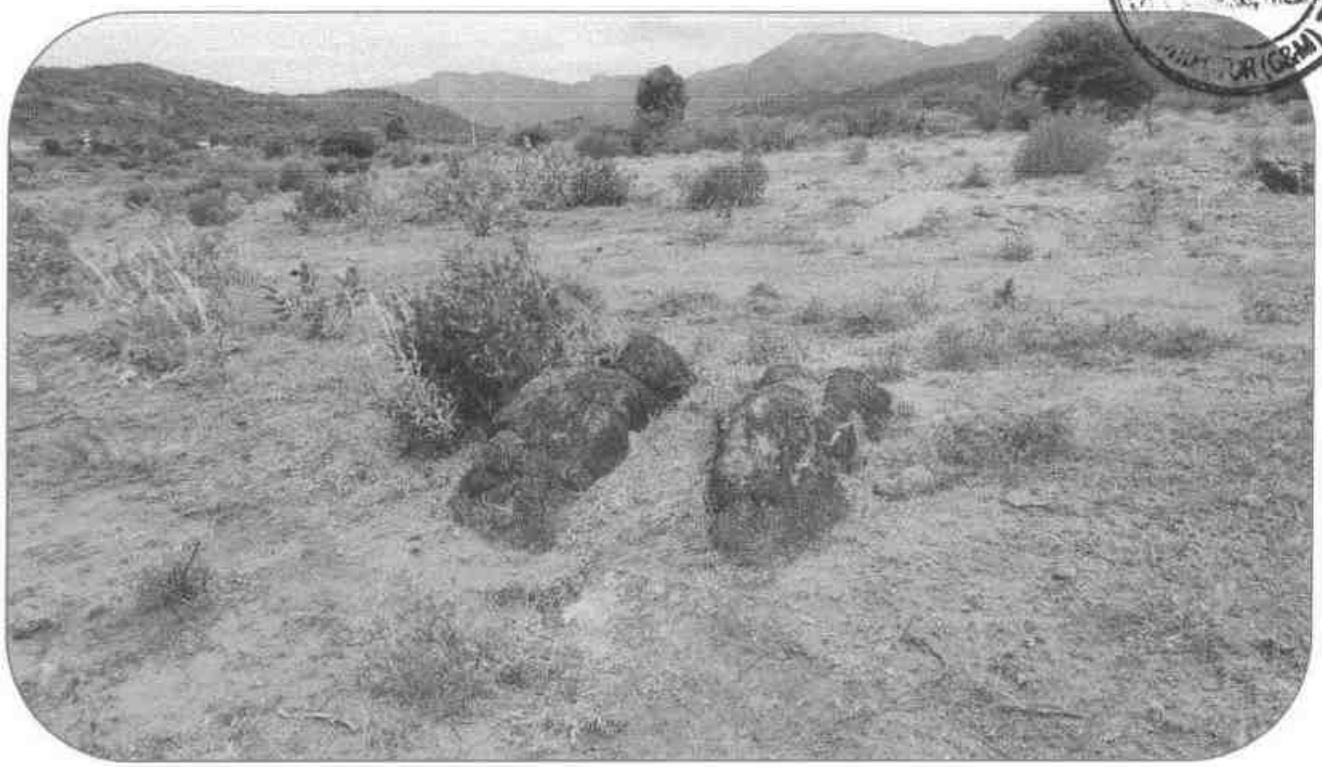


OUTCROPS





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ANNEXURE

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ASST. DIRECTOR (G&M), THENI

அனுப்புநர்

திரு.சோ.கிருஷ்ணமோகன்,
உதவி இயக்குநர்,
புவியியல் மற்றும் சுரங்கத்துறை,
தேனி.

பெறுநர்

திரு.செ.செல்வம்,
த/பெ.செல்லத்துரை,
எண்.38, நடுத்தெரு,
பிராதுகாரன்பட்டி,
சண்முகசுந்தரபுரம்,
ஆண்டிபட்டி வட்டம்,
தேனி மாவட்டம்.

ந.க.எண்.483/கனிமம்/2023, நாள்:22.07.2024.

பொருள்: கனிமங்களும் குவாரிகளும் - சிறுகனிமம் - சாதாரண கற்கள் மற்றும் கிராவல் - தேனி மாவட்டம் - ஆண்டிபட்டி வட்டம், திம்மரசநாயக்கனூர் பிட்-1 கிராமம், புல எண். 927/2 (1.33.50), 927/3 (1.26.50), 927/4 (1.21.50), 927/5 (0.50.50), 940/2 (0.48.50), 940/3 (1.97.50), 943/1 (1.98.50)-இல் 8.76.50 ஹெக்டர் பட்டா பரப்பில் உடைகல் மற்றும் கிராவல் பரப்புள்ள நிலத்தில் சாதாரண கற்கள் / கிராவல் வெட்டியெடுக்க குவாரி குத்தகை உரிமம் கோரி திரு.செ.செல்வம், த/பெ.செல்லத்துரை என்பவருக்கு - 10 (பத்து) ஆண்டுகளுக்கு - ஏற்பளிக்கப்பட்ட சுரங்கத்திட்டம் மற்றும் சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையத்தின் ஒப்புதல் பெற்று சமர்பிக்க கோருதல் - தொடர்பாக.

பார்வை:

1. திரு.செ.செல்வம், த/பெ.செல்லத்துரை, எண்.38, நடுத்தெரு, பிராதுகாரன்பட்டி, சண்முகசுந்தரபுரம், ஆண்டிபட்டி வட்டம், தேனி மாவட்டம். விண்ணப்பம் நாள்: 21.09.2023.
2. வருவாய் கோட்டாட்சியர், பெரியகுளம், கடிதம் ந.க.எண்.8719/2023/அ5, நாள்:19.12.2023.
3. மாவட்ட வன அலுவலர், தேனி செயல்முறை ஆணைகள் ந.க.எண்.11567/2023/D2, நாள்:20.05.2024.
4. திரு.செ.செல்வம், ஆண்டிபட்டி வட்டம், என்பவரின் கடிதம் நாள்: 21.05.2024
5. உதவி இயக்குநர், புவியியல் மற்றும் சுரங்கத்துறை, தேனி புலத்தணிக்கை அறிக்கை நாள்:23.05.2024.

****

தேனி மாவட்டம், ஆண்டிபட்டி வட்டம், திம்மரசநாயக்கனூர் பிட்-1 கிராமம், புல எண்கள்.927/1 (0.18.00), 927/2 (1.33.50), 927/3 (1.26.50), 927/4 (1.21.50), 927/5 (0.50.50), 938/1A (0.85.50), 938/2 (1.94.50), 939/2 (0.45.50), 940/1 (0.65.00), 940/2 (0.48.50), 940/3 (1.97.50), 941 (0.20.50),

942 (1.19.50), 943/1 (1.98.50), 943/2 (0.89.00)-இல் 15.14.00 ஹெக்டர் பட்டா நிலத்தில் இருந்து 10 (ஆண்டுகளுக்கு) ஆண்டுகளுக்கு 10 (பத்து) ஆண்டுகளுக்கு கிராவல் மற்றும் சாதாரண உடைகற்கள் வெட்டியெடுக்க திரு.செ.செல்வம், த/பெ.செல்லத்துரை என்பவர் பார்வை 1-ல் காணும் விண்ணப்பம் செய்துள்ளார்.

இந்நிலையில், பார்வை 4-ல் காணும் கடிதத்தில், "தான் தேனி மாவட்டம், ஆண்டிபட்டி வட்டம், திம்மரசநாயக்கனூர் பிட்-1 கிராமம், புல எண்கள்.927/1 (0.18.00), 927/2 (1.33.50), 927/3 (1.26.50), 927/4 (1.21.50), 927/5 (0.50.50), 938/1A (0.85.50), 938/2 (1.94.50), 939/2 (0.45.50), 940/1 (0.65.00), 940/2 (0.48.50), 940/3 (1.97.50), 941 (0.20.50), 942 (1.19.50), 943/1 (1.98.50), 943/2 (0.89.00)-இல் 15.14.00 ஹெக்டர் பரப்பில் 10 ஆண்டுகளுக்கு கிராவல் மற்றும் சாதாரண உடைகற்கள் வெட்டியெடுக்க விண்ணப்பம் செய்ததாகவும், தற்சமயம் முழு பரப்பளவில் குவாரி செய்ய இயலாததால் தனக்கு சர்வே எண்கள்.927/2 (1.33.50), 927/3 (1.26.50), 927/4 (1.21.50), 927/5 (0.50.50), 940/2 (0.48.50), 940/3 (1.97.50), 943/1 (1.98.50)-இல் 8.76.50 ஹெக்டர் பரப்பில் மட்டும் குவாரி குத்தகை உரிமம் வழங்குமாறு கோரியுள்ளார்.

எனவே, வருவாய் கோட்டாட்சியர், பெரியகுளம், மாவட்ட வன அலுவலர், தேனி மற்றும் உதவி இயக்குநர், புவியியல் மற்றும் சுரங்கத்துறை, தேனி ஆகியோர்களின் பரிந்துரை மற்றும் நிபந்தனைகளின் அடிப்படையில், விண்ணப்பதாரர் திரு.செ.செல்வம், த/பெ.செல்லத்துரை என்பவருக்கு தேனி மாவட்டம், ஆண்டிபட்டி வட்டம், திம்மரசநாயக்கனூர் பிட்-1 கிராமம், புல எண். 927/2 (1.33.50), 927/3 (1.26.50), 927/4 (1.21.50), 927/5 (0.50.50), 940/2 (0.48.50), 940/3 (1.97.50), 943/1 (1.98.50)-இல் 8.76.50 ஹெக்டர் பட்டாபட்டா பரப்பில் சாதாரண கற்கள் மற்றும் கிராவல் வெட்டி எடுத்துக் கொள்ள தமிழ்நாடு சிறுகனிம சலுகை விதிகள் 1959-ன் விதி 19(1)-ன்படி கீழ்க்கண்ட நிபந்தனைகளுக்கு உட்பட்டு 10 (பத்து) ஆண்டுகளுக்கு உடைகல் மற்றும் கிராவல் குவாரி குத்தகை உரிமம் வழங்குவதற்குரிய தகுதியான நிலப்பரப்பாக கருதி குவாரி உரிமம் வழங்க ஏதுவாக 1959-ம் வருடத்திய தமிழ்நாடு சிறுகனிம விதிகள், விதி எண்.41-ன்படி ஏற்பளிக்கப்பட்ட சுரங்கத் திட்டத்தினை 90 தினங்களுக்குள்ளும் அதனை தொடர்ந்து, 1959-ம் வருடத்திய தமிழ்நாடு

சிறுகனிம விதிகள், விதி எண்.42-ன்படி மாநில சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையத்தின் இசைவினையும் பெற்று சமர்பிக்க வேண்டும்.



நிபந்தனைகள்:

1. அருகில் உள்ள பட்டா நிலங்களுக்கு 7.5 மீட்டர் பாதுகாப்பு இடைவெளி விட்டு குவாரிப்பணி மேற்கொள்ள வேண்டும்.

2. விண்ணப்ப புல எண்கள்.927/3 மற்றும் 9272-ல் வடக்கு பக்கமும், புல எண்.927/5-ல் வடக்கு மற்றும் கிழக்கு பக்கம் செல்லும் ஓடைக்கு 50 மீட்டர் பாதுகாப்பு இடைவெளி விடப்பட வேண்டும்.

3. குத்தகைதாரர் தமக்கு குத்தகை வழங்கப்பட்ட பகுதிக்கு அருகில் உள்ள பட்டா நிலத்திற்கும் கிராம பொதுமக்களுக்கும் எவ்வித இடையூறு இன்றி குவாரிப்பணி மேற்கொள்ள வேண்டும்.

உதவி இயக்குநர்,
புவியியல் மற்றும் சுரங்கத்துறை,
தேனி.

23/07/24.

ANNEXURE - II

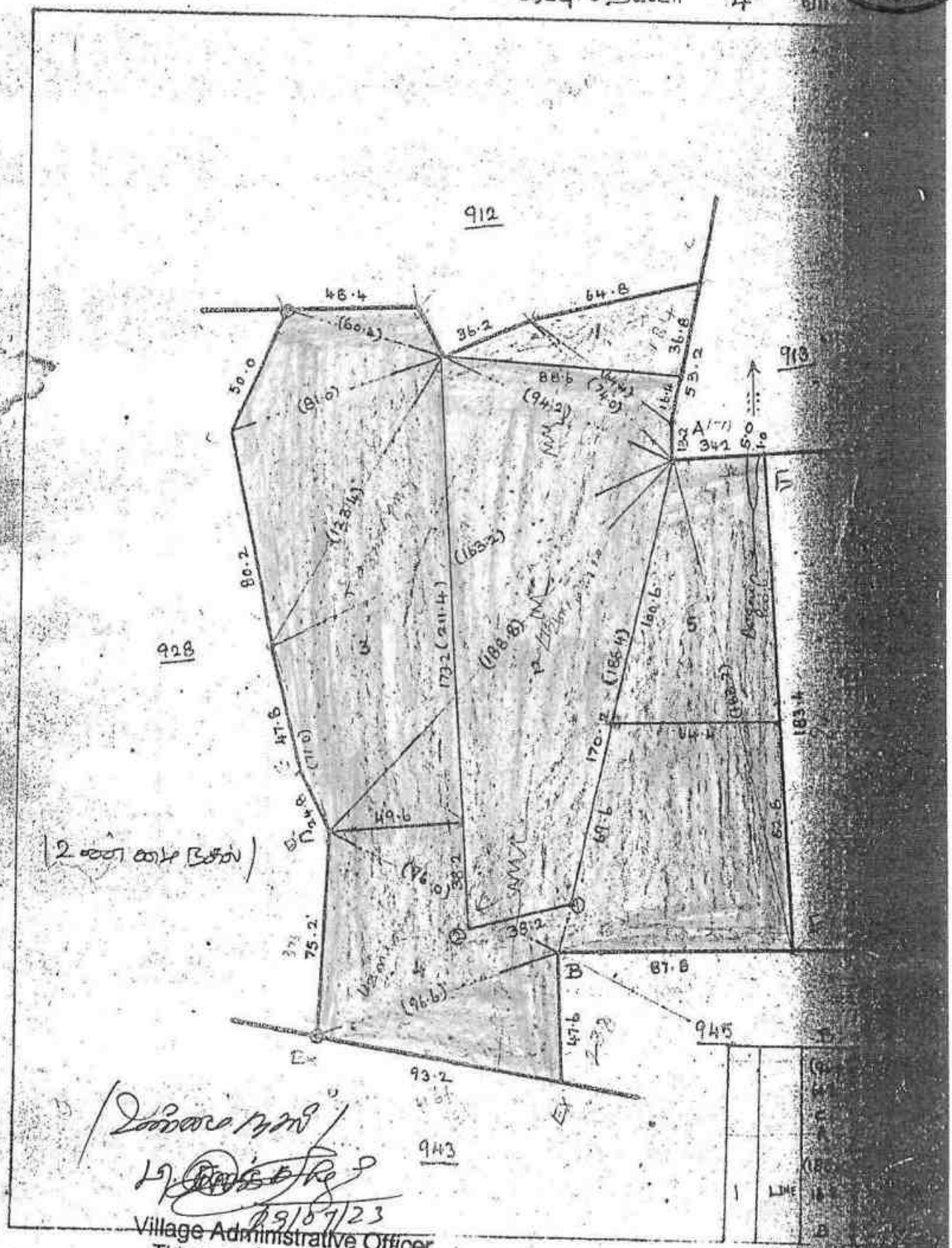
மாவட்டம் மதுரை

வட்டம் பெரியகுளம்

கிராமம் { எண்.
பொ

புல எண். 927

பரப்பு: ஹெக்டேர் 4



(2 வண்டி நடை)

(வண்டி நடை)

Village Administrative Officer
Thimmarajanaickanur-II
Andipatti Tk. Theni Dt.

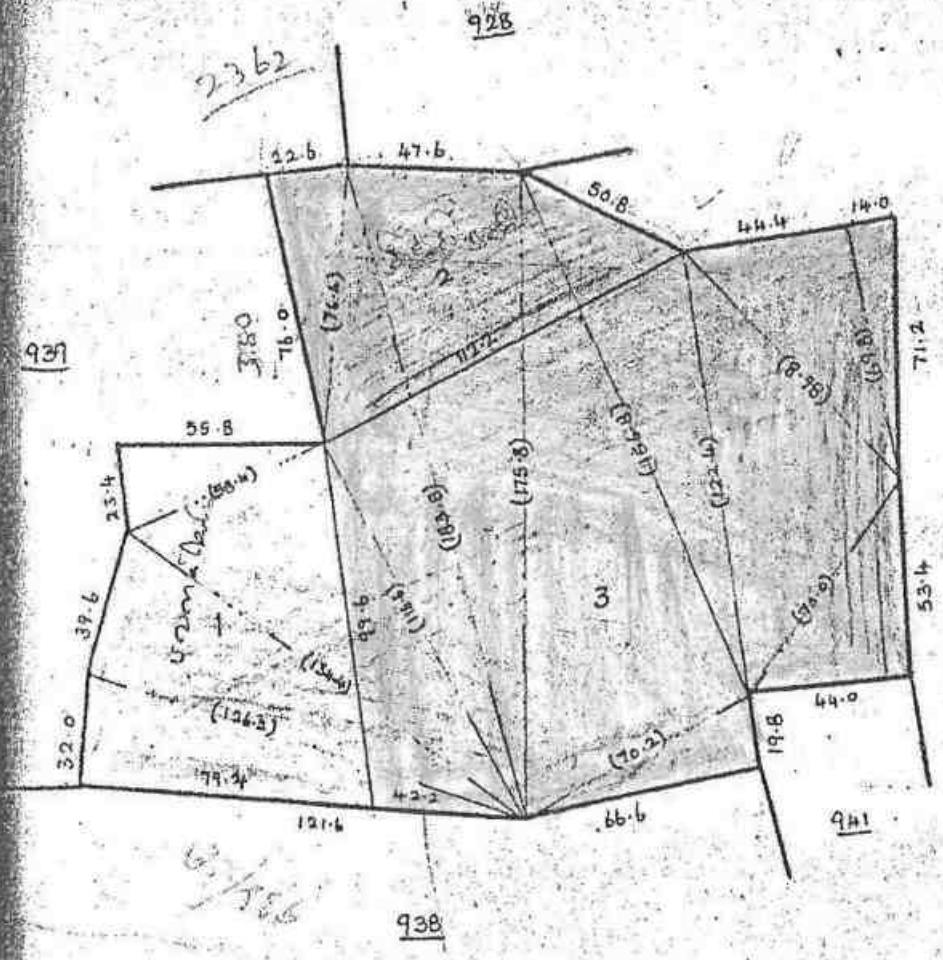
4.2.85

LEASE APPLIED AREA

கிராமம் { பெயர். திம்மராசனாய்க்கன்பட்டி

பெரியகுளம்

புல எண். 940 பரப்பு: ஹெக்டேர் . 3 ஏர். 0



12 எண்ணை 13 கிழ்

19/07/23

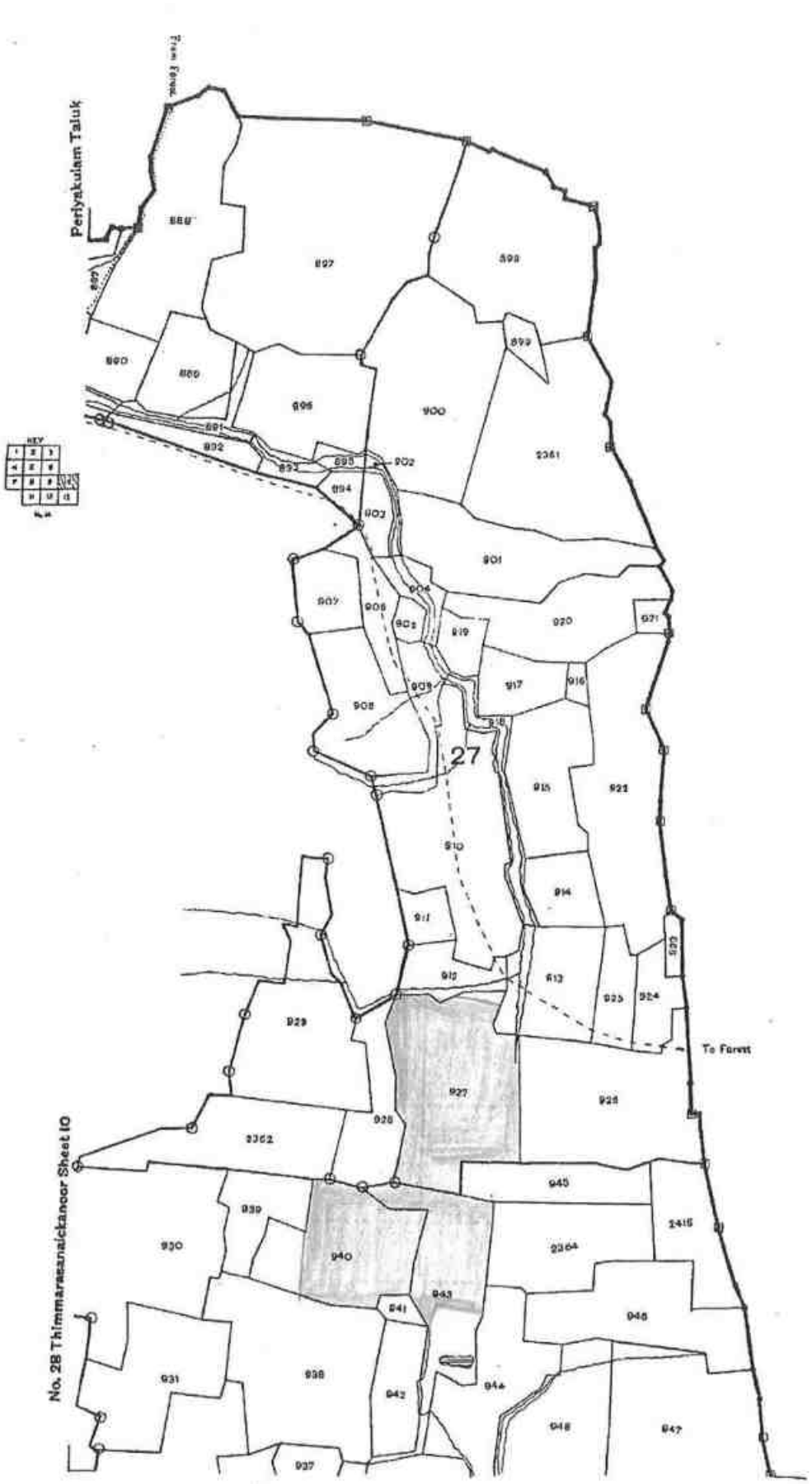
Village Administrative Officer
Thimmarasanaickanur-Bit-1
Aundipatti Tk. Theni Dt.

LEASE APPLIED AREA

MINING PLAN APPROVED
ASST. DIRECTOR
GEOLOGY
MINING, THENI
ASST. DIRECTOR (GEOM), THENI

928
927
945
946
941
944
936
951
2364
12 அடி வழி பாதை
Village Administrative Officer
Thimmarasanaickanur-Bit-1
Aundipatti Tk.
Theni Dt.
LEASE APPLIED AREA

ANNEXURE - III



MINING PLAN APPROVED
ASST. DIRECTOR
GEOLOGY
& MINING, THENI
DEPUTY DIRECTOR (GRM), THENI

LEASE APPLIED AREA

ANNEXURE - IV

வட்டாட்சியர் அலுவலக இணைய சேவை - நில உரிமை விபரங்கள்

MINING PLAN APPROVED
ASST. DIRECTOR GEOLOGY & MINING, THENI
DEPUTY DIRECTOR (G&M), THENI

தமிழ்நாடு அரசு

வருவாய்த் துறை

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

மாவட்டம் : தேனி

வட்டம் : ஆண்டிபட்டி

வருவாய் கிராமம் : திம்மரசநாயக்கனூர்

பட்டா எண் : 5891

உரிமையாளர்கள் பெயர்

1. தனிக்கொடி மனைவி பவளக்கொடி

புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	
786	-	1 - 58.00	1.95	--	--	--	--	R1135/06--- -- 18-09-2006
923	-	0 - 20.00	0.55	--	--	--	--	---- -- 01-08-2015
924	-	0 - 77.50	2.15	--	--	--	--	R1135/06--- -- 18-09-2006
927	1	0 - 18.00	0.50	--	--	--	--	R1135/06--- -- 18-09-2006
927	4	1 - 21.50	3.36	--	--	--	--	R1135/06--- -- 18-09-2006
927	5	0 - 50.50	1.40	--	--	--	--	R1135/06--- -- 18-09-2006
936	3	0 - 52.50	1.46	--	--	--	--	R1135/06--- -- 18-09-2006
939	2	0 - 45.50	1.26	--	--	--	--	R1135/06--- -- 18-09-2006
940	1	0 - 65.00	1.79	--	--	--	--	R1135/06--- -- 18-09-2006
944	1	0 - 55.00	1.52	--	--	--	--	R1135/06--- -- 18-09-2006
944	3	0 - 18.50	0.52	--	--	--	--	R1135/06--- -- 18-09-2006
946	1	0 - 73.00	2.03	--	--	--	--	R1135/06--- -- 18-09-2006
948	3	0 - 33.00	0.94	--	--	--	--	R1135/06--- -- 18-09-2006
948	4	0 - 14.50	0.44	--	--	--	--	R1135/06--- -- 18-09-2006
949	2	0 - 34.00	0.76	--	--	--	--	R1135/06--- -- 18-09-2006
950	-	0 - 48.50	1.34	--	--	--	--	R1135/06--- -- 18-09-2006
951	1	0 - 32.50	0.40	--	--	--	--	R1135/06--- -- 18-09-2006

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& MINING, THENI
DIRECTOR (G&M), THENI

தமிழ்நாடு அரசு

வருவாய்த் துறை

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

மாவட்டம் : தேனி

வட்டம் : ஆண்டிபட்டி

வருவாய் கிராமம் : திம்மரசநாயக்கனூர்

பட்டா எண் : 6234

உரிமையாளர்கள் பெயர்

1. தனிக்கொடி மனைவி பவளக்கொடி

புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	
2364	-	2 - 49.50	6.91	--	--	--	--	R1409/09---- -- 12-01-2007
927	2	1 - 33.50	3.68	--	--	--	--	R1409/09--- -- 26-02-2007
944	2	1 - 83.50	5.08	--	--	--	--	R1409/09--- -- 26-02-2007
945	-	1 - 51.00	4.18	--	--	--	--	R1409/09--- -- 26-02-2007
		7 - 17.50	19.85					

குறிப்பு2 :

	1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் **https://eservices.tn.gov.in** என்ற இணைய தளத்தில் **25/13/002/06234/180275** என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
	2. இத் தகவல்கள் 18-11-2023 அன்று 11:11:09 AM நேரத்தில் அச்சடிக்கப்பட்டது.
	3. கைப்பேசி கேமராவின்2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

MINING PLAN APPROVED
ASST. DIRECTOR
GEOLOGY
MINING, THENI
DIRECTOR (GRAM), THENI

தமிழ்நாடு அரசு

வருவாய்த் துறை

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

மாவட்டம் : தேனி

வட்டம் : ஆண்டிபட்டி

வருவாய் கிராமம் : திம்மரசநாயக்கனூர்

பட்டா எண் : 2653

உரிமையாளர்கள் பெயர்

1. தங்கராஜ்த்தேவர் மகன் தனிக்கொடி

புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	
1004	7	1 - 3.00	2.86	--	--	--	--	---- -- 13-09-2000
2417	1A2	0 - 51.00	1.41	--	--	--	--	---- -- 13-09-2000
927	3	1 - 26.50	3.51	--	--	--	--	---- -- 13-09-2000
		2 - 80.50	7.78					

குறிப்பு2 :

1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் **https://eservices.tn.gov.in** என்ற இணைய தளத்தில் **25/13/002/02653/140266** என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 18-11-2023 அன்று 11:12:12 AM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின்2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

MINING PLAN APPROVED
ASST. DIRECTOR
GEOLOGY
THENI
DIRECTOR (G&M), THENI

தமிழ்நாடு அரசு

வருவாய்த் துறை

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

மாவட்டம் : தேனி

வட்டம் : ஆண்டிபட்டி

வருவாய் கிராமம் : திம்மரசநாயக்கனூர்

பட்டா எண் : 9147

உரிமையாளர்கள் பெயர்

1. தங்கராஜ்தேவர் மகன் தனிக்கோடி

2. தனிக்கோடி மனைவி பவளக்கொடியம்மாள்

புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	
940	2	0 - 48.50	1.35	--	--	--	--	2023/0103/25/092955- -- -- 28-06-2023
943	2	0 - 89.00	2.46	--	--	--	--	2023/0103/25/092955- -- -- 28-06-2023
		1 - 37.50	3.81					

குறிப்பு2 :

1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் **https://eservices.tn.gov.in** என்ற இணைய தளத்தில் **25/13/002/09147/210201** என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 18-11-2023 அன்று 11:15:49 AM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின்2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

MINING PLAN APPROVED
ASST. DIRECTOR GEOLOGY & MINING, THENI
ASST. DIRECTOR (G&M), THENI

தமிழ்நாடு அரசு

வருவாய்த் துறை

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

மாவட்டம் : தேனி

வட்டம் : ஆண்டிபட்டி

வருவாய் கிராமம் : திம்மரசநாயக்கனூர்

பட்டா எண் : 5894

உரிமையாளர்கள் பெயர்

1. தங்கராஜ் மகன் தனிக்கோடி
2. தனிக்கோடி மனைவி பவளக்கொடியம்மாள்

புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	
940	3	1 - 97.50	5.48	--	--	--	--	---- -- 13-09-2014
		1 - 97.50	5.48					

குறிப்பு2 :

1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் **https://eservices.tn.gov.in** என்ற இணைய தளத்தில் **25/13/002/05894/170276** என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 18-11-2023 அன்று 11:17:47 AM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின்2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

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DIRECTOR (G&M), THENI

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வருவாய்த் துறை

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

மாவட்டம் : தேனி

வட்டம் : ஆண்டிபட்டி

வருவாய் கிராமம் : திம்மரசநாயக்கனூர்

பட்டா எண் : 9156

உரிமையாளர்கள் பெயர்

1. தங்கராஜ் தேவர் மகன் தனிக்கோடி
2. தனிக்கோடி மனைவி பவளக்கொடி

புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	
943	1	1 - 98.50	5.49	--	--	--	--	2023/0103/25/094169-- -- 07-07-2023
		1 - 98.50	5.49					

குறிப்பு2 :

1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் **https://eservices.tn.gov.in** என்ற இணைய தளத்தில் **25/13/002/09156/210291** என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 18-11-2023 அன்று 11:19:12 AM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின்2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

1433 – ஆம் பசலியில் தேனி மாவட்டம் திண்டுக்கல் வட்டம் திருமலாபுரம் கிராமம்

நில வரித் திட்டத்தின்படி பலன்களின் விவரம்.

நில அளவை எண். (1)	உட்பிரிவு எண். (2)	பரப்பு. (3)	தீர்வை. (4)	ஒரு போகம் அல்லது இரு போகம். (5)	அனுபவத்தார்களுடைய பெயரும் எண்ணும் அல்லது அறபோக தாருடைய பெயர். (6)
927	1	2.13.00	0.50	5891	Vயாம்பிள்ளை
	2	1.33.5	3.68	6234	"
	3	1.26.5	3.51	6253	தீர்மிக்கை
	4	1.21.5	3.36	5892	Vயாம்பிள்ளை
	5	0.50.5	1.40	5891	"
938	1A	0.15.5	0.42	5893	தீர்மிக்கை
	2	1.54.5	5.35	9151	தீர்மிக்கை(ம)
939	2	0.45.5	1.26	5891	Vயாம்பிள்ளை
940	1	0.65.0	1.79	"	Vயாம்பிள்ளை
	2	0.48.5	1.35	9147	தீர்மிக்கை(ம)
	3	1.97.5	5.48	5894	தீர்மிக்கை(ம)
941	—	0.22.5	0.51	5893	தீர்மிக்கை
942	—	0.11.5	0.29	5893	"
943	1	1.98.5	5.49	9156	தீர்மிக்கை (ம)
	2	0.89.5	2.46	9147	தீர்மிக்கை(ம)

சாகுபடி மானின் பெயர்.

முதல் போகம்.

நிலம் வரித் திட்டத்தில் மாவது சாகுபடியாளர் பதிவிடப்பட்டுள்ளதா. (7)	சாந்து மாதத்தில் பயிர் செய்யப்பட்டது அல்லது அடுத்த மாதத்தில் செய்யப்பட்டது. (8)	பயிர்ச் பெயர். (9)	பயிரான / அறுவடையான பரப்பு. (10)	உள்ளபடியான பாயல்கள் ஆதாரம். (11)	விளைச்சல் அல்லது விழுக்காடு. (12)

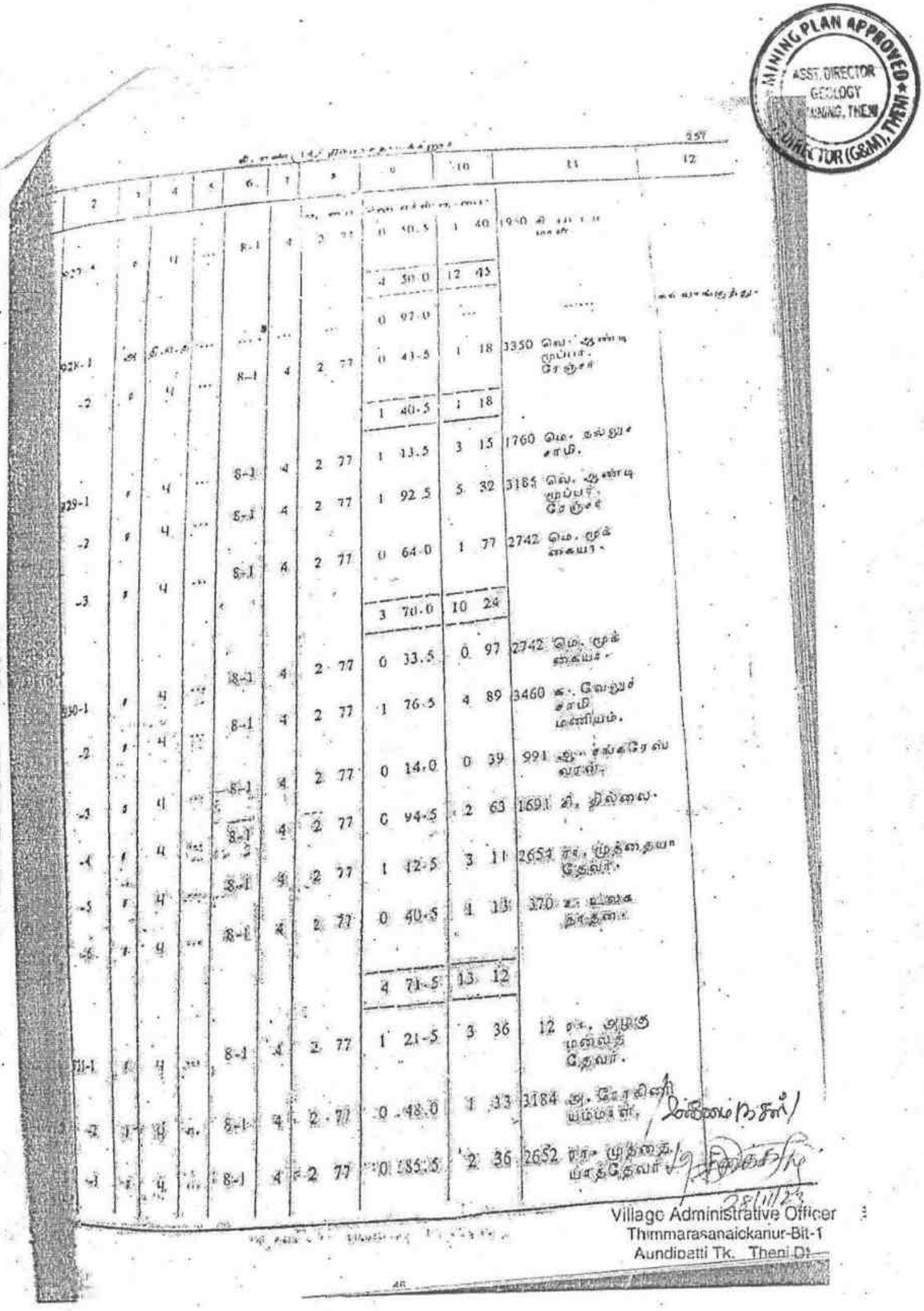
ANNEXURE

MINING PLAN APPROVED
ASST. DIRECTOR GEOLOGY MINING, THENI
DIRECTOR (G&M), THENI

256

1	2	3	4	5	6	7	8	9	10	11
								0 98.5	2 72	413
17	..	917	"	"	..	8-1	4	2 77		
								0 88.0	...	
18	...	918	"	"	...	...	...	...		
								0 50.0	1 38	646
19	...	919	"	"	..	8-1	4	2 77		
								2 37.0	..	
20	1	920-1	"	"	...	...	...	...		
								0 14.0	0 38	403
	2	-2	"	"	...	8-1	4	2 77		
								2 51.0	0 38	
								0 12.5	0 62	647
21	...	921	"	"	...	8-1	4	2 77		
								4 21.0	...	
22	...	922	"	"	...	...	...	...		
								0 20.0	0 55	2656
	...	923	"	"	...	8-1	4	2 77		
								0 77.5	2 15	2655
	...	924	"	"	...	8-1	4	2 77		
								0 83.5	2 31	648
	...	925	"	"	...	8-1	4	2 77		
								1 68.5	4 66	2987
1	926-1	"	"	...	8-1	4	2 77			
								1 56.5	4 33	329
2	-2	"	"	...	8-1	4	2 77			
								1 01.0	2 80	5037
3	-3	"	"	...	8-1	4	2 77			
								4 26.0	11 79	
								0 18.0	0 50	118
1	927-1	"	"	...	8-1	4	2 77			
								1 33.5	3 68	1308
2	-2	"	"	...	8-1	4	2 77			
								1 26.5	3 51	2653
3	-3	"	"	...	8-1	4	2 77			
								1 21.5	3 96	361
4	-4	"	"	...	8-1	4	2 77			

Village Administrative Officer
Thummasanai Panchayat-Bit-1



MINING PLAN APPROVED
ASST. DIRECTOR
GEOLOGY
MINING, THENI
DIRECTOR (G&M), THENI

2	3	4	5	6	7	8	9	10	11	12
							0 40.5	1 40	1940 சி. [illegible]	
				8-1	4	2 77				
							4 50.0	12 45		
							0 97.0	...		
328-1	அ	தி.எ.ஏ	...	...	...	...	0 41.5	1 18	3350 வெ. ஆண்டி மூப்பர். சேஞ்சி	
-2	"	"	...	8-1	4	2 77				
							1 40.5	1 18		
				8-1	4	2 77	1 13.5	3 15	1760 மெ. கல்லுச் சாமி.	
329-1	"	"	...	8-1	4	2 77	1 92.5	5 32	3185 வெ. ஆண்டி மூப்பர். சேஞ்சி	
-2	"	"	...	8-1	4	2 77	0 64.0	1 77	2742 மெ. முத்தையர்.	
-3	"	"	...							
							3 70.0	10 24		
				8-1	4	2 77	0 33.5	0 97	2742 மெ. முத்தையர்.	
330-1	"	"	...	8-1	4	2 77	1 76.5	4 89	3460 க. வேலுச் சாமி மணியம்.	
-2	"	"	...	8-1	4	2 77	0 14.0	0 39	991 ஆ. சங்கரேஸ்வரன்.	
-3	"	"	...	8-1	4	2 77	0 94.5	2 63	1691 சி. தில்லை.	
-4	"	"	...	8-1	4	2 77	1 12.5	3 11	2654 ரா. முத்தையா தேவர்.	
-5	"	"	...	8-1	4	2 77	0 40.5	1 13	370 ஊ. மோக நாதனர்.	
-6	"	"	...							
							4 71.5	13 12		
331-1	"	"	...	8-1	4	2 77	1 21.5	3 36	12 ரா. அழகு முனிவர் தேவர்.	
-2	"	"	...	8-1	4	2 77	0 48.0	1 33	3184 அ. சோலைமீ யம்மாள்.	
-3	"	"	...	8-1	4	2 77	0 185.5	2 36	2652 ரா. முத்தைய்யாத்தேவர்	

28/11/23
Village Administrative Officer
Thimmarasanaickanur-Bit-1
Aundipatti Tk. Theni Dt



2	3	4	5	6	7	8	9	10	11
934 2-1	"	"		S-1	4	2 77	0 10 5	0 29	1123 மு. பெரு மாள் தேவர்.
							2 09-0	5 79	
935-1	"	"	...	S-1	4	2 77	0 64 0	1 77	2215 பெ. பெருமாள் தேவர்.
-1	"	"	...	S-1	4	2 77	0 60-0	1 66	2968 பெ. சாத்தா கிருஷ்ணன்.
-1	"	"	...	S-1	4	2 77	0 46-5	1 28	2169 பெ. பெரு மாள் நாயகர்.
-1	"	"	...	S-1	4	2 77	0 09 0	0 26	4271 பெ. பெரு மாள் நாயகர் (1). பெருமாள் தேவர் (1). சாத்தா கிருஷ் ணன் (3).
-2	"	"	...	S-1	4	2 77	1 94.0	5. 31	652 நா. கனக வேல்.
							3 73.5	10 28	
				S-1	4	2 77	1 22-0	3 38	1828 ஜா. தாய் முகமது.
936-1	"	"	...	S-1	4	2 77	1 13-5	3 14	1759 மு. தங்க கண்ணு தேவர்.
-2	"	"	...	S-1	4	2 77	0 52.5	1 46	1598 அ. தங்க.
-3	"	"	...	S-1	4	2 77			
							2 88-0	7 98	
				S-1	4	2 77	0 62-5	1 75	தனக.
937	அ	"	...	S-1	4	2 77	0 83-5	2 42	2267 ஜா. பெருமாள் கோனார்.
938-1	"	"	...	S-1	4	2 77	1 76.5	4 89	1759 மு. தங்க கண்ணுத் தேவர்.
-1	"	"	...	S-1	4	2 77	1 94-5	5 38	2261 மு. பெரு மாயி அம்மாள்.
							4 56.5	12 69	

/ அனைவரின் /

Village Administrative Officer
Thimmarasanaickanur-Bit-1
Aundipatti Tk., Theni Dt.

