

**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 – MINOR MINERAL – B1 CLUSTER CATEGORY– NON-FOREST
LAND-PATTA LAND-EXISTING QUARRY- LEASE PERIOD 10 YEARS**

CLUSTER EXTENT-8.77.0 ha

(1 Proposed quarry + 3 Existing quarries)

THIRU.A.A. KUMARESAN ROUGH STONE & GRAVEL QUARRY

PROJECT PROPONENT	PROPOSED PROJECT	PROPOSED PRODUCTION
Thiru. A.A. Kumaresan, S/o. Arumugam, No. 3-109, Morattupalayam, Uthukuli Taluk, Tiruppur District – 638 752.	Extent: 2.62.0 ha S.F. Nos: 376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 & 375/16 Morattupalayam Village, Uthukuli Taluk, Tiruppur District.	Rough Stone = 3,89,440 m ³ Gravel = 40,116 m ³ Annual Peak Production = 46,900m ³ of Rough Stone Proposed Depth = 42m (2m Gravel + 40m Rough Stone)

File No.11239 TOR Identification No. TO24B0108TN5546980N Dated:23.10.2024

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: ifthiahmed@gmail.com, geothangam@gmail.com Web: www.gemssalem.com	  Laboratory  EHS 360 LABS PRIVATE LIMITED, NABL Accredited laboratory 10/2 Ground floor, 50 th street, 7 th Avenue, Ashok Nagar, Chennai – 600 083.
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Baseline Monitoring Period

DECEMBER 2024 to FEBRUARY 2025

MARCH 2025

UNDERTAKING

I, A.A. Kumaresan given undertaking that this EIA & EMP report prepared for our Rough Stone and Gravel Quarry situated in S.F. Nos 376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 & 375/16 over an extent of 2.62.0 Ha in Morattupalayam Village, Uthukuli Taluk, Tiruppur District, Tamil Nadu State based on the ToR issued by the State Level Environmental Impact Assessment Authority (SEIAA), Tamil Nadu vide File No.11239 TOR Identification No. TO24B0108TN5546980N Dated:23.10.2024

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



A.A.Kumaresan
(Proponent)

Place : Tiruppur

Date :

DECLARATION

I Dr. M. Ifthikhar Ahmed – EIA Co Ordinator declare that the Final EIA & EMP report for the Rough Stone and Gravel Quarry in S.F. Nos 376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 & 375/16 over an extent of 2.62.0 Ha in Morattupalayam Village, Uthukuli Taluk, Tiruppur District 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

EIA Coordinator

M/s. Geo Exploration and Mining Solutions

The following quarries are falls in the cluster for the easy representation the proposed, existing, abandoned and expired quarries are designated as below

–PROPOSED QUARRIES				
CODE	Name of the Proponent and Address	S.F. Nos & Village	Extent in Ha	Status
P1	Thiru. A.A. Kumaresan S/o. (Late) Arumugam, No. 3/109, Morattupalayam Uthukuli R.S Via., Uthukuli Taluk. Tiruppur District-638 752.	376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 & 375/16 Morattupalayam Village,	2.62.0	Obtained ToR vide, File No.11239 TOR Identification No. TO24B0108TN5546980N Dated: 23.10.2024
	Total		2.62.0	
EXISTING QUARRIES				
CODE	Name of the Proponent and Address	S.F.Nos	Extent in Ha	Lease Period
E-1	Thiru.A.A.Kumaresan S/o. (Late) Arumugam, No. 3/109, Morattupalayam Uthukuli R.S Via., Uthukuli Taluk. Tiruppur District-638 752	378(P),	2.67.0	25.08.2022 to 24.08.2027
E-2	Thiru. P. Dharmaselvan S/o. Periyasamy Gounder No. 3/85, Thimmanayakkan Palayam, Uthukuli Taluk. Tiruppur District-638 752.	396/2A,	1.82.0	13.04.2023 to 12.04.2028
E-3	Tmt. R. Chitra, W/o. (Late) Rangasamy, No.197, Ponnnya Goundanur, Morattupalayam Post, Tiruppur District – 638 752	367/2A(P),	1.66.0	06.04.2018 to 05.04.2023
Total			6.15.0 Ha	
ABANDONED/EXPIRED QURRIES				
CODE	Name of the Proponent and Address	S.F. Nos	Extent in Ha	Lease Period
A-1	Thiru.P.K.Subramania m	376/1	-	13.09.2011 to 12.09.2016
	Total		-	
*TOTAL CLUSTER EXTENT			8.77.0 Ha	

Note:-

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

As per above notification S.O.2269(E) dated : 01.07.2016 in para (b) in Appendix XI,- (ii)(5): The lease not operative for three years or more and leases which have got environmental clearance as on 15th January, 2016 shall not be counted for calculating the area of cluster, but shall be included in the Environment Management Plan and the Regional Environmental Management Plan”

TERMS OF REFERENCE (ToR) COMPLIANCE

Thiru.A.A. Kumaresan

“ToR issued vide File No.11239 TOR Identification No. TO24B0108TN5546980N_Dated: 20.09.2023

SPECIFIC CONDITIONS		
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 statutory personnel, appropriate environmental monitoring, good maintenance of haul roads and village/panchayat roads, authorized blasting operation 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 A CMC with an organizational chart outlining the members' roles and standard operating procedures will be formed by the project authority. Copy of agreement will be submitted during the appraisal meeting.
2	The PP shall spell out the conservation cost considering the existence of Nanjarayan Birds Sanctuary after consultation with the concerned DFO.	Noted and Agreed. After consulting with the concerned DFO, PP agreed to spend conservation costs in consideration of Nanjarayan Birds Sanctuary's existence.
3	The structures within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m & up to 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 The structure Study carried out up to 300m radius which explains the details of living buildings, places of worship, industries, factories, sheds, etc. It Explicated in Chapter III. Chapter IV discusses mitigation measures for the quarrying activity.
4	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 PP erected adequate fencing for proposed quarry and planted 1310 trees in safety barrier and village roads. Photographs of green belt and fencing given in chapter II. PP agreed to construct garland drainage with siltation tank.
5	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 PP carried out Bio diversity study for the proposed quarry by the NABET experts and discussed in chapter III.
6	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 The Environmental Management Plan (EMP) has been prepared to cover the entire lifespan of the mine, and the proponent has furnished an affidavit undertaking to comply with the EMP
7	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. PP agreed to prepare a conceptual working plan by ensuring the slope stability of the working benches.
Annexure-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 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.	It is a fresh lease
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.	Noted and Agreed Proponent obtained VAO certificate regarding 300m radius periphery of the project site and the same is enclosed as Annexure
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.	Noted and Agreed. As per the ToR Condition the detailed structures study has been carried out covering 0-1km and the details are given in the 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 1 km of the proposed quarry.	Noted and agreed The hydrogeological study was conducted in the project site and the details of water bodies within 1Km radius is given in the Chapter No.3
5	The Proponent shall carry out Bio diversity study through reputed Institution and the same shall be included in EIA Report.	Noted and agreed Biodiversity study has been carried out by the NABET experts for the propose quarry and discussed in chapter III.
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.	Noted and agreed DFO Letter will be submitted during the appraisal meeting. As per the secondary sources TNGIS the nearest reserve forest is Voipadi R.F 9.32 Km – North East.
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	It is a fresh lease.

	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.	Noted and agreed. It is a fresh quarry. Slope stability study will be carried out while reaching 30m depth of mining and the report will submitted along with HYCR.
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.	Noted and Agreed Proponent given affidavit stating that the blasting operation will be carried out under the supervision of Competent person.
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.	Noted and agreed The details of design for carrying out controlled blasting operation involving line drilling and muffle blasting to minimize blast-induced ground vibrations and controlled fly rock travel beyond 30 m from the blast site is detailed in Chapter 4.
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.	Noted and Agreed Apart from this proposal, the project proponent owns one quarry.
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.
13	What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?	Not applicable. It is a fresh lease.
14	Quantify 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.	Fresh lease
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).	Noted and agreed. Project area boundary coordinates superimposed on Toposheet – Figure No. 1.3.
16	The PP shall carry out Drone video survey covering the cluster green belt, fencing, etc.,	Noted and agreed. PP carried out the drone video survey, covering the cluster green belt, fencing, etc. It will be submitted during the appraisal meeting.
17	The proponent shall furnish photographs of adequate fencing, green belt along the periphery	Noted and agreed

	including replantation of existing trees & safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan.	Greenbelt development and Fencing photographs furnished. The Barbed Wire fencing has been erected all around the boundary. No trees within the project site, hence transplantation not required.
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.	Noted and agreed. The total Mineable reserves is 3,89,440m ³ of Rough stone the same quantity is proposed to excavate in this ten years plan period. The proposed working is 5m bench height and width considering the bench safety parameters. The anticipated impact on the surrounding environment due to the quarrying operation are given in the Chapter No.2
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.	Noted and agreed Organization chart indicating Proposal for the appointment of Statutory officials is given in the Chapter No.6
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.	Noted and agreed 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.	Noted and agreed 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 data's are 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.	Noted and agreed Cumulative impact study results related to air pollution, water pollution, & health impacts have been given in chapter No 7.
23	Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted.	Noted and agreed. The lower part of the mine pit will act as temporary rainwater reservoir and the rainwater harvesting structure will be constructed near to the Mine office.
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	Noted and agreed 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-

	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.	operational phases are discussed in Chapter No.2. Table 2.3
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 No waste is Anticipated in the lease area.
26	Proximity to Areas declared as 'Critically Polluted' (or) the Project areas which attracts the court restrictions for mining operations, should also be indicated and where so required. clearance certifications from the prescribed Authorities, such as the TNPCB (or) Dept of Geology and Mining should be secured and furnished to the effect that the proposed mining activities could be considered.	Not Applicable. Project area / Study area is not declared in 'Critically Polluted' Area and does not come under 'Aravalli Range.
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	Noted and agreed The lower part of the mine pit will be utilized as rain water harvesting structure (Temporary) and the water will be used for the water sprinkling on haul roads and Greenbelt development purpose. Rainwater harvesting structure will be constructed near the mine office.
28	Impact on local transport infrastructure due to the Project should be indicated.	Noted and agreed 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 significant impact due to the proposed transportation from the project area. Details have been provided in Chapter No.2. Page No 28.
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.	Noted and agreed Details furnished in chapter III.
30	A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.	Noted and agreed The site specific mine closure plan has been prepared, After the completion of mining operation, the quarried-out land will be utilized as temporary storage reservoir. The details are given in the Chapter No.2
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.	Noted and agreed.
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 and local school/college authorities. The plant species with dense/moderate canopy of native origin should be chosen. Species of small/medium/tall trees alternating with shrubs should be planted in a mixed manner.	Noted and agreed Species are proposed to plant in the safety barrier as mentioned in the ToR appendix. Proposed species are given in the Chapter No 4 Noted & agreed. It is proposed to plant 1310 Nos of trees in the 7.5m safety barrier and approach & Village roads. Proponent planted trees and carrying out fencing along with green mesh.
33	Taller/one year old Saplings raised in appropriate size of bags, preferably eco-friendly bags should	Noted & agreed.

	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	It is proposed to plant 1310 Nos of trees in the 7.5m safety barrier and approach & Village roads. Proponent planted trees and carrying out fencing along with green mesh.
34	A Disaster management Plan shall be prepared and included in the EIA/EMP Report.	Noted and agreed Disaster management Plan detailed in Chapter-7,
35	A Risk Assessment and management Plan shall be prepared and included in the EIA/EMP Report.	Noted and agreed A Risk Assessment and management Plan prepared by PP and furnished in chapter VII.
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.	Noted and agreed. Occupational Health impacts chapter- 10. The proponent ensures that the periodical medical examination will be carried out after commencing the mining operation.
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.	Noted and agreed The details of the health implications of the project and its related activities along with mitigation measures are detailed in the Chapter 4
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.	Noted and agreed The Socio-Economic study has been carried out and the details are given 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 Litigation is pending against this 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.,	Noted and agreed The project will reduce the demand and supply gap in this area. Due to this project 18 Nos of people will get direct employment and ancillary job facilities will be developed in the region.
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 It is a fresh lease, CCR not applicable for this 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.	Noted & agreed. The EMP has been prepared for the entire life of the mine and proponent given affidavit regarding the EMP.
43	Concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this Terms of Conditions besides attracting penal provisions in the Environment (Protection) Act, 1986.	Noted & agreed.

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.	Noted and agreed The Cluster management committee has been formed covering the existing and proposed quarries in the cluster
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.,	Noted and agreed The information will be shared to the cluster management committee during the monthly meeting.
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.	Noted and agreed The list of members of the committee formed will be submitted to AD/Mines before resuming the mining operation.
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.	Noted and agreed It is an existing Granite quarry the blasting will be used occasionally for the removal of overburden only the blasting frequency and usage of haul roads are discussed.
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.	Noted and agreed The risk management plan and disaster management plan has been prepared and enclosed in this EIA report, Chapter No. 7.
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.	Noted and agreed Environmental policy of the cluster management committee is detailed in the EIA Report Chapter No. 6
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 and agreed The Restoration strategy is discussed in the progressive mine closure plan and enclosed in the Scheme of Mining plan.
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.	Noted and agreed The information on the health of the workers and the local people will be updated periodically along with medical examination.
Agriculture & Agro-Biodiversity		
9	Impact on surrounding agricultural fields around the proposed mining Area.	Noted and agreed Detailed discussed in chapter 4.
10	Impact on soil flora & vegetation around the project site.	Detailed discussed in chapter 4.

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.	Noted and agreed The area is proposed Lease & Few trees present with in lease.
12	The Environmental Impact Assessment should study the agro-biodiversity, agro-forestry, horticultural plantations, the natural ecosystem, the soil micro flora, fauna and soil seed banks and suggest measures to maintain the natural Ecosystem.	Details in Chapter 3
13	Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.	Noted & agreed
14	The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock	Noted and agreed The project area is dry barren land no agriculture activities carried out. This is a proposed lease area.
Forests		
15	The project proponent shall detailed study on impact of mining on Reserve forests and free ranging wildlife	Noted and agreed. Nearest Reserve Forest is Voipadi R.F– 9.32km – NE
16	The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.	Noted and agreed. The area is surrounded by Barren land. Details of flora and fauna studies given in the Chapter No.3.
17	The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection	No major trees within the project area.
18	The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site	Noted & agreed. Nanjarayan Lake Birds Sanctuary – 4.0km – SW Vellode Bird Sanctuary – 26.0km – NE
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	Noted and agreed There are 9 open wells and 8 bore wells within the radius of 1km from the project area, Hydrogeological study has been conducted by the resistivity method
20	Erosion Control measures	Noted & agreed
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.	Details in Chapter 2

22	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
23	The project proponent shall study and furnish the details on potential fragmentation impact on natural environment, by the activities.	Noted & agreed
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.	Noted & agreed. Detailed under Chapter 3.
25	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.
26	The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites	Details in Chapter 3 Water environment.
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.	Noted and agreed There are 9 open wells and 8 bore wells within the radius of 1km from the project area, Hydrogeological study has been conducted by the resistivity method
Energy		
28	The measures taken to control Noise, Air, Water, Dust Control and steps adopted to efficiently utilise the Energy shall be furnished.	Noted and agreed Details in Chapter 3 environmental monitoring details.
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	Noted and agreed Details of carbon emission and mitigation activities are given in the Chapter No.4
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	Noted and agreed Details in Chapter-3 for meteorological and climate/weather data representation of graphs.
31	Impact of mining on pollution leading to GHGs emissions and the impact of the same on the local livelihood.	Noted and agreed Details of GHGs emissions and mitigation activities are given in the Chapter No.4
Mine Closure Plan		

32	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		
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	Detailed under Chapter 10
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.	Details in Green belt development in chapter 4
Risk Assessment		
35	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		
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.	Details in Study 7.3 Disaster Management Plan in Chapter -7
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.	Noted & agreed. Detailed under Chapter 4
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.	Noted and agreed
39	The project proponent shall study and furnish the possible pollution due to plastic and micro plastic on the environment. The ecological risks and impacts of plastic & micro plastics 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 in the Chapter No.4

Standard Terms of Reference for (Mining of minerals)		
S.No	Terms of Reference	Reply
1.1	An EIA-EMP Report shall be prepared for peak capacity (.....MTPA) operation in an ML/project area of.....ha based on the generic structure specified in Appendix III of the EIA Notification, 2006.	Peak Production – 46,900m ³ Depth– 42m bgl (As per ToR) Mine Lease area – 2.62.0 Ha
1.2	An EIA-EMP Report would be prepared for peak capacity operation to cover the impacts and environment management plan for the project specific activities on the environment of the region, and the environmental quality encompassing air, water, land, biotic community, etc. through collection of data and information, generation of data on impacts including prediction modeling for.... MTPA of mineral production based on approved project/Mining Plan for.... MTPA. Baseline data collection can be for any season (three months) except monsoon.	Peak capacity of 46,900m ³ operation to cover the impacts and environment management plan in chapter- IV and Chapter 10 covered in project specific activities. Baseline Data were collected for Winter Season Dec 2024 to Feb 2025 as per CPCB Notification and MoEF & CC Guidelines. Details in Chapter No. III
1.3	Proper KML file with pin drop and coordinate of mine at 500-1000 m interval be provided.	Noted, Google earth image showing lease area with Coordinates of pillars in
1.4	A Study area map of the core zone (project area) and 10 km area of the buffer zone (1: 50,000 scale) clearly delineating the major topographical features such as the land use, surface drainage pattern including rivers/streams/nullahs/canals, locations of human habitations, major constructions including railways, roads, pipelines, major industries, mines, and other polluting sources. In case of ecologically sensitive areas such as Biosphere Reserves/National Parks/WL Sanctuaries/ Elephant Reserves, forests (Reserved/Protected), migratory corridors of fauna, and areas where endangered fauna and plants of medicinal and economic importance found in the 15 km study area should be given. The above details to be furnished in tabular form also.	Land use and land cover of the 10km Radius of study area is discussed in Chapter No. III. Geology map of the project area covering 10km radius Figure No. 2.9, f Geomorphology of the area is given in Chapter No 2 Figure No 2.10, There are No National Parks, Biosphere Reserves, Wildlife Corridors, and Tiger/Elephant Reserves within 10 km Radius from the periphery of the project area.
1.5	Map showing the core zone delineating the agricultural land (irrigated and un-irrigated, uncultivable land as defined in the revenue records, forest areas (as per records), along with other physical features such as water bodies, etc should be furnished.	Land use and land cover of the study area is discussed in Chapter No. III with Physical features such as waterbodies, odai, canal etc.,
1.6	A contour map showing the area drainage of the core zone and 25 km of the study area (where the water courses of the core zone ultimately join the major rivers/streams outside the lease/project area) should also be clearly indicated in the separate map.	DEM data using Drainage pattern around 10km radius showing streams and lakes etc., discussed in Chapter No. 3.
1.7	Catchment area with its drainage map of 25 km area within and outside the mine shall be provided with names, details of rivers/ riverlet system and its respective order. The map should clearly indicate drainage pattern of the catchment area with basin of major rivers. Diversion of drains/ river need elaboration in form of length, quantity and quality of water to be diverted.	Drainage pattern around 10km radius showing streams and lakes etc., is discussed in Chapter No. 3.

1.8	(Details of mineral reserves, geological status of the study area and the seams to be worked, ultimate working depth and progressive stage-wise working scheme until the end of mine life should be provided on the basis of the approved rated capacity and calendar plans of production from the approved Mining Plan. Geological maps and sections should be included. The Progressive mine development and Conceptual Final Mine Closure Plan should also be shown in figures. Details of mine plan and mine closure plan approval of Competent Authority should be furnished for green field and expansion projects.	Details in chapter-2 showing the land features. And also enclosed Approved mining plan in annexure.
1.9	Details of mining methods, technology, equipment to be used, etc., rationale for selection of specified technology and equipment proposed to be used vis-à-vis the potential impacts should be provided.	It is an opencast quarrying operation proposed to operate in Mechanized method. The height and width of the bench will be maintained as 5m with 90° 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
1.10	Impact of mining on hydrology, modification of natural drainage, diversion and channeling of the existing rivers/water courses flowing through the ML and adjoining the lease/project and the impact on the existing users and impacts of mining operations thereon.	Impact Studies and Mitigation Measures of Water Environment including Surface Water and Ground Water are discussed in Chapter 4.
1.11	A detailed Site plan of the mine showing the proposed break-up of the land for mining operations such as the quarry area, OB dumps, green belt, safety zone, buildings, infrastructure, Stockyard, township/colony (within and adjacent to the ML), undisturbed area -if any, and landscape features such as existing roads, drains/natural water bodies to be left undisturbed along with any natural drainage adjoining the lease /project areas, and modification of thereof in terms of construction of embankments/bunds, proposed diversion/re-channeling of the water courses, etc., approach roads, major haul roads, etc should be indicated.	Not Applicable. The details of waste dump management are given in the Chapter No. 4

1.12	Original land use (agricultural land/forestland/grazing land/wasteland/water bodies) of the area should be provided as per the tables given below. Impacts of project, if any on the land use, in particular, agricultural land/forestland/grazing land/water bodies falling within the lease/project and acquired for mining operations should be analyzed. Extent of area under surface rights and under mining rights should be specified. Area under Surface Rights					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,			
	Sno	ML. project Land use	Area under Surface Rights(ha	Area Under Mining Rights(ha)	Area under Both (ha)	Description	Present area (Ha)	Area required during the first five year (Ha)	Area at the end of lease period (Ha)
	1	Agriculture Land				Area Under Quarry	Nil	2.05.00	2.05.00
	2	Forest Land							
	3	Grazing Land				Site Services	Nil	0.01.00	0.01.00
	4	Settlements				Roads	Nil	0.02.00	0.02.00
	5	Others (Specify)				Green Belt	Nil	0.23.00	0.40.00
						Unutilized Area	2.62.00	0.31.00	0.14.00
						Grand Total	2.62.00	2.62.00	2.62.00

1.15	Map (1: 50, 000 scale) of the study area (core and buffer zone) showing the location of various sampling stations superimposed with location of habitats, other industries/mines, polluting sources, should be provided. The number and location of the sampling stations in both core and buffer zones should be selected on the basis of size of lease/project area, the proposed impacts in the downwind (air) / downstream (surface water)/groundwater regime (based on flow). One station should be in the upwind/upstream/non-impact/non-polluting area as a control station. The monitoring should be as per CPCB guidelines and parameters for water testing for both ground water and surface water as per ISI standards and CPCB classification wherever applicable. Observed values should be provided along with the	Details in chapter-3 showing the various sampling stations As per CPCB guidelines.
1.16	For proper baseline air quality assessment, Wind rose pattern in the area should be reviewed and accordingly location of AAMSQ shall be planned by the collection of air quality data by adequate monitoring stations in the downwind areas. Monitoring location for collecting baseline data should cover overall the 10km buffer zone i.e., dispersed in 10 km buffer area. In case of expansion, the displayed data of CAAQMS and its comparison with the monitoring data to be provided.	Noted and agreed Air Quality Modelling and wind rose pattern for prediction of incremental GLC's of pollutant was carried out using AERMOD view 13 Model. Details in Chapter No. 4.
1.17	A detailed traffic study along with presence of habitation in 100 mts distance from both side of road, the impact on the air quality with its proper measures and plan of action with timeline for widening of road. The project will increase the no. of vehicle along the road which will indirectly contribute to carbon emission so what will be the compensatory action plan should be clearly spell out in EIA/ EMP report.	Noted and agreed Traffic density survey was carried out to analyses the impact of Transportation in the study area as per IRC guidelines 1961 and it is inferred that there is no significant impact due to the proposed transportation from the project area. Details in Chapter-II.
1.18	The socio-economic study to conducted with actual survey report and a comparative assessment to be provided from the census data should be provided in EIA/ EMP report also occupational status & economic status of the study area and what economically project will contribute should be clearly mention. The study should also include the status of infrastructural facilities and amenities present in the study area and a comparative assessment with census data to be provided and to link it with the initialization and quantification of need-based survey for CSR activities to be followed.	Noted and agreed Detailed in chapter-3 socio-economic study with occupational status & economic status of the study area. The study should also include the status of infrastructural facilities and amenities present in the study area CSR are discussed under Chapter 8.
1.19	The Ecology and biodiversity study should also indicate the likely impact of change in forest area for surface infrastructural development or mining activity in relation to the climate change of that area and what will be the compensatory measure to be adopted by PP to minimize the impact of forest diversion.	Noted and agreed Detailed Ecology and biodiversity study in chapter-3
1.20	Baseline data on the health of the population in the impact zone and measures for occupational health and safety of the personnel and manpower for the mine should be submitted.	Detailed in chapter-4 population in the impact zone and measures for occupational health and safety and proposed occupational health in chapter-X
1.21	Impact of proposed project/activity on hydrological regime of the area shall be assessed and report be submitted. Hydrological studies as per GEC 2015 guidelines to be prepared and submitted.	Noted and agreed

1.22	Impact of mining and water abstraction from the mine on the hydrogeology and groundwater regime within the core zone and 10 km buffer zone including long-term monitoring measures should be provided. Details of rainwater harvesting and measures for recharge of groundwater should be reflected in case there is a declining trend of groundwater availability and/or if the area falls within dark/grey zone.	The ground water table is at 58-63m below ground level. In these projects, ultimate depth is 42 m Bgl (as per ToR) It is inferred the quarrying activities in the Cumulative EIA project (Quarry) will not intersect the Ground water table.
1.23	Study on land subsidence including modeling for prediction, mitigation/prevention of subsidence, continuous monitoring measures, and safety issues should be carried out.	Noted and agreed Detailed in Chapter-IV Anticipated and mitigation measures of in the study area.
1.24	Detailed water balance should be provided. The breakup of water requirement as per different activities in the mining operations, including use of water for sand stowing should be given separately. Source of water for use in mine, sanction of the Competent Authority in the State Govt. and impacts vis-à-vis the competing users should be provided.	Noted and agreed Total Water Requirement: 2.5 KLD Discussed under Chapter 2, The required water will be met from rainwater accumulated in mine pit (when available) and from the approved water vendors.
1.25	PP shall submit design details of all Air Pollution control equipment (APCEs) to be implemented as part of Environment Management Plan vis-à-vis reduction in concentration of emission for each APCEs	Noted and agreed Methodology And Instrument Used for Air Quality Analysis in chapter-3 and Air Pollution control equipment (APCEs) in chapter-10 sub 10.2 Environmental policy.
1.26	PP shall propose to use LNG/CNG based mining machineries and trucks for mining operation and transportation of mineral. The measures adopted to conserve energy or use of renewable sources shall be explored.	Details in Machinery and equipment details in Chapter-2 Table No 2.16
1.27	PP to evaluate the green house emission gases from the mine operation/ washery plant and corresponding carbon absorption plan.	Noted and agreed
1.28	Site specific Impact assessment with its mitigation measures, Risk Assessment and Disaster Preparedness and Management Plan should be provided.	A Risk Assessment and Disaster Preparedness and management Plan Chapter- 7
1.29	Impact of choice of mining method, technology, selected use of machinery and impact on air quality, mineral transportation, handling & storage/stockyard, etc, Impact of blasting, noise and vibrations should be provided.	Detailed in Machinery and technology used Chapter-3. Methodology and Instrument Used for Air Quality Analysis Detailed study in chapter-4 Impact of choice of mining method and impact on air quality and blasting and noise and vibrations.
1.30	Impacts of mineral transportation within the mining area and outside the lease/project along with flow-chart indicating the specific areas generating fugitive emissions should be provided. Impacts of transportation, handling, transfer of mineral and waste on air quality, generation of effluents from workshop etc, management plan for maintenance of HEMM and other machinery/equipment should be given. Details of various facilities such as rest areas and canteen for workers and effluents/pollution load emanating from these activities should also be provided.	Traffic density survey was carried out to analyses 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. Infrastructure & other facilities will be provided to the Mine Workers after the grant of quarry lease and the same has

1.31	Details of various facilities to be provided to the workers in terms of parking, rest areas and canteen, and effluents/pollution load resulting from these activities should also be given.	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
1.32	The number and efficiency of mobile/static water jet, Fog cannon sprinkling system along the main mineral transportation road inside the mine, approach roads to the mine/stockyard/siding, and also the frequency of their use in impacting air quality should be provided.	Detailed in chapter-2 for mineral transportation route with approach roads etc., and impacting air quality detailed given chapter-4
1.33	Conceptual Final Mine Closure Plan and post mining land use and restoration of land/habitat to the pre- mining status should be provided. A Plan for the ecological restoration of the mined-out area and post mining land use should be prepared with detailed cost provisions. Impact and management of wastes and issues of re-handling (wherever applicable) and backfilling and progressive mine closure and reclamation should be furnished.	Discussed under Chapter 2. Mine Closure Plan is a part of Approved Mining Plan enclosed as Annexure Volume – 1.
1.34	Adequate greenbelt nearby areas, mineral stock yard and transportation area of mineral shall be provided with details of species selected and survival rate Greenbelt development should be undertaken particularly around the transport route.	Noted and agreed Greenbelt Development Plan is discussed under Chapter 4,
1.35	Cost of EMP (capital and recurring) should be included in the project cost and for progressive and final mine closure plan.	Noted and agreed The total cost and the details are given in the Chapter No. 10
1.36	Details of R&R. Detailed project specific R&R Plan with data on the existing socio- economic status of the population (including tribals, SC/ST, BPL families) found in the study area and broad plan for resettlement of the displaced population, site for the resettlement colony, alternate livelihood concerns/employment for the displaced people, civic and housing amenities being offered, etc. and costs along with the schedule of the implementation of the R&R Plan should be given.	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.
1.37	CSR Plan along with details of villages and specific budgetary provisions (capital and recurring) for specific activities over the life of the project should be given.	CSR are discussed under Chapter 8. And specific budgetary provisions (capital and recurring) for specific activities over the life of the project in chapter-10
1.38	Corporate Environment Responsibility:	CER are discussed under Chapter 8.
1.39	a) The Company must have a well laid down Environment Policy approved by the Board of Directors.	Detailed in chapter-10 The Environment Policy.
1.40	b) The Environment Policy must prescribe for standard operating process/procedures to bring into focus any infringements/deviation/violation of the environmental or forest norms/conditions.	
1.41	c) The hierarchical system or Administrative Order of the company to deal with environmental issues and for ensuring compliance with the environmental clearance conditions must be furnished.	The Environment Monitoring Cell discussed under Chapter 6
1.42	d) To have proper checks and balances, the company should have a well laid down system of reporting of non-compliances/violations of environmental norms to the Board of Directors of the company and/or shareholders or stakeholders at	The Environment Monitoring Cell discussed under Chapter 6

1.43	e) Environment Management Cell and its responsibilities to be clearly spell out in EIA/ EMP report	The Environment Monitoring Cell discussed under Chapter 6
1.44	f) In built mechanism of self-monitoring of compliance of environmental regulations should be indicated.	The Environment Monitoring Cell discussed under Chapter 6
1.45	Status of any litigations/ court cases filed/pending on the project should be provided.	No litigation is pending in any court against this project
1.46	PP shall submit clarification from DFO that mine does not falls under corridors of any National Park and Wildlife Sanctuary with certified map showing distance of nearest sanctuary.	Nanjarayan Lake Birds Sanctuary – 42km – North East DFO Letter will be Submitted final EIA/EMP report
1.47	Copy of clearances/approvals such as Forestry clearances, Mining Plan Approval, mine closer plan approval. NOC from Flood and Irrigation Dept. (if req.), etc. wherever applicable	Noted and agreed
1.48	Details on the Forest Clearance should be given as per the format given: Total Mine lease area (ha): Total Forest Land (Ha) : Date of FC : Extent of Forest Land : Balance area for which FC is yet to be obtained: Status of application for diversion of forest Land:	Noted and agreed Voipadi R.F– 9.32km – NE Total Mine Lease area 2.62.0ha Details on the Forest Clearance will Submit final EIA/EMP report.
1.49	In case of expansion of the proposal, the status of the work done as per mining plan and approved mine closure plan shall be detailed in EIA/ EMP report.	Enclosed Approved mining plan in Annexure volume-I
1.50	Details on Public Hearing should cover the information relating to notices issued in the newspaper, proceedings/minutes of Public Hearing, the points raised by the general public and commitments made by the proponent and the time bound action proposed with budgets in suitable time frame. These details should be presented in a tabular form. If the Public Hearing is in the regional language, an authenticated English Translation of the same. should be provided.	The outcome of public hearing will be updated in the final EIA/AMP report.
1.51	PP shall carry out survey through drone highlighting the ground reality for at least 10 minutes.	Noted and agreed
1.52	Detailed Chronology of the project starting from the first lease deed allotted/Block allotment/ Land acquired to its No. of renewals, CTO /CTE with details of no. renewals, previous EC(s) granted details and its compliance details, NOC details from various Govt bodies like Forest NOC(s), CGWA permissions, Power permissions, etc as per the requisites respectively to be furnished in tabular form.	Fresh lease
1.53	The first page of the EIA/ EMP report must mention the peak capacity production, area, detail of PP, Consultant (NABET accreditation) and Laboratory (NABL / MoEF & CC certification)	Noted and agreed As per detailed in front page of Draft EIA/EMP, NABET, NABL certification
1.54	The compliances of Tor must be properly cited with respective chapter section and page no in tabular form and also mention sequence of the respective ToR complied within the EIA-EMP report in all the chapters section.	As per Tor compliance each chapter wise page and table, figure no given in the EIA/EMP report.

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.	Noted and agreed The applied land for quarrying is a Patta Land, registered in the name of applicant (Thiru.A.A.Kumaresan) vide patta no.1633 Document is enclosed along with Approved Mining Plan as Annexure
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. The documents including Mining plan, EIA report and public hearing is compatible with one another and all the documents in the name of project proponent.
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).	Noted and agreed Map showing – Project area is with adjacent quarries details is enclosed in Figure No1.1, Page No 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. 2.10
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.	Noted and agreed 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. 1.21.
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.	Noted and agreed 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.	Noted and agreed 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.	Noted and agreed 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° 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.	Noted and agreed 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 Land use and land cover of the study area is discussed in Chapter No. 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. It is a patta land.
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. The details of the vegetation in the study area is detailed in the Chapter No 3.
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/	Not Applicable.

	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	There are No National Parks, Biosphere Reserves, Wildlife Corridors, and Tiger/Elephant Reserves within 10 km Radius from the periphery of the project area.
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.	Noted and agreed 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	Baseline Data were collected for Winter Season (December 2024- Feb 2025) as per CPCB Notification and MoEF & CC Guidelines. Details in Chapter No. 3.

	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 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 view 9.6.1 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.	Noted and agreed Total Water Requirement for this project is given in the chapter No 2, Table No 2.15, Page No 29.						
25	Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.	Noted and agreed 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 2.15, Page No 29..						
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 58-63m below ground level. The ultimate depth of this projects is ultimate depth of mining is 42m BG (2m Gravel + 40m Rough Stone)						
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.	Noted and agreed There is no streams/season odai within the project site. This proposed project will not have significant impact on the surface water bodies.						
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.	<table border="1"> <tr> <td>Description</td><td>BGL</td><td>AMSL</td></tr> <tr> <td>Site elevation</td><td>-</td><td>295m</td></tr> </table>	Description	BGL	AMSL	Site elevation	-	295m
Description	BGL	AMSL						
Site elevation	-	295m						

		Working depth	47m	-
		Water table	58-63m	-
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.	Noted and agreed 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.	Noted and agreed The proponent will transport the rough stone boulders to the nearby crushers only which is situated within the radius of 500m. The project will not have significant impact to the local transport.		
33	Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.	Noted and agreed 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.	Noted and agreed 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.	Noted and agreed 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.	Noted and agreed The details of public health implication of the project are given in Chapter No. 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.	Noted and agreed The local community socio economic is depending upon the quarry and crusher related works.		
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/AMP 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.	Noted and agreed
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.	No litigation pending against the project
41	The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.	The Capital Cost and recurring cost are detailed in the Environmental Management plan in Chapter No. 10.
42	A Disaster management Plan shall be prepared and included in the EIA/EMP Report.	Noted and agreed The Disaster management plan is discussed in the Chapter No.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.	Noted and agreed The benefits of the project are given in the Chapter No .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 booklet
B	All documents to be properly referenced with index and continuous page numbering.	Noted and agreed 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.	Noted and agreed 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	Noted and agreed The Baseline data are enclosed as Annexure
E	Where the documents provided are in a language other than English, an English translation should be provided.	Noted and Agreed
F	The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.	Noted and agreed. The questionnaire of the project is enclosed as Annexure -11
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.	Noted and agreed 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. The previous quarry operation was conducted by the different proponent.

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.	Noted and agreed Surface Plan – Figure No. 2.4, Page No 13 Working Plan – Figure No 2.12, Page No 28
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CHAPTER – 1: INTRODUCTION

1.0 *Preamble*

The project proponent Thiru.A.A.Kumaresan applied for Rough Stone & Gravel Quarry over an extent of 2.62.0 Ha in S.F. Nos 376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 & 375/16, Morattupalayam Village, Uthukuli Taluk, Tiruppur District. As per the EIA Notification, 2006 and subsequent amendments the proposal falls in the B1 Cluster Category - Cluster area calculated as per MoEF & CC Notification S.O. 2269(E) Dated 1st July 2016).

- Proponent applied for Rough stone and Gravel quarry lease on 28.12.2023.
- Precise area communication letter was issued by the District Collector vide Rc.No.817/Kanimam/2023 Dated 27.06.2023.
- The Mining plan has been prepared by the Qualified person and got approval vide Letter vide Rc.No.817/Kanimam/2023 Dated 05.07.2024
- The Mining plan has been approved for the quantity of 3,98,920m³ of Rough Stone and 40,116m³ of Gravel up to the depth of 47m (2m Gravel + 45m Rough stone)
- It is a broken-up land the proponent applied for the quarry lease for the period of Ten years and the Mining plan has been prepared for the period of Ten years.
- Proponent applied for ToR for Environmental Clearance vide online Proposal No. SIA/TN/MIN/494856/2024, Dated: 02.09.2024.
- The proposal was placed in 502nd SEAC meeting held on 03.10.2024 and the committee recommended for issue of ToR.
- The proposal was considered in 765th SEIAA meeting held on 15.10.2024 and issued ToR vide File.No.11239 TOR Identification No. TO24B0108TN5546980N Dated: 23.10.2024.
- SEIAA recommended that by specific conditions in ToR, Restricting the ultimate depth of mining up to **42m BGL** and quantity of **3,89,440 m³** of Rough Stone & **40,116 m³** of Gravel are permitted for mining over a period of **10 years**

As per the EIA Notification, 2006 and subsequent amendments and OM The proposal falls in the B1 Category (Cluster quarries - 1 proposal and 3 Existing quarries forming Cluster Category {Total Extent of the Cluster is 8.77.0 Ha}- Cluster area calculated as per MoEF & CC Notification S.O. 2269(E) Dated 1st July 2016).

- Proponent applied for Terms of Reference vide Proposal No. SIA/TN/MIN/494856/2024, Dated: 02.09.2024.and the ToR was Granted vide File.No.11239 TOR Identification No. TO24B0108TN5546980N Dated: 23.10.2024.
- The Baseline Monitoring study has been carried out during the period of **Dec 2024 – Feb 2025**

This EIA and EMP report is prepared for considering cumulative impacts arising out of these projects, the Cumulative Environmental Impact Assessment study is undertaken, which is followed by preparation of a detailed Environmental Management Plan (EMP) individually to minimize those adverse impacts.

This EIA/EMP report is prepared for considering cumulative impacts arising out of this project, the Cumulative Environmental Impact Assessment study is undertaken, which is followed by preparation of a detailed Environmental Management Plan (EMP) individually to minimize those adverse impacts.

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.

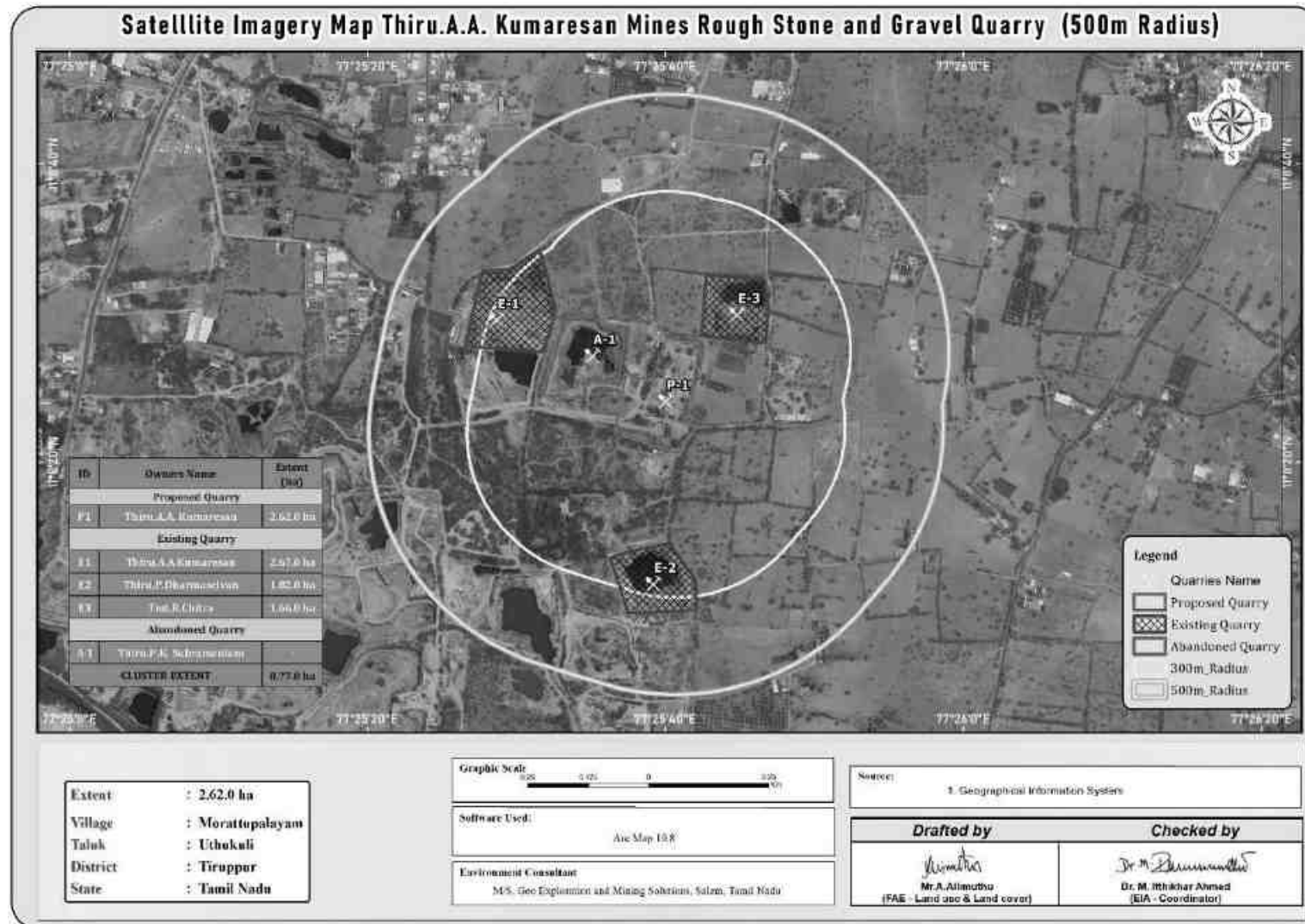
1.1 Purpose of the report

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. 1886 of 20th April 2022, Mining Projects are classified under two categories i.e. A (> 250 Ha) and B ($\leq$ 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 B - 1 and appraised by SEAC/ SEIAA as well as for cluster situation.

The proposed project is 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 OF CLUSTER QUARRIES

1.2 Identification of Project and Project Proponent

1.2.1 Identification of Project

The project area is an existing quarry situated in the quarry and crushers region.

TABLE 1.1: DETAILS OF PROPOSED PROJECT

Name of the Project	Thiru.A.A.Kumaresan Rough Stone & Gravel Quarry
S.F. No.	376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 & 375/16
Extent	2.62.0 Ha
Village, Taluk	Morattupalayam Village, Uthukuli Taluk
District	Tiruppur District

Source: Approved Mining Plan

1.2.2 Identification of Project Proponent

TABLE 1.2: DETAILS OF PROJECT PROPONENT

Name of the Proponent	Thiru.A.A.Kumaresan
Address	S/o. Arumugam, No. 3-109, Morattupalayam, Uthukuli Taluk, Tiruppur District – 638 752.
Mobile	97887 28877
Email	rasonaggregates@rason.in
Status	Proprietor (Individual)

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.

TABLE 1.3: SALIENT FEATURES OF THE PROPOSED PROJECT

Name of the Quarry	Thiru A.A. Kumaresan Rough stone and Gravel quarry	
Land Ownership	It is a Patta land,registered in the name of applicant Thiru.A.A.Kumaresan	
Land classification	It is a Patta Land (Barren Land)	
SF No & Area (Ha)	376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 & 375/16 & 2.62.0 ha	
Village,Taluk & District	Morattupalayam Village, Uthukuli Taluk, Tiruppur District.	
Toposheet No	58E/08	
Latitude between	11°08'20.63"N to 11°08'28.34"N	
Longitude between	77°25'36.57"E to 77°25'42.56"E	
Highest Elevation	295m AMSL	
Proposed Depth of Mining	42m (2m Gravel + 40m Rough Stone) below the ground level	
Geological Resources	Rough Stone in m ³	Gravel m ³
	11,60,460m³	51,576m³
Mineable Reserves as per ToR	Rough Stone in m ³	Gravel m ³
	3,89,440m³	40,116m³
Year wise Production (1st Five years)	Rough Stone in m ³	Gravel m ³
	2,13,840m³	40,116m³
Year wise Production (2nd Five Years)	Rough Stone in m ³	Gravel m ³
	1,85,080m³	-

Ultimate Pit Dimension	XY-AB: 95m (L) X 66m (W) X 27m BGL (D) XY-CD: 60m (L) X 122m (W) X 47m BGL (D) XY-EF: 49m (L) X 132m (W) X 47m BGL (D)	
Water Level in the surrounds area	58-63 m bgl	
Method of Mining	Opencast Mechanized Mining Method involving drilling and blasting	
Topography	The lease applied area is exhibits Flat terrain. The area has gentle sloping towards Southeastern side. The altitude of the area is 295m (max) above Mean Sea level. The area is covered by 2m thickness of Gravel formation. Massive Charnockite which is clearly inferred from the existing quarry pits.	
Machinery proposed	Jack Hammer	6 Nos
	Compressor	2 Nos
	Excavator with Bucket and Rock Breaker	2 No
	Tipper	3 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	32 Nos	
Project Cost	Rs. 94,69,000/-	
EMP cost	Rs. 3,80,000/-	
CER Cost	Rs. 5,00,000/-	
Nearby Water Bodies	Nallar Stream	820m South
	Noyyal River	1km South
	Manikapuram Kulam	2.0km SE
	Koolipalayam Reservoir-	4km SW
	Avarakarai Nadhi	4.5km NW
	Kattagani Kulam	7km SE
Greenbelt Development Plan	It is proposed to plant 1310 Nos of trees in the safety barrier and village road.	
Proposed Water Requirement	2.5 KLD	
Nearest Habitation	510m – North West	

Source: Approved Mining Plan of the proposal

1.3.2 Location of the project

- The area is located in **S.F.Nos. 376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 & 375/16 of Morattupalayam Village, Uthukuli Taluk, Tiruppur District, Tamil Nadu State.**
- The entire quarry lease area falls in the Patta land, the lease applied area is exhibits flat terrain.
- The Altitude of the area is 295m (Maximum) above MSL.
- The area is mentioned in GSI Topo Sheet No. **58 - E/08**
- The Latitude between of **11°08'20.63"N to 11°08'28.34"N**
- The Longitude between of **77°25'36.57"E to 77°25'42.56"E** on WGS 1984datum

FIGURE 1.2 KEY MAP SHOWING THE LOCATION OF THE PROJECT SITE

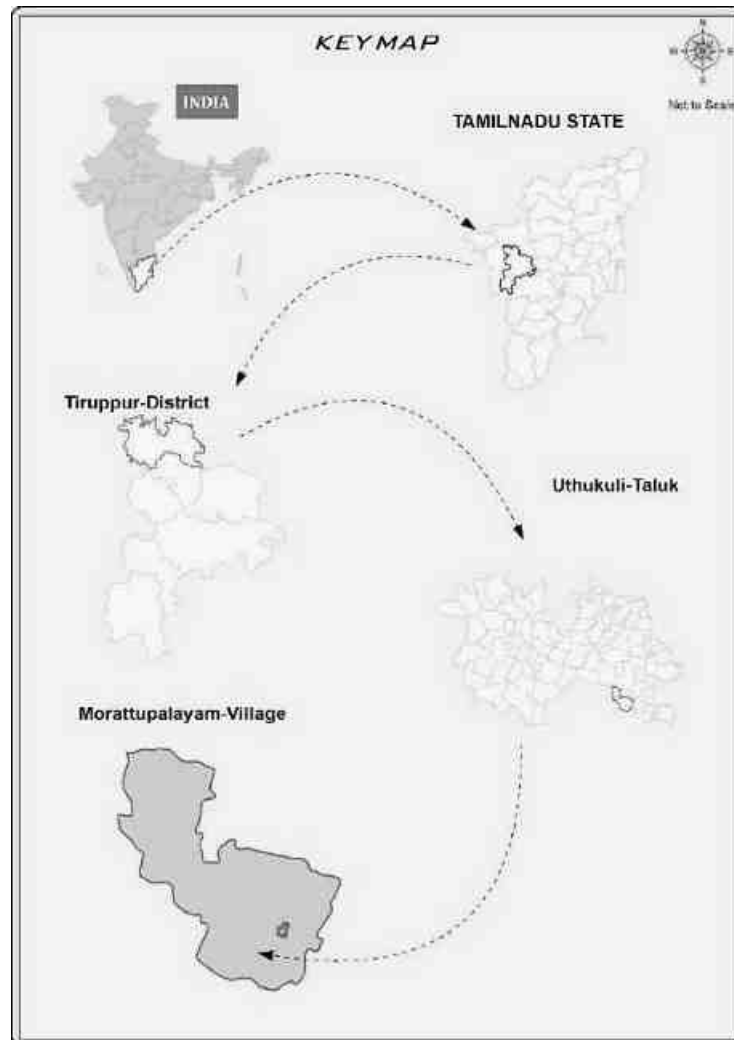


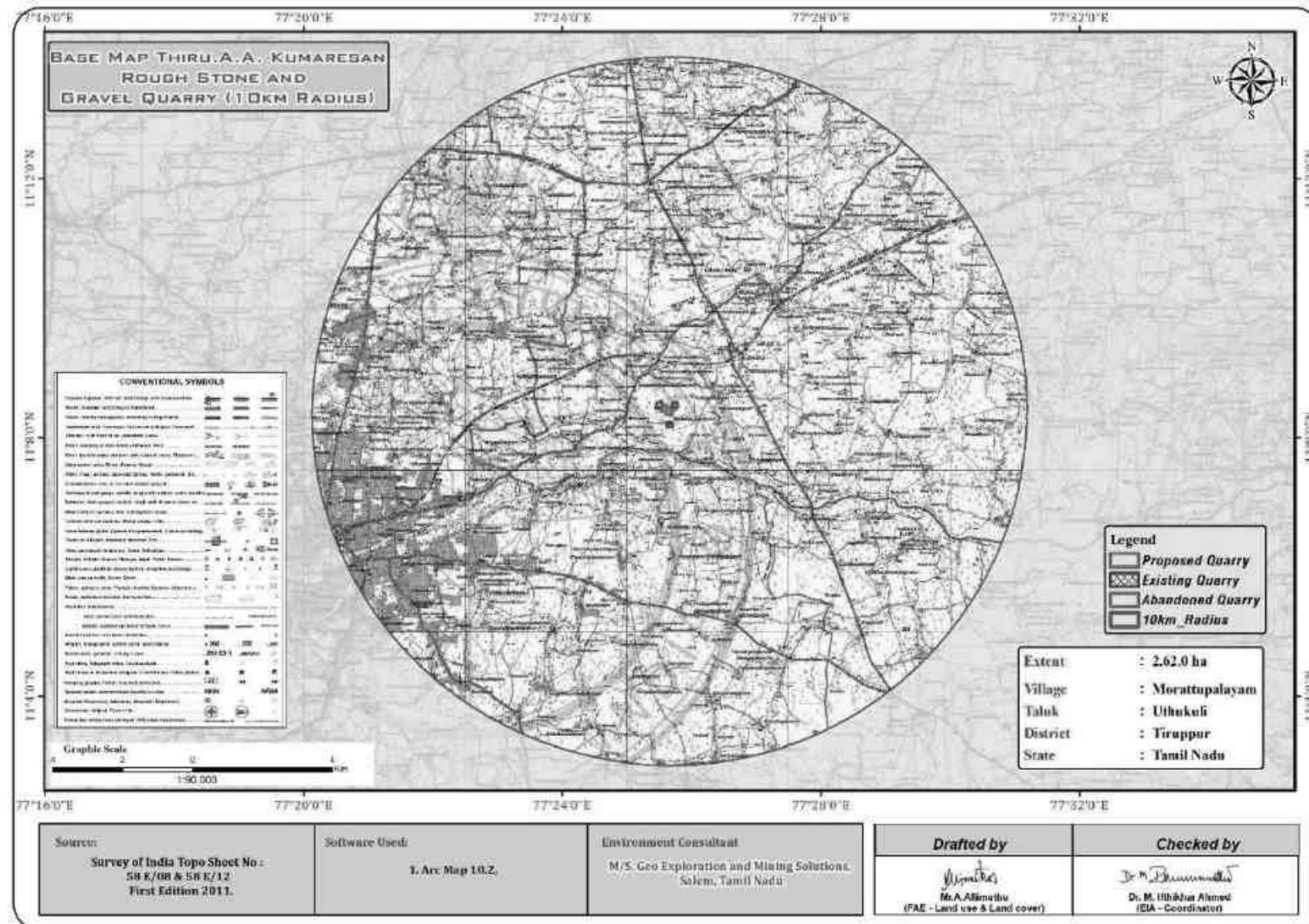
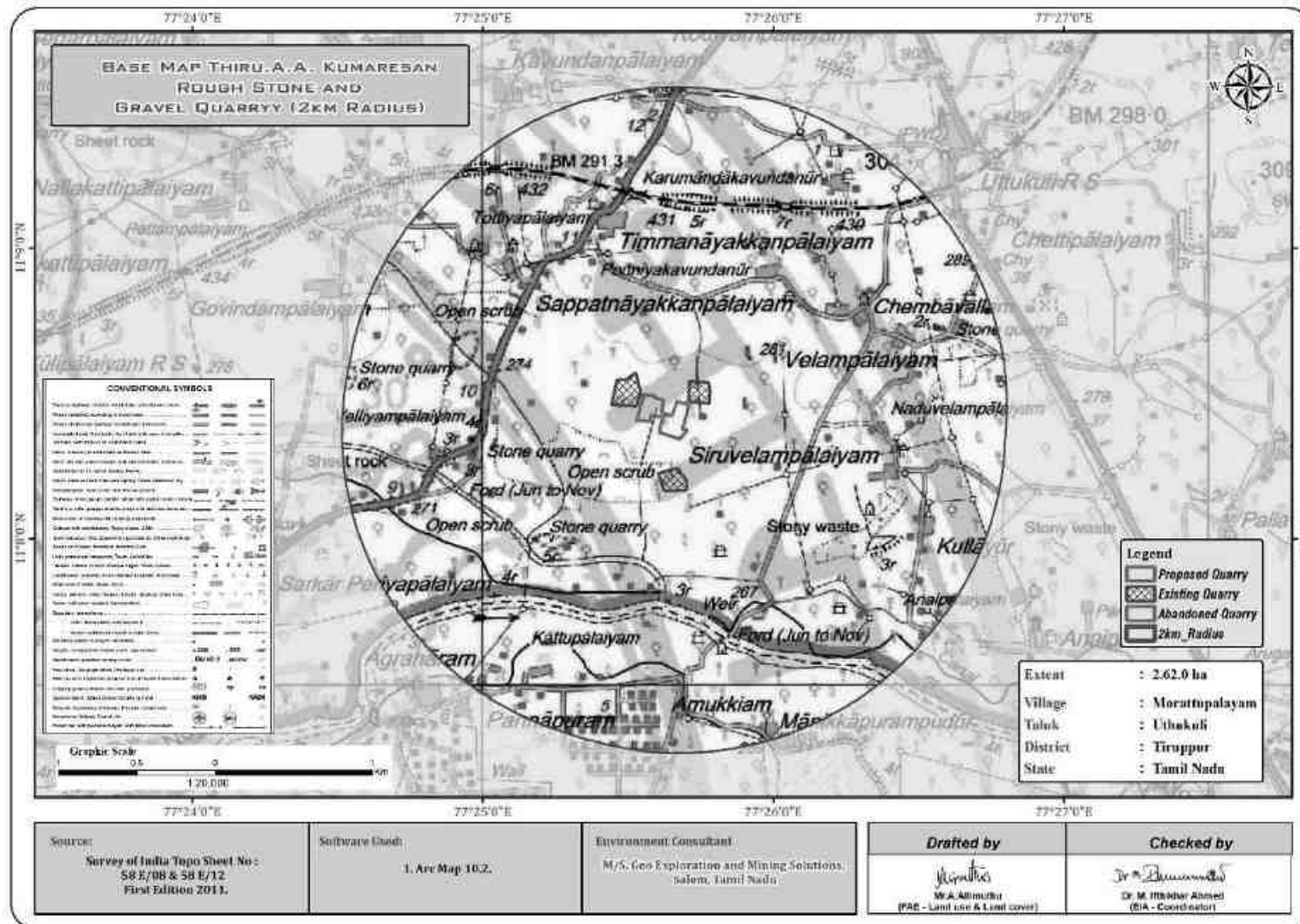
FIGURE 1.3: TOPOSHEET SHOWING LOCATION OF THE PROJECT SITE AROUND 10 KM RADIUS

FIGURE 1.4: TOPOSHEET SHOWING LOCATION OF THE PROJECT SITE AROUND 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: 28.12.2023
- The precise area communication letter was received from the Assistant Director, Department of Geology and Mining, Tiruppur District vide Rc.No.817/Mines/2023, Dated: 27.06.2024
- The Mining plan was approved by the Assistant Director, Department of Geology and Mining, Tiruppur District vide Rc.No.817/Mines/2023 Dated: 05.07.2024.
- Proponent applied for ToR for Environmental Clearance vide online Proposal No. SIA/TN/MIN/494856/2024, Dated: 02.09.2024.