ANNEXURE VII

MINING PLAN APPROVED
ASST. DIRECTOR GEOLOGY & MINING, THENI
ASST. DIRECTOR (G&M), THENI

(9)

भारतीय गैर न्यायिक

एक सौ रुपये

Rs. 100

ONE HUNDRED RUPEES

₹. 100

भारत INDIA

INDIA NON JUDICIAL

தமிழ்நாடு தமிழ்நாடு TAMILNADU

14 SEP 2023

DE 679328

T. Meenakshisundaram

T. மீனாட்சிசுந்தரம்

RO. No. 1761 / 81 / 97-17

C. செல்வம்

தேனிமாவட்டம்

சம்மதப்பத்திரம்

2023 ஆம் செப்டம்பர் மாதம் 14-ம் தேதி தேனி மாவட்டம், ஆண்டிபட்டி தாலுக்கா, பிராமுக்கார்பட்டியில் வசித்துவரும் திரு.A.செல்லத்துரை அவர்களின் குமார் திரு.C.செல்வம் ஆகிய தங்களுக்கு,

மதுரை மாவட்டம், மதுரை டவுன் நரிமேட்டில் மருதுபாண்டியர் நகரில் வேல்மயில் இல்லத்தில் வசித்துவரும் அமர். தங்கராஜுத்தேவர் அவர்கள் குமார் திரு.த. தனிக்கோடி-1,

எழுதிக்கொடுப்பவர்கள்

எழுதி வாங்குபவர்

T. தனிக்கோடி

C. செல்வம்.

NOTARY PUBLIC
GOVERNMENT OF TAMILNADU

MINING PLAN APPROVED
ASST. DIRECTOR
GEOLOGY
& MINING, THENI
DIRECTOR (G&M), TNEM

ஏ 1 நபர் மனைவி திருமதி. த. பவளக்கொடி-2, மற்றும் ஏ 1,2-நபர் மகன் திரு.T.ராஜவேல்பாண்டியன்-3, ஆகிய நாங்கள் மூன்று பேர்களும் சேர்ந்து எழுதிக்கொடுத்த சம்மதப்பத்திரம்

அதாவது இதனடியில் சொத்துவிபரத்தில் சொல்லப்பட்டுள்ள 1,2,3,4,5-லக்க சொத்துக்கள் எங்களில் 1வது நபராகிய திரு. த.தனிக்கோடி அவர்களுக்கும், 2வது நபராகிய திருமதி. த.பவளக்கொடி ஆகிய இருவர் பெயரிலும், 12,13,14,15-லக்க சொத்துக்கள் எங்களில் 1வது நபராகிய திரு.த.தனிக்கோடி அவர்களுக்கும், 6,7,8,9,10,11-லக்க சொத்துக்கள் எங்களில் 2வது நபராகிய திருமதி. த.பவளக்கொடி, பெயரிலும், 16வது சொத்து ஏ 1,2-நபர் மகன் திரு.T.ராஜவேல்பாண்டியன் அவர்கள் பெயரிலும் இருந்து வருகிறது. ஏ சொத்துகளில் நாங்கள் கல்குவாரி வைத்து நடத்திக் கொள்ள எங்களுக்கு முழு சம்மதம். இதில் நாங்கள் எந்தவிதமான மாற்றங்களும் செய்யமாட்டோம் என்று எழுதிக் கொடுத்த சம்மதப்பத்திரம்.

சொத்து விவரம்

1. தேனி டி பெரியகுளம் ரீடி ஆண்டிபட்டி சப்டி திம்மரசநாயக்கனூர் பிட்-1 கிராமம் புலத்தில் புஞ்சை அபன்சர்வே 938/2 நம்பர் ஹெக்டேர் 1.94.50 உள்ள நிலமும், இதுவும்,
2. ஏ கிராமம் புலத்தில் புஞ்சை அபன்சர்வே 940/2 நம்பர் ஹெக்டேர் 0.48.50 உள்ள நிலமும். இதுவும்.

எழுதிக்கொடுப்பவர்கள்

எழுதி வாங்குபவர்

T. பவளக்கொடி

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3. தெ கிராமம் புலத்தின் புஞ்சை அயன்சார்வே 940/3 நம்பர் ஹெக்டேர் 1.97.50 உள்ள நிலமும், இதுவும்,
4. தெ கிராமம் புலத்தின் புஞ்சை அயன்சார்வே 943/1 நம்பர் ஹெக்டேர் 1.98.50 உள்ள நிலமும், இதுவும்,
5. தெ கிராமம் புலத்தின் புஞ்சை அயன்சார்வே 943/2 நம்பர் ஹெக்டேர் 0.89.00 உள்ள நிலமும், இதுவும்,
6. தெ கிராமம் புலத்தின் புஞ்சை அயன்சார்வே 927/1 நம்பர் ஹெக்டேர் 0.18.00 உள்ள நிலமும், இதுவும்,
7. தெ கிராமம் புலத்தின் புஞ்சை அயன்சார்வே 927/2 நம்பர் ஹெக்டேர் 1.33.50 உள்ள நிலமும், இதுவும்,
8. தெ கிராமம் புலத்தின் புஞ்சை அயன்சார்வே 927/4 நம்பர் ஹெக்டேர் 1.21.50 உள்ள நிலமும், இதுவும்,
9. தெ கிராமம் புலத்தின் புஞ்சை அயன்சார்வே 927/5 நம்பர் ஹெக்டேர் 0.50.50 உள்ள நிலமும், இதுவும்,
10. தெ கிராமம் புலத்தின் புஞ்சை அயன்சார்வே 940/1 நம்பர் ஹெக்டேர் 0.65.00 உள்ள நிலமும், இதுவும்,
11. தெ கிராமம் புலத்தின் புஞ்சை அயன்சார்வே 939/2 நம்பர் ஹெக்டேர் 0.45.50 உள்ள நிலமும், இதுவும்,

எழுதிக்கொடுப்பவர்கள்

T. பவளக்கொடி

எழுதி வாங்குபவர்

C. Selvam.

MINING PLAN APPROVED
ASST. DIRECTOR GEOLOGY & MINING, THENI
ASST. DIRECTOR (GEOM), THENI

NOTARY PUBLIC
GOVERNMENT OF TAMILNADU

12. ஏ கிராமம் புலத்தின் புஞ்சை அயன்சர்வே 927/3 நம்பர் ஹெக்டேர் 1.26.50 உள்ள நிலமும், இதுவும்,

13. ஏ கிராமம் புலத்தின் புஞ்சை அயன்சர்வே 938/1A நம்பர் ஹெக்டேர் 0.50.50 உள்ள நிலமும், இதுவும்,

14. ஏ கிராமம் புலத்தின் புஞ்சை அயன்சர்வே 941/1 நம்பர் ஹெக்டேர் 0.20.50 உள்ள நிலமும், இதுவும்,

15. ஏ கிராமம் புலத்தின் புஞ்சை அயன்சர்வே 942/2 நம்பர் ஹெக்டேர் 1.19.50 உள்ள நிலமும்,

16. ஏ கிராமம் புலத்தின் புஞ்சை அயன்சர்வே 938/1B2 நம்பர் ஹெக்டேர் 0.95.50 உள்ள நிலமும், இதுவும், இதற்கேற்பட்ட மாமூல் வழிநடைபாதை பாத்தியம் உள்பட இவை சம்மதபத்திரம்.

எழுதிக்கொடுப்பவர்கள்

T. பவானி

எழுதிவாங்குபவர்

C. [illegible]

சாட்சிகள்:

Signed before me
at Andipatty on 15.09.23
By Notary

K. MURUGAN B.Com.B.L.
Advocate & Notary
G.O.Ms 215/23
Opp Bus Stand,
Andipatty Theni Dt

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ASST. DIRECTOR GEOLOGY & MINING, THENI
ASST. DIRECTOR (G&M), THENI

ANNEXURE VIII

(10)

MINING PLAN APPROVED
ASST. DIRECTOR GEOLOGY & MINING, THENI
DIRECTOR (G&M), THENI

PROCEEDINGS OF THE DISTRICT FOREST OFFICER, THENI DIVISION, THENI.
PRESENT.Thiru.J.R.SAMARTHA, IFS.,

Proc.No: 11567/2023/D2 **Dated:20.05.2024**

Sub: Forests – Theni District – Aandipatty Taluk – Thimmarasanayakkanur Bit I Village – Survey Field Numbers 927/1, 927/2, 927/3, 927/4, 927/5, 938/1A, 938/2, 939/2, 940/1, 940/2, 940/3, 941, 942, 943/1, 943/2 over an extent of 15.14.00 Hectares of Patta Lands – request of grand of lease for quarrying Rough stone and Gravel – Quarry Lease application preferred by Thiru C.Selvam S/o Chelladurai – Regarding.

Ref:
1. Assistant Director, Geological and Mining Department, Theni District, Theni. RoC.No:483/Mines/2023-2, Dated:21.09.2023.
2. Forest Range Officer, Andipatty. C.No:95/2023, Dated:24.11.2023.
3. Principal Chief Conservator of Forests, Chennai Ref.No. TS4/7887/2019 Dt:28.10.2020
4. G.O.(Ms).No:213 Industries (MMC.1) Dated:03.09.2021.
5. G.O.(Ms).No:295 Industries (MMC.1) Dated:03.11.2021.
6. G.O.(Ms).No:243 Industries (MMC.1) Dated:14.12.2022.
7. The Principal Chief Conservator of Forests (Head of Department), Chennai. C.No. TS1/7196/2024, Dated. 21.03.2024

****

An application of Thiru C.Selvam S/o Chelladurai, No.38, No.38, Middle Street, Pirathukaranpatti, Shanmugasundarapuram, Andipatty Taluk, Theni District has been received from the Assistant Director, Geology and Mining, Theni requesting No Objection Certificate from Forest Department for the Quarrying of Rough Stone and Gravel in the survey field numbers 927/1, 927/2, 927/3, 927/4, 927/5, 938/1A, 938/2, 939/2, 940/1, 940/2, 940/3, 941, 942, 943/1, 943/2 over an extent of 15.14.00 Hectares in Thimmarasanayakkanur Bit - I Village of Andipatty Taluk of Theni District. The application was scrutinized and after careful consideration in accordance



to the G.O.(Ms) No. 295, Industries Department, dt: 03.11.2021 and G.O.(Ms) No. 243, Industries Department, dt: 14.12.2022 has been propounded by the Principal Chief Conservator of Forest (Head of Department) vide Ref 7th cited to issue No Objection certificate for Quarrying of Rough Stone and Gravel.

As per the Forest Range Officer inspection report the proposed site Survey field numbers 927/1, 927/2, 927/3, 927/4, 927/5, 938/1A, 938/2, 939/2, 940/1, 940/2, 940/3, 941, 942, 943/1, 943/2 over an extent of 15.14.00 Hectares is located 0.090Km away from the Pulikuthi Reserved Land and 0.240Km away from the Andipatty North Reserved Forest. 18.50km away from the boundary of Kodaikanal Wildlife Sanctuary and 17.50Km of its Eco-sensitive Zone, 08.70km away from the boundary of Srivilliputhur Megamalai Tiger Reserve 08.01Km of its Eco-sensitive Zone

Based on the above facts and concurrence obtained from the Principal Chief Conservator of Forest (Head of Department) as per 7th reference cited to offer remarks from forest and wildlife perspective. No objection certificate for the purpose of Quarrying of Rough Stone and Gravel is hereby issued for the proposed area subject to the following conditions.

1. The Quarrying of Rough Stone and Gravel at Survey field numbers 927/1, 927/2, 927/3, 927/4, 927/5, 938/1A, 938/2, 939/2, 940/1, 940/2, 940/3, 941, 942, 943/1, 943/2 in Thimmarasanayakkanur Bit - I Village for an extent of 15.14.00 Hectares must be demarcated properly and fenced all around to prevent accidents and to ensure safety of people and wild animals.
2. No damage must be caused to the Flora and Fauna in the nearby Forest area by the quarrying activity.
3. There shall not be any anthropogenic pressure on the forests in any way (Like., Noise/sounds/pollution and dumping of waste in the Forests etc..,)

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GEOLOGY
& MINING, THENI

4. All Forest Acts, Rules and Court cases in force have to be followed by the applicant.
5. Environmental clearance should be obtained before execution of project as per the Hon'ble Supreme Court of India Order Dated. 27.02.2021 in IA Nos.12-13 of 2011.
6. This No Objection Certificate is purely temporary and this validation is subject to vary as per the Guidelines and instructions of the Government and the Principal Chief Conservator of Forests / Additional Principal Chief Conservator of Forests / Chief Conservator of Forests and Field Director / District Forest Officer from time to time.
7. All Forest Acts and Rules and Guidelines in force must be followed by the applicant.

Sd/- J.R.Samartha,
District Forest Officer,
Theni Forest Division,
Theni.

To
The Assistant Director,
Geological and mining department,
Theni.
(With respect to the Reference No.483/Mines/2023-2, Dated:21.09.2023)

Copy to

Thiru C.Selvam S/o Chelladurai,
No.38, No.38, Middle Street,
Pirathukaranpatti,
Shanmugasundarapuram,
Andipatty Taluk, Theni District.

//True Copy – By Order//

Draughting Officer.
20/05/2024

ANNEXURE



Government of India

Download Date: 28/05/2020

செல்வம் சே
Selvam C
பிறந்த நாள்/DOB: 14/03/1979
ஆண்/ MALE

Issue Date: 11/08/2016

4997 2297 7755
VID : 9140 0601 0301 5878

எனது ஆதார், எனது அடையாளம்



Unique Identification Authority of India

முகவரி:
தந்தை / தாய் பெயர், செல்வத்துரை, 38, நடுத் தெரு, பிரதாகாரன்பட்டி, ஆண்டிபட்டி தாலுக்கா, சண்முகசுந்தராபுரம், தேனி, தமிழ் நாடு - 625512

Address:
S/O: Chelladurai, 38, MIDDLE STREET, PIRATHUKARANPATTI, AUNDIPATTI-THALUK, Shanmugasundarapuram, Theni, Tamil Nadu - 625512

4997 2297 7755
VID : 9140 0601 0301 5878

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ADMINISTRATION APPROVED ASST. DIRECTOR GEOLOGY & MINING, THENI


आयकर विभाग
INCOME TAX DEPARTMENT
भारत सरकार
GOVT. OF INDIA
CHELLADURAI SELVAM
CHELLADURAI ALAKAPONNUTHEVAR
14/03/1979
Permanent Account Number
AJFPC5027M
Signature



इस कार्ड के खोने / पाने पर कृपया सूचित करें / लौटाएं
आयकर पैन सेवा इकाई, एन एस डी एल
पहली मंजिल, टाईम्स टॉवर, कमला मिल्स कंपाउंड,
एस बी. मार्ग, लोअर परेल, मुम्बई - 400 013

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Income Tax PAN Services Unit, NSDL
1st Floor, Times Tower,
Kamala Mills Compound,
S. B. Marg, Lower Parel, Mumbai - 400 013.

Tel: 91-22-2499 4650, Fax: 91-22-2495 0664,
e-mail: tininfo@nsdl.co.in

ANNEXURE X

Centre Code :29

Reg. No. P 03120004 :Code No. PT [illegible] No. 300271

ASST. DIRECTOR GEOLOGY & MINING, THENI

ASST. DIRECTOR (G&M), THENI

பாரதிதாசன் பல்கலைக்கழகம்
BHARATHIDASAN UNIVERSITY

(Established by the Government of Tamil Nadu in 1982; Recognized by UGC under 2f and 12B of UGC Act; Member, Association of Indian Universities and Association of Commonwealth Universities; Accredited by NAAC with 'A' Grade)

அறிவியல் புலம்
FACULTY OF SCIENCE

பாரதிதாசன் பல்கலைக்கழக ஆட்சிக் குழு ஏப்ரல் 2005 ஆம் ஆண்டு நடத்திய செயல்முறை நிலத்தியல் தேர்வில்

ச. இளவரசன்

என்பவர் முதல் வகுப்பில் தேர்ச்சி பெற்றார் என்று தக்க தேர்வாளர்கள் சான்றளித்தபடி அறிவியல் நிறைஞர் என்னும் பட்டத்தை அவருக்குப் பல்கலைக்கழக இலச்சினையுடன் வழங்குகிறது.

The Syndicate of the **BHARATHIDASAN UNIVERSITY** *hereby makes known that* **S. ILAVARASAN** *has been admitted to the Degree of* **MASTER OF SCIENCE**, *having been certified by duly appointed Examiners to be qualified to receive the same in* **APPLIED GEOLOGY** *at the Examination held in* **APRIL 2005** *and placed in* **FIRST** *Class.*

Given under the seal of the University.

திருச்சிராப்பள்ளி
Tiruchirappalli

நாள் : 20th October 2005
Dated :

பதிவாளர் Registrar

துணைவேந்தர் Vice-Chancellor

A 023450 ISSUED ON : 16 MAY 2006

ANNEXURE X-D

GOVERNMENT OF INDIA

(Ministry of Labour and Employment)
(Director General of Mines Safety)

Certificate of practical experience granted by the Manager to a Candidate for a Manager / Surveyor's / **Geologist.**

Certificate of Competency Examination under the Coal Mines Regulation 1957 / Metalliferous Mines Regulation 1961.

I **A.DAVID PRASAD** being the Manager of **Karaichuttu Uvari** Mine belonging to **M/s.Transworld Garnet India Pvt. Ltd.** do hereby certify that Shri. **S.ILAVARASAN** Son of **U.SANTHANAM** of **Door No.7C, Mettu Street, Beema Nagar, Trichy – 620 001. Tamilnadu.** (Whose signature is appended) worked in above mine. from **01-06-2005** to **17-07-2011** **(Six years One month and Seventeen Days)**

During his terms of work aforesaid he has obtained practical experience as detailed over leaf. The duties connected with his work have involved his continuous attendance at the mine and have been efficiently performance by him.

I believe him to be of good character and fit & proper person to be examined for a Certificate of Compentency.

Signature with date 27/8/2011

Manager DAVID PRASAD

P.O. K.UVARI

District TIRUNELVELI

State TAMIL NADU

MANAGER (MINES)
TRANSWORLD GARNET INDIA PVT LTD.,
K. UVARI MINE, Radhapuram Taluk
Tirunelveli Dist. - 627 658

(Signature of Candidate)

NOTE :

Delete if not applicable

(Garnet Sand) State Name of Mineral

TRANSWORLD GARNET INDIA PVT. LTD. K. UVARI - 627 658

Sl. No.	Particulars of Practical (a) Experience	Period of Practical Experience		Total Experience		
1.	As a Geologist :-	From	To	Years	Months	Days
	Survey and exploration of Garnet bearing placer mineral in coastal region of Tamilnadu. Reserve estimation and preparation of mining plan, scheme of mining, and PMCP, EIA, EMP, geo technical report. Sieve analysis of mineral samples, production schedules preparation, Co-ordination with mines and mineral processing	01-06-05	17-07-11	6	1	17
GRAND TOTAL Six Years One Month Only						
Above Period is Given Below (b) Average Daily Employment (c) During the						
In below ground working		In Open cast working		In all		
Nil		100		108		

Signature of Candidate

Signature of Manager with date 22/8/2011

MANAGER (MINES)
TRANSWORLD GARNET INDIA PVT. LTD.,
K. UVARI MINE, Radhapuram Taluk
Tirunelveli Dist. - 627 658

Name of Mines K. UVARI GARNET SAND MINE

TRANSWORLD GARNET INDIA PVT. LTD. K. UVARI - 627 658

INSTRUCTIONS

(a) State clearly the duties

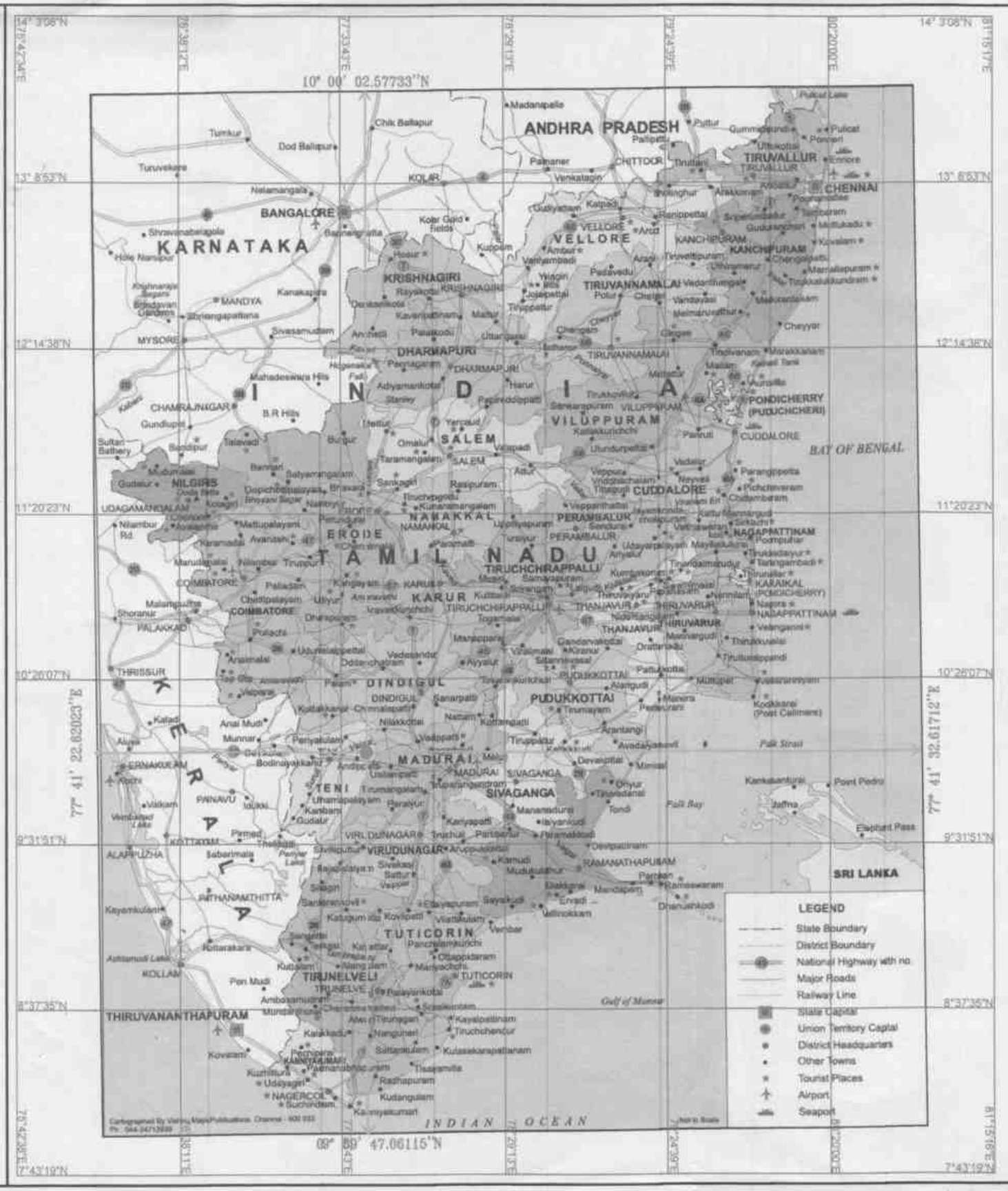
(b) State whether on surface, in open cast workings or below ground.

(c) State specify the period apent by the applicant different mining operations or surveying operations, as the case may be, if the employment has been such as to involve and how many days a weeks he was employed, at the mine whether underground and in what capacity.

(d) Delate if the mine is a Metalliferous mine.

(e) Delate if the mine Coal Mine.

MINING PLAN APPROVED
ASST. DIRECTOR GEOLOGY & MINING, THENI
DIRECTOR (GR&MI), THENI



MINING PLAN APPROVED
ASST. DIRECTOR
GEOLOGY & MINING, THENI
DIRECTORATE FOR (GEOM), THENI

PLATE NO:I

DATE OF SURVEY : 24.07.2024

APPLICANT:

THIRU.C.SELVAM
S/O.CHELLADURAI,
38,MIDDLE STREET,PIRATHUKARANPATTI,
SHANMUGASUNDARAPURAM,
ANDIPATTI TALUK,THENI DISTRICT,
TAMIL NADU-625 512.

LOCATION OF QUARRY LEASE APPLIED AREA:

S.F.NO.S : 927/2,927/3, 927/4 etc..
EXTENT : 8.76.5 Ha.
VILLAGE : THIMMARASANAICKANUR BIT-I,
TALUK : ANDIPATTI,
DISTRICT : THENI,
STATE : TAMIL NADU.

INDEX

Q. LA. AREA :

TOPO SHEET NO. : 58 F/12 and 58G/09

LATITUDE : 09° 59' 47.06115"N to 10° 00' 02.57733"N

LONGITUDE : 77° 41' 22.62023"E to 77° 41' 32.61712"E

LOCATION PLAN

SCALE 1:24,00,000

PREPARED BY :

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

S.ILAVARASAN,M.Sc.,
QUALIFIED PERSON
Under Rule 15(1)(a)and(b)of MCR,2015

PLATE NO:I-A

DATE OF SURVEY : 24.07.2024

APPLICANT:

THIRU.C.SELVAM
S/O.CHELLADURAI,
38,MIDDLE STREET,PIRATHUKARANPATTI,
SHANMUGASUNDARAPURAM
ANDIPATTI TALUK,THENI DISTRICT,
TAMIL NADU-625 512.

MINING PLAN APPROVED
ASST.DIRECTOR GEOLOGY & MINING, THENI
ASST.DIRECTOR (GEOM), THENI

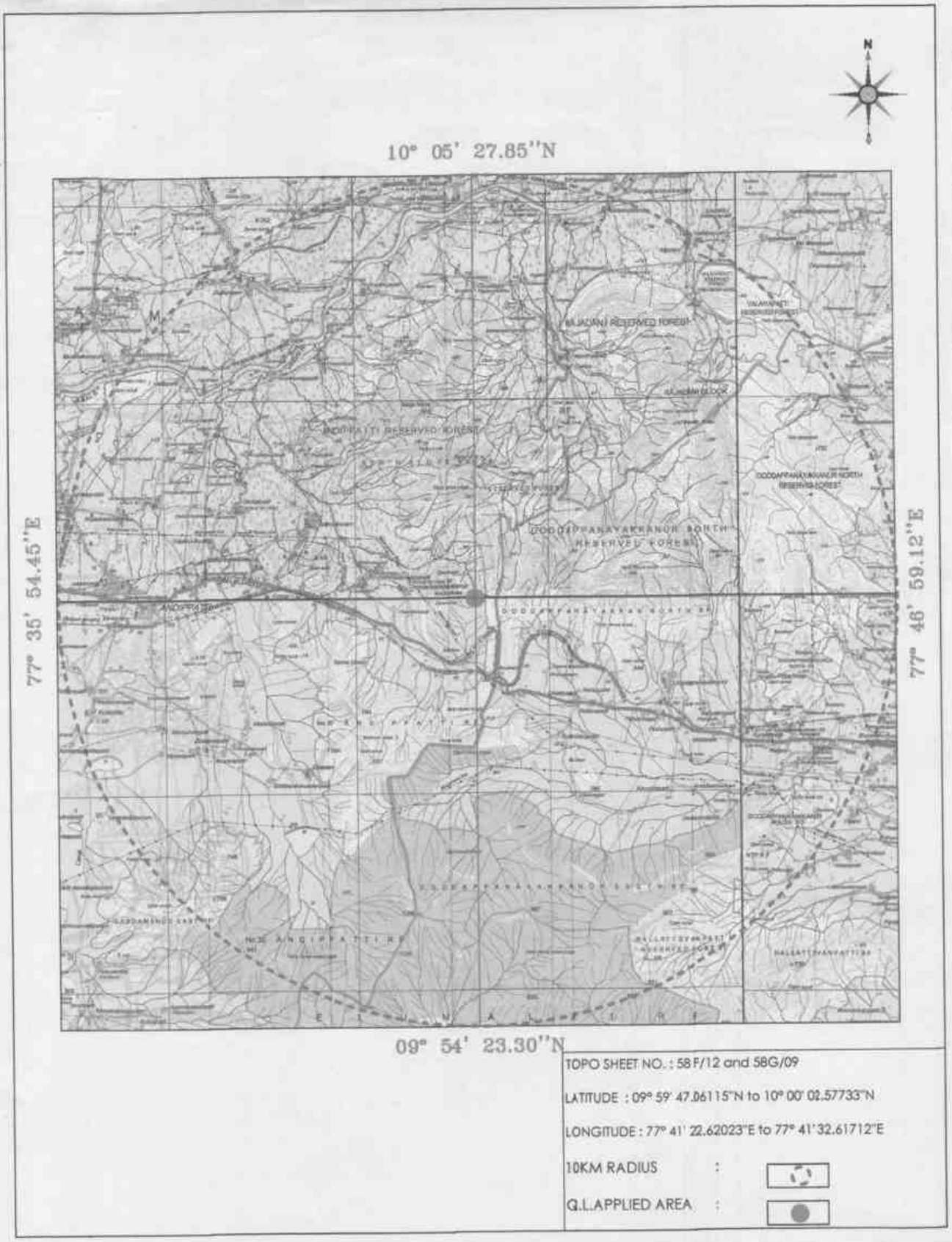
LOCATION OF QUARRY
LEASE APPLIED AREA:

S.F.NO.S : 927/2,927/3, 927/4 etc.,
EXTENT : 8.76.5 Ha.
VILLAGE : THIMMARASANAICKANUR BIT-I,
TALUK : ANDIPATTI,
DISTRICT : THENI,
STATE : TAMIL NADU.

INDEX

CONVENTIONAL SYMBOLS





TOPO SKETCH OF QUARRY LEASE APPLIED AREA FOR 10Km RADIUS

SCALE– 1:100000

TOPO SHEET NO. : 58 F/12 and 58G/09

LATITUDE : 09° 59' 47.06115"N to 10° 00' 02.57733"N

LONGITUDE : 77° 41' 22.62023"E to 77° 41' 32.61712"E

10KM RADIUS :

Q.L.APPLIED AREA :

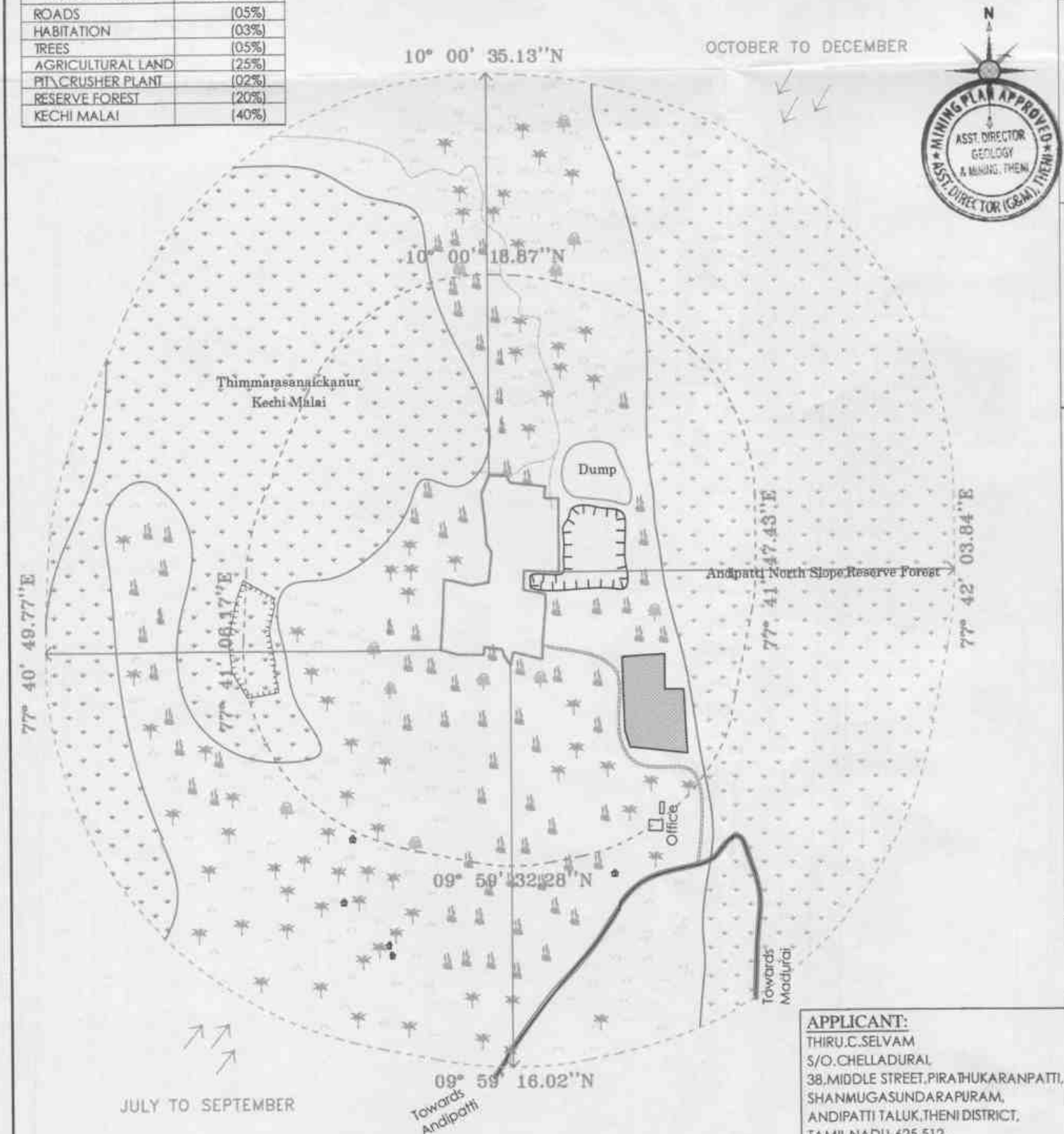
PREPARED BY :

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S.ILAVARASAN,M.Sc.,
QUALIFIED PERSON
Under Rule 15(1)(a)and(b)of MCR,2016

LANDUSE PATTERN

DESCRIPTION	PERCENTAGE
ROADS	(05%)
HABITATION	(03%)
TREES	(05%)
AGRICULTURAL LAND	(25%)
PIT\CRUSHER PLANT	(02%)
RESERVE FOREST	(20%)
KECHI MALAI	(40%)



MINING PLAN APPROVED
ASST. DIRECTOR GEOLOGY & MINING, THENI
ASST. DIRECTOR (G&M), THENI

PLATE NO:I-B

DATE OF SURVEY : 24.07.2024

1Km Radius :

500m Radius :

Q.L.Applied Area :

TOPO SHEET NO. : 58 f/12 and 58G/09

LATITUDE : 09° 59' 47.86115"N to 10° 00' 02.57133"N

LONGITUDE : 77° 41' 22.62023"E to 77° 41' 32.61712"E

LOCATION OF QUARRY LEASE APPLIED AREA:

S.F.NO.S : 927/2,927/3, 927/4 etc.,
EXTENT : 8.76.5 Ha.
VILLAGE : THIMMARASANAICKANUR BIT-I.
TALUK : ANDIPATTI.
DISTRICT : THENI.
STATE : TAMIL NADU.

INDEX

- APPROACH ROAD
- NH-49
- HABITATION
- TREES
- AGRICULTURAL LAND
- PIT
- WIND DIRECTION
- CRUSHER PLANT
- BARREN LAND
- LT POWER LINE
- ODAI
- RESERVE FOREST
- KECHI MALAI
- PIT

TOPO SKETCH OF QUARRY LEASE APPLIED AREA FOR 1Km RADIUS

SCALE– 1:10,000

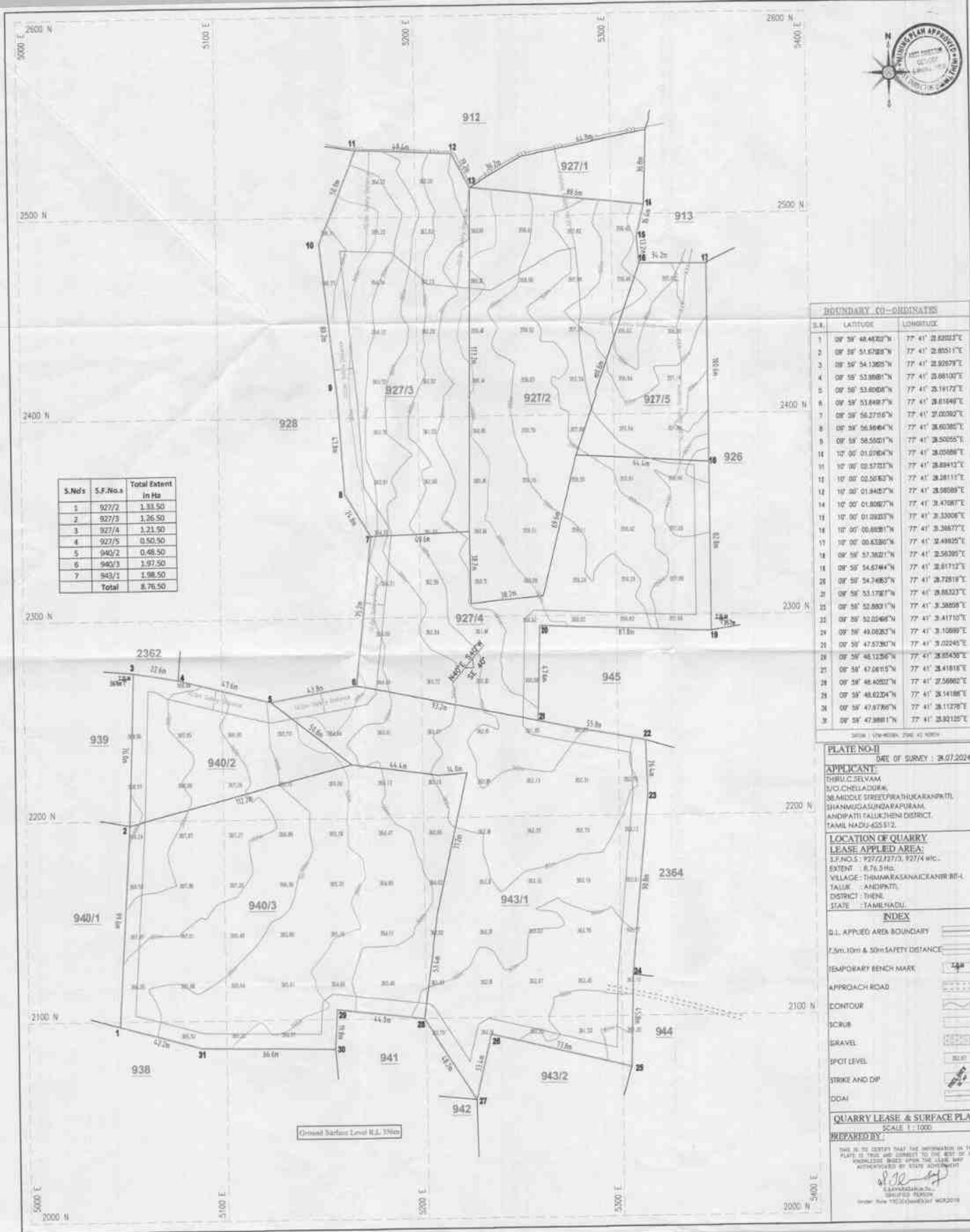
APPLICANT:

THIRU.C.SELVAM
S/O.CHELLADURAI,
38,MIDDLE STREET,PIRATHUKARANPATTI,
SHANMUGASUNDARAPURAM,
ANDIPATTI TALUK,THENI DISTRICT,
TAMIL NADU-625 512.

PREPARED BY :

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

S.ILAVARASAN,M.Sc.,
QUALIFIED PERSON
Under Rule 15(1)(c)and(b)of MCR,2016



S.No's	S.F.No.s	Total Extent in Ha
1	927/2	1.33.50
2	927/3	1.26.50
3	927/4	1.21.50
4	927/5	0.50.50
5	940/2	0.48.50
6	940/3	1.97.50
7	943/1	1.98.50
	Total	8.76.50

BOUNDARY CO-ORDINATES

S.No.	LATITUDE	LONGITUDE
1	09° 59' 48.46302"N	77° 41' 22.82023"E
2	09° 59' 51.67828"N	77° 41' 22.80511"E
3	09° 59' 54.13605"N	77° 41' 22.92678"E
4	09° 59' 53.88681"N	77° 41' 23.66100"E
5	09° 59' 53.69068"N	77° 41' 25.19172"E
6	09° 59' 53.84827"N	77° 41' 25.61648"E
7	09° 59' 56.27316"N	77° 41' 27.00392"E
8	09° 59' 56.56464"N	77° 41' 26.60385"E
9	09° 59' 58.55021"N	77° 41' 26.50055"E
10	10° 00' 01.07804"N	77° 41' 26.03686"E
11	10° 00' 02.57703"N	77° 41' 25.89413"E
12	10° 00' 02.50163"N	77° 41' 26.28111"E
13	10° 00' 01.94057"N	77° 41' 26.56589"E
14	10° 00' 01.80827"N	77° 41' 31.47087"E
15	10° 00' 01.09333"N	77° 41' 31.53006"E
16	10° 00' 00.68881"N	77° 41' 31.36677"E
17	10° 00' 00.63380"N	77° 41' 32.49925"E
18	09° 59' 57.36221"N	77° 41' 32.56395"E
19	09° 59' 54.67444"N	77° 41' 32.61712"E
20	09° 59' 54.74853"N	77° 41' 28.72819"E
21	09° 59' 53.17987"N	77° 41' 28.66323"E
22	09° 59' 52.88031"N	77° 41' 31.38658"E
23	09° 59' 52.03498"N	77° 41' 31.41710"E
24	09° 59' 49.08283"N	77° 41' 31.10899"E
25	09° 59' 47.57390"N	77° 41' 31.02245"E
26	09° 59' 46.12256"N	77° 41' 28.85436"E
27	09° 59' 47.04915"N	77° 41' 25.41816"E
28	09° 59' 48.40502"N	77° 41' 27.56882"E
29	09° 59' 48.62304"N	77° 41' 25.14186"E
30	09° 59' 47.97766"N	77° 41' 25.11278"E
31	09° 59' 47.98811"N	77° 41' 23.92125"E

DATUM : WGS-84 ZONE 43 NORTH

PLATE NO-II

DATE OF SURVEY : 26.07.2024

APPLICANT:

THIRU.C.SELVAM,
S/O.CHELLADURAI,
38,MIDDLE STREET,PIRATHUKARANPATTI,
SHANMUGASUNDARAPURAM,
ANDIPATTI TALUK,THENI DISTRICT,
TAMIL NADU-625512.

LOCATION OF QUARRY LEASE APPLIED AREA:

S.F.NO.S : 927/2,927/3, 927/4 etc.,
EXTENT : 8.76.5 Hs.
VILLAGE : THAMARAISANAICKANUR (U),
TALUK : ANDIPATTI,
DISTRICT : THENI,
STATE : TAMILNADU.

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- D.L. APPLIED AREA BOUNDARY
- 7.5m,10m & 50m SAFETY DISTANCE
- TEMPORARY BENCH MARK
- APPROACH ROAD
- CONTOUR
- SCRUB
- GRAVEL
- SPOT LEVEL
- STRIKE AND DIP
- DIDAI

QUARRY LEASE & SURFACE PLA

SCALE 1 : 1000

PREPARED BY :

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

L.LAKSHMANA SU... GRADED PERSON Under Rule 12(1)(b)(ii)(a) of MCR,2019

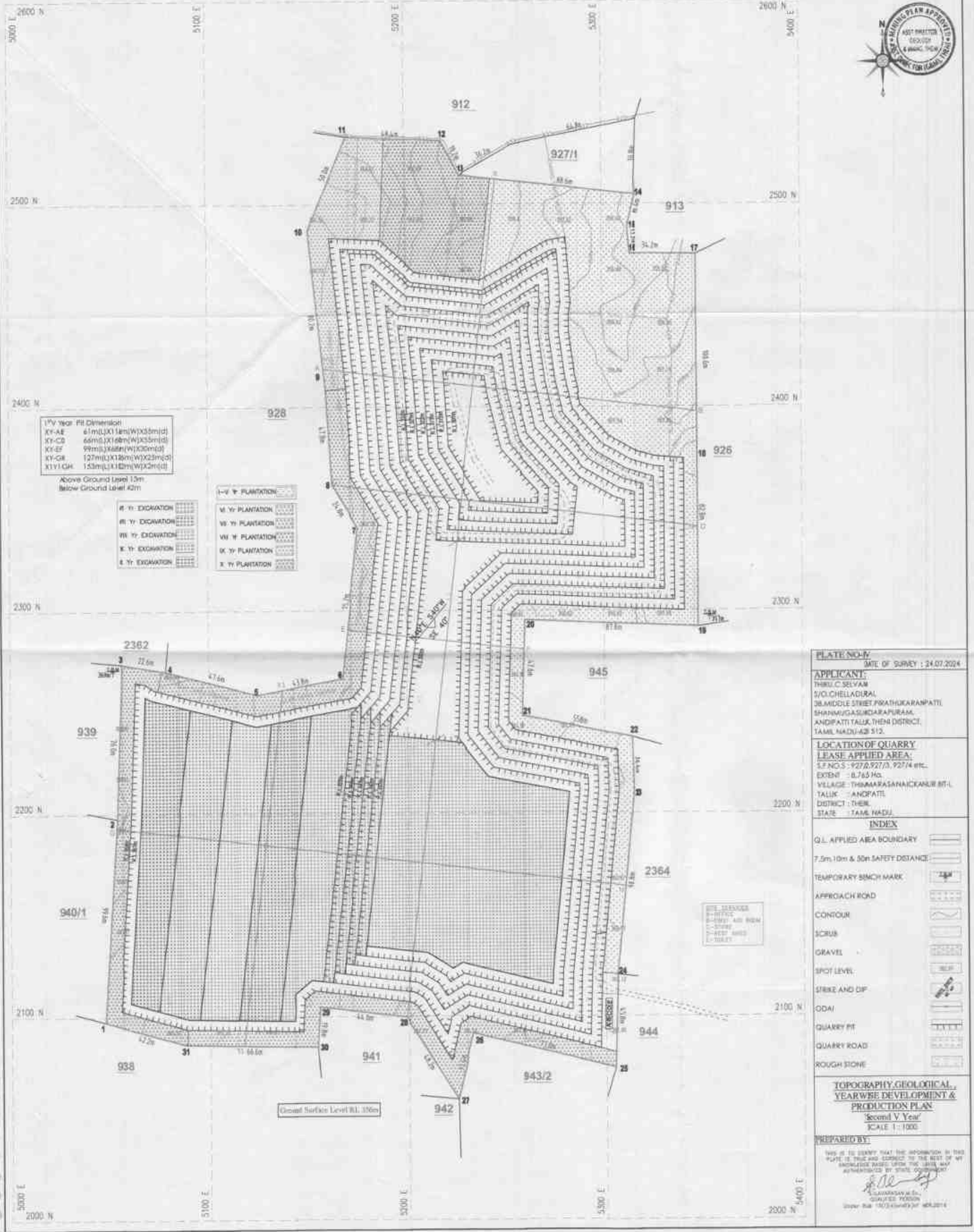


PLATE NO-IV

DATE OF SURVEY : 24.07.2024

APPLICANT:

THIRU.C.SELVAM
S/O.CHELLADURAI,
38,MIDDLE STREET,PARTHUKARANPATTI,
SHANMUGASUNDARAPURAM,
ANDIPATTI TALUK,THENI DISTRICT,
TAMIL NADU-625 512.