SCOPING –

- The proposal was placed in 502nd SEAC meeting held on 03.10.2024 and the committee recommended for issue of ToR.
- The proposal was considered in 765th SEIAA meeting held on 15.10.2024 and issued ToR vide File.No.11239 TOR Identification No. TO24B0108TN5546980N Dated: 23.10.2024.

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 was submitted.

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.

The report has been prepared using the following references:

- Guidance Manual of Environmental Impact Assessment for Mining of Minerals, Ministry of Environment and Forests, 2010
- EIA Notification, 14th September, 2006
- File.No.11239 TOR Identification No. TO24B0108TN5546980N Dated: 23.10.2024.
- Approved Mining of the Rough stone and Gravel quarry project

1.5 *Post Environment Clearance Monitoring*

The Project Proponent will 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 every year.

1.6 *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.

TABLE 1.4 – STRUCTURE OF THE EIA REPORT

S. No	Chapters	Title	Particulars
1	Chapter 1	Introduction	Presents, an Introduction along with Scope and Objective of this EIA/EMP Studies

2	Chapter 2	Project Description	Presents the Technical Details of the Project
3	Chapter 3	Description of Environment	Presents the Baseline Status for various Environmental Parameters in the Study Area for One Season (3 Months)
4	Chapter 4	Anticipated Environmental Impacts and Mitigation Measures	Presents the Identification, Prediction and Evaluation of overall Environmental Impacts due to the Proposed Projects Activities. Also presents Proposed Mitigation Measures.
5	Chapter 5	Analysis of Alternatives (Technology & Site)	Presents Analysis of alternatives with respect to site
6	Chapter 6	Environment Monitoring Programme	Present details of post project environment monitoring
7	Chapter 7	Additional Studies	Presents Public Consultation, Risk Assessment and Disaster Management Plan
8	Chapter 8	Project Benefits	Presents project benefits as: Improvements in the Physical Infrastructure, Social Infrastructure Employment Potential –Skilled; Semi-Skilled and Unskilled etc.,
9	Chapter 9	Cost Benefit Analysis	Environmental Cost Benefit Analysis has not been recommended at Scoping Stage – thus no analysis carried out separately in this EIA/EMP Report
10	Chapter 10	Environmental Management Plan	Description of the administrative aspects to ensure the Mitigation Measures are implemented and their effectiveness monitored, after approval of the project.
11	Chapter 11	Summary & Conclusion	Summary of the EIA Report
12	Chapter 12	Disclosure of Consultants Engaged	Disclosure of the Consultants

1.7 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 Winter season Dec 2024 to Feb 2025 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 1.5 – ENVIRONMENT ATTRIBUTES

Sl.No.	Attributes	Parameters	Source and Frequency
1	Ambient Air Quality	PM ₁₀ , PM _{2.5} , SO ₂ , NO ₂	24 hourly samples twice a week for three months at 8 locations
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, Tiruppur
3	Water quality	Physical, Chemical and Bacteriological parameters	Grab samples were collected at 5 ground water and 1 surface water locations once during study period.
4	Ecology	Existing terrestrial and aquatic flora and fauna within 10 km radius circle.	Limited primary survey and secondary data was collected from the Forest department.
5	Noise levels	Noise levels in dB(A)	At 8 locations data monitored once for 24 hours during EIA study.
6	Soil Characteristics	Physical and Chemical Parameters	Once at 6 locations during study period
7	Land use	Existing land use for different categories	Based on Survey of India topographical sheet and satellite imagery and primary survey.
8	Socio-Economic Aspects	Socio-economic and demographic characteristics, worker characteristics	Based on primary survey and secondary sources data like census of India 2011.

9	Hydrology	Drainage pattern of the area, nature of streams, aquifer characteristics, recharge and discharge areas	Based on data collected from secondary sources as well as hydro-geology study report prepared.
10	Risk assessment and Disaster Management Plan	Identify areas where disaster can occur by fires and explosions and release of toxic substances	Based on the findings of Risk assessment done for the mining associated activities

Source: Field Monitoring Data

The data has been collected as per the requirement of the ToR issued by SEIAA – TN and Standard ToR Published by MoEF & CC.

1.7.1 Regulatory Compliance & Applicable Laws/Regulations

- 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 of Rough Stone and Gravel quarry has been approved under Rule 41 & 42 as amended of Tamil Nadu Minor Mineral Concession Rules, 1959
- ToR from SEIAA – **File.No.11239 TOR Identification No. TO24B0108TN5546980N Dated: 23.10.2024.**
- Approved Mining of the Rough stone and Gravel quarry project

CHAPTER – 2: PROJECT DESCRIPTION

2.0 General

The Rough Stone and Gravel Quarry requires Environmental Clearance. There are One proposed, three existing quarries forming a cluster; the cluster area calculated as per MoEF & CC Notification S.O. 2269(E) Dated 1st July 2016 and the total extent of cluster is 8.77.0Ha.

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

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 pit head to the needy crushers and rock breakers to avoid secondary blasting.

2.2 Location of the Project

- The area is located in **S.F.Nos.. 376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 & 375/16 of Morattupalayam Village, Uthukuli Taluk, Tiruppur District, Tamil Nadu State.**
- The project area falls in the Patta land, the lease applied area is exhibits flat terrain.
- The Altitude of the area is 295m (Maximum) above MSL.
- The area is mentioned in GSI Topo Sheet No. **58 - E/08**
- The Latitude between of **11°08'20.63"N to 11°08'28.34"N**
- The Longitude between of **77°25'10.51"E to 77°25'16.84"E** on WGS 1984datum
- The project site does not fall within 10 km radius of any Eco – sensitive zone, Wild life Sanctuary, National Park, Tiger Reserve, Elephant Corridor and Biosphere Reserves.

TABLE 2.1: SITE CONNECTIVITY TO THE CLUSTER QUARRIES

Nearest Roadway	NH544-Salem-Coimbatore Highway-6.5km-North SH81 – Gopichettipalayam –Kangayam Road – 2km-NE
Nearest Village	510m NorthWest
Nearest Town	Uthukuli – 4.4Km – NE
Nearest Railway	Uthukuli Railway Station – 2.5Km – NE
Nearest Airport	Coimbatore Airport – 44Km – SW
Seaport	Kochi – 184 Km-SW

Source: Survey of India Toposheet.

TABLE 2.2 – BOUNDARY CO-ORDINATES

S. No	Latitude	Longitude
1	11°08'21.90"N	77°25'36.57"E
2	11°08'25.89"N	77°25'37.36"E
3	11°08'25.40"N	77°25'39.10"E
4	11°08'28.34"N	77°25'40.15"E
5	11°08'27.99"N	77°25'41.27"E
6	11°08'27.98"N	77°25'41.80"E
7	11°08'27.40"N	77°25'42.56"E
8	11°08'23.87"N	77°25'41.63"E

9	11°08'22.63"N	77°25'41.27"E
10	11°08'22.36"N	77°25'42.19"E
11	11°08'20.63"N	77°25'40.69"E
12	11°08'21.43"N	77°25'38.08"E
Datum: UTM-WGS84 Zone 43 N		

Source: Mine Lease Plan of the proposal

FIGURE 2.1: TOPOGRAPHICAL VIEW OF THE PROJECT SITE



FIGURE 2.2: FENCING AND GREENBELT OF THE PROJECT SITE

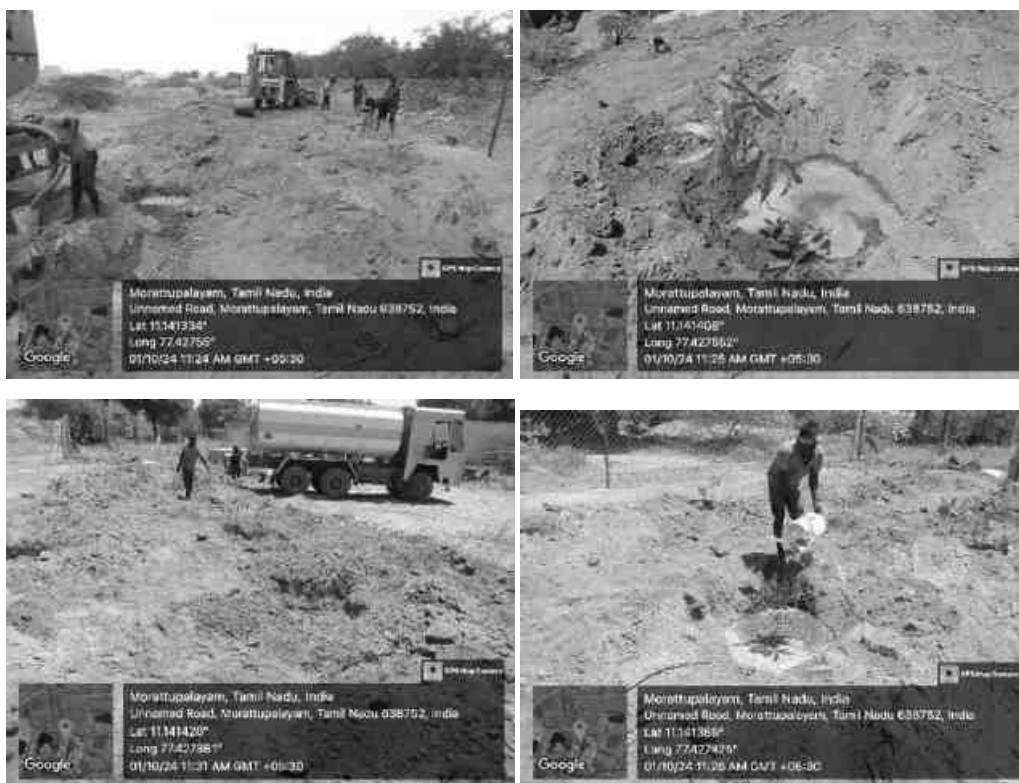


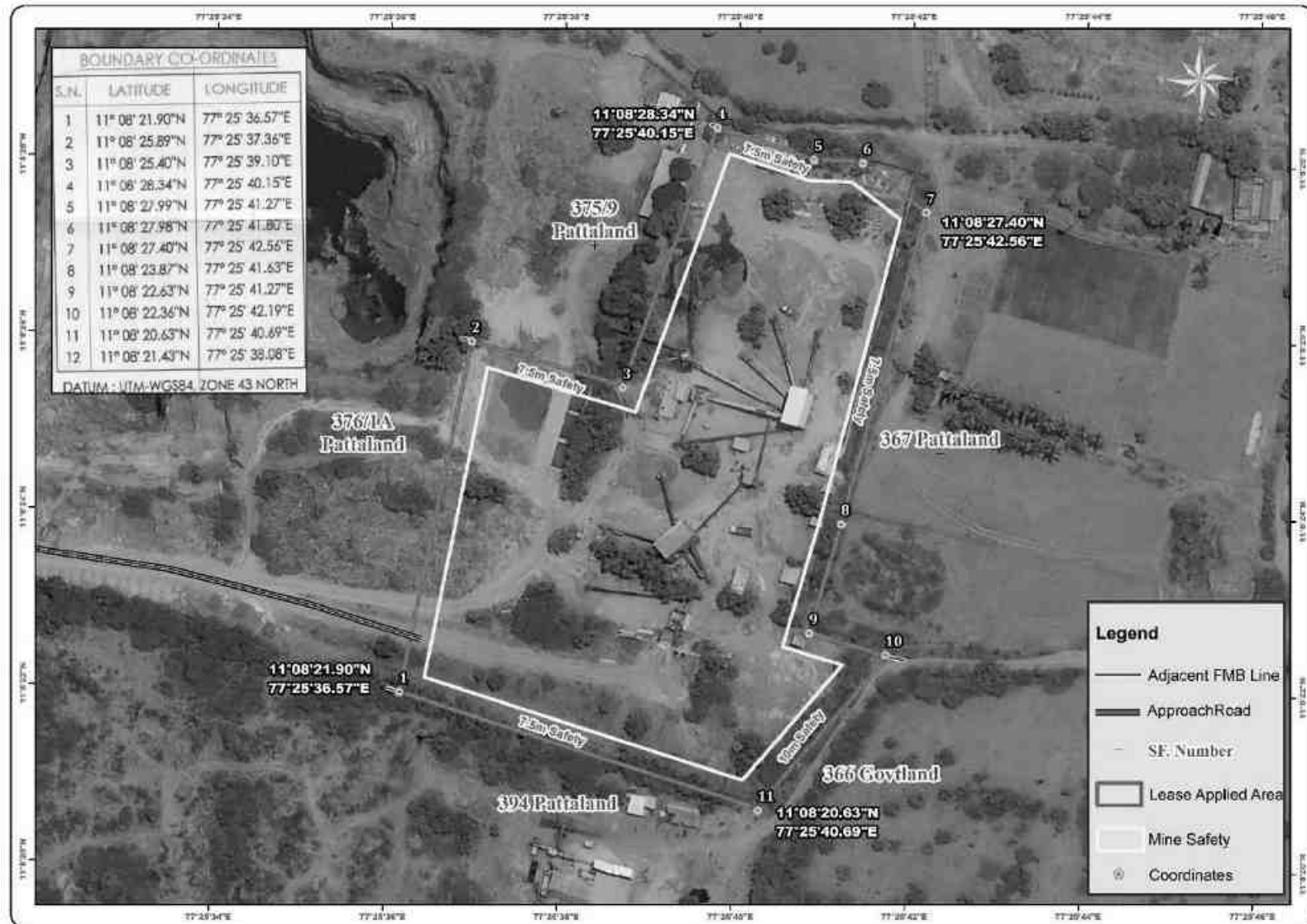
FIGURE 2.3: GOOGLE IMAGE – LEASE AREA

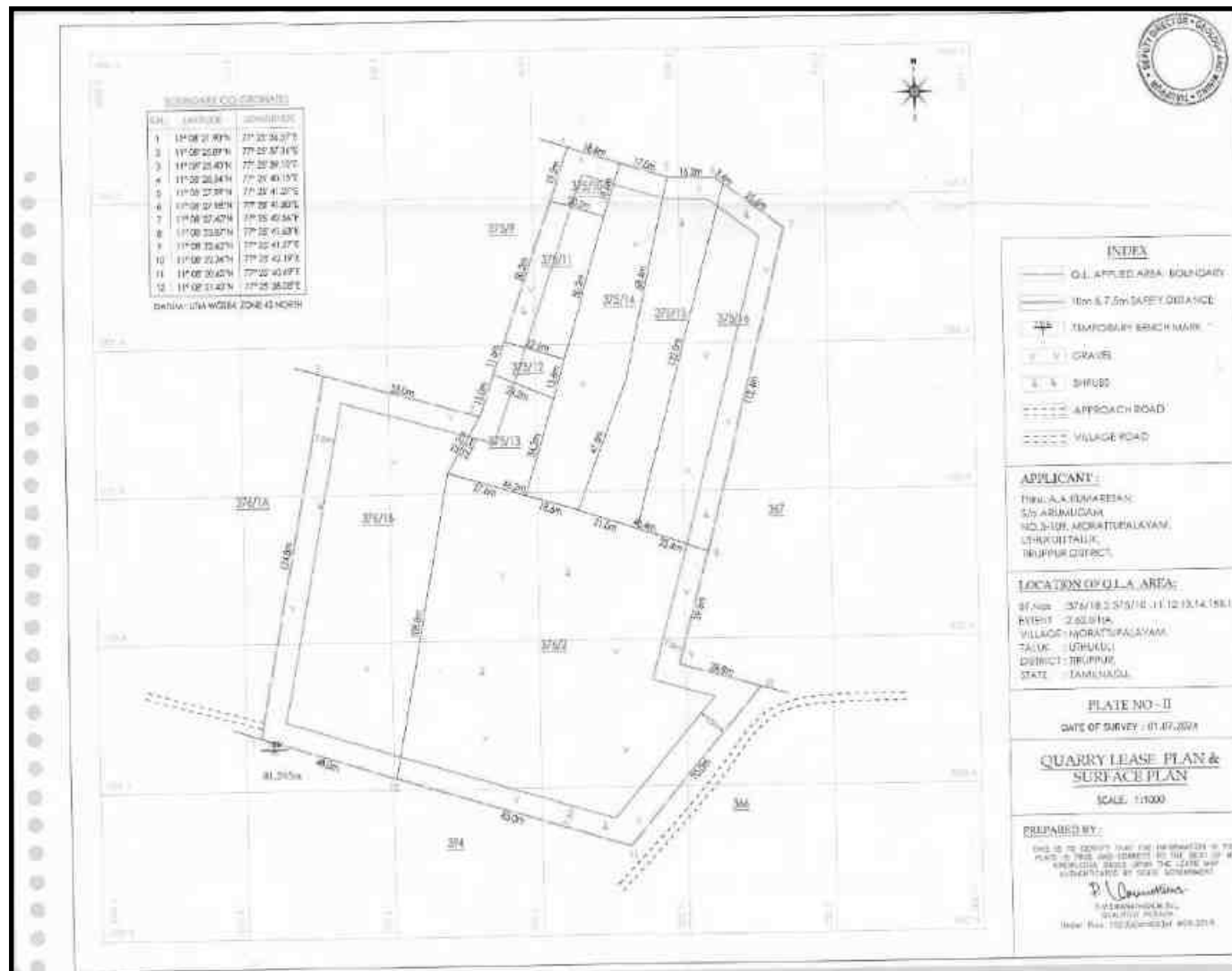
FIGURE 2.4: QUARRY LEASE PLAN WITH CO ORDINATES

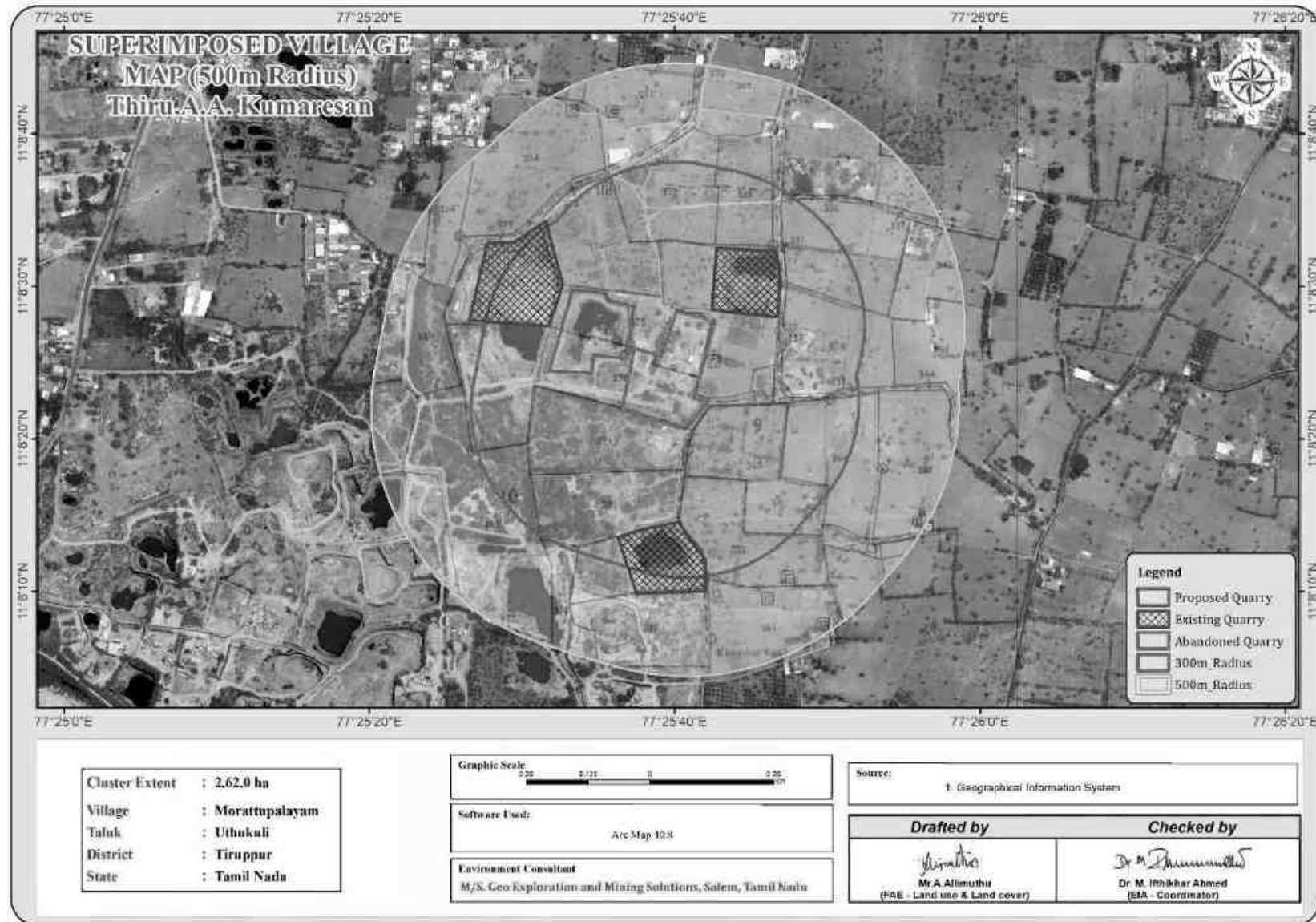
FIGURE 2.5: VILLAGE MAP

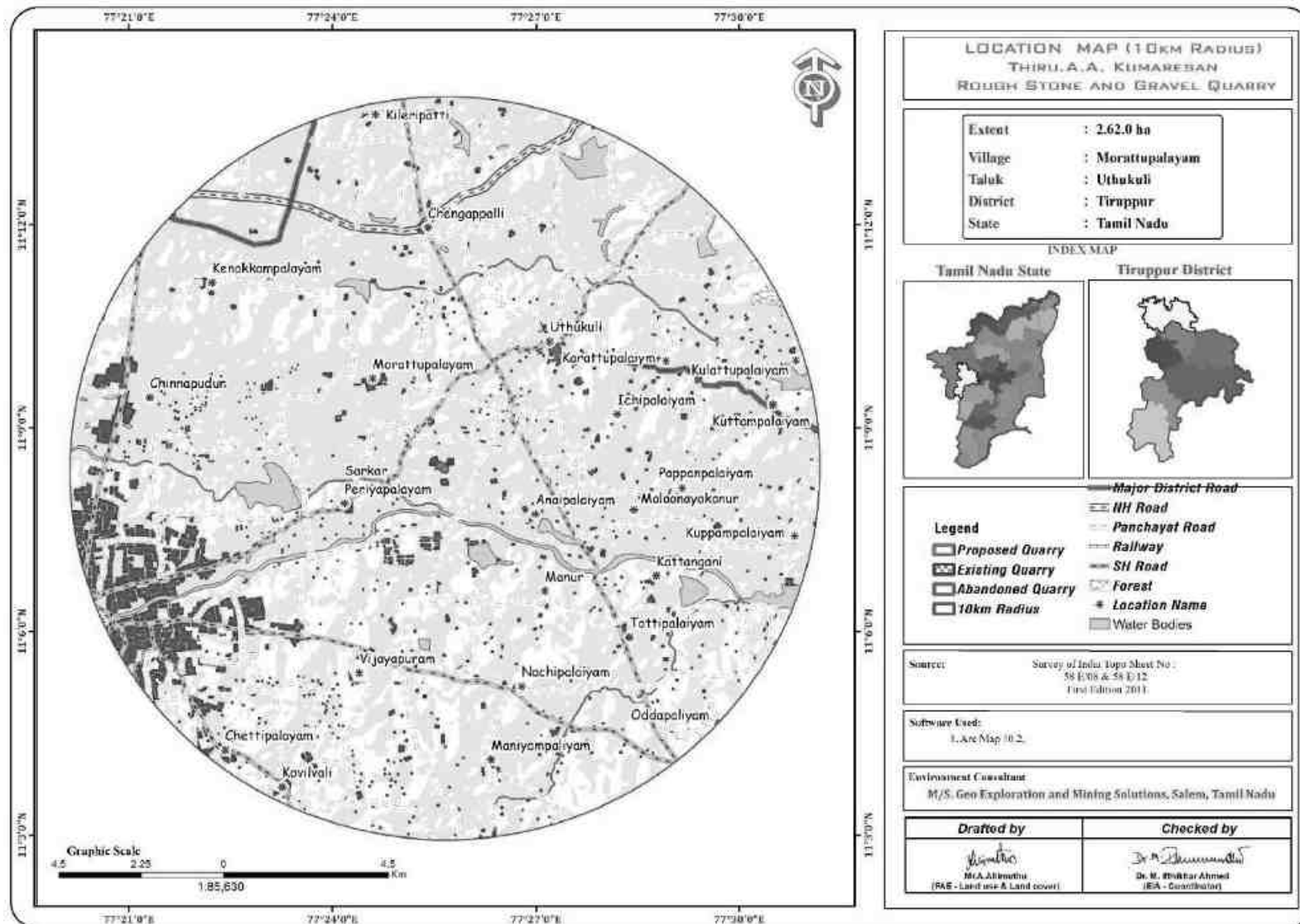
FIGURE 2.6: DIGITIZED MAP OF THE STUDY AREA (10 KM RADIUS)

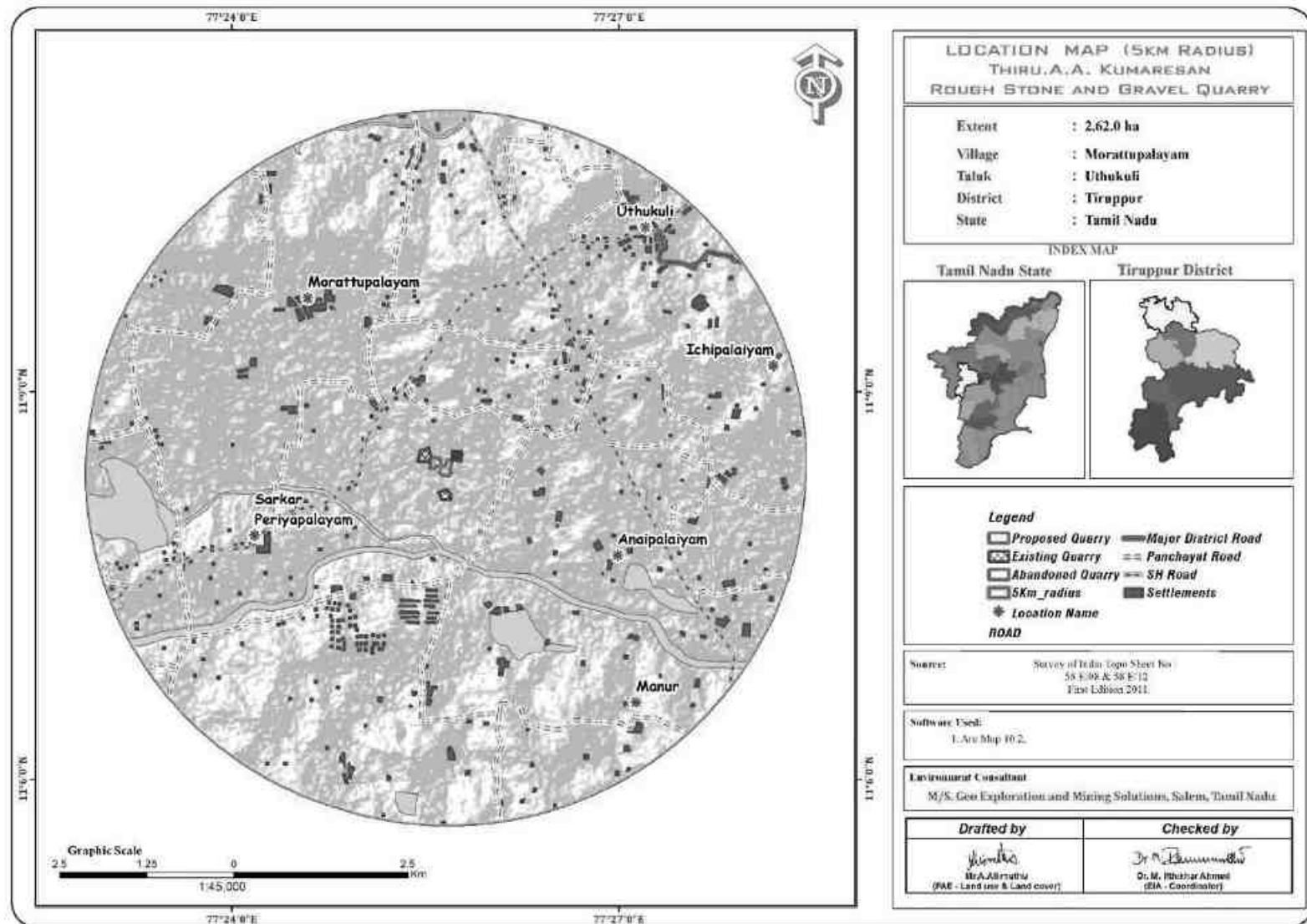
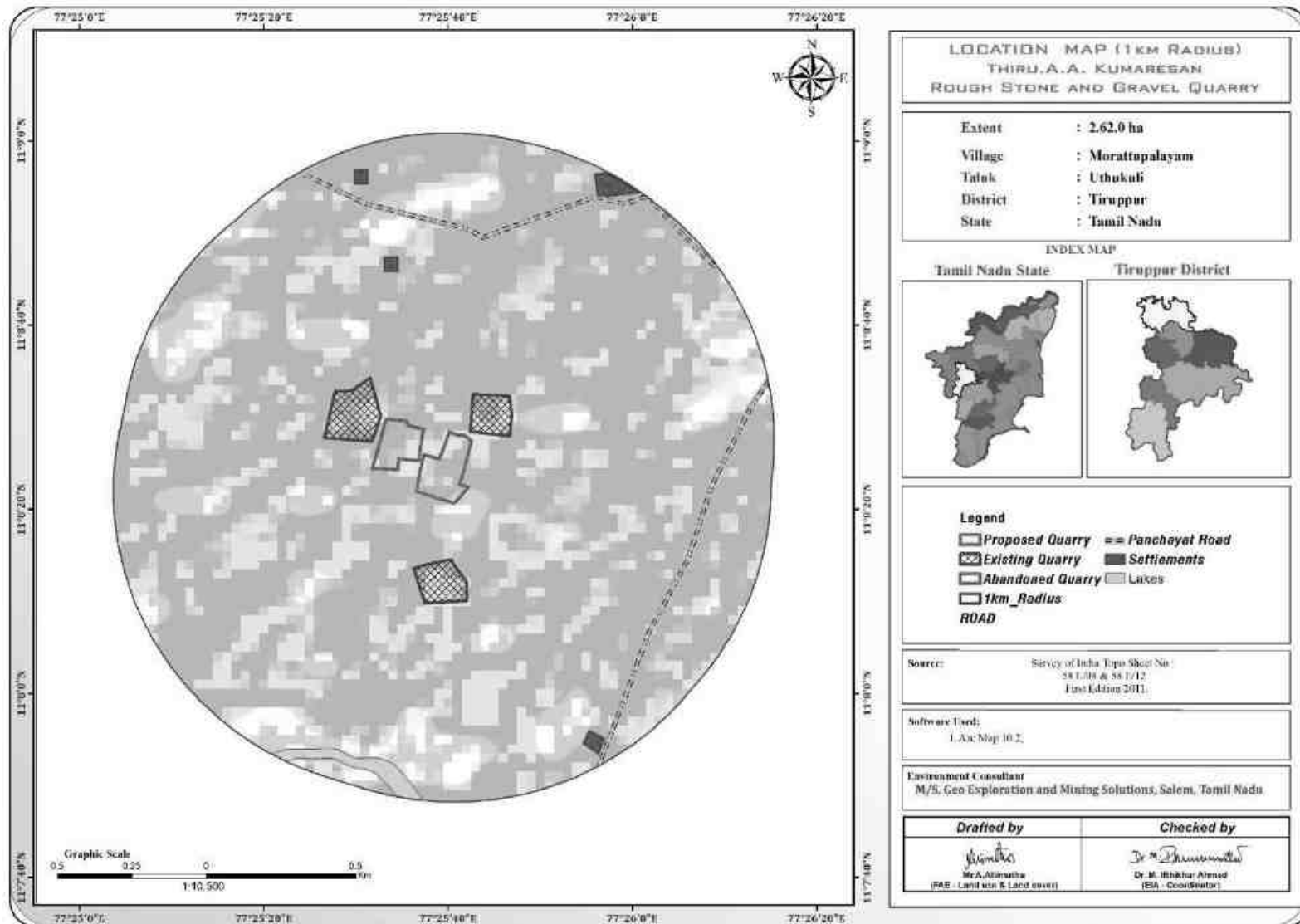
FIGURE 2.7: DIGITIZED MAP OF THE STUDY AREA (5 KM RADIUS FROM PROJECT SITE)

FIGURE 2.8: DIGITIZED MAP OF THE STUDY AREA (1 KM RADIUS FROM PROJECT SITE)

2.2.1 Project Area

- (i) The proposed project is site specific, there is No beneficiation or processing proposed inside the project area.
- (ii) There is no forest land involved in the proposed project area and is devoid of major vegetation and trees.

TABLE 2.3 – LAND USE PATTERN OF THE PROPOSED PROJECT

Description	Present area (Ha)	Area required during the first five year (Ha)	Area at the end of lease period (Ha)
Area Under Quarry	Nil	2.05.00	2.05.00
Site Services	Nil	0.01.00	0.01.00
Roads	Nil	0.02.00	0.02.00
Green Belt	Nil	0.23.00	0.40.00
Unutilized Area	2.62.00	0.31.00	0.14.00
Grand Total	2.62.00	2.62.00	2.62.00

Source: Approved Mining Plan

2.2.2 Size or Magnitude of Operation

TABLE 2.4: OPERATIONAL DETAILS

PARTICULARS	DETAILS	
	Rough Stone (m ³) (5Year Plan period)	Gravel (m ³) (3 Years Plan period)
Geological Resources	11,60,460	51,576
Mineable Reserves as per Mining Plan	3,89,440	40,116
Production for five-year plan period (1 st five year)	2,13,840	40,116
Production for five-year plan period(2 nd five year)	1,85,080	-
Mining Plan Period / Lease Applied Period	5Years	
Number of Working Days	300 Days	
Production per day	260	45
No of Lorry loads (12m ³ per load)	22	4
Total Depth of Mining	42m bgl (2m Gravel + 40m Rough stone).	

Source: Approved mining plan

2.3 Geology

2.3.1 Regional Geology

Tiruppur district of Tamil Nadu forms a part of southern Granulitic terrain and is predominantly occupied by crystalline rocks of Archaean to late Proterozoic age. Regionally, the rocks can be grouped under five categories namely

- I. Charnockite Group represented by Charnockite, Pyroxene Granulite and Magnetite Quartzite,
- II. Peninsular Gneissic Complex (II) comprising hornblende-biotite gneiss,
- III. Basic intrusive include Pyroxinite/Dunite
- IV. Younger intrusive comprising, Nepheline-Syenite, Pink Granite, Pegmatite and Quartz veins and
- V. Quaternary sediments of Kankar and soil.

Stratigraphy of the area

Age	Group	Lithology
Holocene		Block cotton soil/clay±gypsum

Cenozoic		Kankar/calc-tufa
Neoproterozoic	Acid intrusive	Quartz veins Pegmatite Pink Granite
	Sivamalai syenite Complex	Nepheline-syenite
	Chalk Hills (Basic Intrusives)	Pyroxenite/Dunite
Archaean - Palaeoproterozoic	Peninsular Gneissic Complex (II) PGC (II)	Pink Granite Gneiss Hornblende Biotite gneiss
Archaean	Charnockite Group	Charnockite (Unclassified) Pyroxene Granulite Banded Magnetite Quartzite

Tiruppur District is predominantly occupied by hornblende Biotite gneisses of PGC (II) with enclaves of Magnetite Quartzite, Pyroxene Granulite and Charnockite. The area exposes several bands of Pyroxene Granulite which is medium grained, medium to dark grey in color and stand out prominently in the gneissic country generally parallel to regional foliation. Charnockite is coarse grained, massive, many places it is foliated, grey colored and greasy and exposed as boulder outcrops and small knolls. It is well exposed in Central, Western and Southern parts of the Tiruppur District. The general strike of foliation varies from ENE-WSW, E-W with dipping towards NW and N respectively.

Source: District Survey Report for Minor Minerals Tiruppur District – May 2019

<https://cdn.s3waas.gov.in/s3d1f255a373a3cef72e03aa9d980c7eca/uploads/2019/05/2019052585.pdf>

2.3.2 Local Geology: -

The study area follows the regional trend and mainly comprises of Hard Rock Formation as a homogeneous formation / Batholith formation of Charnockite. The project area is plain terrain, covered with gravel formation of 2m thickness; Massive Charnockite formation is found after 2m gravel formation which is inferred from the existing pit within the lease area.

Peninsular gneiss forms the oldest rock formation, in which the massive formation of Charnockite lies over with rich accumulation of recent quaternary formation. On regional scale the Charnockite body N50°E – S50°W with dipping towards SE80° (Source Approved Mining plan).

2.3.3 Hydrogeology

Tiruppur District is underlain by crystalline metamorphic complex in the western parts of district and sedimentary tract in eastern side. An area of 4551 Sq.km is covered by crystalline rocks (63%) and 2671 Sq.km is covered by sediments (37%). The general geological sequence of formation is given below:

Quaternary - Laterites, Sands and Clays

Tertiary - Sandstone, Gravels and Clays

Cretaceous - Limestone, Calcareous Sandstone and Clay unconformity.

Archaean - Charnockites, Gneisses, Granites, Dolerites and Pegmatite

- The major part of the area is covered by metamorphic crystalline rocks of charnockite, granitic gneiss of Archaean age intruded by dolerite dykes and pegmatite veins. These rocks are highly metamorphosed and have been subjected to very severe folding, crushing and faulting.
- Ground Water occurs under the phreatic condition and wherever there are deep seated fractures, it occurs under semi-confined to confined conditions.
- Occurrence of Ground Water in hard rock depends upon the intensity and depth of weathering, fractures and fissures present in the rocks.
- Depth of well in hard rock generally ranges between 8 and 15m below ground level.
- Generally, yield in open wells ranges from 30 to 250m³ /day and in bore well between 260 and 430 m³ /day. The weathered thickness varies from 2.5 m to 42m in general there are 3 to 5 fracture zones within 100 m and 1 to 4 fracture zones between 100 and 200 m.

Aquifer Systems:

Occurrence and storage of groundwater depend upon three factors viz., Geology, Topography and rainfall in the form of precipitation. Apart from Geology, wide variation in topographic profile and intensity of rainfall constitutes the prime factors of groundwater recharge. Aquifers are part of the more complex hydro geological system and the behaviour of the entire system cannot be interpreted easily. In hard rock terrain the occurrence of Ground Water is limited to top weathered, fissured and fractured zone which extends to maximum 30 m on an average it is about 10-15 m in Tiruppur District.

In Sedimentary formations, the presence of primary inter granular porosity enhances the transmitting capacity of groundwater where the yield will be appreciable. The sedimentary area which occupies the eastern part of the district along the coastal tract is more favourable for groundwater recharge. Ground Water occurs both in semi confined and confined conditions. A brief description of occurrence of groundwater in each formation is furnished below.

Aquifer Parameters

The thickness of aquifer in this district is highly erratic and varies between 15 m to 40 m below ground level. The inter granular Porosity is essentially dependent on the intensity and degree of weathering and fracture development in the bed rock. As discussed earlier deep weathering has developed in Gneissic formations and moderate weathering in Charnockite formations. The range of aquifer parameters in hard rock and sedimentary formations are given below:

TABLE 2.5: RANGE OF AQUIFER PARAMETERS

Name	Sp. Capacity (lpm/d)	Specific Yield (%)	T (m ² /d)	K (m/day)	Yield of wells (lps)
Alluvium	2.08	7.2	98	19.7	2.5
Tertiary	78-173	1.4-3.5	46-134	16-33	2-3.3
Cretaceous	33-782	0.3-2.56	33-782	10-66	1.1-3.5
Crystalline	27-224	0.8-2.5	16-60	5-20	1-2

Source: <http://nwm.gov.in/sites/default/files/Notes%20on%20Tiruppur%20District.pdf>

The Ground Water levels from the 38 number of observation wells of TWAD have been analyzed for Post-Monsoon and Pre-Monsoon.

FIGURE 2.9: GROUND WATER LEVEL VARIATIONS OF TIRUPPUR DISTRICT

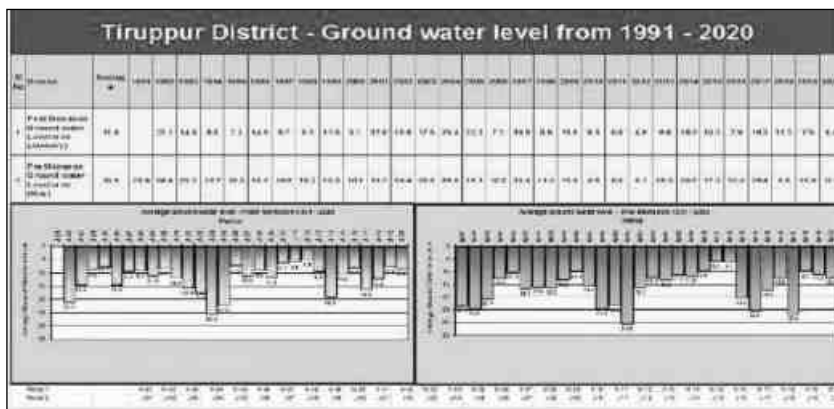


TABLE 2.6: GROUND WATER LEVEL VARIATIONS OF TIRUPPUR DISTRICT

Jan 2017	May 2017	Jan 2018	May 2018	Jan 2019	May 2019	Jan 2020	May 2020	Jan 2021	May 2021	5 Years Pre-Monsoon Average	5Years Post Monsoon Average
16.3	26.4	12.4	9.8	7.6	10.9	8.4	12.3	7.1	10.6	11.9	8.8

Source: <https://www.twadboard.tn.gov.in/content/tiruppur>

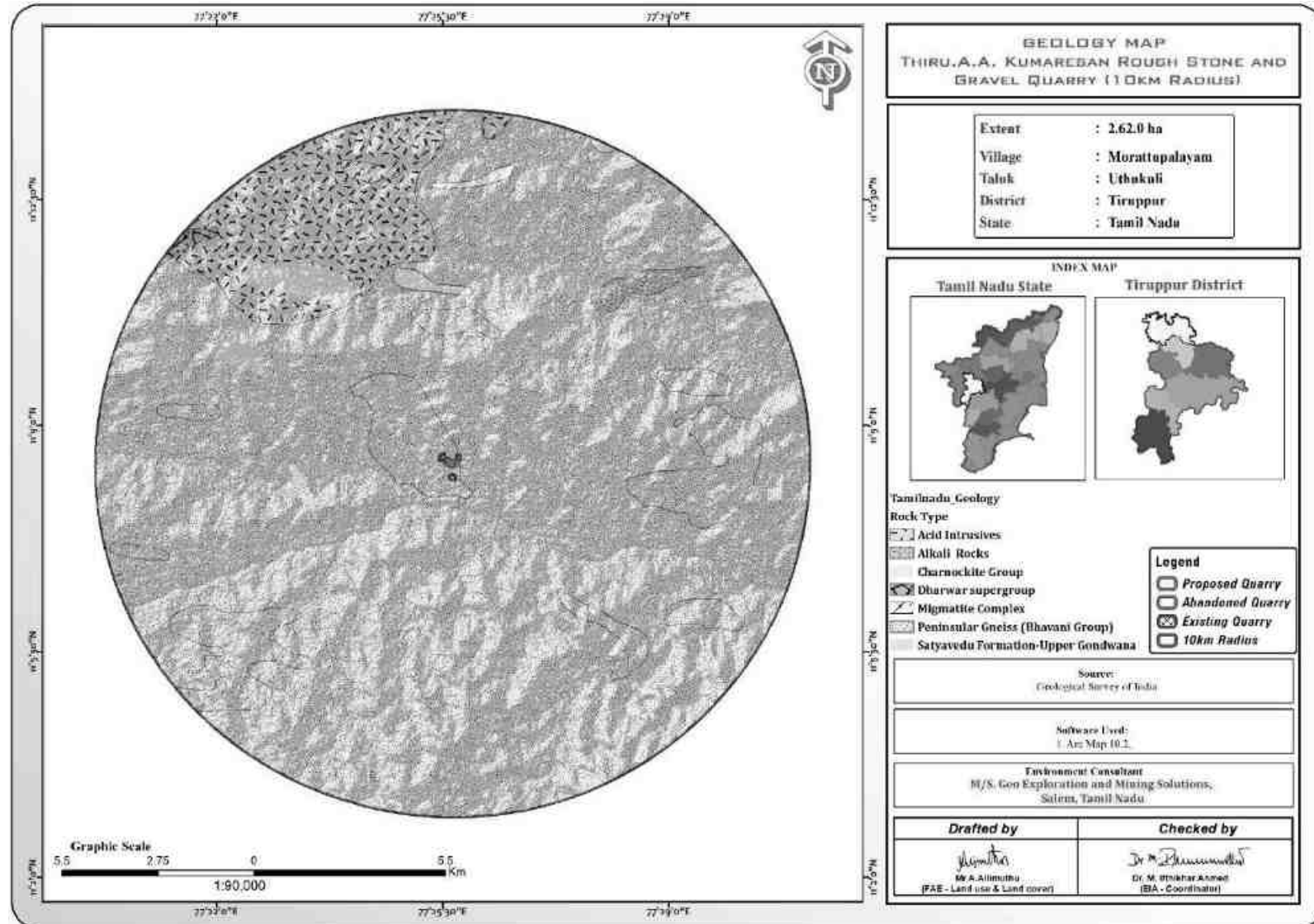
FIGURE 2.10: REGIONAL GEOLOGY MAP

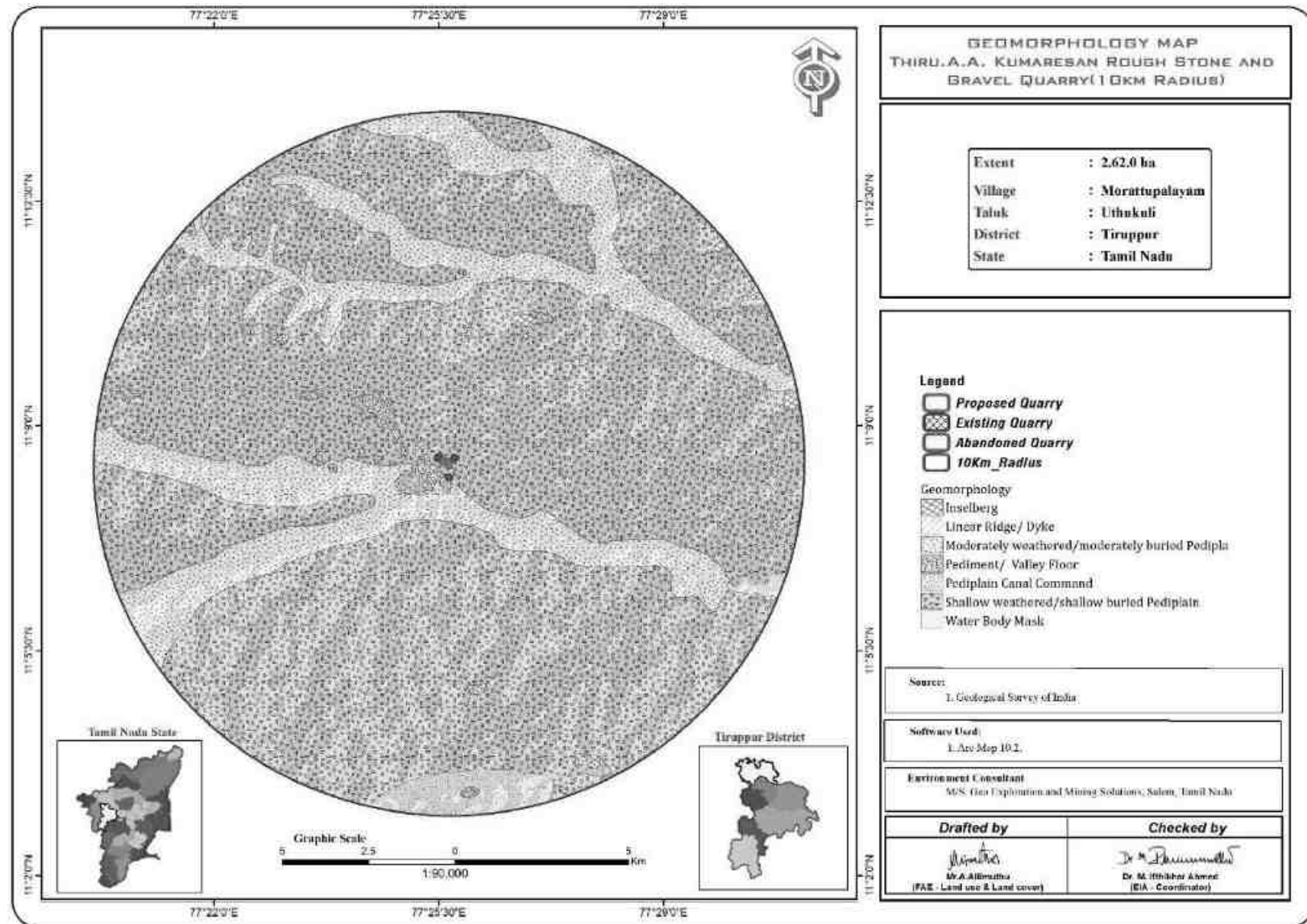
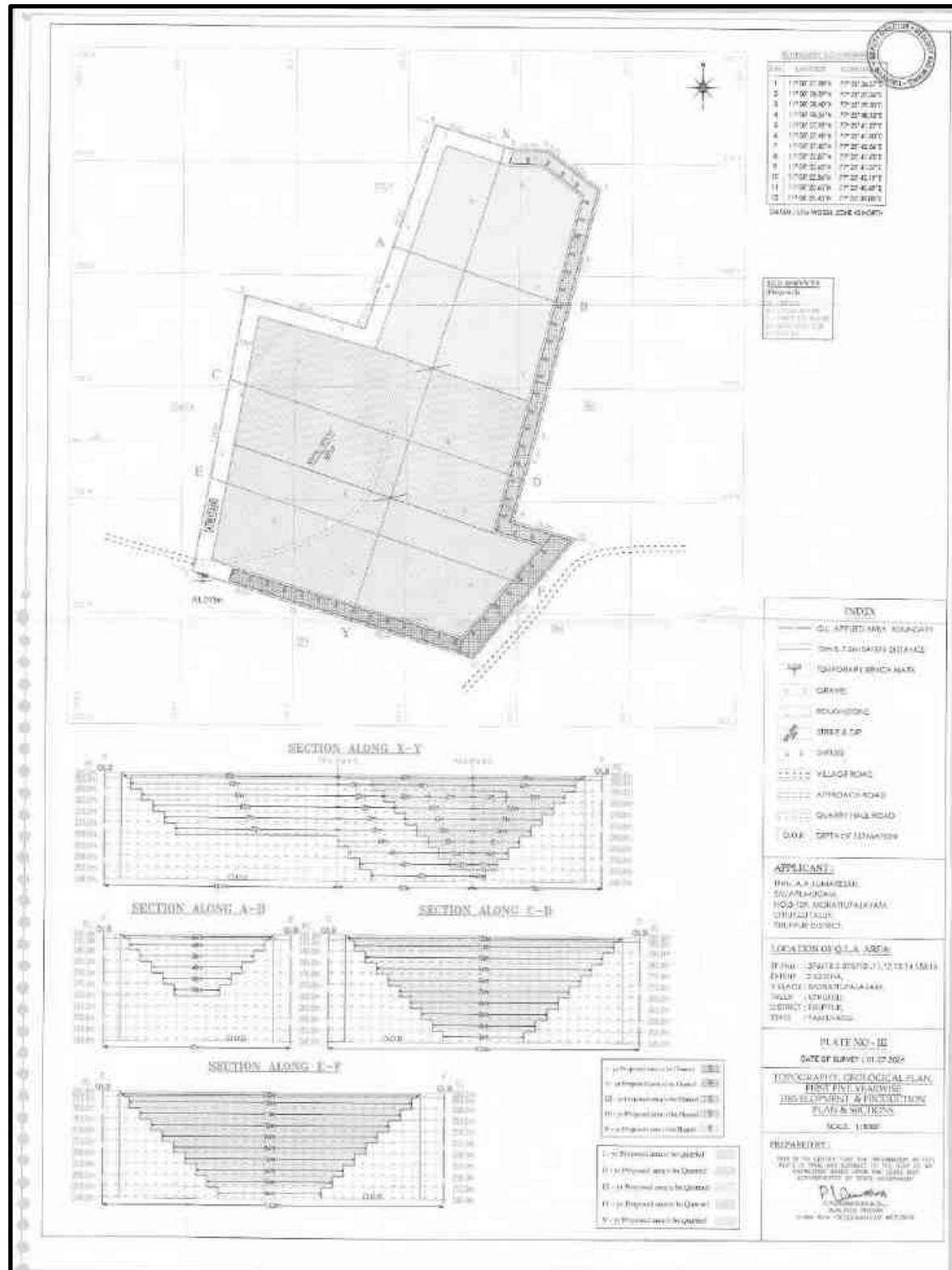
FIGURE 2.11: GEOMORPHOLOGY MAP

FIGURE 2.12: TOPOGRAPHY, YEARWISE PRODUCTION PLAN AND SECTION-



2.4 Resources and Reserves Estimation

The mineable reserves are calculated after leaving necessary safety distances and bench loss prescribed in the Precise area communication letter.