LOCATION OF QUARRY LEASE APPLIED AREA:

S.F.NO.S : 927/2,927/3, 927/4 etc.,
EXTENT : 8.765 Ha.
VILLAGE : THIMMARASANAICKANUR (KIL),
TALUK : ANDIPATTI
DISTRICT : THENI,
STATE : TAMIL NADU.

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- Q.L. APPLIED AREA BOUNDARY
- 7.5m,10m & 50m SAFETY DISTANCE
- TEMPORARY BENCH MARK
- APPROACH ROAD
- CONTOUR
- SCRUB
- GRAVEL
- SPOT LEVEL
- STRIKE AND DIP
- ODAI
- QUARRY PIT
- QUARRY ROAD
- ROUGH STONE

TOPOGRAPHY,GEOLOGICAL, YEARWISE DEVELOPMENT & PRODUCTION PLAN

'Second V Year'

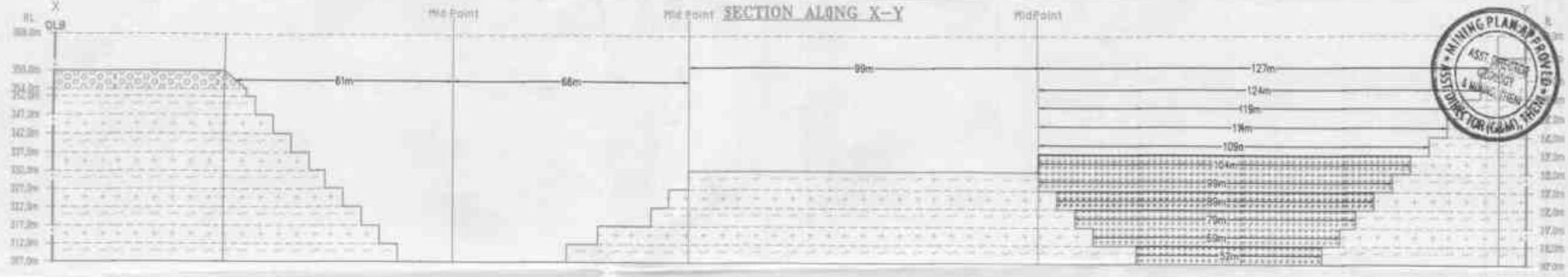
SCALE 1 : 1000

PREPARED BY:

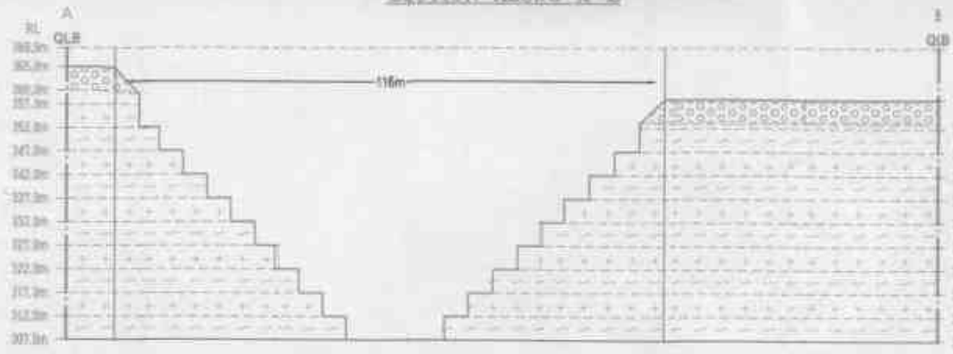
THIS IS TO CERTIFY THAT THE INFORMATION IN THIS PLATE IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE BASED UPON THE LEGAL MAT AUTHENTICATED BY STATE GOVERNMENT

S.SARAVANAN M.Sc.,
QUALIFIED PERSON
Under Rule 15(3)(a)and(b)of MMR,2015

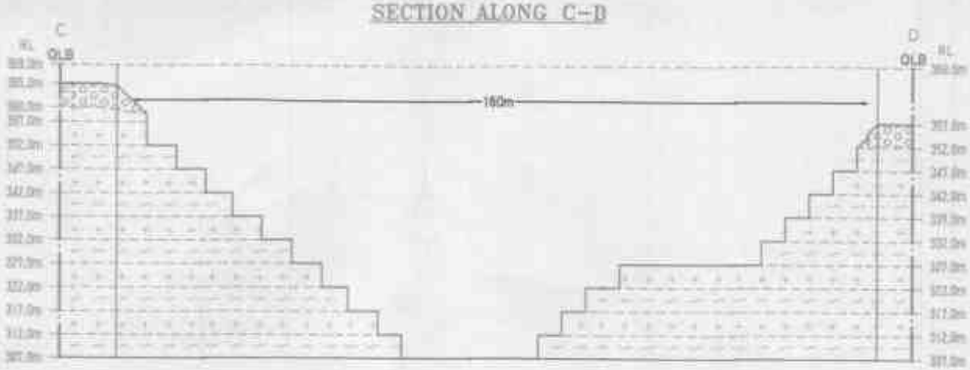
SECTION ALONG X–Y



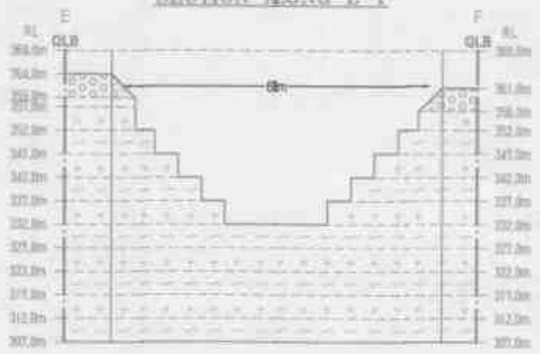
SECTION ALONG A–B



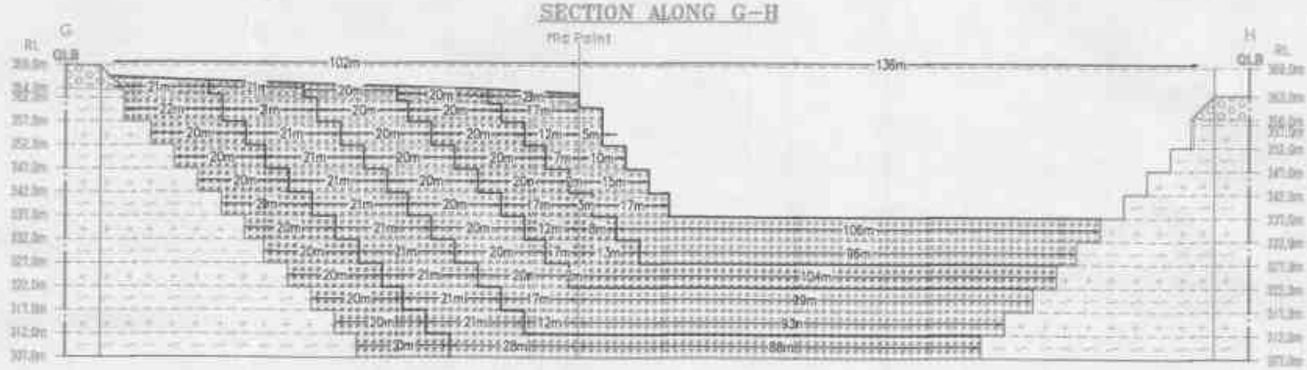
SECTION ALONG C–D



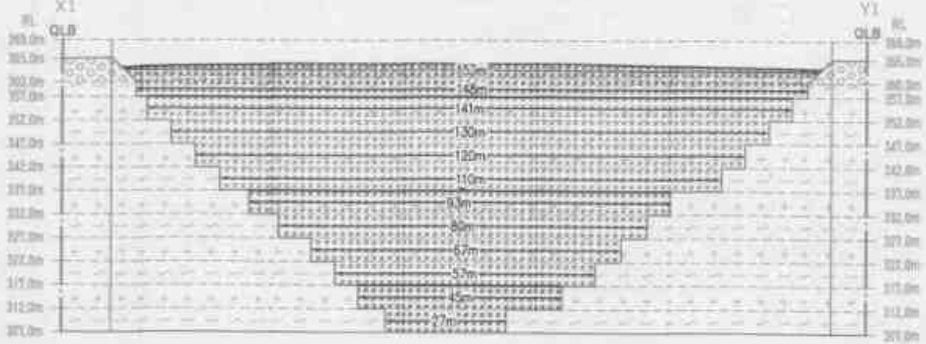
SECTION ALONG E–F



SECTION ALONG G–H



SECTION ALONG X1–Y1



VI Yr EXCAVATION	
VII Yr EXCAVATION	
VIII Yr EXCAVATION	
IX Yr EXCAVATION	
X Yr EXCAVATION	

1ST V Year Pit Dimension	
XY-AB	61m(L)X116m(W)X5m(d)
XY-CD	66m(L)X160m(W)X5m(d)
XY-EF	99m(L)X68m(W)X30m(d)
XY-GH	125m(L)X136m(W)X25m(d)
X1Y1-GH	153m(L)X102m(W)X3m(d)

Above Ground Level 13m
Below Ground Level 42m

PLATE NO-IV-A
DATE OF SURVEY : 24.07.2024

APPLICANT:
THRU.C.SELVAM
S/O.CHELLADURAI,
38,MIDDLE STREET,PRATHUKARANPATTI,
SHANMUGASUNDARAPURAM,
ANDIPATTI TALUK,THENI DISTRICT,
TAMIL NADU-625 512.

INDEX

QL APPLIED AREA BOUNDARY

7.5m,10m & 50m SAFETY DISTANCE

GRAVEL

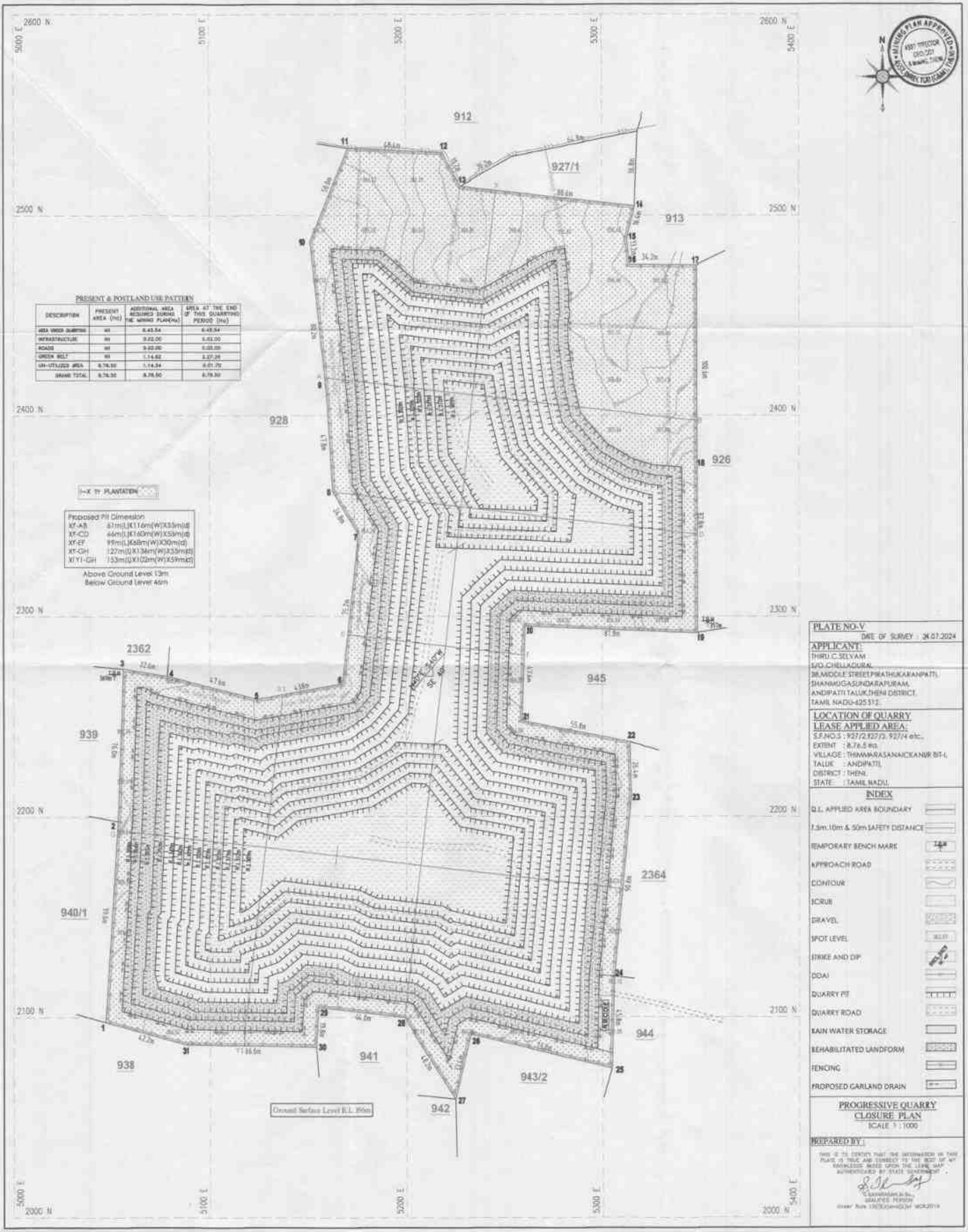
ROUGH STONE

LOCATION OF QUARRY
LEASE APPLIED AREA:
S.F.NO.S : 927/2,927/3,927/4 etc.,
EXTENT : 8.76.5 Ha.
VILLAGE : THIMMARASANAICKANUR BIT-I,
TALUK : ANDIPATTI,
DISTRICT : THENI,
STATE : TAMIL NADU

TOPOGRAPHY,GEOLOGICAL , YEARWISE DEVELOPMENT & PRODUCTION SECTIONS
'Second V Year'
SECTION HOR 1 :1000, VER 1: 1000

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

S.ILAVARASAN,M.Sc.,
QUALIFIED PERSON
Under Rule 15(1)(x)and(3)of MCR,2016



PRESENT & POST LAND USE PATTERN

DESCRIPTION	PRESENT AREA (Ha)	ADDITIONAL AREA REQUIRED DURING THE MINING PLAN(Ha)	AREA AT THE END OF THIS QUARRYING PERIOD (Ha)
AREA UNDER QUARRYING	Nil	6.43.54	6.43.54
INFRASTRUCTURE	Nil	0.02.00	0.02.00
ROADS	Nil	0.03.00	0.03.00
GREEN BELT	Nil	1.14.62	1.27.26
UN-UTILIZED AREA	8.76.50	1.14.34	0.01.70
GRAND TOTAL	8.76.50	8.76.50	8.76.50

|=X !! PLANTATION

Proposed Pit Dimension

XY-AB	81m(L)X116m(W)X35m(d)
XY-CD	44m(L)X160m(W)X55m(d)
XY-EF	99m(L)X68m(W)X30m(d)
XY-GH	127m(L)X136m(W)X55m(d)
X(Y)-GH	153m(L)X102m(W)X59m(d)

Above Ground Level 13m
Below Ground Level 46m

PLATE NO-V

DATE OF SURVEY : 24.07.2024

APPLICANT:
THIRU.C.SELVAM
S/O.CHELLADURAI,
38,MIDDLE STREET,PIRATHUKARANPATTI,
SHANMUGASUNDARAPURAM,
ANDIPATTI TALUK,THENI DISTRICT,
TAMIL NADU-625 512.

LOCATION OF QUARRY LEASE APPLIED AREA:
S.F.NO.S : 927/2,927/3, 927/4 etc.,
EXTENT : 8.76.5 Hs.
VILLAGE : THIMMARASANAICKANUR (EAST),
TALUK : ANDIPATTI,
DISTRICT : THENI.
STATE : TAMIL NADU.

INDEX

- D.L. APPLIED AREA BOUNDARY
- 7.5m,10m & 50m SAFETY DISTANCE
- TEMPORARY BENCH MARK
- APPROACH ROAD
- CONTOUR
- SCRUB
- GRAVEL
- SPOT LEVEL
- STRIKE AND DIP
- DOAI
- QUARRY PIT
- QUARRY ROAD
- RAIN WATER STORAGE
- REHABILITATED LANDFORM
- FENCING
- PROPOSED GARLAND DRAIN

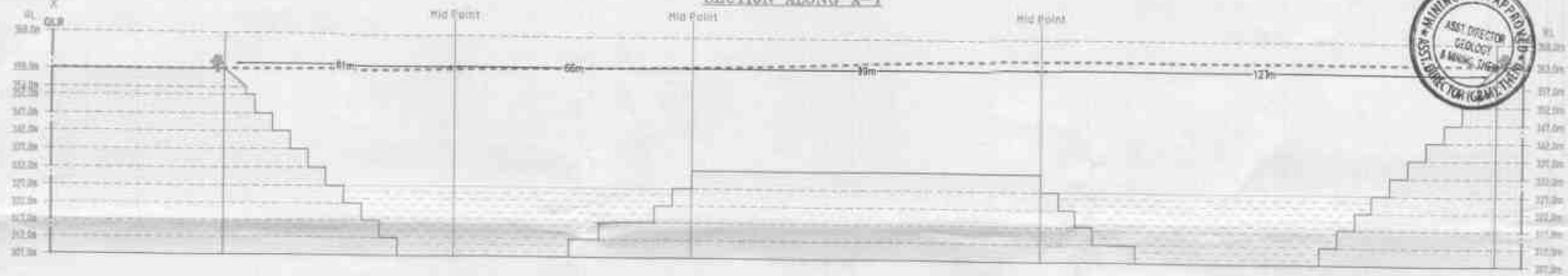
PROGRESSIVE QUARRY CLOSURE PLAN
SCALE : 1:1000

PREPARED BY :

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

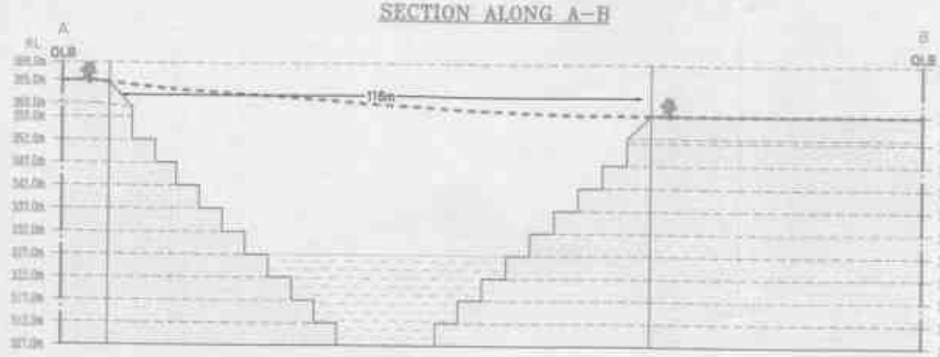
S.SARAVANAN M.Sc.,
QUALIFIED PERSON
Under Rule 13(3)(a)and(3)(iv) MCR,2015

SECTION ALONG X–Y

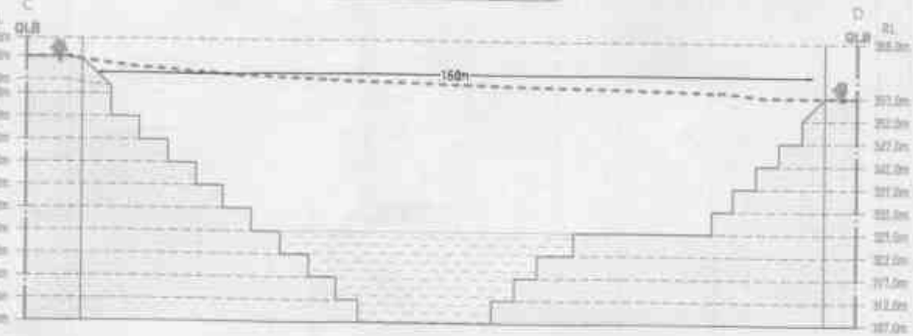


MINING PLAN APPROVED
ASST DIRECTOR GEOLOGY & MINING
ASST DIRECTOR (GEOLOGY), THENI

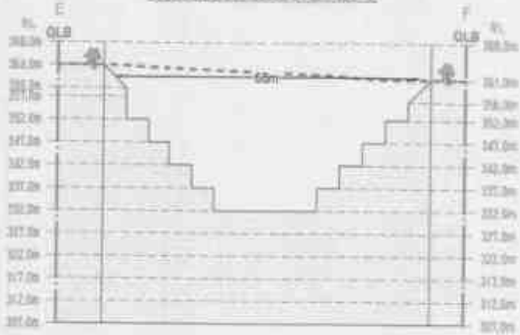
SECTION ALONG A–B



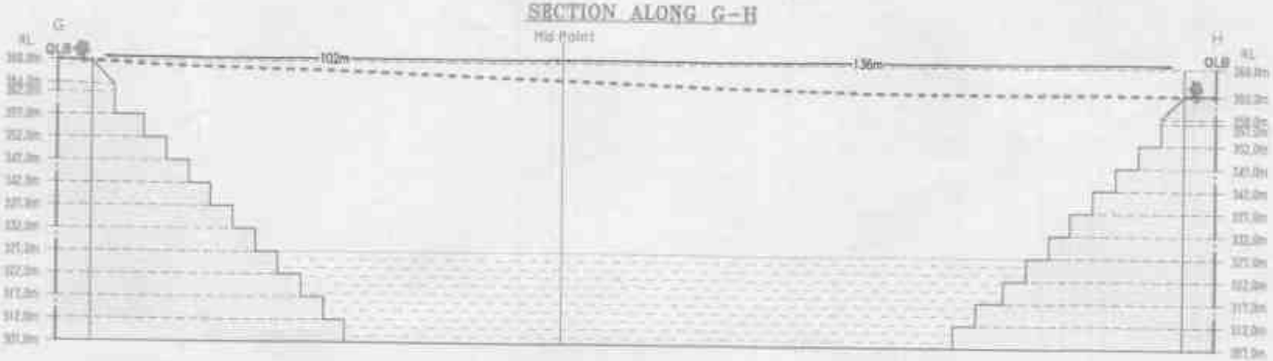
SECTION ALONG C–D



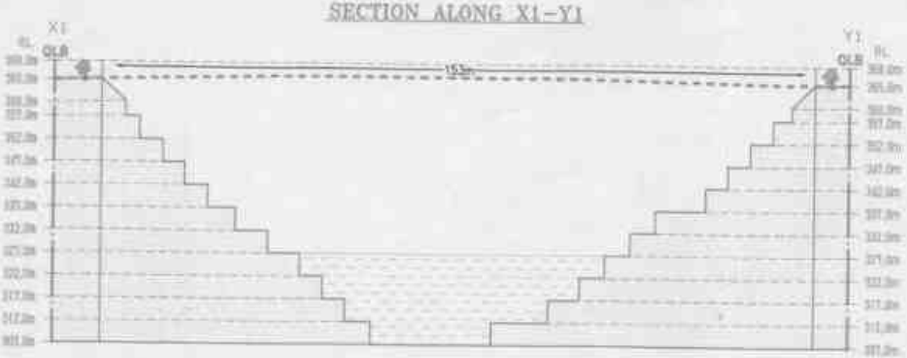
SECTION ALONG E–F



SECTION ALONG G–H



SECTION ALONG X1–Y1



Proposed Pit Dimension	
XY-AB	61m(L)X116m(W)X55m(d)
XY-CD	66m(L)X160m(W)X55m(d)
XY-EF	99m(L)X68m(W)X30m(d)
XY-GH	127m(L)X136m(W)X55m(d)
X1Y1-GH	153m(L)X102m(W)X59m(d)

Above Ground Level 13m
Below Ground Level 46m

APPLICANT:
THIRU.C.SELVAM
S/O.CHELLADURAI,
38,MIDDLE STREET,PIRATHUKARANPATTI,
SHANMUGASUNDARAPURAM,
ANDIPATTI TALUK,THENI DISTRICT,
TAMIL NADU-625 512.

PLATE NO-V-A
DATE OF SURVEY : 24.07.2024

INDEX

- Q.L. APPLIED AREA BOUNDARY
- 7.5m, 10m & 50m SAFETY DISTANCE
- EXISTING LANDFORM
- OLD SURFACE LEVEL
- FINISHED SURFACE LEVEL
- TREES
- RAIN WATER STORAGE

LOCATION OF QUARRY LEASE APPLIED AREA:
S.F.NO.S : 927/2,927/3, 927/4 etc.,
EXTENT : 8.76.5 Ha.
VILLAGE : THIMMARASANAICKANUR BIT-I,
TALUK : ANDIPATTI,
DISTRICT : THENI,
STATE : TAMIL NADU.

PROGRESSIVE QUARRY CLOSURE SECTIONS
SECTION HOR 1 : 1000, VER 1: 1000

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

S.ILAVARASAN,M.Sc.,
QUALIFIED PERSON
Under Rule 15(1)(a)and(b)of MCR,2016

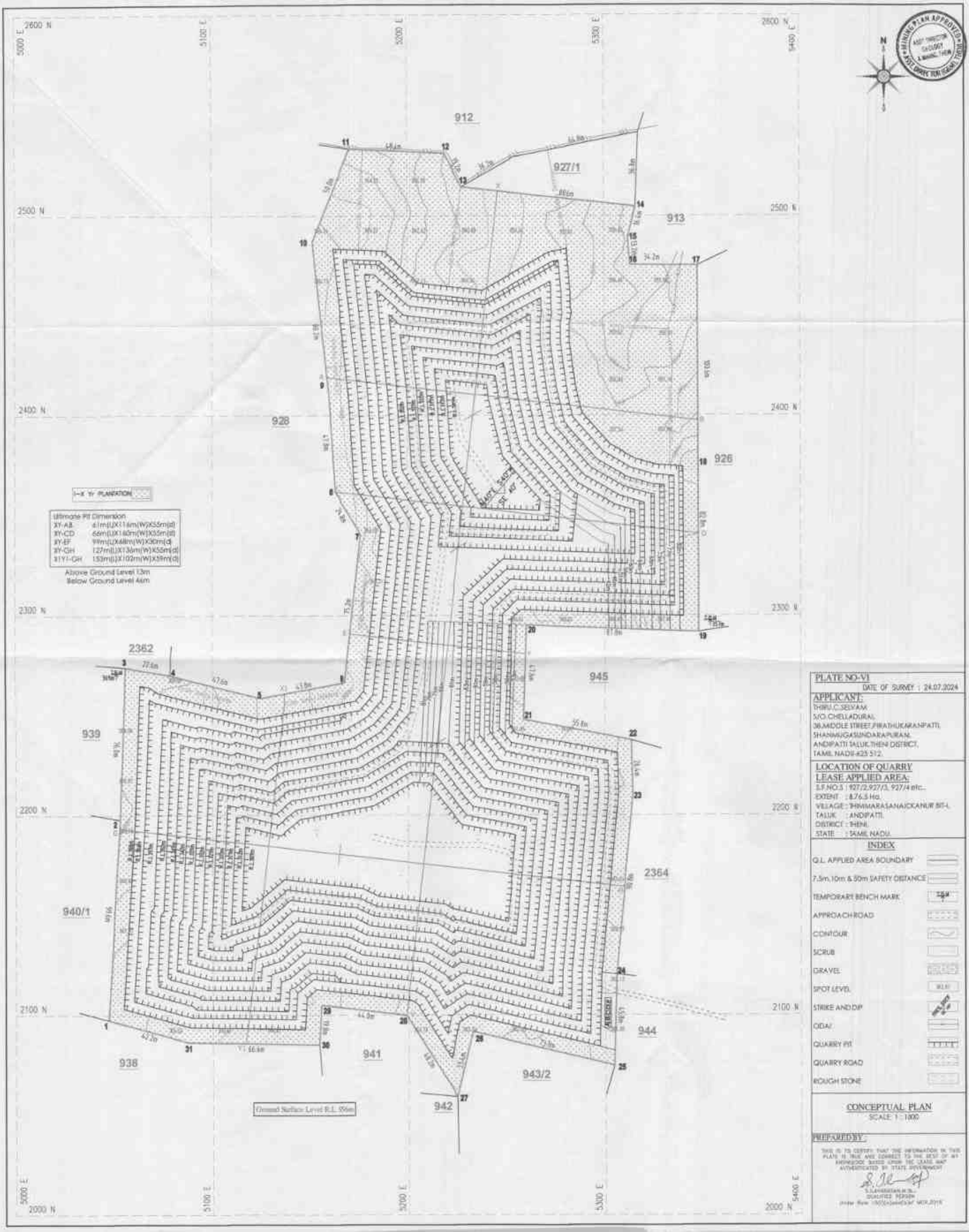


PLATE NO-VI

DATE OF SURVEY : 24.07.2024

APPLICANT:

THIRU.C.SELVAM
S/O.CHELLADURAI,
38,MIDDLE STREET,PIRATHUKARANPATTI,
SHANMUGASUNDARAPURAM,
ANDIPATTI TALUK,THENI DISTRICT,
TAMIL NADU-625 512.

LOCATION OF QUARRY LEASE APPLIED AREA:

S.F.NO.S : 927/2,927/3, 927/4 etc.,
EXTENT : 8.76.5 Hec.
VILLAGE : THIMMARASANAICKANUR (KI-I,
TALUK : ANDIPATTI.
DISTRICT : THENI.
STATE : TAMIL NADU.

INDEX

- G.L. APPLIED AREA BOUNDARY
- 7.5m,10m & 50m SAFETY DISTANCE
- TEMPORARY BENCH MARK
- APPROACH ROAD
- CONTOUR
- SCRUB
- GRAVEL
- SPOT LEVEL
- STRIKE AND DIP
- ODAI
- QUARRY PIT
- QUARRY ROAD
- ROUGH STONE

CONCEPTUAL PLAN

SCALE: 1 : 1000

PREPARED BY :

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S.SAHADEVAN M.Sc.,
QUALIFIED PERSON

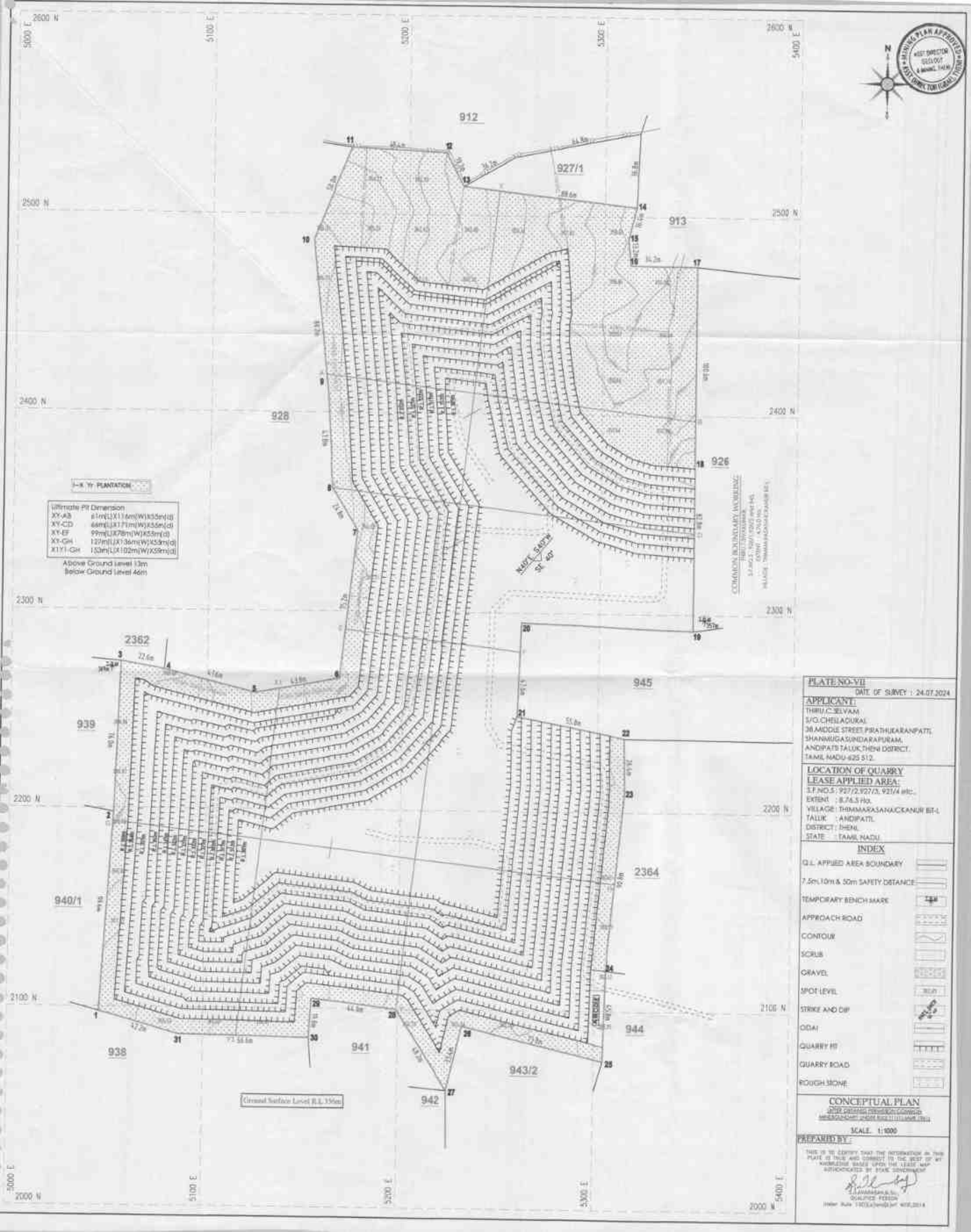


PLATE NO-VII

DATE OF SURVEY : 24.07.2024

APPLICANT:

THIRU.C.SELVAM
S/O.CHELLADURAI,
38,MIDDLE STREET,PIRATHUKARANPATTI,
SHANMUGASUNDARAPURAM,
ANDIPATTI TALUK,THENI DISTRICT.
TAMIL NADU-625 512.

LOCATION OF QUARRY LEASE APPLIED AREA:

S.F.NO.S : 927/2,927/3, 927/4 etc.,
EXTENT : 8.74.5 Hct.
VILLAGE : THIMMARASANAICKANUR (U)
TALUK : ANDIPATTI.
DISTRICT : THENI.
STATE : TAMIL NADU.

INDEX

- Q.L. APPLIED AREA BOUNDARY
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- SCRUB
- GRAVEL
- SPOT LEVEL
- STRIKE AND DIP
- ODAI
- QUARRY PIT
- QUARRY ROAD
- ROUGH STONE

CONCEPTUAL PLAN

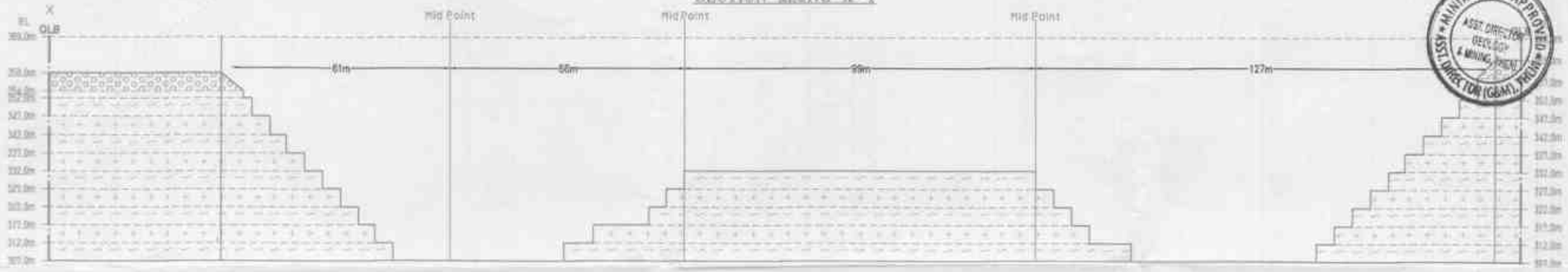
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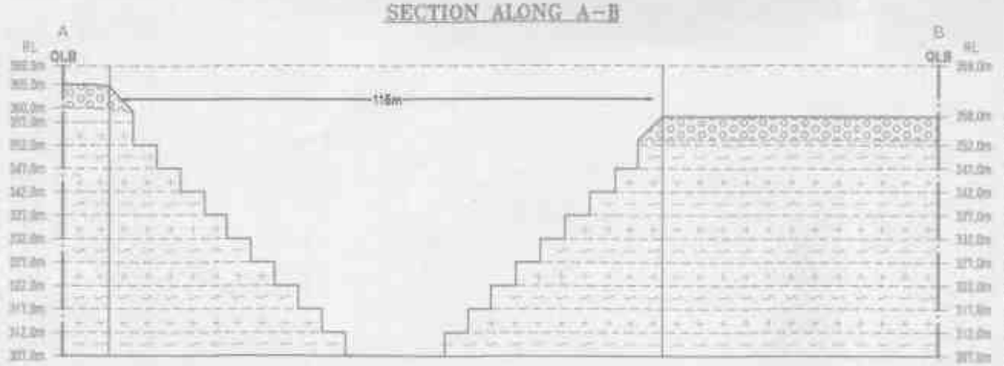
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S.ANANDARAJ,M.Sc.,
QUALIFIED PERSON
Under Rule 13(3)(a)and(b) of MMDR,2014

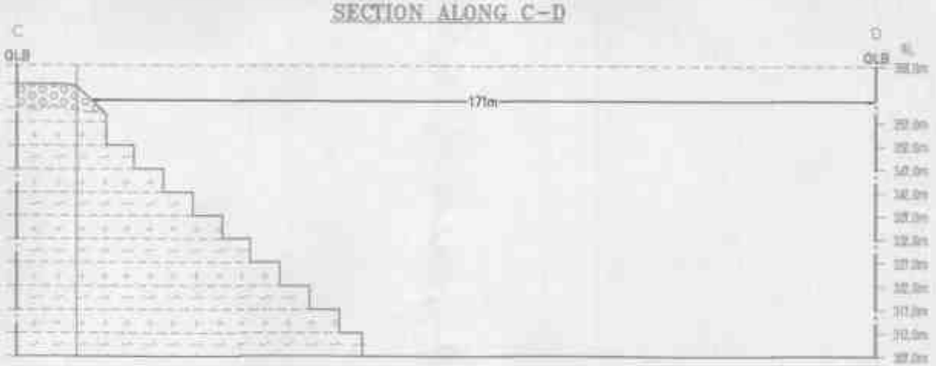
SECTION ALONG X-Y



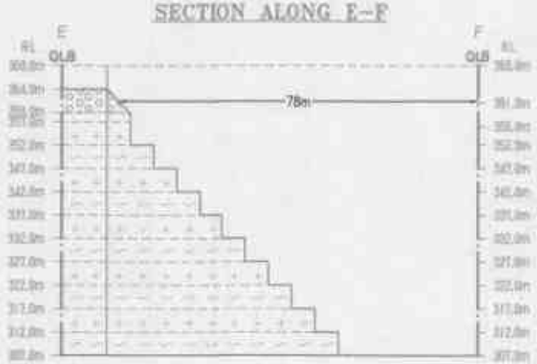
SECTION ALONG A-B



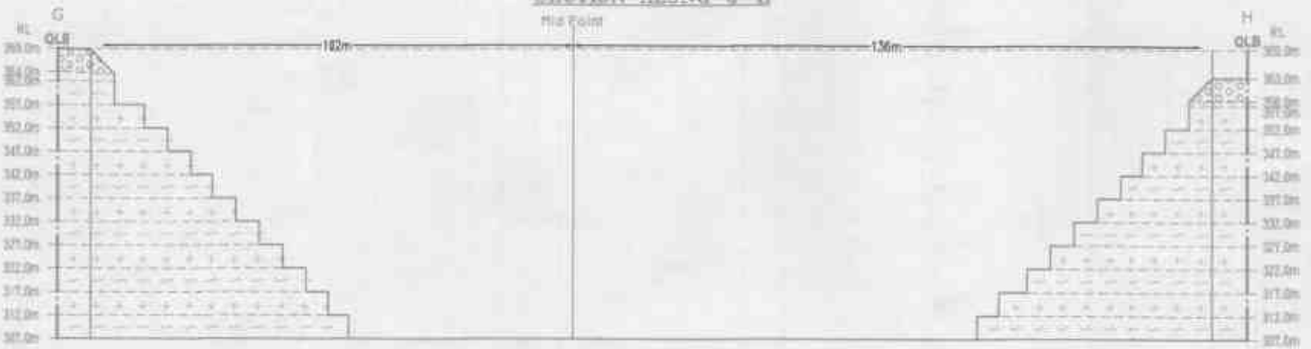
SECTION ALONG C-D



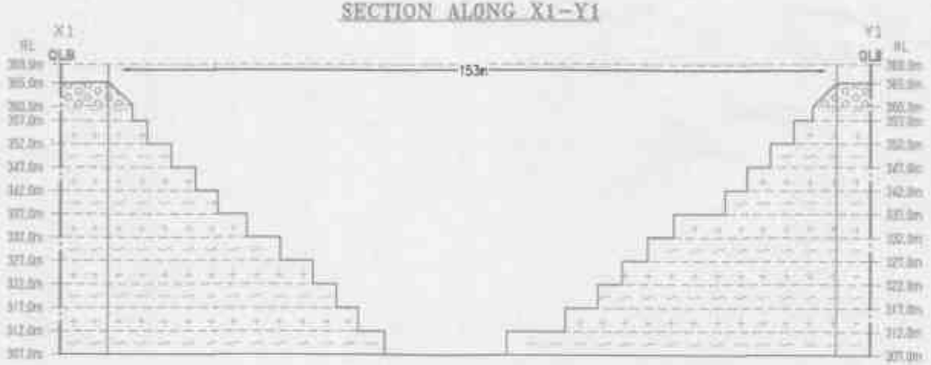
SECTION ALONG E-F



SECTION ALONG G-H



SECTION ALONG X1-Y1



Ultimate Pit Dimension	
XY-AB	61m(L)X116m(W)X55m(d)
XY-CD	66m(L)X171m(W)X55m(d)
XY-EF	99m(L)X78m(W)X55m(d)
XY-GH	127m(L)X136m(W)X55m(d)
X1Y1-GH	153m(L)X102m(W)X59m(d)

Above Ground Level 13m
Below Ground Level 46m

PLATE NO-VII-A

DATE OF SURVEY : 24.07.2024

APPLICANT:

THIRU.C.SELVAM
S/O.CHELLADURAI,
38,MIDDLE STREET,PIRATHUKARANPATTI,
SHANMUGASUNDARAPURAM,
ANDIPATTI TALUK,THENI DISTRICT.
TAMIL NADU-625 512.

INDEX

- Q.L. APPLIED AREA BOUNDARY
- 7.5m,10m & 50m SAFETY DISTANCE
- GRAVEL
- ROUGH STONE

LOCATION OF QUARRY
LEASE APPLIED AREA:

S.F.NO.S : 927/2,927/3, 927/4 etc.,
EXTENT : 8.765 Ha.
VILLAGE : THIMMARASANAICKANUR BIT-I,
TALUK : ANDIPATTI,
DISTRICT : THENI,
STATE : TAMIL NADU.

CONCEPTUAL SECTIONS

(AFTER OBTAINED PERMISSION COMMON MINE BOUNDARY UNDER RULE 11(1)(1)MMR 1961)

SECTION HOR 1 : 1000, VER 1: 1000

PREPARED BY:

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S.ILAMARASAN,M.Sc.,
QUALIFIED PERSON
Under Rule 15(1)(e)and(h)of MCR,2016

MINING PLAN APPROVED
ASST. DIRECTOR (GEOLOGY & MINING), THENI
ASST. DIRECTOR (G&M), THENI

HYDRO – GEOLOGICAL REPORT

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HYDRO - GEOLOGICAL STUDIES AT THIRU. C. SELVAM ROUGH STONE AND GRAVEL QUARRY IN THIMMARASANAYAKKANUR BIT-1 VILLAGE, ANDIPATTI TALUK, THENI DISTRICT, TAMIL NADU.

1 INTRODUCTION

Proprietor of **Thiru. C. Selvam** Rough stone and Gravel quarry Over an extent of 8.76.5 hectares of Patta land in S.F. No's. 927/2, 927/3, 927/4, 927/5, 940/2, 940/3 and 943/1 of Thimmarasanayakkanur Bit-1 Village, Andipatti Taluk, Theni District, Tamil Nadu state on the hydrological regime of thearea, The above area has been studied & investigated for finding out Ground water level and aquifer thickness and water quality in and around mine lease area. The electrical resistivity method, TEM study in Rough stone and gravel quarry and genesis rock with determine the shallow and deeper freshwater aquifer in the proposed mining area in Thimmarasanayakkanur Bit-1 Village.

1.1. Scope of Study

The main aim of the study is to identify the shallow and deeper aquifer investigation through electrical resistivity VES, Method is used to measure the apparent resistivity of the Study area. The present study is estimating the ground water level in Thimmarasanayakkanur Bit-1 Village, Andipatti Taluk, Theni District, Tamil Nadu village proposed leasehold area and their surrounding area. The study area is mostly covered by Water level, type of sand, type of rock and their basement rock characters. The main aim of the study is to determine the water table and flow movement of this Lease and surrounding area **(Fig.1).**

1.2. Profiles in the Study Area.

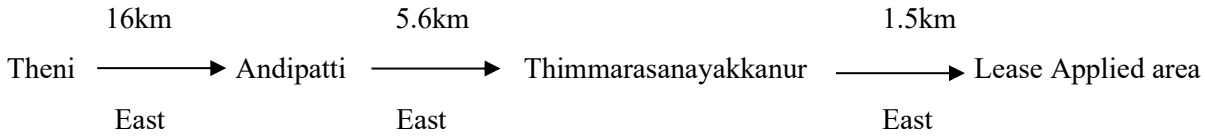
Name of the Lessee	: **Thiru. C. Selvam,**
Survey No	: 927/2, 927/3, 927/4, 927/5, 940/2, 940/3 and 943/1.
Extent	: 8.76.5 hectares.
Village	: Thimmarasanayakkanur Bit-1,
Taluka	: Andipatti,
District	: Theni,
State	: Tamil Nadu

2 STUDY AREA DESCRIPTION



Figure.1. Shows proposed mine lease area

The lease applied area falls in the Toposheet No: **58F/12** and **58G/09** Latitude between: **09°59'47.06115"N to 10°00'02.57733"N** and Longitude between: **77°41'22.62023''E to 77°41'32.61712"E** on WGS datum-1984. The lease applied area is located about 23km Eastern side of Theni town, 7km Eastern side of Andipatti town and 1.4km Eastern side of Thimmarasanayakkanur Village.



2.1 Topography of the Lease Area and Its Surrounding Environments:

The lease applied area is situated an undulated terrain. The gradient of the area towards Northern side and altitude of the area varies from 356m to 369m above from Mean Sea Level. The area is situated in foot hill, since rich accumulation of quaternary formation of gravel having an average thickness of 5m and followed by Massive Charnockite which is clearly inferred from the adjacent existing quarry pit.

The Water level in the surrounding area is 60m - 65m below from general ground profile which is observed from the nearby bore wells. Average annual rainfall is about 985mm.



Figure 2. Topography and Outcrop in the lease area

3 REGIONAL GEOLOGY OF THENI DISTRICT

The Western Ghats comprises Charnockite Group of rocks while the plains are underlain by hornblende – biotite gneiss, silimanite- 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 high-grade metamorphic rocks are well exposed in the Theni district on the moderate to steeply sloping hills. These rocks are

characterized into three Groups (Krishnan, 1949; Anon, 2005), viz.

i. Khondalite Group comprising of quartzite, pyroxene granulite, calc gneiss / spinel gneiss, crystalline limestone, minor garnet-cordierite gneiss and garnetiferousquartzo-feldspathic gneiss (leptynite).
ii. Charnockite Group consisting of acid charnockite and pyroxene granulite.
iii. iii. Migmatite Complex represented by hornblende-biotite gneiss, grey granitic gneiss and pink migmatite.

KHONDALITE GROUP

Khondalite Group consists of meta-sedimentary rocks of arenaceous, calcareous and argillaceous composition metamorphosed under granulite facies and represented by quartzite, calc gneiss / diopside marble, garnet 30 sillimanite gneiss with minor bands of garnetiferousquartzo-feldspathic gneiss (leptynite), garnet cordierite gneiss. These rocks occur as either individual bands or as a set of sequence as „enclaves" or as tectonic slices within the predominantly charnockite-migmatite country.

Quartzite is the important member of Khondalite Group occupying the crest of linear ridges. The thickness varies from less than a metre to 150m. The quartzite is white or dirty white in colour and composed essentially of interlocking grains of quartz and feldspar, which is often kaolinised.

Mafic granulite is dark grey medium grained, evenly granular rock of thickness from 3 to 20m, which is inter banded with quartzite. It consists of mainly diopside, hypersthene, feldspar and quartz.

Calcareous gneiss is grayish white, medium grained, granular or gneissose rock with typical ribbed weathering. It consists mainly of green diopside, white calcite and quartz with pinhead size garnets, green apatite and magnetite as accessory minerals. The thickness of calc gneiss varies from a meter to 30 m. With the decrease of silicate minerals and increase of carbonates, the calc gneiss grades into crystalline limestone at a few places.

Garnet-silimanite gneiss represents metamorphosed pelitic sediments. This rock shows a thickness varying from 1 to 50m. Development of garnet is very profuse and at times, garnet rich layers of 1 to 2cm thick are found alternating with quartz feldspar rich layers. Silimaniteoccurs in varying amounts. Biotite is a common associate mineral. Development of cordierite is noticed in the garnet-silimanite gneiss in a few places. Minor bands of a few centimetres to a couple of metres

wide whitish looking quartzo- feldspathic gneiss (leptynite) with unevenly distributed pink garnets occurs as 31 inter-bands within garnet-sillimanaite gneiss. This rock represents the metamorphosed psammitic sediments within the predominant metapelitic rock. 2.1.2. Charnockite Group.

CHARNOCKITE GROUP

The Charnockite Group consists of acid to intermediate charnockite and the associated thin interbands and lenses of pyroxene granulite. The pyroxene granulite is dark grey granular to gneissic, medium grained and occurs mostly as unmappable bands within charnockite and hornblende biotite gneiss. The charnockite is grey, greasy, medium to coarse grained massive rock and occupies a major part of Theni district. It occurs over the hills as well as the plains underlying the metasediments. The rock is chiefly made up of quartz, K-feldspar, plagioclase and hypersthene with apatite and magnetite as accessories. Pink garnets upto 1 to 2mm diameter are developed in places (Krishnan, 1949; Anon, 2005). 2.1.3.

MIGMATITE COMPLEX

The charnockitic rocks have been extensivelymigmatised due to later quartz feldspathic influx resulting in banded hornblende-biotite gneiss which with change in intensity of migmatisation grade into granitic gneiss and grey hornblende granite. The hornblende biotite gneiss is medium to coarse, pale grey coloured rock and show banded structure with alternating quart-feldspar rich layers and hornblende biotite rich layers with individual layers ranging from 1mm to 1cm width imparting a well developed gneissosity to the rock. (Krishnan, 1949; Anon, 2005). Granitic gneiss is grey, medium grained, well foliated rock with colour and compositional banding. It occurs mostly as band upto 15m wide, co-folded along with the metasediments. The rock is chiefly made up of quartz and orthoclase, which is mostly perthitic with plagioclase and biotite as the main accessories. The hornblende granite is a medium grained massive, grey coloured rock and is made up of quartz, K- 32 feldspar, and plagioclase with hornblende and biotite as accessories. Minute sulphide minerals mainly pyrite and pyrrhotite and rare chalcopyrite are seen embedded within hornblende and biotite in hand specimen.

A small band of carbonatite with magnetite is exposed at the foot hills around Cumbam Mettu. Younger intrusives that are noticed in the Theni district are thin veins of pegmatite seen cutting all

the rocks. Pegmatite is coarse grained, mostly pink coloured with orthoclase and quartz as the main minerals. Biotite and magnetite occur in small. quantity. Quaternary sediments up to 10 to 30m thick occur in the Cumbum valley occupying the NNE-SSW troughs formed due to block faulting (graben). The Quaternary sediments of Theni district comprises gravity slided deposits and boulders and cobbles overlain by sheet wash and slope wash materials like medium sized boulders, pebbles and coarse sands. Colluvial deposits of assorted pebbles and sand are deposited at the bread in slope, which are overlain by a graded sequence of alluvial deposits of medium sands, find sand and slit. It is overlain by basal boulder bed, siliceous limestone, calcareous and ferruginous sandstone with calcrete and kankar layers and coarse sandstone interbedded with partly lithified sandstone and thin layers of Kankarand sand-silt-clay admixtures.

STRUCTURE Three phases of folding are recognized with the earliest (F1) being tight to near isoclinal fold of reclined to recumbent type. The F2 fold is of close type with steep axial plane trending NE-SW with low southerly plunge. Third phase (F3) occur as open type along NW-SE to WNW- ESE axial trace. The main trend of the rock is NE-SW to E-W with moderate to steep dips towards SE and South. The area has undergone metamorphism of upper amphibolite to granulite facies with subsequent retrogression.

4 HYDROGEOLOGY

(i) Major Geological formations: Geology Geologically the entire district is traversed by hard crystalline rocks of Archaen rocks. However, valley fill sediments are found in the Southern part of Andipatti Taluk and Western portion of the Western ghats comprising Bodi, Devaram and Cumbum regions.

(ii) Hard rock More than 90 percent of the district is underlain by hard rocks. The Gneissic type of formation is found in the western ghats and its offshoots, Cumbum valley etc., Infact, Granite gneiss is the predominant rock in this district. This is the major formation among the various types of hard rocks. Charnockite occurs as distinct pockets in part of Periyakulam Taluk. Quartzite which is resistant to weathering are also seen as patched in charnockite and gneissic rock. Garnetiferous mic gneiss occurs as a line batch in the North East-South West direction covering Myladumparai and Southern part of Andipatti Blocks. Valley fill sediments

(iii) Valleyfill sediments composed of admixtures of calcareous mud, clay, silt and sand occur in several places in the western portion particularly in Uthamapalayam Taluk. Good deposits are found in Cumbum Valley, Varshanad Valley and near Palakombai. These are the products of quick transportation of weathering material from the adjacent mountain slopes around the valley. Alluvial deposits such as sand, silt, stiff clay, gravel etc., which are transported sediments by the river are found on either side of Vaigai near Theni block. These formations are overlying the hard rock as a thin layer which is insignificant in the Ground Water Development.

The geological succession of the district is as follows:

Era	Age	Formation	Lithology
Quaternary	Recent	Alluvium, Laterite and Valleyfill sediments	Sand, clay, silt, kankar pebbles and laterite
UNCONFORMITY			
Azoic	Precambrian	Crystalline rocks	Granites with pegmatites and Quartzites, granite, Garnetiferous Mica Gneiss, Charnockite and Complex gneisses

Occurrence of Ground Water Hard rock formation:

Gneissic Rock:

Ground water occurs under water table or phreatic conditions in weathered, jointed and fractured formations. The pore space developed in the weathered mantle (disintegrated material) acts as shallow granular aquifers and forms the potential water bearing and yielding zones. Water table is very shallow in canal and tank irrigated regions whereas it is somewhat deeper in other regions. Charnockite rock Ground water occurs under water table or phreatic conditions but the intensity of weathering, joint, fracture and its development is much less when compared to gneissic formations. As a result, these are not termed as potential water bearing zones excepting in a region where the

intensity of weathering coupled with development of joints and fractures is greater. Sometimes the occurrence of kankar material over charnockite hampers the permeability and well yielding capacity.

Charnockite rock

Ground water occurs under water table or phreatic conditions but the intensity of weathering, joint, fracture and its development is much less when compared to gneissic formations. As a result, these are not termed as potential water bearing zones excepting in a region where the intensity of weathering coupled with development of joints and fractures is greater. Sometimes the occurrence of kankar material over charnockite hampers the permeability and well yielding capacity.

Valleyfill sediments Ground water occurs under water table or semi-confined conditions. The valleyfill sediments are highly porous and permeable and the sandy material facilitates vertical infiltration. Valleyfill sediments play a vital road in the development of Ground Water in Theni District.

Drilling of Bore holes The occurrence and movement of ground water in hard rock formations are restricted to open system of fractures like fissures and joints in the unweathered portion and also in the porous zones of weathered formations. Generally, in hard rock regions occurrence of weathered layer is discontinuous both in space and depth. Hence, recharge in hard rock formations is influenced by the intensity of weathering. The sub surface condition can be ascertained by drilling exploratory bore holes and conducting pumping tests. The ground water wing, during the course of investigation, has drilled 45 bore holes spread over the entire district to find out the nature and behavior of the sub surface formations. There is considerable diversity in the nature of formation even with the short distance. Uttamapalayam taluk there is considerable thickness of valley fill sediments ranging from 30-40m below ground level along valley portions. In the reserve forest and hilly areas, around Periyakulam and Andipatti taluks, the weathering zone is limited to 20-25m below Ground level. In the remaining part of the district the wearing zone varies form 30-40m below ground level and the lithology particulars of selected bore wells drilled in Theni District

Aquifier Parameters Hard Rock The thickness of aquifer in this district is highly erratic and varies between 15 and 40 m below ground level. The intergranular porosity is essential dependant upon the intensity and degree of weathering and fracture development in the bed rock. As discussed earlier,

deep weathering has developed in gnessic formations and moderate weathering in charnockite formations.

Valley fill sediments the boundaries of this deposit are well defined in Theniar sun basin where the thickness varies from 40 to 60 m below ground level. In other areas the thickness of valley fill sediments slightly varies between 30 and 40 m below ground level. Recharge is mainly from precipitation and surface runoff during monsoon seasons.

Drilling of Exploratory Bore holes Based on the interpretations made from aerial photographs and satellite imageries, Geophysical vertical Electrical soundings are conducted and favourable locations are selected for exploratory drilling of bore holes. After completion of drilling, the aquifer characteristics are determined by conducting pumping tests to evaluate the ground water potential of the area. Since the inception of this department 45 exploratory bore holes were drilled in Theni District. Out of 45 bore welss were drilled in hard rock formations covering the entire district. Mahority of the bore wells have been handed over to Municipalities, Panchayat unions etc., on free of cost for drinking water supply schemes.

(iii) Drilling: The drilling types are different according to the formation of the terrain. In general, DTH rigs are used in Hard rock formations for drilling a borewell at a depth range from 30m to 200m, according to the extension of joints, fractures, lineaments, etc in an area. In Sedimentary formations, rotary rigs with different rotors used according to the Tube well's diameter. The Bento novate clay is used in rotary rigs to avoid the collapse of the Tube well. The sedimentary tube wells are drilled up to a depth of 30m to 300m depending on the area, yield,etc. In alluvial formations, the hand rotary used for drilling tube wells ranges from 10m to 15m.In river beds, infiltration tube wells used for extraction of groundwater. In Hard rock, the well designing is simple. The upper top soil and highly weathered zone is cased with PVC pipe and the remaining weathered, Fissured, Jointed portion is left as it is. In Villupuram District, the weathered zone ranges from 1.0m to 12.0m. In Granitic gneiss area, the highly weathered portion will be more up to 15m but in charnockite area, the weathered zone will extend up to 8.0m to 10.m only. In Sedimentary area, the well construction depends on the occurrence of sand thickness in the referred area. The logger is also used in the construction to identify the area of good quality of water. (source: national water mission).

5 METHODOLOGY OF STUDY

1. Open well and bore well water level measurement, depth of water level diameter of open well, agriculture land survey.
2. Geophysical survey for deep aquifer in nearby site Rock and soil geology also collected for the aquifer characteristic study
3. Aquifer thickness and quality measurement study in nearby proposed mine site areas of the study area

5.1 Geophysical Investigation

5.1.1 Vertical Electrical resistivity sounding for aquifer study.

The electrical resistivity study is used to determine aquifer and occurred rock inthe proposed site. The DDR 3 equipment was used for data collection **(Fig.3)**

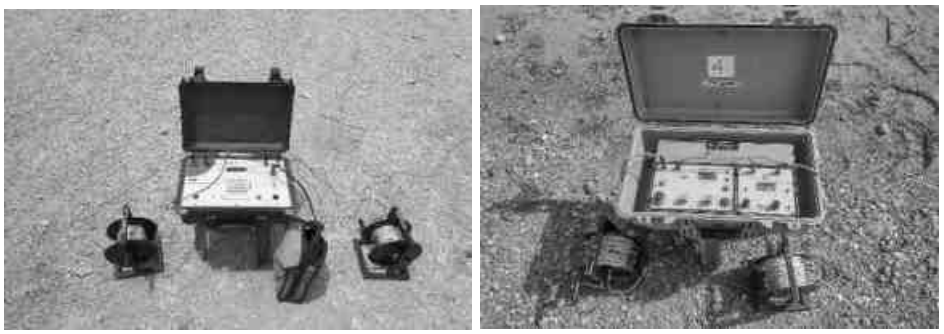


Figure 3. Electrical resistivity survey Instruments.

5.2.2 Basic Principles

The electrical properties of rocks in the upper part of the earth's crust are dependent upon the lithology, porosity, and the degree of pore space saturation and the salinity of the pore water. Saturated rocks have lower resistivity than unsaturated and dry rocks. The higher the porosity of the saturated rock, or the higher the salinity of the saturating fluids, the lower is the resistivity. The presence of clays and conductive minerals also reduces the resistivity of the rock.

The resistivity of earth materials can be studied by measuring the electrical potential distribution produced at the earth's surface by an electric current that is passed through the earth. Current is moved through the subsurface from one current electrode to the other and the potential difference is recorded as the current passes. From this information, resistivity values of various layers are acquired and layer thickness can be identified.

The apparent resistivity values determined are plotted as a log function versus the log of the spacing between the electrodes. These plotted curves identify thickness of layers. If there are multiple layers (more than 2), the acquired data is compared to a master curve to determine layer thickness.

This method is least influenced by lateral in-homogeneities and capable of providing higher depth of investigation.

The resistance R of a certain material is directly proportional to its length L and cross-sectional area A, expressed as:

$$R = Rs * L/A \text{ (in Ohm)}$$

Where Rs is known as the specific resistivity (characteristic of the material and independent of its shape or size)

With Ohm's Law,

$$R = dV/I \text{ (Ohm)}$$

Where dV is the potential difference across the resistor and I is the electric current through the resistor. The specific resistivity may be determined by:

$$Rs = (A/L) * (dV/I) \text{ (in Ohm m)}$$

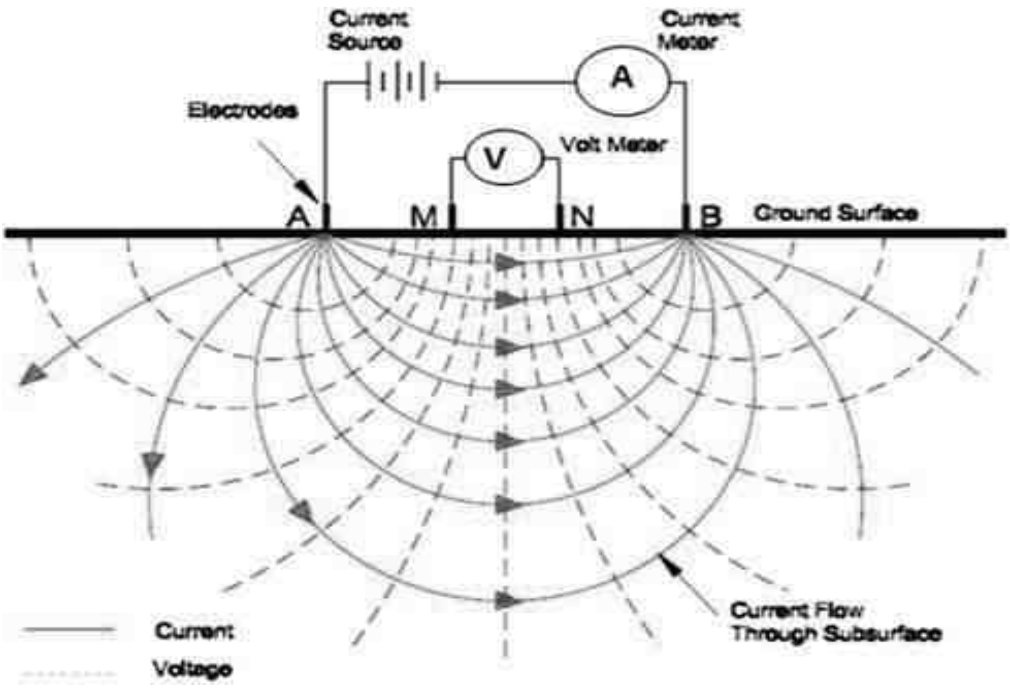


Figure 4. Schematic Diagram of Electrical resistivity principle



Figure 5. Geophysical survey location in the lease area

6. GEOPHYSICAL DATA INTERPRETATION & GRAPH

Table 1 Geophysical data of Station 1

STATION-1				
AB/2 (m)	MN/2(m)	Geometric Factor (K)	Resistance (R) Ohm	Apparent Resistivity Rho Ohm-meter
2	1	4.7	7.65	36.0
5	1	37.7	0.79	29.8
10	1	155.5	0.62	96.4
10	5	23.6	4.21	99.2
15	5	62.8	3.67	230.6
20	5	117.8	2.06	242.7
30	5	274.9	1.86	511.3
40	5	494.8	1.68	831.3
50	5	777.5	1.32	1026.4
60	5	1123.1	0.98	1100.7
70	5	1531.5	0.95	1455.0

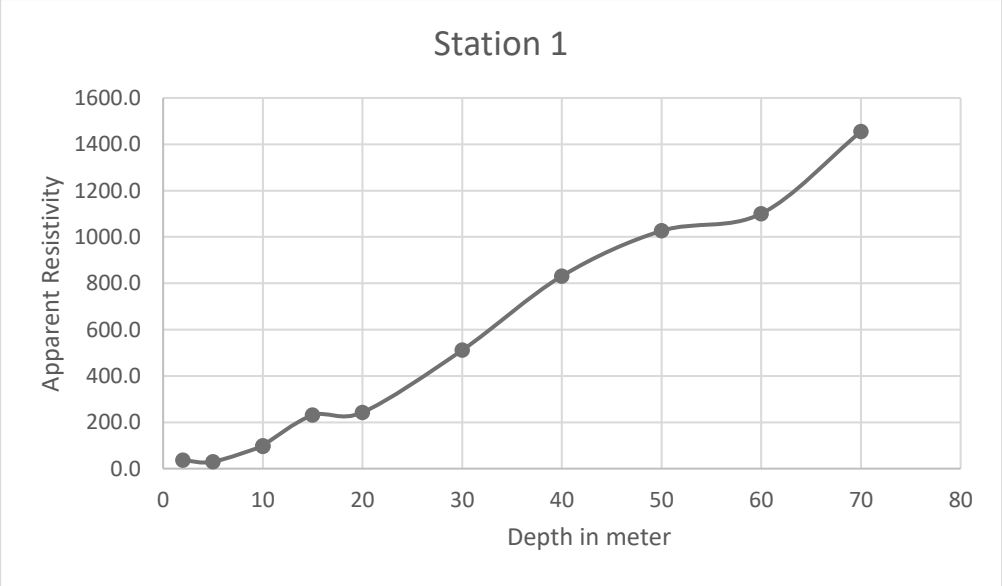


Figure 6 Graphical Representation of Geophysical data Station 1

Table 2 Geophysical data of Station 2

STATION-2				
AB/2 (m)	**MN/2(m)**	**Geometric Factor (K)**	**Resistance (R) Ohm**	**Apparent Resistivity Rho Ohm-meter**
2	1	4.7	4.87	22.9
5	1	37.7	1.92	72.4
10	1	155.5	1.31	203.7
10	5	23.6	3.21	75.6
15	5	62.8	2.87	180.3
20	5	117.8	2.56	301.6
30	5	274.9	2.21	607.5
40	5	494.8	1.72	851.1
50	5	777.5	1.39	1080.8
60	5	1123.1	0.97	1089.4
70	5	1531.5	0.93	1424.3

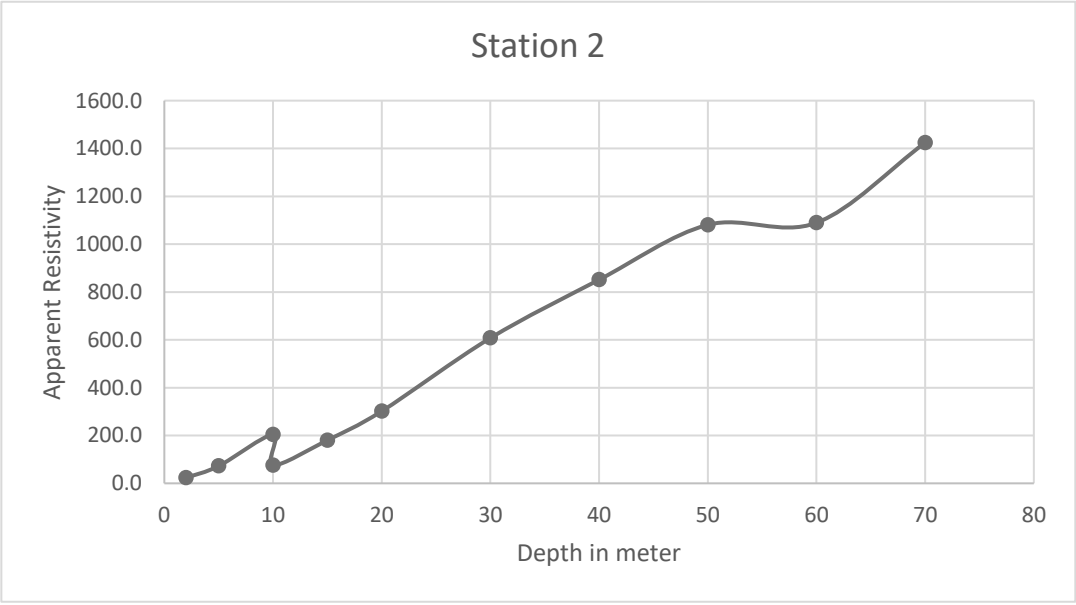


Figure 7 Graphical Representation of Geophysical data Station 2

Table 3 Geophysical data of Station 3

STATION-3				
AB/2 (m)	**MN/2(m)**	**Geometric Factor (K)**	**Resistance (R) Ohm**	**Apparent Resistivity Rho Ohm-meter**
2	1	4.7	6.97	32.8
5	1	37.7	1.98	74.6
10	1	155.5	1.10	171.1
10	5	23.6	3.29	77.5
15	5	62.8	2.84	178.4
20	5	117.8	2.36	278.0
30	5	274.9	2.16	593.8
40	5	494.8	1.56	771.9
50	5	777.5	1.09	847.5
60	5	1123.1	0.81	909.7
70	5	1531.5	0.69	1056.8

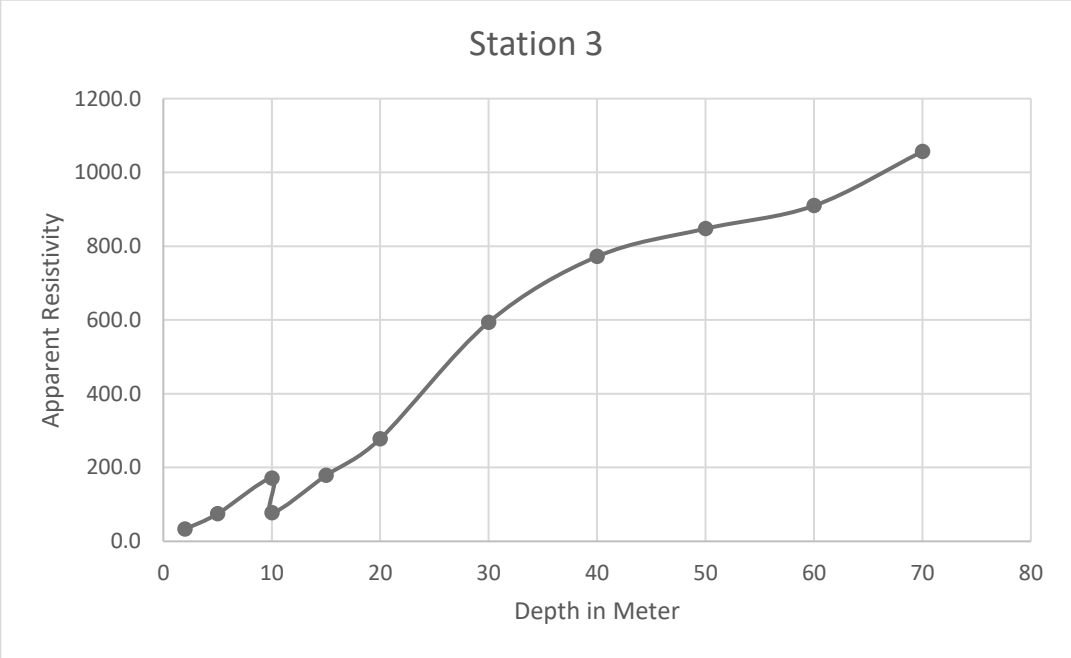


Figure 8 Graphical Representation of Geophysical data Station 3

Table 4 Geophysical data of Station 4

STATION-4				
AB/2 (m)	**MN/2(m)**	**Geometric Factor (K)**	**Resistance (R) Ohm**	**Apparent Resistivity Rho Ohm-meter**
2	1	4.7	8.75	41.2
5	1	37.7	1.68	63.3
10	1	155.5	0.76	118.2
10	5	23.6	2.63	62.0
15	5	62.8	2.08	130.7
20	5	117.8	1.87	220.3
30	5	274.9	1.37	376.6
40	5	494.8	1.26	623.5
50	5	777.5	0.96	746.4
60	5	1123.1	0.71	797.4
70	5	1531.5	0.62	949.5

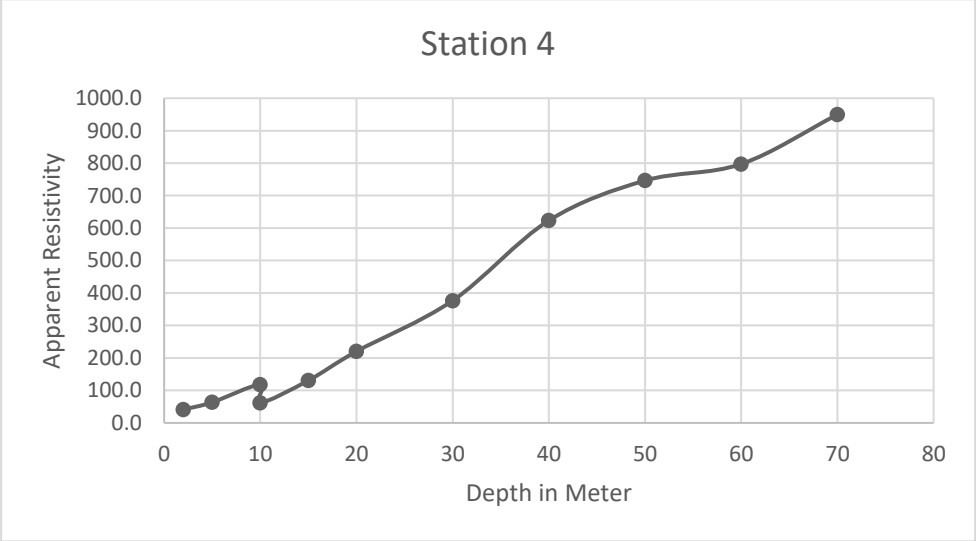
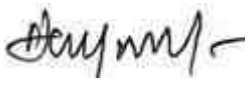


Figure 9 Graphical Representation of Geophysical data Station 4

7.CONCLUSION

- The lease applied area is situated an undulated terrain. The gradient of the area towards Northern side and altitude of the area varies from 356m to 369m above from Mean Sea Level.
- The geological study of the given area covered by Gravel and rough stone in the entire area. The discharge of the groundwater controlled by the massive charnockite rock.
- The study area exhibit SE40^{o} dipping formation hence it act as a barrier and restrict the groundwater flow movement in the mine lease area
- Based on the geophysical investigation, Vertical Electrical Sounding (VES) were conducted to determine the subsurface water table and rock types up to depth of 70 m.
- The subsurface formation up to this depth can be categorized as follows,
    - **0m to 5m (Average) - Gravel**
    - **5m to 70m (Average) – Weathered & Charnockite Formation (Massive Formation)**
- In this mine lease area, groundwater occurs at shallow depth, depending on the intensity of weathering and its development is much less compared to gneissic formation. The mine area such no major intersections of water table are expected up to 50m.
- The aquifer are found within the weathered / fractured metamorphic terrain. Currently the aquifers are located at **60 to 65 meters** below ground level (BGL). However, considering the approved mining plan depth, which is **59 meters (Above Ground level 13m + Below Ground level 46m).** It will not impact the groundwater table.
- From the above study it can be concluded there will be no adverse effect on the hydrological regime, water drainage, environment, and livelihood. Agricultural activity in the region.



Dr. P. Thangaraju, M.Sc., Ph.D.,
Govt. Approved Hydro Geologist
M/s. Geo Exploration and Mining Solutions,
Regd. Office: No. 17, Advaitha Ashram Road,
Alagapuram, Salem – 636 004, Tamil Nadu.



தமிழ்நாடு तमिलनाडु TAMILNADU ₹100 EA 626216

C. செல்வம் 12/8/2024 C. சந்திரா

முத்திரைத்தாள் விற்பனையாளர்
R.C.No.5102 / C2 / 2014 (1) Dt. 20.03.2019
தூத்துக்குடி-628512

DEED OF AGREEMENT

This Agreement is entered into at **Aundipatti** on this **14th AUGUST 2024**, between **Thiru. C.SELVAM S/O. CHELLADURAI**, No-38, MIDDLE STREET, PIRATHUKARANPATTI, AUNDIPATTI (Tk), THENI DISTRICT herein after referred to as party the FIRST PART, and J. SATHISHKUMAR S/o. JAYAPRAKASH, M/S. J.P&Co. 12/4, CI GEORGEPURAM, NILAKOTTAI (Tk), DINDIGUL (Dt.), E/SC/TN/22/537 (E-51889) herein after referred to as party of the Second Part.

First Party:

C. Selvam

Second Party:

FOR J.P. & CO.

PROPRIETOR

Proprietor

The party of the first part is operating quarry work in tha area **THIMMARASANAYAKKANUR, AUNDIPATTI-TALUK, THENI DISTRICT,** over and extent of Survey Number's **927/2, 927/3, 927/4, 927/5, 940/2, 940/3, and 943/1** Hectares in **8.76.50HA.**

Whereas the party of the First Part wants blasting to be done at quarry to excavate the blue metal stone. The blasting work is so intensive and large that the part of the first part has decided to entrust the work involved to the party of the second part on contract basis is as follows.

The party of the First part will allot the blasting operations in the above said areas to the party of the second part who is responsible for blasting rocks and making his own arrangement for the explosives and exploding equipment's required for the work. The entire blasting in the above quarry and teh possession of the blasting equipment will be handled by the party of the second part having valid explosives License No.E/SC/TN/22/537 (E51889) and shot Firer Licenses issued by the Joint Chief Controller of Explosives, South Circle, Chennai and he hereby undertake the responsibility for the work entrusted.

Payments will be made periodically by the party of the first part for the quantity used, explosives consumed, and hours and time of the exploding equipment's put into use. Calculations will be made, and settlement will be arrived every month. The rates for the items of work will as mutually agreed as marginal cost which includes cost of explosives, transportation cost and other charges for blasting work. This agreement is made for all blasting in the said area.

First Party:

Second Party:

FOR J.P. & CO.

PROPRIETOR

Proprietor

The Agreement is valid from the date of execution and validity of quarrying leases granted by the State Government to the party of the First Part. The agreement is terminable earlier by mutual consent with a month's notice. The agreement will expire with the expiry of quarry lease.

First Party:

Second Party:

FOR J.P. & CO.

PROPRIETOR.

Proprietor

Witnesses:

① S. - S. Kannan s/o. M. Susaimani

② K. - K. Balasubramanian s/o. S. Kanthavadivel.

Place: THENI

Date: 13/08/2024

(विस्फोटक नियम, 2008 की अनुसूची 4 के भाग 1 के अनुच्छेद 3(क) से (घ) देखिए।)
(See article 3(a) to (d) of Part 1 of Schedule IV of Explosives Rules, 2008)

(ग) उपयोग के लिए एक समय पर वर्ग 1,2,3,4,5 या वर्ग 7 के विस्फोटक या किसी मैगज़ीन में वर्ग 6 के विस्फोटक रखने के लिए अनुज्ञप्ति
Licence to possess : (c) for use,explosives of class 1, 2,3,4,5,6 or 7 in a magazine

अनुज्ञप्ति सं. (Licence No.) : E/SC/TN/22/537(E51889)
वार्षिक फीस रुपए (Annual Fee Rs): 5600/-

1. Licence is hereby granted to



J.SATHISH KUMAR,S/o R.JAYAPRAKASH,M/s.J.P.& Co. (अधिभोगी / Occupier : J. Sathiskumar), 12/4-C-1,Georgepuram,Nilakottai,Dindigul-624208., Town/Village - Nilakottai, District-DINDIGUL, State-Tamil Nadu, Pincode - 624208

को अनुज्ञप्ति अनुदत्त की जाती है।

2. अनुज्ञप्तिधारी की प्रास्थिति | Status of licensee : **Individual**

3. अनुज्ञप्ति निम्नलिखित प्रयोजनों के लिए विधिमान्य है। : possess for use of **Nitrate Mixture, Safety Fuse, Detonating Fuse, Electric and/or Ordinary Detonators,** - के उपयोग के लिए
Licence is valid only for the following purpose.

4. अनुज्ञप्ति विस्फोटकों के निम्नलिखित किस्मों, प्रकार और मात्रा के लिए विधिमान्य है।
Licence is valid for the following kinds and quantity of explosives: -- (क) (a)

क्र Sr. No.	नाम और विवरण Name and Description	वर्ग और प्रभाग Class & Division	उप-प्रभाग Sub-division	मात्रा किसी एक समय में Quantity at any one time
1.	Nitrate Mixture	2 ,0	0	600 Kg.
2.	Safety Fuse	6 ,1	0	25000 Mtrs
3.	Detonating Fuse	6 ,2	0	10000 Mtrs
4.	Electric and/or Ordinary Detonators	6 ,3	0	44000 Nos.

(ख) किसी एक कलैंडर मास में खरीदे जाने वाले विस्फोटक की मात्रा [अनुच्छेद 3(ख) और (ग) के अधीन अनुज्ञप्ति के लिए] : **20 times as above.**
(b) Quantity of explosives to be purchased in a calendar month[applicable for licence under article 3(b) and (c)]

5. निम्नलिखित रेखाचित्र (रेखाचित्रों) से अनुज्ञप्त परिसर की पुष्टि होती है। : रेखाचित्र क्र. (Drawing No.) E/SC/TN/22/537(E51889)
The licensed premises shall conform to the following drawing(s). दिनांक (Dated) 30/06/2010

6. अनुज्ञप्ति परिसर निम्नलिखित पते पर स्थित हैं। The licensed premises are situated at following address:
Survey No. 5/2 , ग्राम (Town/Village) : **VeezhiNaickenpatti** **पुलिस थाना (Police Station) : Nilakottai**

जिला (District)	**DINDIGUL**	राज्य (State)	**Tamil Nadu**	पिनकोड (Pincode)	**624208**
दूरभाष (Phone)	**9842161763**	ई मेल (E-Mail)		फैक्स (Fax)	

7. अनुज्ञप्ति परिसर में निम्नलिखित सुविधाएं अंतर्विष्ट हैं। : **One Explosives Magazine, Lobby & Detonator Annexe**
The licensed premises consist of following facilities.

8. अनुज्ञप्ति समय – समय पर यथासंशोधित विस्फोटक अधिनियम, 1884 और उनके अधीन विरचित विस्फोटक नियम, 2004 के उपबंधों, शर्तों और अतिरिक्त शर्तों और निम्नलिखित उपाबद्धों के अधीन रहते हुए अनुदत्त की जाती है।
The licence is granted subject to the provision of Explosives Act 1884 as amended from time to time and the Explosives Rules, 2008 framed there under and the conditions, additional conditions and the following Annexures.
   1. उपर्युक्त क्रम सं. 5 में यथा कथित रेखाचित्र (स्थान, सन्निर्माण संबंधी और अन्य विवरण दर्शित करते हुए)।
   Drawings (showing site, constructional and other details) as stated in serial No. 5 above.
   2. अनुज्ञप्ति प्राधिकारी द्वारा हस्ताक्षरित इस अनुज्ञप्ति की शर्तें और अतिरिक्त शर्तें।
   Conditions and Additional Conditions of this licence signed by the licensing authority.
   3. दूरी प्ररूप DE-2 | Distance Form DE-2.