TABLE 2.7: AVAILABLE GEOLOGICAL RESOURCES OF PROPOSED PROJECT

Description	Rough Stone(m ³)	Gravel(m ³)
Geological Resource	11,60,460	51,576
Mineable Reserves	3,89,440	40,116
Proposed production for 1 st five years	2,13,840	40,116
Proposed production for 2 nd five years	1,85,080	-

Source: Approved Mining Plan

TABLE 2.8: YEAR-WISE PRODUCTION PLAN

YEAR	ROUGH STONE QUARRY (m ³)	GRAVEL (m ³)
I	44,060	12,936
II	45,400	14,640
III	40,300	12,540
IV	45,140	-
V	38,940	-
VI	46,900	-
VII	33,750	-
VIII	40,850	-
IX	33,700	-
X	29,880	-
TOTAL	3,98,920	40,116

Source: Approved Mining Plan

Disposal of Waste

There is no waste is anticipated, quarried out materials (Rough stone and Gravel) will be utilized (100%).

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.

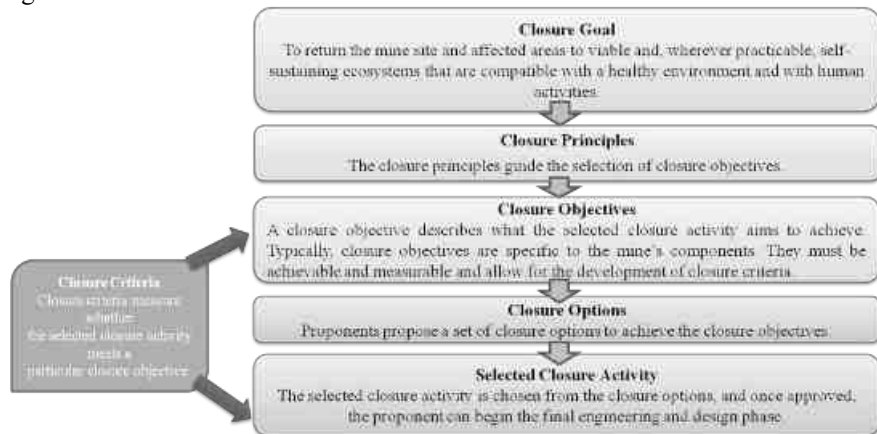
TABLE 2.9: ULTIMATE PIT DIMENSIONS

Section	Length (Max) (m)	Width (Max) (m)	Depth (Max) (m)
XY-AB	95	66	27m BGL
XY-CD	60	122	47m BGL
XY-EF	49	132	47m BGL

Source: Approved Mining Plan

- At the end of the life of the mine the quarried out land will be 2.05.00 Ha which 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.

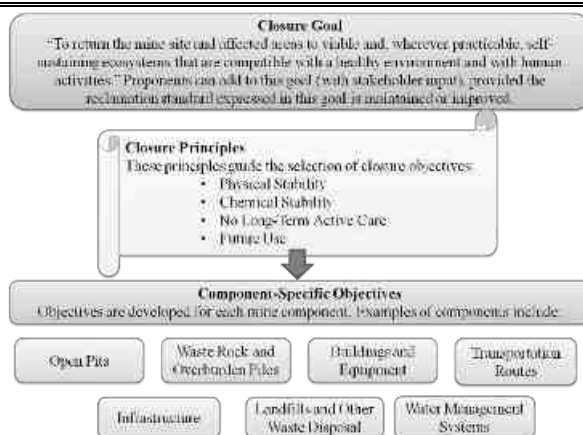


Closure Objectives

- 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 the mined out pits will be ensuring safe for humans, aquatic life, and wildlife.
- Discharge of contaminated drainage has been minimized and controlled.
- 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
- 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.
- 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.
- Monitor wildlife interactions with barriers to determine effectiveness.
- Inspect aquatic habitat in flooded pits where applicable.
- Monitor dust levels.

2.5 Method of Mining

The method of mining is Opencast Mechanized Mining. It is an existing quarry attained a depth of 20m maximum in the centre part of the pit it is proposed to start from the North side and progress towards south. The same method of mining 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). 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 top layer of overburden (Gravel) will be Excavate directly by Hydraulic Excavators and loaded into tippers directly and sold to needy customers. The Rough Stone will be quarried 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

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

Spacing – 1.2m, Burden –1.0, Depth of hole - 1.5m

2.5.2 Blasting

Blasting will be done as per details below: -

- Controlled blasting parameter: -

Spacing	– 1.2m
Burden	– 1.0 m
Depth of hole	– 1.6 m
Charge per hole	– 0.5Kg

Powder factor – 6.0 tonnes/kg

Dia of hole – 32 mm

Details of blasting design and parameters are discussed in approved mining plan.

No of Holes to be drilled per day: -

Total Volume = 3,89,440 m³
 = 3,89,440/5
 = 77888/300
 = 260* 2.6
 = 676 Tonnes per day
 Powder factor = 6 Tonnes/kg
 Hence it is required t = 113 kg per day
 Quantity of Explosives required per hole = 0.5kg
 Total No of holes/ Day = 80 Holes per day
Total quantity of Explosives will not exceed 5 kg per round i.e., 10 holes per round

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.

2.5.3 Extent of Mechanization

TABLE 2.10 PROPOSED MACHINERY DEPLOYMENT

S.NO.	TYPE	NOS	SIZE/CAPACITY	MOTIVE POWER
1	Jack hammers	6	1.2m to 2.0m	Compressed air
2	Compressor	2	400psi	Diesel Drive
3	Excavator with Bucket / Rock Breaker	2	300 HP	Diesel Drive
4	Tippers	3	20 Tonnes	Diesel Drive

Source: Approved Mining Plan.

2.6 General Features

2.6.1 Existing Infrastructures

Infrastructures like Mine office, Temporary Rest shelters for workers, Latrine and Urinal Facilities are available in the Existing quarries and the same infrastructure as per the Mine Rule will be maintained.

2.6.1 Drainage Pattern

The general drainage pattern of the area is dendritic. There are no streams, canals or water bodies crossing within the project area, hence there is no requirement of stream or canals diversion in the near future.

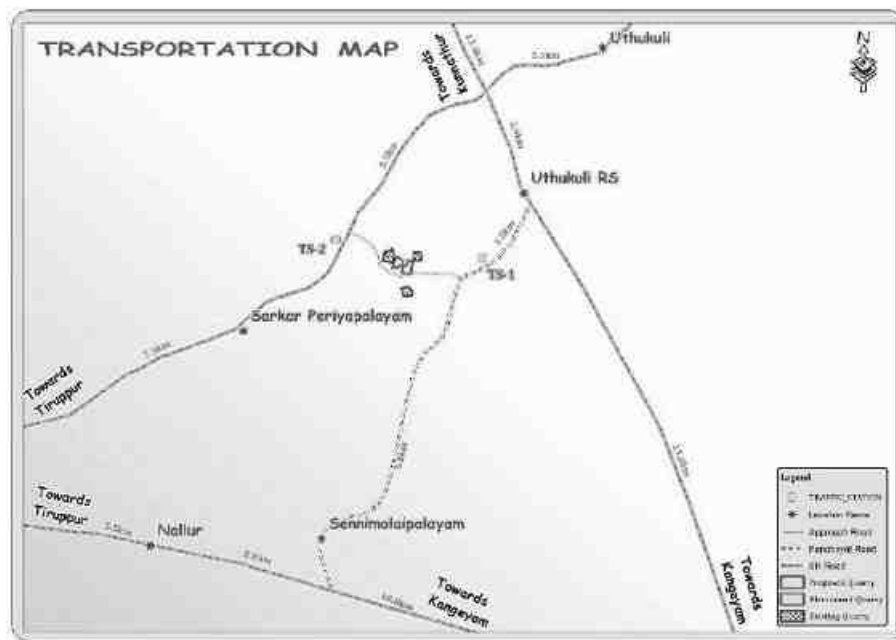
2.6.2 Traffic Density

Traffic density measurements were performed as per IRC 1960 Guidelines at three locations based on the transportation route. 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 LOCATION'S

Station code	Station location	Distance and Direction	Type of Road
TS1	Uthukuli-Tiruppur Road	1.5 0km- West	SH Road
TS2	Senniyampalayam Panchayat Road	800m-NE	Panchayat road

Source: On-site monitoring by GEMS FAE & TM

FIGURE 2.13: TRAFFIC SURVEY LOCATIONS & TRANSPORTATION ROUTE MAP

(Source: Survey of India Toposheet)

TABLE 2.12 – EXISTING TRAFFIC VOLUME

Station code	HMV (Hourly Average)		LMV hourly average		2/3 Hourly average		Total PCU per hour
	No	PCU	No	PCU	No	PCU	
TS1	150	300	100	100	150	75	475
TS2	55	165	50	50	75	75	290

Source: On-site monitoring by GEMS FAE & TM

- PCU conversion factor for HMV (Trucks and Bus) = 3, LMV (Car, Jeep and Auto) = 1 and 0.5 for Motor Vehicles (2/3 Wheelers)

TABLE 2.13 – ANTICIPATED TRAFFIC DUE TO THIS PROPOSED PROJECT

Transportation of Rough stone per day		
Capacity of trucks	Cumulative Trips	Volume in PCU
10/20 tonnes	30	90

Source: Anticipated based on Approved Mining Plan Production

TABLE 2.14 – SUMMARY OF TRAFFIC VOLUME

Route	Existing traffic value in PCU	Incremental traffic from the quarry in PCU	Total traffic volume	Hourly Capacity in PCU as per IRC guidelines
TS1	475	90	565	1200
TS2	290	90	380	1500

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

As per the IRC 1960 this existing 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 transportation.

2.6.3 Mineral Beneficiation and Processing

There is no proposal for the mineral processing or ore beneficiation in this project. the entire quarried out material will be transported to the crushing units situated within 500m south side.

2.6.4 Existing Infrastructure

It is an Existing quarry, no infrastructural facility available within the project area. The infrastructural facilities to be made after the start of the quarrying operations will be prepared outside limit as per the rules and safe distance to be adopted.

2.6.2 Drainage Pattern

The drainage pattern of the area is dendritic – sub dendritic. There is no drainage pattern, water course adjacent to the project site.

2.7 Project Requirement

2.7.1 Water Source & Requirement

Detail of Total water requirements in KLD as given below:

TABLE 2.15 – WATER REQUIREMENT FOR THE PROJECT

*Purpose	Quantity	Source
Domestic & Drinking purpose	0.5KLD	From existing, bore wells and drinking water will be sourced from Approved water vendors.
Dust Suppression	1.0KLD	From Existing bore wells from nearby area
Green Belt	1.0KLD	From Existing bore wells from nearby area
Total	2.5 KLD	

Source: Prefeasibility Report

About 50% water will be required for the suppression of the dust, Water will be sourced from accumulated rainwater/seepage water in quarry pits. Packaged Drinking Water is available from the nearby approved water vendors.

2.7.2 Power and Other Infrastructure Requirement

The project does not require power supply for the quarry operation. 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 TNEB. For the quarrying operation like compressor for drilling Diesel will be utilized.

The temporary infrastructures such as Mine Office, First Aid Room, Rest Shelter etc., are already available within the project site. 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.

2.7.3 Fuel Requirement

High speed Diesel (HSD) will be used for mining machineries. Diesel will be brought from nearby Fuel Stations. The quarry works restricted to one general shift during day time only. **No electricity is needed for quarry operation etc** as mainly diesel operated mining machinery is used for quarrying. However, the electricity will be required for crusher plant, pumping of water and for administrative building & rest shelters. Besides, standby generator will be available to meet the emergency power requirement of the quarry.

For Rough stone and gravel:

Per hour Excavator will consume	=	16 liters / hour
Per hour Excavator will excavate	=	20m ³ of Rough stone
Rough stone	=	3,89,440/20 = 19472 hours
Diesel consume	=	19472 hours' x 16 liters
Total diesel consumption	=	3,11,552 Liters of HSD will be utilized for rough stone

Total diesel consumption is around **3,11,552 Liters** of HSD for the entire period of life.

Gravel:

Per hour Excavator will consume	=	10 liters / hour
Per hour Excavator will excavate	=	60m ³ of Gravel
Gravel quantity	=	40116/60 = 669 hours
Diesel consume	=	669hours x 10 liters
Total diesel consumption	=	6690 Litres of HSD will be utilized for Gravel for the entire life

Total Diesel consumption per day average is computed as 25 – 30 Litres / day

2.7.4 Employment Requirement:

The skilled, competent qualified statutory persons will be engaged for quarrying operation, preference will be given to the local community.

TABLE 2.16: EMPLOYMENT POTENTIAL

Mine officials & Competent person	Nos
Geologist	1
Mines Foreman	1
Mate/ Blaster	1
Water Sprinkler Drivers	1
Jack hammer Operator	12
Excavator Operator	2
Tipper Driver	3
Helper	4
Cleaner & Co operator	5
Security	2
Total	32 Nos

To operate the quarry in safe and systematic manner the above Statutory/ Competent persons are required. A total of 32 people will get employment this project.

2.7.5 Project Cost

TABLE 2.17 – PROJECT COST

Project Cost
Rs. 94,69,000/-

Source: Approved Mining Plan & Prefeasibility Report

2.8 Project Implementation Schedule

The commercial operation will commence after the grant of Environmental Clearance. CTO will be obtained from the Tamil Nadu State Pollution Control Board. The conditions imposed during the Environmental Clearance will be compiled before the start of mining operation.

TABLE 2.18 – EXPECTED TIME SCHEDULE

S. No	Particulars lease execution	Time schedule (in month)					Remarks if any
		1 st	2 nd	3 rd	4 th	5 th	
1	Environmental Clearance						
2	Consent to operate						Production start period

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

CHAPTER – 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 December 2024 to February 2025 with CPCB guidelines Environmental data has been collected with reference to cluster quarries by EHS 360 Labs Private Limited, accredited by ISO/IEC-17025:2005 (NABL) for the below attributes -

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

Study Area

An area of 10 km radius (aerial distance) from the periphery of the cluster is considered for EIA study. The data collection has been used to understand the existing environment scenario around the cluster quarries against which the potential impacts of the project can be assessed. The study area has been divided into two zones viz **core zone** and **buffer zone** where core zone is considered as cluster and 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 **Winter season** i.e., December 2024 to February 2025.

Study Methodology

1. The project area (Core zone) was surveyed in detail with the help of DGPS survey instrument and the boundary pillars were picked up with DGGPS. 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).
2. Soil samples were collected and analysed for relevant physico-chemical characteristics, exchangeable cations, nutrients & micro nutrients etc., in order to assess the impact of mining activities and proposed greenbelt development.
3. Ground water samples were collected during the study period from the open wells and bore wells, while surface water was collected from river and lake in the buffer zone. The samples were analysed for parameters necessary to determine water quality (based on IS: 10500:2012 criteria) and those which are relevant from the point of view of environmental impact of project.
4. A meteorological station was setup in Morattupalayam village. Wind speed, Wind direction, Dry and wet bulb temperature, Relative humidity, Rainfall with cloud cover and general weather conditions were recorded throughout the study period.
5. In order to assess the Ambient Air Quality (AAQ), samples of Ambient Air were collected by installation of Respiratory Dust Samplers (RDS) for Fugitive dust, PM₁₀ and SO₂, 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
6. 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
7. 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

8. 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 – ENVIRONMENTAL 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 (1 core & 5 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 (2 surface water & 4 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	PM ₁₀ PM _{2.5} SO ₂ NO _x Fugitive Dust	24 hourly twice a week (Mar to May 2022)	7 (2 core & 5buffer)	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 Lab Private Limited in association with GEMS

* All monitoring and testing are 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 10 Km radius around the proposed mine site so that temporal changes due to the mining activities on the surroundings can be assessed in future.

Considering the core zone of the project site the area has been already broken up and the quarrying activities carried out past 10 years and the surrounding lands are used specifically for the mining activities. Around this project site mining activities and crushers are operating more than 15 years.

3.1.1 LAND USE/ LAND COVER

To study the land use pattern of the core as well as a buffer zone, land use/land cover details have been identified/ maps have been prepared in accordance with the **Standard ToR point no. 4 & 10 Stating:**

Point No. 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).

Point No. 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.

Current vintage data of Indian Remote Sensing Satellite Resourcesat1 LIII (False Color Composite) has been used for Land Use / Land Cover study. Satellite image has been procured from National Remote Sensing Centre, Hyderabad.

3.1.2 OBJECTIVE

The objectives of the LULC study are as follow:

- ☞ To develop the Land use & Land cover map using land coordinates of the quarry area (Core Zone) and 10 km radius from the quarry site (Buffer area).
- ☞ To Identify and mark the important Land use and Land cover features using the primary and secondary data collected.
- ☞ To evaluate the impacts on existing land use/cover features of the buffer area by the Proposed Project activities.
- ☞ To identify the mitigative measures for the sustainable use of land and to protect the buffer zone from the adverse impacts.

Technical specification of Satellite imagery Data Used:

Current vintage data of Indian Remote Sensing Satellite RESOURCESAT1 (LISS-III) digital FCC (False Color Composite) has been used for preparation of Land use/ Land cover thematic map of study area. Satellite image has been procured from National Remote Sensing Centre, Hyderabad. Survey of India Toposheet as a reference map on 1:50,000 scale has been used for preparation of base layer data like road, rail network; village for geo-referencing of satellite image.

- | | | |
|-------------------------|---|--|
| ☞ Satellite Image | - | Resourcesat1-LISSIII, 23.5m Resolution |
| ☞ Satellite Data Source | - | NRSC, Hyderabad |
| ☞ Satellite Vintage | - | 14st July 2020, Swath 141km wide. |
| ☞ SOI Toposheet No | - | 58 -E/08 |
| ☞ Software Used | - | ArcGIS 10.8 |

The satellite image (FCC color 3,2,1) of the buffer zone is given in 3.1

The spatial resolution and the spectral bands in which the sensor collects the remotely sensed data are two important parameters for any land use survey. Resourcesat1-LISSIII, 23m Resolution of 23.5m and a 141 km wide swath of the earth in 23.5m resolution covering wide areas the data is collected in 4 visible bands namely band number and Resolution.

TABLE 3.2: RESOURCESAT1-LISSIII SENSOR CHARACTERISTICS

Band Number	Description	Wavelength	Resolution
Band 1	Green	0.52-0.59 μm	23.5 meters
Band 2	Red	0.62-0.68 μm	23.5meters
Band 3	NIR	0.77-0.86 μm	23.5meters
Band 4	SWIR	1.55-1.70 μm	70meters

Source: NRSC, Hyderabad

3.1.3 METHODOLOGY

The land use / land cover map is prepared by adopting the interpretation techniques of the Satellite image in combination with collateral data such as Survey of India topographical maps. Image classification is done by using visual interpretation techniques and digital classification using any of the image processing software. The various activities for preparation of LULC include pre-processing, rectification, image enhancements and classifying the satellite data for assessing the change in land use land cover due to proposed developmental activities.

- ☞ Preliminary/primary data collection of the study area
- ☞ Satellite data procurement from NRSC
- ☞ Secondary data collection from authorized bodies
- ☞ Survey of India Toposheet (SOI)
- ☞ Mine Layout
- ☞ Cadastral / Khasra map
- ☞ GPS Coordinates of Lease Boundary
- ☞ Processing of satellite data using ArcGIS 10.8 and preparing the Land Use & Land cover maps (e.g. Plant/Mine area, Existing Quarry, Settlements, Agriculture land, Non agriculture land, water bodies, etc.) by Digital Image Processing (DIP) technique.
- ☞ Geo-Referencing of the Survey of India Toposheet
- ☞ Geo-Referencing of satellite Imagery with the help of Geo-Referenced Toposheets
- ☞ Enhancement of the Satellite Imagery
- ☞ Base Map layer creation (Roads, Railway, Village Names, and other Secondary data, etc.)
- ☞ Data analysis and Classification using Digital interpretation techniques.
- ☞ Ground truth studies or field Verification.
- ☞ Error fixing / Reclassification
- ☞ Final Map Generation.

The land use/Land cover Map of the buffer zone is given in 3.3. Land Use Pattern of the Buffer Zone (Study area) Details of the same are given in Table - 3.3 and the map is shown in Figure - 3.3.

TABLE: 3.3 LAND USE / LAND COVER DETAILS OF STUDY AREA

S.No	CLASSIFICATION	AREA_HA	AREA_%
BUILTUP			
1	URBAN	3219.58	10.02
2	RURAL	1706.32	5.31
3	MINING	291.78	0.91
AGRICULTURAL LAND			
4	CROP LAND	18258.02	56.84
5	PLANTATION	1646.49	5.13
6	FALLOW LAND	5519.94	17.18
BARREN/WASTE LANDS			
7	SCRUB LAND	467.11	1.45
8	RAVINOUS LAND	66.75	0.21
WETLANDS/ WATER BODIES			
9	WATER BODIES/LAKE/RIVER	945.73	2.94
TOTAL		32121.72	100.00

Source: Bhuvan, NRSC.

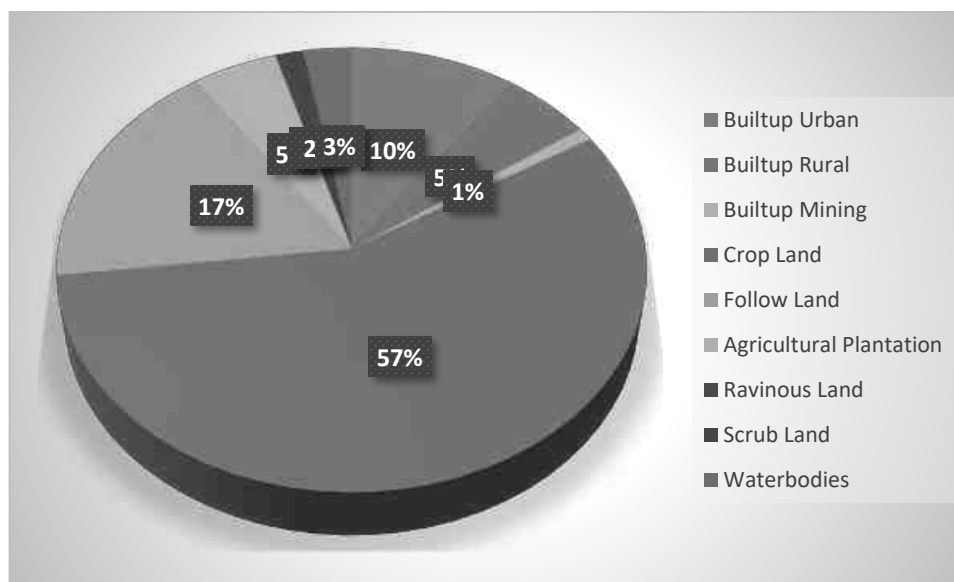
**FIGURE 3.1: CHART SHOWING LANDUSE/LANDCOVER ANALYSIS USING LISS III Data**

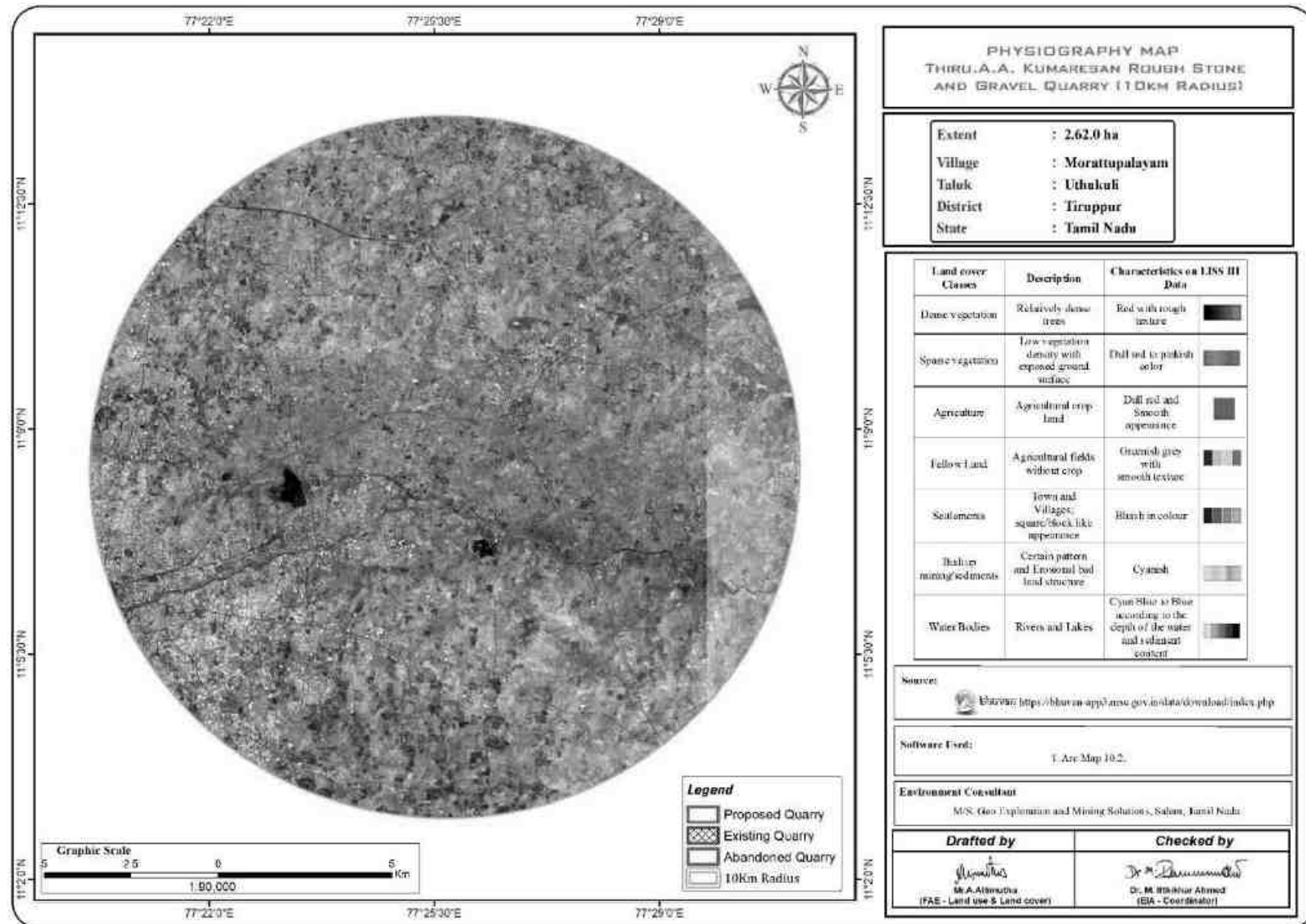
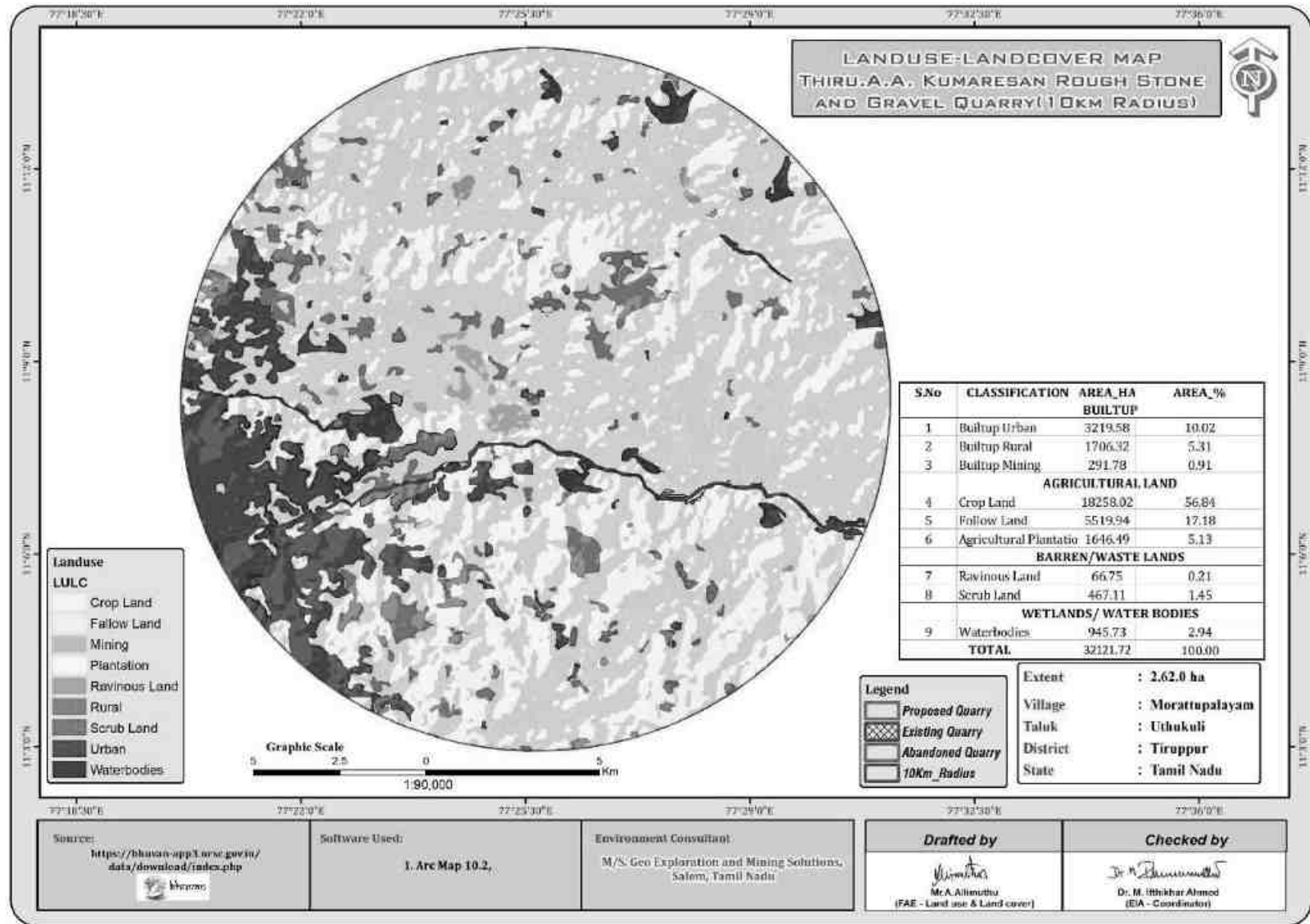
FIGURE 3.2: MAP SHOWING FALSE COLOR COMPOSITE (3,2,1) SATELLITE IMAGERY OF THE STUDY AREA

FIGURE 3.3: LAND USE LAND COVER MAP 10KM RADIUS

3.1.4 Interpretation

- ∞ The 10 km radius study area mainly comprises of Crop land & Agriculture Plantation land accounting of 56.84% & 5.13% of the total study area. The study area also consists of fallow land of 17.18%.
- ∞ The buffer zone studied has no ecological sensitive area (National Park, Wildlife Sanctuary, Biosphere Reserve/ etc.).
- ∞ Water Bodies such as Odai, ponds/ lakes comprise of 2.94% of the total buffer area. Nallar odai is about 820m south side of the project site, Noyyal River (1km - South), of the total study area.
- ∞ The Scrub land accounts of 1.45%. As per the primary survey, it was observed the scrub land is mainly occupied by the stony waste and left-over domestic waste generated by the nearby areas.
- ∞ The Ravinous Land means gullied area (Unconsolidated material) covered is about 0.21% in buffer zone.
- ∞ 0.91% of the total study area is occupied by the mine industries. The area occupied by Mainly Rough stone and gravel of the total buffer area. As also observed within the primary survey, the 10 km buffer area is also occupied by the medium scaled Rough stone and crusher industries also located in the study area.
- ∞ 15.33% of the area is covered under the Built-up Land including rural area. The nearest village within the 3km from the project site boundary is observed to be villages Morattupalayam, Kullayur, Velliyampalayam and Velampalayam villages etc.,

The project site falls under the quarry region. Therefore, the area is appropriate for developing Road development and building etc., it shows that the region has good prospects in the future. Due to proposed Rough stone and gravel quarry in this region, economic condition of locals is expected to be improved directly & indirectly. Hence project will prove to be the best economic proposal for the coming times.

3.1.5 Topography

The project area is almost plain terrain with gentle gradient towards South-eastern, maximum elevation of the area is 295 m above Mean Sea Level There are no hilly regions in and around the area.

3.1.6 Drainage Pattern of the Area

There are no developed surface drainage channels adjacent to the site the main drainage pattern in the study area is Noyyal, a non-perennial pass 1km-South from the project site. The area is studded with few tanks that serve as the source of drinking water and also their surplus feeds adjoining tanks. The area is mostly dry in all seasons except rainy seasons.

The general drainage pattern of the area is of sub dendritic and dendritic pattern. No prominent water course or nallah is inferred. During rainy season the surface runoff flows in W to E direction. The drainage pattern of the study area is given in Fig. 3.5. The quarrying activity will not hinder the natural flow of rainwater.

3.1.7 Environmental Features in the Study Area

Nanjarayan Birds Sanctuary – 4.0km-SW & Vellode Birds 26.0 km Northeast side of the project site. No Protected and Reserved Forest area is involved in the project area. The details related to the environment sensitivity around the mine lease area i.e. 10 km radius of the mine lease area, are given in the below Table 3.3.

3.1.8 Seismic Sensitivity

The proposed project site falls in the seismic Zone II, 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.

TABLE 3.4 – DETAILS OF ENVIRONMENT SENSITIVITY AROUND THE PROJECT AREA

Sl. No	Sensitive Ecological Features	Name	Arial Distance in km from Mine Lease Boundary
1	National Park / Wild life Sanctuaries	None	Nanjarayan Birds Sanctuary – 4.0 Km – SW Vellode Bird Sanctuary – 26.0 km – NE
2	Reserve Forest	None	Voipadi R.F– 9.32km – NE
3	Tiger Reserve/ Elephant Reserve/ Biosphere Reserve	None	Nil within 10Km Radius
4	Critically Polluted Areas	None	Nil within 10Km Radius
5	Mangroves	None	Nil within 10Km Radius
6	Mountains/Hills	None	Nil within 10Km Radius
7	Notified Archaeological Sites	None	Kodumanal Archaeological Excavation – 11.0 Km – South East
8	Defence Installation	None	Nil within 10Km Radius

Source: Survey of India Toposheet, Village Cadastral Map& Google Earth/Maps

TABLE 3.5 – WATER BODIES IN THE STUDY AREA

S.No	NAME	DISTANCE & DIRECTION
1	Nallar Stream	820m South
2	Noyyal River	1km South
3	Manikapuram Kulam	2.0km SE
4	Koolipalayam Reservoir-	4km SW
5	Avarakarai Nadhi	4.5km NW
6	Kattagani Kulam	7km SE

Source: Village Cadastral Map and Field Survey and Toposheet

3.1.9 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 3.4 and Figure 3.3.

TABLE 3.6 – SOIL SAMPLING LOCATIONS

S. No	Location Code	Monitoring Locations	Distance & Direction	Coordinates
1	S-1	Project Area	Core Zone	11° 8'21.97"N 77°25'39.41"E
2	S-2	Govindampalayam	2km NW	11° 8'47.63"N 77°24'30.79"E
3	S-3	Thirunagar	4.8km SW	11° 6'9.80"N 77°24'0.79"E
4	S-4	Thenniswaranpalayam	4km NE	11° 9'25.59"N 77°27'45.67"E
5	S-5	Mannur	4.5km SE	11° 6'29.59"N 77°27'13.11"E
6	S-6	Kallipalayam	6.5km NW	11°11'23.67"N 77°23'49.24"E

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

The objective of the soil sampling is -

1. To determine the baseline soil characteristics of the study area;
2. To determine the impact of proposed activity on soil characteristics and;

To determine the impact on soil more importantly agriculture production point of view.

Methodology –

For studying soil quality, sampling locations were selected to assess the existing soil conditions in and around the proposed quarry 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 sealed 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 3.7 – 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 KGS Enviro Laboratory Private Limited

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 classification of soil and physico-chemical characteristics of the soils are presented below in Table 3.6 & Test Results in Table 3.7.

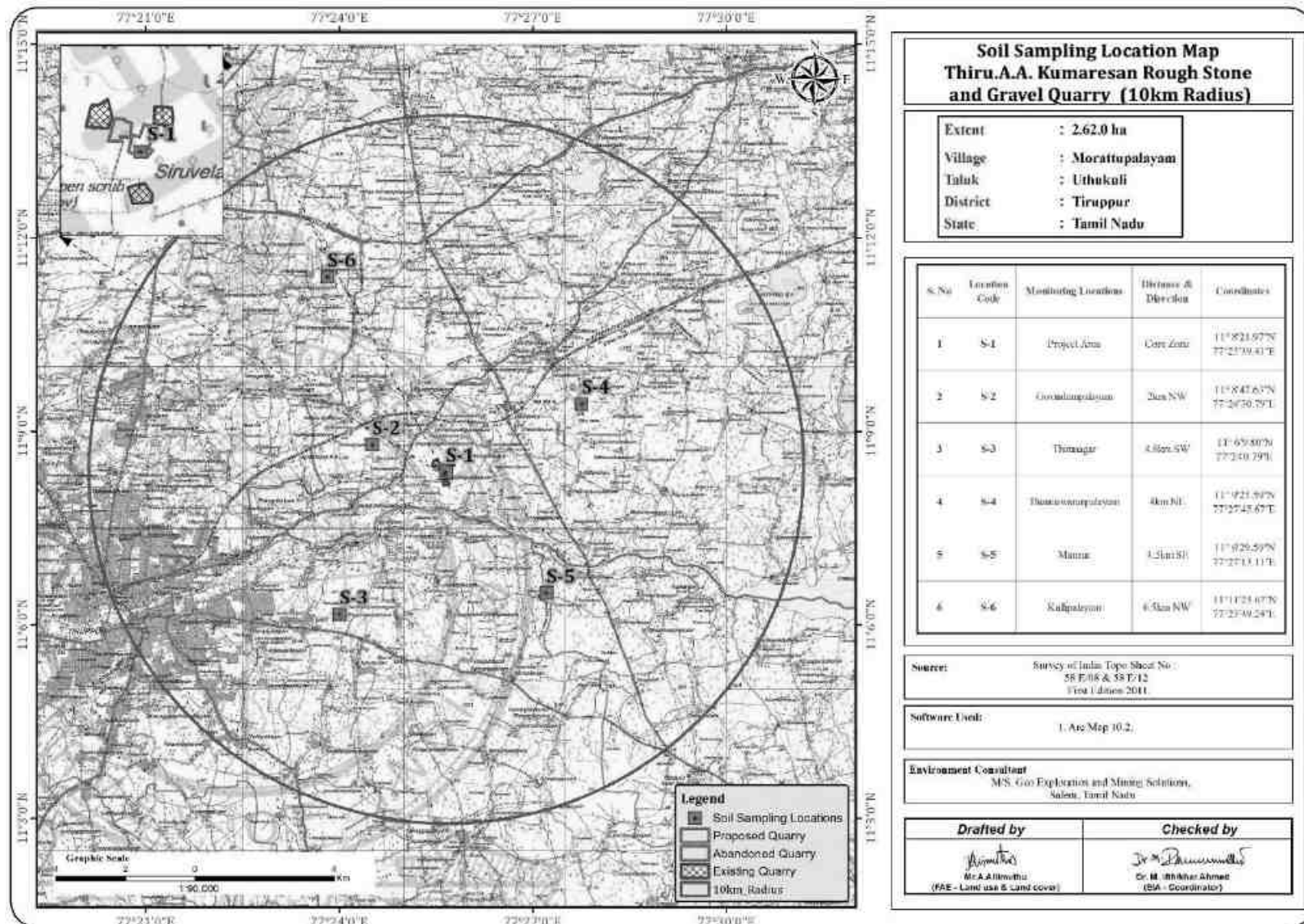
FIGURE 3.4: SOIL SAMPLING LOCATIONS AROUND 10 KM RADIUS

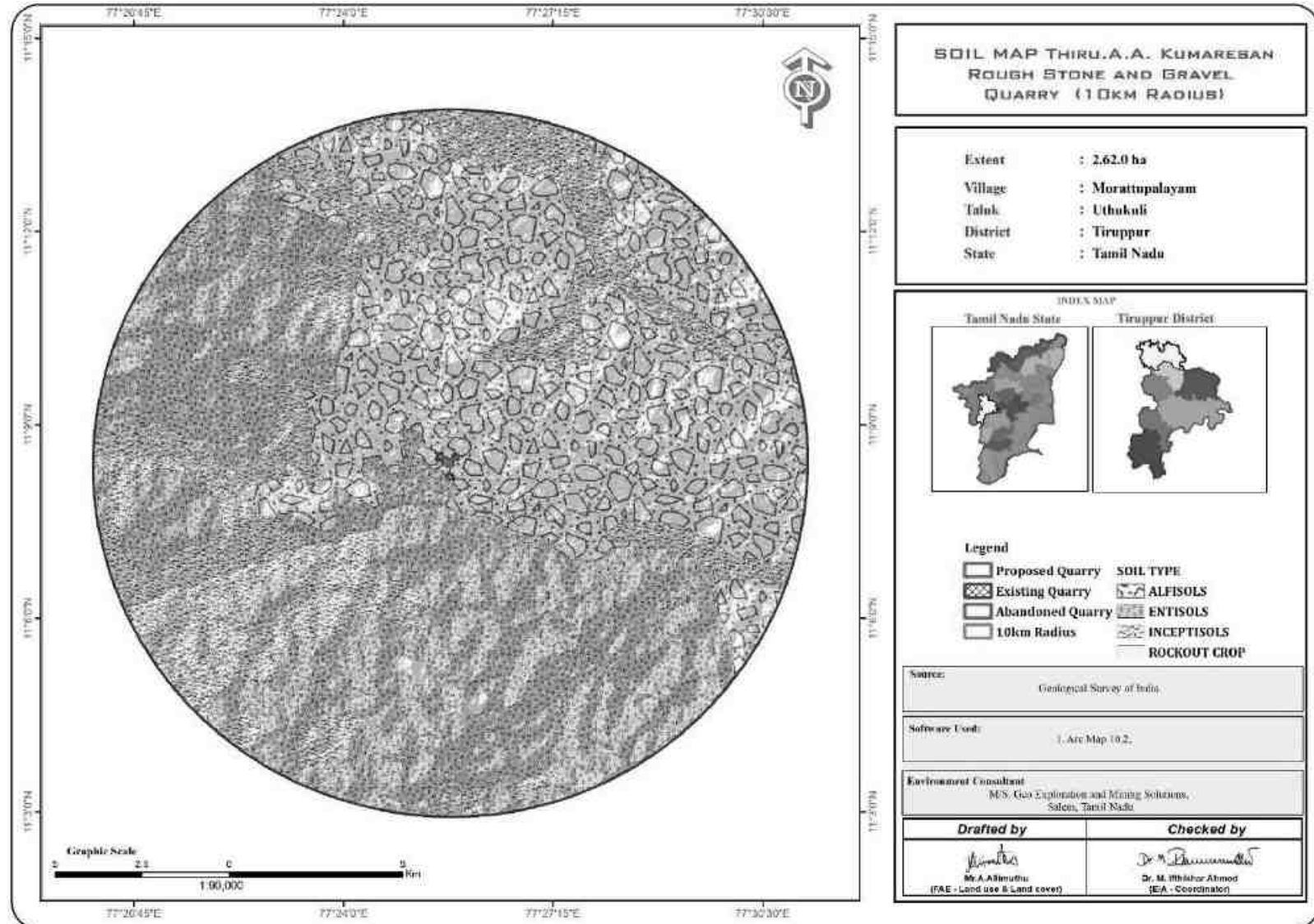
FIGURE 3.5: SOIL MAP

TABLE 3.8 – SOIL QUALITY MONITORING DATA

Parameter		Unit	S-1 Core Zone	S-2 Govindampalay am	S-3 Thirunagar	S-4 Thenniswaranpala yam	S-5 Mannur	S-6 Kallipalayam
1	pH @ 25°C	-	8.80	8.19	8.28	8.55	8.15	7.99
2	Conductivity @ 25°C	µmhos/cm	410 µmhos/cm	329 µmhos/cm	402 µmhos/cm	489 µmhos/cm	340 µmhos/cm	410 µmhos/cm
3	Water Holding Capacity	%	47.5 %	47.7 %	47.9 %	46.8 %	47.1 %	46.4 %
4	Bulk Density	g/cm ³	1.04 g/cm ³	1.02 g/cm ³	1.02 g/cm ³	1.03 g/cm ³	1.02 g/cm ³	1.1 g/cm ³
5	Porosity	%	46.4 %	47.1 %	48.1 %	47.7 %	46.5 %	47.9 %
6	Calcium as Ca	mg/kg	21.5 mg/kg	15.2 mg/kg	20.9 mg/kg	24.6 mg/kg	24.4 mg/kg	25.0 mg/kg
7	Magnesium as Mg	mg/kg	14 mg/kg	13.5 mg/kg	14.7 mg/kg	13.24 mg/kg	15.1 mg/kg	16.5 mg/kg
8	Chloride as Cl	mg/kg	9.59 mg/kg	20 mg/kg	18.24 mg/kg	15.3 mg/kg	18.8 mg/kg	19.8 mg/kg
9	Soluble Sulphate as SO ₄	%	0.0018 %	0.0024 %	0.0019 %	0.0027 %	0.0019 %	0.0022 %
10	Total Phosphorus as P	mg/Kg	4.02 mg/kg	2.97 mg/kg	4.13 mg/kg	5.29 mg/kg	3.18 mg/kg	2.73 mg/kg
11	Total Nitrogen as N	mg/Kg	470 mg/kg	470 mg/kg	445.1 mg/kg	488 mg/kg	364.2 mg/kg	515 mg/kg
12	Organic Matter	%	0.96 %	1.67 %	1.81 %	1.26 %	2.0 %	2.12 %
13	Organic Carbon	%	0.56 %	0.97 %	1.05 %	0.73 %	1.16 %	1.23 %
14	Texture :							
	Clay	%	31.4 %	33.3 %	31.9 %	30.1 %	29.3 %	32.9 %
	Sand	%	29.7 %	30.9 %	32.5 %	33.3 %	34.8 %	30.8 %
	Silt	%	38.9 %	35.8 %	35.6 %	36.6 %	35.9 %	36.3 %
15	Manganese as Mn	mg/Kg	8.4 mg/kg	5.16 mg/kg	6.17 mg/kg	3.16 mg/kg	15.3 mg/kg	4.11 mg/kg
16	Zinc as Zn	mg/Kg	2.1 mg/kg	8.08 mg/kg	2.54 mg/kg	4.17 mg/kg	2.09 mg/kg	5.03 mg/kg
17	Boron as B	mg/Kg	3.05 mg/kg	1.05 mg/kg	1.7 mg/kg	1.08 mg/kg	7.15 mg/kg	1.16 mg/kg
18	Potassium as K	mg/Kg	25 mg/kg	64.2 mg/kg	61.75 mg/kg	49.57 mg/kg	46.5 mg/kg	61.2 mg/kg
19	Cadmium as Cd	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)	BDL (DL : 1.0 mg/kg)
20	Total Chromium as Cr	-	1.65	2.02	2.66	4.26	4.01	2.16
21	Copper as Cu	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)	BDL (DL : 1.0 mg/kg)
22	Lead as Pb	mg/Kg	0.58 mg/kg	0.67 mg/kg	1.05 mg/kg	0.66 mg/kg	1.09 mg/kg	0.8 mg/kg
23	Iron as Fe	mg/Kg	17 mg/kg	25 mg/kg	27.2 mg/kg	20.45 mg/kg	17.11 mg/kg	15.4 mg/kg
24	Cation Exchange Capacity	meq/100g	43 meq/100g of soil	40.13 meq/100g of soil	44.03 meq/100g of soil	35.46 meq/100g of soil	37.12 meq/100g of soil	44.19 meq/100g of soil

Source: Sampling Results by EHS 360 Lab 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 to Sandy Soil and Bulk Density of Soils in the study area varied between 1.02– 1.10 g/cm³. The Water Holding Capacity 46.4 – 47.9% and Porosity of the soil samples is found to be medium i.e., ranging from 46.4 – 48.1%.

Chemical Characteristics –

- The nature of soil is slightly alkaline to strongly alkaline in nature with pH range 7.99 to 8.80
- The available Nitrogen content range between 364.2 to 515 mg/kg
- The available Phosphorus content range between 2.73 to 5.29mg/kg
- The available Potassium range between 25 to 64.2 mg/kg

Whereas, the micronutrient as zinc (Zn), iron (Fe) and copper (Cu) were found in the range of 2.09 to 8.08mg/kg; 15.4 to 27.2 mg/kg and BDL (DL: 1.0 mg/kg) respectively.

Wilting coefficient in significant level would mean that the soil would support the vegetation. The soil properties in the buffer zone reveal that the soil can sustain vegetation. If amended suitability the core area can also withstand plantation.

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:

Noyyal river lies at 1.5km Southeast from the project and Koolipalayam Lake 4km South west. The area is studded with few tanks that serve as the source for agriculture and also their surplus feeds adjoining tanks. The rainfall over the area is moderate, the rainwater storage in open wells, trenches is in practice over the area and the stored water acts as source of freshwater for couple of months after rainy season.

3.2.2 Ground Water Resources:

The terrain is underlain by hard rock formations, Fissured and fractured crystalline rocks constitute the important aquifer systems in the Tiruppur region. Ground water occurs under phreatic to semi-confined conditions in these formations and is being developed by means of dug wells and filter points. Proterozoic formation is the basement rocks which consist of quartzite, crystalline limestone, calc-granulite, hornblende – biotite gneiss, charnockite or pyroxene granulite, granite and pegmatite. Weathered, a fissured crack, shear zones and joints in the basement rock act as a good groundwater potential zone in the study area. The study area is falls in the hard rock region and the proposed depth of the mine is 30m bgl will not intersect the ground water table. The study area falls in the Uthukuli which is categorized as over-exploited zone as per G.O (MS) No 113 dated 09.06.2016.

3.2.3 Methodology

Reconnaissance survey was undertaken to collect the sampling and locations were finalized based on;

1. Drainage pattern;
2. Location of residential areas representing different activities/likely impact areas; and
3. Likely areas, which can represent baseline conditions

Two (2) surface water and four (4) ground water samples were collected in the study area and physico-chemical, heavy metals and bacteriological parameters were analysed. The samples were analysed as per the procedures specified by CPCB, IS-10500:2012 and 'Standard methods for the Examination of Water and Waste water' published by American Public Health Association (APHA). The water sampling locations are given in Table 3.8 and shown as Figure 3.6.