9. यह अनुज्ञप्ति तारीख **31 मार्च 2015** तक विधिमान्य रहेगी। This licence shall remain valid till **31st day of March 2015.**
यह अनुज्ञप्ति, अधिनियम या उसके अधीन विरचित नियमों या अनुसूची V के भाग 4 के प्रति निर्दिष्ट सेट-VII के अधीन तथा उपवर्णित इस अनुज्ञप्ति की शर्तों का अतिक्रमण करने या यदि अनुज्ञप्त परिसर योजना या उससे संलग्न उपबंध में दर्शित विवरण के अनुरूप नहीं पाए जाने पर निलंबित या प्रतिसंहृत की जा सकती है, जहां वह लागू हो।
This licence is liable to be suspended or revoked for any violation of the Act or Rules framed there under or the conditions of this licence as set forth under Set VIII, wherever applicable, referred to in Part 4 of Schedule V or if the licensed premises are not found conforming to the description shown in the plans and Annexure attached hereto

तारीख | The Date - 30/06/2010

Sd/-
संयुक्त मुख्य विस्फोटक नियंत्रक | Joint Chief Controller of Explosives South Circle, Chennai

Amendments :
- Amendment of Quantity of Explosives/Monthly Purchase Limit dated : 04/08/2010
- Amendment of Quantity of Explosives/Monthly Purchase Limit dated : 03/11/2014

नवीनीकरण के पृष्ठांकन के लिए स्थान
Space for Endorsement of Renewal

नवीकरण की तारीख Date of Renewal	समाप्ति की तारीख Date of Expiry	अनुज्ञापन प्राधिकारी के हस्ताक्षर और स्टाम्प Signature of licensing authority and stamp
24/03/2023	31/03/2028	Jt. Chief Controller of Explosives, South Circle, Chennai

कानूनी चेतावनी : विस्फोटकों को गलत ढंग से चलाने या उनका दुरूपयोग विधि के अधीन गंभीर दांडिक अपराध होगा।
Statutory Warning : Mishandling and misuse of explosives shall constitute serious criminal offence under the law.

Note :- This is system generated document does not require physical signature. Applicant may take printout for their records.

Digitally signed by MANMEET SINGH MANHAS

அ1 அறிவிப்பு

தேனி மாவட்டம், ஆண்டிபட்டி வட்டம், திம்மரசநாயக்கனூர் பிட்—I கிராம புல எண்கள். 927/1, 927/2, 927/3, 927/4, 927/5, 938/1A, 938/2, 939/2, 940/1, 940/2, 940/3, 941, 942, 943/1, 943/2 மொத்த விஸ்தீரணம் 15.14.00 ஹெக்டேரில் சிறுகனிமம், உடைகல் மற்றும் கிராவல் குவாரி குத்தகை வழங்கல் தொடர்பாக அ1.அறிவிப்பு.

வ. எண்	புல எண்.	விஸ்தீரணம்	தீர்வை	எல்லைகள்		
1.	927/1	0.18.00	0.50	கிழக்கு	913/1	தனிக்கொடி
				வடக்கு	912	அரசு புறம்போக்குஓடை
				மேற்கு	927/2	பவளக்கொடி
				தெற்கு	927/4	பவளக்கொடி
2.	927/2	1.33.50	3.68	கிழக்கு	927/5	பவளக்கொடி
				வடக்கு	927/1	பவளக்கொடி
				மேற்கு	927/3	தனிக்கொடி
				தெற்கு	927/4	பவளக்கொடி
3.	927/3	1.26.50	3.51	கிழக்கு	927/2	பவளக்கொடி
				வடக்கு	912	அரசு புறம்போக்குஓடை
				மேற்கு	928	அரசு புறம்போக்கு
				தெற்கு	927/4	பவளக்கொடி
4.	927/4	1.21.50	3.36	கிழக்கு	926/1	ராஜவேல்பாண்டியன்
				வடக்கு	927/2	பவளக்கொடி
				மேற்கு	928	அரசு புறம்போக்கு
				தெற்கு	943/1	தனிக்கொடி மற்றும் நபர்கள்
5.	927/5	0.50.50	1.40	கிழக்கு	926/1	ராஜவேல்பாண்டியன்
				வடக்கு	913/1	தனிக்கொடி
				மேற்கு	927/2	பவளக்கொடி
				தெற்கு	927/4	பவளக்கொடி

6.	938/1A	0.85.50	0.42	கிழக்கு	938/2	தனிக்கொடி மற்றும் நபர்கள்
				வடக்கு	940/1	பவளக்கொடி
				மேற்கு	930	ஜான்
				தெற்கு	938/1B2	ராஜவேல்பாண்டியன்
					938/1B1	சின்னத்துரை
7.	938/2	1.94.50	5.32	கிழக்கு	942	தனிக்கொடி
				வடக்கு	940/3	தனிக்கொடி மற்றும் நபர்கள்
				மேற்கு	938/1B2	ராஜவேல்பாண்டியன்
				தெற்கு	937	அரசு புறம்போக்கு
8.	939/2	0.45.50	1.26	கிழக்கு	940/1	பவளக்கொடி
				வடக்கு	939/1	ஆண்டிச்சி மற்றும் நபர்கள்
				மேற்கு	930/2,3	ஜான்
				தெற்கு	938/1A	தனிக்கொடி
9.	940/1	0.65.00	1.79	கிழக்கு	940/3	தனிக்கொடி
				வடக்கு	939/1	ஆண்டிச்சி மற்றும் நபர்கள்
				மேற்கு	939/2	பவளக்கொடி
				தெற்கு	938/1B1	சின்னத்துரை
10.	940/2	0.48.50	1.35	கிழக்கு	943/1	தனிக்கொடி மற்றும் நபர்கள்
				வடக்கு	928	அரசு புறம்போக்கு
				மேற்கு	939/2	பவளக்கொடி
				தெற்கு	940/3	தனிக்கொடி
11.	940/3	1.97.50	5.48	கிழக்கு	943/1	தனிக்கொடி
				வடக்கு	940/2	தனிக்கொடி
				மேற்கு	940/1	பவளக்கொடி
				தெற்கு	938/1B2	ராஜவேல்பாண்டியன்
					938/2	தனிக்கொடி, பவளக்கொடி
12.	941	0.20.50	0.51	கிழக்கு	943/1	தனிக்கொடி மற்றும் நபர்கள்
				வடக்கு	940/3	தனிக்கொடி மற்றும் நபர்கள்
				மேற்கு	940/3 938/2	தனிக்கொடி தனிக்கொடி மற்றும் நபர்கள்
				தெற்கு	942	தனிக்கொடி

(4) S. Kannan

(5) K. [illegible]

(6) K. Balasubramanian

(7) S. [illegible]

(8) [illegible]

(9) R. [illegible]

(10) [illegible]

(11) M.P. [illegible]

(12) [illegible]

(13) [illegible]

(14) [illegible]

(15) [illegible]

பணித்தலையங்கம்

அரசாணை ஒன்று இடைக்கால ஊதியம் நிர்ணயம் செய்யப்பட்டுள்ளது. மேல் விவரங்கள் அரசாணை நகலில் காண்க

[illegible]

27/11/23

(A)

தேனம்மபட்டி ஊர் நிலம் கொடுத்தி பணிந்து

விண்ணப்பிப்பதாவது

தேனம்மபட்டி கிராமத்தில் வசிக்கும் நான் 2ம் நிலை பாதுகாப்பு படை ஒரு சிறை காவலராக பணியாற்றி வருகிறேன். எனக்கு தேனம்மபட்டி கிராமத்தில் புன்செய் நிலம் இல்லாத காரணத்தால் மிகவும் சிரமப்படுகிறேன். எனவே தேனம்மபட்டி கிராமத்தில் புன் எண் 927/1, 2, 3, 4, 5, 938/1A, 2, 939/2, 940/1, 2, 3 941/1, 942/2, 943/1, 2 ஆகிய உள்ள பட்டாதாரர் நிலம் தாராளமாக இருக்கிறது. எனக்கு நிலம் வழங்க வேண்டுகிறேன் ① நிலம் வழங்க மனுவை ② இத்துடன் இணைத்துள்ளேன். மேலும் நிலம் 10 (பத்து) ஆண்டுகள் 2ம் நிலை பாதுகாவலராக இருக்கிறேன் என்பதை தெரிவித்துக் கொள்கிறேன். மேலும் எனக்கு நிலம் வழங்க தங்களை அன்புடன் கேட்டுக் கொள்கிறேன்

தேனம்மபட்டி ஊர் நிலம் தாராளமாக உள்ளது !

கிராமம் புன எண்: 927/1 0.18.00 927/4 1.21.50
927/5 0.50.50 939/2 0.45.50 மடுவு எண் 5891 புன எண் 927/2 1.33.50 மடுவு எண் 6234 புன எண் 940/1 0.65.00 மடுவு எண்

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5891 ஆம் பகு 06 ஏர் அம்பிகை நிலம் எனது பெயரில்
பட்டா எனது சிவபாலன் அவரை நிலம் பயன்படுத்தும் புல எண்
927/3 1.26.50 பரப்பு மீ எண் 2653 புல எண் 938/1A
0.85.50 941/- 0.20.50 942/- 1-195 ஆகியவை
நிலங்களை பெற நிலம் எனது அவரை அவர்களின் பட்டா எண் 5893,
2653 இதில்லாமல் நிலம் பட்டா நிலை அவர்களுக்கு புல
எண் 938/2 1.94.50 பட்டா எண் 9157 புல எண்
940/2 0.48.50, 943/2 0.89.00 பட்டா
எண் 9147 புல எண் 940/3 1.97.50 பரப்பு எண்
5894 புல எண் 943/1 1.98.50 ஆகியவை இதில்லாமல்
நிலம் எனது ① பயன் எனது ② இதில்லாமல் அவர் நிலம்
சட்டப்படியான நிலை அவர்களுக்கு தேர் அளவு எனக்கு
யாவும் நிலம் இல்லை என்று பரப்பு நிலம் இல்
உரிய அதிகாரிகளை பெற அல்லது சிவபாலன் உடன் அவருக்கும்
நிலம் இல்லாத இந்நிலை உரிமை என்று அவரும் எனக்கும்
அவருக்கு பகுதி அவருக்கு அவர்களை எனக்கு வரை நிலம் 15.14.00
ஆகியவை பயன் 300 ரூபாய் நிர்ணயம் அவர்களுக்கு
இது யாருடைய அதிகாரம் 50 ரூபாய் நிர்ணயம் நீர் நிலை கொள்
கிணறு மரங்கள் எல்லை அவர்கள் இதுவும் இதுவும் பயன்
பெறாமல் வரை பெற்ற நிலையை இல்லை நிர்ணயம்

கிராம நத்தம் நிலவரித்திட்ட முறைப்படி வரையறை செய்யப்பட்ட புறம்போக்கு நிலத்தில் அரசு மற்றும் பொதுப்பணிகளுக்காக ஒதுக்கப்பட்ட 60 சென்ட் நிலத்தில் பயன்படுத்தப்பட்ட அளவுக்கு நீக்கம் செய்து புல எண்களுக்கு மாறுதல் செய்யப்பட்ட பின்னர் மீதமுள்ள நிலம் மற்றும் கிராமம் விரிவாக்கத்திற்காக ஒதுக்கப்பட்ட நிலம் ஆகியவற்றை சேர்த்து புல எண் 943/2 ல் புறம்போக்கு நிலமாக்கப்பட்டு தேனி மாவட்ட ஆட்சியரின் ஆணைப்படி புல எண் 927/1, 2, 3, 4, 5, 938/2, 1A, 939/2, 940/2, 3, 941/1, 942/2, 943/1, 2, ஆகிய அனைத்து உள்பிரிவுகளும் 15.14.00 ஹெக்டேர் மொத்த நிலம் அரசு புறம்போக்கு நிலமாக மாற்றப்பட்டு, இது தொடர்பாக கிராம நிர்வாக அலுவலர் குறிப்பு தயார் செய்து வருவாய் கோட்டாட்சியர் ஒப்புதலுக்காக சமர்ப்பிக்கப்படுகிறது.

Village Administrative Officer
Thimmarasanaickanur-Bit-1
Aundipatti Tk. Theni Dt

(5)

கடலூர் மாவட்டம், விருத்தாசலம் வட்டம், கருவேப்பிலங்குறிச்சி கிராமம், புல எண் 927/1, 2, 3, 4, 5, 938/1A, 2, 939/2, 940/1, 2, 3, 941/-, 942/-, 943/1, 2 ஆகிய மொத்த பரப்பளவு 4.00.00 ஹெக்டேர் நன்செய் நிலத்தினை (1), ஆகிய நான்கு பேரையும் பிரதிவாதிகளாக (3) சேர்த்து வாதி கொண்டு வந்த வழக்கில் 1 முதல் 3 வரையிலான பிரதிவாதிகள் ஒரே வழக்கறிஞர் மூலம் ஆஜராகி தனித்தனியே எழுத்துப்பூர்வமான வாதுரைகளை தாக்கல் செய்துள்ளனர்.

வாதி தரப்பில், தங்களுக்கு சொந்தமான மேற்படி நன்செய் நிலத்தினை அட்டவணை - I விவரப்படி 4 ஹெக்டேர் 00 ஏர் பரப்பினை 927/1 - 0.18.00, 927/4 - 1.25.50, 927/5 - 0.50.50, 939/2 - 0.45.50, பரப்பளவுள்ள 5891, 6334 ஆகிய 06 பட்டா எண்களில் கொண்ட நன்செய் நிலத்தினை 2011-ம் ஆண்டு முதல் அனுபவித்து வருவதாகவும், மேற்படி நிலத்தினை 927/3 - 1.26.50, 940/1 - 0.65.50 பரப்பளவுள்ள 2653 ஆகிய பட்டா எண்களில் 938/1A - 0.95.50, 941/- 0.20.50, 942/- 1.00.50 பரப்பளவுள்ள 5893, 2653 ஆகிய பட்டா எண்களில் தனித்தனியே

- 2 -

புதுமனை 27.11.2023 அன்று பொது மக்கள் பார்வைக்கு கருத்துகேட்பு நடைபெறுவது குறித்து, அரசு அலுவலர்களுக்கு, பொது அமைதி ஏற்படுத்துவது 40 எண் 943/2-ல் பகுதிக்கு ராம ராமசுப்பர் உரிமை என்ற நிலை தொடர்பான ஆவணம் ஏற்படுத்தி உள்ளது. இப்பொது அமைதி ஏற்படுத்தும் உரிமை குறித்து எனது பகுதி 927/1,2,3,4,5 938/2,1A, 939/2, 940/2,3,1 941/1, 942/2, 943/1,2 தொடர்பு இல்லை எனவே 15.14.00 மணிக்கு மஞ்சுளா எதிர்பார்த்து இது எனக்கு தெரிவித்தார். இதனால் மனிதம் மரணம் ஏற்படுத்தும் இடத்தில் தொடர்பு கொண்டு பார்வைக்கு உடல்நலம் பாதிக்கப்பட்டு ஏற்படுத்தும் நிலை தொடர்பு கொண்டு தெரிவித்தார். இதனால் ஏற்படும் பாதிப்பு தொடர்பு கொண்டு தெரிவித்தார்.

30.11.23

விருதாய் ஆய்வாளர்
ஆண்டிபட்டி.

ந.க.எண்.. 6965/2023/அ5

வருவாய் கோட்டாட்சியர் அலுவலகம்,
பெரியகுளம். நாள் :03.11.2023.

குறிப்பாணை

பொருள்: கனிமங்களும் குவாரிகளும் - சிறுகனிமம் - கிராவல் - தேனி மாவட்டம் - ஆண்டிபட்டி வட்டம் - திம்மரசநாயக்கனூர் பிட்-1 கிராமம் - புல எண்கள்.927/1, 927/2, 927/3, 927/4, 927/5, 938/1A, 938/2, 939/2, 940/1, 940/3, 941, 942, 943/1, 943/2-இல் மொத்த விஸ்தீரணம் 15.14.00 ஹெக்டேர் பரப்பில் 10 (பத்து) ஆண்டுகளுக்கு உடைகல் மற்றும் கிராவல் குவாரி குத்தகை உரிமம் கோரி திரு. செ.செல்வம் த/பெ செல்லத்துரை என்பவர் விண்ணப்பம் செய்தது - அறிக்கை கோருதல் - தொடர்பாக.

பார்வை: தேனி உதவி இயக்குநர் புவியியல் மற்றும் சுரங்கத்துறை கடித ந.க.எண்.483/கனிமம்/2023, நாள்: 21.10.2023.

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தேனி மாவட்டம், ஆண்டிபட்டி வட்டம், திம்மரசநாயக்கனூர் பிட்-1 கிராமம், புல எண்கள்.927/1, 927/2, 927/3, 927/4, 927/5, 938/1A, 938/2, 939/2, 940/1, 940/3, 941, 942, 943/1, 943/2-இல் மொத்த விஸ்தீரணம் 15.14.00 ஹெக்டேர் பரப்பில் 10 (பத்து) ஆண்டுகளுக்கு உடைகல் மற்றும் கிராவல் குவாரி குத்தகை உரிமம் கோரி திரு. செ.செல்வம் த/பெ செல்லத்துரை, என்பவர் மனுச் செய்தன் பேரில் அனுமதி வழங்குவது குறித்து புலத்தணிக்கை செய்து பிரேரணையினை அனுப்பி வைக்குமாறு பார்வையில் காணும் கடிதம் வரப்பெற்றுள்ளது. அக்கடித நகல் இத்துடன் இணைத்துனுப்பப்பட்டுள்ளது. கனிம சேமிப்பு நிலையம் உரிமம் வழங்கக் கோரும் நிலத்தின் மீதான உரிமை (Surface Right) விண்ணப்பதாரருக்கு உள்ளதா? இப்புலத்தை புலத்தணிக்கை செய்து, 500 மீட்டர் சுற்றளவில் அங்கீகரிக்கப்பட்ட குடியிருப்புகள் மற்றும் 50 மீட்டர் சுற்றளவில் புராதானச் சின்னங்கள், கோவில், மயானம், மின்கம்பங்கள் மற்றும் ஆட்சேபகரமான அமைப்புகள், ஓடைகள் இருப்பின் அதனை புலவரைபடத்தில் குறித்து வண்ணமிட்டு, மேற்கண்ட பட்டா நிலம் அரசு ஒப்படை செய்யப்பட்ட நிலமா? அல்லது பஞ்சமர் தரிசு நிலமா? என்பதற்கும், விண்ணப்பம் செய்யப்பட்டுள்ள நிலத்தைச் சுற்றியுள்ள பட்டா நிலங்களின் வகைபாடு மற்றும் சம்பந்தப்பட்ட பட்டா நிலத்திற்கு பாதை வசதி உள்ளதா? என்பதற்கும், பாதை வசதி இருப்பின் அதனை கூட்டுப்புல வரைபடத்தில் தெளிவாக காட்டியும், புலத்தணிக்கை குறிப்பு மற்றும் அறிக்கையினை அனுப்பிவைக்குமாறு ஆண்டிபட்டி வட்டாட்சியர் கேட்டுக் கொள்ளப்படுகிறார்.

இணைப்பு: கடித நகல்

ஒம்/- த.முத்து மாதவன்,
வருவாய் கோட்டாட்சியர்,
பெரியகுளம்.

/உ.ந.உ.ப/.

நேர்முக உதவியாளர்.

பெறுநர் :

வட்டாட்சியர்,
ஆண்டிபட்டி.

3/11/2023

அனுப்புநர்
உதவி இயக்குநர்,
புவியியல் மற்றும் சுரங்கத்துறை,
தேனி.

பெறுநர்
வருவாய் கோட்டாட்சியர்,
பெரியகுளம்.

ந.க.எண்.483/கனிமம்/2023-1, நாள். 21.09.2023

ஐயா,

பொருள்: கனிமங்களும் சுரங்கங்களும் - சிறுகனிமம் - உடைகல் மற்றும் கிராவல் - தேனி மாவட்டம் - ஆண்டிபட்டி வட்டம் - திம்மரசநாயக்கனூர் பிட் 1 கிராமம் - புல எண்கள். 927/1, 927/2, 927/3, 927/4, 927/5, 938/1A, 938/2, 939/2, 940/1, 940/2, 940/3, 941, 942, 943/1, 943/2-இல் மொத்த விஸ்தீரணம் 15.14.00 ஹெக்டேர் பரப்பில் - 10 (பத்து) ஆண்டுகளுக்கு உடைகல் மற்றும் கிராவல் குவாரி குத்தகை உரிமம் கோரி - திரு.செ.செல்வம் த/பெ.செல்லத்துரை என்பவர் விண்ணப்பம் செய்தது - அறிக்கை கோருதல் தொடர்பாக.

பார்வை: திரு.செ.செல்வம் த/பெ.செல்லத்துரை, எண்.38 நடுத்தெரு, பிராதுக்காரன்பட்டி, சண்முகசுந்தரபுரம், ஆண்டிபட்டி வட்டம், தேனி மாவட்டம். விண்ணப்பம் நாள்: இல்லை (இவ்வலுவலகத்தில் கிடைக்கப் பெற்ற நாள்: 20.09.2023).

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தேனி மாவட்டம், ஆண்டிபட்டி வட்டம், திம்மரசநாயக்கனூர் பிட் 1 கிராமம், புல எண்கள். 927/1, 927/2, 927/3, 927/4, 927/5, 938/1A, 938/2, 939/2, 940/1, 940/2, 940/3, 941, 942, 943/1, 943/2-இல் மொத்த விஸ்தீரணம் 15.14.00 ஹெக்டேர் பரப்பில் பரப்பில் 10 (பத்து) ஆண்டுகளுக்கு உடைகல் மற்றும் கிராவல் குவாரி குத்தகை உரிமம் கோரி திரு.செ.செல்வம் த/பெ.செல்லத்துரை, என்பவர் பார்வையில் கண்டவாறு விண்ணப்பம் செய்துள்ளார். மேற்படி விண்ணப்பம் மற்றும் தொடர்புடைய ஆவணங்களின் நகல்கள் இத்துடன் இணைத்து அனுப்பப்படுகிறது. விண்ணப்பப் புலத்தில் மனுதாரருக்கு குத்தகை உரிமம் வழங்குவது தொடர்பாக தங்களது முன்மொழிவினை கீழ்காணும் விபரங்களுடன் விரிவான விசாரணை அறிக்கையினை அனுப்பி வைக்குமாறு கேட்டுக் கொள்கிறேன்.

நிபந்தனைகள்

1. விண்ணப்பதாரருக்கு நிலத்தில் முழு உரிமை உள்ளதா என்பதை 10(1) பட்டா. கிரைய ஆவணம் மற்றும் வில்லங்கச் சான்றுடன் ஒப்பிட்டு அறிக்கை அனுப்பப்பட வேண்டும்.

2. குவாரி செய்ய உத்தேசிக்கப்பட்டுள்ள விண்ணப்ப புலம் அமைந்துள்ள நிலத்தினை மனுதாரர் பட்டாதாரரிடமிருந்து குத்தகை அடிப்படையில் பெறும் நோ்வில் குத்தகை ஆவணமானது பதிவு செய்யப்பட்ட ஆவணமாக இருக்க வேண்டும்.

3. அங்கீகரிக்கப்பட்ட குடியிருப்பிலிருந்து 300 மீட்டர் தொலைவில் இருக்க வேண்டும்.

4. கோயில், மசூதி, நினைவுச் சின்னங்கள், உயர் மற்றும் தாழ்வழுத்த மின்பாதைகள் மற்றும் இடுகாடு ஆகியவற்றிலிருந்து வரையறுக்கப்பட்ட பாதுகாப்பு இடைவெளி 50 மீட்டர் இருத்தல் வேண்டும்.

5. புராதன சின்னங்கள் மற்றும் பழமையான கல்வெட்டுகள் ஆகியவற்றிலிருந்து வரையறுக்கப்பட்ட பாதுகாப்பு இடைவெளி 500 மீட்டர் இருத்தல் வேண்டும்.

6. இருப்புப்பாதை, சாலை, மின் இணைப்புகள் குளம், ஓடை மற்றும் கால்வாய் போன்ற நீர்நிலையிலிருந்து 50 மீட்டர் தூரத்தில் இருக்க வேண்டும். விண்ணப்ப புலமானது மாண்புமிகு உச்சநீதிமன்ற தீர்ப்பின் அடிப்படையில் விண்ணப்பதாரருக்கு பாத்தியப்பட்டுள்ளதாக உத்தரவிடப்பட்டுள்ள சொத்தின் பட்டியலில் இடம் பெற்றுள்ளதா என்பதை பட்டியலுடன் ஒப்பிட்டு அறிக்கை செய்ய வேண்டும்.

7. பிரஸ்தாப நிலத்தில் நீர்நிலைகள், நிலவியல் ஓடைகள் ஏதும் உள்ளனவா என்பதையும் பரிசீலித்து அறிக்கையில் குறிப்பிட வேண்டும்.

8. கிராமத்தில் A-1 அறிவிப்பு பிரசுரிக்கப்பட வேண்டும் மற்றும் மேற்கண்ட இடத்தில் கற்குவாரி குத்தகை உரிமம் வழங்கிட பொதுமக்கள் ஆட்சேபனை உள்ளதா என்ற விபரம் அறிக்கையில் இடம் பெற வேண்டும்.

9. குவாரி செய்து கனிமம் கொண்டு வர பாதை வசதி இருக்க வேண்டும். அணுகு பாதை, நில வகைப்பாடு பற்றிய விபரம், பாதை அமைந்துள்ள புல எண்களுக்கான நிலங்களின் பட்டாதாரர்கள் விபரம் மற்றும் சம்மந்தப்பட்ட பட்டாதாரரிடமிருந்து பாதை வசதி உபயோகிக்கும் வகைக்கு சம்மதக் கடிதம் மற்றும் வாக்குமூலம் ஆகியவற்றை சம்மந்தப்பட்ட ஆவணங்களுடன் குறிப்பிடப்பட வேண்டும்.

10. குவாரி செய்ய உத்தேசிக்கப்பட்டுள்ள விண்ணப்ப புலத்தின் நான்கு மால்களும், வகைபாடு மற்றும் பாதை வசதி அமைந்துள்ள புல எண்கள் ஆகியவற்றை காண்பிக்கும் வரைபடம் கிராம நிர்வாக அலுவலர், அளவர் மற்றும் வட்டாட்சியர் கையொப்பத்துடன் இரண்டு பிரதிகள் அனுப்பப்பட வேண்டும்.

11. விண்ணப்ப புல எண், கள்ளர் கண்டிஷன் ஜாரி, பஞ்சமர் கண்டிஷன் ஜாரி, இதர கண்டிஷன் ஜாரி நிலங்களா, தடை ஆணை புத்தகத்தில் குறிப்பிட்டுள்ளதா என்றும் அரசு வகைக்கு சிறப்பு ஒதுக்கீடு ஏதேனும் செய்யப்பட்டுள்ளதா என்றும் குறிப்பிடப்பட வேண்டும்.

12. விண்ணப்ப புலத்தில் ஏற்கனவே மண் குடைவு செய்யப்பட்ட குழி/குழிகள் இருப்பின் பழைய குழி/குழிகளின் நீளம், அகலம் மற்றும் ஆழம் ஆகியவற்றின் விபரங்களை உள் மற்றும் புற அளவுகளுடன் வரைபடத்தில் குறித்து மேலொப்பமிட்டு அனுப்பப்பட வேண்டும்.

13. விண்ணப்பபுலம் ஒன்றுக்கு மேற்பட்டதாக இருப்பின் கூட்டு வரைபடம் தயார் செய்து மேற்கண்ட விபரங்களுடன் மேலொப்பமிட்டு அனுப்பப்பட வேண்டும்.

14. தலையிடமிருந்து கனிம பாக்கி மற்றும் வருவாய் வசூல் சட்டத்தின்படி வசூலிக்கப்பட வேண்டிய நிலுவைத் தொகை ஏதேனும் உள்ளதா என்பதற்கு அறிக்கை செய்ய கேட்டுக்கொள்ளப்படுகிறது.

15. பாதுகாக்கப்பட்ட வனப்பகுதி / வனவிலங்குகள் / மான் சரணாலயம் ஏதும் அருகிலிருப்பின் அதற்கான பாதுகாப்பு இடைவெளி உள்ளதா? என்றும் குறிப்பிடப்பட வேண்டும்.

இணைப்பு: மனுவின் நகல்

21/9/23

உதவி இயக்குநர்,
புவியியல் மற்றும் சுரங்கத்துறை,
தேனி.

நகல்: வட்டாட்சியர், ஆண்டிபட்டி

21/9/23

அனுப்புநர்

திரு. த. முத்து மாதவன், பி.இ.,
பருவாய் கோட்டாட்சியர்,
பெரியகுளம்.

பெறுநர்

மாவட்ட ஆட்சித்தலைவர்,
தேனி.

ந.க.எண். 8719/2023/அ5 நாள்: 19.12.2023

அம்மையீர்,

பொருள்: கனிமங்களும் குவாரிகளும் - சிறு கனிமம் - தேனி மாவட்டம் - ஆண்டிபட்டி வட்டம் - திம்மரசநாயக்கனூர் பிட்-1 கிராமம் - புல எண். 927/1, 2, 3, 4, 5, 938/1ஏ, 2, 939/2, 940/1, 2, 3, 941, 942 மற்றும் 943/1, 2-ல் மொத்த விஸ்தீரணம் 15.14.00 ஹெக்டேர் பரப்பளவில் 3 வருடங்களுக்கு உடைகல், ஜல்லி மற்றும் கிராவல் குவாரி அமைப்பதற்கு அனுமதி கோரி திரு. செ.செல்வம், த/பெ. செல்லத்துரை என்பவருக்கு குவாரி குத்தகை உரிமம் வழங்கக்கோரி வரப்பெற்ற மனு தொடர்பாக - அறிக்கை அனுப்பிவைத்தல் - தொடர்பாக

பார்வை: ஆண்டிபட்டி வட்டாட்சியர் கடிதம் ந.க.எண். 202/2023/அ4 நாள்: 02.12.2023.

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தேனி மாவட்டம், ஆண்டிபட்டி வட்டம், திம்மரசநாயக்கனூர் பிட்-1 கிராமம், புல எண். 927/1, 2, 3, 4, 5, 938/1ஏ, 2, 939/2, 940/1, 2, 3, 941, 942 மற்றும் 943/1, 2-ல் மொத்த விஸ்தீரணம் 15.14.00 ஹெக்டேர் பரப்பளவில் 3 வருடங்களுக்கு உடைகல், ஜல்லி மற்றும் கிராவல் குவாரி அமைப்பதற்கு அனுமதி கோரி திரு. செ.செல்வம், த/பெ. செல்லத்துரை என்பவர் மனு செய்துள்ளது தொடர்பாக பார்வையில் காணும் அறிக்கையினை ஆண்டிபட்டி வட்டாட்சியர் சமர்பித்துள்ளார்.

ஆண்டிபட்டி வட்டாட்சியரின் அறிக்கையின் அடிப்படையில் மேற்கண்ட புலத்தினை கடந்த 15.12.2023-ம் தேதியன்று புலத்தணிக்கை செய்யப்பட்டது.

மேற்படி மனுதாரர் மேற்கூறிய புல எண்கள். 927/1, 2, 3, 4, 5, 938/1ஏ, 2, 939/2, 940/1, 2, 3, 941, 942 மற்றும் 943/1, 2-ல் மொத்த விஸ்தீரணம் 15.14.00 ஹெக்டேர் நிலமானது தங்கராஜ்தேவர் மகன் தனிக்கொடி-1, தனிக்கொடி மனைவி பவளக்கொடி என்பவர்களின் பெயரில் பட்டா தாக்கலாகியுள்ளது. மேற்படி நில உரிமையாளர்கள் திரு.செ.செல்வம், த/பெ. செல்லத்துரை என்பவருக்கு உடைகல் மற்றும் கிராவல் குவாரி அமைக்க சம்மத பத்திரம் கொடுத்துள்ளார். பிரஸ்தாப புலத்தைச் சுற்றி 500 மீட்டர் சுற்றளவில் அங்கீகரிக்கப்பட்ட குடியிருப்புகள் ஏதுமில்லை. மேலும் பிரஸ்தாப புலத்தைச் சுற்றி 50 மீட்டர் சுற்றளவில் புராதானச் சின்னங்கள், கோவில், மயானம், மின்கம்பங்கள் (உயர் மின்னழுத்தம்), ஓடைகள், ஆட்சேபகரமான அமைப்புகள் ஏதுமில்லை. பிரஸ்தாப புலமானது ஒப்படை செய்யப்பட்ட நிலம்

மற்றும் பஞ்சமர் நிலம் பதிவேட்டில் இல்லை. மேற்கூறிய புலமானது புன்செய் வகைப் உள்ளது. மேற்படி புல எண்களுக்கு சிறுகனிமம் உடைகல் மற்றும் கிராவல் குவாரி குத்த உரிமம் வழங்குவது தொடர்பாக கிராம நிர்வாக அலுவலர் தகவல் பலகையில் ஏ1 நோட்டீ வைக்கப்பட்டு ஆட்சேபனை ஏதுமில்லை.

பிரஸ்தாப புலத்தின் நான்குமால் விபரம் பின்வருமாறு:

புல எண்	கிழக்கு	வடக்கு	மேற்கு	தெற்கு
927/1	913. தனிக்கொடி	912 ஓடை	927/2 பவளக்கொடி	927/4 பவளக்கொடி
927/2	927/5 பவளக்கொடி	927/1 பவளக்கொடி	927/3 தனிக்கொடி	927/4 பவளக்கொடி
927/3	927/2 பவளக்கொடி	912 ஓடை	928 அரசு புறம்போக்கு	927/4 பவளக்கொடி
927/4	926/1 ராஜவேல்பாண்டியன்	927/3 தனிக்கொடி 927/2 பவளக்கொடி	928 அரசு புறம்போக்கு	943/1 தனிக்கொடி மற்றும் நபர்கள்.
927/5	926/1 ராஜவேல்பாண்டியன்	913/1 தனிக்கொடி	927/2 பவளக்கொடி	927/4 பவளக்கொடி
938/1ஏ	938/2 தனிக்கொடி மற்றும் நபர்கள்	940/1 பவளக்கொடி	930 ஜான்	938/1பி2 ராஜவேல்பாண்டியன் 938/1பி1 சின்னத்துரை
938/2	942 தனிக்கொடி	940/3 தனிக்கொடி மற்றும் நபர்கள்	938/1பி2 ராஜவேல்பாண்டியன்	937 அரசு புறம்போக்கு
939/2	940/1 பவளக்கொடி	939/1ஆண்டிச்சி மற்றும் நபர்கள்	930/2, 3 ஜான்	938/1ஏ தனிக்கொடி
940/1	940/3 தனிக்கொடி	939/1 ஆண்டிச்சி மற்றும் நபர்கள்	939/2 பவளக்கொடி	938/1பி1 சின்னத்துரை
940/2	943/1 தனிக்கொடி மற்றும் நபர்கள்	928 புறம்போக்கு	939/2 பவளக்கொடி	940/3 தனிக்கொடி
940/3	943/1 தனிக்கொடி	940/2 தனிக்கொடி	940/1 பவளக்கொடி	938/1பி2 ராஜவேல்பாண்டியன் 938/2 தனிக்கொடி மற்றும் பவளக்கொடி
941	943/1 தனிக்கொடி மற்றும் நபர்கள்	940/3 தனிக்கொடி மற்றும் நபர்கள்	940/3 தனிக்கொடி 938/2 தனிக்கொடி மற்றும் நபர்கள்	942 தனிக்கொடி
942	943/2 தனிக்கொடி மற்றும் நபர்கள்	941 தனிக்கொடி	938/2 தனிக்கொடி	943/2 தனிக்கொடி மற்றும் நபர்கள்
943/1	2364 பவளக்கொடி	927/4 பவளக்கொடி 945 பவளக்கொடி	940 தனிக்கொடி மற்றும் நபர்கள் 941 தனிக்கொடி	943/2 தனிக்கொடி மற்றும் நபர்கள்
943/2	944/1, 2, 3 பவளக்கொடி	943/1 தனிக்கொடி மற்றும் நபர்கள்	941 தனிக்கொடி 942 தனிக்கொடி	951 பவளக்கொடி

குவாரி குத்தகை ரூ 1 ஸ்டாம்ப்

எனவே, ஆண்டிபட்டி வட்டம், திம்மரசநாயக்கனூர் பிட்-1 கிராமம், புல எண். 927/1, 4, 5, 938/1ஏ, 2, 939/2, 940/1, 2, 3, 941, 942 மற்றும் 943/1, 2-ல் மொத்த விஸ்தீரணம் 5.14.00 ஹெக்டேர் பரப்பளவில் உடைகல், ஜல்லி மற்றும் கிராவல் குவாரி அமைக்க திரு. செ.செல்வம், த/பெ. செல்லத்துரை என்பவருக்கு மூன்று வருடங்களுக்கு அனுமதி வழங்க பரிந்துரை செய்து இத்துடன் புலத்தணிக்கைக் குறிப்பு மற்றும் ஆண்டிபட்டி வட்டாட்சியரது அறிக்கையுடன் வரப்பெற்ற வருவாய் கணக்குகளின் நகல்களை இணைத்து அனுப்பியுள்ளேன் என்பதைப் பணிவுடன் தெரிவித்துக்கொள்கிறேன்.

இணைப்பு: மேற்கண்டவாறு

தங்கள் நம்பிக்கையுள்ள,
ஒம்/-த. முத்து மாதவன்,
வருவாய் கோட்டாட்சியர்,
பெரியகுளம்.

/உ.ந.உப/

நேர்முக உதவியாளர்
19.12.2023

19/12/23

புலத்தணிக்கை குறிப்பு
நாள்: 15 .12.2023

தேனி மாவட்டம், ஆண்டிபட்டி வட்டம், திம்மரசநாயக்கனூர் பிட்-1 கிராமம், புல எண். 927/1, 2, 3, 4, 5, 938/1ஏ, 2, 939/2, 940/1, 2, 3, 941, 942 மற்றும் 943/1, 2-ல் மொத்த விஸ்தீரணம் 15.14.00 ஹெக்டேர் பரப்பளவில் 10 வருடங்களுக்கு உடைகல், ஜல்லி மற்றும் கிராவல் குவாரி அமைப்பதற்கு அனுமதி கோரி திரு. செ.செல்வம், த/பெ. செல்லத்துரை என்பவர் மனுவின் பிரஸ்தாப புலங்களை இன்று (15.12.2023) தணிக்கை செய்யப்பட்டது.

மேற்படி மனுதாரர் மேற்கூறிய புல எண்கள். 927/1, 2, 3, 4, 5, 938/1ஏ, 2, 939/2, 940/1, 2, 3, 941, 942 மற்றும் 943/1, 2-ல் மொத்த விஸ்தீரணம் 15.14.00 ஹெக்டேர் நிலமானது தங்கராஜ்தேவர் மகன் தனிக்கொடி-1, தனிக்கொடி மனைவி பவளக்கொடி என்பவர்களின் பெயரில் பட்டா தாக்கலாகியுள்ளது. மேற்படி நில உரிமையாளர்கள் திரு.செ.செல்வம், த/பெ. செல்லத்துரை என்பவருக்கு உடைகல் மற்றும் கிராவல் குவாரி அமைக்க சம்மத பத்திரம் கொடுத்துள்ளார். பிரஸ்தாப புலத்தைச் சுற்றி 500 மீட்டர் சுற்றளவில் அங்கீகரிக்கப்பட்ட குடியிருப்புகள் ஏதுமில்லை. மேலும் பிரஸ்தாப புலத்தைச் சுற்றி 50 மீட்டர் சுற்றளவில் புராதானச் சின்னங்கள், கோவில், மயானம், மின்கம்பங்கள் (உயர் மின்னழுத்தம்), ஓடைகள், ஆட்சேபகரமான அமைப்புகள் ஏதுமில்லை. பிரஸ்தாப புலமானது ஒப்படை செய்யப்பட்ட நிலம் மற்றும் பஞ்சமர் நிலம் பதிவேட்டில் இல்லை. மேற்கூறிய புலமானது புன்செய் வகைப்பாட்டில் உள்ளது. மேற்படி புல எண்களுக்கு சிறுகனிமம் உடைகல் மற்றும் கிராவல் குவாரி குத்தகை உரிமம் வழங்குவது தொடர்பாக கிராம நிர்வாக அலுவலர் தகவல் பலகையில் ஏ1 நோட்டீஸ் வைக்கப்பட்டு ஆட்சேபணை ஏதுமில்லை.

பிரஸ்தாப புலத்தின் நான்குமால் விபரம் பின்வருமாறு:

புல எண்	கிழக்கு	வடக்கு	மேற்கு	தெற்கு
927/1	913. தனிக்கொடி	912 ஓடை	927/2 பவளக்கொடி	927/4 பவளக்கொடி
927/2	927/5 பவளக்கொடி	927/1 பவளக்கொடி	927/3 தனிக்கொடி	927/4 பவளக்கொடி
927/3	927/2 பவளக்கொடி	912 ஓடை	928 அரசு புறம்போக்கு	927/4 பவளக்கொடி
927/4	926/1 ராஜவேல்பாண்டியன்	927/3 தனிக்கொடி 927/2 பவளக்கொடி	928 அரசு புறம்போக்கு	943/1 தனிக்கொடி மற்றும் நபர்கள்.
927/5	926/1 ராஜவேல்பாண்டியன்	913/1 தனிக்கொடி	927/2 பவளக்கொடி	927/4 பவளக்கொடி
938/1ஏ	938/2 தனிக்கொடி மற்றும் நபர்கள்	940/1 பவளக்கொடி	930 ஜான்	938/1பி2 ராஜவேல்பாண்டியன் 938/1பி1 சின்னத்துரை

938/2	942 தனிக்கொடி	940/3 தனிக்கொடி மற்றும் நபர்கள்	938/1பி2 ராஜவேல்பாண்டியன	937 அரச புறம்போக்கு
939/2	940/1 பவளக்கொடி	939/1ஆண்டிச்சி மற்றும் நபர்கள்	930/2, 3 ஜான்	938/1ஏ தனிக்கொடி
940/1	940/3 தனிக்கொடி	939/1 ஆண்டிச்சி மற்றும் நபர்கள்	939/2 பவளக்கொடி	938/1பி1 சின்னத்துரை
940/2	943/1 தனிக்கொடி மற்றும் நபர்கள்	928 புறம்போக்கு	939/2 பவளக்கொடி	940/3 தனிக்கொடி
940/3	943/1 தனிக்கொடி	940/2 தனிக்கொடி	940/1 பவளக்கொடி	938/1பி2 ராஜவேல்பாண்டியன் 938/2 தனிக்கொடி மற்றும் பவளக்கொடி
941	943/1 தனிக்கொடி மற்றும் நபர்கள்	940/3 தனிக்கொடி மற்றும் நபர்கள்	940/3 தனிக்கொடி 938/2 தனிக்கொடி மற்றும் நபர்கள்	942 தனிக்கொடி
942	943/2 தனிக்கொடி மற்றும் நபர்கள்	941 தனிக்கொடி	938/2 தனிக்கொடி	943/2 தனிக்கொடி மற்றும் நபர்கள்
943/1	2364 பவளக்கொடி	927/4 பவளக்கொடி 945 பவளக்கொடி	940 தனிக்கொடி மற்றும் நபர்கள் 941 தனிக்கொடி	943/2 தனிக்கொடி மற்றும் நபர்கள்
943/2	944/1, 2, 3 பவளக்கொடி	943/1 தனிக்கொடி மற்றும் நபர்கள்	941 தனிக்கொடி 942 தனிக்கொடி	951 பவளக்கொடி

எனவே, ஆண்டிபட்டி வட்டம், திம்மரசநாயக்கனூர் பிட்-1 கிராமம், புல எண். 927/1, 2, 3, 4, 5, 938/1ஏ, 2, 939/2, 940/1, 2, 3, 941, 942 மறறும் 943/1, 2-ல் மொத்த விஸ்தீரணம் 15.14.00 ஹெக்டேர் பரப்பளவில் 10 வருடங்களுக்கு உடைகல், ஜல்லி மற்றும் கிராவல் குவாரி அமைக்க திரு. செ.செல்வம், த/பெ. செல்லத்துரை என்பவருக்கு அனுமதி வழங்கலாம்.

வருவாய் கோட்டாட்சியர்,
பெரியகுளம்.

புலத்தணிக்கை குறிப்பு
நாள்: 15 .12.2023

தேனி மாவட்டம், ஆண்டிபட்டி வட்டம், திம்மரசநாயக்கனூர் பிட்-1 கிராமம், புல எண்: 946/1, 946/4, 947/1, 947/2, 947/3 மற்றும் 2364-இல் விஸ்தீரணம் 7.80.5 ஹெக்டேர் பரப்பில் அமைந்துள்ள பட்டா நிலத்தில் உடைகல், எம்.சாண்ட், ஜல்லி, கிரஷர் தூசி கனிம சேமிப்பு மையம் அமைப்பதற்கு அனுமதி கோரி தி/ள். டி.டி.கே. புளூமெட்டல்ஸ் உரிமையாளர் திரு.த.தனிக்கொடி த/பெ. தங்கராஜ் என்பவர் மனுவின் பிரஸ்தாப புலங்களை இன்று (15-12.2023) தணிக்கை செய்யப்பட்டது.

மனுதாரர் அனுமதி கோரியுள்ள திம்மரசநாயக்கனூர் பிட்-1 கிராமம், புல எண்கள். 947/1 விஸ்தீரணம் 1.47.5 ஹெக்டேர், 947/2-ல் விஸ்தீரணம் 1.81.5 ஹெக்டேர், 947/3-ல் விஸ்தீரணம் 0.44.5 ஹெக்டேர் மற்றும் 946/4-ல் விஸ்தீரணம் 0.84.5 ஹெக்டேர் ஆகியவை தனிக்கொடி த/பெ. தங்கராஜ் என்ற பெயரிலும், 946/1-ல் விஸ்தீரணம் 0.73.0 ஹெக்டேர், 2364-ல் விஸ்தீரணம் 2.49.5 ஹெக்டேர் பவளக்கொடி க/பெ. தனிக்கொடி என்ற பெயரிலும் பட்டா தாக்கலாகியுள்ளது. திருமதி.பவளக்கொடி என்பவர் மேற்படி நிலங்களில் தனது கணவர் தனிக்கொடி என்பவர் மேற்படி கனிம இருப்பு மையம் வைத்து பயன்படுத்திக்கொள்ள சம்மதம் தெரிவித்துள்ளார். மேற்கூறிய புலமானது புஞ்சை வகைப்பாட்டில் உள்ளது.

பிரஸ்தாப புலத்தின் நான்குமால் விபரம் பின்வருமாறு:

புல எண்	கிழக்கு	வடக்கு	மேற்கு	தெற்கு
946/1	2364	948/3	946/2, 4	944
946/4	946/2	947/1	944/3	946/1
947/1	946/4	947/2	947/3	948/2
947/2	947/1	969/4	947/3	948/2
947/3	946/3	970/3	947/4	947/2
2364	945	946/4	2416/1	943/2

பிரஸ்தாப புலமானது தற்போது தரிசாக உள்ளது. பிரஸ்தாப புலத்திலிருந்து 500 மீட்டர் சுற்றளவில் அங்கீகரிக்கப்பட்ட குடியிருப்புகள் மற்றும் 50 மீட்டர் சுற்றளவில் புராதானச் சின்னங்கள், கோவில், மயானம், மின்கம்பங்கள் மற்றும் ஆட்சேபகரமான அமைப்புகள் ஏதும் இல்லை. பிரஸ்தாப புலத்தின் வழியே உயர்மின்னழுத்த கோபுரங்கள் செல்லவில்லை. பிரஸ்தாப புலத்தில் ஆக்கிரமிப்புகள் மற்றும் விலையுயர்ந்த மரங்கள் ஏதும் இல்லை. பிரஸ்தாப புலமானது அரசு ஒப்படை நிலமாகவோ, பஞ்சமர் தரிசு நிலமாகவோ, கள்ளர்ஜாரி நிலமாகவோ இல்லை. மேலும் தடையாணை புத்தகத்தில் இடம்பெறவில்லை. பிரஸ்தாப புலங்களில் நீர்நிலைகள் மற்றும் நிலவியல் ஓடைகள் ஏதுமில்லை.

மனுதாரர் ஏற்கனவே கல்குவாரி மற்றும் கிரஷர் யூனிட் அனுமதி பெற்று நடத்தி வருவதால் அதில் கிடைக்கும் அரவை கற்கள், கிரஷர் தூசி இருப்பில் வைக்க மேற்கண்ட பல எண்களில் மொத்த விஸ்தீரணம் 7.80.5 ஹெக்டேர் நிலத்தில் போதுமான இட வசதி உள்ளது. மேற்படி இடத்தில் உடைகல் மற்றும் கிரஷர் தூசி இருப்பு வைத்து உரிமம் வழங்குவது தொடர்பாக அ1 நோட்டீஸ் கிராமத்தில் 09.10.2023 முதல் 26.10.2023 வரை விளம்பரம் செய்யப்பட்டதில், பொதுமக்களிடமிருந்து எவ்வித ஆட்சேபணையும் வரப்பெறவில்லை. பிரஸ்தாப புலத்திற்கு சென்று வரும் பாதை வசதியானது வரைபடத்தில் வண்ணமிட்டு காட்டப்பட்டுள்ளது.

எனவே, ஆண்டிபட்டி வட்டம், திம்மரசநாயக்கனூர் பிட்-1 கிராமம், புல எண்: 946/1, 946/4, 947/1, 947/2, 947/3 மற்றும் 2364-இல் விஸ்தீரணம் 7.80.5 ஹெக்டேர் பரப்பில் அமைந்துள்ள பட்டா நிலத்தில் உடைகல், எம்.சாண்ட், ஜல்லி, கிரஷர் தூசி கனிம சேமிப்பு மையம் அமைக்க தி/ள். டி.டி.கே. புளூமெட்டல்ஸ் உரிமையாளர் திரு.த.தனிக்கொடி த/பெ. தங்கராஜ் என்பவருக்கு அனுமதி வழங்கலாம்.

வருவாய் கோட்டாட்சியர்,
பெரியகுளம்.

(2)

அனுப்புநர்
உதவி இயக்குநர்,
புவியியல் மற்றும் சுரங்கத்துறை,
தேனி.

பெறுநர்
வருவாய் கோட்டாட்சியர்,
பெரியகுளம்.

ந.க.எண்.483/கனிமம்/2023-1, நாள். 21.09.2023

ஐயா,

பொருள்: கனிமங்களும் சுரங்கங்களும் - சிறுகனிமம் - உடைகல் மற்றும் கிராவல் - தேனி மாவட்டம் - ஆண்டிபட்டி வட்டம் - திம்மரசநாயக்கனூர் பிட் 1 கிராமம் - புல எண்கள். 927/1, 927/2, 927/3, 927/4, 927/5, 938/1A, 938/2, 939/2, 940/1, 940/2, 940/3, 941, 942, 943/1, 943/2-இல் மொத்த விஸ்தீரணம் 15.14.00 ஹெக்டேர் பரப்பில் - 10 (பத்து) ஆண்டுகளுக்கு உடைகல் மற்றும் கிராவல் குவாரி குத்தகை உரிமம் கோரி - திரு.செ.செல்வம் த/பெ.செல்லத்துரை என்பவர் விண்ணப்பம் செய்தது - அறிக்கை கோருதல் தொடர்பாக.

பார்வை: திரு.செ.செல்வம் த/பெ.செல்லத்துரை, எண்.38 நடுத்தெரு, பிராதுக்காரன்பட்டி, சண்முகசுந்தரபுரம், ஆண்டிபட்டி வட்டம், தேனி மாவட்டம். விண்ணப்பம் நாள்: இல்லை (இவ்வலுவலகத்தில் கிடைக்கப் பெற்ற நாள்: 20.09.2023).

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தேனி மாவட்டம், ஆண்டிபட்டி வட்டம், திம்மரசநாயக்கனூர் பிட் 1 கிராமம், புல எண்கள். 927/1, 927/2, 927/3, 927/4, 927/5, 938/1A, 938/2, 939/2, 940/1, 940/2, 940/3, 941, 942, 943/1, 943/2-இல் மொத்த விஸ்தீரணம் 15.14.00 ஹெக்டேர் பரப்பில பரப்பில் 10 (பத்து) ஆண்டுகளுக்கு உடைகல் மற்றும் கிராவல் குவாரி குத்தகை உரிமம் கோரி திரு.செ.செல்வம் த/பெ.செல்லத்துரை, என்பவர் பார்வையில் கண்டவாறு விண்ணப்பம் செய்துள்ளார். மேற்படி விண்ணப்பம் மற்றும் தொடர்புடைய ஆவணங்களின் நகல்கள் இத்துடன் இணைத்து அனுப்பப்படுகிறது. விண்ணப்பப் புலத்தில் மறுதாரருக்கு குத்தகை உரிமம் வழங்குவது தொடர்பாக தங்களது முன்மொழிவினை கீழ்காணும் விபரங்களுடன் விரிவான விசாரணை அறிக்கையினை அனுப்பி வைக்குமாறு கேட்டுக் கொள்கிறேன்.

நிபந்தனைகள்

1. விண்ணப்பதாரருக்கு நிலத்தில் முழு உரிமை உள்ளதா என்பதை 10(1) பட்டா, கிரைய ஆவணம் மற்றும் வில்லங்கச் சான்றுடன் ஒப்பிட்டு அறிக்கை அனுப்பப்பட வேண்டும்.
2. குவாரி செய்ய உத்தேசிக்கப்பட்டுள்ள விண்ணப்ப புலம் அமைந்துள்ள நிலத்தினை மறுதாரர் பட்டாதாரரிடமிருந்து குத்தகை அடிப்படையில் பெறும் நேர்வில் குத்தகை ஆவணமானது பதிவு செய்யப்பட்ட ஆவணமாக இருக்க வேண்டும்.
3. அங்கீகரிக்கப்பட்ட குடியிருப்பிலிருந்து 300 மீட்டர் தொலைவில் இருக்க வேண்டும்.
4. கோயில், மகுதி, நினைவுச் சின்னங்கள், உயர் மற்றும் தாழ்வழுத்த மின்பாதைகள் மற்றும் இடுகாடு ஆகியவற்றிலிருந்து வரையறுக்கப்பட்ட பாதுகாப்பு இடைவெளி 50 மீட்டர் இருத்தல் வேண்டும்.

5. புராதன சின்னங்கள் மற்றும் பழமையான கல்வெட்டுகள் ஆகியவற்றிலிருந்து வரையறுக்கப்பட்ட பாதுகாப்பு இடைவெளி 500 மீட்டர் இருத்தல் வேண்டும்.

6. இருப்புப்பாதை, சாலை, மின் இணைப்புகள் குளம், ஓடை மற்றும் கால்வாய் போன்ற நீர்நிலையிலிருந்து 50 மீட்டர் தூரத்தில் இருக்க வேண்டும். விண்ணப்ப புலமானது மாண்புமிகு உச்சநீதிமன்ற தீர்ப்பின் அடிப்படையில் விண்ணப்பதாரருக்கு பாத்தியப்பட்டுள்ளதாக உத்தரவிடப்பட்டுள்ள சொத்தின் பட்டியலில் இடம் பெற்றுள்ளதா என்பதை பட்டியலுடன் ஒப்பிட்டு அறிக்கை செய்ய வேண்டும்.

7. பிரஸ்தாப நிலத்தில் நீர்நிலைகள், நிலவியல் ஓடைகள் ஏதும் உள்ளனவா என்பதையும் பரிசீலித்து அறிக்கையில் குறிப்பிட வேண்டும்.

8. கிராமத்தில் A-1 அறிவிப்பு பிரசுரிக்கப்பட வேண்டும் மற்றும் மேற்கண்ட இடத்தில் கற்குவாரி குத்தகை உரிமம் வழங்கிட பொதுமக்கள் ஆட்சேபனை உள்ளதா என்ற விபரம் அறிக்கையில் இடம் பெற வேண்டும்.

9. குவாரி செய்து கனிமம் கொண்டு வர பாதை வசதி இருக்க வேண்டும். அணுகு பாதை, நில வகைப்பாடு பற்றிய விபரம், பாதை அமைந்துள்ள புல எண்களுக்கான நிலங்களின் பட்டாதார்ர்கள் விபரம் மற்றும் சம்மந்தப்பட்ட பட்டாதாரரிடமிருந்து பாதை வசதி உபயோகிக்கும் வகைக்கு சம்மதக் கடிதம் மற்றும் வாக்குமூலம் ஆகியவற்றை சம்மந்தப்பட்ட ஆவணங்களுடன் குறிப்பிடப்பட வேண்டும்.

10. குவாரி செய்ய உத்தேசிக்கப்பட்டுள்ள விண்ணப்ப புலத்தின் நான்கு மால்களும், வகைபாடு மற்றும் பாதை வசதி அமைந்துள்ள புல எண்கள் ஆகியவற்றை காண்பிக்கும் வரைபடம் கிராம நிர்வாக அலுவலர், அளவர் மற்றும் வட்டாட்சியர் கையொப்பத்துடன் இரண்டு பிரதிகள் அனுப்பப்பட வேண்டும்.

11. விண்ணப்ப புல எண், கள்ளர் கண்டிஷன் ஜாரி, பஞ்சமர் கண்டிஷன் ஜாரி, இதர கண்டிஷன் ஜாரி நிலங்களா, தடை ஆணை புத்தகத்தில் குறிப்பிட்டுள்ளதா என்றும் அரசு வகைக்கு சிறப்பு ஒதுக்கீடு ஏதேனும் செய்யப்பட்டுள்ளதா என்றும் குறிப்பிடப்பட வேண்டும்.

12. விண்ணப்ப புலத்தில் ஏற்கனவே மண் குடைவு செய்யப்பட்ட குழி/குழிகள் இருப்பின் பழைய குழி/குழிகளின் நீளம், அகலம் மற்றும் ஆழம் ஆகியவற்றின் விபரங்களை உள் மற்றும் புற அளவுகளுடன் வரைபடத்தில் குறித்து மேலொப்பமிட்டு அனுப்பப்பட வேண்டும்.

13. விண்ணப்பபுலம் ஒன்றுக்கு மேற்பட்டதாக இருப்பின் கூட்டு வரைபடம் தயார் செய்து மேற்கண்ட விபரங்களுடன் மேலொப்பமிட்டு அனுப்பப்பட வேண்டும்.

14. தனியரிடமிருந்து கனிம பாக்கி மற்றும் வருவாய் வசூல் சட்டத்தின்படி வசூலிக்கப்பட வேண்டிய நிலுவைத் தொகை ஏதேனும் உள்ளதா என்பதற்கு அறிக்கை செய்ய கேட்டுக்கொள்ளப்படுகிறது.

15. பாதுகாக்கப்பட்ட வனப்பகுதி / வனவிலங்குகள் / மான் சரணாலயம் ஏதும் அருகிலிருப்பின் அதற்கான பாதுகாப்பு இடைவெளி உள்ளதா? என்றும் குறிப்பிடப்பட வேண்டும்.

இணைப்பு: மனுவின் நகல்

உதவி இயக்குநர்,
புவியியல் மற்றும் சுரங்கத்துறை,
தேனி.

நகல்: வட்டாட்சியர், ஆண்டிபட்டி

From
Thiru.T.Vinoth, M.Sc.,
Assistant Director,
Geology and Mining,
Theni.

To
The District Forest Officer,
Theni District

Roc.No.483/Mines/2023-2, Date: 21.09.2023

Sir,

Sub: Mines and Minerals - Theni District – Andipatti Taluk – Thimmarasanakkanur Bit-1Village - S.F.Nos. 927/1, 927/2, 927/3, 927/4, 927/5, 938/1A, 938/2, 939/2, 940/1, 940/2, 940/3, 941, 942, 943/1, 943/2 over an extent of 15.14.00 hectares of patta lands- request of grant of lease for quarrying Roughstone and Gravel - Quarry lease application preferred by Thiru.C.Selvam S/o.Chelladurai - Report requested - Regarding.

Ref.: 1. Quarry lease application preferred by Thiru.C.Selvam S/o.Chelladurai, dated.Nil (This office received dated: 20.09.2023).

2. G.O. (Ms) No. 295 Industries (MMC-1) Department dated. 03.11.2021.

3. G.O. (Ms) No. 243 Industries (MMC-1) Department dated. 14.12.2022.

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In the reference 1st cited, Thiru.C.Selvam S/o.Chelladurai, No.38, Middle .Street, Pirathurakaranpatti, Shanmugasundarapuram, Andipatty Taluk, Theni District has applied for grant of lease for quarrying Roughstone and Gravel over an extent of 15.14.00 hectares in S.F.Nos. 927/1, 927/2, 927/3, 927/4, 927/5, 938/1A, 938/2, 939/2, 940/1, 940/2, 940/3, 941, 942, 943/1, 943/2 of Thimmarasanakkanur Bit-1Village, Andipatti Taluk for a period of 10 years under Rule 19(1) of Tamil Nadu Minor Mineral Concession Rules, 1959.

The Government in their order 2nd 3rd cited have ordered that no quarrying or mining or crushing activities shall be carried out within one 1km radial distance or the protective distance as notified by the MoEF and Climate Change, Government of India form time to time, whichever is more from the boundaries of ecologically sensitive areas, environmentally and ecologically protected areas such as the National Parks, Wild Life Sanctuaries, Tiger Reserves, and Elephant Corridors.

I request you to inform whether the lease applied area in Thimmarasanakkanur Bit-1Village of S.F. Nos. 927/1, 927/2, 927/3, 927/4, 927/5, 938/1A, 938/2, 939/2, 940/1, 940/2, 940/3, 941, 942, 943/1, 943/2 falls in Eco Sensitive Zone of any National Parks, Wild Life Sanctuaries, Tiger Reserve and Elephant Corridors if so the distance of protected area from the boundary of the lease applied area and also send your remarks on forest point of view.

Assistant Director,
Geology and Mining,
Theni.

EHS 360 LABS PRIVATE LIMITED

TC-9583

TEST REPORT

Report No	EHS360/TR/2024-25/N14822	**Report Date**	03-01-2025
Site Location	**M/s Thiru. C. Selvam S/o. Chelladurai,** S.F. Nos. 927/2,3,4,5,940/2 & 943/1, Thimmarasanayakkanur Bit – I Village, Andipatti Taluk, Theni District, Tamil Nadu, Extent: 8.76.5 ha		
Sampling Method	IS 5182	**Sample Drawn by**	Laboratory
Sample Name	Air	**Sample Code**	EHS360/N14822
Sample Description	Ambient Air Quality Monitoring	**Sample Condition**	Good
Sampling Location	**AAQ 1 – Project Area- 10° 0'0.48"N 77°41'32.35"E**		

Date	Period. hrs	PM10(µg/m3)	PM2.5(µg/m3)	SO2 (µg/m3)	NO2 (µg/m3)	O3 (µg/m3)	NH3 (µg/m3)	CO (mg/ m3)
04.10.2024	7:00-7:00	46.9	20.5	5.9	21.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
05.10.2024	7:15-7:15	47.7	20.1	5.7	21.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
11.10.2024	7:00-7:00	45.5	21.4	5.8	21.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
12.10.2024	7:15-7:15	46.4	21.9	5.5	21.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
18.10.2024	7:00-7:00	45.3	21.1	6.8	22.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
19.10.2024	7:15-7:15	46.0	21.5	4.6	22.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
25.10.2024	7:00-7:00	45.5	21.8	4.8	22.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
26.10.2024	7:15-7:15	46.8	20.5	4.6	22.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
01.11.2024	7:00-7:00	45.9	20.3	4.7	23.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
02.11.2024	7:15-7:15	45.2	20.6	4.6	21.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
08.11.2024	7:00-7:00	46.4	20.1	4.5	21.0	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
09.11.2024	7:15-7:15	46.2	21.8	4.7	21.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
15.11.2024	7:00-7:00	46.6	19.8	5.8	21.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
16.11.2024	7:15-7:15	45.0	19.1	5.3	21.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
22.11.2024	7:00-7:00	45.3	18.6	5.7	21.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
23.11.2024	7:15-7:15	46.7	18.8	6.8	22.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
29.11.2024	7:00-7:00	45.0	19.5	6.6	22.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
30.11.2024	7:15-7:15	46.9	20.3	6.7	22.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
06.12.2024	7:00-7:00	45.7	20.1	4.5	21.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
07.12.2024	7:15-7:15	45.6	20.8	4.3	21.9	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
13.12.2024	7:00-7:00	46.5	20.6	4.2	21.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
14.12.2024	7:15-7:15	45.3	21.1	4.4	21.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
20.12.2024	7:00-7:00	46.2	21.5	5.4	20.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
21.12.2024	7:15-7:15	45.6	20.2	5.8	20.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
27.12.2024	7:00-7:00	45.7	21.5	5.5	20.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
28.12.2024	7:15-7:15	45.1	20.7	5.7	20.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
NAAQ* Standard		<100	<60	<80	<80	<100	<400	<4

Note: BDL: Below Detection Limit ;**DL**: Detection Limit
Remarks: The values observed for the pollutants given above are within the CPCB standards.

Verified by

EHS360 LABS PRIVATE LIMITED CHENNAI 600 083

Authorized Signatory
Santhosh Kumar .A
Managing Director

************End of Report************

Note: 1. The test results are only to the sample submitted for test. 2.Any correction of the test report in full or part shall invalidate the report.
3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client.
4. Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.

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EHS 360 LABS PRIVATE LIMITED

TEST REPORT

Report No	EHS360/TR/2024-25/N14822	**Report Date**	03-01-2025
Site Location	**M/s Thiru. C. Selvam S/o. Chelladurai,** S.F. Nos. 927/2,3,4,5,940/2 & 943/1, Thimmarasanayakkanur Bit – I Village, Andipatti Taluk, Theni District, Tamil Nadu, Extent: 8.76.5 ha		
Sampling Method	IS 5182	**Sample Drawn by**	Laboratory
Sample Name	Air	**Sample Code**	EHS360/N14822
Sample Description	Ambient Air Quality Monitoring	**Sample Condition**	Good
Sampling Location	**AAQ 1 – Project Area- 10° 0'0.48"N 77°41'32.35"E**		

Date	Period. hrs	SPM (µg/m³)	As (ng/m³)	C6H6 (µg/m³)	BaP (ng/m³)	Pb (µg/m³)	Ni (ng/m³)
04.10.2024	7:00-7:00	64.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
05.10.2024	7:15-7:15	64.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
11.10.2024	7:00-7:00	64.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
12.10.2024	7:15-7:15	64.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
18.10.2024	7:00-7:00	64.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
19.10.2024	7:15-7:15	65.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
25.10.2024	7:00-7:00	65.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
26.10.2024	7:15-7:15	65.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
01.11.2024	7:00-7:00	64.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
02.11.2024	7:15-7:15	64.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
08.11.2024	7:00-7:00	64.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
09.11.2024	7:15-7:15	64.1	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
15.11.2024	7:00-7:00	64.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
16.11.2024	7:15-7:15	64.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
22.11.2024	7:00-7:00	65.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
23.11.2024	7:15-7:15	65.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
29.11.2024	7:00-7:00	65.1	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
30.11.2024	7:15-7:15	65.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
06.12.2024	7:00-7:00	62.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
07.12.2024	7:15-7:15	62.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
13.12.2024	7:00-7:00	62.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
14.12.2024	7:15-7:15	65.1	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
20.12.2024	7:00-7:00	65.0	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
21.12.2024	7:15-7:15	64.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
27.12.2024	7:00-7:00	64.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
28.12.2024	7:15-7:15	64.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
NAAQ* Standard		<200	<100	<60	<80	<80	<100

Note: BDL: Below Detection Limit ;**DL**: Detection Limit
Remarks: The values observed for the pollutants given above are within the CPCB standards.

Verified by
Y. Kesavam (Kesavam Y)

EHS360 LABS PRIVATE LIMITED CHENNAI 600 083

Authorized Signatory
Santhosh Kumar .A
Managing Director

**********End of Report**********

Note: 1. The test results are only to the sample submitted for test. 2.Any correction of the test report in full or part shall invalidate the report.
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EHS 360 LABS PRIVATE LIMITED

TC-9583

TEST REPORT

Report No	EHS360/TR/2024-25/N14823	**Report Date**	03-01-2025
Site Location	**M/s Thiru. C. Selvam S/o. Chelladurai,** S.F. Nos. 927/2,3,4,5,940/2 & 943/1, Thimmarasanayakkanur Bit – I Village, Andipatti Taluk, Theni District, Tamil Nadu, Extent: 8.76.5 ha		
Sampling Method	IS 5182	**Sample Drawn by**	Laboratory
Sample Name	Air	**Sample Code**	EHS360/N14823
Sample Description	Ambient Air Quality Monitoring	**Sample Condition**	Good
Sampling Location	**AAQ 2 – Near Project Area- 9°59'49.02"N 77°41'22.71"E**		

Date	Period. hrs	PM10(µg/m3)	PM2.5(µg/m3)	SO2 (µg/m3)	NO2 (µg/m3)	O3 (µg/m3)	NH3 (µg/m3)	CO (mg/ m3)
04.10.2024	7:00-7:00	46.5	18.9	5.3	22.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
05.10.2024	7:15-7:15	46.7	19.5	5.6	21.2	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
11.10.2024	7:00-7:00	45.5	20.5	5.4	22.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
12.10.2024	7:15-7:15	45.9	20.9	5.1	22.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
18.10.2024	7:00-7:00	46.2	21.3	6.8	21.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
19.10.2024	7:15-7:15	46.9	21.7	6.6	22.2	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
25.10.2024	7:00-7:00	46.1	21.6	6.1	21.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
26.10.2024	7:15-7:15	46.9	20.6	6.6	21.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
01.11.2024	7:00-7:00	47.1	20.8	6.1	22.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
02.11.2024	7:15-7:15	47.5	19.5	6.2	22.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
08.11.2024	7:00-7:00	46.9	19.6	6.4	23.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
09.11.2024	7:15-7:15	44.2	18.2	6.3	21.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
15.11.2024	7:00-7:00	44.8	18.6	5.6	22.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
16.11.2024	7:15-7:15	44.5	18.3	5.1	21.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
22.11.2024	7:00-7:00	44.6	19.6	5.7	22.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
23.11.2024	7:15-7:15	44.8	19.8	5.6	22.2	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
29.11.2024	7:00-7:00	45.9	20.1	6.5	22.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
30.11.2024	7:15-7:15	45.8	20.3	6.8	21.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
06.12.2024	7:00-7:00	47.2	20.4	6.6	21.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
07.12.2024	7:15-7:15	47.5	21.3	6.4	21.2	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
13.12.2024	7:00-7:00	47.9	21.7	5.3	22.9	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
14.12.2024	7:15-7:15	48.5	21.6	5.7	21.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
20.12.2024	7:00-7:00	48.4	21.6	5.8	21.9	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
21.12.2024	7:15-7:15	47.9	20.3	5.2	21.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
27.12.2024	7:00-7:00	48.2	20.5	5.7	21.9	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
28.12.2024	7:15-7:15	48.4	20.7	6.2	21.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
NAAQ* Standard		<100	<60	<80	<80	<100	<400	<4

Note: BDL: Below Detection Limit ;**DL**: Detection Limit

Remarks: The values observed for the pollutants given above are within the CPCB standards.

Verified by

Authorized Signatory

Santhosh Kumar .A
Managing Director

**********End of Report**********

Note: 1. The test results are only to the sample submitted for test. 2.Any correction of the test report in full or part shall invalidate the report.
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EHS 360 LABS PRIVATE LIMITED

TEST REPORT

Report No	EHS360/TR/2024-25/N14823	**Report Date**	03-01-2025
Site Location	**M/s Thiru. C. Selvam S/o. Chelladurai,** S.F. Nos. 927/2,3,4,5,940/2 & 943/1, Thimmarasanayakkanur Bit – I Village, Andipatti Taluk, Theni District, Tamil Nadu, Extent: 8.76.5 ha		
Sampling Method	IS 5182	**Sample Drawn by**	Laboratory
Sample Name	Air	**Sample Code**	EHS360/N14823
Sample Description	Ambient Air Quality Monitoring	**Sample Condition**	Good
Sampling Location	**AAQ 2 – Near Project Area- 9°59'49.02"N 77°41'22.71"E**		

Date	Period. hrs	SPM (µg/m³)	As (ng/m³)	C6H6 (µg/m³)	BaP (ng/m³)	Pb (µg/m³)	Ni (ng/m³)
04.10.2024	7:00-7:00	64.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
05.10.2024	7:15-7:15	65.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
11.10.2024	7:00-7:00	65.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
12.10.2024	7:15-7:15	65.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
18.10.2024	7:00-7:00	64.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
19.10.2024	7:15-7:15	64.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
25.10.2024	7:00-7:00	65.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
26.10.2024	7:15-7:15	65.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
01.11.2024	7:00-7:00	667	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
02.11.2024	7:15-7:15	64.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
08.11.2024	7:00-7:00	65.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
09.11.2024	7:15-7:15	66.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
15.11.2024	7:00-7:00	64.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
16.11.2024	7:15-7:15	64.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
22.11.2024	7:00-7:00	65.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
23.11.2024	7:15-7:15	65.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
29.11.2024	7:00-7:00	64.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
30.11.2024	7:15-7:15	62.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
06.12.2024	7:00-7:00	63.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
07.12.2024	7:15-7:15	64.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
13.12.2024	7:00-7:00	65.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
14.12.2024	7:15-7:15	65.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
20.12.2024	7:00-7:00	64.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
21.12.2024	7:15-7:15	64.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
27.12.2024	7:00-7:00	64.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
28.12.2024	7:15-7:15	63.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
NAAQ* Standard		<200	<100	<60	<80	<80	<100

Note: BDL: Below Detection Limit ;**DL**: Detection Limit
Remarks: The values observed for the pollutants given above are within the CPCB standards.

Verified by

Authorized Signatory
Santhosh Kumar .A
Managing Director

**********End of Report**********

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EHS 360 LABS PRIVATE LIMITED

TC-9583

TEST REPORT

Report No	EHS360/TR/2024-25/N14824	**Report Date**	03-01-2025
Site Location	**M/s Thiru. C. Selvam S/o. Chelladurai,** S.F. Nos. 927/2,3,4,5,940/2 & 943/1, Thimmarasanayakkanur Bit – I Village, Andipatti Taluk, Theni District, Tamil Nadu, Extent: 8.76.5 ha		
Sampling Method	IS 5182	**Sample Drawn by**	Laboratory
Sample Name	Air	**Sample Code**	EHS360/N14824
Sample Description	Ambient Air Quality Monitoring	**Sample Condition**	Good
Sampling Location	**AAQ3 –Near Project Area- 9°59'40.47"N 77°41'37.10"E**		

Date	Period. hrs	PM10(µg/m3)	PM2.5(µg/m3)	SO2 (µg/m3)	NO2 (µg/m3)	O3 (µg/m3)	NH3 (µg/m3)	CO (mg/ m3)
04.10.2024	7:00-7:00	45.9	20.5	6.6	21.2	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
05.10.2024	7:15-7:15	45.3	21.2	6.1	21.9	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
11.10.2024	7:00-7:00	44.2	20.6	5.3	22.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
12.10.2024	7:15-7:15	45.6	20.7	5.7	22.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
18.10.2024	7:00-7:00	45.5	21.6	6.1	21.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
19.10.2024	7:15-7:15	44.6	20.8	5.4	23.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
25.10.2024	7:00-7:00	42.2	19.4	5.5	21.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
26.10.2024	7:15-7:15	42.3	20.3	5.8	22.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
01.11.2024	7:00-7:00	42.1	21.7	5.4	21.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
02.11.2024	7:15-7:15	41.6	21.5	6.5	22.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
08.11.2024	7:00-7:00	41.9	21.2	6.2	21.2	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
09.11.2024	7:15-7:15	43.2	21.6	6.1	21.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
15.11.2024	7:00-7:00	42.6	20.6	5.3	20.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
16.11.2024	7:15-7:15	40.8	20.2	5.5	20.2	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
22.11.2024	7:00-7:00	41.5	19.7	5.1	21.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
23.11.2024	7:15-7:15	42.9	20.4	6.8	21.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
29.11.2024	7:00-7:00	40.1	20.2	6.7	22.9	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
30.11.2024	7:15-7:15	40.6	19.3	6.3	21.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
06.12.2024	7:00-7:00	41.4	20.6	6.5	21.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
07.12.2024	7:15-7:15	41.9	19.4	6.6	22.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
13.12.2024	7:00-7:00	40.5	20.5	6.5	21.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
14.12.2024	7:15-7:15	41.4	21.3	5.8	21.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
20.12.2024	7:00-7:00	40.6	20.5	5.6	20.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
21.12.2024	7:15-7:15	41.7	21.7	5.8	21.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
27.12.2024	7:00-7:00	40.4	21.3	6.4	20.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
28.12.2024	7:15-7:15	41.2	20.4	6.9	21.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
NAAQ* Standard		<100	<60	<80	<80	<100	<400	<4

Note: BDL: Below Detection Limit ;**DL**: Detection Limit
Remarks: The values observed for the pollutants given above are within the CPCB standards.

Verified by

EHS360 LABS PRIVATE LIMITED CHENNAI 600 083

Authorized Signatory
Santhosh Kumar .A
Managing Director

************End of Report************

Note: 1. The test results are only to the sample submitted for test. 2.Any correction of the test report in full or part shall invalidate the report.
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4. Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.

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EHS 360 LABS PRIVATE LIMITED

TEST REPORT

Report No	EHS360/TR/2024-25/N14824	**Report Date**	03-01-2025
Site Location	**M/s Thiru. C. Selvam S/o. Chelladurai,** S.F. Nos. 927/2,3,4,5,940/2 & 943/1, Thimmarasanayakkanur Bit – I Village, Andipatti Taluk, Theni District, Tamil Nadu, Extent: 8.76.5 ha		
Sampling Method	IS 5182	**Sample Drawn by**	Laboratory
Sample Name	Air	**Sample Code**	EHS360/N14824
Sample Description	Ambient Air Quality Monitoring	**Sample Condition**	Good
Sampling Location	**AAQ3 –Near Project Area- 9°59'40.47"N 77°41'37.10"E**		

Date	Period. hrs	SPM (µg/m³)	As (ng/m³)	C6H6 (µg/m³)	BaP (ng/m³)	Pb (µg/m³)	Ni (ng/m³)
04.10.2024	7:00-7:00	65.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
05.10.2024	7:15-7:15	65.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
11.10.2024	7:00-7:00	64.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
12.10.2024	7:15-7:15	65.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
18.10.2024	7:00-7:00	65.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
19.10.2024	7:15-7:15	66.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
25.10.2024	7:00-7:00	64.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
26.10.2024	7:15-7:15	65.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
01.11.2024	7:00-7:00	64.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
02.11.2024	7:15-7:15	64.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
08.11.2024	7:00-7:00	64.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
09.11.2024	7:15-7:15	65.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
15.11.2024	7:00-7:00	66.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
16.11.2024	7:15-7:15	65.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
22.11.2024	7:00-7:00	64.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
23.11.2024	7:15-7:15	65.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
29.11.2024	7:00-7:00	65.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
30.11.2024	7:15-7:15	64.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
06.12.2024	7:00-7:00	65.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
07.12.2024	7:15-7:15	64.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
13.12.2024	7:00-7:00	65.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
14.12.2024	7:15-7:15	65.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
20.12.2024	7:00-7:00	64.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
21.12.2024	7:15-7:15	66.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
27.12.2024	7:00-7:00	65.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
28.12.2024	7:15-7:15	66.1	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
NAAQ* Standard		<200	<100	<60	<80	<80	<100

Note: BDL: Below Detection Limit ;**DL**: Detection Limit
Remarks: The values observed for the pollutants given above are within the CPCB standards.

Verified by
Y. Kesavam

EHS360 LABS PRIVATE LIMITED CHENNAI 600 083

Authorized Signatory
Santhosh Kumar .A
Managing Director

**********End of Report**********

Note: 1. The test results are only to the sample submitted for test. 2.Any correction of the test report in full or part shall invalidate the report.
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EHS 360 LABS PRIVATE LIMITED

TC-9583

TEST REPORT

Report No	EHS360/TR/2024-25/N14825	**Report Date**	03-01-2025
Site Location	**M/s Thiru. C. Selvam S/o. Chelladurai,** S.F. Nos. 927/2,3,4,5,940/2 & 943/1, Thimmarasanayakkanur Bit – I Village, Andipatti Taluk, Theni District, Tamil Nadu, Extent: 8.76.5 ha		
Sampling Method	IS 5182	**Sample Drawn by**	Laboratory
Sample Name	Air	**Sample Code**	EHS360/N14825
Sample Description	Ambient Air Quality Monitoring	**Sample Condition**	Good
Sampling Location	**AAQ4 – Timmarasanayakkanur-10° 0'3.07"N 77°40'39.72"E**		

Date	Period. hrs	PM10(µg/m3)	PM2.5(µg/m3)	SO2 (µg/m3)	NO2 (µg/m3)	O3 (µg/m3)	NH3 (µg/m3)	CO (mg/ m3)
04.10.2024	7:00-7:00	42.3	20.2	5.5	22.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
05.10.2024	7:15-7:15	42.5	21.5	5.0	22.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
11.10.2024	7:00-7:00	42.9	21.3	5.8	22.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
12.10.2024	7:15-7:15	42.5	20.3	4.2	21.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
18.10.2024	7:00-7:00	43.6	20.5	4.9	21.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
19.10.2024	7:15-7:15	42.5	19.4	5.6	22.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
25.10.2024	7:00-7:00	43.5	19.7	4.8	23.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
26.10.2024	7:15-7:15	42.2	20.5	4.6	23.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
01.11.2024	7:00-7:00	42.6	20.4	4.3	21.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
02.11.2024	7:15-7:15	42.0	19.3	4.6	22.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
08.11.2024	7:00-7:00	43.3	19.5	4.3	21.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
09.11.2024	7:15-7:15	43.5	18.8	5.9	22.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
15.11.2024	7:00-7:00	43.8	18.3	5.2	22.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
16.11.2024	7:15-7:15	42.2	20.7	5.5	21.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
22.11.2024	7:00-7:00	42.4	20.6	5.1	21.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
23.11.2024	7:15-7:15	41.7	19.2	5.9	21.9	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
29.11.2024	7:00-7:00	42.2	19.5	6.3	21.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
30.11.2024	7:15-7:15	43.9	19.3	6.0	20.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
06.12.2024	7:00-7:00	42.5	18.4	6.5	20.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
07.12.2024	7:15-7:15	42.6	19.3	5.4	21.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
13.12.2024	7:00-7:00	42.1	20.7	5.5	22.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
14.12.2024	7:15-7:15	42.7	20.3	5.9	22.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
20.12.2024	7:00-7:00	43.5	19.4	6.2	21.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
21.12.2024	7:15-7:15	43.7	19.6	6.4	21.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
27.12.2024	7:00-7:00	43.5	20.2	6.5	22.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
28.12.2024	7:15-7:15	43.8	20.7	5.7	21.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
NAAQ* Standard		<100	<60	<80	<80	<100	<400	<4

Note: BDL: Below Detection Limit ;**DL**: Detection Limit
Remarks: The values observed for the pollutants given above are within the CPCB standards.

Verified by

EHS360 LABS PRIVATE LIMITED CHENNAI 600 083

Authorized Signatory
Santhosh Kumar .A
Managing Director

**********End of Report**********

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EHS 360 LABS PRIVATE LIMITED

TEST REPORT

Report No	EHS360/TR/2024-25/N14825	**Report Date**	03-01-2025
Site Location	**M/s Thiru. C. Selvam S/o. Chelladurai,** S.F. Nos. 927/2,3,4,5,940/2 & 943/1, Thimmarasanayakkanur Bit – I Village, Andipatti Taluk, Theni District, Tamil Nadu, Extent: 8.76.5 ha		
Sampling Method	IS 5182	**Sample Drawn by**	Laboratory
Sample Name	Air	**Sample Code**	EHS360/N14825
Sample Description	Ambient Air Quality Monitoring	**Sample Condition**	Good
Sampling Location	**AAQ4 – Timmarasanayakkanur-10° 0'3.07"N 77°40'39.72"E**		

Date	Period. hrs	SPM (µg/m³)	As (ng/m³)	C6H6 (µg/m³)	BaP (ng/m³)	Pb (µg/m³)	Ni (ng/m³)
04.10.2024	7:00-7:00	67.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
05.10.2024	7:15-7:15	68.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
11.10.2024	7:00-7:00	67.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
12.10.2024	7:15-7:15	67.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
18.10.2024	7:00-7:00	66.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
19.10.2024	7:15-7:15	65.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
25.10.2024	7:00-7:00	66.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
26.10.2024	7:15-7:15	64.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
01.11.2024	7:00-7:00	65.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
02.11.2024	7:15-7:15	66.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
08.11.2024	7:00-7:00	66.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
09.11.2024	7:15-7:15	65.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
15.11.2024	7:00-7:00	64.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
16.11.2024	7:15-7:15	65.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
22.11.2024	7:00-7:00	64.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
23.11.2024	7:15-7:15	65.1	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
29.11.2024	7:00-7:00	66.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
30.11.2024	7:15-7:15	65.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
06.12.2024	7:00-7:00	62.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
07.12.2024	7:15-7:15	64.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
13.12.2024	7:00-7:00	63.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
14.12.2024	7:15-7:15	66.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
20.12.2024	7:00-7:00	64.1	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
21.12.2024	7:15-7:15	65.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
27.12.2024	7:00-7:00	62.1	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
28.12.2024	7:15-7:15	65.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
NAAQ* Standard		<200	<100	<60	<80	<80	<100

Note: BDL: Below Detection Limit ;**DL**: Detection Limit
Remarks: The values observed for the pollutants given above are within the CPCB standards.

Verified by
Y. Kesavam

EHS360 LABS PRIVATE LIMITED CHENNAI 600 083

Authorized Signatory
Santhosh Kumar .A
Managing Director

**********End of Report**********

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EHS 360 LABS PRIVATE LIMITED

TC-9583

TEST REPORT

Report No	EHS360/TR/2024-25/N14826	**Report Date**	03-01-2025
Site Location	**M/s Thiru. C. Selvam S/o. Chelladurai,** S.F. Nos. 927/2,3,4,5,940/2 & 943/1, Thimmarasanayakkanur Bit – I Village, Andipatti Taluk, Theni District, Tamil Nadu, Extent: 8.76.5 ha		
Sampling Method	IS 5182	**Sample Drawn by**	Laboratory
Sample Name	Air	**Sample Code**	EHS360/N14826
Sample Description	Ambient Air Quality Monitoring	**Sample Condition**	Good
Sampling Location	**AAQ5 – Mekalpatty- 9°58'27.86"N 77°38'34.94"E**		

Date	Period. hrs	PM10(µg/m3)	PM2.5(µg/m3)	SO2 (µg/m3)	NO2 (µg/m3)	O3 (µg/m3)	NH3 (µg/m3)	CO (mg/ m3)
04.10.2024	7:00-7:00	41.6	20.5	6.3	20.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
05.10.2024	7:15-7:15	41.2	21.9	6.4	20.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
11.10.2024	7:00-7:00	42.5	21.8	6.2	21.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
12.10.2024	7:15-7:15	42.9	18.3	6.9	21.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
18.10.2024	7:00-7:00	43.6	19.5	6.2	20.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
19.10.2024	7:15-7:15	44.9	18.6	6.1	20.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
25.10.2024	7:00-7:00	44.3	19.5	6.8	20.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
26.10.2024	7:15-7:15	43.6	19.9	6.5	21.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
01.11.2024	7:00-7:00	41.3	19.3	6.2	21.2	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
02.11.2024	7:15-7:15	44.0	18.6	6.8	21.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
08.11.2024	7:00-7:00	44.6	19.9	6.1	20.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
09.11.2024	7:15-7:15	43.1	19.6	6.4	20.9	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
15.11.2024	7:00-7:00	43.6	18.8	6.8	21.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
16.11.2024	7:15-7:15	44.1	20.5	6.3	20.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
22.11.2024	7:00-7:00	43.8	20.9	6.9	20.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
23.11.2024	7:15-7:15	42.9	19.6	6.4	21.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
29.11.2024	7:00-7:00	43.6	19.5	7.2	20.9	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
30.11.2024	7:15-7:15	43.8	19.0	6.9	20.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
06.12.2024	7:00-7:00	44.3	19.1	6.5	21.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
07.12.2024	7:15-7:15	42.8	19.7	7.1	21.2	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
13.12.2024	7:00-7:00	43.9	19.3	7.8	21.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
14.12.2024	7:15-7:15	44.2	21.1	7.2	20.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
20.12.2024	7:00-7:00	44.3	21.5	7.5	20.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
21.12.2024	7:15-7:15	43.9	21.9	8.0	21.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
27.12.2024	7:00-7:00	42.7	20.3	7.5	20.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
28.12.2024	7:15-7:15	42.1	20.9	6.7	21.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
NAAQ* Standard		<100	<60	<80	<80	<100	<400	<4

Note: BDL: Below Detection Limit ;**DL**: Detection Limit
Remarks: The values observed for the pollutants given above are within the CPCB standards.