TABLE 3.9 – WATER SAMPLING LOCATIONS

S. No	Location code	Monitoring Locations	Distance & Direction	Coordinates
1	SW-1	Koolipalayam Lake	4km SW	11° 7'50.03"N 77°23'29.91"E
2	SW-2	Noyyal River	1.5km SE	11° 7'36.47"N 77°25'56.69"E
3	WW-1	Near Habitation	560m NW	11° 8'36.58"N 77°25'22.22"E
4	WW-2	Thenniswaranpalayam	4km NE	11° 9'34.85"N 77°27'47.50"E
5	BW-1	Near Project Area	420m NE	11° 8'28.21"N 77°25'57.15"E
6	BW-2	Thirunagar	4.8km SW	11° 6'10.71"N 77°24'1.91"E

Source: On-site monitoring/sampling by EHS 360 Lab Private Limited

Note: SW- Surface water, WW – Well Water, BW – Bore well

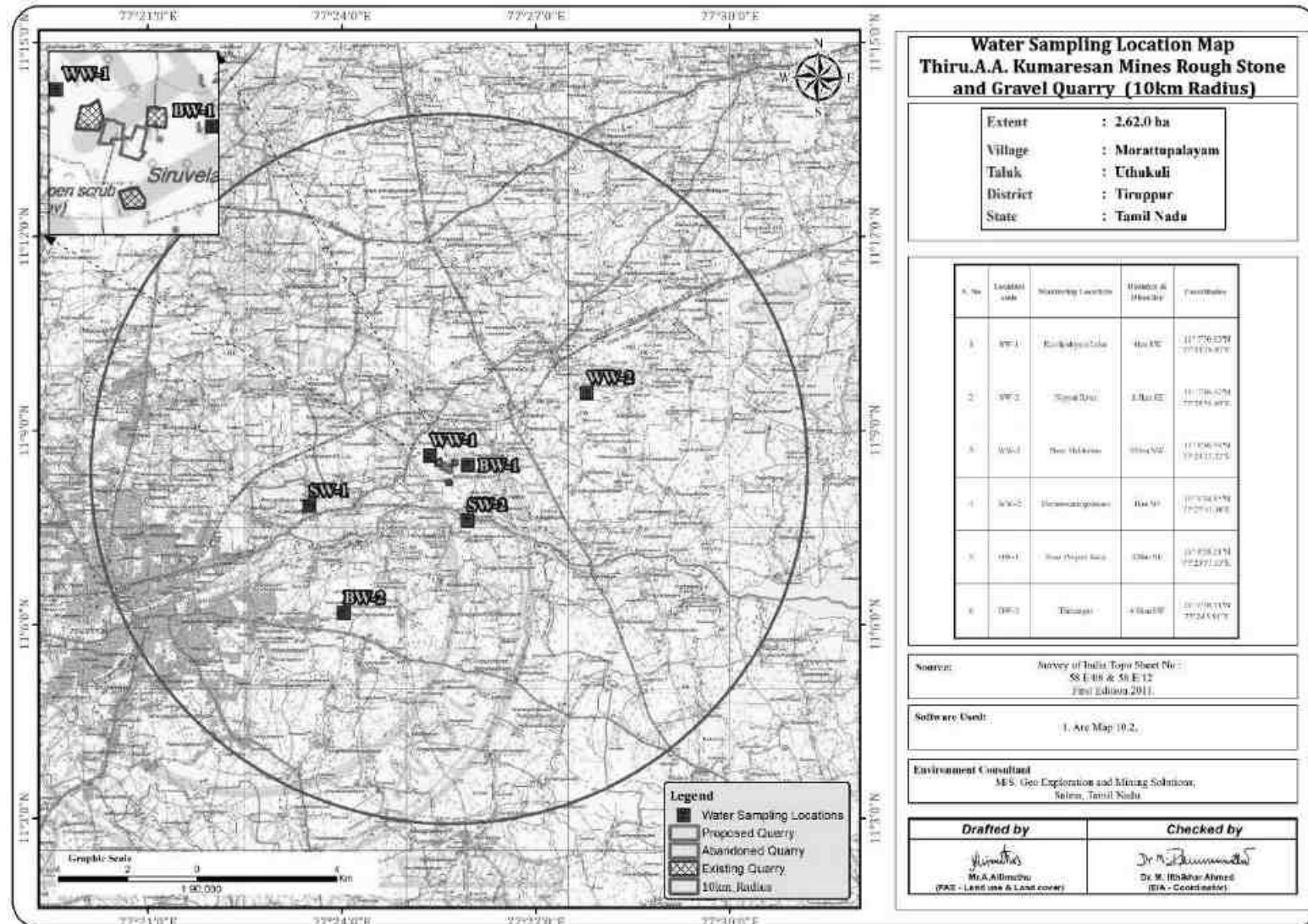
FIGURE 3.6: WATER SAMPLING LOCATIONS AROUND 10 KM RADIUS

TABLE 3.10 – SURFACE WATER ANALYSIS RESULTS

S.N O	Parameter	UNIT	SW1 Koolipalayam lake	SW2 Noyyal River
1	Color	Hazen	5 Hazen	10 Hazen
2	Odour	-	Agreeable	Agreeable
3	pH@ 25°C	-	7.59	7.09
4	Electrical Conductivity @ 25°C	µs/cm	824 µmhos/cm	962 µmhos/cm
5	Turbidity	NTU	5.6 NTU	4.9 NTU
6	Total Dissolved Solids	mg /l	486 mg/l	567 mg/l
7	Total Hardness as CaCO ₃	mg/l	154.06 mg/l	184.62 mg/l
8	Calcium as Ca	mg/l	27.8 mg/l	32.8 mg/l
9	Magnesium as Mg	mg/l	20.6 mg/l	25.0 mg/l
10	Total Alkalinity as CaCO ₃	mg/l	140 mg/l	176.1 mg/l
11	Chloride as Cl ⁻	mg/l	119 mg/l	121 mg/l
12	Sulphate as SO ₄ ⁻	mg/l	68 mg/l	64.12 mg/l
13	Iron as Fe	mg/l	0.31 mg/l	0.22 mg/l
14	Free Residual Chlorine	mg/l	BDL (DL:0.1 mg/l)	BDL (DL:0.1 mg/l)
15	Fluoride as F	mg/l	0.13 mg/l	0.11 mg/l
16	Nitrates as NO ₃	mg/l	7.55 mg/l	9.25 mg/l
17	Copper as Cu	mg/l	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)
18	Manganese as Mn	mg/l	BDL (DL:0.02 mg/l)	BDL (DL:0.02 mg/l)
19	Mercury as Hg	mg/l	BDL (DL:0.0005 mg/l)	BDL (DL:0.0005 mg/l)
20	Cadmium as Cd	mg/l	BDL (DL:0.001 mg/l)	BDL (DL:0.001 mg/l)
21	Selenium as Se	mg/l	BDL (DL:0.005 mg/l)	BDL (DL:0.005 mg/l)
22	Aluminium as Al	mg/l	BDL (DL:0.005 mg/l)	BDL (DL:0.005 mg/l)
23	Lead as Pb	mg/l	BDL (DL:0.005 mg/l)	BDL (DL:0.005 mg/l)
24	Zinc as Zn	mg/l	BDL(DL : 0.05 mg/l)	BDL(DL : 0.05 mg/l)
25	Total Chromium	mg/l	BDL(DL : 0.02 mg/l)	BDL(DL : 0.02 mg/l)
26	Boron as B	mg/l	BDL(DL : 0.05 mg/l)	BDL(DL : 0.05 mg/l)
27	Mineral Oil	mg/l	BDL(DL : 0.01 mg/l)	BDL(DL : 0.01 mg/l)
28	Phenolic Compunds as	mg/l	BDL (DL:0.0005 mg/l)	BDL (DL:0.0005 mg/l)
29	Anionic Detergents as	mg/l	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)
30	Cynaide as CN	mg/l	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)
31	Bio chemical Oxygen demand	mg/l	11 mg/l	15 mg/l
32	Chemical Oxygen demand	mg/l	30 mg/l	50 mg/l
33	Dissolved Oxygen	mg/l	5.5 mg/l	5.2 mg/l
34	Barium as Ba	mg/l	BDL(DL:0.05 mg/l)	BDL(DL:0.05 mg/l)
35	Ammonia-n (as Total	mg/l	1.08 mg/l	1.22 mg/l
36	Sulphide as H ₂ S	mg/l	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)
37	Molybdenum as Mo	mg/l	BDL (DL:0.02 mg/l)	BDL (DL:0.02 mg/l)
38	Total Arsenic as As	mg/l	BDL (DL:0.005 mg/l)	BDL (DL:0.005 mg/l)
39	Total Suspended Solids	mg/l	15.5 mg/l	25.3 mg/l
40	Total Coliform	Per 100ml	450 MPN/100ml	490 MPN/100ml
41	E-Coli	Per 100ml	200 MPN/100ml	280 MPN/100ml

TABLE 3.11 – GROUND WATER ANALYSIS RESULTS

S.NO	Parameter	Unit	WW1 Near Habitation	WW2 Thenniswaranpalayam	BW1 Near Project Area	BW2 Thirunagar
1	Color	Hazen	5	5	5	5
2	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable
3	pH@ 25°C	-	6.98	7.91	7.19	7.88
4	Electrical Conductivity	µs/cm	854 µmhos/cm	915 µmhos/cm	785 µmhos/cm	788 µmhos/cm
5	Turbidity	NTU	1.0 NTU	1.0 NTU	1.0 NTU	1 NTU
6	Total Dissolved Solids	mg /l	505 mg/l	540 mg/l	464 mg/l	465 mg/l
7	Total Hardness as CaCO ₃	mg/l	150.89 mg/l	179.76 mg/l	152.0 mg/l	174.03 mg/l
8	Calcium as Ca	mg/l	29 mg/l	32.5 mg/l	27.8 mg/l	30.2 mg/l
9	Magnesium as Mg	mg/l	19.1 mg/l	24 mg/l	20.1 mg/l	24 mg/l
10	Total Alkalinity	mg/l	141.3 mg/l	170 mg/l	155 mg/l	140 mg/l
11	Chloride as Cl ⁻	mg/l	132.0 mg/l	132 mg/l	94 mg/l	110 mg/l
12	Sulphate as SO ₄ ⁻	mg/l	59 mg/l	70.5 mg/l	58.0 mg/l	62.1 mg/l
13	Iron as Fe	mg/l	0.26 mg/l	0.22 mg/l	0.15 mg/l	0.28 mg/l
14	Free Residual Chlorine	mg/l	BDL (DL:0.1 mg/l)	BDL (DL:0.1 mg/l)	BDL (DL:0.1 mg/l)	BDL (DL:0.1 mg/l)
15	Fluoride as F	mg/l	0.14 mg/l	0.20 mg/l	0.20 mg/l	0.15 mg/l
16	Nitrates as NO ₃	mg/l	5.02 mg/l	6.0 mg/l	7.12 mg/l	5.16 mg/l
17	Copper as Cu	mg/l	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)
18	Manganese as Mn	mg/l	BDL (DL:0.02 mg/l)	BDL (DL:0.02 mg/l)	BDL (DL:0.02 mg/l)	BDL (DL:0.02 mg/l)
19	Mercury as Hg	mg/l	BDL (DL:0.0005 mg/l)	BDL (DL:0.0005 mg/l)	BDL (DL:0.0005 mg/l)	BDL (DL:0.0005 mg/l)
20	Cadmium as Cd	mg/l	BDL (DL:0.001 mg/l)	BDL (DL:0.001 mg/l)	BDL (DL:0.001 mg/l)	BDL (DL:0.001 mg/l)
21	Selenium as Se	mg/l	BDL (DL:0.005 mg/l)	BDL (DL:0.005 mg/l)	BDL (DL:0.005 mg/l)	BDL (DL:0.005 mg/l)
22	Aluminium as Al	mg/l	BDL (DL:0.005 mg/l)	BDL (DL:0.005 mg/l)	BDL (DL:0.005 mg/l)	BDL (DL:0.005 mg/l)
23	Lead as Pb	mg/l	BDL (DL:0.005 mg/l)	BDL (DL:0.005 mg/l)	BDL (DL:0.005 mg/l)	BDL (DL:0.005 mg/l)
24	Zinc as Zn	mg/l	BDL(DL : 0.05 mg/l)	BDL(DL : 0.05 mg/l)	BDL(DL : 0.05 mg/l)	BDL(DL : 0.05 mg/l)
25	Total Chromium	mg/l	BDL(DL : 0.02 mg/l)	BDL(DL : 0.02 mg/l)	BDL(DL : 0.02 mg/l)	BDL(DL : 0.02 mg/l)
26	Boron as B	mg/l	BDL(DL : 0.05 mg/l)	BDL(DL : 0.05 mg/l)	BDL(DL : 0.05 mg/l)	BDL(DL : 0.05 mg/l)
27	Mineral Oil	mg/l	BDL(DL : 0.01 mg/l)	BDL(DL : 0.01 mg/l)	BDL(DL : 0.01 mg/l)	BDL(DL : 0.01 mg/l)
28	Phenolic Compunds	mg/l	BDL (DL:0.0005 mg/l)	BDL (DL:0.0005 mg/l)	BDL (DL:0.0005 mg/l)	BDL (DL:0.0005 mg/l)
29	Anionic Detergents	mg/l	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)
30	Cynaide as CN	mg/l	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)
31	Barium as Ba	mg/l	BDL(DL:0.05 mg/l)	BDL(DL:0.05 mg/l)	BDL(DL:0.05 mg/l)	BDL(DL:0.05 mg/l)
32	Ammonia (as Total	mg/l	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)

33	Sulphide as H ₂ S	mg/l	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)
34	Molybdenum as Mo	mg/l	BDL (DL:0.02 mg/l)	BDL (DL:0.02 mg/l)	BDL (DL:0.02 mg/l)	BDL (DL:0.02 mg/l)
35	Total Arsenic as	mg/l	BDL (DL:0.005 mg/l)	BDL (DL:0.005 mg/l)	BDL (DL:0.005 mg/l)	BDL (DL:0.005 mg/l)
36	Total Suspended Solids	mg/l	BDL (DL:1.0 mg/l)	BDL (DL:1.0 mg/l)	BDL (DL:1.0 mg/l)	BDL (DL:1.0 mg/l)
37	Total Coliform	Per 100ml	160 MPN/100ml	170 MPN/100ml	90 MPN/100ml	140 MPN/100ml
38	E-Coli	Per 100ml	< 1.8 MPN/100ml	< 1.8 MPN/100ml	< 1.8 MPN/100ml	< 1.8 MPN/100ml

Source: Sampling Results by EHS 360 Lab Private Limited

3.2.4 Interpretation& Conclusion

Surface Water

The pH of surface 7.09-7.59 while turbidity found within the standards. Total Dissolved Solids 486-567 mg/l and Chloride 119-121mg/l. Nitrates 7.55-9.25mg/l, while sulphates 64.12-68 mg/l.

Ground Water

The pH of the water samples collected ranged from 6.98 to 7.91 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. Total Dissolved Solids were found in the range of 464- 540 mg/l in all samples. The Total hardness varied between 150.89 – 179.76mg/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-ATS Instrument by qualified Geo physicist with the help of IGIS software and it was inferred that the low resistance encountered at the depth between 58-63m. the quarrying operations is up to 47m 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.

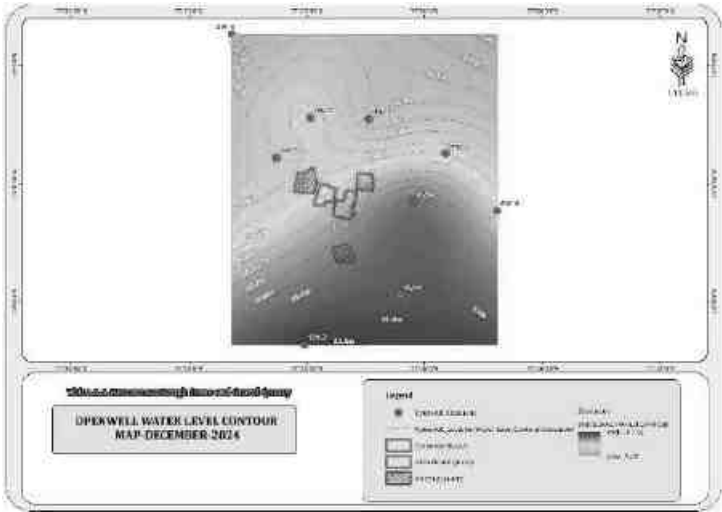
During the rainy season there is a possibility of collection of seepage water from the subsurface levels this is due to the high intensity of fracture and weathered portion upto a depth of 10m thus the collected seepage water will be stored in the mine sump pits and will be used for dust suppression and greenbelt development and during the end of the life of the mine this collected water will be as a temporary reservoir in that area.

TABLE 3.12: WINTER WATER LEVEL OF OPEN WELLS 1 KM RADIUS

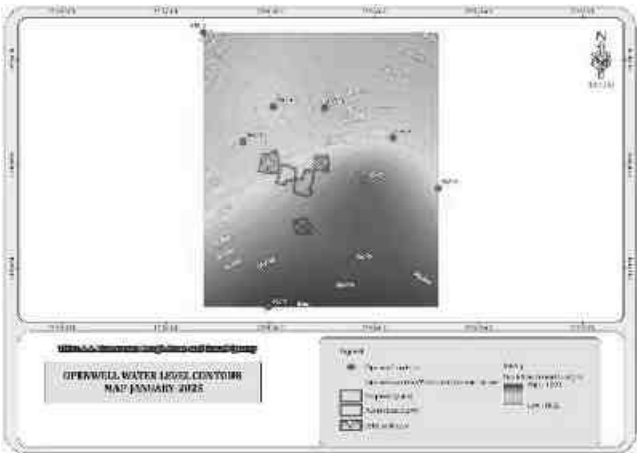
S.No	LABEL	LONGITUDE	LATITUDE	DEC 2024	JAN 2025	FEB 2025
1	OW-1	77° 25' 22.2076" E	11° 08' 36.5623" N	10.1	10.9	11.5
2	OW-2	77° 25' 30.9527" E	11° 08' 46.6438" N	10.3	11.1	11.7
3	OW-3	77° 25' 45.7589" E	11° 08' 46.3255" N	9.9	10.7	11.3
4	OW-4	77° 25' 10.8233" E	11° 09' 07.9954" N	9.5	10.3	10.9
5	OW-5	77° 25' 57.0095" E	11° 08' 25.3247" N	10.9	11.7	12.3
6	OW-6	77° 26' 05.3153" E	11° 08' 37.6391" N	10.3	11.1	11.7
7	OW-7	77° 25' 29.4248" E	11° 07' 48.9146" N	11.2	12	12.6
8	OW-8	77° 26' 18.4508" E	11° 08' 23.1187" N	10.4	11.2	11.8

9	OW-9	77° 25' 53.5990" E	11° 08' 01.7628" N	11	11.8	12.4
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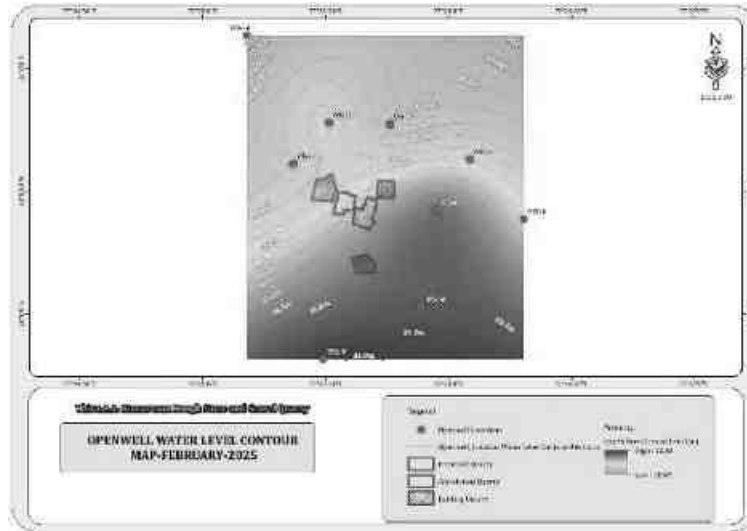
FIGURE 3.7: CONTOUR MAP OF OPEN WELL WATER LEVEL



DECEMBER 2024



JANUARY 2025



FEBRUARY 2025

TABLE 3.13: WINTER WATER LEVEL OF BOREWELLS 1 KM RADIUS

S.No	LABEL	LONGITUDE	LATITUDE	DEC 2024	JAN 2025	FEB 2025
1	BW-1	77° 25' 57.1186" E	11° 08' 27.5159" N	63.3	64.1	64.5
2	BW-2	77° 25' 23.4699" E	11° 08' 39.9269" N	62.6	63.4	63.8
3	BW-3	77° 25' 33.5370" E	11° 08' 56.8896" N	62	62.8	63.2
4	BW-4	77° 25' 24.4932" E	11° 08' 02.6262" N	63	63.8	64.2
5	BW-5	77° 25' 47.6793" E	11° 08' 04.7688" N	62.8	63.6	64
6	BW-6	77° 25' 29.8060" E	11° 07' 36.5670" N	61.9	62.7	63.1
7	BW-7	77° 26' 14.1963" E	11° 08' 45.1759" N	63.4	64.2	64.6
8	BW-8	77° 24' 49.4572" E	11° 08' 16.2032" N	62.5	63.3	63.7

FIGURE 3.8: CONTOUR MAP OF BORE WELL WATER LEVEL



DEC 2024



JANUARY 2025



FEBRUARY 2025

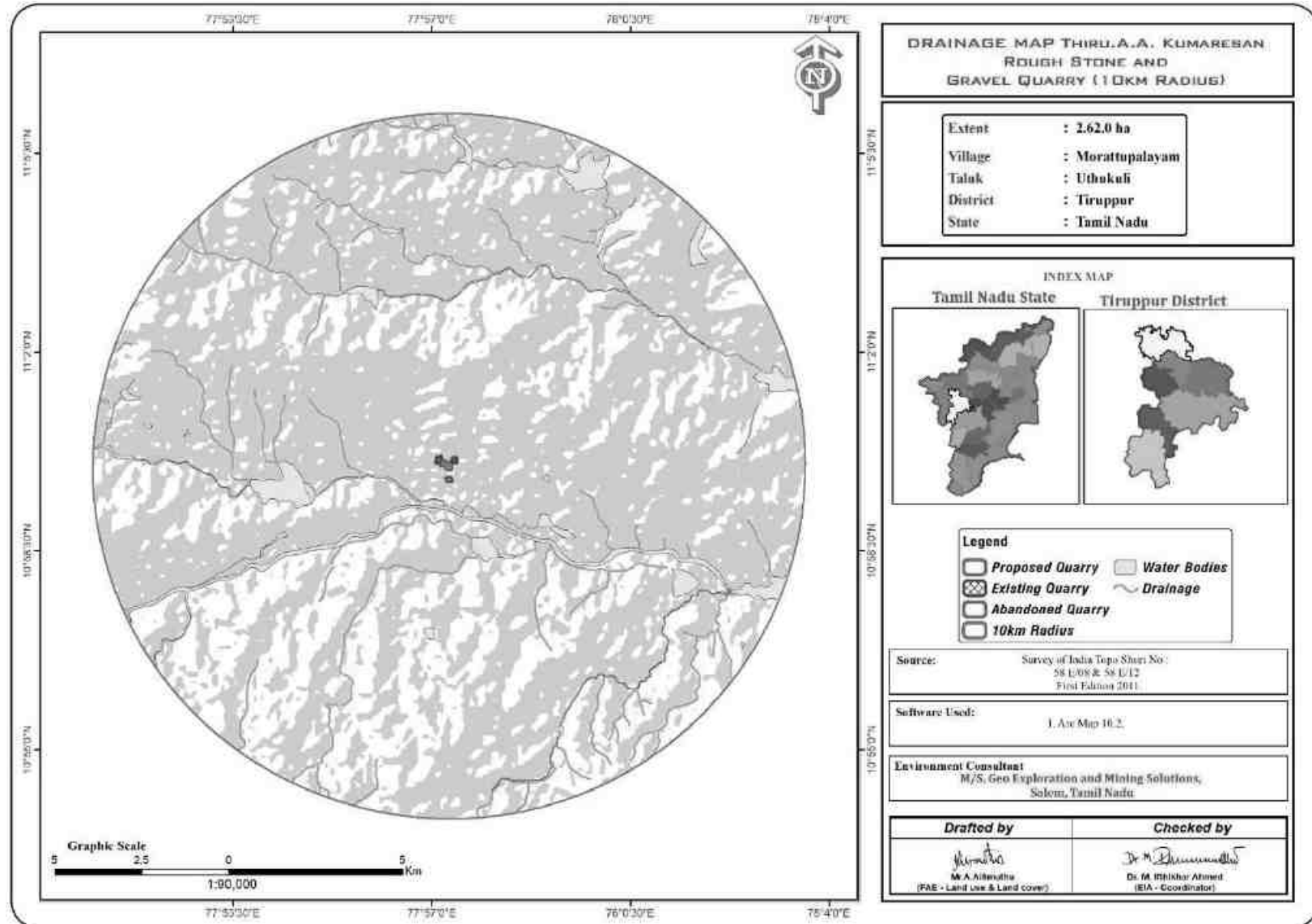
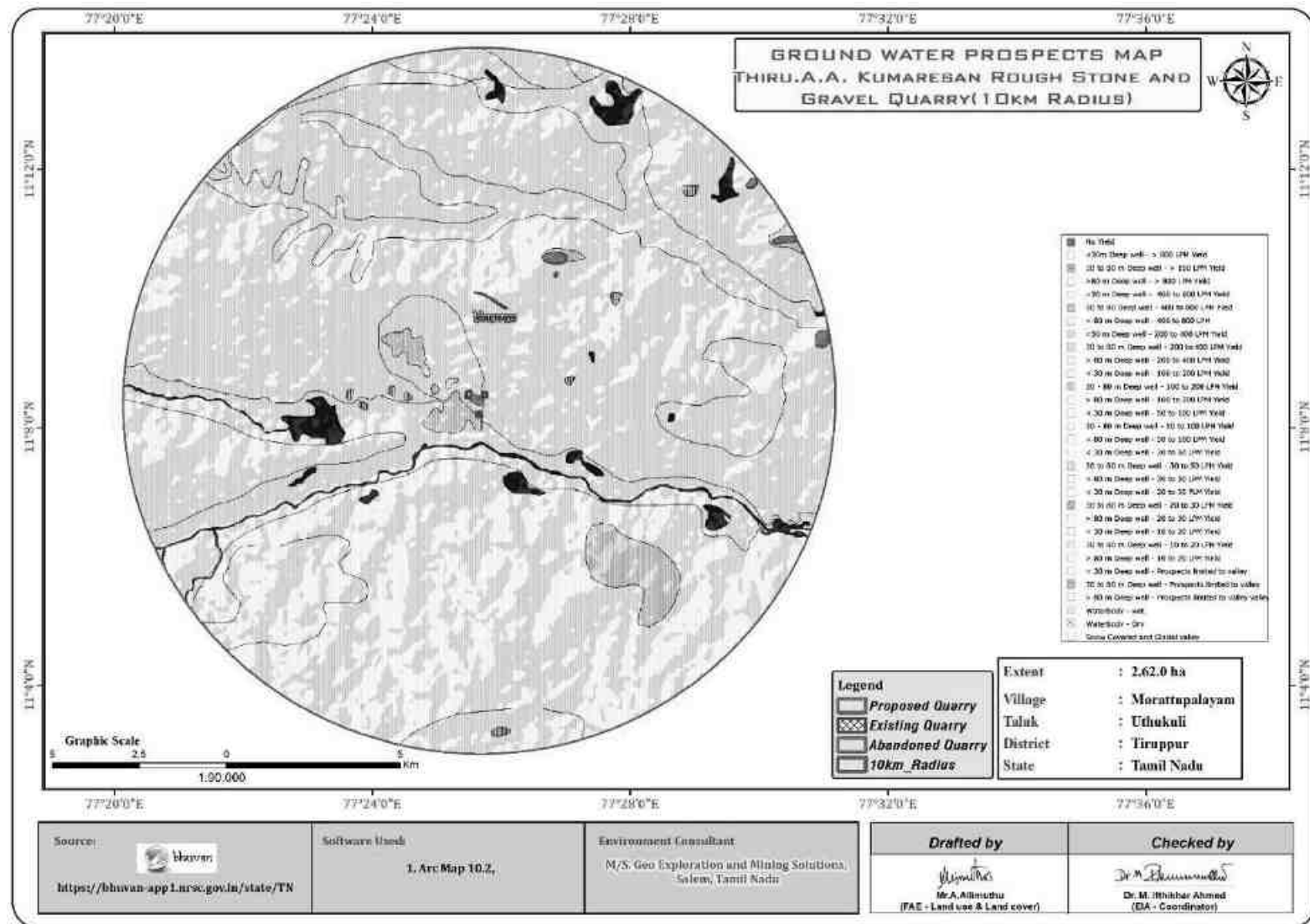
FIGURE 3.9: DRAINAGE MAP AROUND 10 KM RADIUS FROM CLUSTER

FIGURE 3.10: GROUND WATER PROSPECTS MAP



Source: Bhuvan

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 inhomogeneities 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 form 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 inhomogeneities 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,

$$\rho_r = F \rho_w = a \phi^m \rho_w$$

ρ_r = Resistivity of Rocks

ρ_w = Resistivity of water in pores of rock

F = Formation Factor

ϕ = Fractional pore volume

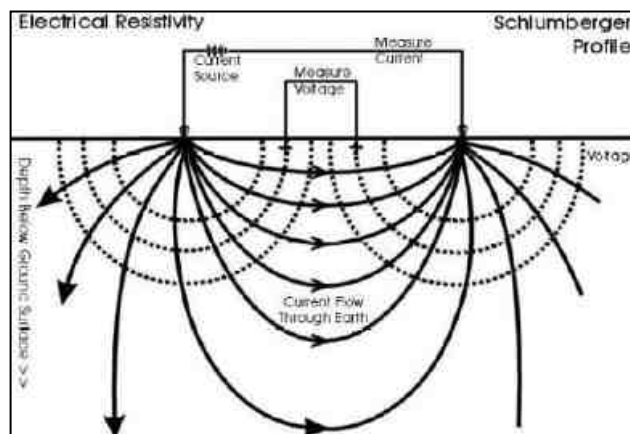
A = Constants with values ranging from 0.5 to 2.5

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 noise ration can be enhanced by $\sqrt{N}$ where N is the number of stacked readings. This SSR meter in which running averages of measurements $[1, (1+2)/2, (1+2+3)/3 \dots (1+2+\dots+16/16)]$ 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 78-73m. The maximum depth proposed out of proposed projects is 30m 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 ambient air quality with respect to the study area of 10 km radius including the cluster quarries forms the baseline information. The prime objective of baseline air quality monitoring is to assess existing air quality of the area. This will also be useful in assessing the conformity to standards of the ambient air quality during the operations

The existing ambient air quality of the area is important for evaluating the impact of mining activities on the ambient air quality. These will also be useful for assessing the conformity to standards of the ambient air quality during the operation of Existing and proposed quarries within the radius of 500m.

The sources of air pollution in the region are mostly due to vehicular traffic, Crushers dust arising from unpaved village road and domestic & agricultural activities. This section describes the identification of sampling locations, methodology adopted during the monitoring period and sampling frequency.

The baseline status of the ambient air quality has been assessed through scientifically designed ambient air quality network. The design of monitoring network in the air quality surveillance program has been based on the following considerations:

- Meteorological conditions.
- Topography of the study area.
- Likely impact area.

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. The station was installed at a height of 4 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 Tiruppur District lies on 300m above sea level The climate here is considered to be a local steppe climate. There is not much rainfall in Tiruppur all year long. This location is classified as BSh by Köppen and Geiger. In Tiruppur.

- The average annual temperature is 27.3°C | 81.1°F.
- The annual rainfall here is around 605mm | 23.8 inch.
- The driest month is January with 7mm |0.3 inch of rainfall. The greatest amount of precipitation occurs in October, with an average of 155mm | 6.1 inch.
- The warmest month of the year is April, with an average temperature of 30.0°C | 86.0°F. The lowest average temperatures in the year occur in December, when it is around 24.8°C | 76.64°F.
- The difference in precipitation between the driest month and the wettest month is 148 mm |6 inch. The variation in annual temperatures throughout the year is 5.2°C | 41.4°F.

Source: <https://en.climate-data.org/asia/india/tamil-nadu/tiruppur-2789/>

Rainfall –

The average annual rainfall and the 5 years' rainfall is as follows:

TABLE 3.14 – RAINFALL DATA

Actual Rainfall in mm					Normal Rainfall in mm
2017	2018	2019	2020	2021	606.8
679.8	716.2	488.1	748.8	845.1	

Source: <https://www.twadboard.tn.gov.in/content/tiruppur>

TABLE 3.15 – METEOROLOGICAL DATA RECORDED AT SITE

S.No	Parameters		Dec-2024	Jan-2025	Feb-2025
1	Temperature (°C)	Max	28.91	25.88	25.35
		Min	23.85	23.27	21.38
		Avg	26.38	24.57	23.36
2	Relative Humidity (%)	Avg	78.54	82.81	85.47
3	Wind Speed (m/s)	Max	4.8	3.47	3.84
		Min	0.9	1.32	0.9
		Avg	2.85	2.39	2.37
4	Cloud Cover (OKTAS)		0-8	0-8	0-8
5	Wind Direction		WSW,W	ENE,E	ENE,E

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

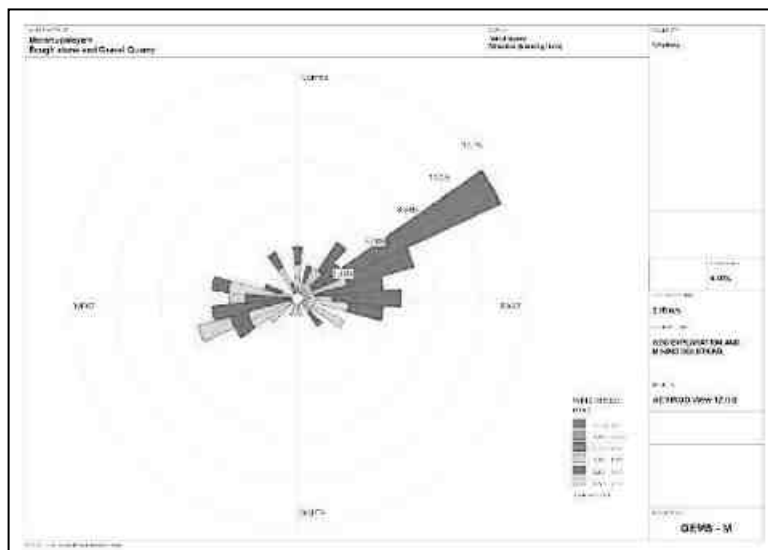
Correlation between Secondary and Primary Data

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

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

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

FIGURE 3.11: WINDROSE DIAGRAM



Environmental 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 SW, E, NE, ESE
2. Wind velocity readings were recorded between 0.50 to 8.80km / hour
3. Calm conditions prevail of about 0.00% of the monitoring period
4. Temperature readings ranging from 24.5⁰ to 30.5⁰C
5. Relative humidity ranging from 73.29 to 79.53%
6. The monitoring was carried out continuously for three months (December 2024 to February 2025)

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 3.16 – METHODOLOGY AND INSTRUMENT USED FOR AIR QUALITY ANALYSIS

Parameter	Method	Instrument
PM _{2.5}	Gravimetric Method Beta attenuation Method	Fine Particulate Sampler Make – Thermo Environmental Instruments – TEI 121
PM ₁₀	Gravimetric Method Beta attenuation Method	Respirable Dust Sampler Make – Thermo Environmental Instruments – TEI 108
SO ₂	IS-5182 Part II (Improved West & Gaeke method)	Respirable Dust Sampler with gaseous attachment
NO _x	IS-5182 Part II (Jacob & Hochheiser modified method)	Respirable Dust Sampler with gaseous attachment
Free Silica	NIOSH – 7601	Visible Spectrophotometry

Source: Sampling Methodology followed by EHS 360 Lab Private Limited & CPCB Notification.

TABLE 3.17 – 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/m ³)	Annual Avg.* 24 hours**	50.0 80.0	20.0 80.0
2	Nitrogen Dioxide (µg/m ³)	Annual Avg. 24 hours	40.0 80.0	30.0 80.0
3	Particulate matter (size less than 10µm) PM ₁₀ (µg/m ³)	Annual Avg. 24 hours	60.0 100.0	60.0 100.0
4	Particulate matter (size less than 2.5 µm) PM _{2.5} (µg/m ³)	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 Mar-May2022. The baseline data of ambient air has been generated for PM₁₀, PM_{2.5}, Sulphur Dioxide (SO₂) & Nitrogen Dioxide (NO₂).

3.3.5 Ambient Air Quality Monitoring Stations

Seven (7) 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 3.18 – AMBIENT AIR QUALITY (AAQ) MONITORING LOCATIONS

S. No	Location Code	Monitoring Locations	Distance & Direction	Coordinates
1	AAQ-1	Project Area	Core Zone	11° 8'27.72"N 77°25'41.47"E
2	AAQ-2	Project Area	Core Zone	11° 8'22.48"N 77°25'36.78"E
3	AAQ-3	Near Project Area	350m NW	11° 8'29.69"N 77°25'26.38"E
4	AAQ-4	Thirunagar	4.8km SW	11° 6'12.41"N 77°23'58.21"E
5	AAQ-5	Thenniswaranpalayam	4km NE	11° 9'27.20"N 77°27'45.12"E
6	AAQ-6	Mannur	4.5km SE	11° 6'29.73"N 77°27'7.92"E
7	AAQ-7	Kallipalayam	6.5km NW	11°11'24.26"N 77°23'53.51"E

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

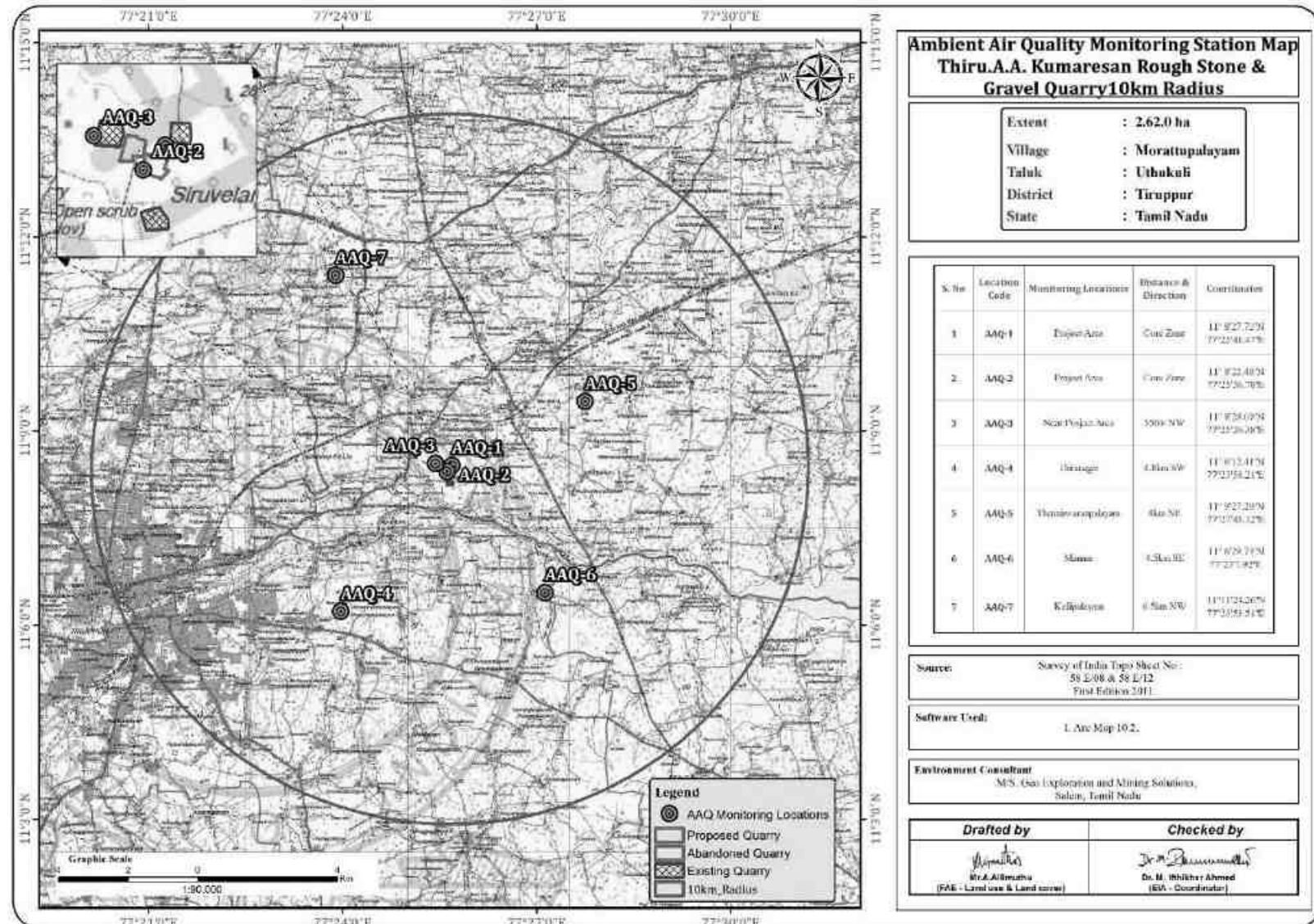
FIGURE 3.12 AMBIENT AIR QUALITY LOCATIONS AROUND 10 KM RADIUS

TABLE 3.19 – ABSTRACT OF AMBIENT AIR QUALITY DATA

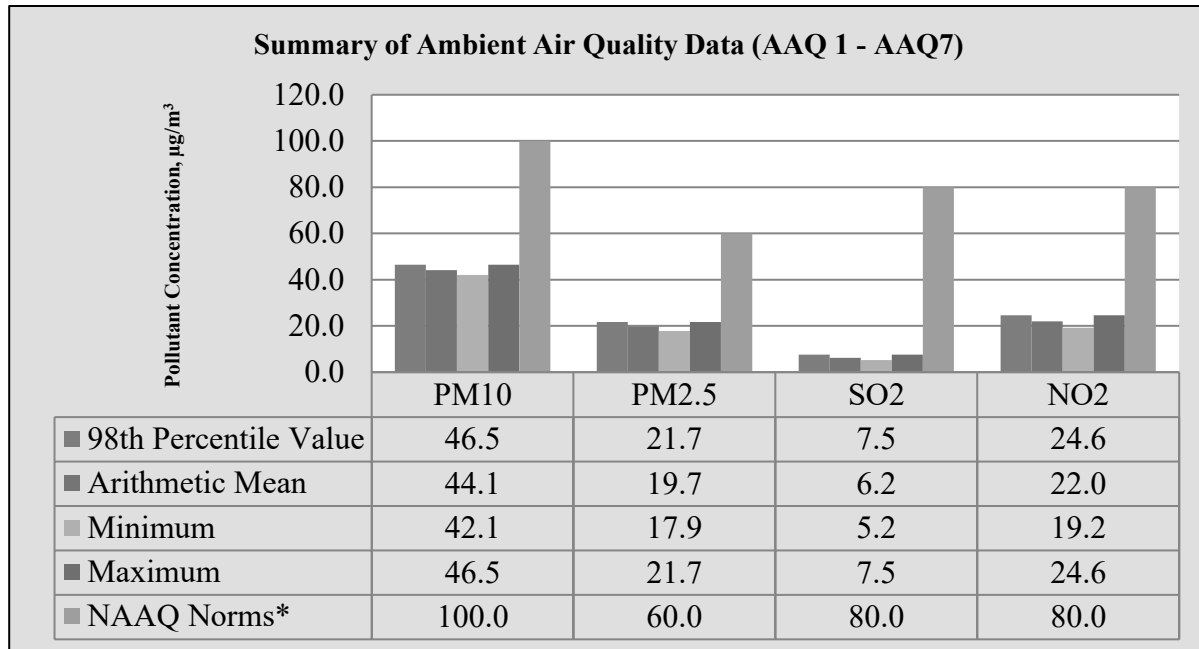
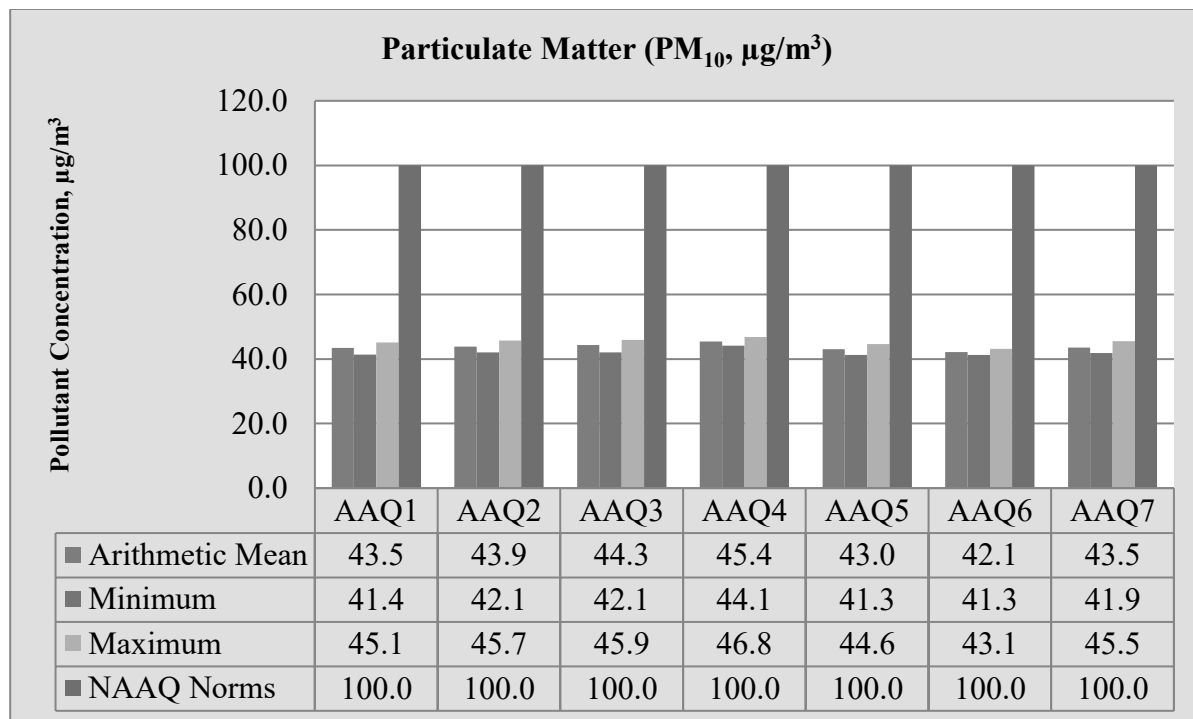
1	Parameter	PM ₁₀	PM _{2.5}	SO ₂	NO ₂
2	No. of Observations	260	260	260	260
3	10 th Percentile Value	42.1	17.9	5.2	19.2
4	20 th Percentile Value	42.5	18.3	5.3	19.8
5	30 th Percentile Value	42.7	18.6	5.5	20.6
6	40 th Percentile Value	43.1	18.9	5.6	21.2
7	50 th Percentile Value	43.5	19.2	5.9	21.6
8	60 th Percentile Value	44.1	19.5	6.1	21.9
9	70 th Percentile Value	44.6	19.9	6.3	22.3
10	80 th Percentile Value	44.9	20.5	6.5	22.7
11	90 th Percentile Value	45.5	21.1	6.8	23.5
12	95 th Percentile Value	45.9	21.4	7.3	24.1
13	98 th Percentile Value	46.5	21.7	7.5	24.6
14	Arithmetic Mean	44.1	19.7	6.2	22.0
15	Geometric Mean	44.1	19.7	6.1	21.9
16	Standard Deviation	1.5	1.3	0.8	1.7
17	Minimum	42.1	17.9	5.2	19.2
18	Maximum	46.5	21.7	7.5	24.6
19	NAAQ Norms*	100.0	60.0	80.0	80.0
	% Values exceeding Norms*	0.0	0.0	0.0	0.0

Legend:PM_{2.5}-Particulate Matter size less than 2.5 µm; PM₁₀-Respirable Particulate Matter size less than 10 µm; SO₂-Sulphur dioxide; NO₂-Nitrogen Dioxide; CO-Carbon monoxide; O₃-Ozone; NH₃-Ammonia; Pb-Particulate Lead; As-Particulate Arsenic; Ni-Particulate Nickel; C₆H₆-Benzene & BaP- Benzo (a) pyrene in particulate phase levels were monitored below their respective detectable limits.

* NAAQ Norms-National Ambient Air Quality Norms-Revised as per GSR 826(E) dated 16.11.2009 for Industrial, Residential, Rural and other Area.

TABLE 3.20 –SUMMARY OF AMBIENT AIR QUALITY DATA

PM ₁₀	AAQ1	AAQ2	AAQ3	AAQ4	AAQ5	AAQ6	AAQ7
Arithmetic Mean	43.5	43.9	44.3	45.4	43.0	42.1	43.5
Minimum	41.4	42.1	42.1	44.1	41.3	41.3	41.9
Maximum	45.1	45.7	45.9	46.8	44.6	43.1	45.5
NAAQ Norms	100.0	100.0	100.0	100.0	100.0	100.0	100.0
PM _{2.5}	AAQ1	AAQ2	AAQ3	AAQ4	AAQ5	AAQ6	AAQ7
Arithmetic Mean	18.6	20.5	18.5	20.1	19.3	18.3	19.5
Minimum	17.3	18.4	17.1	18.9	18.1	17.2	18.0
Maximum	19.9	21.6	19.8	21.9	21.2	19.5	21.5
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	6.3	6.1	6.0	5.8	6.0	5.5	5.9
Minimum	5.2	5.1	5.3	4.0	5.1	5.1	5.0
Maximum	7.8	7.8	6.8	7.3	6.9	5.9	6.8
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	21.5	22.1	21.6	23.4	22.1	19.9	19.1
Minimum	20.3	21.0	20.3	21.4	20.3	18.3	16.3
Maximum	23.2	23.6	22.8	24.8	24.3	21.8	20.9
NAAQ Norms	80.0	80.0	80.0	80.0	80.0	80.0	80.0

**FIGURE 3.13: BAR DIAGRAM OF SUMMARY OF AAQ****FIGURE 3.14: BAR DIAGRAM OF PARTICULATE MATTER (PM₁₀)**

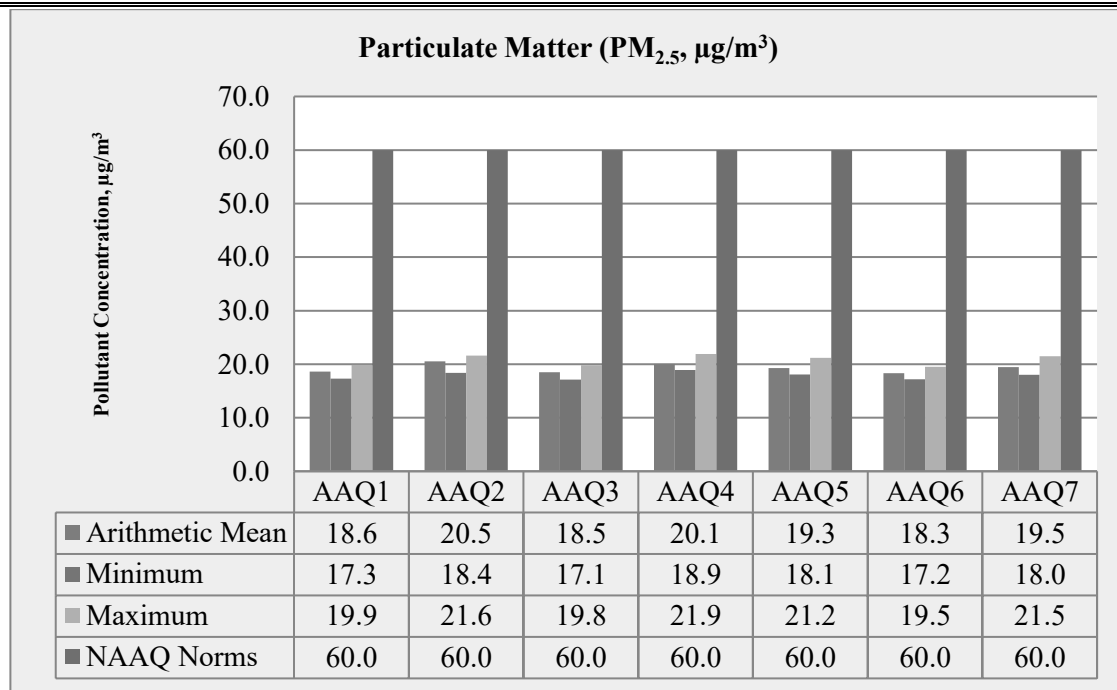
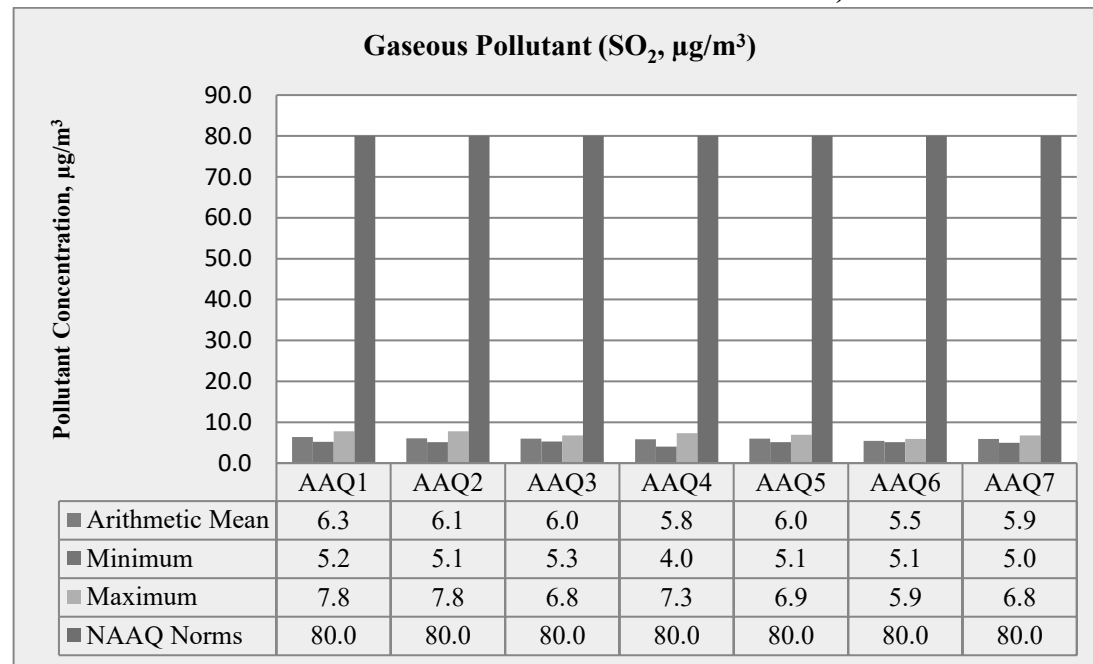
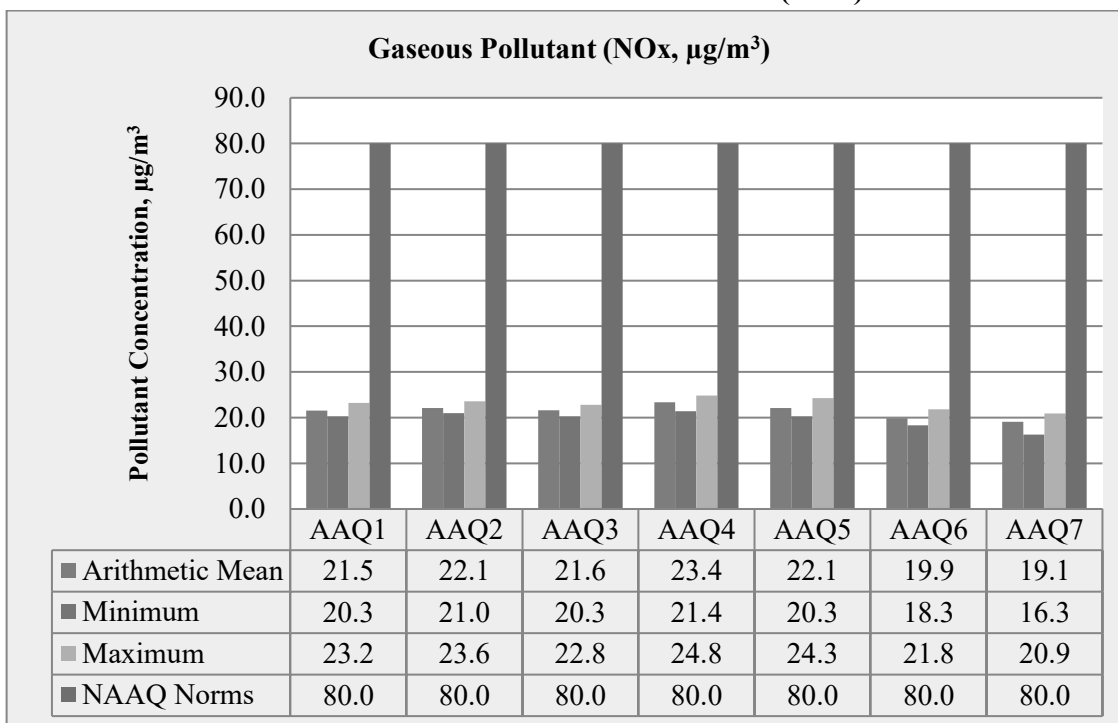
**FIGURE 3.15: BAR DIAGRAM OF PARTICULATE MATTER (PM_{2.5})****FIGURE 3.16: BAR DIAGRAM OF SO₂)**

FIGURE 3.17: BAR DIAGRAM OF (NO_x)

3.3.6 Interpretations & Conclusion

As per monitoring data, PM₁₀ ranges from 42.1 µg/m³ to 45.4 µg/m³, PM_{2.5} data ranges from 18.3 µg/m³ to 20.5 µg/m³, SO₂ ranges from 5.5 µg/m³ to 6.3 µg/m³ and NO_x data ranges from 19.1 µg/m³ to 23.4 µg/m³. The concentration levels of the above criteria pollutants were observed to be well within the limits of NAAQS prescribed by CPCB.

The minimum & maximum concentrations of PM₁₀ were found to be 42.1 µg/m³ in Mannur Village & 45.4 µg/m³ in Thirunagar respectively. The minimum & maximum concentrations of PM_{2.5} were found to be 18.3 µg/m³ in Mannur Village and & 20.5 µg/m³ in Core zone respectively.

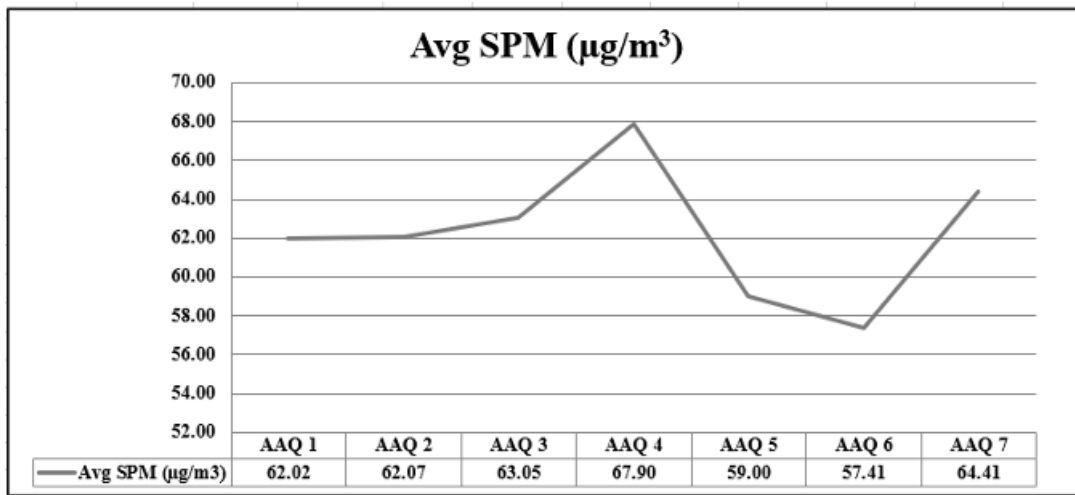
3.3.7 FUGITIVE DUST EMISSION –

Fugitive dust was recorded at 7 AAQ monitoring stations for 30 days' average during the study period.

TABLE 3.21– AVERAGE FUGITIVE DUST SAMPLE VALUES IN µg/m³

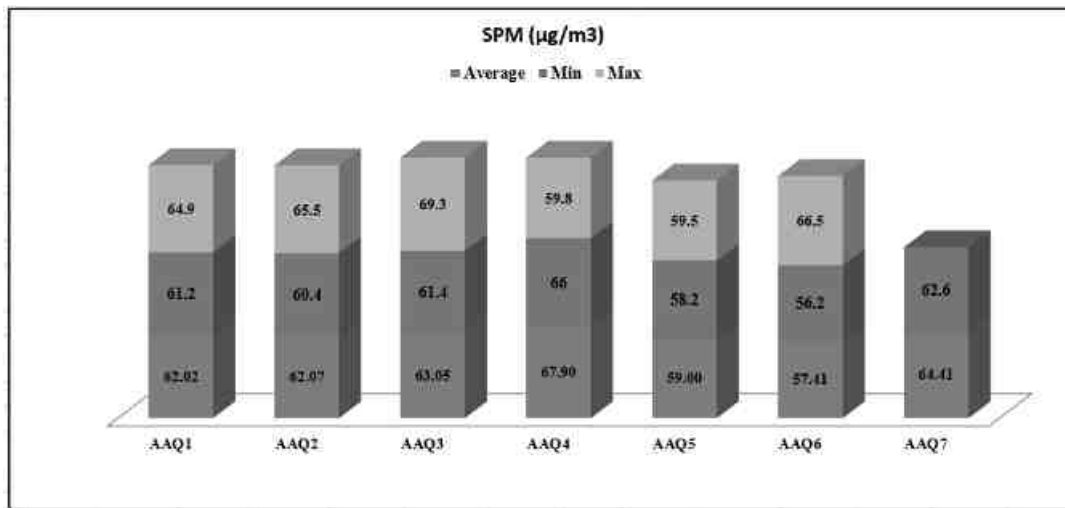
AAQ Locations	Avg SPM (µg/m ³)
AAQ 1	62.02
AAQ 2	62.07
AAQ 3	63.05
AAQ 4	67.90
AAQ 5	59.00
AAQ 6	57.41
AAQ 7	64.41

Source: EHS 360 Lab Private Limited

TABLE 3.22– FUGITIVE DUST SAMPLE VALUES IN $\mu\text{g}/\text{m}^3$ –

SPM ($\mu\text{g}/\text{m}^3$)	AAQ1	AAQ2	AAQ3	AAQ4	AAQ5	AAQ6	AAQ7
Average	62.02	62.07	63.05	67.90	59.00	57.41	64.41
Max	61.2	60.4	61.4	66	58.2	56.2	62.6
Min	62.8	64.9	65.5	69.3	59.8	59.5	66.5

Source: Calculations from Lab Analysis Reports



Source: Bar Diagram of table 3.30

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 best suited the purpose and objectives of the study.

TABLE 3.23 – DETAILS OF SURFACE NOISE MONITORING LOCATIONS

S. No	Location code	Monitoring Locations	Distance & Direction	Coordinates
1	N-1	Core Zone	Project Area	11° 8'27.66"N 77°25'40.47"E
2	N-2	Core Zone	Project Area	11° 8'22.10"N 77°25'37.13"E
3	N-3	Govindampalayam	2km NW	11° 8'48.38"N 77°24'31.02"E
4	N-4	Thirunagar	4.8km SW	11° 6'10.40"N 77°24'0.01"E
5	N-5	Thenniswaranpalayam	4km NE	11° 9'28.10"N 77°27'45.52"E
6	N-6	Mannur	4.5km SE	11° 6'29.19"N 77°27'11.59"E
7	N-7	Kallipalayam	6.5km NW	11°11'23.95"N 77°23'49.73"E

Source: On-site monitoring/sampling by EHS Laboratory 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.

$$Leq = 10 \log L / T \sum (10L_n/10)$$

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

T = Time interval of observation

3.4.3 Analysis of Ambient Noise Level in the Study Area

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 3.6

Day time : 6:00 hours to 22.00 hours.

Night time : 22:00 hours to 6.00 hours

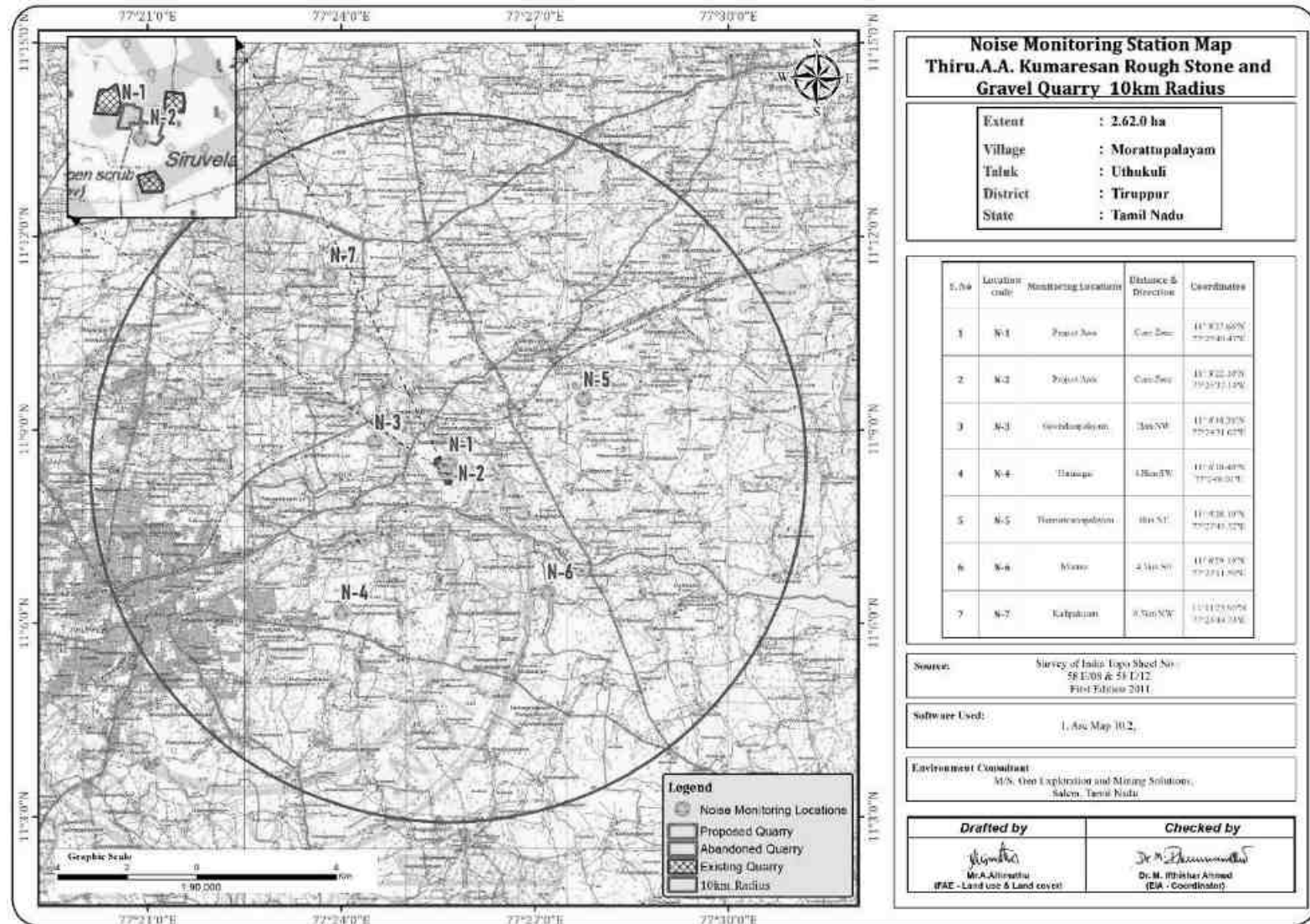
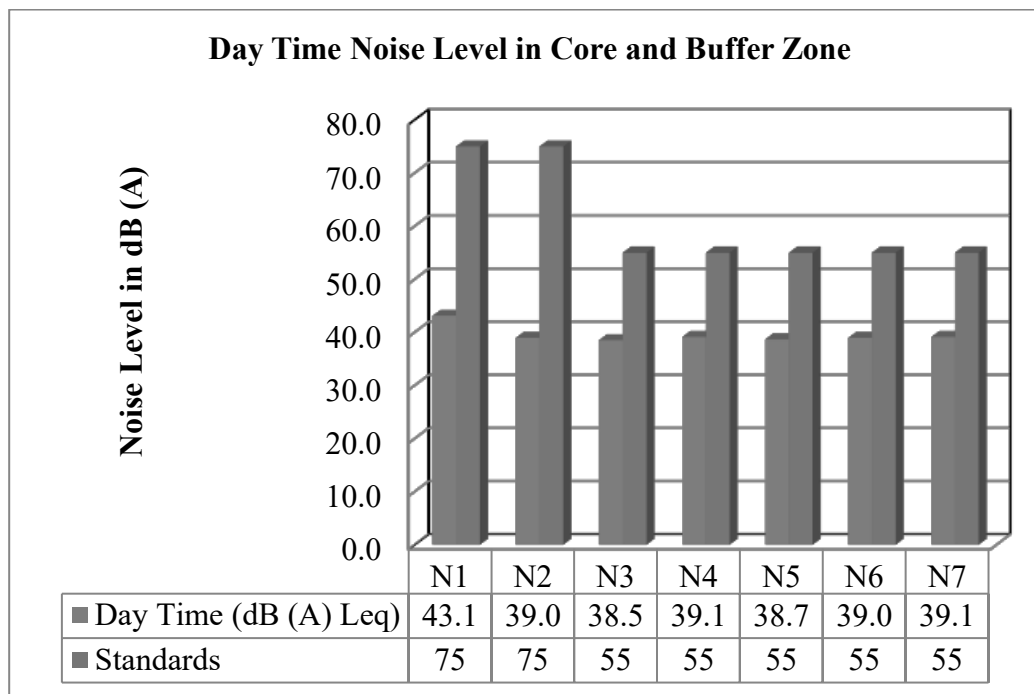
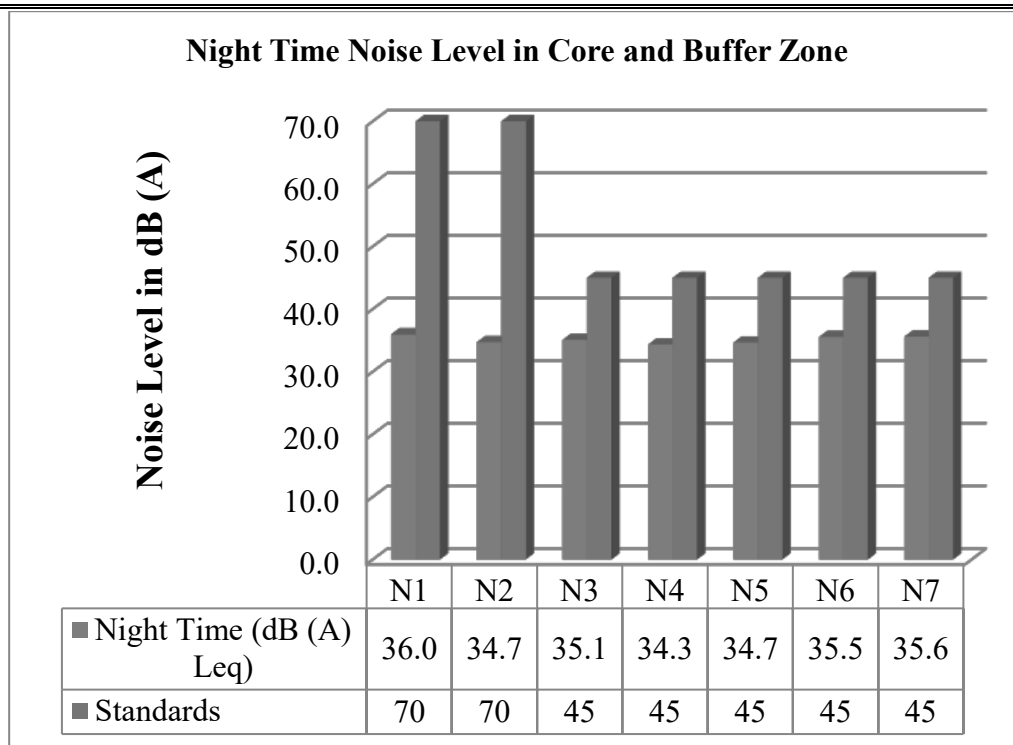
FIGURE 3.18: NOISE MONITORING STATIONS AROUND 10 KM RADIUS

TABLE 3.24 – NOISE MONITORING RESULTS IN CORE AND BUFFER ZONE

S. No	Locations	Noise level (dB (A) Leq)		Ambient Noise Standards
		Day Time	Night Time	
N-1	Core Zone	38.3	34.4	Industrial Day Time- 75 dB (A) Night Time- 70 dB (A)
N-2	Core Zone	39.0	34.7	
N-3	Govindampalayam	38.5	35.1	
N-4	Thirunagar	39.1	34.3	
N-5	Thenniswaranpalayam	38.7	34.7	Residential Day Time– 55 dB (A) Night Time- 45 dB (A)
N-6	Mannur	39.0	35.5	
N-7	Kallipalayam	39.1	35.9	

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

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



3.4.4 Interpretation & Conclusion:

Ambient noise levels were measured at 7 (Seven) locations around the project area considering cluster quarries. Noise levels recorded in core zone during day time were from 39.0-43.1 dB (A) Leq and during night time were from 34.7-36.0 dB (A) Leq. Noise levels recorded in buffer zone during day time were from 38.5 – 39.1dB (A) Leq and during night time were from 34.3 -35.6 dB (A) Leq. Thus, the noise level for Industrial and Residential area meets the requirements of CPCB.

3.5. Biological Environment

3.5.1. Study area Ecology

In this project, the total area of the Cluster within 10km radius from the periphery of this quarry is reported as **8.77.0 Ha with cluster quarries**. In such a Cluster situation, a common Ecology and Biodiversity study for the entire cluster of quarries is enough to capture all the possible externalities. This baseline data can be used for all quarries that fall under this cluster but the present work was carried out on the detailed study of the impacts of Morattupalayam Village Rough stone and gravel quarry on the ecology and biodiversity of the core lease area with the proper mitigation and sustainable management plan. The proposed mine lease applied area exhibits flat terrain. The following methods were applied during the baseline study of flora, fauna and diversity assessment.

3.5.2. Objectives of Biological Studies

- To study the likely impact of the proposed mining project on the local biodiversity and to suggest mitigation measures, if required, for vulnerable biota.
- Undertake intensive field survey to assess the status of floral & faunal component in different habitats in the core and buffer areas of the project site.
- Identification and listing of flora and fauna which are important as per the Wildlife (Protection) Act 1972.
- Suggest Wildlife conservation (species specific/habitat specific) and management plan for the threatened (critically endangered & endangered species - schedule I) faunal species if any reported within the study area.

-
- e) To identify the impacts of mining on agricultural lands and how it affects.
 - f) Proper collection of information about wildlife Sanctuaries/ national parks/ biosphere reserves of the project area.
 - g) Devise management & conservation measures for biodiversity.
-

3.5.3. Methodology of Sampling

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 materials i.e. flowers, fruits and seeds. 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 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. The 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).

3.5.3.1. Sampling

A stratified simple random sampling procedure was employed to obtain a sample from study area. The study area was further stratified in different land use/ecosystems.

3.5.3.2. Sampling Size

Keeping in mind both random sampling technique and covering all land use patterns for the study following sampling locations were chosen depending up on the area of the proposed site.

3.5.3.3. Timing of Study

The study was carried out during morning and evening hours, to cover the different activity phases for important species such as time resting, feeding, hunting, and daily movements.

3.5.3.4. Observations from Sampling

The various observations relating to flora and fauna species are discussed in detail below, in separate sections.

3.5.3.5. Equipment/ References

- Canon Mark III Camera with 50-500mm lens– Snap shots taken
- Leica Binoculars (8 X 20) to spot/identify species

-
- IUCN Red Data Book – <https://www.iucnredlist.org/species>
-

Ornithological/Entomological/Herpetological/Mammalian catalogues and pictorial descriptions from various authors and websites are followed for species identification.

3.5.4. Part I Field Sampling Techniques

3.5.4.1. Transect walk – Birds

Six no of transect lines with varying length (100m-300m) and fixed width (2m) were laid which cuts through the core and buffer areas of proposed site. The transect surveys were conducted from 07:00 to 11:00Hrs and 14:30 to 17:30Hrs (Bibby et al. 2000). All avifauna found along these transects were recorded for analysing of the data. Counts were conducted while there is no heavy rain, mist or strong wind.

3.5.4.2. Modified Pollard Walk – for Butterflies

The Modified Pollard Walk (Pollard 1977, 1993, Walpole 1999) using fixed width transect walk method were employed to investigate butterfly spatial distribution, diversity, and abundance at the different survey sites.

3.4.3. Visual Encounter Survey (VES) - reptiles and amphibians

VES is a time-constrained sampling technique (Campbell and Christman, 1982; Corn and Bury, 1990). It needs a systematic search through an area or habitat for a prescribed time period (Campbell and Christman, 1982). The result of VES is measured against the time spent for search. VES technique is one of the simplest methods and an appropriate technique for both inventory and monitoring Herpetofauna (Heyer et al. 1994).

3.5.4.4. Observational methods- Mammals

For the purpose of recording mammals, we used two different observational techniques: (1) direct observations, and (2) recording of occurrences like holes, markings, scats, hairs, and spines (Menon 2003). For identification confirmations, photographs with a scale reference were used, and locations were recorded using a portable GPS device. Indigenous knowledge particularly that of the locals, was occasionally employed to compile a preliminary list of species and/or aid in the recognition of indicators.

3.5.4.5. Multiple Stage Quadrat – Vegetation

A variety of habitat or vegetation structure variables were measured using the Multiple Stage Quadrat sampling protocol (Sykes and Horrill 1977). All of those areas were sampled, and the major corners were temporarily delineated with coloured ribbons. Each site was identified in the field using a compass and clinometer, and the plot's latitude, longitude, and elevation were recorded using a handheld Global Positioning System (Garmin 12XL).

3.5.5 Flora

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 for trees, Shrubs, and herbs respectively.

3.5.6 Flora Composition in the Core Zone

Taxonomically a total of 24 species belonging to 15 families have been recorded from the core mining lease area. It exhibit plain topography. Based on habitat classification of the enumerated plants the majority of species were Herbs 11 (46%) followed by Shrubs 5 (21%), Trees 4 (17%), Grasses 3 (12%), and Climbers/Creepers 1 (4%). Details of flora with the scientific name were mentioned in Table No. 3.31. The result of the core zone of flora studies shows that Fabaceae and Poaceae and Lamiaceae are the main dominating species in the study area mentioned in Table No.3.31. No species were found as a threatened category (Table No. 3.31).

TABLE NO: 3.25. FLORA IN THE CORE ZONE OF CLUSTER

Sl.No	English Name	Vernacular Name	Scientific Name	Family Name
Trees				
1.	Neem	Vembu	<i>Azadirachta indica</i>	Meliaceae
2.	Mesquite	Mullu maram	<i>Prosopis juliflora</i>	Fabaceae
3.	River tamarind	Saluda	<i>Leucaenaleucocephala</i>	Fabaceae
4.	Pala indigo	Pala maram	<i>Wrightia tinctoria</i>	Apocynaceae
Shrubs				
1.	Milk Weed	Erukku	<i>Calotropis gigantea</i>	Apocynaceae
2.	Avaram	Avarai	<i>Senna auriculata</i>	Fabaceae
3.	Thorn apple	Oomathai	<i>Datura stramonium</i>	Solanaceae
4.	Lantana	Unni chedi	<i>Lantana camara</i>	Verbenaceae
5.	Night shade plan	Sundaika	<i>Solanum torvum</i>	Solanaceae
Herbs				
1.	Common leucas	Thumbai	<i>Leucas aspera</i>	Lamiaceae
2.	Devil's thorn	Nerunji	<i>Tribulus terrestris</i>	Zygophyllales
3.	Asthma-plant	Amman pacharisi	<i>Euphorbia hirta</i>	Euphorbiaceae
4.	Indian Catmint	Pei viratti	<i>Anisomeles malabarica</i>	Lamiaceae
5.	Indian mallow	Thuthi	<i>Abutilon indicum</i>	Meliaceae
6.	Common nut	Korai	<i>Cyperus rotundus</i>	Cyperaceae
7.	Indian doab	Arugampul	<i>Cynodon dactylon</i>	Poaceae
8.	Holy basil	Thulasi	<i>Ocimum tenuiflorum</i>	Lamiaceae
9.	Ban Tulsi	Melakai poondu	<i>Croton bonplandianus</i>	Euphorbiaceae
10.	Prickly chaff	Nayuruv	<i>Achyranthes aspera</i>	Amaranthaceae
11.	Coat buttons	Thatha poo	<i>Tridax procumbens</i>	Asteraceae
Creeper /Climbers				
1	Stemmed vine	Perandai	<i>Cissus quadrangularis</i>	Vitaceae
Grass				
1.	Eragrostis	Pullu	<i>Eragrostis ferruginea</i>	Poaceae
2.	Great brome	Thodappam	<i>Bromus diandrus</i>	Poaceae
3.	Nut grass	Korai	<i>Cyperus rotundus</i>	Poaceae

Sources: Species observation in the field study

a. *Azadirachta indica*b. *Calotropis gigantea*



c. *Leucaena leucocephala*



d. *Datura stramonium*



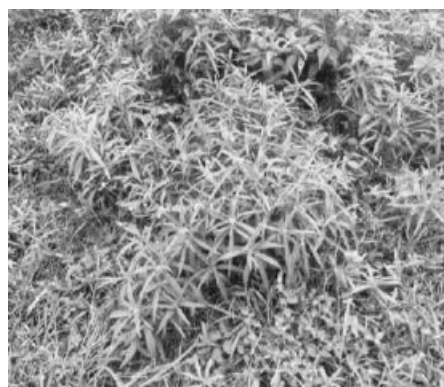
e. *Wrightia tinctoria*



f. *Abutilon indicum*



g. *Tridax procumbens*



h. *Leucas aspera*



i. *Anisomeles malabarica*



j. *Croton bonplandianus*



k. *Prosopis juliflora*

l. *Cissus quadrangularis*

FIGURE: 3.20. FLORA SPECIES OBSERVATION IN THE CORE ZONE AREA

TABLE NO: 3.26. FLORA IN THE BUFFER ZONE OF CLUSTER

Sl.No.	English Name	Vernacular Name	Scientific Name	Resource use type *(E,M,EM)
Trees				
1.	Millettia pinnata	Pongam oiltree	Pongamia pinnata	E
2.	Tamarind	Puliyamaram	Tamarindus indica	EM
3.	Asian Palmyra palm	Panai maram	Borassus flabellifer	E
4.	Wild Date Palm	Pericham	Phoenix sylvestris	E
5.	Coconut	Thennai maram	Cocos nucifera	EM
6.	River tamarind	Savunda	Leucaena leucocephala	E
7.	Lemon	Ezhumuchaipalam	Citrus lemon	EM
8.	Mango	Manga	Mangifera indica	E
9.	Banyan tree	Alamaram	Ficus benghalensis	E
10.	Neem or Indian lilac	Vembu	Azadirachta indica	M
11.	Creamy Peacock flower	Vadanarayani	Delonix elata	M
12.	Mesquite	Sema Karuvelam	Prosopis juliflora	E
13.	Beauty leaf	Punnai	Calophyllum inophyllum	M
14.	Madras Thorn	Kodukapuli	Pithecellobium dulce	E
15.	Castor oil plant	Amanakku	Ricinus communis	M
16.	Gum arabic tree	Karuvelam	Acacia nilotica	NE
17.	False ashoka	Asoka maram	Polyalthia longifolia	E
18.	Monkey pod tree	Thungumoonchi	Samanea saman	E
19.	Bitter Albizia	Arappu	Albizia amara	M
20.	Giant thorny bamboo	Perumungil	Bambusa bambos	M
21.	Wood-apple	Vilamaram	Limonia acidissima	M
22.	Orange jessamine	Venkarai	Murraya paniculata	E
23.	Black plum	Navalmaram	Syzygium cumini	EM
24.	Eucalyptus	Eucalyptus	Eucalyptus globules	EM
25.	Custard apple	Seethapazham	Annona reticulata	E
26.	Copperpod	Iyal Vaagai	copperpod	E
27.	Acacia Nilotica	Karuvelam maram	Vachellia nilotica	M
28.	Indian gooseberry	Nelli	Emblica officinalis	EM
29.	Henna	Marudaani	Lawsonia inermis	EM
30.	Sacred fig	Arasan	Ficus religiosa	E
31.	Indian mulberry	Nuan	Morinda tinctoria	E
32.	Teak	Thekku	Tectona grandis	E
33.	Papaya	Pappali maram	Carica papaya	EM
34.	Chinese chaste tree	Nochi	Vitex negundo	E
35.	Peepal	Arasanmaram	Ficus religiosa	M
36.	Indian fir tree	Nettilinkam	Polylathia longifolia	E
37.	Guava	Koyya	Psidium guajava	EM
38.	Curry tree	Velipparuthi	Murraya koenigii	EM
39.	Bamboo	Moonghil	Bambusa bambo	E
40.	Drumstick tree	Murunga maram	Moringa oleifera	EM
41.	Indian almond	Padam maram	Terminalia catappa	EM

42.	Mesquite	Velikathan maram	Prosopis juliflora	M
43.	Portia tree	Poovarasam	Thespesia populnea	E
Shrubs				
1.	Avaram	Avarai	Senna auriculata	M
2.	Night shade plan	Sundaika	Solanum torvum	EM
3.	Lantana	Unnichedi	Lantana camara	M
4.	Rough cocklebu	Ottarachedi	Xanthium strumarium	M
5.	Triangular spruge	Chaturakalli	Euphorbia antiquorum	NE
6.	Indian jujube	Elanthai	Ziziphus mauritiana	M
7.	Coffee senna	Kattuttakarai	Senna occidentalis	M
8.	Rosy Periwinkle	Nithyakalyani	Cathranthus roseus	M
9.	Bush Morning Glory	Neyvelik	Ipomoea carnea	E
10.	Chinese chastetree	Nochi	Vitex negundo	M
11.	Water spinach	Nalikam	Ipomoea aquatica	E
12.	Indian Oleander	Arali	Nerium indicum	M
13.	Shoe flower	Chemparuthi	Hibiscu rosa-sinensis	EM
14.	Puriging nut	Kattamanakku	Jatropha curcas	EM
15.	Columnar Cactus	Sappathikalli	Cereus pterogonus	M
16.	Thorn apple	Oomathai	Datura stramonium	E
17.	Century plant	Anaikathalai	Agave americana	M
18.	Jackal jujube	Soorai pazham	Ziziphus oenopolia	M
19.	Indian mallow	Thuthi	Abutilon indicum	M
20.	Flame of the Woods	Idlipoo	Xoracoc cineia	M
21.	Peacock Flower	Mayil Kontai	Caesalpinia pulcherrima	M
22.	Datura metel	Uumaththai	Datura metel	NE
23.	Milk Weed	Erukku	Calotropis gigantea	M
24.	Cassava	Maravalli kizhangu	Manihot esculenta	EM
25.	Hopbush	Virali	Dodonaea viscosa	E
26.	Paper flower	Kahitha poo	Bougainvillea glabra	M
27.	Tiger nail	Eli verandi	Martynia annua	M
Herbs				
1.	Prickly chaff flower	Nayuruv	Achyranthes aspera	M
2.	Tridax daisy	Veetukaayapoundu	Tridax procumbens	M
3.	Indian Copperleaf	Kuppaimeni	Acalypha indica	M
4.	Indian doab	Arugampul	Cynodon dactylon	E
5.	Copperleaf	Kuppaimeni	Acalypha indica	M
6.	Indian Catmint Plant	Pei viratti	Anisomeles malabarica	M
7.	Cleome viscosa	Nai kadugu	Celome viscosa	M
8.	Porcupine flower	Shemmuli	Barleria prionitis	E
9.	Common Wireweed	Arivalmanai poundu	Sida acuta	M
10.	Punarnava	Mukkirattai	Boerhaavia diffusa	EM
11.	Mexican prickly poppy	Kudiyotti	Argemone mexicana	M
12.	Common leucas	Thumbai	Leucas aspera	M
13.	Licorice weed	Kallurukki	Scoparia dulcis	M
14.	Chay root	Chaaya ver	Oldenlandia umbellata	M
15.	Slender dwarf morning-	Vittunu-k-kiranti	Evolvulus alsinoides	M

16.	Spiny amaranth	Mullu keera	Amaranthus spinosus	M
17.	Cracker plant	Tapas kaaya	Ruellia tuberosa	M
18.	Flannel Weed	Sida mutti	Sida cordifolia	M
19.	Green amaranth	Mulai keera	Amaranthus viridis	M
20.	Marsh barbel	Neermulli	Hygrophila auriculata	M
21.	Yellow-fruit nightshade	Kandakathirika	Solanum surattense	M
22.	Shameplant	Thottachenunki	Mimosa pudica	M
23.	Common Purslane	Paruppu keera	Portulaca oleracea	M
24.	Water willow	Kodakasalai	Justicia procumbens	M
25.	Threadstem carpetweed	Parpatakam	Mollugo cerviana	M
26.	Perennial Water Primrose	Muyalkathu Ilai	Ludwigia perennis	M
27.	Prostrate Globe Amaranth	-	Gomphrena serrata	M
28.	Node Flower	Kumattikkirai	Allmania nodiflora	M
29.	Sessile Joyweed	Ponnankanni	Alternanthera sessilis	M
30.	Asthma-plant	Ammanpacharisi	Euphorbia hirta	M
31.	Pignut	Nattapoochedi	Hyptis suaveolens	M
32.	Holy basil	Thulasi	Ocimum tenuiflorum	M
33.	Pink Blumea	Suvatru mullangi	Blumea mollis	M
34.	Madagascar Periwinkle	Nithykalyani Podi	Catharanthus roseus	E
35.	Asian spiderflower	Naaikaduku	Cleome viscosa L	M
36.	Digeria muricata	Thoiya keera	Digeria muricata	EM
37.	Carrot grass	Parttiniyam	Parthenium hysterophorus	NE
38.	Europeanblack nightshade	Manathakkali	Solanumnigrum	EM
39.	Mountain knotgrass	Thengaipoo kirai	Aerva lanata	M
40.	Bindii	Nerunchi	Tribulus terrestris	M
41.	Fish poison	Kolinch	Tephrosia purpurea	M
42.	Chrysanthemum	Samanthi Poo	Chrysanthemum	E
43.	East Indian globe thistle	Kottakarantai	Sphaeranthus indicus	M
44.	Tomato	Thakkali	Solanum lycopersicum	EM
45.	False daisy	Karisalankanni	Eclipta alba	M
46.	Chilli	Milakai	Capsicum annuum	EM
47.	Red Spiderling	Mukirattai	Boerhavia diffusa	M
48.	Aloe	Katrashai	Aloe vera	M
49.	Eggplant	Kathrikkai	Solanum melongena	EM
50.	Coat buttons	Thatha poo	Tridax procumbens	M
51.	Indian mint	Karpura valli	Coleus amboinicus	EM
52.	Aloe barbadensis	Katrashai	Aloe vera	EM
Climber/ Creeper				
1.	Stemmed vine	Perandai	Cissus quadrangularis	M
2.	Wild bitter	Pavarkai	Momordica charantia	EM
3.	Pointed gourd	Kovakkai	Trichosanthes dioica	EM
4.	Ivy gourd	Kovai	Coccinia grandis	M
5.	Bottle Guard	Sorakkai	Lagenaria siceraria	EM
6.	Ground Spurge	Sithrapaalavi	Euphorbia prostrata	EM
Grass				
1.	Jungle rice	Kuthirai vaalKattu	Echinochloa colona	NE

2.	Mauritian Grass	Moongil pul	Apluda mutica	NE
3.	Swollen Windmill Grass	Kondai Pul	Chloris barbata	NE
4.	Needle Grass	Thodappam	Aristida adscensionis	E
5.	Eragrostis	Pullu	Eragrostis ferruginea	E
6.	Needle Grass	-	Aristida funiculata	NE
7.	Windmill grass	Chevvarakupul	Chloris barbata	NE
8.	Sugarcane	Karumbu	Saccharum	E
Cactus				
1.	Prickly pear	Nagathali	Opuntia dillenii	M

Sources: Species observation in the field study and secondary data

3.5.7 Flora Composition in the Buffer Zone

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 proposed project site there are 137 species in the buffer zone study area in total, based on records. The floral (137) varieties among them Trees 43, Herbs 52, Shrubs 27, Climbers/ Creepers 6, Grasses 8, and Cactus 1 were identified. The result of the buffer zone of flora studies shows that Fabaceae and Cucurbitaceae, Euphorbiaceae is the main dominating species in the study area mentioned in Table No.3.32. 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 3.33 and their % distribution is shown in Figure 3.19

TABLE 3.27: NUMBER OF FLORAL LIFE FORMS IN THE STUDY AREA

S. No	Plant Life Form	Number of Species
1	Trees	43
2	Shrubs	27
3	Herbs	52
4	Climber/Creepers	6
6	Grasses	8
7	Cactus	1
Total No. of Species		137

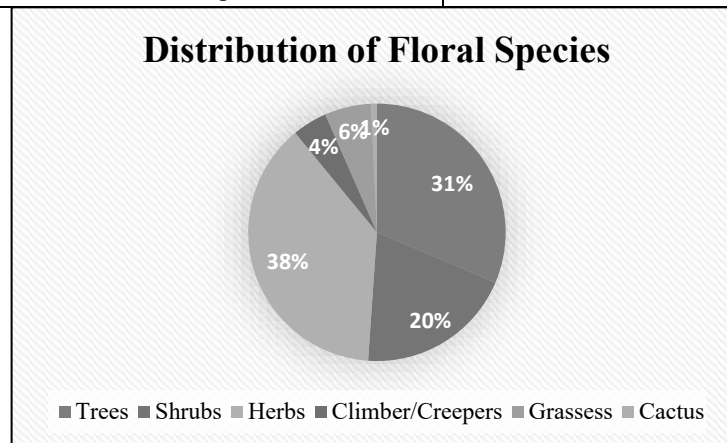


FIGURE. 3.21: DIAGRAM SHOWING % DISTRIBUTION OF FLORAL LIFE FORMS



a. *Calotropis gigantea*



b. *Azadirachta indica*



c. *Ocimum tenuiflorum*



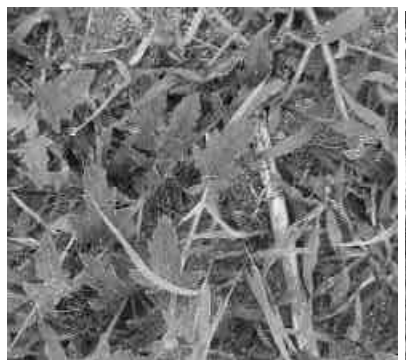
d. *Celome viscosa*



e. *Amaranthus spinosus*



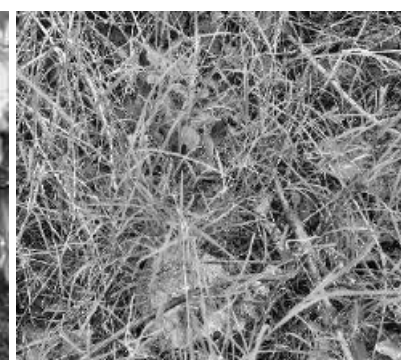
f. *Annona reticulata*



g. *Tridax procumbens*



h. *Pongamia pinnata*



i. *Cynodon dactylon*



j. *Boerhaavia diffusa*



k. *Jatropha curcas*



l. *Morinda tinctoria*



m.Coleus amboinicus



n.Aloe vera



o.Solanum melongena



p.Carica papaya L



q.Thespesia populnea



r.Euphorbia antiquorum



s.Solanum nigrum



t.Chrysanthemum



u.Solanum lycopersicum



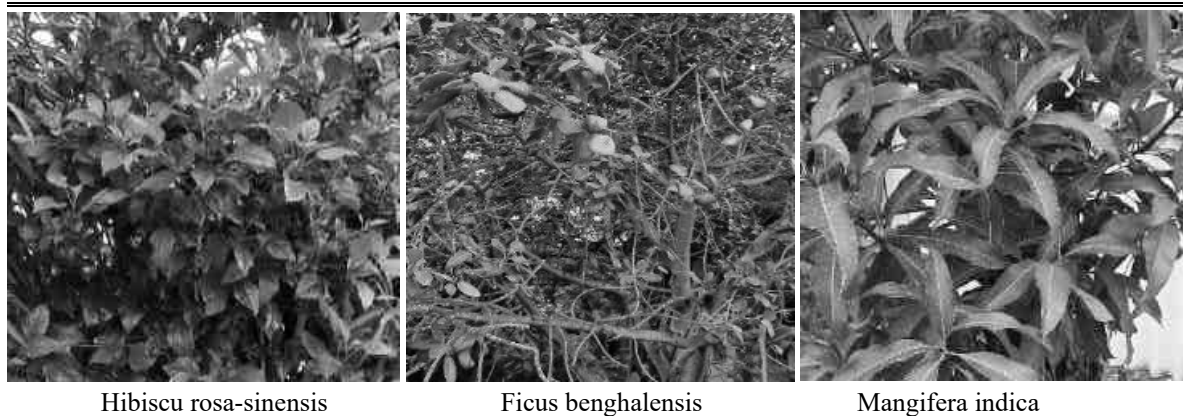
v.Solanum torvum



w.Datura stramonium



x.Abutilon indicum



Hibiscus rosa-sinensis

Ficus benghalensis

Mangifera indica

FIGURE 3.22. FLORA SPECIES OBSERVATION IN THE BUFFER ZONE AREA**3.5.8. Major Agricultural Crops**

Tiruppur district though an industrial district plays important role in Agriculture also. The food production required to be enhanced to provide food and nutritional security to the growing district population. In Tiruppur more than 80% of the farmers belong to small and marginal category and they play a key role in overall development in Agriculture. The total area of cultivation is around 2,28,556 hectares, mainly food and commercial crops. The chief food crops are paddy, millets and pulses. The non-food or commercial crops in the district are cotton, oil seeds and coconut. Details of the major crops are given in Table No: 3.34.

TABLE NO: 3.28. MAJOR CROPS IN TIRUPPUR DISTRICT

S.No	Major crops	Scientific name	Families
1	Paddy	<i>Oryza sativa</i>	Grasses
2	Sorghum	<i>Sorghum bicolor</i>	Grasses
3	Maize	<i>Zea mays</i>	Grasses

(Source: Agriculture Contingency Plan– Tiruppur-2013)

3.5.8.1. Horticulture

Major horticulture crops cultivated in this district are fruits crops like mango, banana, aonla, sapota and papaya, vegetables like bhendi, tomato, brinjal, onion, tapioca, moringa, spices and condiments like chillies and turmeric, plantation crops like cocoa, flower crops like jasmine, tube rose, marigold, cock's comb and medicinal plants like gloriosa and coleus. Details of major field crops and horticulture in Tiruppur district is given in Table No: 3.35.

TABLE NO: 3.29. MAJOR FIELD CROPS & HORTICULTURE IN TIRUPPUR DISTRICT.

Sl.No	Common Name	Scientific Name	Family
Major Horticultural Crops			
1	Banana	<i>Musa</i>	Musaceae
2	Mango	<i>Mangifera indica</i>	Anacardiaceae
3	Jack	<i>Artocarpus heterophyllus</i>	Mulberry
4	Guava	<i>Psidium guajava</i>	Myrtle
5	Sapota	<i>Manilkara zapota</i>	Sapotaceae
6	Lemon	<i>Citrus × limon</i>	Rutaceae
Vegetables			
7	Onion	<i>Allium cepa</i>	Amaryllidaceae
8	Tapioca	<i>Manihot esculenta</i>	Spurges
9	Brinjal	<i>Solanum melongena</i>	Nightshade
10	Tomato	<i>Solanum lycopersicum</i>	Nightshade

11	Gourds	<i>Lagenaria siceraria</i>	Cucurbits
12	Bhendi	<i>Abelmoschus esculentus</i>	Mallows
13	Moringa	<i>Moringa oleifera</i>	Moringaceae
Medicinal and Aromatic Plants			
14	Gloriosa superba	<i>Colchicaceae</i>	Colchicaceae
15	Coleus	<i>Plectranthus scutellarioides</i>	Mints
Flowers			
16	Jasmine	<i>Jasminum</i>	Jasminaceae
17	Crossandra	<i>Crossandra infundibuliformis</i>	
18	Crysanthimum	<i>Asteraceae</i>	Asteraceae
19	Rose & Jathi	<i>Rosa</i>	Rosaceae
20	Tuberose	<i>Polianthes tuberosa</i>	Asparagus
Spices and Condiments			
21	Chillies	<i>Capsicum frutescens</i>	Solanaceae
22	Turmeric	<i>Curcuma longa</i>	Zingiberaceae
23	Tamarind	<i>Tamarindus indica</i>	Legumes
24	Curry leaf	<i>Murraya koenigii</i>	Rutaceae
Plantation Crops			
25	Cashew	<i>Anacardium occidentale</i>	Cashews
26	Cocoa	<i>Theobroma cacao</i>	Mallows

(Source: Statistical handbook of Tamil Nadu-2013)

3.5.8.2 Types of Irrigation

Irrigation is the artificial application of water to the soil for normal growth of plants. Water is an important determinant factor for production of crops in agriculture sector. Intensive and extensive cultivation of land depends mainly on the availability of water. Medium and minor irrigation schemes are implemented in the state for augmenting the water supply for agriculture. The various sources of irrigation are canals, tanks, tube wells, ordinary wells, springs and channels. The Following Table No: 3.36. Shows the area irrigated in Tiruppur District.

TABLE NO: 3.30. IRRIGATED AREA IN THE DISTRICT

S.No	Irrigation	Area ('000 ha)
1	Net irrigated area	119.3
2	Gross irrigated area	123.1
3	Rain fed area	72.9

(Source: Statistical handbook of Tamil Nadu-2013)

Dug wells are the major source of water for irrigation in Tiruppur district, accounting for about 59.97 percent of the total area irrigated in this district. Tube wells accounting for about 9.48 percent of the total area irrigated in this district. Of the net area irrigated, the canal irrigated area is only 29.45 percent. The area irrigated under tank is 1.10 percent. (Source: Statistical handbook of Tamil Nadu-2013)

3.5.8.3 Vegetation in the RF / PF areas, ecologically sensitive areas

There are neither reserved (RF) nor protected (PF) forests either in the mine lease area or in the buffer zone. Thus, no forest land is involved in any manner. Hence, no certificate from the Forest department is required. There are no impacts due to this mining activity.

There are no protected or ecologically sensitive areas such as National parks or 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 and the 10 Km buffer zone) 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.

3.5.9 Fauna

The faunal survey has been carried out as per the methodology cited and listed out Mammals, birds, Reptiles, Amphibians, and Butterflies. All the listed species were compared with the Red Data Book and the Indian Wildlife Protection Act, 1972. There are no rare, endangered, threatened (RET), and endemic species present in the core area.

3.5.10. Fauna Composition in the Core Zone

A total of 16 varieties of species were observed in the Core zone of Morattupalayam Village, Rough stone and gravel quarry (Table No.3.7) among them numbers of Insects 5 (31%), Reptiles 2 (13%), Mammals 2 (12%) and Avian 7 (44%). A total of 15 species belonging to 13 families have been recorded from the core mining lease area. None of these species are threatened or endemic in the study area and surroundings. There is no Schedule I species and six species are under schedule IV according to the Indian wild life Act 1972. A total of 7 species of bird were sighted in the mining lease area.

There are no critically endangered, endangered, vulnerable and endemic species were observed. Details of fauna in core zone with the scientific name were mentioned in Table No. 3.7.

TABLE NO: 3.31. FAUNA IN THE CORE ZONE OF CLUSTER

SI. No	Common name/English Name	Scientific Name	Schedule list wildlife Protection act 1972
Insects			
1.	Mottled emigrant	Catopsilia pyranthe	NL
2.	Striped tiger	Danaus plexippus	Schedule IV
3.	Common Tiger	Danaus genutia	NL
4.	Red-veined darter	Sympetrum fonscolombii	NL
5.	Danaid egg fly	Hypolimnasmisippus	Schedule IV
Reptiles			
1.	Garden lizard	Calotes versicolor	Schedule IV
2.	Common skink	Mabuya carinatus	Schedule IV
Mammals			
1.	Indian Field Mouse	Mus booduga	Schedule IV
2.	Common rat	Rattus rattus	Schedule IV
Aves			
1.	Common myna	Acridotheres tristis	Schedule IV
2.	House crow	Corvus splendens	Schedule IV
3.	Common quail	Coturnix coturnix	Schedule IV
4.	Koel	Eudynamys	Schedule IV
5.	Cattle egret	Bubulcus ibis	Schedule IV
6.	Asian green bee-eater	Merops orientalis	Schedule IV
7.	Black drongo	Dicurus macrocercus	Schedule IV

*NL- Not listed, LC- Least Concern

(Sources: Species observation in the field study)

3.5.11 Fauna Composition in the Buffer Zone

As animals, especially vertebrates move from place to place in search of food, shelter, mate or other biological needs, separate lists for core and buffer areas are not feasible however, a separate list of fauna pertaining to core and buffer zone are listed separately. Though there is no reserved forests in the buffer zone. As such there are no chances of occurrence of any rare or endangered or endemic or threatened (REET) species within the core or buffer area.

There are no Sanctuaries, National Parks, Tiger Reserve or Biosphere reserves or Elephant Corridor or other protected areas within 10 km radius of from the core area. It is evident from the available records, reports, and circumstantial evidence that the entire study area including the core and buffer areas were free from any endangered animals. There were no resident birds other than common bird species such as Red-whiskered Bulbul, Asian Koel, House crow, Black drangos, Crows, Pond heron etc.

The list of Mammals (*directly sighted animals & Secondary data) is given in table No.3.38. The list of bird species recorded during the field survey and literature from the study area are given in Table 3.39. The list of reptilian species recorded during the field survey and literature from the study area is given in Table 3.40. The list of insect species recorded during the field survey and literature from the study area are given in Table 3.41. The list of Butterflies species recorded during the field survey and literature from the study area are given in Table 3.42. It is apparent from the list that none of the species either spotted or reported is included in Schedule I of the Wildlife Protection Act. Similarly, none of them comes under the REET category.

Taxonomically a total of 71 species recorded were from the buffer zone area. Based on habitat classification the majority of species were birds 35, followed by Butterflies 12, Reptiles 10, Insects 5, Mammals 5, and Amphibians 4. There are five Schedule II species, two species are under the schedule III and fifty four species are under Schedule IV according to the Indian Wildlife Act 1972. A total of 35 species of bird were sighted in the study area. There are no critically endangered, endangered, vulnerable, and endemic species were observed. There are no impacts on nearby fauna species. Dominant species are mostly birds, butterflies, and insects, and four amphibian was observed during the extensive field visit *Sphaerothera breviceps*, *Euphlyctis hexadactylus*, *Bufo melanostictus*, etc., There is no Schedule I Species in the study area. There are no critically endangered, endangered, vulnerable, and endemic species were observed.

TABLE 3.32. LIST OF FAUNA & THEIR CONSERVATION STATUS,

Mammals: (*directly sighted animals & Secondary data)

SI. No	Common Name/English Name	Scientific Name	Schedule list wildlife Protection act 1972
1.	Indian palm squirrel	<i>Funambulus palmarum</i>	Schedule IV
2.	Indian Field Mouse	<i>Mus booduga</i>	Schedule IV
3.	Asian Small Mongoose	<i>Herpestes javanicus</i>	Schedule (Part II)
4.	Indian hare	<i>Lepus nigricollis</i>	Schedule (Part II)
5.	Brown rat	<i>Rattus norvegicus</i>	Schedule IV

TABLE 3.33. LISTED BIRDS

SI. No	Common Name/English Name	Scientific Name	Schedule list wildlife Protection act 1972
1.	Black kite	<i>Milvus migrans</i>	Schedule IV
2.	Jungle babbler	<i>Turdoides striata</i>	Schedule IV
3.	Indian robin	<i>Saxicoloides fulicatus</i>	Schedule IV
4.	Asian Koel	<i>Eudynamis</i>	Schedule IV
5.	Cattle egret	<i>Bubulcus ibis</i>	Schedule IV
6.	Rock pigeon	<i>Columbidae</i>	Schedule IV
7.	Common myna	<i>Acridotheres tristis</i>	Schedule IV
8.	House crow	<i>Corvus splendens</i>	Schedule IV
9.	Red Vented Bulbul	<i>Pycnonotus cafer</i>	Schedule IV
10.	Small Bee Eater	<i>Merops orientalis</i>	Schedule IV

11.	Purple sunbird	Cinnyris asiaticus	Schedule IV
12.	Common hawk-cuckoo	Hierococcyx varius	Schedule IV
13.	House sparrow	Passer domesticus	Schedule IV
14.	Brahminy myna	Temenuchus pagodarum	Schedule IV
15.	Small blue Kingfisher	Alcedo atthis	Schedule IV
16.	Rose-ringed parakeet	Psittacula krameri	Schedule IV
17.	The common woodshrike	Tephrodornis pondicerianus	Schedule IV
18.	Asian Palm Swift	Cypsiurus balasiensis	Schedule IV
19.	Common quail	Coturnix coturnix	Schedule IV
20.	Pond herons	Ardeola grayii	Schedule IV
21.	Black-headed Cuckooshrike	Lalage sykesi	Schedule IV
22.	Black drongo	Dicrurus macrocercus	Schedule IV
23.	Woodpecker bird	Picidae	Schedule IV
24.	Weaver bird	Ploceus philippines	Schedule IV
25.	Two-tailed Sparrow	Dicrurus macrocercus	Schedule IV
26.	Grey drongo	Dicrurus longicaudatus	Schedule IV
27.	Grey Francolin	Francolinus pondicerianus	Schedule IV
28.	Wood Sandpiper	Tringa glareola	Schedule IV
29.	Blue-Tailed Bee Eater	Merops philippinus	Schedule IV
30.	Indian Roller	Coracias benghalensis	Schedule IV
31.	Common Swallow	Hirundo rustica	Schedule IV
32.	Purple Rumped Sunbird	Leptocoma zeylonica	Schedule IV
33.	Common Tailor Bird	Orthotomus sutorius	NL
34.	Purple Sunbird	Cinnyris asiaticus	NL
35.	Lesser Golden Backed Woodpecker	Dinopium benghalense	Schedule IV

Reference: Ali, S. (2002). The Book of Indian Birds (13th revised edition). Oxford University Press, New Delhi. 326pp.

TABLE 3.34. LIST OF REPTILES EITHER SPOTTED OR REPORTED FROM THE STUDY AREA.

(*indicates direct observations & Secondary data)

Sl. No	Common Name/English Name	Scientific Name	Schedule list wildlife Protection act 1972
1.	Oriental garden lizard	Calotes versicolor	NL
2.	House lizards	Hemidactylus flaviviridis	Schedule IV
3.	Indian cobra	Naja naja	Sch II (Part II)
4.	Green vine snake	Ahaetulla nasuta	Schedule IV
5.	Rat snake	Ptyas mucosa	Sch IV (Part II)
6.	Common krait	Bungarus caeruleus	Schedule IV
7.	Common skink	Mabuya carinatus	NL
8.	Russell's viper	Vipera russeli	Sch II (Part II)
9.	Fresh water snake	Nerodia piscator	Sch III (Part II)
10.	Fresh water tortoise	Groemyda bijuga	Sch III (Part II)

TABLE 3.35. LIST OF INSECTS EITHER SPOTTED OR REPORTED FROM THE STUDY AREA

SI. No	Common Name/English Name	Scientific Name	Schedule list wildlife Protection act 1972
1.	Indian honey bee	Apis cerana	-
2.	Termite	Hamitermes silvestri	NE
3.	Grasshopper	Hieroglyphus sp	NL
4.	Ant	Camponotus Vicinus	NL
5.	Dragonfly	Ceratogomphus pictus	-

TABLE.3.36. LIST OF BUTTERFLIES REPORTED FROM THE STUDY AREA

SI. No	Common Name/English Name	Scientific Name	Schedule
1.	Indian palm bob	Suastusgremius	Schedule IV
2.	Common Mormon	Papilio polytes	Schedule IV
3.	Common rose	Pachlioptaaristolochiaee	Schedule IV
4.	Spotless grass yellow	Eurema laeta	Schedule IV
5.	Common Tiger	Danaus genutia	Schedule IV
6.	Common emigrant	Catopsiliapomona	Schedule IV
7.	Crimson tip	Colotisdanae	Schedule IV
8.	Common Indian crow	Euploea core	Schedule IV
9.	Lime Butterfly	Papilio demoleus	Schedule IV
10.	Yellow Pansy	Junonia hierta	Schedule IV
11.	Chocolate Pansy	Junonia iphita	Schedule IV
12.	Double-branded Black Crow	Euploea sylvester	Schedule IV

3.5.12 Aquatic Ecology

Mining activities will not have an impact on aquatic ecosystems because no effluent discharge from the Limestone mine is planned. There are no natural perennial surface water bodies, such as marshes, rivers, streams, lakes, or agricultural sites, inside the mining lease area. The study region contains a few seasonal bodies of water. There is no aquatic flora and, aquatic faun. Hence, it does not harbour any significant aquatic life. Therefore, the project is not likely to affect the aquatic ecology. Aquatic weeds are found to be growing everywhere in 10 km radius area, in every water bog, pond, etc. *Typha angustata* can be found growing all along the drains of villages, small water-logged depressions, and agricultural fields lacking water but containing enough moisture to support its growth. And where water is present, *Eichhornia crassipes* has taken its roots and covers the entire water surface by its sprawl and invasion.

3.5.12.1. Objectives of Aquatic Studies

- ✓ Generating data through actual field collection in these locations over the study period; and
- ✓ Impacts on aquatic fauna/flora
- ✓ Consulted with locals to obtain knowledge about aquatic flora and animals.

3.5.12.2. Macrophytes

The macrophytes observed within the study area are tabulated in Table 3.43

TABLE NO.3.37 DESCRIPTION OF MACROPHYTES

Sl. No	Scientific name	Common Name	Vernacular Name (Tamil)	IUCN Red List of Threatened Species
1.	<i>Eichornia crassipe</i>	Water hyacinth	Agayatamarai	NA
2.	<i>Aponogeton natans</i>	Floating lace plant	Kottikizhnagu	NA
3.	<i>Nymphaea nouchali</i>	Blue water lily	Nellambal	LC
4.	<i>Typha angustifolia</i>	Sambu	Narrowleaf cattail	LC
5.	<i>Carex cruciata</i>	Cross Grass	Koraipullu	NA
6.	<i>Cyperus exaltatus</i>	Tall Flat Sedge	Koraikizhangu	LC

Sources: Species observation in the field study

3.5.12.3 Aquatic Faunal Diversity

Amphibian species like the common Indian Burrowing frog, and Green pond frog, and etc. were sighted near the water bodies located in the study area.

TABLE NO. 3.38. AMPHIBIANS OBSERVED/RECORDED FROM THE STUDY AREA

Sl. No	Common Name/English Name	Scientific Name	Schedule list wildlife Protection act 1972
1.	Indian Burrowing frog	Sphaerotheca breviceps	Schedule IV
2.	Green pond frog	Euphlyctis hexadactylus	Schedule IV
3.	Indian Toad	Bufo melanostictus	Schedule IV
4.	Skipper	Euphlyctis cynophlyctis	Schedule IV

3.5.13 Other Aquatic Fauna

3.5.13.1. Fishes

The study area has low aquatic diversity, with few types of fish living. The species of fish reported during the primary visit are Rohu, Catla, Catfish, etc. Species of fish reported in the study area are given in table 3.45.

TABLE 3.39. BASED ON ACTUAL SIGHTING, BASED ON INPUTS FROM LOCALS AND PERUSED FROM SECONDARY DATA

S.No	Common name	Scientific name	Family
1.	Ponithia	Puntius sophore	Cyprinidae
2.	Catla	Catla Catla	Cyprinidae
3.	Silver scabbardfish	Lepidopus caudatus	Trichiuridae
4.	Catfish	Siluriformes	-
5.	Rohu	Labeo rohita	Cyprinidae
6.	Eel fish	Electrophorus electricus	Gymnotidae

3.5.14 Findings/Results

The assessment was carried out during the summer season. The inspection day was quite alright with respectable weather. The details of the flora and fauna observed are given below.

Records of threatened species in the area

No threatened species were observed

Endangered Species as per Wildlife (Protection) Act

No Endangered fauna was recorded in the project area.

Endemic Species of the Project areas

No endemic species were observed in the project area.

Migratory species of the Project areas

No migratory fauna observed in project area.

Migratory corridors and Flight paths

No migratory corridors and Flight paths were observed in project area.

Breeding and spawning grounds

No breeding and spawning grounds were earmarked for the wildlife fauna in project area.

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 10km radius. Hence no specific conservation for conservation of any RET species or Wildlife is envisaged.

There are no National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar sites, Tiger/Elephant Reserves/(existing as well as proposed) within 10 km of the mine lease area. There are no protected forests within the project area. Hence submission of clearance from the National Board of Wildlife does not arise.

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.