Verified by

EHS360 LABS PRIVATE LIMITED CHENNAI 600 083

Authorized Signatory
Santhosh Kumar .A
Managing Director

**********End of Report**********

Note: 1. The test results are only to the sample submitted for test. 2.Any correction of the test report in full or part shall invalidate the report.
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EHS 360 LABS PRIVATE LIMITED

TC-9583

TEST REPORT

Report No	EHS360/TR/2024-25/N14826	**Report Date**	03-01-2025
Site Location	**M/s Thiru. C. Selvam S/o. Chelladurai,** S.F. Nos. 927/2,3,4,5,940/2 & 943/1, Thimmarasanayakkanur Bit – I Village, Andipatti Taluk, Theni District, Tamil Nadu, Extent: 8.76.5 ha		
Sampling Method	IS 5182	**Sample Drawn by**	Laboratory
Sample Name	Air	**Sample Code**	EHS360/N14826
Sample Description	Ambient Air Quality Monitoring	**Sample Condition**	Good
Sampling Location	**AAQ5 – Mekalpatty- 9°58'27.86"N 77°38'34.94"E**		

Date	Period. hrs	SPM (µg/m³)	As (ng/m³)	C6H6 (µg/m³)	BaP (ng/m³)	Pb (µg/m³)	Ni (ng/m³)
04.10.2024	7:00-7:00	62.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
05.10.2024	7:15-7:15	62.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
11.10.2024	7:00-7:00	64.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
12.10.2024	7:15-7:15	62.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
18.10.2024	7:00-7:00	63.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
19.10.2024	7:15-7:15	63.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
25.10.2024	7:00-7:00	64.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
26.10.2024	7:15-7:15	64.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
01.11.2024	7:00-7:00	64.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
02.11.2024	7:15-7:15	64.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
08.11.2024	7:00-7:00	65.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
09.11.2024	7:15-7:15	65.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
15.11.2024	7:00-7:00	64.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
16.11.2024	7:15-7:15	64.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
22.11.2024	7:00-7:00	65.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
23.11.2024	7:15-7:15	65.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
29.11.2024	7:00-7:00	65.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
30.11.2024	7:15-7:15	66.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
06.12.2024	7:00-7:00	66.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
07.12.2024	7:15-7:15	66.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
13.12.2024	7:00-7:00	63.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
14.12.2024	7:15-7:15	66.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
20.12.2024	7:00-7:00	65.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
21.12.2024	7:15-7:15	65.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
27.12.2024	7:00-7:00	64.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
28.12.2024	7:15-7:15	66.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
NAAQ* Standard		<200	<100	<60	<80	<80	<100

Note: BDL: Below Detection Limit ;**DL**: Detection Limit

Remarks: The values observed for the pollutants given above are within the CPCB standards.

Verified by

Authorized Signatory

Santhosh Kumar .A
Managing Director

**********End of Report**********

Note: 1. The test results are only to the sample submitted for test. 2.Any correction of the test report in full or part shall invalidate the report.
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EHS 360 LABS PRIVATE LIMITED

TC-9583

TEST REPORT

Report No	EHS360/TR/2024-25/N14827	**Report Date**	03-01-2025
Site Location	**M/s Thiru. C. Selvam S/o. Chelladurai,** S.F. Nos. 927/2,3,4,5,940/2 & 943/1, Thimmarasanayakkanur Bit – I Village, Andipatti Taluk, Theni District, Tamil Nadu, Extent: 8.76.5 ha		
Sampling Method	IS 5182	**Sample Drawn by**	Laboratory
Sample Name	Air	**Sample Code**	EHS360/N14827
Sample Description	Ambient Air Quality Monitoring	**Sample Condition**	Good
Sampling Location	**AAQ 6 – Thottappanayakkanur-9°58'38.99"N 77°43'56.91"E**		

Date	Period. hrs	PM10(µg/m3)	PM2.5(µg/m3)	SO2 (µg/m3)	NO2 (µg/m3)	O3 (µg/m3)	NH3 (µg/m3)	CO (mg/ m3)
04.10.2024	7:00-7:00	39.5	19.5	5.2	21.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
05.10.2024	7:15-7:15	40.6	20.8	5.8	21.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
11.10.2024	7:00-7:00	41.5	20.0	5.6	20.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
12.10.2024	7:15-7:15	40.8	20.9	5.4	21.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
18.10.2024	7:00-7:00	40.5	20.5	6.7	21.2	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
19.10.2024	7:15-7:15	39.1	21.8	6.3	22.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
25.10.2024	7:00-7:00	39.6	20.6	6.9	22.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
26.10.2024	7:15-7:15	39.5	20.3	6.3	21.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
01.11.2024	7:00-7:00	40.5	19.5	5.4	21.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
02.11.2024	7:15-7:15	40.1	19.1	5.7	22.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
08.11.2024	7:00-7:00	40.3	20.8	5.4	22.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
09.11.2024	7:15-7:15	40.6	20.2	5.9	22.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
15.11.2024	7:00-7:00	40.6	20.5	5.2	21.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
16.11.2024	7:15-7:15	41.5	21.8	5.4	21.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
22.11.2024	7:00-7:00	40.6	20.4	5.3	20.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
23.11.2024	7:15-7:15	40.9	20.9	7.6	21.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
29.11.2024	7:00-7:00	41.8	20.4	7.5	21.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
30.11.2024	7:15-7:15	40.5	20.9	7.9	20.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
06.12.2024	7:00-7:00	41.6	19.1	7.2	20.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
07.12.2024	7:15-7:15	42.8	19.3	6.8	21.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
13.12.2024	7:00-7:00	41.3	20.4	6.6	21.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
14.12.2024	7:15-7:15	42.6	20.9	6.5	21.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
20.12.2024	7:00-7:00	41.9	20.4	6.1	20.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
21.12.2024	7:15-7:15	42.8	20.1	7.2	20.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
27.12.2024	7:00-7:00	42.9	20.4	5.5	21.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
28.12.2024	7:15-7:15	42.8	20.1	5.7	21.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
NAAQ* Standard		<100	<60	<80	<80	<100	<400	<4

Note: BDL: Below Detection Limit ;**DL**: Detection Limit
Remarks: The values observed for the pollutants given above are within the CPCB standards.

Verified by

EHS360 LABS PRIVATE LIMITED CHENNAI 600 083

Authorized Signatory
Santhosh Kumar .A
Managing Director

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EHS 360 LABS PRIVATE LIMITED

TEST REPORT

Report No	EHS360/TR/2024-25/N14827	**Report Date**	03-01-2025
Site Location	**M/s Thiru. C. Selvam S/o. Chelladurai,** S.F. Nos. 927/2,3,4,5,940/2 & 943/1, Thimmarasanayakkanur Bit – I Village, Andipatti Taluk, Theni District, Tamil Nadu, Extent: 8.76.5 ha		
Sampling Method	IS 5182	**Sample Drawn by**	Laboratory
Sample Name	Air	**Sample Code**	EHS360/N14827
Sample Description	Ambient Air Quality Monitoring	**Sample Condition**	Good
Sampling Location	**AAQ 6 – Thottappanayakkanur-9°58'38.99"N 77°43'56.91"E**		

Date	Period. hrs	SPM (µg/m³)	As (ng/m³)	C6H6 (µg/m³)	BaP (ng/m³)	Pb (µg/m³)	Ni (ng/m³)
04.10.2024	7:00-7:00	63.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
05.10.2024	7:15-7:15	63.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
11.10.2024	7:00-7:00	64.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
12.10.2024	7:15-7:15	64.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
18.10.2024	7:00-7:00	64.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
19.10.2024	7:15-7:15	64.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
25.10.2024	7:00-7:00	63.1	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
26.10.2024	7:15-7:15	63.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
01.11.2024	7:00-7:00	64.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
02.11.2024	7:15-7:15	64.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
08.11.2024	7:00-7:00	64.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
09.11.2024	7:15-7:15	63.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
15.11.2024	7:00-7:00	64.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
16.11.2024	7:15-7:15	64.1	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
22.11.2024	7:00-7:00	64.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
23.11.2024	7:15-7:15	65.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
29.11.2024	7:00-7:00	64.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
30.11.2024	7:15-7:15	65.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
06.12.2024	7:00-7:00	65.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
07.12.2024	7:15-7:15	64.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
13.12.2024	7:00-7:00	62.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
14.12.2024	7:15-7:15	64.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
20.12.2024	7:00-7:00	64.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
21.12.2024	7:15-7:15	64.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
27.12.2024	7:00-7:00	64.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
28.12.2024	7:15-7:15	65.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
NAAQ* Standard		<200	<100	<60	<80	<80	<100

Note: BDL: Below Detection Limit ;**DL**: Detection Limit
Remarks: The values observed for the pollutants given above are within the CPCB standards.

Verified by
Y. Kesavam (Kesavam Y)

EHS360 LABS PRIVATE LIMITED CHENNAI 600 083

**********End of Report**********

Authorized Signatory
Santhosh Kumar .A
Managing Director

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EHS 360 LABS PRIVATE LIMITED

TC-9583

TEST REPORT

Report No	EHS360/TR/2024-25/N14828	**Report Date**	03-01-2025
Site Location	**M/s Thiru. C. Selvam S/o. Chelladurai,** S.F. Nos. 927/2,3,4,5,940/2 & 943/1, Thimmarasanayakkanur Bit – I Village, Andipatti Taluk, Theni District, Tamil Nadu, Extent: 8.76.5 ha		
Sampling Method	IS 5182	**Sample Drawn by**	Laboratory
Sample Name	Air	**Sample Code**	EHS360/N14828
Sample Description	Ambient Air Quality Monitoring	**Sample Condition**	Good
Sampling Location	**AAQ7 – Theppathupatty- 10° 2'59.18"N 77°42'39.57"E**		

Date	Period. hrs	PM10(µg/m3)	PM2.5(µg/m3)	SO2 (µg/m3)	NO2 (µg/m3)	O3 (µg/m3)	NH3 (µg/m3)	CO (mg/ m3)
04.10.2024	7:00-7:00	44.3	19.3	6.6	22.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
05.10.2024	7:15-7:15	44.3	19.6	6.9	22.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
11.10.2024	7:00-7:00	42.3	19.7	6.5	22.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
12.10.2024	7:15-7:15	42.6	19.1	7.2	22.9	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
18.10.2024	7:00-7:00	42.9	20.2	5.3	21.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
19.10.2024	7:15-7:15	42.1	20.3	5.4	21.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
25.10.2024	7:00-7:00	42.7	20.4	5.6	21.9	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
26.10.2024	7:15-7:15	43.6	20.6	5.2	20.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
01.11.2024	7:00-7:00	43.1	20.7	5.1	20.9	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
02.11.2024	7:15-7:15	43.8	20.3	7.7	20.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
08.11.2024	7:00-7:00	43.4	20.7	7.9	21.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
09.11.2024	7:15-7:15	43.7	21.3	7.9	21.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
15.11.2024	7:00-7:00	43.2	21.8	6.0	21.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
16.11.2024	7:15-7:15	43.6	21.3	6.6	20.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
22.11.2024	7:00-7:00	43.7	19.6	6.1	21.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
23.11.2024	7:15-7:15	43.1	19.7	6.3	20.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
29.11.2024	7:00-7:00	43.9	19.2	5.7	22.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
30.11.2024	7:15-7:15	42.8	19.3	5.6	22.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
06.12.2024	7:00-7:00	41.6	19.5	5.4	22.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
07.12.2024	7:15-7:15	41.5	19.8	5.2	22.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
13.12.2024	7:00-7:00	42.6	20.3	6.9	20.9	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
14.12.2024	7:15-7:15	42.7	20.4	6.1	22.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
20.12.2024	7:00-7:00	42.3	20.6	6.6	21.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
21.12.2024	7:15-7:15	42.7	20.9	5.1	20.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
27.12.2024	7:00-7:00	42.6	19.6	5.9	21.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
28.12.2024	7:15-7:15	42.9	19.8	5.3	22.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
NAAQ* Standard		<100	<60	<80	<80	<100	<400	<4

Note: BDL: Below Detection Limit ;**DL**: Detection Limit
Remarks: The values observed for the pollutants given above are within the CPCB standards.

Verified by

EHS360 LABS PRIVATE LIMITED CHENNAI 600 083

Authorized Signatory
Santhosh Kumar .A
Managing Director

**********End of Report**********

Note: 1. The test results are only to the sample submitted for test. 2.Any correction of the test report in full or part shall invalidate the report.
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EHS 360 LABS PRIVATE LIMITED

TEST REPORT

Report No	EHS360/TR/2024-25/N14828	**Report Date**	03-01-2025
Site Location	**M/s Thiru. C. Selvam S/o. Chelladurai,** S.F. Nos. 927/2,3,4,5,940/2 & 943/1, Thimmarasanayakkanur Bit – I Village, Andipatti Taluk, Theni District, Tamil Nadu, Extent: 8.76.5 ha		
Sampling Method	IS 5182	**Sample Drawn by**	Laboratory
Sample Name	Air	**Sample Code**	EHS360/N14828
Sample Description	Ambient Air Quality Monitoring	**Sample Condition**	Good
Sampling Location	**AAQ7 – Theppathupatty- 10° 2'59.18"N 77°42'39.57"E**		

Date	Period. hrs	SPM (µg/m³)	As (ng/m³)	C6H6 (µg/m³)	BaP (ng/m³)	Pb (µg/m³)	Ni (ng/m³)
04.10.2024	7:00-7:00	62.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
05.10.2024	7:15-7:15	62.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
11.10.2024	7:00-7:00	62.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
12.10.2024	7:15-7:15	61.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
18.10.2024	7:00-7:00	62.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
19.10.2024	7:15-7:15	62.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
25.10.2024	7:00-7:00	62.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
26.10.2024	7:15-7:15	62.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
01.11.2024	7:00-7:00	62.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
02.11.2024	7:15-7:15	63.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
08.11.2024	7:00-7:00	63.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
09.11.2024	7:15-7:15	62.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
15.11.2024	7:00-7:00	64.1	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
16.11.2024	7:15-7:15	64.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
22.11.2024	7:00-7:00	64.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
23.11.2024	7:15-7:15	62.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
29.11.2024	7:00-7:00	63.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
30.11.2024	7:15-7:15	63.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
06.12.2024	7:00-7:00	62.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
07.12.2024	7:15-7:15	62.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
13.12.2024	7:00-7:00	62.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
14.12.2024	7:15-7:15	64.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
20.12.2024	7:00-7:00	64.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
21.12.2024	7:15-7:15	64.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
27.12.2024	7:00-7:00	64.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
28.12.2024	7:15-7:15	62.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
NAAQ* Standard		<200	<100	<60	<80	<80	<100

Note: BDL: Below Detection Limit ;**DL**: Detection Limit
Remarks: The values observed for the pollutants given above are within the CPCB standards.

Verified by
Y. Kesavam (Kesavam Y)

EHS360 LABS PRIVATE LIMITED CHENNAI 600 083

**********End of Report**********

Authorized Signatory
Santhosh Kumar .A
Managing Director

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TC-9583

TEST REPORT

Report No	EHS360/TR/2024-25/N14829/N14830	**Report Date**	03-01-2025
Site Location	**M/s Thiru. C. Selvam S/o. Chelladurai,** S.F. Nos. 927/2,3,4,5,940/2 & 943/1, Thimmarasanayakkanur Bit – I Village, Andipatti Taluk, Theni District, Tamil Nadu, Extent: 8.76.5 ha		
Sampling Method	IS 9989	**Sample Drawn by**	Laboratory
Sample Name	Noise Level Monitoring	**Sample Code**	EHS360/ N14829/N14830
Sample Description	Ambient Noise	**Sample Collected Date**	28-12-2024

Location	N1 – Project Area- 10° 0'0.96"N 77°41'30.62"E			N2 – Project Area– 9°59'48.58"N 77°41'23.76"E		
Parameter	Min	Max	Result	Min	Max	Result
Time	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
06:00-07:00	35.2	38.1	**36.9**	35.1	41.3	**39.2**
07:00-08:00	35.4	39.4	**37.8**	36.2	40.9	**39.2**
08:00-09:00	36.2	38.1	**37.3**	34.5	38.2	**36.7**
09:00-10:00	34.9	38.8	**37.3**	35.6	36.6	**36.1**
10:00-11:00	32.9	39.6	**37.4**	37.2	37.8	**37.5**
11:00-12:00	32.6	37.7	**35.9**	40.6	42.5	**41.7**
12:00-13:00	35.4	47.8	**45.0**	42.8	44.2	**43.6**
13:00-14:00	35.9	45.9	**43.3**	41.5	41.7	**41.6**
14:00-15:00	36.1	44.3	**41.9**	31.9	38.6	**36.4**
15:00-16:00	36.1	40.2	**38.6**	36.5	40.3	**38.8**
16:00-17:00	33.4	41.7	**39.3**	35.5	38.7	**37.4**
17:00-18:00	32.9	39.1	**37.0**	36.4	41.5	**39.7**
18:00-19:00	34.9	41.5	**39.3**	34.6	42.6	**40.2**
19:00-20:00	32.9	40.9	**38.5**	37.2	38.8	**38.1**
20:00-21:00	32.6	40.5	**38.1**	35.6	39.6	**38.0**
21:00-22:00	31.8	38.7	**36.5**	33.6	41.5	**39.1**
22:00-23:00	34.2	35.5	**34.9**	32.8	40.2	**37.9**
23:00-00:00	33.6	41.6	**39.2**	31.6	38.4	**36.2**
00:00-01:00	31.5	38.2	**36.0**	33.4	41.2	**38.9**
01:00-02:00	32.4	38.8	**36.7**	32.5	35.7	**34.4**
02:00-03:00	32.5	38.9	**36.8**	32.6	39.4	**37.2**
03:00-04:00	32.4	35.5	**34.2**	33.7	34.4	**34.1**
04:00-05:00	32.6	36.8	**35.2**	32.9	35.6	**34.5**
05:00-06:00	33.7	35.9	**34.9**	34.5	35.8	**35.2**
Result	Day Means		**38.5**	Day Means		**38.9**
	Night Means		**36.2**	Night Means		**35.8**

Note: CPCB Norms Industrial Area Day Time:75 dB(A); Night Time:70 dB(A)
The Noise level in the above location exists within the permissible limits of CPCB.

Verified by

Authorized Signatory
Santhosh Kumar .A
Managing Director

End of Report

Note: 1. The test results are only to the sample submitted for test. 2.Any correction of the test report in full or part shall invalidate the report.
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EHS 360 LABS PRIVATE LIMITED

TC-9583

TEST REPORT

Report No	EHS360/TR/2024-25/N14831/N14832	**Report Date**	03-01-2025
Site Location	**M/s Thiru. C. Selvam S/o. Chelladurai,** S.F. Nos. 927/2,3,4,5,940/2 & 943/1, Thimmarasanayakkanur Bit – I Village, Andipatti Taluk, Theni District, Tamil Nadu, Extent: 8.76.5 ha		
Sampling Method	IS 9989	**Sample Drawn by**	Laboratory
Sample Name	Noise Level Monitoring	**Sample Code**	EHS360/N14831/N14832
Sample Description	Ambient Noise	**Sample Collected Date**	28-12-2024

Location	N3 – Near Project Area – 9°59'39.52"N 77°41'39.81"E			N4 – Timmarasanayakkanur - 10° 0'3.84"N 77°40'40.20"E		
Parameter	Min	Max	Result	Min	Max	Result
Time	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
06:00-07:00	34.8	38.5	**37.0**	34.1	39.7	**37.7**
07:00-08:00	34.6	35.6	**35.1**	35.2	38.2	**37.0**
08:00-09:00	35.2	36.7	**36.0**	34.5	40.5	**38.5**
09:00-10:00	31.8	35.6	**34.1**	32.9	41.5	**39.1**
10:00-11:00	35.5	40.2	**38.5**	34.5	41.6	**39.4**
11:00-12:00	34.4	37.5	**36.2**	35.6	40.7	**38.9**
12:00-13:00	34.1	38.8	**37.1**	35.1	42.5	**40.2**
13:00-14:00	36.5	39.9	**38.5**	35.9	41.5	**39.5**
14:00-15:00	37.5	40.1	**39.0**	36.7	44.3	**42.0**
15:00-16:00	34.6	42.5	**40.1**	33.9	43.8	**41.2**
16:00-17:00	35.6	41.5	**39.5**	36.3	43.7	**41.4**
17:00-18:00	34.1	43.4	**40.9**	35.8	44.8	**42.3**
18:00-19:00	33.6	41.6	**39.2**	34.2	42.3	**39.9**
19:00-20:00	34.7	40.8	**38.7**	35.7	44.5	**42.0**
20:00-21:00	34.1	43.4	**40.9**	33.6	40.8	**38.5**
21:00-22:00	36.9	40.1	**38.8**	34.5	40.1	**38.1**
22:00-23:00	32.7	34	**33.4**	35.5	41.6	**39.5**
23:00-00:00	34.2	36.8	**35.7**	34.5	39.7	**37.8**
00:00-01:00	33.9	34.7	**34.3**	36.7	38.8	**37.9**
01:00-02:00	32.4	35.6	**34.3**	35.5	38.9	**37.5**
02:00-03:00	34.8	35.1	**35.0**	35.5	38.6	**37.3**
03:00-04:00	35.5	36.1	**35.8**	34.8	36.7	**35.9**
04:00-05:00	35.6	35.7	**35.7**	34.1	38.5	**36.8**
05:00-06:00	36.7	37.6	**37.2**	35.5	37.5	**36.6**
Result	Day Means		**37.8**	Day Means		**39.7**
	Night Means		**35.4**	Night Means		**37.1**

Note: CPCB Norms Industrial Area Day Time:75 dB(A); Night Time:70 dB(A)
The Noise level in the above location exists within the permissible limits of CPCB.

Verified by
Y. Kesavam

EHS360 LABS PRIVATE LIMITED CHENNAI 600 083

**********End of Report**********
Page 1 of 1

Authorized Signatory
Santhosh Kumar .A
Managing Director

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EHS 360 LABS PRIVATE LIMITED

TC-9583

TEST REPORT

Report No	EHS360/TR/2024-25/N14833/14834	**Report Date**	03-01-2025
Site Location	**M/s Thiru. C. Selvam S/o. Chelladurai,** S.F. Nos. 927/2,3,4,5,940/2 & 943/1, Thimmarasanayakkanur Bit – I Village, Andipatti Taluk, Theni District, Tamil Nadu, Extent: 8.76.5 ha		
Sampling Method	IS 9989	**Sample Drawn by**	Laboratory
Sample Name	Noise Level Monitoring	**Sample Code**	EHS360/N14833/N14834
Sample Description	Ambient Noise	**Sample Collected Date**	28-01-2025

Location	N5 – Mekalpatty– 9°58'29.49"N 77°38'34.73"E			N6 – Thottappanayakkanur– 9°58'38.24"N 77°43'57.09"E		
Parameter	Min	Max	Result	Min	Max	Result
Time	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
06:00-07:00	34.5	38.5	**36.9**	36.7	38.9	**37.9**
07:00-08:00	34.9	38.1	**36.8**	35.8	36.6	**36.2**
08:00-09:00	37.7	39.7	**38.8**	35.1	35.8	**35.5**
09:00-10:00	35.5	40.8	**38.9**	32.9	38.7	**36.7**
10:00-11:00	37.6	41.3	**39.8**	34.5	40.5	**38.5**
11:00-12:00	36.8	41.8	**40.0**	33.6	41.3	**39.0**
12:00-13:00	35.5	41.8	**39.7**	32.5	39.8	**37.5**
13:00-14:00	34.6	47.6	**44.8**	31.6	38.6	**36.4**
14:00-15:00	36.6	46.6	**44.0**	33.8	37.2	**35.8**
15:00-16:00	37.1	41.1	**39.5**	32.2	41.2	**38.7**
16:00-17:00	37.2	47.2	**44.6**	31.5	41.8	**39.2**
17:00-18:00	38.1	45.9	**43.6**	32.9	41.7	**39.2**
18:00-19:00	39.4	46.3	**44.1**	32.7	40.6	**38.2**
19:00-20:00	32.6	41.2	**38.8**	36.5	42.5	**40.5**
20:00-21:00	37.3	42.5	**40.6**	34.5	41.9	**39.6**
21:00-22:00	37.5	45.5	**43.1**	34.4	43.2	**40.7**
22:00-23:00	35.4	46.2	**43.5**	31.8	39.5	**37.2**
23:00-00:00	36.8	39.5	**38.4**	35.2	38.5	**37.2**
00:00-01:00	35.9	39.8	**38.3**	6.7	37.1	**34.1**
01:00-02:00	35.2	40.3	**38.5**	33.7	38.2	**36.5**
02:00-03:00	36.1	41.5	**39.6**	34.8	38.4	**37.0**
03:00-04:00	35.7	40.1	**38.4**	35.9	36.6	**36.3**
04:00-05:00	34.9	38.6	**37.1**	36.8	37.9	**37.4**
05:00-06:00	35.9	37.8	**37.0**	35.7	37.4	**36.6**
Result	Day Means		**41.0**	Day Means		**38.0**
	Night Means		**38.2**	Night Means		**36.4**

Note: CPCB Norms Industrial Area Day Time:75 dB(A); Night Time:70 dB(A)
The Noise level in the above location exists within the permissible limits of CPCB.

Verified by

CHENNAI 600 083

Authorized Signatory
Santhoshkumar .A
Managing Director

**********End of Report**********
Page 1 of 1

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EHS 360 LABS PRIVATE LIMITED

TC-9583

TEST REPORT

Report No	EHS360/TR/2024-25/N14835	**Report Date**	03-01-2025
Site Location	**M/s Thiru. C. Selvam S/o. Chelladurai,** S.F. Nos. 927/2,3,4,5,940/2 & 943/1, Thimmarasanayakkanur Bit – I Village, Andipatti Taluk, Theni District, Tamil Nadu, Extent: 8.76.5 ha		
Sampling Method	IS 9989	**Sample Drawn by**	Laboratory
Sample Name	Noise Level Monitoring	**Sample Code**	EHS360/N14835
Sample Description	Ambient Noise	**Sample Collected Date**	28-12-2024

Location	N7 - Theppathupatty- 10° 2'58.18"N 77°42'38.91"E		
arameter	Min	Max	Result
Time	dB(A)	dB(A)	dB(A)
06:00-07:00	37.9	43.2	**41.3**
07:00-08:00	38.2	41.5	**40.2**
08:00-09:00	37.2	45.5	**43.1**
09:00-10:00	39.9	42.5	**41.4**
10:00-11:00	40.2	43.6	**42.2**
11:00-12:00	41.5	42.5	**42.0**
12:00-13:00	31.9	36.5	**34.8**
13:00-14:00	33.7	35.1	**34.5**
14:00-15:00	42.8	45.5	**44.4**
15:00-16:00	45.6	46.2	**45.9**
16:00-17:00	42.5	44.2	**43.4**
17:00-18:00	31.6	36.7	**34.9**
18:00-19:00	34.2	38.1	**36.6**
19:00-20:00	33.9	37.8	**36.3**
20:00-21:00	34.5	35.5	**35.0**
21:00-22:00	35.2	36.4	**35.8**
22:00-23:00	33.8	38.6	**36.8**
23:00-00:00	32.4	37.9	**36.0**
00:00-01:00	34.6	37.2	**36.1**
01:00-02:00	35.5	38.4	**37.2**
02:00-03:00	34.8	35.6	**35.2**
03:00-04:00	33.8	38.1	**36.5**
04:00-05:00	35.9	38.9	**37.7**
05:00-06:00	36.4	38.8	**37.8**
Result	Day Means		**39.3**
	Night Means		**36.6**
Note: CPCB Norms Industrial Area Day Time:75 dB(A); Night Time:70 dB(A) The Noise level in the above location exists within the permissible limits of CPCB.			

Verified by

Y. Kesavam

EHS360 LABS PRIVATE LIMITED CHENNAI 600 083

**********End of Report**********

Authorized Signatory

Santhoshkumar .A

Managing Director

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TC-9583

TEST REPORT

Report No	EHS360/TR/2024-25/N14836	**Report Date**	03-01-2025
Site Location	**M/s Thiru. C. Selvam S/o. Chelladurai,** S.F. Nos. 927/2,3,4,5,940/2 & 943/1, Thimmarasanayakkanur Bit – I Village, Andipatti Taluk, Theni District, Tamil Nadu, Extent: 8.76.5 ha		
Sampling Method	SOP Method	**Sample Drawn by**	Laboratory
Sample Name	Soil	**Sample Code**	EHS360/N14836
Sample Description	Soil 1	**Sample Collected Date**	28-12-2024
Qty. of Sample Received	2 KG	**Sample Received On**	28-12-2024
Sample Condition	Good	**Test Commenced On**	28-12-2024
Sampling Location	Core Zone		

S.No	Test Parameters	Protocols	Results
01	pH @ 25°C	IS 2720 Part 26 - 1987 (Reaff:2016)	8.17
02	Conductivity @ 25°C	IS 14767 - 2000 (Reaff : 2016)	481 µmhos/cm
03	Water Holding Capacity	By Gravimetric Method	48.4 %
04	Bulk Density	By Cylindrical Method	1.03 g/cm^3
05	Porosity	By Gravimetric Method	47.2 %
06	Calcium as Ca	Food and Agriculture organization of the united Nation Rome 2007 : 2018	32.1 mg/kg
07	Magnesium as Mg		26.4 mg/kg
08	Chloride as Cl	APHA 23rd Edn 2019 4500 Cl B	40.6 mg/kg
09	Soluble Sulphate as SO_4	IS 2720 Part 27 : 1977 (Reaff:2015)	0.0022 %
10	Total Phosphorus as P	IS 10158 : 1982 (Reaff: 2019)	5.37 mg/kg
11	Total Nitrogen as N	IS 14684 : 1999 (Reaff:2019)	410.5 mg/kg
12	Organic Matter	IS : 2720 Part 22: 1972 (Reaff: 2015)	2.05 %
13	Organic Carbon	IS : 2720 Part 22: 1972 (Reaff: 2015)	1.19 %

Verified by

(Reseven Y)

..... Continued.....

Authorized Signatory

Santhosh Kumar .A

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TEST REPORT

Report No	EHS360/TR/2024-25/N14836	**Report Date**	03-01-2025
Site Location	**M/s Thiru. C. Selvam S/o. Chelladurai,** S.F. Nos. 927/2,3,4,5,940/2 & 943/1, Thimmarasanayakkanur Bit – I Village, Andipatti Taluk, Theni District, Tamil Nadu, Extent: 8.76.5 ha		
Sampling Method	SOP Method	**Sample Drawn by**	Laboratory
Sample Name	Soil	**Sample Code**	EHS360/N14836
Sample Description	Soil 1	**Sample Collected Date**	28-12-2024
Qty. of Sample Received	2 KG	**Sample Received On**	28-12-2024
Sample Condition	Good	**Test Commenced On**	28-12-2024
Sampling Location	Core Zone		

S.No	Test Parameters	Protocols	Results
14	**Texture :**		
	Clay	Gravimetric Method	29.2 %
	Sand		31.9 %
	Silt		38.9 %
15	Manganese as Mn	USEPA 3050 B – 1996 & USEPA 6010 C - 2000	12.7 mg/kg
16	Zinc as Zn		2.22 mg/kg
17	Boron as B		1.09 mg/kg
18	Potassium as K		30.8 mg/kg
19	Cadmium as Cd		BDL (DL : 1.0 mg/kg)
20	Total Chromium as Cr		2.57
21	Copper as Cu		BDL (DL : 1.0 mg/kg)
22	Lead as Pb		0.67 mg/kg
23	Iron as Fe		46.7 mg/kg
24	Cation Exchange Capacity	USEPA 9080 – 1986	35.1 meq/100g of soil

Verified by

(Keerthivasan Y)

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**********End of Report**********

Page 2 of 2

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Santhosh Kumar .A
Managing Director

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TC-9583

TEST REPORT

Report No	EHS360/TR/2024-25/N14837	**Report Date**	03-01-2025
Site Location	**M/s Thiru. C. Selvam S/o. Chelladurai,** S.F. Nos. 927/2,3,4,5,940/2 & 943/1, Thimmarasanayakkanur Bit – I Village, Andipatti Taluk, Theni District, Tamil Nadu, Extent: 8.76.5 ha		
Sampling Method	SOP Method	**Sample Drawn by**	Laboratory
Sample Name	Soil	**Sample Code**	EHS360/N14837
Sample Description	Soil 2	**Sample Collected Date**	28-12-2024
Qty. of Sample Received	2 KG	**Sample Received On**	28-12-2024
Sample Condition	Good	**Test Commenced On**	28-12-2024
Sampling Location	Near Project Area		

S.No	Test Parameters	Protocols	Results
01	pH @ 25°C	IS 2720 Part 26 - 1987 (Reaff:2016)	8.50
02	Conductivity @ 25°C	IS 14767 - 2000 (Reaff : 2016)	373 µmhos/cm
03	Water Holding Capacity	By Gravimetric Method	46.9 %
04	Bulk Density	By Cylindrical Method	1.01 g/cm^3
05	Porosity	By Gravimetric Method	48.1 %
06	Calcium as Ca	Food and Agriculture organization of the united Nation Rome 2007 : 2018	27.7 mg/kg
07	Magnesium as Mg		15.4 mg/kg
08	Chloride as Cl	APHA 23rd Edn 2019 4500 Cl B	14.9 mg/kg
09	Soluble Sulphate as SO_4	IS 2720 Part 27 : 1977 (Reaff:2015)	0.0011 %
10	Total Phosphorus as P	IS 10158 : 1982 (Reaff: 2019)	3.3 mg/kg
11	Total Nitrogen as N	IS 14684 : 1999 (Reaff:2019)	380.8 mg/kg
12	Organic Matter	IS : 2720 Part 22: 1972 (Reaff: 2015)	1.84 %
13	Organic Carbon	IS : 2720 Part 22: 1972 (Reaff: 2015)	1.07 %

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(Keseven Y)

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Santhosh Kumar .A
Managing Director

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TEST REPORT

Report No	EHS360/TR/2024-25/N14837	**Report Date**	03-01-2025
Site Location	**M/s Thiru. C. Selvam S/o. Chelladurai,** S.F. Nos. 927/2,3,4,5,940/2 & 943/1, Thimmarasanayakkanur Bit – I Village, Andipatti Taluk, Theni District, Tamil Nadu, Extent: 8.76.5 ha		
Sampling Method	SOP Method	**Sample Drawn by**	Laboratory
Sample Name	Soil	**Sample Code**	EHS360/N14837
Sample Description	Soil 2	**Sample Collected Date**	28-12-2024
Qty. of Sample Received	2 KG	**Sample Received On**	28-12-2024
Sample Condition	Good	**Test Commenced On**	28-12-2024
Sampling Location	Near Project Area		

S.No	Test Parameters	Protocols	Results
14	**Texture :**		
	Clay	Gravimetric Method	27.9 %
	Sand		35.7 %
	Silt		36.4 %
15	Manganese as Mn	USEPA 3050 B – 1996 & USEPA 6010 C - 2000	12.4 mg/kg
16	Zinc as Zn		4.06 mg/kg
17	Boron as B		3.2 mg/kg
18	Potassium as K		31.61 mg/kg
19	Cadmium as Cd		BDL (DL : 1.0 mg/kg)
20	Total Chromium as Cr		2.97
21	Copper as Cu		BDL (DL : 1.0 mg/kg)
22	Lead as Pb		BDL (DL : 1.0 mg/kg)
23	Iron as Fe		24.9 mg/kg
24	Cation Exchange Capacity	USEPA 9080 – 1986	40.1 meq/100g of soil

Verified by

(Keerthivasan Y)

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**********End of Report**********

Page 2 of 2

Authorized Signatory

Santhosh Kumar .A

Managing Director

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TEST REPORT

Report No	EHS360/TR/2024-25/N14838	**Report Date**	03-01-2025
Site Location	**M/s Thiru. C. Selvam S/o. Chelladurai,** S.F. Nos. 927/2,3,4,5,940/2 & 943/1, Thimmarasanayakkanur Bit – I Village, Andipatti Taluk, Theni District, Tamil Nadu, Extent: 8.76.5 ha		
Sampling Method	SOP Method	**Sample Drawn by**	Laboratory
Sample Name	Soil	**Sample Code**	EHS360/N14838
Sample Description	Soil 3	**Sample Collected Date**	28-12-2024
Qty. of Sample Received	2 KG	**Sample Received On**	28-12-2024
Sample Condition	Good	**Test Commenced On**	28-12-2024
Sampling Location	Timmarasanayakkanur		

S.No	Test Parameters	Protocols	Results
01	pH @ 25°C	IS 2720 Part 26 - 1987 (Reaff:2016)	8.31
02	Conductivity @ 25°C	IS 14767 - 2000 (Reaff : 2016)	428 µmhos/cm
03	Water Holding Capacity	By Gravimetric Method	47.1 %
04	Bulk Density	By Cylindrical Method	1.02 g/cm^3
05	Porosity	By Gravimetric Method	47.7 %
06	Calcium as Ca	Food and Agriculture organization of the united Nation Rome 2007 : 2018	20.1 mg/kg
07	Magnesium as Mg		17.4 mg/kg
08	Chloride as Cl	APHA 23rd Edn 2019 4500 Cl B	28.54 mg/kg
09	Soluble Sulphate as SO_4	IS 2720 Part 27 : 1977 (Reaff:2015)	0.0028 %
10	Total Phosphorus as P	IS 10158 : 1982 (Reaff: 2019)	2.86 mg/kg
11	Total Nitrogen as N	IS 14684 : 1999 (Reaff:2019)	546.2 mg/kg
12	Organic Matter	IS : 2720 Part 22: 1972 (Reaff: 2015)	1.67 %
13	Organic Carbon	IS : 2720 Part 22: 1972 (Reaff: 2015)	1.19 %

Verified by
(Reseven Y)

..... Continued.....

Authorized Signatory
Santhosh Kumar .A
Managing Director

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TEST REPORT

Report No	EHS360/TR/2024-25/N14838	**Report Date**	03-01-2025
Site Location	**M/s Thiru. C. Selvam S/o. Chelladurai,** S.F. Nos. 927/2,3,4,5,940/2 & 943/1, Thimmarasanayakkanur Bit – I Village, Andipatti Taluk, Theni District, Tamil Nadu, Extent: 8.76.5 ha		
Sampling Method	SOP Method	**Sample Drawn by**	Laboratory
Sample Name	Soil	**Sample Code**	EHS360/N14838
Sample Description	Soil 3	**Sample Collected Date**	28-12-2024
Qty. of Sample Received	2 KG	**Sample Received On**	28-12-2024
Sample Condition	Good	**Test Commenced On**	28-12-2024
Sampling Location	Timmarasanayakkanur		

S.No	Test Parameters	Protocols	Results
14	**Texture :**		
	Clay	Gravimetric Method	25.6 %
	Sand		32.0 %
	Silt		42.4 %
15	Manganese as Mn	USEPA 3050 B – 1996 & USEPA 6010 C - 2000	17.0 mg/kg
16	Zinc as Zn		2.14 mg/kg
17	Boron as B		5.13 mg/kg
18	Potassium as K		30.45 mg/kg
19	Cadmium as Cd		BDL (DL : 1.0 mg/kg)
20	Total Chromium as Cr		3.19
21	Copper as Cu		BDL (DL : 1.0 mg/kg)
22	Lead as Pb		0.71 mg/kg
23	Iron as Fe		41.6 mg/kg
24	Cation Exchange Capacity	USEPA 9080 – 1986	42.11 meq/100g of soil

Verified by
(Keerthivasan Y)

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Authorized Signatory
Santhosh Kumar .A
Managing Director

**********End of Report**********

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TC-9583

TEST REPORT

Report No	EHS360/TR/2024-25/N14839	**Report Date**	03-01-2025
Site Location	**M/s Thiru. C. Selvam S/o. Chelladurai,** S.F. Nos. 927/2,3,4,5,940/2 & 943/1, Thimmarasanayakkanur Bit – I Village, Andipatti Taluk, Theni District, Tamil Nadu, Extent: 8.76.5 ha		
Sampling Method	SOP Method	**Sample Drawn by**	Laboratory
Sample Name	Soil	**Sample Code**	EHS360/N14839
Sample Description	Soil 4	**Sample Collected Date**	28-12-2024
Qty. of Sample Received	2 KG	**Sample Received On**	28-12-2024
Sample Condition	Good	**Test Commenced On**	28-12-2024
Sampling Location	Mekalpatty		

S.No	Test Parameters	Protocols	Results
01	pH @ 25°C	IS 2720 Part 26 - 1987 (Reaff:2016)	8.09
02	Conductivity @ 25°C	IS 14767 - 2000 (Reaff : 2016)	503 µmhos/cm
03	Water Holding Capacity	By Gravimetric Method	48.5. %
04	Bulk Density	By Cylindrical Method	1.01 g/cm^3
05	Porosity	By Gravimetric Method	47.4 %
06	Calcium as Ca	Food and Agriculture organization of the united Nation Rome 2007 : 2018	20 mg/kg
07	Magnesium as Mg		5.68 mg/kg
08	Chloride as Cl	APHA 23rd Edn 2019 4500 Cl B	15 mg/kg
09	Soluble Sulphate as SO_4	IS 2720 Part 27 : 1977 (Reaff:2015)	0.0025 %
10	Total Phosphorus as P	IS 10158 : 1982 (Reaff: 2019)	5.02 mg/kg
11	Total Nitrogen as N	IS 14684 : 1999 (Reaff:2019)	342 mg/kg
12	Organic Matter	IS : 2720 Part 22: 1972 (Reaff: 2015)	1.81 %
13	Organic Carbon	IS : 2720 Part 22: 1972 (Reaff: 2015)	1.05 %

Verified by

(Reseven Y)

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Authorized Signatory

Santhosh Kumar .A

Managing Director

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TEST REPORT

Report No	EHS360/TR/2024-25/N14839	**Report Date**	03-01-2025
Site Location	**M/s Thiru. C. Selvam S/o. Chelladurai,** S.F. Nos. 927/2,3,4,5,940/2 & 943/1, Thimmarasanayakkanur Bit – I Village, Andipatti Taluk, Theni District, Tamil Nadu, Extent: 8.76.5 ha		
Sampling Method	SOP Method	**Sample Drawn by**	Laboratory
Sample Name	Soil	**Sample Code**	EHS360/N14839
Sample Description	Soil 4	**Sample Collected Date**	28-12-2024
Qty. of Sample Received	2 KG	**Sample Received On**	28-12-2024
Sample Condition	Good	**Test Commenced On**	28-12-2024
Sampling Location	Mekalpatty		

S.No	Test Parameters	Protocols	Results
14	**Texture :**		
	Clay	Gravimetric Method	31.0 %
	Sand		28.6 %
	Silt		40.4 %
15	Manganese as Mn	USEPA 3050 B – 1996 & USEPA 6010 C - 2000	8.1 mg/kg
16	Zinc as Zn		3.2 mg/kg
17	Boron as B		2.4 mg/kg
18	Potassium as K		20.5 mg/kg
19	Cadmium as Cd		BDL (DL : 1.0 mg/kg)
20	Total Chromium as Cr		3.08
21	Copper as Cu		BDL (DL : 1.0 mg/kg)
22	Lead as Pb		2.6 mg/kg
23	Iron as Fe		28.7 mg/kg
24	Cation Exchange Capacity	USEPA 9080 – 1986	41.9 meq/100g of soil

Verified by
Kreevan Y

EHS360 LABS PRIVATE LIMITED CHENNAI TAMIL NADU 003

**********End of Report**********

Authorized Signatory
Santhosh Kumar .A
Managing Director

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EHS 360 LABS PRIVATE LIMITED

TC-9583

TEST REPORT

Report No	EHS360/TR/2024-25/N14840	**Report Date**	03-01-2025
Site Location	**M/s Thiru. C. Selvam S/o. Chelladurai,** S.F. Nos. 927/2,3,4,5,940/2 & 943/1, Thimmarasanayakkanur Bit – I Village, Andipatti Taluk, Theni District, Tamil Nadu, Extent: 8.76.5 ha		
Sampling Method	SOP Method	**Sample Drawn by**	Laboratory
Sample Name	Soil	**Sample Code**	EHS360/N14840
Sample Description	Soil 5	**Sample Collected Date**	28-12-2024
Qty. of Sample Received	2 KG	**Sample Received On**	28-12-2024
Sample Condition	Good	**Test Commenced On**	28-12-2024
Sampling Location	Thottappanayakkanur		

S.No	Test Parameters	Protocols	Results
01	pH @ 25°C	IS 2720 Part 26 - 1987 (Reaff:2016)	8.22
02	Conductivity @ 25°C	IS 14767 - 2000 (Reaff : 2016)	359 µmhos/cm
03	Water Holding Capacity	By Gravimetric Method	48.0 %
04	Bulk Density	By Cylindrical Method	1.04 g/cm^3
05	Porosity	By Gravimetric Method	46.1 %
06	Calcium as Ca	Food and Agriculture organization of the united Nation Rome 2007 : 2018	23.4 mg/kg
07	Magnesium as Mg		12.2 mg/kg
08	Chloride as Cl	APHA 23rd Edn 2019 4500 Cl B	18 mg/kg
09	Soluble Sulphate as SO_4	IS 2720 Part 27 : 1977 (Reaff:2015)	0.0015 %
10	Total Phosphorus as P	IS 10158 : 1982 (Reaff: 2019)	3.9 mg/kg
11	Total Nitrogen as N	IS 14684 : 1999 (Reaff:2019)	502 mg/kg
12	Organic Matter	IS : 2720 Part 22: 1972 (Reaff: 2015)	2.34 %
13	Organic Carbon	IS : 2720 Part 22: 1972 (Reaff: 2015)	1.36 %

Verified by
(Yesevan Y)

..... Continued.....

Authorized Signatory
Santhosh Kumar .A
Managing Director

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TEST REPORT

Report No	EHS360/TR/2024-25/N14840	**Report Date**	03-01-2025
Site Location	**M/s Thiru. C. Selvam S/o. Chelladurai,** S.F. Nos. 927/2,3,4,5,940/2 & 943/1, Thimmarasanayakkanur Bit – I Village, Andipatti Taluk, Theni District, Tamil Nadu, Extent: 8.76.5 ha		
Sampling Method	SOP Method	**Sample Drawn by**	Laboratory
Sample Name	Soil	**Sample Code**	EHS360/N14840
Sample Description	Soil 5	**Sample Collected Date**	28-12-2024
Qty. of Sample Received	2 KG	**Sample Received On**	28-12-2024
Sample Condition	Good	**Test Commenced On**	28-12-2024
Sampling Location	Thottappanayakkanur		

S.No	Test Parameters	Protocols	Results
14	**Texture :**		
	Clay	Gravimetric Method	24.9 %
	Sand		32.8 %
	Silt		42.3 %
15	Manganese as Mn	USEPA 3050 B – 1996 & USEPA 6010 C – 2000	4.5 mg/kg
16	Zinc as Zn		1.26 mg/kg
17	Boron as B		4.9 mg/kg
18	Potassium as K		30 mg/kg
19	Cadmium as Cd		BDL (DL : 1.0 mg/kg)
20	Total Chromium as Cr		3.56
21	Copper as Cu		BDL (DL : 1.0 mg/kg)
22	Lead as Pb		0.88 mg/kg
23	Iron as Fe		19.4 mg/kg
24	Cation Exchange Capacity	USEPA 9080 – 1986	46.5 meq/100g of soil

Verified by
(Keeran Y)

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Authorized Signatory
Santhosh Kumar .A
Managing Director

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TC-9583

TEST REPORT

Report No	EHS360/TR/2024-25/N14841	**Report Date**	03-01-2025
Site Location	**M/s Thiru. C. Selvam S/o. Chelladurai,** S.F. Nos. 927/2,3,4,5,940/2 & 943/1, Thimmarasanayakkanur Bit – I Village, Andipatti Taluk, Theni District, Tamil Nadu, Extent: 8.76.5 ha		
Sampling Method	SOP Method	**Sample Drawn by**	Laboratory
Sample Name	Soil	**Sample Code**	EHS360/14841
Sample Description	Soil 6	**Sample Collected Date**	28-12-2024
Qty. of Sample Received	2 KG	**Sample Received On**	28-12-2024
Sample Condition	Good	**Test Commenced On**	28-12-2024
Sampling Location	Theppathupatty		

S.No	Test Parameters	Protocols	Results
01	pH @ 25°C	IS 2720 Part 26 - 1987 (Reaff:2016)	8.66
02	Conductivity @ 25°C	IS 14767 - 2000 (Reaff : 2016)	349 µmhos/cm
03	Water Holding Capacity	By Gravimetric Method	48.4 %
04	Bulk Density	By Cylindrical Method	1.0 g/cm^3
05	Porosity	By Gravimetric Method	47.9 %
06	Calcium as Ca	Food and Agriculture organization of the united Nation Rome 2007 : 2018	16.4 mg/kg
07	Magnesium as Mg		12.6 mg/kg
08	Chloride as Cl	APHA 23rd Edn 2019 4500 Cl B	8.7 mg/kg
09	Soluble Sulphate as SO_4	IS 2720 Part 27 : 1977 (Reaff:2015)	0.0010 %
10	Total Phosphorus as P	IS 10158 : 1982 (Reaff: 2019)	7.61 mg/kg
11	Total Nitrogen as N	IS 14684 : 1999 (Reaff:2019)	671.2 mg/kg
12	Organic Matter	IS : 2720 Part 22: 1972 (Reaff: 2015)	2.38 %
13	Organic Carbon	IS : 2720 Part 22: 1972 (Reaff: 2015)	1.38 %

Verified by
(Reseven Y)

..... Continued.....

Authorized Signatory
Santhosh Kumar .A
Managing Director

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TEST REPORT

Report No	EHS360/TR/2024-25/N14841	**Report Date**	03-01-2025
Site Location	**M/s Thiru. C. Selvam S/o. Chelladurai,** S.F. Nos. 927/2,3,4,5,940/2 & 943/1, Thimmarasanayakkanur Bit – I Village, Andipatti Taluk, Theni District, Tamil Nadu, Extent: 8.76.5 ha		
Sampling Method	SOP Method	**Sample Drawn by**	Laboratory
Sample Name	Soil	**Sample Code**	EHS360/N14841
Sample Description	Soil 6	**Sample Collected Date**	28-12-2024
Qty. of Sample Received	2 KG	**Sample Received On**	28-12-2024
Sample Condition	Good	**Test Commenced On**	28-12-2024
Sampling Location	Theppathupatty		

S.No	Test Parameters	Protocols	Results
14	**Texture :**		
	Clay	Gravimetric Method	30.9 %
	Sand		33.1 %
	Silt		36.0 %
15	Manganese as Mn	USEPA 3050 B – 1996 & USEPA 6010 C – 2000	8.3 mg/kg
16	Zinc as Zn		5.45 mg/kg
17	Boron as B		1.71 mg/kg
18	Potassium as K		22.4 mg/kg
19	Cadmium as Cd		BDL (DL : 1.0 mg/kg)
20	Total Chromium as Cr		6.69
21	Copper as Cu		BDL (DL : 1.0 mg/kg)
22	Lead as Pb		BDL (DL : 1.0 mg/kg)
23	Iron as Fe		37.02 mg/kg
24	Cation Exchange Capacity	USEPA 9080 – 1986	39.4 meq/100g of soil

Verified by
(Keeran Y)

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Authorized Signatory
Santhosh Kumar .A
Managing Director

**********End of Report**********

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TC-9583

TEST REPORT

Report No	EHS360/TR/2024-25/N14842	**Report Date**	03-01-2025
Site Location	**M/s Thiru. C. Selvam S/o. Chelladurai,** S.F. Nos. 927/2,3,4,5,940/2 & 943/1, Thimmarasanayakkanur Bit – I Village, Andipatti Taluk, Theni District, Tamil Nadu, Extent: 8.76.5 ha		
Sampling Method	SOP Method	**Sample Drawn by**	Laboratory
Sample Name	Water	**Sample Code**	EHS360/N14842
Sample Description	Surface Water (SW-2)	**Sample Collected Date**	28-12-2024
Qty. of Sample Received	2 Litres	**Sample Received On**	28-12-2024
Sample Condition	Fit for Analysis	**Test Commenced On**	28-12-2024
Sampling Location	**Vaigai River**		

S.No.	Parameters	Test Method	RESULTS
	Discipline: Chemical		
1	Colour	IS 3025 Part 4:1983	10 Hazen
2	Odour	IS 3025 Part 5:2018	Agreeable
3	pH at 25°C	IS 3025 Part 11:1983	7.29
4	Conductivity @ 25°C	IS 3025 Part 14:2013	813 µmhos/cm
5	Turbidity	IS 3025 Part 10:1984	3.5 NTU
6	Total Dissolved Solids	IS 3025 Part 16:1984	480 mg/l
7	Total Hardness as $CaCO_3$	IS 3025 Part 21:2009	175.18 mg/l
8	Calcium as Ca	IS 3025 Part 40:1991	30.5 mg/l
9	Magnesium as Mg	IS 3025 Part 46:1994	24.1 mg/l
10	Total Alkalinity as $CaCO_3$	IS 3025 Part 23:1986	156 mg/l
11	Chloride as Cl	IS 3025 Part 32:1988	115.5 mg/l
12	Sulphate as SO_4	IS 3025 Part 24:1986	39.4 mg/l
13	Iron as Fe	IS 3025 Part 53:2003	0.19 mg/l
14	Residual Free Chlorine	IS 3025 Part 26:1986	BDL (DL:0.1 mg/l)
15	Fluoride as F	APHA 23rd Edn. 2017:4500 F,D	0.33 mg/l
16	Nitrate as NO_3	IS 3025 Part 34:1988	5.15 mg/l
17	Copper as Cu	IS 3025 Part 65:2014	BDL (DL:0.01 mg/l)
18	Manganese as Mn	IS 3025 Part 65:2014	BDL (DL:0.02 mg/l)

Verified by
Y. Kesavan
(Kesavan Y)

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Authorized Signatory
Santhosh Kumar .A
Managing Director

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TEST REPORT

Report No	EHS360/TR/2024-25/N14842	**Report Date**	03-01-2025
Site Location	**M/s Thiru. C. Selvam S/o. Chelladurai,** S.F. Nos. 927/2,3,4,5,940/2 & 943/1, Thimmarasanayakkanur Bit – I Village, Andipatti Taluk, Theni District, Tamil Nadu, Extent: 8.76.5 ha		
Sampling Method	SOP Method	**Sample Drawn by**	Laboratory
Sample Name	Water	**Sample Code**	EHS360/009
Sample Description	Surface Water (SW-2)	**Sample Collected Date**	28-12-2024
Qty. of Sample Received	2 Litres	**Sample Received On**	28-12-2024
Sample Condition	Fit for Analysis	**Test Commenced On**	28-12-2024
Sampling Location	**Vaigai River**		

S.No.	Parameters	Test Method	RESULTS
19	Mercury as Hg	USEPA 200.8	BDL (DL:0.0005 mg/l)
20	Cadmium as Cd	IS 3025 Part 65:2014	BDL (DL:0.001 mg/l)
21	Selenium as Se	IS 3025 Part 65:2014	BDL (DL:0.005 mg/l)
22	Aluminium as Al	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
23	Lead as Pb	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
24	Zinc as Zn	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.05 mg/l)
25	Total Chromium as Cr	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.02 mg/l)
26	Boron as B	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.05 mg/l)
27	Mineral Oil	IS 3025 Part 39-1991 (Reaff. 2019)	BDL(DL : 0.01 mg/l)
28	Phenolic compounds as C_6H_5OH	IS 3025 Part 43-1992(Reaff: 2019)	BDL (DL:0.0005 mg/l)
29	Anionic Detergents (as MBAS)	IS 13428 – 2005 (Reaff:2019) (Annex K)	BDL (DL:0.01 mg/l)
30	Cyanide as CN	IS 3025 Part 27-1986 (Reaff. 2019)	BDL (DL:0.01 mg/l)
31	BOD @ 27°C for 3 days	IS 3025 Part 44:1993 (Reaff:2019)	13.1 mg/l
32	Chemical Oxygen Demand	IS 3025 Part 58:2006 (Reaff:2017)	40 mg/l
33	Dissolved Oxygen	IS 3025 Part 38:1989 (Reaff:2019)	5.4 mg/l
34	Barium as Ba	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL:0.05 mg/l)
35	Ammonia (as total ammonia-N)	IS 3025 Part 34-1988 (Reaff. 2019)	1.19 mg/l
36	Sulphide as H_2S	IS 3025 Part 29-1986 (Reaff: 2019)	BDL (DL:0.01 mg/l)
37	Molybdenum as Mo	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)
38	Total Arsenic as As	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
39	Total Suspended Solids	IS 3025 Part 17 -1984 (Reaff:2017)	20.5 mg/l
	Discipline: Biological	**Group:** Water	
40	Total Coliform	APHA 23rd Edn. 2017:9221B	440 MPN/100ml
41	*Escherichia coli*	APHA 23rd Edn. 2017:9221F	130 MPN/100ml

Verified by
Kesavan Y

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**********End of Report**********

Authorized Signatory
Santhosh Kumar .A
Managing Director

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TC-9583

TEST REPORT

Report No	EHS360/TR/2024-25/N14843	**Report Date**	03-01-2025
Site Location	**M/s Thiru. C. Selvam S/o. Chelladurai,** S.F. Nos. 927/2,3,4,5,940/2 & 943/1, Thimmarasanayakkanur Bit – I Village, Andipatti Taluk, Theni District, Tamil Nadu, Extent: 8.76.5 ha		
Customer Name			
Sampling Method	SOP Method	**Sample Drawn by**	Laboratory
Sample Name	Water	**Sample Code**	EHS360/N14843
Sample Description	Ground Water (WW-1)	**Sample Collected Date**	28-12-2024
Qty. of Sample Received	2 Litres	**Sample Received On**	28-12-2024
Sample Condition	Fit for Analysis	**Test Commenced On**	28-12-2024
Near Project Area	Near Project Area		

S.No.	Parameters	Test Method	RESULTS
	Discipline: Chemical	**Group:** Water	
1	Colour	IS 3025 Part 4:1983 (Reaff:2017)	5
2	Odour	IS 3025 Part 5:2018	Agreeable
3	pH at 25°C	IS 3025 Part 11:1983 (Reaff:2017)	6.97
4	Conductivity @ 25°C	IS 3025 Part 14:2013 (Reaff:2019)	915 µmhos/cm
5	Turbidity	IS 3025 Part 10:1984 (Reaff:2017)	1 NTU
6	Total Dissolved Solids	IS 3025 Part 16:1984 (Reaff:2017)	540 mg/l
7	Total Hardness as $CaCO_3$	IS 3025 Part 21:2009 (Reaff:2019)	203.2 mg/l
8	Calcium as Ca	IS 3025 Part 40:1991 (Reaff:2019)	35.8 mg/l
9	Magnesium as Mg	IS 3025 Part 46:1994 (Reaff:2019)	27.7 mg/l
10	Total Alkalinity as $CaCO_3$	IS 3025 Part 23:1986 (Reaff:2019)	201 mg/l
11	Chloride as Cl	IS 3025 Part 32:1988 (Reaff:2019)	115.3 mg/l
12	Sulphate as SO_4	IS 3025 Part 24:1986 (Reaff:2019)	59 mg/l
13	Iron as Fe	IS 3025 Part 53:2003 (Reaff:2019)	0.29 mg/l
14	Residual Free Chlorine	IS 3025 Part 26:1986 (Reaff:2019)	BDL (DL:0.1 mg/l)
15	Fluoride as F	APHA 23rd Edn. 2017:4500 F,D	0.24 mg/l
16	Nitrate as NO_3	IS 3025 Part 34:1988 (Reaff:2019)	3.15 g/l

Verified by
(Kesavan Y)

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Authorized Signatory
Santhosh Kumar .A
Managing Director

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TEST REPORT

Report No	EHS360/TR/2024-25/N14843	**Report Date**	03-01-2025
Site Location	**M/s Thiru. C. Selvam S/o. Chelladurai,** S.F. Nos. 927/2,3,4,5,940/2 & 943/1, Thimmarasanayakkanur Bit – I Village, Andipatti Taluk, Theni District, Tamil Nadu, Extent: 8.76.5 ha		
Sampling Method	SOP Method	**Sample Drawn by**	Laboratory
Sample Name	Water	**Sample Code**	EHS360/N14843
Sample Description	Ground Water (WW-1)	**Sample Collected Date**	28-12-2024
Qty. of Sample Received	2 Litres	**Sample Received On**	28-12-2024
Sample Condition	Fit for Analysis	**Test Commenced On**	28-12-2024
Sampling Location	Near Project Area		

S.No.	Parameters	Test Method	RESULTS
17	Copper as Cu	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.01 mg/l)
18	Manganese as Mn	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)
19	Mercury as Hg	USEPA 200.8	BDL (DL:0.0005 mg/l)
20	Cadmium as Cd	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.001 mg/l)
21	Selenium as Se	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
22	Aluminium as Al	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
23	Lead as Pb	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
24	Zinc as Zn	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.05 mg/l)
25	Total Chromium as Cr	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.02 mg/l)
26	Boron as B	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.05 mg/l)
27	Mineral Oil	IS 3025 Part 39-1991 (Reaff. 2019)	BDL(DL : 0.01 mg/l)
28	Phenolic compounds as C_6H_5OH	IS 3025 Part 43-1992(Reaff: 2019)	BDL (DL:0.0005 mg/l)
29	Anionic Detergents (as MBAS)	IS 13428 – 2005 (Reaff:2019) (Annex K)	BDL (DL:0.01 mg/l)
30	Cyanide as CN	IS 3025 Part 27-1986 (Reaff. 2019)	BDL (DL:0.01 mg/l)
31	Barium as Ba	IS 3025 Part 44:1993 (Reaff:2019)	BDL(DL:0.05 mg/l)
32	Ammonia (as total ammonia-N)	IS 3025 Part 58:2006 (Reaff:2017)	BDL (DL:0.01 mg/l)
33	Sulphide as H_2S	IS 3025 Part 38:1989 (Reaff:2019)	BDL (DL:0.01 mg/l)
34	Molybdenum as Mo	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)
35	Total Arsenic as As	IS 3025 Part 34-1988 (Reaff. 2019)	BDL (DL:0.005 mg/l)
36	Total Suspended Solids	IS 3025 Part 29-1986 (Reaff: 2019)	BDL (DL:1.0 mg/l)
	Discipline: Biological	**Group:** Water	
37	Total Coliform	APHA 23rd Edn. 2017:9221B	180 MPN/100ml
38	*Escherichia coli*	APHA 23rd Edn. 2017:9221F	< 1.8 MPN/100ml

Verified by
(Keevan Y)

EHS 360 LABS PRIVATE LIMITED CHENNAI

**********End of Report**********

Authorized Signatory
Santhosh Kumar .A
Managing Director

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TC-9583

TEST REPORT

Report No	EHS360/TR/2024-25/N14844	**Report Date**	03-01-2025
Site Location	**M/s Thiru. C. Selvam S/o. Chelladurai,** S.F. Nos. 927/2,3,4,5,940/2 & 943/1, Thimmarasanayakkanur Bit – I Village, Andipatti Taluk, Theni District, Tamil Nadu, Extent: 8.76.5 ha		
Customer Name			
Sampling Method	SOP Method	**Sample Drawn by**	Laboratory
Sample Name	Water	**Sample Code**	EHS360/N14844
Sample Description	Ground Water (WW-2)	**Sample Collected Date**	28-12-2024
Qty. of Sample Received	2 Litres	**Sample Received On**	28-12-2024
Sample Condition	Fit for Analysis	**Test Commenced On**	28-12-2024
Sampling Location	Mekalpatty		

S.No.	Parameters	Test Method	RESULTS
	Discipline: Chemical	**Group:** Water	
1	Colour	IS 3025 Part 4:1983 (Reaff:2017)	5
2	Odour	IS 3025 Part 5:2018	Agreeable
3	pH at 25°C	IS 3025 Part 11:1983 (Reaff:2017)	7.08
4	Conductivity @ 25°C	IS 3025 Part 14:2013 (Reaff:2019)	785 µmhos/cm
5	Turbidity	IS 3025 Part 10:1984 (Reaff:2017)	1.0 NTU
6	Total Dissolved Solids	IS 3025 Part 16:1984 (Reaff:2017)	463 mg/l
7	Total Hardness as $CaCO_3$	IS 3025 Part 21:2009 (Reaff:2019)	168.02 mg/l
8	Calcium as Ca	IS 3025 Part 40:1991 (Reaff:2019)	30.1 mg/l
9	Magnesium as Mg	IS 3025 Part 46:1994 (Reaff:2019)	22.6 mg/l
10	Total Alkalinity as $CaCO_3$	IS 3025 Part 23:1986 (Reaff:2019)	144.2 mg/l
11	Chloride as Cl	IS 3025 Part 32:1988 (Reaff:2019)	99 mg/l
12	Sulphate as SO_4	IS 3025 Part 24:1986 (Reaff:2019)	58.4 mg/l
13	Iron as Fe	IS 3025 Part 53:2003 (Reaff:2019)	0.17 mg/l
14	Residual Free Chlorine	IS 3025 Part 26:1986 (Reaff:2019)	BDL (DL:0.1 mg/l)
15	Fluoride as F	APHA 23rd Edn. 2017:4500 F,D	0.22 mg/l
16	Nitrate as NO_3	IS 3025 Part 34:1988 (Reaff:2019)	4.52 mg/l

Verified by
Y. Kesavan
(Kesavan Y)

..... Continued.....

Authorized Signatory
Santhosh Kumar .A
Managing Director

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TEST REPORT

Report No	EHS360/TR/2024-25/N14844	**Report Date**	03-01-2025
Site Location	**M/s Thiru. C. Selvam S/o. Chelladurai,** S.F. Nos. 927/2,3,4,5,940/2 & 943/1, Thimmarasanayakkanur Bit – I Village, Andipatti Taluk, Theni District, Tamil Nadu, Extent: 8.76.5 ha		
Sampling Method	SOP Method	**Sample Drawn by**	Laboratory
Sample Name	Water	**Sample Code**	EHS360/N14844
Sample Description	Ground Water (WW-2)	**Sample Collected Date**	28-12-2024
Qty. of Sample Received	2 Litres	**Sample Received On**	28-12-2024
Sample Condition	Fit for Analysis	**Test Commenced On**	28-12-2024
Sampling Location	Mekalpatty		

S.No.	Parameters	Test Method	RESULTS
17	Copper as Cu	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.01 mg/l)
18	Manganese as Mn	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)
19	Mercury as Hg	USEPA 200.8	BDL (DL:0.0005 mg/l)
20	Cadmium as Cd	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.001 mg/l)
21	Selenium as Se	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
22	Aluminium as Al	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
23	Lead as Pb	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
24	Zinc as Zn	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.05 mg/l)
25	Total Chromium as Cr	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.02 mg/l)
26	Boron as B	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.05 mg/l)
27	Mineral Oil	IS 3025 Part 39-1991 (Reaff. 2019)	BDL(DL : 0.01 mg/l)
28	Phenolic compounds as C_6H_5OH	IS 3025 Part 43-1992(Reaff: 2019)	BDL (DL:0.0005 mg/l)
29	Anionic Detergents (as MBAS)	IS 13428 – 2005 (Reaff:2019) (Annex K)	BDL (DL:0.01 mg/l)
30	Cyanide as CN	IS 3025 Part 27-1986 (Reaff. 2019)	BDL (DL:0.01 mg/l)
31	Barium as Ba	IS 3025 Part 44:1993 (Reaff:2019)	BDL(DL:0.05 mg/l)
32	Ammonia (as total ammonia-N)	IS 3025 Part 58:2006 (Reaff:2017)	BDL (DL:0.01 mg/l)
33	Sulphide as H_2S	IS 3025 Part 38:1989 (Reaff:2019)	BDL (DL:0.01 mg/l)
34	Molybdenum as Mo	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)
35	Total Arsenic as As	IS 3025 Part 34-1988 (Reaff. 2019)	BDL (DL:0.005 mg/l)
36	Total Suspended Solids	IS 3025 Part 29-1986 (Reaff: 2019)	BDL (DL:1.0 mg/l)
	Discipline: Biological	**Group:** Water	
37	Total Coliform	APHA 23rd Edn. 2017:9221B	124 MPN/100ml
38	*Escherichia coli*	APHA 23rd Edn. 2017:9221F	< 1.8 MPN/100ml

Verified by
Kesavan Y

EHS360 LABS PRIVATE LIMITED CHENNAI TAMIL NADU

**********End of Report**********

Authorized Signatory
Santhosh Kumar .A
Managing Director

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TC-9583

TEST REPORT

Report No	EHS360/TR/2024-25/N14845	**Report Date**	03-01-2025
Site Location	**M/s Thiru. C. Selvam S/o. Chelladurai,** S.F. Nos. 927/2,3,4,5,940/2 & 943/1, Thimmarasanayakkanur Bit – I Village, Andipatti Taluk, Theni District, Tamil Nadu, Extent: 8.76.5 ha		
Customer Name			
Sampling Method	SOP Method	**Sample Drawn by**	Laboratory
Sample Name	Water	**Sample Code**	EHS360/N14845
Sample Description	Ground Water (WW-3)	**Sample Collected Date**	28-12-2024
Qty. of Sample Received	2 Litres	**Sample Received On**	28-12-2024
Sample Condition	Fit for Analysis	**Test Commenced On**	28-12-2024
Sampling Location	Thottappanayakkanur		

S.No.	Parameters	Test Method	RESULTS
	Discipline: Chemical	**Group:** Water	
1	Colour	IS 3025 Part 4:1983 (Reaff:2017)	5
2	Odour	IS 3025 Part 5:2018	Agreeable
3	pH at 25°C	IS 3025 Part 11:1983 (Reaff:2017)	7.55
4	Conductivity @ 25°C	IS 3025 Part 14:2013 (Reaff:2019)	890 µmhos/cm
5	Turbidity	IS 3025 Part 10:1984 (Reaff:2017)	1.0 NTU
6	Total Dissolved Solids	IS 3025 Part 16:1984 (Reaff:2017)	525 mg/l
7	Total Hardness as $CaCO_3$	IS 3025 Part 21:2009 (Reaff:2019)	176.18 mg/l
8	Calcium as Ca	IS 3025 Part 40:1991 (Reaff:2019)	30.9 mg/l
9	Magnesium as Mg	IS 3025 Part 46:1994 (Reaff:2019)	24.1 mg/l
10	Total Alkalinity as $CaCO_3$	IS 3025 Part 23:1986 (Reaff:2019)	174 mg/l
11	Chloride as Cl	IS 3025 Part 32:1988 (Reaff:2019)	122 mg/l
12	Sulphate as SO_4	IS 3025 Part 24:1986 (Reaff:2019)	72.5 mg/l
13	Iron as Fe	IS 3025 Part 53:2003 (Reaff:2019)	0.31 mg/l
14	Residual Free Chlorine	IS 3025 Part 26:1986 (Reaff:2019)	BDL (DL:0.1 mg/l)
15	Fluoride as F	APHA 23rd Edn. 2017:4500 F,D	0.12 mg/l
16	Nitrate as NO_3	IS 3025 Part 34:1988 (Reaff:2019)	5.15 mg/l

Verified by
(Keseven Y)

..... Continued.....

Authorized Signatory
Santhosh Kumar .A
Managing Director

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TEST REPORT

Report No	EHS360/TR/2024-25/N14845	**Report Date**	03-01-2025
Site Location	**M/s Thiru. C. Selvam S/o. Chelladurai,** S.F. Nos. 927/2,3,4,5,940/2 & 943/1, Thimmarasanayakkanur Bit – I Village, Andipatti Taluk, Theni District, Tamil Nadu, Extent: 8.76.5 ha		
Sampling Method	SOP Method	**Sample Drawn by**	Laboratory
Sample Name	Water	**Sample Code**	EHS360/N14845
Sample Description	Ground Water (WW-3)	**Sample Collected Date**	28-12-2024
Qty. of Sample Received	2 Litres	**Sample Received On**	28-12-2024
Sample Condition	Fit for Analysis	**Test Commenced On**	28-12-2024
Sampling Location	Thottappanayakkanur		

S.No.	Parameters	Test Method	RESULTS
17	Copper as Cu	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.01 mg/l)
18	Manganese as Mn	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)
19	Mercury as Hg	USEPA 200.8	BDL (DL:0.0005 mg/l)
20	Cadmium as Cd	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.001 mg/l)
21	Selenium as Se	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
22	Aluminium as Al	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
23	Lead as Pb	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
24	Zinc as Zn	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.05 mg/l)
25	Total Chromium as Cr	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.02 mg/l)
26	Boron as B	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.05 mg/l)
27	Mineral Oil	IS 3025 Part 39-1991 (Reaff. 2019)	BDL(DL : 0.01 mg/l)
28	Phenolic compounds as C_6H_5OH	IS 3025 Part 43-1992(Reaff: 2019)	BDL (DL:0.0005 mg/l)
29	Anionic Detergents (as MBAS)	IS 13428 – 2005 (Reaff:2019) (Annex K)	BDL (DL:0.01 mg/l)
30	Cyanide as CN	IS 3025 Part 27-1986 (Reaff. 2019)	BDL (DL:0.01 mg/l)
31	Barium as Ba	IS 3025 Part 44:1993 (Reaff:2019)	BDL(DL:0.05 mg/l)
32	Ammonia (as total ammonia-N)	IS 3025 Part 58:2006 (Reaff:2017)	BDL (DL:0.01 mg/l)
33	Sulphide as H_2S	IS 3025 Part 38:1989 (Reaff:2019)	BDL (DL:0.01 mg/l)
34	Molybdenum as Mo	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)
35	Total Arsenic as As	IS 3025 Part 34-1988 (Reaff. 2019)	BDL (DL:0.005 mg/l)
36	Total Suspended Solids	IS 3025 Part 29-1986 (Reaff: 2019)	BDL (DL:1.0 mg/l)
	Discipline: Biological	**Group:** Water	
37	Total Coliform	APHA 23rd Edn. 2017:9221B	110 MPN/100ml
38	*Escherichia coli*	APHA 23rd Edn. 2017:9221F	< 1.8 MPN/100ml

Verified by
(Keeran Y)

CHENNAI 600 003

**********End of Report**********

Authorized Signatory
Santhosh Kumar .A
Managing Director

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TC-9583

TEST REPORT

Report No	EHS360/TR/2024-25/N14846	**Report Date**	03-01-2025
Site Location	**M/s Thiru. C. Selvam S/o. Chelladurai,** S.F. Nos. 927/2,3,4,5,940/2 & 943/1, Thimmarasanayakkanur Bit – I Village, Andipatti Taluk, Theni District, Tamil Nadu, Extent: 8.76.5 ha		
Customer Name			
Sampling Method	SOP Method	**Sample Drawn by**	Laboratory
Sample Name	Water	**Sample Code**	EHS360/N14846
Sample Description	Ground Water (BW-1)	**Sample Collected Date**	28-12-2024
Qty. of Sample Received	2 Litres	**Sample Received On**	28-12-2024
Sample Condition	Fit for Analysis	**Test Commenced On**	28-12-2024
Sampling Location	Near Project Area		

S.No.	Parameters	Test Method	RESULTS
	Discipline: Chemical	**Group:** Water	
1	Colour	IS 3025 Part 4:1983 (Reaff:2017)	5
2	Odour	IS 3025 Part 5:2018	Agreeable
3	pH at 25°C	IS 3025 Part 11:1983 (Reaff:2017)	7.65
4	Conductivity @ 25°C	IS 3025 Part 14:2013 (Reaff:2019)	983 µmhos/cm
5	Turbidity	IS 3025 Part 10:1984 (Reaff:2017)	1 NTU
6	Total Dissolved Solids	IS 3025 Part 16:1984 (Reaff:2017)	580 mg/l
7	Total Hardness as $CaCO_3$	IS 3025 Part 21:2009 (Reaff:2019)	202.16 mg/l
8	Calcium as Ca	IS 3025 Part 40:1991 (Reaff:2019)	36.7 mg/l
9	Magnesium as Mg	IS 3025 Part 46:1994 (Reaff:2019)	26.9 mg/l
10	Total Alkalinity as $CaCO_3$	IS 3025 Part 23:1986 (Reaff:2019)	206 mg/l
11	Chloride as Cl	IS 3025 Part 32:1988 (Reaff:2019)	120 mg/l
12	Sulphate as SO_4	IS 3025 Part 24:1986 (Reaff:2019)	67.5 mg/l
13	Iron as Fe	IS 3025 Part 53:2003 (Reaff:2019)	0.31 mg/l
14	Residual Free Chlorine	IS 3025 Part 26:1986 (Reaff:2019)	BDL (DL:0.1 mg/l)
15	Fluoride as F	APHA 23rd Edn. 2017:4500 F,D	0.26 mg/l
16	Nitrate as NO_3	IS 3025 Part 34:1988 (Reaff:2019)	6.15 mg/l

Verified by
(Yesavan Y)

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Authorized Signatory
Santhosh Kumar .A
Managing Director

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TEST REPORT

Report No	EHS360/TR/2024-25/N14846	**Report Date**	03-01-2025
Site Location	**M/s Thiru. C. Selvam S/o. Chelladurai,** S.F. Nos. 927/2,3,4,5,940/2 & 943/1, Thimmarasanayakkanur Bit – I Village, Andipatti Taluk, Theni District, Tamil Nadu, Extent: 8.76.5 ha		
Sampling Method	SOP Method	**Sample Drawn by**	Laboratory
Sample Name	Water	**Sample Code**	EHS360/N14846
Sample Description	Ground Water (BW-1)	**Sample Collected Date**	28-12-2024
Qty. of Sample Received	2 Litres	**Sample Received On**	28-12-2024
Sample Condition	Fit for Analysis	**Test Commenced On**	28-12-2024
Sampling Location	Near Project Area		

S.No.	Parameters	Test Method	RESULTS
17	Copper as Cu	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.01 mg/l)
18	Manganese as Mn	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)
19	Mercury as Hg	USEPA 200.8	BDL (DL:0.0005 mg/l)
20	Cadmium as Cd	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.001 mg/l)
21	Selenium as Se	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
22	Aluminium as Al	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
23	Lead as Pb	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
24	Zinc as Zn	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.05 mg/l)
25	Total Chromium as Cr	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.02 mg/l)
26	Boron as B	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.05 mg/l)
27	Mineral Oil	IS 3025 Part 39-1991 (Reaff. 2019)	BDL(DL : 0.01 mg/l)
28	Phenolic compounds as C_6H_5OH	IS 3025 Part 43-1992(Reaff: 2019)	BDL (DL:0.0005 mg/l)
29	Anionic Detergents (as MBAS)	IS 13428 – 2005 (Reaff:2019) (Annex K)	BDL (DL:0.01 mg/l)
30	Cyanide as CN	IS 3025 Part 27-1986 (Reaff. 2019)	BDL (DL:0.01 mg/l)
31	Barium as Ba	IS 3025 Part 44:1993 (Reaff:2019)	BDL(DL:0.05 mg/l)
32	Ammonia (as total ammonia-N)	IS 3025 Part 58:2006 (Reaff:2017)	BDL (DL:0.01 mg/l)
33	Sulphide as H_2S	IS 3025 Part 38:1989 (Reaff:2019)	BDL (DL:0.01 mg/l)
34	Molybdenum as Mo	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)
35	Total Arsenic as As	IS 3025 Part 34-1988 (Reaff. 2019)	BDL (DL:0.005 mg/l)
36	Total Suspended Solids	IS 3025 Part 29-1986 (Reaff: 2019)	BDL (DL:1.0 mg/l)
	Discipline: Biological	**Group:** Water	
37	Total Coliform	APHA 23rd Edn. 2017:9221B	150 MPN/100ml
38	*Escherichia coli*	APHA 23rd Edn. 2017:9221F	< 1.8 MPN/100ml

Verified by

Authorized Signatory
Santhosh Kumar .A
Managing Director

**********End of Report**********

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TC-9583

TEST REPORT

Report No	EHS360/TR/2024-25/N14847	**Report Date**	03-01-2025
Site Location	**M/s Thiru. C. Selvam S/o. Chelladurai,** S.F. Nos. 927/2,3,4,5,940/2 & 943/1, Thimmarasanayakkanur Bit – I Village, Andipatti Taluk, Theni District, Tamil Nadu, Extent: 8.76.5 ha		
Customer Name			
Sampling Method	SOP Method	**Sample Drawn by**	Laboratory
Sample Name	Water	**Sample Code**	EHS360/N14847
Sample Description	Ground Water (BW-2)	**Sample Collected Date**	28-12-2024
Qty. of Sample Received	2 Litres	**Sample Received On**	28-12-2024
Sample Condition	Fit for Analysis	**Test Commenced On**	28-12-2024
Sampling Location	Theppathupatty		

S.No.	Parameters	Test Method	RESULTS
	Discipline: Chemical	**Group:** Water	
1	Colour	IS 3025 Part 4:1983 (Reaff:2017)	5
2	Odour	IS 3025 Part 5:2018	Agreeable
3	pH at 25°C	IS 3025 Part 11:1983 (Reaff:2017)	7.59
4	Conductivity @ 25°C	IS 3025 Part 14:2013 (Reaff:2019)	1034 µmhos/cm
5	Turbidity	IS 3025 Part 10:1984 (Reaff:2017)	1 NTU
6	Total Dissolved Solids	IS 3025 Part 16:1984 (Reaff:2017)	610 mg/l
7	Total Hardness as $CaCO_3$	IS 3025 Part 21:2009 (Reaff:2019)	210.97 mg/l
8	Calcium as Ca	IS 3025 Part 40:1991 (Reaff:2019)	36.6 mg/l
9	Magnesium as Mg	IS 3025 Part 46:1994 (Reaff:2019)	29.1 mg/l
10	Total Alkalinity as $CaCO_3$	IS 3025 Part 23:1986 (Reaff:2019)	225 mg/l
11	Chloride as Cl	IS 3025 Part 32:1988 (Reaff:2019)	140.2 mg/l
12	Sulphate as SO_4	IS 3025 Part 24:1986 (Reaff:2019)	70 mg/l
13	Iron as Fe	IS 3025 Part 53:2003 (Reaff:2019)	0.16 mg/l
14	Residual Free Chlorine	IS 3025 Part 26:1986 (Reaff:2019)	BDL (DL:0.1 mg/l)
15	Fluoride as F	APHA 23rd Edn. 2017:4500 F,D	0.23 mg/l
16	Nitrate as NO_3	IS 3025 Part 34:1988 (Reaff:2019)	7.55 mg/l

Verified by
(Reseavan Y)

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Authorized Signatory
Santhosh Kumar .A
Managing Director

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TEST REPORT

Report No	EHS360/TR/2024-25/N14847	**Report Date**	03-01-2025
Site Location	**M/s Thiru. C. Selvam S/o. Chelladurai,** S.F. Nos. 927/2,3,4,5,940/2 & 943/1, Thimmarasanayakkanur Bit – I Village, Andipatti Taluk, Theni District, Tamil Nadu, Extent: 8.76.5 ha		
Sampling Method	SOP Method	**Sample Drawn by**	Laboratory
Sample Name	Water	**Sample Code**	EHS360/N14847
Sample Description	Ground Water (BW-2)	**Sample Collected Date**	28-12-2024
Qty. of Sample Received	2 Litres	**Sample Received On**	28-12-2024
Sample Condition	Fit for Analysis	**Test Commenced On**	28-12-2024
Sampling Location	Theppathupatty		

.No.	Parameters	Test Method	RESULTS
17	Copper as Cu	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.01 mg/l)
18	Manganese as Mn	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)
19	Mercury as Hg	USEPA 200.8	BDL (DL:0.0005 mg/l)
20	Cadmium as Cd	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.001 mg/l)
21	Selenium as Se	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
22	Aluminium as Al	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
23	Lead as Pb	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
24	Zinc as Zn	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.05 mg/l)
25	Total Chromium as Cr	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.02 mg/l)
26	Boron as B	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.05 mg/l)
27	Mineral Oil	IS 3025 Part 39-1991 (Reaff. 2019)	BDL(DL : 0.01 mg/l)
28	Phenolic compounds as C_6H_5OH	IS 3025 Part 43-1992(Reaff: 2019)	BDL (DL:0.0005 mg/l)
29	Anionic Detergents (as MBAS)	IS 13428 – 2005 (Reaff:2019) (Annex K)	BDL (DL:0.01 mg/l)
30	Cyanide as CN	IS 3025 Part 27-1986 (Reaff. 2019)	BDL (DL:0.01 mg/l)
31	Barium as Ba	IS 3025 Part 44:1993 (Reaff:2019)	BDL(DL:0.05 mg/l)
32	Ammonia (as total ammonia-N)	IS 3025 Part 58:2006 (Reaff:2017)	BDL (DL:0.01 mg/l)
33	Sulphide as H_2S	IS 3025 Part 38:1989 (Reaff:2019)	BDL (DL:0.01 mg/l)
34	Molybdenum as Mo	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)
35	Total Arsenic as As	IS 3025 Part 34-1988 (Reaff. 2019)	BDL (DL:0.005 mg/l)
36	Total Suspended Solids	IS 3025 Part 29-1986 (Reaff: 2019)	BDL (DL:1.0 mg/l)
	Discipline: Biological	**Group:** Water	
37	Total Coliform	APHA 23rd Edn. 2017:9221B	135 MPN/100ml
38	*Escherichia coli*	APHA 23rd Edn. 2017:9221F	< 1.8 MPN/100ml

Verified by
Kreevan Y

EHS 360 LABS PRIVATE LIMITED CHENNAI 600 083

Authorized Signatory
Santhosh Kumar .A
Managing Director

**********End of Report**********

Note: 1. The test results are only to the sample submitted for test. 2.Any correction of the test report in full or part shall invalidate the report.
3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client.
4. Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.

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Certificate of Accreditation

Geo Exploration & Mining Solutions, Salem

No. 17, Advaitha Ashram Road, Fairlands, Salem – 636 004, Tamilnadu, India.

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

S.No	Sector Description	Sector (as per)		Cat.
		NABET	MoEFCC	
1	Mining of minerals opencast only	1	1 (a) (i)	A
2	Industrial estates/ parks/ complexes/areas, export processing Zones (EPZs), Special Economic Zones (SEZs), Biotech Parks, Leather Complexes	31	7 (c)	B
3	Building and construction projects	38	8(a)	B

Note: Names of approved EIA Coordinators and Functional Area Experts are mentioned in RAAC minutes dated Jan 06, 2023 and posted on QCI-NABET website.

The Accreditation shall remain in force subject to continued compliance to the terms and conditions mentioned in QCI-NABET's letter of accreditation bearing no QCI/NABET/ENV/ACO/23/2684 dated Feb 20, 2023. The accreditation needs to be renewed before the expiry date by Geo Exploration & Mining Solutions, Salem following due process of assessment.

Sr. Director, NABET
Dated: Feb 20, 2023

Certificate No.
NABET/EIA/2225/RA 0276

Valid up to
August 06, 2025

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