3.9. Conclusion

The observations and assessment of the overall ecological scenario involve details such as classification of Biogeographic zone, eco-region, habitat types and land cover, distances from natural habitats, vegetation/forest types, and sensitive ecological habitats such as Wetlands sites, Important Bird areas, migration corridors of important wildlife etc. Such baseline information provides better understanding of the situation and overall ecological importance of the area. This baseline information viewed against proposed project activities help in predicting their impacts on the wildlife and their habitats in the region. Data collected and information gathered from secondary literature on flora, fauna, protected area, natural habitats, and wildlife species etc., and consulted and discussed with local people, from the villages, herders and farmers who inhabit close to the proposed project area.

3.6 Socio Economic Environment

The major developmental activities in mining /Industrial sector are required for economic development as well as creation of employment opportunities (direct and indirect) and to meet the basic/modern needs of the society, which ultimately results in overall improvement of the quality of life through upliftment of social, economic, health, education and nutritional status in the project region, state as well as the country. In this manner all developmental projects have direct as well as indirect relationships with socioeconomic aspects, which also include public acceptability for new developmental projects. Thus, the study of socioeconomic component incorporating various facets related to prevailing social and cultural conditions and economic status of the Rough stone and Gravel quarry project region is an important part of EIA study. The study of these parameters helps in identification, prediction and evaluation of the likely impacts on the socio economics and parameters of human interest due to the project.

3.6.1 Objectives of the Study

The objectives of the socio-economic impact assessment are as follows:

- a) To study the socio-economic status of the people living in the study area of the project.
- b) To identify the basic needs of the nearby villages within the study area.
- c) To assess the impact on socio-economic environment due to the project.
- d) To provide the employment and improved living standards.
- e) To study the socio-economic status of the people living in the study area Rough stone and Gravel quarry project region.
- f) To assess the impact on socio-economic environment due to Rough stone and Gravel quarry project region.
- g) To analysis of impact of socio economic and Environmental Infrastructure facilities and road accessibility.

3.6.2 Scope of Work

- To study the Socio-economic Environment of area from the secondary sources

- Developing a questionnaire for Survey
- Data Collection and Analysis
- Identification of impacts due to the mining projects
- Mitigation Measures

3.6.3 Methodology

The methodology adopted for the socio-economic impact assessment is as follows:

- a) The details of the activities and population structure have been obtained from Census 2001 and 2011 and analyzed.
- b) Based on the above data, impacts due to plant operation on the community have been assessed and recommendations for further improvement have been made.

3.6.4 Sources of Information and Data Base

To achieve the above objectives, the information has been collected from both primary and secondary sources. Both primary data and secondary data have been analyzed by means of suitable statistical techniques for the purpose of verifying the above selected hypotheses concerned with the surrounding area.

3.6.5 Primary Survey

The primary data collection includes the collection of data through a structured interview schedule by direct observation method. The questionnaire survey includes both open and closed methods. The sample size is limited respondents, who were selected on the basis of simple random sampling from Morattupalayam Village, Uthukuli Taluk, Tiruppur District, Tamilnadu State. in the field survey has been divided into three major segments namely Primary Zone (0 - 3 km), Secondary Zone (3 - 7 km) and tertiary Zone (7 - 10 km).

The questionnaires were designed to suit the subjects considering their rural background enabling to furnish correct information and data as far as possible. Data were collected at village level and household level by questionnaires and focused group discussions.

3.6.6 Collection of Data from Secondary Sources

Data from secondary sources were collected on following aspects:

- Demographic profile of the area
- Economic profile of the area

TABLE 3.40 TYPE OF INFORMATION AND SOURCES

Information	Source
Demography	District Census Handbook, Govt. of India
Economic profile of the area	Census of India, Tamil Nadu State

b) Data Presentation and Analysis

The data collected were presented in a suitable, concise form i.e., tabular or diagrammatic or graphic form for further analysis. These tabulated data were interpreted and analysed with the help of various qualitative techniques and ideographic approaches.

3.7 Background Information of the Area

3.7.1 Tiruppur District

Tiruppur district was formed after separating from Coimbatore and Erode districts in Tamilnadu by the year 2008. Taluks like Avinashi, Palladam, Udumalaipettai, and Tiruppur from Coimbatore and Taluks like Kangayam, Dharapuram from Erode were separated and formed new district Tiruppur in Tamilnadu. The districts of Coimbatore, Erode, Karur and Dindigul and the state of Kerala border Tiruppur district.

Tiruppur is the 32nd district of Tamilnadu. Tiruppur is well known as the textile city of Tamilnadu. The district is famous for its cotton market and banyan mills. Tiruppur is a wonderful district which brings good income to India through banyan export.

There cannot be anyone who does not know about Uthukuli Butter near Tiruppur. Rivers like Noyyal, Amaravathi, Somanur, Uthukuli, Vanchipalayam, Koolipalayam flow here.

Tiruppur Administration

Revenue Divisions	- 3 (Tiruppur, Dharapuram, Udumalaipettai)
Taluks	- 7 (Avinashi, Dharapuram, Kangayam, Madathukulam, Palladam, Tiruppur, Udumalaipettai)
Corporation	- 1 (Tiruppur)
Municipalities	- 7 (S.Nallur, Dharapuram, Palladam, Udumalaipettai, Velampalayam, Vellakoil, Kangayam)
Blocks	- Avinashi, Gudimangalam, Kundah Dam, Mulanur, Pongalur, Udumalaipettai, Vellakoil, Dharapuram, Kangayam, Madathukulam, Palladam, Tiruppur, Uthukuli
Town Panchayats	- Muthur, Kannivadi, Chinnakapalayam, Madathukulam, Samalapuram, Kunnathur, Kangayam, Mulanur, Avinashi, Kaniyur, Sankararamanallur, Uthukuli, Ruthravathy, kolathupalayam, Thali, Kumaralingam, Thirumuruganpoondi

Parliamentary Constituency - 1 (Tiruppur)

State Assembly Constituency - 8 (Kangayam, Avinashi, Palladam, Udumalaipettai, Tiruppur North, Tiruppur South, Dharapuram, Madathukulam)

3.11 Study Area

Detailed socio-economic survey was conducted in the study area (Core and buffer zone) within 10 km radius of the area at Morattupalayam Village, Uthukuli Taluk, Tiruppur District, Tamil Nadu State. In order to determine the impact of the proposed project on nature and inhabitant. To get an overview of the villagers and their perspectives about this proposed activity, different demographic parameters and social aspects such population density, sex ratio, literacy rate, worker ratio etc. has been identified, analysed, studied together. These impacts may be beneficial or disadvantageous. If disadvantageous anticipated suggestions measures are advocated in order to have collective development.

3.12 Demographic pattern of 10km study area characteristics a comparative analysis

TABLE 3.41 SHOWS THE SOCIO-ECONOMIC PROFILE OF THE STUDY AREA

Particular	India	Tamil Nadu	Tiruppur District
Area (in sq. km.)	3,287,263	130058	5087
Population Density/ sq. Km.	368	554	487
No. of Households	249454252	13357027	712210
Population	1210569573	72147030	2479052
Male	623121843	36137975	1246159
Female	587447730	36009055	1232893
Scheduled Tribes	104281034	794697	5458
Scheduled Castes	201378086	14438445	395876
Literacy Rate (%)	72.99	80	71
Sex Ratio (Females per 1000 Males)	943	996	989

Source: Census of India, 2011

3.12 Morattupalayam Town Population Census 2011 - 2023

Morattupalayam is a Census Town city in district of Tiruppur, Tamil Nadu. The Morattupalayam Census Town has population of 5,798 of which 2,900 are males while 2,898 are females as per report released by Census India 2011.

Morattupalayam 2023 Population

Current estimated population of Morattupalayam Census Town in 2023 is approximately 7,900. The schedule census of 2021 for Morattupalayam city is postponed due to covid. We believe new population census for Morattupalayam city will be conducted in 2023 and same will be updated once its done. The current data for Morattupalayam town are estimated only but all 2011 figures are accurate. Source: <https://www.census2011.co.in/data/town/644778-morattupalayam-tamil-nadu.html>

3.13 Sex Ratio

Population of Children with age of 0-6 is 586 which is 10.11 % of total population of Morattupalayam (CT). In Morattupalayam Census Town, Female Sex Ratio is of 999 against state average of 996.

Child Sex Ratio in Morattupalayam is around 915 compared to Tamil Nadu state average of 943.

3.14 Literacy rate of Morattupalayam city is 70.53 % lower than state average of 80.09 %. In Morattupalayam, Male literacy is around 79.72 % while female literacy rate is 61.42 %.

Morattupalayam Census Town has total administration over 1,681 houses to which it supplies basic amenities like water and sewerage. It is also authorized to build roads within Census Town limits and impose taxes on properties coming under its jurisdiction.

3.15 Morattupalayam Project Population

Year	Population
2011	5,798
2021	7,500
2022	7,700
2023	7,900
2024	8,100
2025	8,300
2026	8,500
2027	8,700
2028	8,900
2029	9,100
2030	9,300
2031	9,500

3.16 Workers Population

Out of total population, 3,062 were engaged in work or business activity. Of this 1,891 were males while 1,171 were females. In census survey, worker is defined as person who does business, job, service, and cultivator and labour activity. Of total 3062 working population, 87.66 % were engaged in Main Work while 12.34 % of total workers were engaged in Marginal Work.

3.17 Basic Amenities

A better network of physical infrastructure facilities (well-built roads, rail links, irrigation, power and telecommunication, information technology, market-network and social infrastructure support, viz. health and education, water and sanitation, veterinary services and co-operatives) is essential for the development of the rural economy. A review of infrastructure facilities available in the area has been done based on the information from baseline survey of the study area. In this review, the villages which fall within 10Km radius round the site has been considered. Infrastructure facilities available in the area have been described in the subsequent sections as below:

1. Educational Facilities

Education is considered to be one of the most dominant indicators towards the development of a region. According to baseline survey, education facilities are available in the villages within the study area. All the villages have schools only up to primary and middle level, higher level education facilities very less only one-degree college available in Tiruppur. Improved educational facilities will be provided by proponent, which will contribute Improvement in awareness level of the villagers.

2. Health Facilities

Medical facilities are available. There are majorly non-Government medical facilities/medicine shop available in the area. There is only one dispensary / health center available and no Primary Health Sub-Centers available in the study area. There is no such case of epidemic or some special diseases in the region. Normal cases of diseases i.e. Cough, cold, fever, headache etc. are reported in the region.

3. Other Infrastructure Facilities

Basic facilities are available in study area as educational facilities, health, transportation, electricity, drinking water, market, bank, post office, petrol pump; Aanganbadi Centers, Community Hall, Cooperative bank and Commercial Bank etc. are available.

➤ Transport Facilities

The study area is served by road transport. Most of the villages connected by bus/other transport services. The area has a moderate road network, which includes state highway, major District Roads and other roads within 10 km radius of the lease boundary. Major District Road is passing through the adjacent of Quarry area.

➤ Electrification in the Area

100% villages in the study area are electrified. Electricity is available for domestic, commercial, industrial agricultural and public lighting purposes.

➤ Drinking Water Facility

Village people are availing Drinking water facilities generally from Tap water, Pond, Well, Tube well, Hand Pump, River etc. In few villages like Kullayur, Velliyampalayam, Kavundampalayam Villages, etc. there is problem of drinking water facility.

3.22 Interpretation

Based on the data, following inferences could be drawn:

- Total literacy rate in the study area is 70.53%.
- The study area had average educational facilities. The overall status depicts that the education is limited to primary and middle level.
- The study area is well connected by District/Village Road.
- The study area well health facilities of primary level.
- Considering the above facts, the proposed project will boost the socio-economic development activities in the area and hence will leave positive impact.
- The study area has mobile connectivity

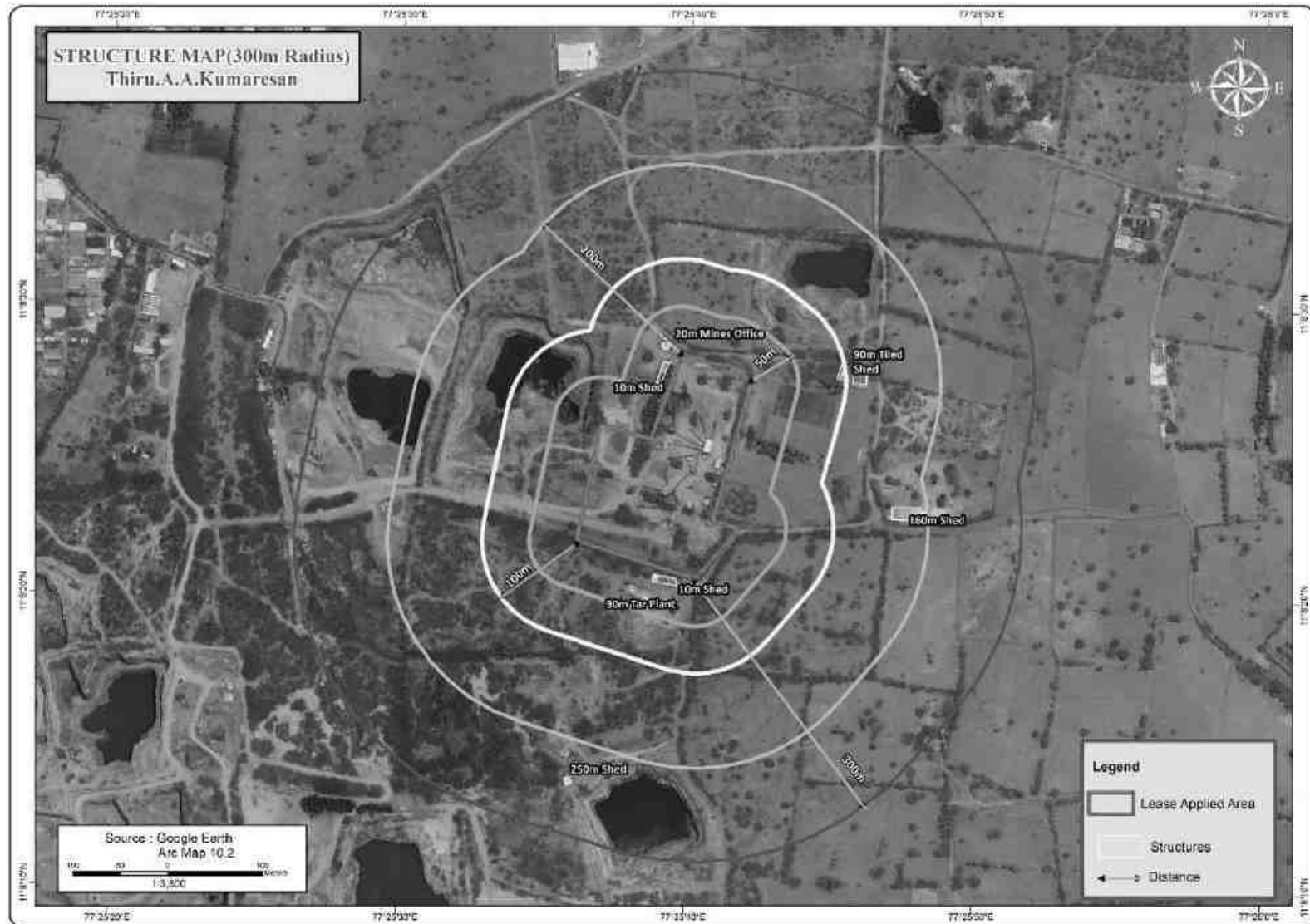
FIGURE .3.23 STRUCTURE MAP AROUND 500M RADIUS

TABLE 3.42 STRUCTURE MAP AROUND 300M RADIUS

Enumeration of Structures from 0 - 300m Radius						
Structure Numbers	Distance & Direction from the project site	Structure Details and Usage Purpose	Type of Structure Structures (Kutchu/ Brick/ Cement/ RCC/ Framed Structures)	No of Occupants	Structure belongs to owner (Yes/No)	Remarks
1	10m – West	Shed	Sheet Structure	Nil	Yes	Used to store mines materials
2	10m – South	Shed	Sheet Structure	3 Nos	No	Tar plant's Labour rest shed & office – No Stay
3	20m – NE	Mines Office	Brick Cement Structure	2 Nos	Yes	Used to store mines documents – No Stay
4	30m – South	Tar plant	Sheet Structure	2 Nos	No	To mixing Tar & Jelly
5	90m – NE	Tiled Shed	Tiled Structure	Nil	No	Used to store mines materials & Labour Shed
6	160m – East	Shed	Sheet Structure	Nil	No	Used to store mines materials
7	250m – South	Shed	Sheet Structure	Nil	No	Used to store mines materials

3.18 Recommendations and Suggestion

- ❖ There is no habitation within the radius of 300m. The Structures located within 300m & 500m are enumerated in the above table
- ❖ The surrounding areas are built up by Grinding stone units, Crusher units and other industrials related to the mining apart from this cloth dying units are situated in 500m radius
- ❖ It is an existing quarry and the mining activities are carried out in this region without major hindrance to the public
- ❖ It is recommended to follow the Environmental Management plan as per this report to control the Noise, Vibration and dust propagation
- ❖ Education Awareness program is being/will be conducted to make the population aware and better treatment for livelihood.
- ❖ Vocational training session is being/will be organized to provide self-employment to the women and unemployment youth.
- ❖ Healthcare Centre and Ambulance facility is being/will be provided to make the population get easy medical facilities.
- ❖ Natural Resource Management and Environmental Conservation.
- ❖ On the basis of qualification and skills local youths is being/will be employed. Long term and short-term employments is being/will be generated.
- ❖ Health care center and ambulance facility is being/will be provided to make the population get easy medical facilities.
- ❖ Basic amenities and facilities are being/will be made available to the people and there will be proper maintenance of the facilities already provided by the government in the study area through various CSR activities conducted by Proposal proponent.

3.19 CONCLUSION

To evaluate the impacts of proposed rough stone and gravel quarry project on the surrounding area, it is vital to assess the baseline status of the environmental quality in the locality of the site. Socio-Economic Survey was also conducted during the study period which revealed that area further require improvement in the Economy and Infrastructure Development of the area. Hence it can be concluded that the present baseline environment status of the study area will not be affected by the proposed project as **Thiru.A.A. Kumaresan Rough Stone and Gravel Quarry** will adopt adequate control measures to protect the surrounding environment and will contribute in development of the study areas.

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.

CHAPTER – 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.

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
- Water Environment
- Air Environment
- Noise Environment
- Socio economic environment
- Solid waste
- Soil environment

4.1 **Land Environment**

4.1.2 **Anticipated Impact from Proposed Project**

- Permanent or temporary change on land use and land cover.
- Change in Topography: Topography of the ML area will change at the end of the life of the mine.
- Movement of heavy vehicles sometimes cause problems to agricultural land, human habitations due to dust, noise and it also causes traffic hazards.
- Due to degradation of land by pitting the aesthetic environment of the core zone may be affected.
- Earthworks during the rainy season increase the potential for soil erosion and sediment laden water entering the water ways.
- If no due care is taken wash off from the exposed working area may choke the water course & can also causes the siltation of water course

4.1.2.1 **Mitigation Measures for Proposed Project**

- It is an existing project the area has been already broken up. The mining activity has been carried out in this surrounding region for the past 15 years
- 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
- The mining activity will be gradual confined in blocks and excavation will be undertaken progressively along with other mitigative measures like phase wise development of greenbelt etc.,
- Construction of garland drains all around the quarry pits and construction of check dam at strategic location in lower elevations to prevent erosion due to surface runoff during rainfall and also to collect the storm water for various uses within the proposed area
- Thick plantation will be carried out on unutilized area, top benches of mined out pits, on safety barrier, etc.,
- At conceptual stage, the land use pattern of the quarry will be changed into Greenbelt area and temporary reservoir
- In terms of aesthetics, natural vegetation surrounding the quarry will be retained (such as in a buffer area i.e., 7.5 m safety barrier and other safety provided) so as to help minimise dust emissions.

- Proper fencing will be carried out at the conceptual stage, Security will be posted round the clock, to prevent inherent entry of the public and cattle

4.1.3 Soil Environment

4.1.4 Impact on Soil Environment

The top layer of the project site in the form of Gravel formation, the Gravel will be directly loaded into tippers for the filling and levelling of low-lying areas. There is no disposal of Gravel. The excavated rough stone will be directly loaded into dumpers to the needy customers.

There will be no disposal of waste water from the quarry operation, No discharge of toxic effluent from the proposed projects. The dust emission at working face and haul roads will be controlled by water sprinkling and plantation.

Erosion and Sedimentation (Removal of protective vegetation cover; Exposure of underlying soil horizons that may be less pervious, or more erodible than the surface layers; Reduced capacity of soils to absorb rainfall; Increased energy in storm-water runoff due to concentration and velocity; and Exposure of subsurface materials which are unsuitable for vegetation establishment).

4.1.5 Mitigation Measures for Proposed Project

- Run-off diversion – Garland drains will be constructed all around the project boundary to prevent surface flows from entering the quarry works areas. 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. These trap sediments 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 are no wastages anticipated in this rough stone and gravel quarrying operation. The entire quarried out materials will be utilized (100%).

The overburden in the form of gravel formation the gravel will be also sold to needy customers for the filling and levelling of low-lying areas.

4.2 *Water Environment*

4.2.1 Anticipated Impact on Surface and ground water

The impact due to quarrying on the water quality is expected to be insignificant because of no use of chemicals or hazardous substances during quarrying process. The quarrying activity will not intersect ground water table as the maximum depth of the quarry in the cluster is 30m and water table is found at a depth of 70-65m BGL. The quarrying operation will be carried out well above the water table. There is no intersection of surface water bodies (Streams, Canal, Odai etc.,) in the project area. During rainy season rain water will be collected in the quarry pit and later used for greenbelt development and for the water sprinkling in the haul roads. There is no proposal for discharging of quarry pit water outside the project area.

TABLE 4.1: WATER REQUIREMENTS

*Purpose	Quantity	Source
Domestic & Drinking purpose	0.5KLD	From existing, bore wells and drinking water will be sourced from Approved water vendors.
Dust Suppression	1.0KLD	From Existing bore wells from nearby area
Green Belt	1.0KLD	From Existing bore wells from nearby area
Total	2.5 KLD	

* Water for drinking purpose will be brought from approved water vendors

Source: Approved Mining Plan Pre-Feasibility Report

Total water requirement in the cluster quarries is about 2.5 KLD, the water for dust suppression and greenbelt development will be sourced from the mine pit water collected during rainy seasons, the water for domestic purpose and drinking will be sourced from the approved water vendors.

4.2.2 Mitigation Measures:

- 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 judiciously utilize the rainwater as part of rainwater harvesting system.
- Providing benches with inner slopes and through a system of drains and channels, allowing rain water to descent into surrounding drains, so as to minimize the effects of erosion & water logging arising out of uncontrolled descent of water.
- Reuse the water collected during storm for dust suppression and greenbelt development within the mines
- Installing interceptor traps/oil separators to remove oils and greases. Water from the tipper wash-down facility and machinery maintenance yard will pass through interceptor traps/oil separators prior to its reuse;
- Using flocculating or coagulating agents to assist in the settling of suspended solids during monsoon seasons;
- Periodic (every 6 months 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.
- Regular monitoring (every 6 months once) and analysing the quality of water in open well, bore wells and surface water

4.3 Air Environment

The air borne particulate matter is the main air pollutant in this opencast mining. The mining operation will be carried out by jackhammer drilling (35mm dia) and Hydraulic Excavators will be utilized for excavation of Rough Stone waste.

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 Proposed Project

Wind erosion of the exposed areas and the air borne particulate matter generated by quarrying operation, and transportation are mainly PM₁₀ & PM_{2.5} and emissions of Sulphur dioxide (SO₂) & Oxides of Nitrogen (NO_x) due to excavation/loading equipment and vehicles plying on haul roads are the cause of air pollution in the project area.

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.

The impact on Air Environment is due to the mining and allied activities during Land Development phase, Mining process and Transportation. The emissions of Sulphur dioxide (SO₂), Oxides of Nitrogen (NO_x) due to excavation/loading equipment and vehicles plying on haul roads are marginal. Loading - unloading and transportation of Rough Stone, wind erosion of the exposed area and movement of light vehicles will be the main polluting source in the mining activities releasing Particulate Matter (PM₁₀) affecting Ambient Air of the area. Prediction of impacts on air environment has been carried out taking into consideration cumulative production three proposed quarries. Air environment and net increase in emissions by Open pit source modelling in AERMOD Software.

4.3.1.2 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 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 4-2.

TABLE 4.2: ESTIMATED EMISSION RATE

	Activity	Source type	Value	Unit
Estimated Emission Rate for PM ₁₀	Drilling	Point Source	0.082331503	g/s
	Blasting	Point Source	0.000915050	g/s
	Mineral Loading	Point Source	0.042281670	g/s
	Haul Road	Line Source	0.00249171	g/s/m
	Overall Mine	Area Source	0.057963764	g/s
Estimated Emission Rate for SO ₂	Overall Mine	Area Source	0.000652283	g/s
Estimated Emission Rate for NO _x	Overall Mine	Area Source	0.000037801	g/s

4.3.2 Frame work of Computation & Model details

The prediction included the impact of Excavation, Drilling, Blasting, 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 PM₁₀ was observed close to the source due to low to moderate wind speeds. Incremental value of PM₁₀ was superimposed on the base line data monitored at the proposed site to predict total GLC of PM₁₀ due to combined impacts

Air Pollution Dispersion Modelling

Baseline Air Quality –

Baseline air quality has been measured at 2 locations in the cluster and 6 locations within the buffer zone of the study area. The 24 - hourly average samples of particulate matters (PM₁₀ and PM_{2.5}), SO₂ and NO_x were measured following the National Ambient Air Quality Standards (NAAQS), 2009. Monitoring data of 7 sampling stations are given below –

Meteorological Data –

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 and monitored continually for study period without break. The station was installed at a height of 4 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. A weather data was collected from IMD, Tiruppur agro for the month of Mar – May2022 to correlate with site data and found not much of change in the parameters.

FIGURE 4.1: AERMOD TERRAIN MAP

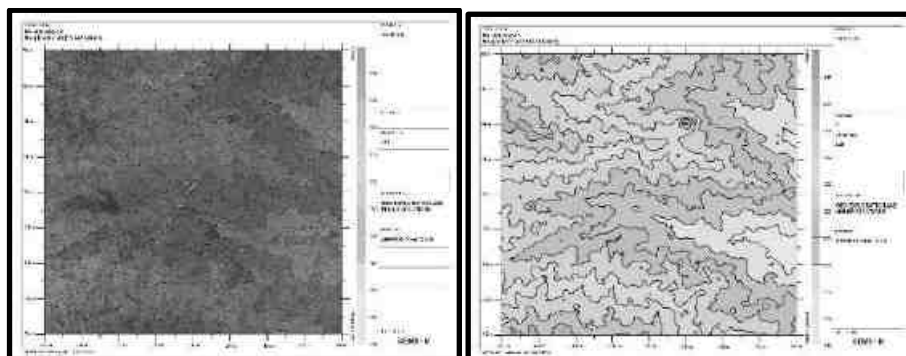


FIGURE 4.2: PREDICTED INCREMENTAL CONCENTRATION OF PM₁₀

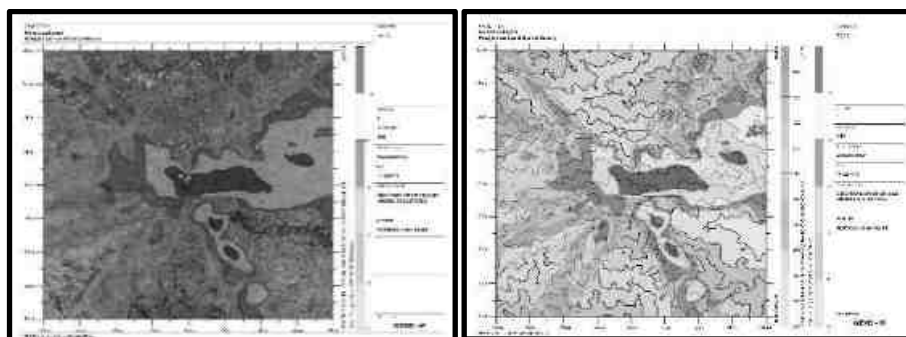
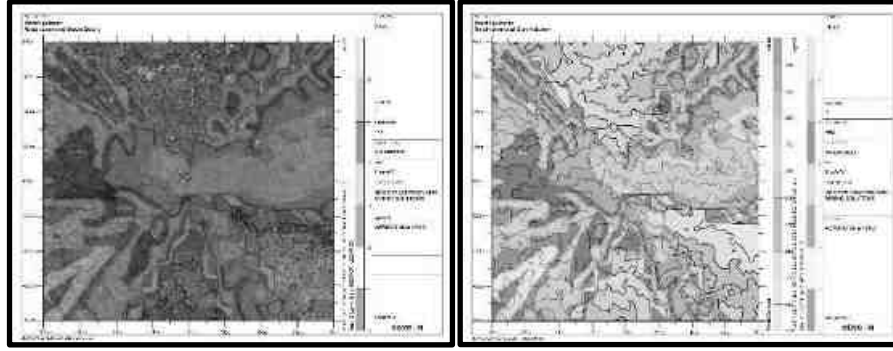
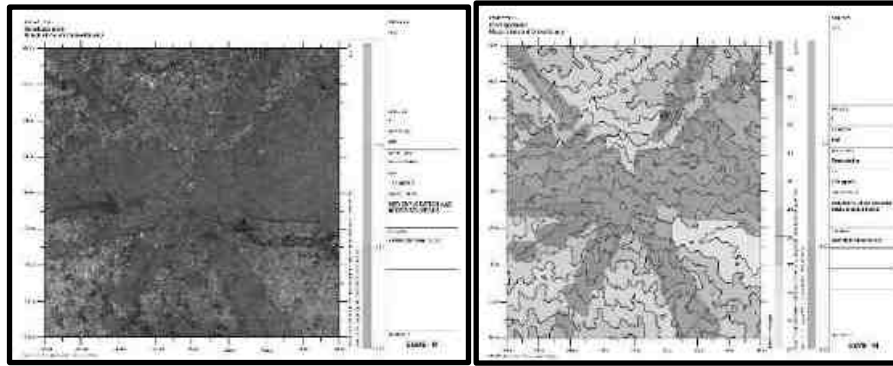
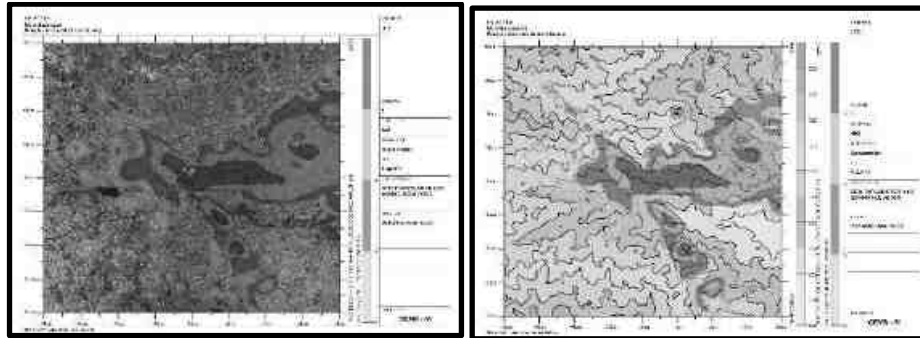
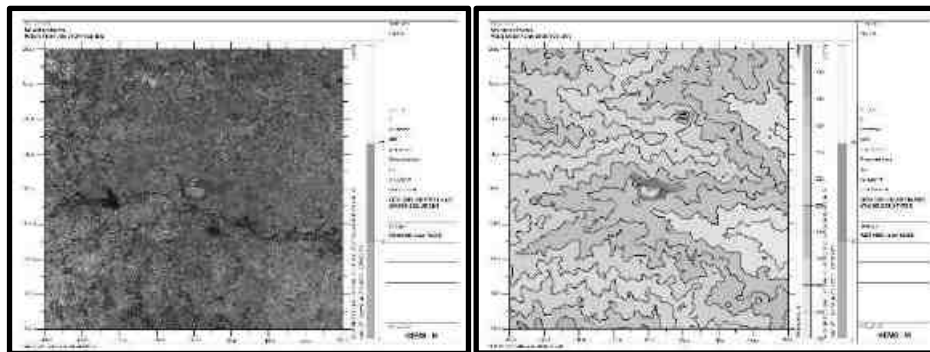


FIGURE 4.3: PREDICTED INCREMENTAL CONCENTRATION OF PM_{2.5}**FIGURE 4.4: PREDICTED INCREMENTAL CONCENTRATION OF SO₂****FIGURE 4.5: PREDICTED INCREMENTAL CONCENTRATION OF NO_x****FIGURE 4.6: PREDICTED INCREMENTAL CONCENTRATION OF FUGITIVE DUST**

4.3.2.1 Model Results

The post project Resultant Concentrations of PM₁₀, PM_{2.5}, SO₂& NO_x (GLC) is given in Table below:

TABLE 4.3: INCREMENTAL & RESULTANT GLC OF PM₁₀

Station Code	Location	X Coordinate (m)	Y Coordinate (m)	Average Baseline PM ₁₀ (µg/m ³)	Incremental value of PM ₁₀ due to mining (µg/m ³)	Total PM ₁₀ (µg/m ³) (5+6)
AAQ1	11° 8'27.72"N 77°25'41.47"E	53	99	43.5	14.93	58.43
AAQ2	11° 8'22.48"N 77°25'36.78"E	-94	-61	43.9	14.61	58.51
AAQ3	11° 8'29.69"N 77°25'26.38"E	-409	156	44.3	14.21	58.51
AAQ4	11° 6'12.41"N 77°23'58.21"E	-1913	-3288	45.4	8.40	53.8
AAQ5	11° 9'27.20"N 77°27'45.12"E	3831	1945	43.0	10.50	53.5
AAQ6	11° 6'29.73"N 77°27'7.92"E	2695	-3559	42.1	0	42.1
AAQ7	11°11'24.26"N 77°23'53.51"E	-4257	4358	43.5	9.66	53.16

TABLE 4.4: INCREMENTAL & RESULTANT GLC OF PM_{2.5}

Station Code	Location	X Coordinate (m)	Y Coordinate (m)	Average Baseline PM _{2.5} (µg/m ³)	Incremental value of PM _{2.5} due to mining (µg/m ³)	Total PM _{2.5} (µg/m ³) (5+6)
AAQ1	11° 8'27.72"N 77°25'41.47"E	53	99	18.6	6.89	25.49
AAQ2	11° 8'22.48"N 77°25'36.78"E	-94	-61	20.5	6.52	27.02
AAQ3	11° 8'29.69"N 77°25'26.38"E	-409	156	18.5	6.30	24.8
AAQ4	11° 6'12.41"N 77°23'58.21"E	-1913	-3288	20.1	4.90	25.0
AAQ5	11° 9'27.20"N 77°27'45.12"E	3831	1945	19.3	5.82	25.12
AAQ6	11° 6'29.73"N 77°27'7.92"E	2695	-3559	18.3	1.85	20.15
AAQ7	11°11'24.26"N 77°23'53.51"E	-4257	4358	19.5	5.31	24.81

TABLE 4.5: INCREMENTAL & RESULTANT GLC OF SO₂

Station Code	Location	X Coordinate (m)	Y Coordinate (m)	Average Baseline SO ₂ (µg/m ³)	Incremental value of SO ₂ due to mining (µg/m ³)	Total SO ₂ (µg/m ³) (5+6)
AAQ1	11° 8'27.72"N 77°25'41.47"E	53	99	6.3	1.79	8.09
AAQ2	11° 8'22.48"N 77°25'36.78"E	-94	-61	6.1	1.75	7.85
AAQ3	11° 8'29.69"N 77°25'26.38"E	-409	156	6.0	1.70	7.7
AAQ4	11° 6'12.41"N 77°23'58.21"E	-1913	-3288	5.8	0.97	6.77
AAQ5	11° 9'27.20"N 77°27'45.12"E	3831	1945	6.0	1.58	7.58
AAQ6	11° 6'29.73"N 77°27'7.92"E	2695	-3559	5.5	0	5.5
AAQ7	11°11'24.26"N 77°23'53.51"E	-4257	4358	5.9	1.24	7.14

TABLE 4.6: INCREMENTAL & RESULTANT GLC OF NO_x

Station Code	Location	X Coordinate (m)	Y Coordinate (m)	Average Baseline NO _x (µg/m ³)	Incremental value of NO _x due to mining (µg/m ³)	Total NO _x (µg/m ³) (5+6)
AAQ1	11° 8'27.72"N 77°25'41.47"E	53	99	21.5	9.79	31.29

AAQ2	11° 8'22.48"N 77°25'36.78"E	-94	-61	22.1	9.42	31.52
AAQ3	11° 8'29.69"N 77°25'26.38"E	-409	156	21.6	9.18	30.78
AAQ4	11° 6'12.41"N 77°23'58.21"E	-1913	-3288	23.4	1.70	25.1
AAQ5	11° 9'27.20"N 77°27'45.12"E	3831	1945	22.1	5.29	27.39
AAQ6	11° 6'29.73"N 77°27'7.92"E	2695	-3559	19.9	0	19.9
AAQ7	11°11'24.26"N 77°23'53.51"E	-4257	4358	19.1	4.00	23.1

TABLE 4.7: INCREMENTAL & RESULTANT GLC OF FUGITIVE DUST

Station Code	Location	X Coordinate (m)	Y Coordinate (m)	Average Baseline Fugitive ($\mu\text{g}/\text{m}^3$)	Incremental value of Fugitive due to mining ($\mu\text{g}/\text{m}^3$)	Total Fugitive ($\mu\text{g}/\text{m}^3$) (5+6)
AAQ1	11° 8'27.72"N 77°25'41.47"E	53	99	62.02	27.82	89.84
AAQ2	11° 8'22.48"N 77°25'36.78"E	-94	-61	62.07	27.45	89.52
AAQ3	11° 8'29.69"N 77°25'26.38"E	-409	156	63.05	27.00	90.05
AAQ4	11° 6'12.41"N 77°23'58.21"E	-1913	-3288	67.90	0	67.90
AAQ5	11° 9'27.20"N 77°27'45.12"E	3831	1945	59.00	0	59.0
AAQ6	11° 6'29.73"N 77°27'7.92"E	2695	-3559	57.41	0	57.41
AAQ7	11°11'24.26"N 77°23'53.51"E	-4257	4358	64.41	0	64.41

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 $\mu\text{g}/\text{m}^3$ for PM₁₀, SO₂ & NO_x respectively. By adopting suitable mitigation measures, the pollutant levels in the atmosphere can be further being controlled.

4.3.4. Mitigation Measures for Proposed Project

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 tarpaulin.
- The speed of tippers plying on the haul road will be limited below 20 km/hr to avoid generation of dust.
- Water sprinkling on haul roads & loading points will be carried out twice a day.
- Main source of gaseous pollution will be from vehicle used for transportation of mineral; therefore, weekly maintenance of machines improves combustion process & makes reduction in the pollution.
- The un-metalled haul roads will be compacted weekly before being put into use.
- Over loading of tippers will be avoided to prevent spillage.

- It will be ensured that all transportation vehicles carry a valid PUC certificate.
- Grading of haul roads and service roads to clear accumulation of loose materials.

Green Belt –

- Planting of trees all along main mine haul roads and regular grading of haul roads will be practiced to prevent the generation of dust due to movement of dumpers/trucks
- Green belt of adequate width will be developed around the project areas

Occupational Health

- Dust mask will be provided to the workers and their use will be strictly monitored
- Annual medical 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 (Impact & Mitigation Measures)

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 in close proximity to the project area. 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.

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

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 4.8: 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

*50 feet from source = 15.24 meters

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

The total noise to be produced by mining activity is calculated to be 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 noise prediction modelling.

TABLE 4.9: PREDICTED NOISE INCREMENTAL VALUES

Location ID	N1	N2	N3	N4	N5	N6	N7
Maximum Monitored Value (Day) dB(A)	48.2	48.2	48.9	49.3	45.4	43.2	43.99
Incremental Value dB(A)	47.30	66.12	32.14	27.43	24.25	26.48	23.84
Total Predicted Noise level dB(A)	46.30	66.19	48.99	49.33	45.43	43.29	44.03
NAAQ Standards	Industrial		Day Time- 75 dB (A)		Night Time- 70 dB (A)		
	Residential		Day Time- 55 dB (A)		Night Time- 45 dB (A)		

4.4.2 Mitigation Measures for Proposed Project

The following noise mitigation measures are proposed for control of Noise.

- Time intervals for each quarry during blasting.
- Use of personal protective devices i.e., earmuffs and earplugs by workers, who are working in high noise generating areas.
- Limiting time exposure of workers to excessive noise.
- Proper and regular maintenance of vehicles, machinery and other equipment's.
- The noise generated by the machinery will be reduced by proper lubrication of the machinery and other equipment's.
- Speed of trucks entering or leaving the quarry will be limited to moderate speed to prevent undue noise from empty vehicles...
- Noise levels will be controlled by using optimum explosive charge, proper delay detonators and proper stemming to prevent blow out of holes (occasionally).
- Providing proper noise proof enclosure for the workers separated from the noise source and noise prone equipment.
- Provision of Quiet areas, where employees can get relief from workplace noise.
- The development of green belts around the periphery of the quarry site to attenuate noise.
- 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 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 project area is located 510m Northwest in Morattupalayam village. The ground vibrations due to the blasting in proposed mine 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

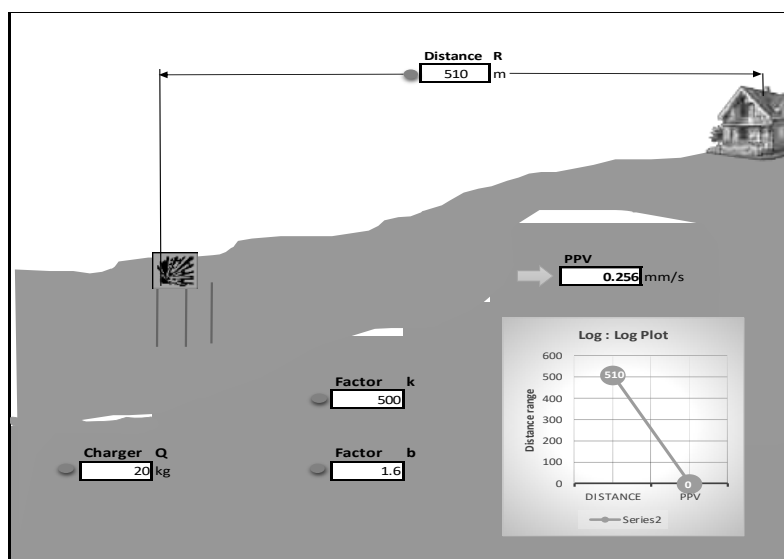
Q = maximum instantaneous charge (kg)

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

R = distance from charge (m)

TABLE 4.10: PREDICTED PPV VALUES DUE TO BLASTING

Maximum Charge in kgs	Nearest Habitation in m	PPV in m/ms
20	510m-NW	0.256



From the above, the charge per blast of Maximum 20Kg 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. It should be ensured that the explosives used for blasting at one blast should not exceed more than 2 Kg at any point of time. 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 for Proposed Project

- 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

4.5 Ecology and Biodiversity

Environmental impact studies are required for systematic identification, qualification, and interpretation of the anticipated changes. The main environmental problems associated with mining activities are deforestation, land degradation (change in topography, soil erosion), visual intrusion, disturbance to the hydrological system, and water, air, and noise pollution which ultimately impact the floral and faunal status of the project area. However, the occurrence and magnitude of these impacts entirely depend on project location, mode of operation, and adoption of the latest technologies.

4.5.1. Impact Identification and Evaluation

In general, impact prediction methods argue that the foremost step in impact appraisal must consider and identify project actions that are likely to bring significant changes in the project environment. The present study determined to predict the likely impacts of the Proposed Rough and Gravel Quarry mining Project in the surrounding environment with a specific focus on biological attributes covering habitats/ecosystems and associated biodiversity. Likely impacts identified were categorized into different levels like direct or primary and indirect or secondary impacts based on the influence of sources of impacts. There is no National Park or 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 Schedule- I species were found in the buffer zone of the proposed project area during the biodiversity assessment.

4.5.2. Impact on Flora

The mine lease area is an existing quarry exhibits plain topography and it is Patta land which is not fit for cultivation. It is mostly devoid of any considerable vegetation. The proposed mine lease area (core zone) does not encompass any designated forest land within it. The vegetation is very sparse and scanty. So, there will be no impact on flora from the mining operation. There will not be much contamination of soil or any other materials from the mining operation. No threatened plant species were reported in the core and buffer study area during the field survey.

4.5.2.1. Anticipated Impact on agricultural land associated with flora

1. There are no impacts on the nearby agricultural land due to this mining activity.
2. None of the plants will be cut during the operational phase of the mine.
3. 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.

Most of the land in the buffer area is undulating terrain with croplands, grass patches, and small shrubs. Hence, there will be no effect on the flora of the region.

4.5.3 Mitigation Measures

4.5.3.1. General Guidelines for Green Belt Development

In selecting plant species for 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.

Characteristic features of plants to be used for Absorption of pollutant gases

- Plant species should be perennial and evergreen with thick canopy cover.
- The crown of the tree (mass of foliage/leaves and branches growing outward from the trunk of the tree) should be either Oblong, Round or Spreading for effective absorption of pollutant gases.

- Plants should have foliage of longer duration.
- The foliage should be freely exposed through the adequate height of the crown, Openness of foliage/leaves in the canopy, and Big leaves (long and broad laminar surfaces).

The project site should have land to develop a greenbelt in and around the limits of the mine, along roads, and another vacant area. The main objective of the green belt is to provide a barrier between the source of pollution and the surrounding areas. Although the project will not lead to any tree cutting, it is proposed to improve the greenery of the locality through plantation services. To avoid dust emissions, the mined materials will be covered with tarpaulin during transportation.

TABLE NO. 4.11. LIST OF PLANT SPECIES PROPOSED FOR GREENBELT DEVELOPMENT

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

TABLE NO. 4.12. SPECIES SUITABLE FOR ABATEMENT OF NOISE AND DUST POLLUTION

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

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.

4.5.4. Anticipated Impact on Fauna

- Since the terrestrial fauna in the study area is distributed away from the mine site, the impacts of the project are likely to be much low on the terrestrial fauna of the region. The proposed mining lease area is devoid of any significant vegetation; it is not suitable for permanent habitat for any specific wildlife.
- Habitat degradation and disturbance to the faunal group due to ground vibration and increase in noise level will be minimized or resolved by modern technologies. So, from the above facts, it is revealed that there will be no impact on fauna. No threatened fauna species were reported in the core and buffer study area.

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.
- Checks and controls the movement of vehicles in and out of the mine.
- Undertaking mitigate measures for a conducive environment for the flora and fauna in consultation with the Forest Department.
- 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.

4.5.5. Impact on Aquatic Biodiversity

Mining activities will not disturb the aquatic ecology as there is no effluent discharge proposed from the Rough Stone and Gravel quarry. There is no natural perennial surface water body within the mine lease area, like wetlands, rivers streams, lakes, and farmer sites. There is no impact on fish habitats and the food WEB/ food chain in the water body and Reservoir. There are a few seasonal water bodies located away from the proposed project site (10 km radius). Aquatic biodiversity is observed in the study area. Please refer the clause No.3.7. The project is not likely to affect the aquatic ecology.

TABLE NO: 4.13. GENERAL IMPACTS VS. MITIGATION MATRIX

Particulars	Issues	Reason/Status in relation to the mine site	Reference/Method	Suggestions
Species	Rare/ Endangered/ Threatened species	Not reported	Field observation, interviews of local people	Nil
	Endemic Species	No endemic species of any flora, fauna or wildlife are present in the study area.	Field survey, Literature review	Nil
Important Natural Habitats	Protected Areas	No National Park, Wildlife Sanctuary, Tiger reserve, and Biosphere Reserve falls in the 10-km radius study area	ENVIS, Government of Tamil Nadu protected area website, Google Earth, Project Maps, etc.	Nil
	Important Bird Areas	No Important Bird Areas are falling in the 10-km radius area for Migratory Bird Habitat	ENVIS Centre on Wildlife & Protected Areas, Important Bird Area in India, IBA Book (Birdlife International)	Nil
	Ramsar site	No Ramsar sites present in the surrounding area region	Ramsar Web site	Nil
	Wetlands of National Importance	Nil	ENVIS Centre on Wildlife & Protected Areas, Wetlands directory of Government of India	Nil
	Wetlands of International Importance	Nil	Nil	Nil
	Wildlife Corridors	No Wildlife Corridor is falling in 10 km radius project study area	Protected Areas, Consultation with local naturalists & authenticated location map.	Nil
	Eco-sensitive zone identified by the government	No Eco-sensitive zone is falling 10 km radius project study area	ENVIS, Consultation with local naturalists & authenticated location map	Nil
	Forest Areas	No Reserve forest is falling in 10 km radius project study area	ENVIS, Government of Tamil Nadu protected area website, Google Earth, Project Maps, etc.	NIL, Applicant will create the green belt plantation on the periphery of mine sites.

	Water bodies	Nil	Project Map and local maps, Google Earth	Ensure minimum destruction during in operation phase.
	Breeding/nesting areas	No breeding/Nesting site are falling in the study area	Literature Survey Project Map and local maps, Google Earth	NIL

TABLE 4.14: GREENBELT DEVELOPMENT PLAN

No. of trees proposed to be planted	Area to be covered	Name of the species
1310	Near 7.5m safety distance, panchayat road and village road	Neem, Iluppai, Marudhu, Poovarasu, Eati, Mahagani, Magilam etc.,

After complete extraction of mineral, the excavated pits will be allowed to collect rainwater and seepage water to serve as a reservoir to charge the nearby wells. Fish culture will also be attempted. A bund will be constructed around the pits. In order to minimize the impact of mining on the vegetation outside the mine lease area, it is recommended that adequate protection measures must be implemented. As mining involves movement of vehicles and increased anthropogenic activities, some of the areas can be fenced by involving local people and educating them about increased benefits of such activities.

4.6 Socio Economic

4.6.1 Anticipated Impact from Proposed Project

- 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 for Proposed Project

- The area is already broken up and the surrounding areas are depending upon quarries. The surrounding units are grinder manufacturing units and crusher units depending upon the project hence this project will give a positive impact on the surroundings
- 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, Spiro metric 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 from this project site.

4.9 *Mine Closure*

Mine closure plan is the most important environmental requirement in mining projects. The progressive mine closure plan should be specifically dealt with in the mining plan and is to be reviewed along with mining plan. 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.

It is a Rough stone quarry project after completion of quarrying operation this land will be facilitate to store the rainwater hence forth the pit will act as temporary reservoir to supply the water during the drought seasons.

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 mining 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.

CHAPTER – 5: ANALYSIS OF ALTERNATIVES (TECHNOLOGY AND SITE)

5.0 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.

5.1 FACTORS BEHIND THE SELECTION OF PROJECT SITE

Thiru.A.A. Kumaresan Rough Stone and Gravel Quarry Project at Morattupalayam 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 – II, there is no major history of landslides, earthquake, subsidence etc., recorded in the past history.

5.2 ANALYSIS OF ALTERNATIVE SITE

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

5.3 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.

5.4 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.

CHAPTER – 6: ENVIRONMENTAL MONITORING PROGRAMME

6.0 General

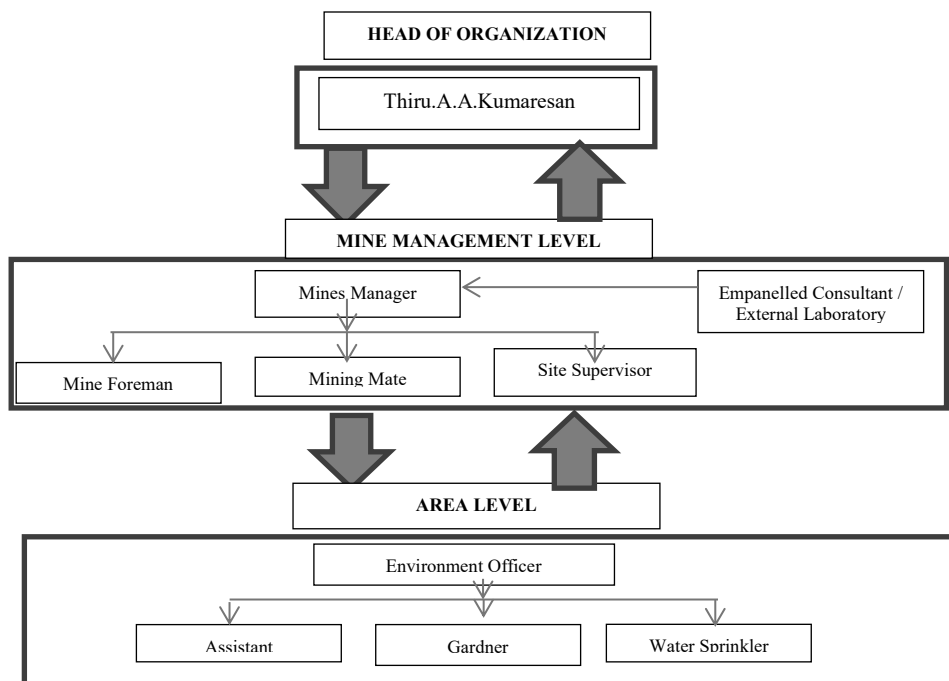
Environmental Monitoring will be taken up for various environmental components as per conditions stipulated in Environmental Clearance Letter issued by MoEF & Consent to Operate issued by the State Pollution Control Board. Monitoring reports will be submitted to regulator as per statutory requirements. The entire monitoring work will be carried out by MoEF & CC / NABL recognized laboratories.

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.

6.1 Methodology of Monitoring Mechanism

Implementation of EMP and periodic monitoring will be carried out by the proponent. A comprehensive monitoring mechanism has been devised for monitoring of impacts due to proposed project; Mine Management Level environmental protection measures like dust suppression, treatment and recycling of waste water, control of noise due to blasting and Ground vibration, maintenance of machinery and vehicles, housekeeping in the mine premises, plantation, implementation of other hand, implementation of area level protection measures like plantation and green Environment Management Plan and environmental clearance conditions will be monitored by the proponent. On the belt development, environmental quality monitoring etc., An environment monitoring cell (EMC) will be constituted at the quarry consisting of following members to monitor the implementation of EMP and other environmental protection measures.

FIGURE 6.1 ENVIRONMENTAL MONITORING CELL



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. 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 monthly, half-yearly and yearly. The half-yearly reports will be 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).

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 the project
2	Soil Quality Control Measures	Before commissioning of the project	Immediately after the commencement of the 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

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 are 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 Environmental Policy of the Proponent

The project proponents in the proposed quarries are committed to ensure that:

- Protect the environment by control and prevention of pollution and promote green environment.
- To operate the quarry with an objective of no injuries and accidents at the work place and provide a safe work place for our employees, contractors and others who perform their duties.
- Adequate health care will be taken to all the employees and create process to reduce the adverse effect of the operations on Health of the employees.
- Provide safety appliance and continuous training in safety to employees to ensure safe production and achieve the target of zero accidents.
- Develop safe working methods and practices, remove unsafe work conditions and consider all the aspects at the early stages of process development to provide safe working atmosphere.
- Communicate Safety, Health and Environmental Policy to all employees for better understanding and practice.

6.5 Budgetary Provision for Environmental Monitoring Programme

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 total cost for Environmental Monitoring Programme for two proposed quarries in cluster for the mining plan period is Rs 7,60,000/-

TABLE 6.3 ENVIRONMENT MONITORING BUDGET

Parameter	EMP Cost
Air Quality, Meteorology, Water Quality, Hydrology, Soil Quality, Noise Quality, Vibration Study Greenbelt	Rs.3,80,000/-(For first five years)
Total	Rs. 7,60,000/-

Source: Approved Mining Plan

6.6 *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 proponent with Environmental Monitoring cell and necessary corrective measures will be carried out. 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
- SEIAA, Chennai, Tamil Nadu

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

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

CHAPTER – 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. 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
- Cluster Management Committee

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 cluster quarry operation will be carried out under the direction of a Qualified Competent Mine manager holding certificate of competency to manage a metalliferous mine granted by the DGMS, Dhanbad. Risk Assessment is all about prevention of accidents and to take necessary steps to prevent it from happening. Factors of risks involved due to human induced activities in connection with mining & allied activities with detailed analysis of causes and control measures for the mine is given in below Table 7.1.

TABLE 7.3 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; ▪ Entry of unauthorized persons will be prohibited; ▪ Fire fighting and first-aid provisions in the mine office complex and mining area; ▪ 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 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& Blasting	Due to 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.
3	Blasting	Fly rock, ground vibration, Noise and dust. Improper charging, stemming & Blasting/fining of blast holes Vibration due to movement of vehicles.	▪ The maximum charge per delay and by optimum blast hole pattern, vibrations will be controlled within the permissible limit and blast 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 is and will be distinctly demarcated (by means of red flags)
4	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
5	Natural calamities	Unexpected happenings	▪ Escape Routes will be provided to prevent inundation of storm water ▪ Fire Extinguishers & Sand Buckets
6	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.

7.3 Disaster Management Plan

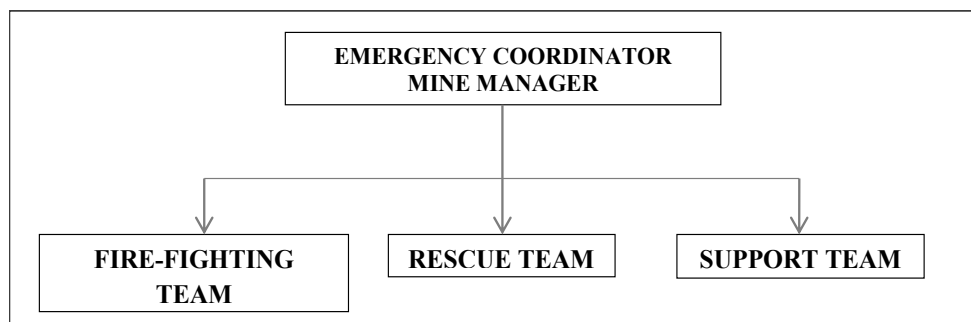
Natural disasters like Earthquake, Landslides has not been recorded in the past history as the terrain is categorized under seismic zone III. The area is far away from the sea hence the disaster due to heavy floods and tsunamis are not anticipated. The Disaster Management Plan is aimed to ensure safety 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 mine 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 7.4: 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. 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

(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 is proposed at strategic locations within the quarry.

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
- Firefighting and first-aid provisions in the mines office complex and mining area will be 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 the quarry in phase manner
- Cleaning of mine faces will be carried out regularly
- Provision of high-capacity standby pumps with generator sets with enough quantity of diesel for emergency pumping especially during monsoon.
- A blasting SIREN will be used at the time of blasting for audio signal.
- Checking of blasting area for any un-blasted hole or material.
- Warning notice boards indicating the time of blasting and NOT TO TRESPASS will be displayed at prominent places

7.4 CUMULATIVE IMPACT STUDY

There are One (1) proposed and three (3) existing quarries, 1 abandoned & expired quarry falls in the cluster. The list of quarries is as below –

TABLE 7.5: LIST OF QUARRIES WITHIN 500 METER RADIUS FROM THIS PROPOSAL

–PROPOSED QUARRIES				
CODE	Name of the Proponent and Address	S.F. Nos & Village	Extent in Ha	Status
P1	Thiru. A.A. Kumaresan S/o. (Late) Arumugam, No. 3/109, Morattupalayam Uthukuli R.S Via., Uthukuli Taluk. Tiruppur District-638 752.	376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 & 375/16 Morattupalayam Village,	2.62.0	Obtained ToR vide, File No.11239 TOR Identification No. TO24B0108TN5546980N Dated: 23.10.2024
	Total		2.62.0	
EXISTING QUARRIES				
CODE	Name of the Proponent and Address	S.F.Nos	Extent in Ha	Lease Period
E-1	Thiru.A.A.Kumaresan S/o. (Late) Arumugam, No. 3/109, Morattupalayam Uthukuli R.S Via., Uthukuli Taluk. Tiruppur District-638 752	378(P),	2.67.0	25.08.2022 to 24.08.2027
E-2	Thiru. P. Dharmaselvan S/o. Periyasamy Gounder No. 3/85, Thimmanayakkan Palayam, Uthukuli Taluk. Tiruppur District-638 752.	396/2A,	1.82.0	13.04.2023 to 12.04.2028
E-3	Tmt. R. Chitra, W/o. (Late) Rangasamy, No.197, Ponniya Goundanur, Morattupalayam Post, Tiruppur District – 638 752	367/2A(P),	1.66.0	06.04.2018 to 05.04.2023
Total			6.15.0 Ha	
ABANDONED/EXPIRED QURRIES				
CODE	Name of the Proponent and Address	S.F. Nos	Extent in Ha	Lease Period
A-1	Thiru.P.K.Subramaniam	376/1	-	13.09.2011 to 12.09.2016
	Total		-	
*TOTAL CLUSTER EXTENT			8.77.0 Ha	

Note:-

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

As per above notification S.O.2269(E) dated : 01.07.2016 in para (b) in Appendix XI, - (ii)(5): The lease not operative for three years or more and leases which have got environmental clearance as on 15th January, 2016 shall not be counted for calculating the area of cluster, but shall be included in the Environment Management Plan and the Regional Environmental Management Plan”

TABLE 7.6: SALIENT FEATURES OF THE PROPOSAL “P1”

Name of the Quarry	Thiru A.A. Kumaresan Rough stone and Gravel quarry
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Land Ownership	It is a Patta land,registered in the name of applicant Thiru.A.A.Kumaresan	
Land classification	It is a Patta Land (Barren Land)	
SF No & Area (Ha)	376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 & 375/16 & 2.62.0 ha	
Village,Taluk & District	Morattupalayam Village, Uthukuli Taluk, Tiruppur District.	
Toposheet No	58E/08	
Latitude between	11°08'20.63"N to 11°08'28.34"N	
Longitude between	77°25'36.57"E to 77°25'42.56"E	
Highest Elevation	295m AMSL	
Proposed Depth of Mining	42m (2m Gravel + 40m Rough Stone) below the ground level	
Geological Resources	Rough Stone in m ³	Gravel m ³
	11,60,460m³	51,576m³
Mineable Reserves as per ToR	Rough Stone in m ³	Gravel m ³
	3,89,440m³	40,116m³
Year wise Production (1 st Five years)	Rough Stone in m ³	Gravel m ³
	2,13,840m³	40,116m³
Year wise Production (2 nd Five Years)	Rough Stone in m ³	Gravel m ³
	1,85,080m³	-
Ultimate Pit Dimension	XY-AB: 95m (L) X 66m (W) X 27m BGL (D) XY-CD: 60m (L) X 122m (W) X 47m BGL (D) XY-EF: 49m (L) X 132m (W) X 47m BGL (D)	
Water Level in the surrounds area	58-63 m bgl	
Method of Mining	Opencast Mechanized Mining Method involving drilling and blasting	
Topography	The lease applied area is exhibits Flat terrain. The area has gentle sloping towards Southeastern side. The altitude of the area is 295m (max) above Mean Sea level. The area is covered by 2m thickness of Gravel formation. Massive Charnockite which is clearly inferred from the existing quarry pits.	
Machinery proposed	Jack Hammer	6 Nos
	Compressor	2 Nos
	Excavator with Bucket and Rock Breaker	2 No
	Tipper	3 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	32 Nos	
Project Cost	Rs. 94,69,000/-	
EMP cost	Rs. 3,80,000/-	
CER Cost	Rs. 5,00,000/-	
Nearby Water Bodies	Nallar Stream	820m-South
	Noyyal River	1km-South
	Manikapuram Kulam	2.0km-SE
	Koolipalayam Reservoir-	4km-SW
	Avarakarai Nadhi	4.5km-NW
	Kattagani Kulam	7km-SE
Greenbelt Development Plan	It is proposed to plant 1310 Nos of trees in the safety barrier and village road.	
Proposed Water Requirement	2.5 KLD	
Nearest Habitation	510m – North West	

Source: Approved Mining Plan of the respective proposals

TABLE 7.6: SALIENT FEATURES OF THE EXISTING “E1”

Name of the Mine	Thiru. A.A. Kumaresan Rough Stone and Gravel Quarry	
Geological Reserves	Rough Stone	Gravel
	7,04,056 m ³	18,194 m ³
Mineable Reserves	Rough Stone	Gravel
	4,45,147 m ³	15,824 m ³
Mining Plan Period / Lease Period	5 Years	
Ultimate Pit Dimension	194 m (L) * 152 m (W) * 42 m (D)	
Toposheet No	58 - E/08	
Latitude	11°08'27.39"N to 11°08'34.27"N	
Longitude	77°25'26.56"E to 77°25'32.68"E	
Highest Elevation	302 m above from Mean sea level	
Water Level	62m in summer and at 58m in rainy seasons	
Machinery	Jack Hammer Drills	10 Nos
	Compressor	3 Nos
	Hydraulic Excavator	2 Nos
	Tippers	3 Nos
Blasting	Usage of Slurry Explosive with MSD detonators	
Manpower Deployment	35 Nos	
Project Cost	Land Cost	Rs. 80,14,000/-
	Machinery Cost & Others	
	EMP Cost	Rs. 3, 80,000/-
	Total	Rs. 83,62,000/-
Depth of Mining	42 m bgl	

Source: Approved Mining Plan

TABLE 7.6: SALIENT FEATURES OF THE EXISTING “E2”

Name of the Mine	Thiru. P. Dharmaselvan Rough Stone & Gravel Quarry	
Geological Reserves	Rough Stone	Gravel
	6,89,857 m ³	23,480 m ³
Mineable Reserves	Rough Stone	Gravel
	1,80,403 m ³	12,535 m ³
Mining Plan Period / Lease Period	5 Years	

Ultimate Pit Dimension	Pit I	127 m (L)	128 m (W)	45 m (D)
Toposheet No	58 - E/08			
Latitude	11°08'09.81"N to 11°08'14.54"N			
Longitude	77°25'36.30"E to 77°25'42.09"E			
Highest Elevation	274m above from Mean sea level			
Water Level	62 – 58 m			
Machinery	Jack Hammer Drills		4 Nos	
	Compressor		1 No	
	Hydraulic Excavator		1 No	
	Tippers		3 Nos	
Blasting	Usage of Slurry Explosive with MSD detonators			
Manpower Deployment	21 Nos			
Project Cost	Land Cost, Machinery Cost & Others		45,11,000/-	
	EMP Cost		Rs 3, 80,000/-	
	Total		Rs. 48,91,000/-	
Depth of Mining	45 meters			

TABLE 7.6: SALIENT FEATURES OF THE EXISTING “E3”

Name of the Mine	Tmt. R. Chitra Rough Stone and Gravel Quarry	
Geological Reserves	Rough Stone	Gravel
	6,29,492 m³	11,784 m³
Mineable Reserves	Rough Stone	Gravel
	2,19,325 m³	7,980 m³
Mining Plan Period / Lease Period	5 Years	
Ultimate Pit Dimension	114 m (L) * 116 m (W) * 42 m (D)	
Toposheet No	58 - E/08	
Latitude	11°08'28.03"N to 11°08'32.58"N	
Longitude	77°25'42.44"E to 77°25'46.93"E	
Highest Elevation	302 m AMSL	
Water Level	58m in rainy season and 62m in summer season	
Machinery	Jack Hammer Drills	4 Nos
	Compressor	1 No

	Hydraulic Excavator	1 No
	Tippers	2 Nos
Blasting	Usage of Slurry Explosive with MSD detonators	
Manpower Deployment	20 Nos	
Project Cost	Land Cost	Rs. 48,27,000/-
	Machinery Cost & Others	
	EMP Cost	Rs. 3, 80,000/-
	Total	Rs. 52, 07,000/-
Depth of Mining	42 m bgl	

Source: Mining Plan

The Cumulative Impact is mainly anticipated due to drilling & blasting, 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.

Impact on Air Environment –

Calculating the Cumulative Load of Mining within the cluster is as shown in table 7.5 & 7.6

TABLE 7.7 CUMULATIVE PRODUCTION LOAD OF ROUGH STONE IN CLUSTER

Quarry	Production for five-year plan period	Per Year Production in m ³	Per Day Production in m ³	Number of Lorry Load Per Day @ 12m ³ per load
P1	3,89,440	78,888	260	22
E-1	4,45,147	89,029	297	25
E-2	1,80,403	36,081	120	10
E-3	2,19,325	43,865	146	12
G.Total	12,34,315	2,47,863	823	69

TABLE 7.8: CUMULATIVE PRODUCTION OF GRAVEL IN CLUSTER

Quarry	Mineable Reserves in m ³	Per Year Production in m ³	Per Day in m ³	Number of Lorry Load @ 12m ³ per load
P1	40,116	13,372	45	4
E-1	15,824	5,275	18	2
E-2	12,535	4,178	14	1
E-3	7,980	2,660	9	1
G.Total	76,455	25,485	86	8

Source: Approved Mining plans of the respective projects (Blue color shade is Proposed quarry)

Based on the above production quantities the emissions due to various activities in all the 3-proposal quarry various activities like ground preparation, excavation, handling and transport of mineral. 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 7.7.

TABLE 7.9: EMISSION ESTIMATION FROM CLUSTER

EMISSION ESTIMATION FOR QUARRY “P1”- Thiru.A.A.Kumaresan				
Estimated Emission Rate for PM ₁₀	Activity	Source type	Value	Unit
	Drilling	Point Source	0.082331503	g/s
	Blasting	Point Source	0.000915050	g/s
	Mineral Loading	Point Source	0.042281670	g/s
	Haul Road	Line Source	0.00249171	g/s/m
	Overall Mine	Area Source	0.057963764	g/s

Estimated Emission Rate for SO ₂	Overall Mine	Area Source	0.000652283	g/s
Estimated Emission Rate for NO _x	Overall Mine	Area Source	0.000037801	g/s
EMISSION ESTIMATION FOR QUARRY “E1”- Thiru.A.A.Kumaresan				
Estimated Emission Rate for PM ₁₀	Activity	Source type	Value	Unit
	Drilling	Point Source	0.099787261	g/s
	Blasting	Point Source	0.002393260	g/s
	Mineral Loading	Point Source	0.044125522	g/s
	Haul Road	Line Source	0.002496795	g/s/m
	Overall Mine	Area Source	0.059623415	g/s
Estimated Emission Rate for SO ₂	Overall Mine	Area Source	0.001025704	g/s
Estimated Emission Rate for NO _x	Overall Mine	Area Source	0.000061288	g/s
EMISSION ESTIMATION FOR QUARRY “E2”- Thiru.P.Dharmaselvam				
Estimated Emission Rate for PM ₁₀	Activity	Source type	Value	Unit
	Drilling	Point Source	0.076102296	g/s
	Blasting	Point Source	0.000617452	g/s
	Mineral Loading	Point Source	0.040525069	g/s
	Haul Road	Line Source	0.002488407	g/s/m
	Overall Mine	Area Source	0.049523480	g/s
Estimated Emission Rate for SO ₂	Overall Mine	Area Source	0.000426276	g/s
Estimated Emission Rate for NO _x	Overall Mine	Area Source	0.000017662	g/s
EMISSION ESTIMATION FOR QUARRY “E3”- Tmt.R.Chitra				
Estimated Emission Rate for PM ₁₀	Activity	Source type	Value	Unit
	Drilling	Point Source	0.080695558	g/s
	Blasting	Point Source	0.000827680	g/s
	Mineral Loading	Point Source	0.041115448	g/s
	Haul Road	Line Source	0.00248938	g/s/m
	Overall Mine	Area Source	0.047925039	g/s
Estimated Emission Rate for SO ₂	Overall Mine	Area Source	0.000491462	g/s
Estimated Emission Rate for NO _x	Overall Mine	Area Source	0.000018794	g/s

Source: Emission Formula

TABLE 7.10: INCREMENTAL & RESULTANT GLC WITHIN CLUSTER

PM ₁₀ in µg/m ³	
Location	AAQ1 – CORE
Background (average)	45.7
Highest Incremental	9.87
Resultant	55.6
NAAQ Norms	100 µg/m ³
PM _{2.5} in µg/m ³	
Background (average)	22.8
Highest Incremental	4.79
Resultant	27.6
NAAQ Norms	60 µg/m ³
SO ₂ in µg/m ³	
Location	AAQ1 – CORE
Background (average)	8.0
Highest Incremental	1.19
Resultant	9.2
NAAQ Norms	80 µg/m ³
NO _x in µg/m ³	
Location	AAQ1 – CORE
Background (average)	24.9
Incremental	7.85
Resultant	32.8
NAAQ Norms	80 µg/m ³

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.

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

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.

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

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 MINES

Location ID	N1	N2	N3	N4	N5	N6	N7
Maximum Monitored Value (Day) dB(A)	48.2	48.2	48.9	49.3	45.4	43.2	43.99
Incremental Value dB(A)	47.30	66.12	32.14	27.43	24.25	26.48	23.84
Total Predicted Noise level dB(A)	46.30	66.19	48.99	49.33	45.43	43.29	44.03
NAAQ Standards	Industrial		Day Time- 75 dB (A)		Night Time- 70 dB (A)		
	Residential		Day Time- 55 dB (A)		Night Time- 45 dB (A)		

Source: Lab Monitoring Data

The incremental noise level is found within the range of 27.04 – 35.49dB (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), dated 19.09.2006 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 3-proposal quarry 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 proposal quarries 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 8mines respectively are as in below Table 7.9

TABLE 7.12: NEAREST HABITATION FROM EACH MINE

Location ID	Distance in Meters
Habitation Near P1	510m-NW
Habitation Near E1	830m-SW
Habitation Near E2	1200m-NE
Habitation Near E3	900m-NE

Source: Satellite Imagery and Field Data

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 4 MINES

Location ID	Maximum Charge in kgs	Nearest Habitation in m	PPV in m/ms
P1	20	510m-NW	0.256
E1	93	830m-SW	0.401
E2	38	1200m-NE	0.109
E3	46	900m-NE	0.201

Source: PPV Calculation

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 4 mines shall provide employment and revenue will be created to government

TABLE 7.14: SOCIO ECONOMIC BENEFITS FROM 4 MINES

Location Code	Employment	Project Cost	CER
P1	32	₹ 94,69,000/-	Rs.5,00,000/-
E1	35	₹ 80,14,000/-	₹ 1,60,280/-
E2	15	₹ 45,11,000/-	₹ 90,220/-
E3	20	₹ 48,27,000/-	₹ 96,540/-
Total	102	₹ 2,68,21,000/-	₹ 8,47,040/-

A total of 32 people will get employment due to this Proposal in cluster. 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 by all the mines.

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 Quarry CER Cost-**Rs.3,47,040/-**

TABLE 7.15: GREENBELT DEVELOPMENT BENEFITS FROM 4 MINES

Code	No. of trees proposed to be planted	Area to be covered	Name of the species
P1	1310		

E1	100	Near 7.5m safety distance, panchayat road and village road	Neem, Iluppai, Marudhu, Poovarasu, Eati, Mahagani, Magilam, etc.,
E2	150		
E3	100		
Total	1660		

Based on the Proposed Mining Plans it's anticipated that there shall growth of native species of Neem, Iluppai, Marudhu, Poovarasu, Eati, etc in the Cluster at a rate of 500 trees per ha is proposed to plant with Survival Rate of 100 %.

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 7.16: 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

Source: Proposed by FAE's and EC

7.6 Cluster Management Committee

The cluster management committee is proposed to form including of 1 Proposed quarry and 3 existing quarries total extent of the cluster is 8.77.0 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 QUARRIES				
CODE	Name of the Proponent and Address	S.F. Nos & Village	Extent in Ha	Status
P1	Thiru.A.A.Kumaresan	376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 & 375/16 Morattupalayam Village,	2.62.0	Obtained ToR vide, File No.11239 TOR Identification No. TO24B0108TN5546980N Dated: 23.10.2024
	Total		2.62.0	
EXISTING QUARRIES				
CODE	Name of the Proponent and Address	S.F.Nos	Extent in Ha	Lease Period
E-1	Thiru.A.A.Kumaresan	378(P),	2.67.0	25.08.2022 to 24.08.2027
E-2	Thiru.P.Dharmaselvan	396/2A,	1.82.0	13.04.2023 to 12.04.2028
E-3	Tmt.R.Chitra	367/2A(P),	1.66.0	06.04.2018 to 05.04.2023
Total			6.15.0 Ha	
ABANDONED/EXPIRED QURRIES				
CODE	Name of the Proponent and Address	S.F. Nos	Extent in Ha	Lease Period
A-1	Thiru.P.K.Subramaniam	376/1	-	13.09.2011 to 12.09.2016
	Total		-	
*TOTAL CLUSTER EXTENT			8.77.0 Ha	

STANDARD OPERATING PROCEDURE FOR MORATTUPALAYAM 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-metalled haul roads will be compacted weekly before being put into use.
- Over loading of tippers will be avoided to prevent spillage.
- It will be ensured that all transportation vehicles carry a valid PUC certificate
- Grading of haul roads and service roads to clear accumulation of loose materials

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 through 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

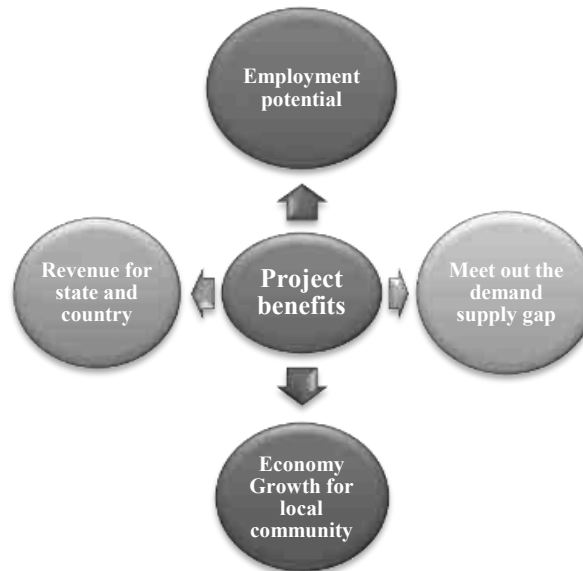
Compliance to statutory provisions, norms of State Pollution Control Board, Ministry of Environment and Forests and the conditions of the environmental clearance as well as the consents to establish and consents to operate.

CHAPTER – 8: PROJECT BENEFITS

8.0 General

The Proposed Project for Quarrying Rough Stone and Gravel at Morattupalayam Village aims to produce cumulatively 3,89,440m³ Rough Stone over a period of 10 Years & 40,116m³ of Gravel over a period of 3 Years. This will enhance the socio-economic activities in the adjoining areas and will result in the following benefits

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



8.1 Employment Potential

It is proposed to provide employment to about 32 persons for carrying out mining operations and give preference to the local people in providing employment. 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 than negative 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 project site is located in Morattupalayam Village, Uthukuli Taluk, Tiruppur District of Tamil Nadu and area have communications, roads and other facilities already well established. The following physical infrastructure facilities will further improve due to the project.

- 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

The quarry projects in the region will have positive impact on the social economic condition of the area by way of providing employment to the local peoples; thereby increasing the per capita income, housing, education, medical and transportation facilities, economic status, health and agriculture.

- Social welfare program like medical camps, educational facilities to the poverty level students, providing water supply from the quarries during drought seasons will be taken from the project proponent's
- Supplementing Govt. efforts in health monitoring camps, social welfare and various Awareness programs among the rural population.

8.5 Other Tangible Benefits

The proposed quarry project 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 quarry site 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 proponents 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 Morattupalayam 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–

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 as per directions of EAC/SEAC and the total CER amount from the proposed mines is Rs. 5,00,000/-.

The Project Proponent Thiru. A.A. Kumaresan, agreed to spend Rs 5,00,000/- for the CER Activity to Government High School, Morattupalayam Village and Uthukuli Taluk, Tiruppur District

TABLE 8.1 CER – ACTION PLAN

Activities to the Government school	Cost
• Renovation of Existing toilets • Providing Environmental related books to the school library • Carrying out plantation in school ground • Construction of an auditorium with stage	Rs 5,00,000/-
Total	Rs. 5,00,000/-

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

CHAPTER – 9: ENVIRONMENTAL COST BENEFIT ANALYSIS

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

CHAPTER - 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.A.A. Kumaresan** will –

- Meet the requirements of all laws, acts, regulations, and standards relevant to its operations and activities
- 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 a program to train employees in general environmental issues and individual workplace environmental responsibilities
- 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 –

Land degradation is one of the major adverse impacts of opencast mining in the form of excavated voids and contamination of soil affects the viability of the soil resource.

Soil contamination then has a number of flow-on effects like, Inhibition of plant growth, and death of existing plants in contaminated areas and contamination of soil also has potential to impact on a surface water quality and groundwater resources.

TABLE 10.1: PROPOSED CONTROLS FOR LAND ENVIRONMENT

CONTROL	RESPONSIBILITY
Designing vehicle wash-down system so that all washed water is captured and passed through grease and oil separators.	Mines Manager
Re fuelling will be carried out in a safe location, away from vehicle movement pathways	Mine Foreman & Mining Mate
Greenbelt development and its maintenance	Environment Officer
Garland drains with catch pits to be provided all around the project area to prevent run off affecting the surrounding lands.	Environment Officer
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
Thick plantation using native flora species will be carried out on the top benches.	Mines Manager
There will be formation of a small surface water body in the mined-out area, which can be used for watering the greenbelt at the conceptual stages.	Environment Officer

Source: Proposed by FAE's & EIA Coordinator

10.3 Soil Management

Top Soil Management –

- There is no topsoil in this project, it is an existing quarry covered with Gravel formation of 2m thickness.

Overburden / Waste and Side Burden Management –

- The overburden in the form of Gravel formation, the Gravel will be directly loaded into tippers 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.

TABLE 10.2: PROPOSED CONTROLS FOR SOIL MANAGEMENT

CONTROL	RESPONSIBILITY
Garland drains are to be paved around the quarry pit area to arrest possible wash off in the rainy seasons	Mines Manager
Surface run-off from the surface water 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	Environment Officer
keeping records of mitigation of erosion events, to improve on management techniques	Environment Officer
A monitoring map with information including their GPS coordinates, erosion type, intensity, and the extent of the affected area, as well as existing control measures and assessment of their performance	Environment Officer
Empty sediment from sediment traps Maintain, repair or upgrade garland drain system	Environment Officer
Test soils for pH, EC, chloride, exchangeable cations, particle size and water holding capacity	Mines Manager

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 42 m BGL, the water table in the area is 58-63m 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 existing and proposed mining activities would result in the increase of particulate matter concentrations due to fugitive dust. Water sprinkling twice per day 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 Management

There will be intermittent noise levels due to vehicular movement, trucks loading, drilling and blasting and other allied 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 assess the impact due to the mining activities and the efficacy of the adopted noise control measures. Additional noise control measures will be adopted if required as per the observations during monitoring	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

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 Coordinator

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 1310 nos. of saplings is proposed to be planted for the Mining plan period in safety barrier of applied mine lease area. 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 trees proposed to be planted	Area to be covered	Name of the species
I	1310	Near 7.5m safety distance, panchayat road and village road	Neem, Iluppai, Marudhu, Poovarasu, Eati, Mahagani, Magilam etc.,

Source: Conceptual Plan of Approved Mining plan& 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

Sl.No	Activities	1 st Year	2 nd Year	3 rd Year	4 th Year	5 th 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 Proponent 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	26200	26200
	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 - 6 Units	150000	15000
	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 Governors @ Rs. 5000/- per Tipper/Dumper deployed - 3 Units	15000	750
	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	52400

	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 / Competent 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	1012544
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 managent	Provision for garland drain @ Rs. 10,000/- per Hectare with maintenance of Rs. 5,000/- per annum	26200	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	524000	10000
	3. Progressive Closure Activity Green belt development - 500 trees per one hectare - Proposal for 1310 Trees - 670 Inside Lease Area & 640 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)	134000	20100
		Avenue Plantation @ 300 per plant (capital) for plantation outside the lease area and @ 30 per plant maintenance (recurring)	192000	19200
	4. Implementation of Final Mine Closure Actity 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	106200	0

	5. Contribution towards Green Fund. As per TNMMCR 1959, Rule 35 A	The Contribution towards Green Funds @ 10% of Seigniorage fee are indicated as part of EMP Budge and not necessarily implemented in the Project Site	3504960	0
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) - 32 Employees	128000	32000
	Health check up for workers will be provisioned	IME & PME Health check up @ Rs. 1000/- per employee	0	32000
	First aid facility will be provided	Provision of 2 Kits per Hectare @ Rs. 2000/-	0	5240
	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	131000	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 (1 st Class / 2 nd 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	As per MoEF & CC OM 22-65/2017-IA.III Dated 25.02.2021	Detailed Description in following slides and Budget allocation is included as per MoEF & CC OM	500000	0
TOTAL			2786400	2197434

In order to implement the environmental protection measures, an amount of Rs.27.86 lakhs as capital cost and recurring cost as Rs. 21.97 lakhs as recurring cost is proposed considering present market price considering present market scenario for the proposed project.

<u>Year Wise Break Up</u>	
1st Year	₹ 49,83,834
2nd Year	₹ 23,07,306
3rd Year	₹ 24,22,671
4th Year	₹ 25,43,805
5th Year	₹ 26,70,995
6th Year	₹ 41,97,744
7th Year	₹ 30,14,431
8th Year	₹ 31,65,153
9th Year	₹ 33,23,410
10th Year	₹ 35,95,781
Total	₹ 322 Lakhs

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.

CHAPTER – 11: SUMMARY AND CONCLUSIONS

Thiru.A.A. Kumaresan Rough Stone and Gravel Quarry (Extent: **2.62.0** ha) 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.

A detailed final EIA/ EMP Report is prepared for public and other stakeholders' suggestions and a Final EIA/ EMP Report is prepared based on the outcome of Public Consultation.

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 Dec 2024 to Feb 2025 for various environmental components so as to assess the anticipated impacts of the cluster quarry projects 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 & Gravel as per market demand.

Sustainable and modern mining leads us to see positive impact of mining operation and providing consistent employment for nearly 32 people directly in the cluster and indirectly around 80 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.A.A. Kumaresan Rough Stone and Gravel Quarry (Extent: **2.62.0**ha).

CHAPTER 12.0: DISCLOSURE OF CONSULTANTS

The Project Proponent **Thiru.A.A. Kumaresan** 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, Advaita 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 RH	A A

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

DECLARATION BY EXPERTS CONTRIBUTING TO THE EIA/EMP

Declaration by experts contributing to the EIA/EMP for Thiru.A.A. Kumaresan Rough Stone & Gravel Quarry over an Extent of **2.62.0** ha in Morattupalayam Village, Uthukuli Taluk, Tiruppur District of Tamil Nadu. 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**

Date & Signature:

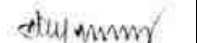
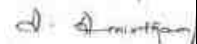


Period of Involvement: **January 2022 to till date**

Associated Team Member with EIA Coordinator:

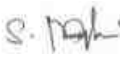
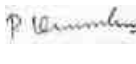
1. **Mr. Viswanathan**
2. **Mr. Santhoshkumar**
3. **Mr. S. Ilavarasan**

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.	Mrs. Amirtham	

		- Impact of the project on flora and fauna. - Suggesting species for greenbelt development.	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. Viswanathan	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 for Thiru.A.A. Kumaresan Rough Stone & Gravel Quarry over an Extent of **2.62.0** ha in Morattupalayam Village, Uthukuli Taluk, Tiruppur District of Tamil Nadu. 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. Ifthikhar 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.A.A. KUMARESAN ROUGH STONE & GRAVEL QUARRY

Morattupalayam Village,
Uthukuli Taluk,
Tiruppur District.

CLUSTER EXTENT: 8.77.0 Ha

ToR obtained

File No.11239 TOR Identification No. TO24B0108TN5546980N
Dated:23.10.2024

PROJECT PROJECT	PROPOSED PROJECT
Thiru. A.A. Kumaresan, S/o. Arumugam, No. 3-109, Morattupalayam, Uthukuli Taluk, Tiruppur District – 638 752.	S.F. Nos: 376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 & 375/16 Morattupalayam Village, Uthukuli Taluk, Tiruppur District.

LIST OF ANNEXURES

ANNEXURES	DESCRIPTION	PAGE NOS
P1- THIRU. A.A. KUMARESAN	COPY OF TERMS OF REFERENCE	1A-24A
	COPY OF MINING PLAN APPROVED LETTER & 500M RADIUS LETTER	25A-28A
	COPY OF APPROVED MINING PLAN WITH PLATES	29A-109A
	COPY OF 300m & VAO ATTESTATION LETTER	110A-111A
	COPY OF CER	112A
	COPY OF EXPLOSIVE LETTER	113A-114A
E1- A.A. Kumaresan	COPY OF APPROVED LETTER	115A-117A
E2- P.Dharmaselvam	COPY OF APPROVED LETTER	118A-120A
E3- R.Chitra	COPY OF APPROVED LETTER	121A-122A
	COPY OF BASE LINE MONITORING DATA	123A – 164A
	COPY OF CONSULTANT ACCREDITATION CERTIFICATE	165A



File No: 11239
Government of India
Ministry of Environment, Forest and Climate Change
(Issued by the State Environment Impact Assessment
Authority(SEIAA), TAMIL NADU)



Dated 23/10/2024



To,

Thiru.kumaresan
Thiru.kumaresan
No. 3-109, Morattupalayam, Uthukuli Taluk, and Tiruppur District, Tiruppur , TIRUPPUR, TAMIL
NADU, 638752
kalakumaresan.rason@gmail.com

Subject: Grant of Terms of Reference 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 2.62.0 Ha at S.F.Nos. 376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 & 375/16 of Morattupalayam Village, Uthukuli Taluk, Tiruppur District, Tamil Nadu by Thiru.A.A. Kumaresan - 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/494856/2024, Dated: 02.09.2024.
2. Your application submitted for Terms of Reference dated: 09.09.2024.
3. Minutes of the 502nd Meeting of SEAC held on 03.10.2024.
4. Minutes of the 765th Meeting of Authority held on 15.10.2024.

2. The particulars of the proposal are as below :

(i) TOR Identification No.	TO24B0108TN5546980N
(ii) File No.	11239
(iii) Clearance Type	TOR
(iv) Category	B1
(v) Project/Activity Included Schedule No.	1(a) Mining of minerals A.A. Kumaresan, Rough Stone and Gravel Quarry Extent: 2.62.0ha, S.F.Nos. 376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 and 375/16 of Morattupalayam Village, Uthukuli Taluk,
(vii) Name of Project	

(viii) Name of Company/Organization	Tiruppur District. kumaresan
(ix) Location of Project (District, State)	TIRUPPUR, 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) Appraisal Committee of SEIAA in the meeting held on 15/10/2024. 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 for instant proposal of Thiru. kumaresan 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

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, Tiruppur District

7. The Commissioner of Geology and Mines, Guindy, Chennai-32

8. The Assistant Director, Department of Geology & Mining, Tiruppur District

9. EI Division, Ministry of Environment & Forests, Paryavaran Bhawan, New Delhi.

10. Integrated Regional office of MoEF&CC, Sastri 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	After detailed discussions, the Authority accepts the recommendation of SEAC and decided to grant Terms of Reference (ToR) along with Public Hearing under cluster for undertaking the combined Environment Impact Assessment Study and preparation of separate Environment Management Plan subject to the conditions as recommended by SEAC & normal conditions and conditions in Annexure 'B' of this minutes. Restricting the ultimate depth of mining up to 42m BGL and quantity of 3,89,440 cu.m of Rough Stone & 40,116 cu.m of Gravel are permitted for mining over a period of ten years and the annual peak production should not exceed 46,900 cu.m of Rough stone & 14,640 cu.m of Gravel considering water bodies around, fertility of agriculture land around the mining area and the environmental impacts due to the mining, safety precautionary measures of the working personnel & sustainable mining. The PP shall obtain modified mining plan for the same during EIA appraisal.

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 statutory personnel, appropriate environmental monitoring, good maintenance of haul roads and village/panchayat roads, authorized blasting operation 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 Nanjarayan Birds Sanctuary after consultation with the concerned DFO. 3. The structures within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m & upto 1km shall be enumerated with details such as dwelling houses with number of occupants, whether it belongs to the owner (or) not, places of worship, industries, factories, sheds, etc. and spell out the mitigation measures to be proposed for the protection of the above structures, if any during the quarrying operations. 4. 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. 5. The Proponent shall carry out Bio diversity study as a part of EIA study and the same shall be included in the Report. 6. 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. 7. 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, 13. What was the period of the operation and stoppage of the earlier mines with last work permit

S. No	Terms of Reference
	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 restrictions for mining operations, should also be indicated and where so required,

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	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

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	comply with any of the conditions mentioned above may result in withdrawal of this Terms of Conditions besides attracting penal provisions in the Environment (Protection) Act, 1986.

4. Seiaa Standard Conditions:

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4.1	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, horticultural plantations, the natural ecosystem, the soil micro flora, fauna and soil seed banks and suggest measures to maintain the natural Ecosystem.

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	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:

S. No	Terms of Reference
	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

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	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.

Standard Terms of Reference for (Mining of minerals)

1.

S. No	Terms of Reference
1.1	An EIA-EMP Report shall be prepared for peak capacity (.....MTPA)operation in an ML/project area of.....ha based on the generic structure specified in Appendix III of the EIA Notification, 2006.
1.2	An EIA-EMP Report would be prepared for peak capacity operation to cover the impacts and environment management plan for the project specific activities on the environment of the region, and the environmental quality encompassing air, water, land, biotic community, etc. through collection of data and information, generation of data on impacts including prediction modeling for..... MTPA of mineral production based on approved project/Mining Plan for.....MTPA. Baseline data collection can be for any season (three months) except monsoon.
1.3	Propoer KML file with pin drop and coordinate of mine at 500-1000 m interval be provided
1.4	A Study area map of the core zone (project area) and 10 km area of the buffer zone (1: 50,000 scale) clearly delineating the major topographical features such as the land use, surface drainage pattern including rivers/streams/nullahs/canals, locations of human habitations, major constructions including railways, roads, pipelines, major industries, mines and other polluting sources. In case of ecologically sensitive areas such as Biosphere Reserves/National Parks/WL Sanctuaries/ Elephant Reserves, forests (Reserved/Protected), migratory corridors of fauna, and areas where endangered fauna and plants of medicinal and economic importance found in the 15 km study area should be given. The above details to be furnished in tabular form also
1.5	Map showing the core zone delineating the agricultural land (irrigated and un-irrigated, uncultivable land as defined in the revenue records, forest areas (as per records), along with other physical features such as water bodies, etc should be furnished.
1.6	A contour map showing the area drainage of the core zone and 25 km of the study area (where the water courses of the core zone ultimately join the major rivers/streams outside the lease/project area) should also be clearly indicated in the separate map.
1.7	Catchment area with its drainage map of 25 km area within and outside the mine shall be provided

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	with names, details of rivers/ riverlet system and its respective order. The map should clearly indicate drainage pattern of the catchment area with basin of major rivers. Diversion of drains/ river need eloboration in form of lengthe, quantity and quality of water to be diverted																																																
1.8	(Details of mineral reserves, geological status of the study area and the seams to be worked, ultimate working depth and progressive stage-wise working scheme until the end of mine life should be provided on the basis of the approved rated capacity and calendar plans of production from the approved Mining Plan. Geological maps and sections should be included. The Progressive mine development and Conceptual Final Mine Closure Plan should also be shown in figures. Details of mine plan and mine closure plan approval of Competent Authority should be furnished for green field and expansion projects.																																																
1.9	Details of mining methods, technology, equipment to be used, etc., rationale for selection of specified technology and equipment proposed to be used vis-à-vis the potential impacts should be provided.																																																
1.10	Impact of mining on hydrology, modification of natural drainage, diversion and channeling of the existing rivers/water courses flowing though the ML and adjoining the lease/project and the impact on the existing users and impacts of mining operations thereon.																																																
1.11	A detailed Site plan of the mine showing the proposed break-up of the land for mining operations such as the quarry area, OB dumps, green belt, safety zone, buildings, infrastructure, Stockyard, township/colony (within and adjacent to the ML), undisturbed area -if any, and landscape features such as existing roads, drains/natural water bodies to be left undisturbed along with any natural drainage adjoining the lease /project areas, and modification of thereof in terms of construction of embankments/bunds, proposed diversion/re-channelling of the water courses, etc., approach roads, major haul roads, etc should be indicated.																																																
1.12	Original land use (agricultural land/forestland/grazing land/wasteland/water bodies) of the area should be provided as per the tables given below. Impacts of project, if any on the land use, in particular, agricultural land/forestland/grazing land/water bodies falling within the lease/project and acquired for mining operations should be analyzed. Extent of area under surface rights and under mining rights should be specified. Area under Surface Rights <table><tr><th>S.N</th><th>ML/Project Land use</th><th>Area under Surface Rights(ha)</th><th>Area Under Mining Rights(ha)</th><th>Area under Both (ha)</th></tr><tr><td>1</td><td>Agricultural land</td><td></td><td></td><td></td></tr><tr><td>2</td><td>Forest Land</td><td></td><td></td><td></td></tr><tr><td>3</td><td>Grazing Land</td><td></td><td></td><td></td></tr><tr><td>4</td><td>Settlements</td><td></td><td></td><td></td></tr><tr><td>5</td><td>Others (specify)</td><td></td><td></td><td></td></tr></table> <table><tr><th>S.N.</th><th>Details</th><th>Area (ha)</th></tr><tr><td>1</td><td>Buildings</td><td></td></tr><tr><td>2</td><td>Infrastructure</td><td></td></tr><tr><td>3</td><td>Roads</td><td></td></tr><tr><td>4</td><td>Others (specify)</td><td></td></tr><tr><td></td><td>Total</td><td></td></tr></table>	S.N	ML/Project Land use	Area under Surface Rights(ha)	Area Under Mining Rights(ha)	Area under Both (ha)	1	Agricultural land				2	Forest Land				3	Grazing Land				4	Settlements				5	Others (specify)				S.N.	Details	Area (ha)	1	Buildings		2	Infrastructure		3	Roads		4	Others (specify)			Total	
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1.13	Study on the existing flora and fauna in the study area (10km) should be carried out by an institution of relevant discipline. The list of flora and fauna duly authenticated separately for the core and study area and a statement clearly specifying whether the study area forms a part of the migratory corridor of any endangered fauna should be given. If the study area has endangered flora and fauna, or if the area is occasionally visited or used as a habitat by Schedule-I species, or if the project falls within 15 km of an ecologically sensitive area, or used as a migratory corridor then a Comprehensive Conservation Plan along with the appropriate budgetary provision should be prepared and submitted with EIA-EMP Report; and comments/observation from the CWLW of the State Govt. should also be obtained and furnished.
1.14	One-season (other than monsoon) primary baseline data on environmental quality - air (PM10, PM2.5, SOx, NOx and heavy metals such as Hg, Pb, Cr, As, etc), noise, water (surface and groundwater), soil - along with one-season met data coinciding with the same season for AAQ collection period should be provided. The detail of NABL/ MoEF&CC certification of the respective laboratory and NABET accreditation of the consultant to be provided.
1.15	Map (1: 50, 000 scale) of the study area (core and buffer zone) showing the location of various sampling stations superimposed with location of habitats, other industries/mines, polluting sources, should be provided. The number and location of the sampling stations in both core and buffer zones should be selected on the basis of size of lease/project area, the proposed impacts in the downwind (air)/downstream (surface water)/groundwater regime (based on flow). One station should be in the upwind/upstream/non-impact/non-polluting area as a control station. The monitoring should be as per CPCB guidelines and parameters for water testing for both ground water and surface water as per ISI standards and CPCB classification wherever applicable. Observed values should be provided along with the specified standards.
1.16	For proper baseline air quality assessment, Wind rose pattern in the area should be reviewed and accordingly location of AAMSQ shall be planned by the collection of air quality data by adequate monitoring stations in the downwind areas. Monitoring location for collecting baseline data should cover overall the 10 km buffer zone i.e. dispersed in 10 km buffer area. In case of expansion, the displayed data of CAAQMS and its comparison with the monitoring data to be provided
1.17	A detailed traffic study along with presence of habitation in 100 mts distance from both side of road, the impact on the air quality with its proper measures and plan of action with timeline for widening of road. The project will increase the no. of vehicle along the road which will indirectly contribute to carbon emission so what will be the compensatory action plan should be clearly spell out in EIA/ EMP report.
1.18	The socio-economic study to conducted with actual survey report and a comparative assessment to be provided from the census data should be provided in EIA/ EMP report also occupational status & economic status of the study area and what economically project will contribute should be clearly mention. The study should also include the status of infrastructural facilities and amenities present in the study area and a comparative assessment with census data to be provided and to link it with the initialization and quantification of need based survey for CSR activities to be followed.
1.19	The Ecology and biodiversity study should also indicate the likely impact of change in forest area for surface infrastructural development or mining activity in relation to the climate change of that area and what will be the compensatory measure to be adopted by PP to minimize the impact of forest diversion.
1.20	Baseline data on the health of the population in the impact zone and measures for occupational

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	health and safety of the personnel and manpower for the mine should be submitted.
1.21	Impact of proposed project/activity on hydrological regime of the area shall be assessed and report be submitted. Hydrological studies as per GEC 2015 guidelines to be prepared and submitted
1.22	Impact of mining and water abstraction from the mine on the hydrogeology and groundwater regime within the core zone and 10 km buffer zone including long-term monitoring measures should be provided. Details of rainwater harvesting and measures for recharge of groundwater should be reflected in case there is a declining trend of groundwater availability and/or if the area falls within dark/grey zone.
1.23	Study on land subsidence including modeling for prediction, mitigation/prevention of subsidence, continuous monitoring measures, and safety issues should be carried out.
1.24	Detailed water balance should be provided. The break up of water requirement as per different activities in the mining operations, including use of water for sand stowing should be given separately. Source of water for use in mine, sanction of the Competent Authority in the State Govt. and impacts vis-à-vis the competing users should be provided.
1.25	PP shall submit design details of all Air Pollution control equipment (APCEs) to be implemented as part of Environment Management Plan vis-à-vis reduction in concentration of emission for each APCEs
1.26	PP shall propose to use LNG/CNG based mining machineries and trucks for mining operation and transportation of mineral. The measures adopted to conserve energy or use of renewable sources shall be explored
1.27	PP to evaluate the green house emission gases from the mine operation and corresponding carbon absorption plan.
1.28	Site specific Impact assessment with its mitigation measures, Risk Assessment and Disaster Preparedness and Management Plan should be provided.
1.29	Impact of choice of mining method, technology, selected use of machinery and impact on air quality, mineral transportation, handling & storage/stockyard, etc, Impact of blasting, noise and vibrations should be provided.
1.30	Impacts of mineral transportation within the mining area and outside the lease/project along with flow-chart indicating the specific areas generating fugitive emissions should be provided. Impacts of transportation, handling, transfer of mineral and waste on air quality, generation of effluents from workshop etc, management plan for maintenance of HEMM and other machinery/equipment should be given. Details of various facilities such as rest areas and canteen for workers and effluents/pollution load emanating from these activities should also be provided.
1.31	Details of various facilities to be provided to the workers in terms of parking, rest areas and canteen, and effluents/pollution load resulting from these activities should also be given.
1.32	The number and efficiency of mobile/static water jet, Fog cannon sprinkling system along the main mineral transportation road inside the mine, approach roads to the mine/stockyard/siding, and also the frequency of their use in impacting air quality should be provided.

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1.33	Conceptual Final Mine Closure Plan and post mining land use and restoration of land/habitat to the pre- mining status should be provided. A Plan for the ecological restoration of the mined out area and post mining land use should be prepared with detailed cost provisions. Impact and management of wastes and issues of re-handling (wherever applicable) and backfilling and progressive mine closure and reclamation should be furnished.
1.34	Adequate greenbelt nearby areas, mineral stock yard and transportation area of mineral shall be provided with details of species selected and survival rate Greenbelt development should be undertaken particularly around the transport route.
1.35	Cost of EMP (capital and recurring) should be included in the project cost and for progressive and final mine closure plan.
1.36	Details of R&R. Detailed project specific R&R Plan with data on the existing socio- economic status of the population (including tribals, SC/ST, BPL families) found in the study area and broad plan for resettlement of the displaced population, site for the resettlement colony, alternate livelihood concerns/employment for the displaced people, civic and housing amenities being offered, etc and costs along with the schedule of the implementation of the R&R Plan should be given.
1.37	CSR Plan along with details of villages and specific budgetary provisions (capital and recurring) for specific activities over the life of the project should be given.
1.38	Corporate Environment Responsibility:
1.39	a) The Company must have a well laid down Environment Policy approved by the Board of Directors.
1.40	b) The Environment Policy must prescribe for standard operating process/procedures to bring into focus any infringements/deviation/violation of the environmental or forest norms/conditions.
1.41	c) The hierarchical system or Administrative Order of the company to deal with environmental issues and for ensuring compliance with the environmental clearance conditions must be furnished.
1.42	d) To have proper checks and balances, the company should have a well laid down system of reporting of non-compliances/violations of environmental norms to the Board of Directors of the company and/or shareholders or stakeholders at large.
1.43	e) Environment Managament Cell and its responsibilities to be clearly spleel out in EIA/ EMP report
1.44	f) In built mechanism of self-monitoring of compliance of environmental regulations should be indicated.
1.45	Status of any litigations/ court cases filed/pending on the project should be provided.
1.46	PP shall submit clarification from DFO that mine does not falls under corridors of any National Park and Wildlife Sanctuary with certified map showing distance of nearest sanctuary.

S. No	Terms of Reference												
1.47	Copy of clearances/approvals such as Forestry clearances, Mining Plan Approval, mine closer plan approval. NOC from Flood and Irrigation Dept. (if req.), etc. wherever applicable.												
1.48	Details on the Forest Clearance should be given as per the format given: <table><thead><tr><th>Total ML Project Area (ha)</th><th>Total Forest land (ha)</th><th>Date of FC</th><th>Extent of Forest Land</th><th>Balance area for which FC is yet to be obtained</th><th>Status of appl For diversion of forest land</th></tr></thead><tbody><tr><td colspan="6">If more than one provide details of each FC</td></tr></tbody></table>	Total ML Project Area (ha)	Total Forest land (ha)	Date of FC	Extent of Forest Land	Balance area for which FC is yet to be obtained	Status of appl For diversion of forest land	If more than one provide details of each FC					
Total ML Project Area (ha)	Total Forest land (ha)	Date of FC	Extent of Forest Land	Balance area for which FC is yet to be obtained	Status of appl For diversion of forest land								
If more than one provide details of each FC													
1.49	In case of expansion of the proposal, the status of the work done as per mining plan and approved mine closure plan shall be detailed in EIA/ EMP report												
1.50	Details on Public Hearing should cover the information relating to notices issued in the newspaper, proceedings/minutes of Public Hearing, the points raised by the general public and commitments made by the proponent and the time bound action proposed with budgets in suitable time frame. These details should be presented in a tabular form. If the Public Hearing is in the regional language, an authenticated English Translation of the same should be provided.												
1.51	PP shall carry out survey through drone highlighting the ground reality for atleast 10 minutes												
1.52	Detailed Chronology of the project starting from the first lease deed allotted/Block allotment/ Land acquired to its No. of renewals, CTO /CTE with details of no. renewals, previous EC(s) granted details and its compliance details, NOC details from various Govt bodies like Forest NOC(s), CGWA permissions, Power permissions, etc as per the requisites respectively to be furnished in tabular form.												
1.53	The first page of the EIA/ EMP report must mention the peak capacity production, area, detail of PP, Consultant (NABET accreditation) and Laboratory (NABL / MoEF & CC certification)												
1.54	The compliances of ToR must be properly cited with respective chapter section and page no in tabular form and also mention sequence of the respective ToR complied within the EIA-EMP report in all the chapter,s section.												

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 clearly indicating the area to be covered under plantation and the species to be planted. The details of plantation already done should be given. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerant to pollution.
- 32) Impact on local transport infrastructure due to the Project should be indicated. Projected increase in truck traffic as a result of the Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of handling the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress Guidelines.
- 33) Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.
- 34) Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report.
- 35) Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.
- 36) Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed 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 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 its acquisition, nearby (in 2-3 km.) water body, population, within 10km other industries, forest, eco-sensitive zones, accessibility, (note - in case of industrial estate this information may not be necessary)
18. Baseline environmental data - air quality, surface and ground water quality, soil characteristic, flora and fauna, socio-economic condition of the nearby population
19. Identification of hazards in handling, processing and storage of hazardous material and safety system provided to mitigate the risk.
20. Likely impact of the project on air, water, land, flora-fauna and nearby population
21. Emergency preparedness plan in case of natural or in plant emergencies
22. Issues raised during public hearing (if applicable) and response given
23. CER plan with proposed expenditure.
24. Occupational Health Measures
25. Post project monitoring plan
26. The project proponent shall carry out detailed hydro geological study through intuitions/NABET Accredited agencies.
27. A detailed report on the green belt development already undertaken is to be furnished and also submit the proposal for green belt activities.
28. The proponent shall propose the suitable control measure to control the fugitive emissions during the operations of the mines.
29. A specific study should include impact on flora & fauna, disturbance to migratory pattern of animals.
30. Reserve funds should be earmarked for proper closure plan.

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

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

- a. A note confirming compliance of the TOR, with cross referencing of the relevant sections / pages of the EIA report should be provided.
- b. All documents may be properly referenced with index, page numbers and continuous page numbering.
- c. Where data are presented in the report especially in tables, the period in which the data were collected and the sources should be indicated.
- d. While preparing the EIA report, the instructions for the proponents and instructions for the consultants issued by MoEF& CC vide O.M. No. J-11013/41/2006-IA.II (I) dated 4th August, 2009, which are available on the website of this Ministry should also be followed.
- e. The consultants involved in the preparation of EIA/EMP report after accreditation with Quality Council of India (QCI)/National Accreditation Board of Education and Training (NABET) would need to include a certificate in this regard in the EIA/EMP reports prepared by them and data provided by other organization/Laboratories including their status of approvals etc. In this regard circular no F. No.J -11013/77/2004-IA-II(I) dated 2nd December, 2009, 18th March 2010, 28th May 2010, 28th June 2010, 31st December 2010 & 30th September 2011 posted on the Ministry's website <http://www.moef.nic.in/> may be referred.
 - After preparing the EIA (as per the generic structure prescribed in Appendix-III of the EIA Notification, 2006) covering the above mentioned points, the proponent will take further necessary action for obtaining environmental clearance in accordance with the procedure prescribed under the EIA Notification, 2006.
 - The final EIA report shall be submitted to the SEIAA, Tamil Nadu for obtaining Environmental Clearance.
 - The TORs with public hearing prescribed shall be **valid for a period of three years** from the date of issue, for submission of the EIA/EMP report as per OMNo.J-11013/41/2006-IA-II(I)(part) dated 29th August, 2017.

From

Thiru. A.Perumal, M.Sc., M.Phil.,
Deputy Director,
Geology and Mining,
Tiruppur

To

Thiru.A.A.Kumaresan,
S/o.A.Arumugam,
3-109, Morattupalayam,
Uthukuli Taluk,
Tiruppur District.

R.c. No. 817/ Mines / 2023 dated: 05-07.2024

Sub: Mines and Minerals – Minor Mineral – Rough Stone and Gravel- Tiruppur District –Uthukuli Taluk – Morattupalayam Village- S.F.Nos. 376/1B(0.62.00), 376/2 (0.98.50), 375/10 (0.04.00), 375/11 (0.10.50), 375/12 (0.03.00), 375/13 (0.09.50), 375/14 (0.21.00), 375/15 (0.24.50) and 375/16 (0.29.00) totally over an extent of 2.62.0 Hectares of patta land- Quarry lease for Rough Stone and Gravel - Application preferred by Thiru.A.A.Kumaresan - Precise area communicated for the proposed grant of quarry lease - Mining Plan Submitted for approval - Approved - regarding.

- Ref: 1. Application for grant of Rough Stone and Gravel quarry lease preferred by Thiru.A.A.Kumaresan dated: 28.12.2023.
2. G.O. Ms. No. 79 / Industries (MMC 1) Department dated 06.04.2015.
3. The Deputy Director, Geology and Mining, Tiruppur letter R.C. No. 817/Mines/2023 dated 27.06.2024.
4. Thiru.A.A.Kumaresan letter dated:nil received on 04.07.2024

Thiru.A.A.Kumaresan preferred an application for the grant of Rough Stone and Gravel quarry lease over an extent of 2.62.0 Hectares of Patta land in S.F.Nos. 376/1B(0.62.00), 376/2 (0.98.50), 375/10 (0.04.00), 375/11 (0.10.50), 375/12 (0.03.00), 375/13 (0.09.50), 375/14 (0.21.00), 375/15 (0.24.50) and 375/16 (0.29.00) of Morattupalayam Village, Uthukuli Taluk, Tiruppur District vide the reference 1st cited and the precise area was communicated to the applicant vide the reference 3rd cited with a direction to submit the approved mining plan and Environmental Clearance.

As directed, the applicant submitted three copies of mining plan for approval vide the reference 4th cited. The Mining Plan has been verified in detail and found that it was prepared in accordance with the guidelines / instructions issued by the Commissioner of Geology and Mining in letter RC. No. 3868 / LC / 2012 dated 19.11.2012.

Therefore in exercise of the powers conferred under Rule 41(2) of Tamil Nadu Minor Mineral Concession Rules, 1959, read with G.O. (Ms). No.79 / Industries (MMC 1) Department dated 06.04.2015, the mining plan is hereby approved, subject to the following conditions:

- (i) The mining plan is approved without prejudice to any other Law applicable to the quarry lease from time to time whether such laws are made by the Central Government, State Government or any other authority.
- (ii) This approval of the mining plan does not in any way convey the approval of the Government in terms or 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, Explosives Act, 1884 (Central Act IV of 1884) Minor Mineral Concession and Development Rules, 2010 and the Rules made there under and the Tamil Nadu Minor Mineral Concession Rules, 1959.
- (iii) The mining plan is approved without prejudice to any other order or direction from any court of competent jurisdiction.
- (iv) The validity of the mining plan is co-terminus with the lease period.
- (v) Quarrying shall be done in accordance with 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.
- (vi) 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.
- (vii) A safety distance of 7.5 meters shall be provided for the patta lands situated adjacent to the applied area.
- (viii) A safety distance of 10 meters shall be provided for the village road passing on the South Eastern side of the applied area.

Encl.: Approved Mining Plan.


Deputy Director,
Geology and Mining,
Tiruppur

From

Thiru.A.Perumal, M.Sc., M.Phil
Deputy Director,
Geology and Mining,
Tiruppur

To

Thiru.A.A.Kumaresan,
S/o.A.Arumugam,
3-109, Morattupalayam,
Uthukuli Taluk,
Tiruppur District.

R.c. No. 817/ Mines / 2023 dated: 05.07.2024

Sub: Mines and Minerals – Minor Mineral – Rough Stone and Gravel- Tiruppur District – Uthukuli Taluk – Morattupalayam Village- S.F.Nos. 376/1B(0.62.00), 376/2 (0.98.50), 375/10 (0.04.00), 375/11 (0.10.50), 375/12 (0.03.00), 375/13 (0.09.50), 375/14 (0.21.00), 375/15 (0.24.50) and 375/16 (0.29.00) totally over an extent of 2.62.0 Hectares of patta land- Quarry lease for Rough Stone and Gravel - Application preferred by Thiru.A.A.Kumaresan - Precise area communicated for the proposed grant of quarry lease - Mining Plan Submitted for approval - Approved - further details requested - furnished regarding.

- Ref: 1. Application for grant of Rough Stone and Gravel quarry lease preferred by Thiru.A.A.Kumaresan dated: 28.12.2023.
2. G.O. Ms. No. 79 / Industries (MMC 1) Department dated 06.04.2015.
3. The Deputy Director, Geology and Mining, Tiruppur letter R.C. No. 817/Mines/2023 dated 27.06.2024.
4. Thiru.A.A.Kumaresan letter dated:nil received on 04.07.2024
5. This office letter even no. dated. 05.07.2023 (Mining Plan approved)

In the reference 5th cited above, the applicant Thiru.A.A.Kumaresan has requested to furnish details of other quarry leases of expired, existing and proposed within 500mtr radius from the proposed rough stone and gravel lease over an extent of 2.62.0 Hect in S.F.Nos. 376/1B(0.62.00), 376/2 (0.98.50), 375/10 (0.04.00), 375/11 (0.10.50), 375/12 (0.03.00), 375/13 (0.09.50), 375/14 (0.21.00), 375/15 (0.24.50) and 375/16 (0.29.00) of Morattupalayam Village of Uthukuli Taluk, Tiruppur District.

As requested by the applicant, the details of existing, proposed and expired quarries situated within the radius of 500 meters from the subject area are furnished as follows:-

1. Existing quarries:

SNo	Name of the Applicant	S.F.Nos	Extent(Hect)	Lease Period
1.	A.A.Kumaresan	378 (Part)	2.67.0	25.08.2022 – 24.08.2027
2.	P.Dharmaselvan	396/2A	1.82.0	13.04.2023 – 12.04.2028
3.	R.Chitra	367/2A(P)	1.66.0	13.12.2023 – 12.12.2028

2. Proposed quarries :

Sl.No	Name of the Applicant	S.F.Nos	Extent (Hect)	Remarks
1.	A.A.Kumaresan	376/1B(0.62.00), 376/2 (0.98.50), 375/10 (0.04.00), 375/11 (0.10.50), 375/12 (0.03.00), 375/13 (0.09.50), 375/14 (0.21.00), 375/15 (0.24.50) and 375/16 (0.29.00)	2.62.0	Applied for quarry lease

3. Lease expired and abandoned quarries:

SNo	Name of the Applicant	S.F.Nos	Extent(Hect)	Lease Period
1.	P.K.Subramaniam	376/1		13.09.2011 – 12.09.2016

Deputy Director
Geology and Mining,
Tiruppur

Copy to : State Level Environment Impact Assessment Authority-Tamil Nadu, 3rd Floor, Panagal Maaligai, No.1 Jeenis Road, Saidapet, Chennai-15



MINING PLAN AND PROGRESSIVE QUARRY CLOSURE PLAN FOR MORATTUPALAYAM 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 : 2.62.0Ha
S.F.Nos. : 376/1B, 376/2, 375/10, 375/11, 375/12,
375/13, 375/14, 375/15 and 375/16,
VILLAGE : MORATTUPALAYAM
TALUK : UTHUKULI
DISTRICT : TIRUPPUR
STATE : TAMIL NADU

FOR

APPLICANT

Thiru. A.A. Kumaresan,

S/o. Arumugam,
No.3-109, Morattupalayam,
Uthukuli Taluk, Tiruppur District,
Tamil Nadu State – 638 752.

PREPARED BY

P. Viswanathan, M.Sc.,

Qualified Person

No. 4/366-D, Selva Nagar,
Kamaraj Nagar Colony, Near Omega Church,
Salem District – 636 014,
Mobile No.: +91 97916 09929.
E-Mail: viswa2727@gmail.com

ABBREVIATIONS

- EIA - Environmental Impact Assessment
- SEAC - State Expert Appraisal Committee
- SEIAA - State Level Environment Impact Assessment Authority
- MoEF&CC - Ministry of Environment, Forest and Climate changes
- MSL - Mean Sea Level
- CPCB - Central Pollution Control Board
- TNPCB - Tamil Nadu Pollution Control Board
- S.F.No. - Survey Field Number
- DMS - Director of Mines Safety
- DGMS - Director General of Mines Safety
- MMR - Metalliferous Mines Regulations
- MCR - Minerals (Other than Atomic and Hydro Carbons Energy Minerals) Concession Rules
- TNMMCR - Tamil Nadu Minor Mineral Concession Rules
- EMP - Environment Management Plan
- NONEL - Non Electric
- PPV - Peak Particle Velocity
- CRZ - Coastal Regulatory Zone
- HACA - Hill Area Conservation Authority
- QP - Qualified Person



A.A. Kumaresan,

S/o. Arumugam,

No. 3-109, Morattupalayam,

Uthukuli Taluk, Tiruppur District,

Tamil Nadu State – 638 752.

CONSENT LETTER FROM THE APPLICANT

The Mining Plan and Progressive Quarry Closure Plan in Respect of Morattupalayam Rough Stone and Gravel Quarry lease applied area over an extent of 2.62.0 Hectares Patta lands in S.F.Nos. 376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 and 375/16 of Morattupalayam Village, Uthukuli Taluk, Tiruppur District, Tamil Nadu State has been prepared by

B. Vengadagiri, 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 Deputy Director, Department of Geology and Mining, Tiruppur District, Tamil Nadu State to make further correspondence regarding the modification of the Mining Plan with the said Qualified Person at his following address.

B. Vengadagiri, M.Sc.,

No.105, 5th Cross, Alagapuram,

Salem District – 636 010,

Mobile No.: +91 86953 32233.

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 our knowledge and consent and shall be acceptable to me and binding on me in all respects. If there is any substantial change during operation we will carry out a Modified Mining plan and seek its approval from concerned Authorities.

Signature of the Applicant


(A.A. Kumaresan)

Place: Tiruppur

Date: 28.06.2024



A.A. Kumaresan,
S/o. Arumugam,
No. 3-109, Morattupalayam,
Uthukuli Taluk, Tiruppur District,
Tamil Nadu State – 638 752.

DECLARATION OF THE APPLICANT

The Mining Plan and Progressive Quarry Closure Plan in Respect of Morattupalayam Rough Stone and Gravel Quarry lease applied area over an extent of 2.62.0 Hectares Patta lands in S.F.Nos. 376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 and 375/16 of Morattupalayam Village, Uthukuli Taluk, Tiruppur District, Tamil Nadu State has been prepared in full consultation with me.

I have understood its contents and agree to implement the same in accordance with Laws, Rules and Act applicable to quarry from time to time as per Tamil Nadu Minor Mineral Concession Rules, 1959.

Signature of the Applicant


(A.A. Kumaresan)

Place: Tiruppur

Date: 03.07.2024



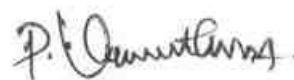
CERTIFICATE

Certified that I am, **P. Viswanathan, M.Sc.**, residing at No. 4/366-D, Selva Nagar, Kamaraj Nagar Colony, Near Omega Church, Salem District – 636 014, Tamil Nadu, holding a Post Graduate Degree in Geology (M.Sc., Applied Geology) from Periyar University, Salem 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 degree in mining engineering or 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 Morattupalayam Rough Stone and Gravel Quarry over an extent of 2.62.0 Hectares Patta lands in S.F.Nos. 376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 and 375/16 of Morattupalayam Village, Uthukuli Taluk, Tiruppur District for **Thiru. A.A. Kumaresan**, S/o. Arumugam, residing at No. 3-109, Morattupalayam, Uthukuli Taluk, Tiruppur District, Tamil Nadu State – 638 752. 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



P. Viswanathan, M.Sc.,

Place: Salem

Date: 03.07.2024



P. Viswanathan, M.Sc.,

No. 4/366-D, Selva Nagar,

Kamaraj Nagar Colony, Near Omega Church,

Salem District – 636 014,

Mobile No.: +91 97916 09929.

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 Morattupalayam Rough Stone and Gravel Quarry lease applied area over an extent of 2.62.0 Hectares Patta lands in S.F.Nos. 376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 and 375/16 of Morattupalayam Village, Uthukuli Taluk, Tiruppur District, Tamil Nadu State has been prepared for

Thiru. A.A. Kumaresan,

S/o. Arumugam,

No. 3-109, Morattupalayam,

Uthukuli Taluk, Tiruppur District,

Tamil Nadu State – 638 752.

Whenever specific permissions / exemptions / relaxations and approvals are required, the applicant will approach the concerned authorities of the Deputy Director, Department of Geology and Mining, Tiruppur District, Tamil Nadu State 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


P. Viswanathan, M.Sc.,

Place: Salem

Date: 03.07.2024



P. Viswanathan, M.Sc.,

No. 4/366-D, Selva Nagar,

Kamaraj Nagar Colony, Near Omega Church,

Salem District – 636 014,

Mobile No.: +91 97916 09929.

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 Morattupalayam Rough Stone and Gravel Quarry lease applied area over an extent of 2.62.0 Hectares Patta lands in S.F.Nos. 376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 and 375/16 of Morattupalayam Village, Uthukuli Taluk, Tiruppur District, Tamil Nadu State has been prepared for

Thiru. A.A. Kumaresan,

S/o. Arumugam,

No. 3-109, Morattupalayam,

Uthukuli Taluk, Tiruppur District,

Tamil Nadu State – 638 752.

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 State 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

P. Viswanathan, M.Sc.,

Place: Salem

Date: 03.07.2024

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MINING PLAN ALONG WITH PROGRESSIVE QUARRY CLOSURE PLAN FOR MORATTUPALAYAM ROUGH STONE AND GRAVEL.

(PREPARED UNDER RULES 41 & 42 AS PER THE AMENDMENT OF TAMIL NADU MINOR MINERAL CONCESSION RULES, 1959)

1.0 INTRODUCTION AND EXECUTIVE SUMMARY:

The Applicant **Thiru. A.A. Kumaresan**, S/o. Arumugam, residing at No. 3-109, Morattupalayam, Uthukuli Taluk, Tiruppur District, Tamil Nadu State – 638 752 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 has applied quarry lease for quarrying of Rough stone and Gravel over an extent of 2.62.0 Hectares Patta lands in S.F.Nos. 376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 and 375/16 of Morattupalayam Village, Uthukuli Taluk, Tiruppur District, Tamil Nadu State for a period of ten years under Rules 19 of Tamil Nadu Minor Mineral Concession Rules, 1959. The following are the statutory requirements with respect to Rough stone and Gravel quarry (Refer Annexure No. I).

1. Thiru. A.A. Kumaresan, S/o. Arumugam, residing at No. 3-109, Morattupalayam, Uthukuli Taluk, Tiruppur District applicant application Dated: 28.12.2023.
2. Deputy Director, Department of Geology and Mining, Tiruppur, letter Rc.No. 817/Mines/2023 dated: 28.12.2023.
3. The Tashildar, Uthukuli letter R.C.No.688/2024/A1 dated: 20.02.2024.
4. Sub Collector (i/c), Tiruppur, Letter No. 650/2024/A3 dated: 30.04.2024.
5. The Block Development Officer, Uthukuli letter R.c.No.355/2024/A2 dated: 22.06.2024.
6. Assistant Geologist, Department of Geology and Mining, Tiruppur, inspection report dated:06.2024.
7. Other related Documents.

The application was examined, Scrutinized, Inspected and processed by the Deputy Director, Department of Geology and Mining, Tiruppur and issued a Precise Area Communication letter vide letter **R.C. No. 817/Mines/2023, dated: 27.06.2024** for preparation of Mining plan as per the Rule 41 & 42 of Tamil Nadu Minor Mineral Concession Rules, 1959 within 90 days and getting approval from the Department of Geology and Mining, Tiruppur to obtain Environmental Clearance from the State Level Environment Impact Assessment Authority (SEIAA), Tamil Nadu, with the following conditions to provide (Refer Annexure No. I):

**General Conditions:**

- The quarried out minerals should be transported after paid the necessary seniorage fee as per Appendix- II of Tamil Nadu Minor Mineral Concession Rules, 1959.
- A safety distance of 7.5 meters should be provided to the adjacent patta lands from the lease applied area.
- Quarrying should be carried out using low explosives with qualified blaster.
- The applicant should submit the DGPS survey report for the area applied for lease area.
- Explosives should be carried out by experienced explosives operators using low power explosives without No Encroachment shall be caused to the adjacent Government Poramboke lands and Patta lands while quarry operation.
- As per the rules, approved mining plan should be submitted within due time.
- The applicant should submit the Mining plan and Environmental Clearance before grant of quarry lease.

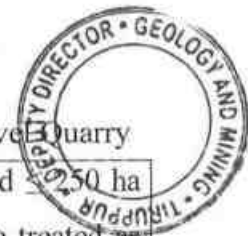
Specific conditions as prescribed in the precise area communication letter:

- A safety distance of 10 meters should be provided to the Village Road passing on the southeastern side of the applied area while quarrying operation.
- The crusher machines located in the permission seeking area should be removed prior to the before grant of quarry lease.

This Mining Plan along with Progressive Mine closure Plan is prepared in full consultation with **Thiru. A.A. Kumaresan**, S/o. Arumugam, residing at No. 3-109, Morattupalayam, Uthukuli Taluk, Tiruppur District, Tamil Nadu State – 638 752 for Rough stone and Gravel quarry over an extent of 2.62.0 Hectares Patta lands in S.F.Nos. 376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 and 375/16 of Morattupalayam Village, Uthukuli Taluk, Tiruppur District, Tamil Nadu State under Rules 19 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 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 of 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),

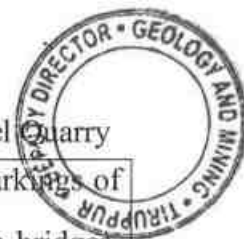


Dated: 20.04.2022 "All mining lease area in respect of minor mineral mining leases and mining lease area in respect of major mineral mining lease other than coal" would be treated as category B and will be considered by the state notified by Ministry of Environment, Forest and Climate Change as prescribed procedure under EIA notification 2006.

The field survey carried out by the Qualified Person and Team as on 01.07.2024.

Short Notes of Mining plan:

- a. Village Panchayat - Morattupalayam
- b. Panchayat Union - Uthukuli
- c. Total extent of the lease applied area is 2.62.0Ha.
- d. Topography of the area - The area exhibits plain topography.
- e. The Estimated Geological Resources are **11,60,460m³** of Rough stone and **51,576m³** of Gravel in the entire area.
- f. Tentative total Mineable Reserves are **3,98,920m³** of Rough stone and **40,116m³** of Gravel in the entire area.
- g. The proposed quantity of reserves/ (level of production) to be mined are **3,98,920m³** of Rough stone (**2,13,840m³** for **first five years** and **1,85,080m³** for **second five years** period) for Ten years and **40,116m³** of Gravel for first three years in the entire area.
- h. Proposed Depth of mining = 47m below ground level.
- i. Lease Period = Ten years
- j. Mining Plan Period = Five years
- k. It is a fresh lease applied area, at present the area is virgin. Hence no existing pit.
- l. Method of mining / level of mechanization.
Opencast mechanized method, the quarry operation involves shallow jack hammer drilling, slurry blasting with NONEL initiation.
- m. Type of machineries proposed in the quarrying operation is given below.
Excavators attached with bucket and rock breaker.
Hand Jack hammer, Compressor (Diesel drive) (4 Jack Hammer capacity).
- n. No trees will be uprooted due to this quarry operation.
- o. The approach road from the main road to quarry will be constructed and same has been maintained in a good condition for the haulage of quarry materials and machineries.
- p. There is No Export of this Rough stone and Gravel.



- q. 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 & IB.
- r. The lease applied area is about 2.62.0Ha bounded by twelve corners; the corners are designated as 1 – 12 clockwise from the Southwest corner and the Co – ordinates for all the corners are clearly marked in the Quarry Lease Plan and Surface Plan enclosed as Plate No. II.
- s. 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 and IV.
- t. General conditions will not applicable for the proposed area. The area applied for lease is 10Km away from the,
- i) *Interstate Boundary,*
 - ii) *Protected area under wild life protection ACT, 1972,*
 - iii) *Critically polluted areas as identified by CPCB,*
 - iv) *Notified Eco sensitive areas.*
- u. There is no waste anticipated during this quarry operation, hence waste dump is not proposed in the lease applied area.
- v. Around 32 employees are proposed to deploying the quarrying operation.
- w. Total Cost of the project is about **Rs.1,04,34,000/-**.

**2.0 GENERAL INFORMATION**

2.1 a) Name of the Applicant : **Thiru. A.A. Kumaresan,**
S/o. Arumugam,

b) Address of the Applicant (With Phone No and Aadhaar No.)

Address : No. 3-109, Morattupalayam,
Uthukuli Taluk, Tiruppur District,
State with Pin Code : Tamil Nadu – 638 752.
Mobile No : +91 97887 28877 and 93445 77440.
Aadhaar No : 5776 0366 4924
E-mail : rasonaggregates@rason.in

c) Status of the Applicant (Individual / Company / Firm):

The applicant is an individual.

2.2 a) Mineral which the Applicant intends to mine:

The Applicant intends to quarry Rough stone and Gravel only.

b) Precise area communication letter details received from the Competent Authority of the Government:

The precise area communication letter was received from the Deputy Director, Department of Geology and Mining, Tiruppur District vide **R.C. No. 817/Mines/2023, dated: 27.06.2024** (Refer Annexure No. I) and was given to us for the preparation of mining plan to meet out the applicant production schedule.

c) Period of permission / lease to be granted:

Ten Years as mentioned in Precise area Communication letter.

d) Name and address of the Qualified Person who preparing the Mining Plan:

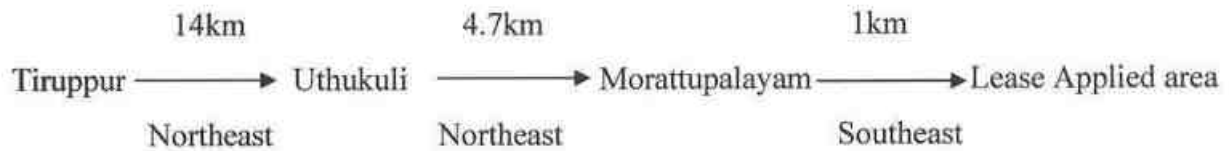
Name : **P. Viswanathan, M.Sc.,**
Qualified Person (As per Rule 15(I)(a) and (I)(b) of MCR, 2016)
Address : No. 4/366-D, Selva Nagar,
Kamaraj Nagar Colony, Near Omega Church,
Salem District – 636 014.
Mobile : +91 97916 09929.
Email : viswa2727@gmail.com



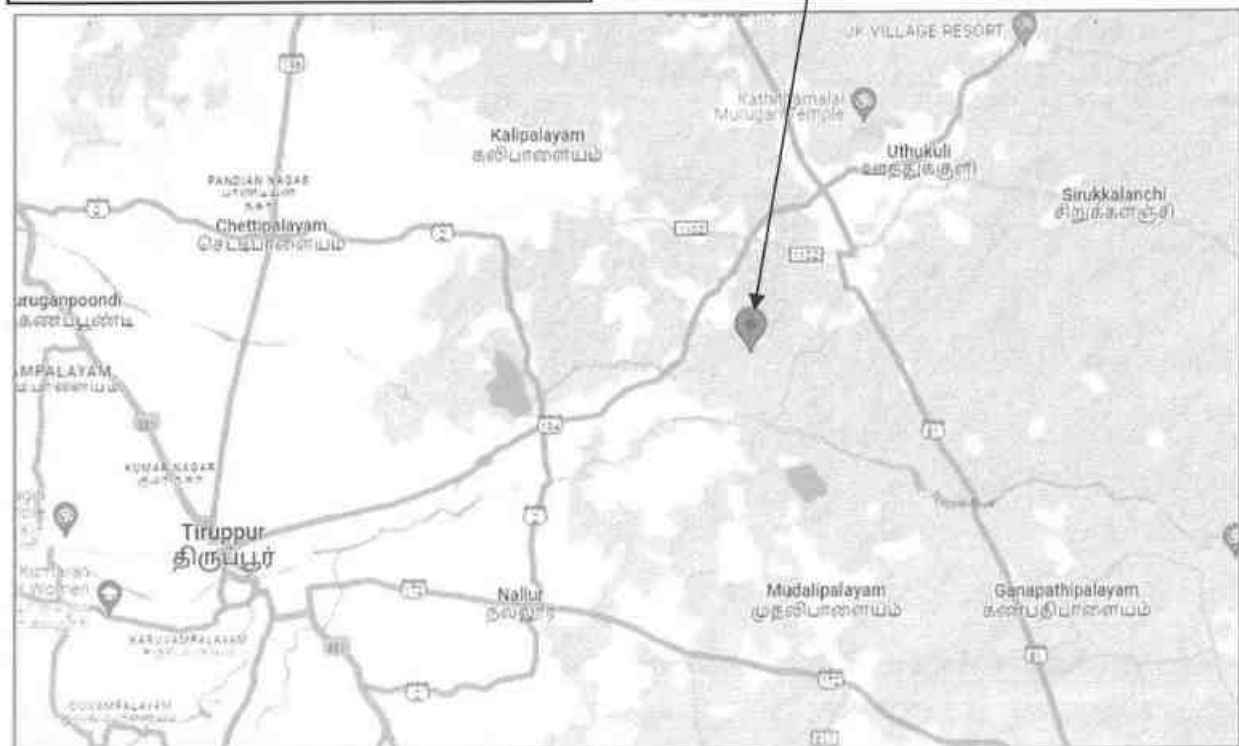
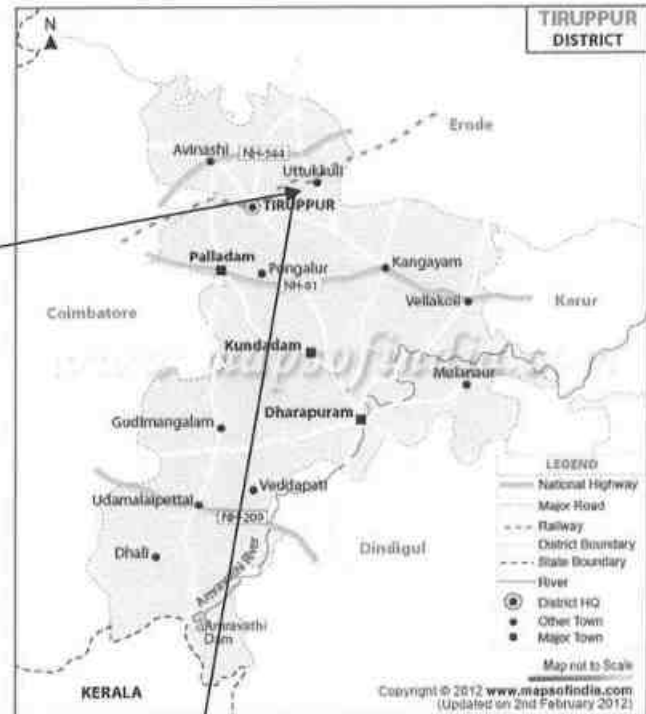
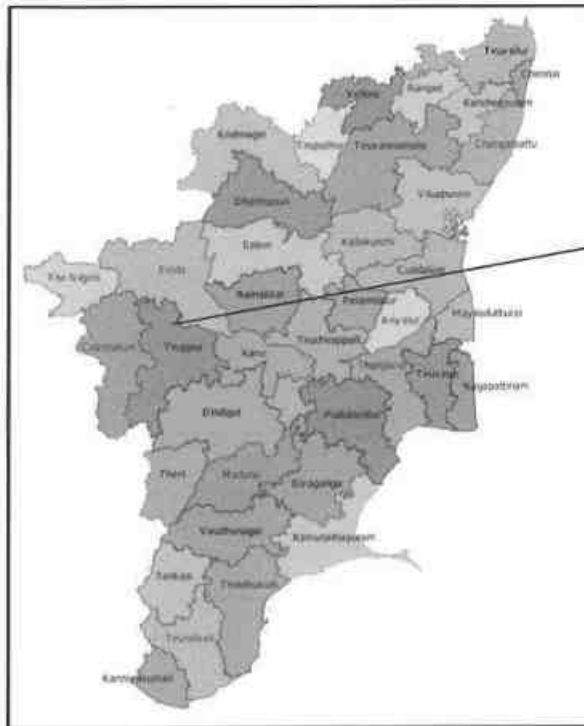
3.0 LOCATION

a) Details of the area with location map:

The Lease applied area is located about 9.8km Northeastern side of Tiruppur town, 4.4km Southwestern side of Uthukuli town and 1 km Southeastern side of Morattupalayam Village.



Location Map of the Lease Applied area



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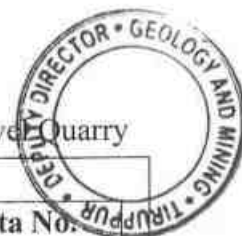


Table – 1

District	Taluk	Village	S.F. No.	Area (Ha.)	Patta No.
Tiruppur	Uthukuli	Morattupalayam	376/1B	0.62.00	1633
			376/2	0.98.50	
			375/10	0.04.00	
			375/11	0.10.50	
			375/12	0.03.00	
			375/13	0.09.50	
			375/14	0.21.00	
			375/16	0.24.50	
			375/16	0.29.00	
Total Extent				2.62.00	

Source: As per the FMB and 'A' register record furnished by the applicant.

b) Classification of the area (Ryotwari/ Poramboke / others):

It is Patta lands, classified as Punsei (Barren land) (Refer Annexure Nos. IV & VI).

c) Ownership / Occupancy of the applied area (surface right):

It is Patta lands, registered in the name of applicant (Thiru. A. A. Kumaresan, S/o. Arumugam) vide patta Nos. 1633 (Refer Annexure Nos. IV & VI).

d) Toposheet No. with latitude and longitude:

The lease applied area falls in the Toposheet No: 58 E/08 Latitude between: 11°08'20.63"N to 11°08'28.34"N and Longitude between: 77°25'36.57"E to 77°25'42.56"E on WGS datum-1984. Please refer the Plate Nos. I to II as per the GSI Toposheet.

e) Existence of public road / Railway line, if any nearby and approximate distance:

The approach road is situated on the Western side, which connects to the Village road is located at 410m on the Northwestern side of the lease applied area.

Road access is available from the quarry to state highways and 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 will be constructed and the same has been utilized for haulage and maintained during the entire lease period.

The Nearest Railway line is Salem - Coimbatore which is located about 1.3km on the Northern side of the area as per the GSI Toposheet and Google Map.

**PART - A****4.0 GEOLOGY AND MINERAL RESERVES****4.1 Brief description of the Topography and general Geology of the area (with plans):**

The lease applied area exhibits plain topography. The area has gentle sloping towards Southeastern side and altitude of the area is 295m above from Mean Sea Level. The area is covered by 2m thickness of Gravel and followed by Massive Charnockite which is clearly inferred from the nearby existing quarry pit. The Water level in the surrounding area is 58m – 63m below from general ground profile which is observed from the nearby bore wells. Average annual rainfall is about 607mm.

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 of the Charnockite body is N35°E – S35°W with dipping towards SE70°.

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

4.2 Details of exploration already carried out if any:

State Geology and Mining Dept, 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 Tiruppur District. Besides, the Qualified Person and his team members made a detailed geological study of the proposed area. The Rough stone formation is clearly inferred from the nearby existing quarry pit.

4.3 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 four sections have been drawn, one cross section drawn length wise as (X-Y) and other three cross sections is drawn as Width wise (A-B, C-D and E-F) to cover the maximum area considered for lease upto 47m depth.

The Topographical, Geological plan and sections demarcated the commercial marketable Rough stone (Charnockite) deposit has been prepared in the scale of 1:1000 (please refer the Geological plan and sections Plate Nos. III and III-A). As the sale of Rough stone 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):**

The Geological Resources of Rough Stone and Gravel are calculated upto a depth of 47m (2m Gravel + 45m Rough stone) below from the ground level. The total **Geological Resources** are calculated by cross sectional method. The total geological resources are given table below:

TABLE - 2

GEOLOGICAL RESOURCES						
Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Geological Resources of Rough stone in (m³) 100%	Gravel (m³)
XY-AB	I	104	83	2	-	17264
	II	104	83	5	43160	-
	III	104	83	5	43160	-
	IV	104	83	5	43160	-
	V	104	83	5	43160	-
	VI	104	83	5	43160	-
	VII	104	83	5	43160	-
	VIII	104	83	5	43160	-
	IX	104	83	5	43160	-
	X	104	83	5	43160	-
	Total				388440	17264
XY-CD	I	60	139	2	-	16680
	II	60	139	5	41700	-
	III	60	139	5	41700	-
	IV	60	139	5	41700	-
	V	60	139	5	41700	-
	VI	60	139	5	41700	-
	VII	60	139	5	41700	-
	VIII	60	139	5	41700	-
	IX	60	139	5	41700	-
	X	60	139	5	41700	-
	Total				375300	16680
XY-EF	I	58	152	2	-	17632
	II	58	152	5	44080	-
	III	58	152	5	44080	-
	IV	58	152	5	44080	-
	V	58	152	5	44080	-
	VI	58	152	5	44080	-
	VII	58	152	5	44080	-
	VIII	58	152	5	44080	-
	IX	58	152	5	44080	-
	X	58	152	5	44080	-
	Total				396720	17632
Grand Total				1160460	51576	

The Geological Resources of Gravel : **51,576m³**

The Geological Resources of Rough Stone : **11,60,460m³**

Geological Resources has been computed based on the physical investigation and filed survey data.

**Estimation of Mineable Reserves:**

The mineable reserves are calculated after leaving the safety distance and Bench loss.

TABLE – 3

MINEABLE RESERVES						
Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Mineable Reserves of Rough stone in (m³) 100%	Gravel (m³)
XY-AB	I	95	66	2	-	12540
	II	92	60	5	27600	-
	III	87	50	5	21750	-
	IV	82	40	5	16400	-
	V	77	30	5	11550	-
	VI	72	20	5	7200	-
	Total				84500	12540
XY-CD	I	60	122	2	-	14640
	II	60	116	5	34800	-
	III	60	106	5	31800	-
	IV	60	96	5	28800	-
	V	60	86	5	25800	-
	VI	60	76	5	22800	-
	VII	60	66	5	19800	-
	VIII	55	56	5	15400	-
	IX	50	46	5	11500	-
	X	45	36	5	8100	-
	Total				198800	14640
XY-EF	I	49	132	2	-	12936
	II	46	126	5	28980	-
	III	41	116	5	23780	-
	IV	36	106	5	19080	-
	V	31	96	5	14880	-
	VI	26	86	5	11180	-
	VII	21	76	5	7980	-
	VIII	16	66	5	5280	-
	IX	11	56	5	3080	-
	X	6	46	5	1380	-
	Total				115620	12936
Grand Total				398920	40116	

The mineable reserves have been computed as **3,98,920m³** of Rough stone at the rate of 100% recovery and **40,116m³** of Gravel for a period of Ten years upto a depth of 47m below ground level.



5.0 MINING

5.1. 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 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. 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. The relaxation will be applied and obtained after the execution of lease deed / commencement of quarry operation.

5.2. 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 shallow jack hammer drilling, slurry explosives in blasting, 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 of considerable volume from the parent rock mass by shallow jackhammer drilling and blasting, hydraulic excavators are used for loading the Rough Stone from pithead to the needy crushers.

Occasionally hydraulic excavators are attached with rock breakers for fragmentation to avoid secondary blasting. The primary boulders thus splitted are removed from the pits by excavators and further made to smaller sizes by rock breakers attached in excavators. It is a conventional opencast mechanized method of mining.

5.3. 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. After obtaining relaxation as per 106 2(b) of Metalliferous Mines Regulations, 1961 from the DMS, the realignment of benches will be carried out.

5.4. 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 Composite year wise Development and production plan and sections indicating the pit lay out and green belt development are shown in Plate Nos. III and III-A.



Year wise Development and Production

TABLE – 5

YEARWISE PRODUCTION FOR FIRST FIVE YEARS							
Section	Year	Bench	Length in (m)	Width in (m)	Depth in (m)	Recoverable Reserve of Rough stone in (m³) 100%	Gravel (m³)
XY-EF	I	I	49	132	2	-	12936
		II	46	126	5	28980	-
		III	26	116	5	15080	-
		Total				44060	12936
XY-CD	II	III	15	116	5	8700	-
		I	60	122	2	-	14640
		II	45	116	5	26100	-
		III	20	106	5	10600	-
		Total				45400	14640
XY-AB	III	I	95	66	2	-	12540
XY-CD		III	20	106	5	10600	-
		IV	35	96	5	16800	-
		V	30	86	5	12900	-
		Total				40300	12540
XY-EF	IV	IV	36	106	5	19080	-
		V	31	96	5	14880	-
		VI	26	86	5	11180	-
		Total				45140	-
XY-CD	V	VII	21	76	5	7980	-
		VIII	16	66	5	5280	-
		IX	11	56	5	3080	-
		VI	25	76	5	9500	-
		VII	20	66	5	6600	-
		VIII	15	56	5	4200	-
		IX	10	46	5	2300	-
		Total				38940	-
Grand Total						213840	40116

The Recoverable reserves have been computed as 2,13,840m³ of Rough stone at 100% recovery for first five years and 40,116m³ of Gravel for first three years upto a depth of 42m below ground level (Refer Plate No. III).



TABLE – 5A

YEARWISE PRODUCTION FOR SECOND FIVE YEARS						
Section	Year	Bench	Length in (m)	Width in (m)	Depth in (m)	Recoverable Reserve of Rough stone in (m ³) 100%
XY-CD	VI	II	15	116	5	8700
		III	20	106	5	10600
XY-AB		II	92	60	5	27600
		Total				
XY-CD	VII	III	87	50	5	21750
		IV	25	96	5	12000
		Total				
	XY-AB	VIII	V	30	86	5
IV			82	40	5	16400
V			77	30	5	11550
Total					40850	
XY-CD		IX	VI	72	20	5
	VI		35	76	5	13300
	VII		40	66	5	13200
	Total					33700
	X	VIII	40	56	5	11200
		IX	40	46	5	9200
X		45	36	5	8100	
XY-EF		X	6	46	5	1380
	Total					29880
Grand Total						185080

The Recoverable reserves have been computed as **1,85,080m³** of Rough stone only at 100% recovery to a depth of 47m below ground level for remaining five years of the lease period (Refer Plate No. III-A). Total excavation will be proposed **3,98,920m³** of Rough stone for the period of ten years and **40,116m³** of Gravel for the period of three years. The peak production capacity in the quarry is 46,900m³ of Rough stone on 6th year and the proposed production schedule is arrived as per applicant's requirement and the EIA and EMP will be prepared an annual peak production.

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	=	6m ³ (approx.)
Total No of Working days	=	300 Days per year
Total quantity to be removed during the ten years lease period	=	3,98,920m ³
Peak production capacity during the 6 th year	=	46,900m ³
Hence total Lorry loads per day	=	46,900m ³ /6m ³
	=	7,817 Lorry loads
	=	7,817/300 days
Rough Stone (Maximum)	=	26 Lorry loads per day
Total Gravel to be removed during the first three years	=	40,116m ³
Peak production capacity during the 2 nd year	=	14,640m ³
Hence total Lorry loads per day	=	14,640m ³ /6m ³
	=	2,440 Lorry loads
	=	2,440/300 days
Gravel (Maximum)	=	8 Lorry loads per day

Working hours = 8.00 am to 5.00 pm (with 12.30 - 1.30 P.M. lunch break).

5.5. Machineries to be used:

For Mining:

The following machineries are utilized on rental basis for the development and production work at this quarry.

TABLE – 6

I. DRILLING MACHINE:

S. No.	Type	Nos	Dia Hole mm	Size Capacity	Motive power
1	Jack-Hammer	6	32	1.2m to 2.0m	Compressed air
2	Compressor	2	-	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	Tippers	3	20 tonnes	Diesel Drive
2	Water Sprinkling Tanker	1	6,000 litres	Diesel Drive

**5.6. Disposal of Overburden/Waste:**

There is no Waste anticipated during this plan period hence, disposal of waste does not arise. The overburden in the form of Gravel, the Gravel will be directly loaded into Tippers for the filling and levelling of low-lying areas. The excavated rough stone (100%) will be directly loaded into Tippers to the needy customers.

5.7. Use of the Mineral:

The excavated rough stone (100%) will be directly loaded into Tippers as raw form to the needy nearby crushing unit to making Road metals and construction materials.

5.8. 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 applied quarry lease for Ten years, the ultimate pit limit (dimension) at the end of this mining plan period is given below:

Table – 7

Section	Length (Max) (m)	Width (Max) (m)	Depth (Max) (m)
XY-AB	95	66	27m
XY-CD	60	122	47m
XY-EF	49	132	47m

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, III-A & IV. As per the NGT orders the applicant is directed to plant 500 trees per hectares along the quarry site and in the haul road either at the regular or the phased manner by planting native species.

There is no waste anticipated during the entire life of quarry. Hence, backfilling is not proposed in this Rough stone quarry. After completion of quarry operation the quarried out pit will be allowed to collect the seepage and rainwater and the water storage will be kept as temporary reservoir for charging the nearby wells and the water will be utilized for Green belt development purpose. 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. IV and V). The Conceptual Mining is based upon the entire ROM proposed for the life of the quarry.



6.0 BLASTING

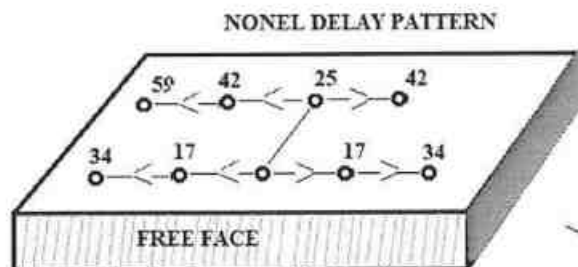
6.1 Blasting pattern:

The quarrying operation is proposed to be carried out by Mechanized Opencast Method in conjunction with conventional method of mining using shallow Jack hammer drilling and mild blasting with NONEL initiation of shattering effect for loosening the Rough stone. Nonel initiation provides a reasonably good solution to the 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 and hence it optimizes the cost of blasting.

Drilling and blasting parameters are as follows:

Depth of Each hole	:	1.6m
Spacing between holes	:	1.2m
Burden for hole	:	1.0m
Diameter of hole	:	32mm
Pattern of hole	:	Staggered pattern
Inclination of holes	:	80° from horizontal
Use of delay detonators	:	NONEL
Hole to Hole	:	17 milli second delay
Row to Row	:	25 milli second delay

BLASTING PATTERN DRAWING



Spacing	=	1.2m
Burden	=	1.0m
Depth of the hole	=	1.6m
No of holes proposed per day (Peak Production)	=	134 Holes.

6.2 Type of explosives to be used:

Small Dia. 25mm Slurry explosives are proposed to be used for shattering and heaving effect for removal and winning of Rough stone. No deep hole drilling or secondary blasting is proposed. NONEL blasting and muffle blasting may be adopted after permission from DGMS.



6.3 Measures proposed to minimize ground vibration due to blasting:

The quarry is situated more than 300m away from the nearby villages, Controlled blasting measures of NONEL initiation is being adopted for minimizing ground vibration and fly rock.

Shallow depths jackhammer drilling & 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:

Delay blasting (millisecond delays) permits to divide the shot into smaller charges, which are detonated in a predetermined millisecond sequence at specific time intervals.

The major advantages of delay 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):

Peak production (6 th Year)	= 46,900m ³ x 2.6 (Bulk Density) = 1,21,940 Tons
No of Holes	= 134 Holes
Yield	= 402 Tons
Powder factor	= 6 Tons/Kg of explosives
Total explosive required	= 67 Kg-Slurry explosives
Charge/ hole	= 0.5 Kg
Blasting at day time only	= 1.00 – 1.30 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 – 8

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)
67	1	67	134	134	1 (2 Holes)	510	0.673

From the above table, the charge per blast of 67kg 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 thrice a day** 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.

6.4 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 the completion of Blasting the explosives Agencies 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.

7.0 MINE DRAINAGE**7.1 Depth of water table (based on nearby wells and water bodies):**

The area is a plain topography; since the lease applied area consists the most common type of dendritic drainage pattern. The water table in the area is about 58m – 63m which is observed from the existing private boreholes. The lease area is fully covered by Massive Charnockite formation. The quarry operation confined to well above the water table hence, the Ground Water problem will not arise. If water seepage may occur due to the fracture, the same will be used for Greenbelt. Anyhow, Garland drain will be constructed all along the boundary to prevent surface run-off water entering into the quarry.

TABLE – 9

Type	Distance & Direction	Location
Bore Well	380m Northwestern side	11°08'40.44"N 77°25'37.87"E

7.2 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.

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**8.0 OTHER PERMANENT STRUCTURES (also shown in the map)****TABLE – 10**

S.No.	Description	Particulars	Aerial Distance & Direction																	
1	Nearest National Highway	(NH-544) Coimbatore -- Salem	6.5km – North																	
2	State Highways	(SH-81) Gopichettipalayam – Kangayam	2km – NE																	
3	Village Road	Village Road	10m – SE																	
4	Railway station	Uthukuli Railway station	2.5km – NE																	
5	Airport	Coimbatore Airport	44km – SW																	
6	Nearest Habitation	510m – NE																		
7	Nearest Town	Uthukuli	4.4km – NE																	
8	Nearest Government School	Morattupalayam Secondary School	3.2km – NW																	
9	Government Hospital	Uthukuli	4.8km – NE																	
10	Reserved Forest	No Reserve Forest within 60m Radius.																		
11	Defense Installation/Historical Monuments/ Archaeological	Nil within 500m radius.																		
12	Nearby Water Bodies	Nil within 50m radius.																		
13	Interstate Boundary	Around 69km – SW (Kerala State Boundary)																		
14	Critically Polluted areas identified by the CPCB	Around 53.5km – SW (Coimbatore – SIDCO)																		
15	Protected areas Notified under wildlife (Protection) Act, 1972.	Around 26.4km – NE (Vellode birds Sanctuary)																		
16	Applicability of CRZ, Notification 2011 as amended.	Not Applicable																		
17	Applicability of Hill Area Conservation Authority (HACA) Clearance.	Not Applicable																		
18	Housing area, EB line (HT & LT Line)	There is no other EB-LT/HT line or Housing area situated within 50m radius from the lease area.																		
19	Boundaries of the permitted area.	The boundaries of the permitted areas are as follows (Refer Plate No. II): North - S.F.No. 367 East - S.F.Nos. 367 and 366 South - S.F.No. 394 West - S.F.Nos. 376/1A and 375/9																		
20	Adjacent Patta lands / Govt. Land	<table><tr><th>Direction</th><th>Classification</th><th>Safety Distance</th></tr><tr><td>North</td><td>Patta land</td><td>7.5m</td></tr><tr><td rowspan="2">East</td><td>Patta land</td><td>7.5m</td></tr><tr><td>Village Road</td><td>10m</td></tr><tr><td>South</td><td>Patta land</td><td>7.5m</td></tr><tr><td>West</td><td>Patta land</td><td>7.5m</td></tr></table>	Direction	Classification	Safety Distance	North	Patta land	7.5m	East	Patta land	7.5m	Village Road	10m	South	Patta land	7.5m	West	Patta land	7.5m	
Direction	Classification	Safety Distance																		
North	Patta land	7.5m																		
East	Patta land	7.5m																		
	Village Road	10m																		
South	Patta land	7.5m																		
West	Patta land	7.5m																		
21	Others structures	The Crusher unit is situated in the lease applied area, Hene the crusher unit is removed before the lease execution of the lease applied area.																		

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TABLE - 11

STRUCTURE WITHIN 0 - 100m					
Number of Structures - 2Nos.					
Number of Structure	Type of Structure	Usage Purpose	Commercial / industry/ residential/ farm house/ Govt. building	Occupants of Building/ Structure	Remarks
1	Labour shed and office	Thar plant's Labour rest shed and office	Non residential	Nil	No resident
2	Thar Plant	To Mixing Thar and Jelly	Non residential	Nil	No resident
STRUCTURE WITHIN 100 - 200m					
Number of Structures - 2 Nos					
1	Labour shed	Labour rest shed	Non residential	Nil	No resident
2	Shed	To making the fly ash bricks	Non residential	Nil	No resident
STRUCTURE WITHIN 200 - 300m					
Number of Structures - 1No.					
1	Crusher plant	To Crushing the Rough stone	Non Residential	Nil	No resident

9.0 EMPLOYMENT POTENTIAL & WELFARE MEASURES**9.1 Employment potential (skilled, semi-skilled, un skilled):**

TABLE - 12

Designation	Present Employment position	Employees Requirement	Total
a) Supervisory category			
Geologist	-	1	1
b) Skilled labour			
Mine Foreman	-	1	1
Blaster/Mate	-	1	1
Excavator - Operator	-	2	2
Tipper Driver	-	3	3
Water sprinkler Driver	-	1	1
Jack-Hammer Drillers	-	12	12
c) Unskilled			
Security	-	2	2
Labour & Helper	-	4	4
Co-operator and Cleaner	-	5	5
Total	-	32	32



The proposed output per man shift:

TABLE – 13

Average ROM Production expected per annum ($3,98,920\text{m}^3 / 10 \text{ years}$)	$39,892\text{m}^3$
No. of days likely to be worked	300 days
Average ROM production per day	133m^3
O/S = Average Production per day / Average employment per day	$133\text{m}^3 / 32 = 4.1\text{m}^3$

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.

9.2 Welfare Measures:

a) Drinking Water:

Packaged drinking water is available from the nearby water vendors in Morattupalayam which is located about 1km on the Northwestern side of the lease applied area.

b) Sanitary Facilities:

Hygienic modern Sanitary Facilities will be constructed in the safety area as semi-permanent structure 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 Uthukuli located at a distance of 4.8km on the Northeastern side.

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.

PART – B**10.0 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 followed 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. 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 and spillage of oil and grease.	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 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 of local species to prevent soil erosion and landslide.



	iii. Propagation of foreign material like polythene bag, jute bag, Plastic water and cool drink containers and undecomposed waste materials dumping.	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: - Alteration of natural drainage pattern resulting from modification of topography. - Abnormal increase in the turbidity of the nearby stream and Gundar River. - The activities can also disrupt the ecological diversity in many ways. - Contamination of groundwater if mining intersects with the water table.	i. Construction of Garland drain with check dam and settling tank will be constructed around the quarry to collect the surface run off rain water and which will be discharge in to the natural drainage system and water bodies in manure as prescribed by TNPCB standards. ii. Further mining will be completely stopped during the monsoon for free flow of surface run off and allowing natural recharge of groundwater. iii. No wastewater shall be generated from the quarry activity. Proper drainage will be Maintained to eliminate inundation of working pits during rains from run-off water. iv. The mine pit water collected due to rain will be utilized for water spraying on the haul Roads and watering for plantations. v. Septic tanks and soak pits will be provided for the disposal of domestic/ washroom effluents. vi. The deposit will be worked from the top surface up to a depth of 47m and shall not in any case intersect and contaminate the ground water as the depth of the water table in the area is 58m – 63m.



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 (PM₁₀ & PM_{2.5}), Nitrogen oxides and Sulphur dioxide (NO₂ & SO₂). 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 and Vibration	In the present mining activity for building material, noise will be generated from drilling machinery, blasting and vehicular movement.	i. Selection of new 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.



	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.	iii. To ensure minimum vibrations and noise due to blasting, non-electric delay 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 level. viii. There would be restrictions on mining activity and vehicular movement during night hours.
Biological Environment	The area having main floras are Neem, Palm, Cocos nucifera, Palm, Senna auriculata, Calotropis, Casuarina, Teak, Acacia nilotica, Thorne bushes and shrubs. No plants of botanical interest or animals of zoological interest recorded within 500m radius. The anticipated	i. The natural habitats of the existing flora and fauna will not be disturbed. ii. No mining will be carried out during the monsoon season to minimize impact on aquatic life which is mainly breeding season for many species. iii. Fruit bearing trees will be planted to survive of the existing native faunas. iv. No clearance of vegetation will be done during the entire mining operations. v. Water sprinkling on haul roads would be reduces the dust emission, thus averting



	impacts on biological environment as follows:	damage to the crops and plants.
	i. Diversity of living insects in the overburden material. ii. Natural habitats of the existing faunas and its breeding will change due to the noise and vibration during operation. iii. Mining may drive away the nearby residents from their habitat. iv. Access roads crossing the riparian areas will have impact on the species disturbing the ecosystem. v. Diminution of the quality and quantity of habitat essential for aquatic and riparian species vi. Deposition of dust on the plant and crop leaves is affecting the photosynthesis, Pollination, ratio of growth and reduction in the yield of agriculture. vii. Excessive and unscientific surface mining results in the destruction of aquatic and riparian habitat through large changes in the channel morphology.	vi. No night hour mining will be carried out which may catch the attention of wildlife.



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 instructed to carry out safe, sustainable, eco-friendly mining operations at all times. The following positive impact on the society due to this mining activity. - It is proposed to provide employment to about 32 persons for carrying out mining operations and give preference to the local people in providing employment. 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. - 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. - 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. - The continuation of opportunity for the employments, the nearby villages, living peoples and their life style would be improved. - The applicant is advised to invest the CER cost (@ 2% from the total Project Cost) to develop the local Panchayat.	Does not arise.
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**10.1 Environmental impact assessment statement describing impact of mining on the next Ten years:**

In the mining plan proposed for a production of Rough stone does not involve deep hole drilling and blasting. 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.

10.2 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.

10.3 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 47m has been envisaged as workable depth for safe & economic quarrying operation during entire life of quarry. There is no waste generated hence, backfilling is not possible. After completion of quarry operation the quarried out pit will be allowed to collect the seepage and rainwater and the water storage will be kept as temporary reservoir for charging the nearby wells and the water will be utilized for Green belt development purpose. 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.

10.4 Programme of Greenbelt development (indicate extend, number, name of species to be afforested):

The safety zone along the boundary barrier has been identified to be utilized for Greenbelt development. Around 4,000m² area will be utilized for green belt development by planting 1000 numbers along the safety zone during entire lease period also around 300 tree saplings in the approach road at first year of the plan period and 200 tree saplings from third year onwards in quarried out top benches with 2m height tree saplings with an anticipated survival rate of 80% with maintain atleast 1200 plants during the entire life of the quarry.

As per the SEIAA Recommendation the plantation will be carried out based on the output Environmental Clearance and the recommended species will be carried out for green belt development. Appropriate species of trees will be planted in a phased manner as described below.



TABLE – 14

Year	No. of tress proposed to be planted	Area to be covered (m ²)	Name of the species	Survival %	No. of trees expected to be grown
I	115	460	Neem, Pongamia Pinnata, Cordia dichotoma, Mango, Thespesia populnea, Mantharai, etc.,	80%	92
II	115	460		80%	92
III	115	460		80%	92
IV	115	460		80%	92
V	115	460		80%	92
VI	85	340		80%	68
VII	85	340		80%	68
VIII	85	340		80%	68
IX	85	340		80%	68
X	85	340		80%	68

10.5 Proposed financial estimate / budget for (EMP) environment management:

Budget Provision for the Mining Plan period:

TABLE – 15

S. No	Monitory and Analysis Description	Rate per location	No. of location	Total Charges/ six months	Total Charges/ year
1	Ambient air quality monitoring	6500	4	26000	52000
2	Noise level monitoring	250	4	1000	2000
3	Ground vibration monitoring	1000	2	2000	4000
4	Water sampling and analysis	9000	1	9000	18000
Total EMP Cost/ year					76,000

The EMP cost would be around **Rs. 7,60,000/-** for the period of Ten years.



A. Operational Cost / Project Cost / Investment:					Approximate Cost (Rs.)
i) Land cost	The Land value as per the Government Guideline land cost is about,				33,11,000
	S.F. No.	Area (Ha.)	Cost / Ha	Total	
	376/1B	0.62.00	1359500	₹ 8,42,890	
	376/2	0.98.50	1359500	₹ 13,39,108	
	375/10	0.04.00	1112000	₹ 44,480	
	375/11	0.10.50	1112000	₹ 1,16,760	
	375/12	0.03.00	1112000	₹ 33,360	
	375/13	0.09.50	1112000	₹ 1,05,640	
	375/14	0.21.00	1112000	₹ 2,33,520	
	375/16	0.24.50	1112000	₹ 2,72,440	
	375/16	0.29.00	1112000	₹ 3,22,480	
		2.62.00		₹ 33,10,678	
Round of Rs.33,11,000/-. (Source: https://tnreginet.gov.in/portal/)					
ii) Machinery cost	The machineries are proposed on rental basis to meet out the productions. The rental cost would be around (Including Fuel, oil, grease, spares, etc.,).				40,00,000
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 730m x Rs. 300/meter).				2,19,000
iv) Labourers shed	Labour shed will be constructed as semi-permanent structure. The cost is around.				3,00,000
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.				60,000
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.				2,50,000
viii) Sanitary arrangement	The latrine and urinal will keep clean and sanitary condition. The maintenance cost would be around.				60,000
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.				80,000



x) Water sprinkling	Water will be sprinkled in the haul roads by water sprinkler. The cost would be around.	6,00,000
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 630m x Rs. 300/meter).	1,89,000
xii) Greenbelt etc.	Greenbelt development and maintenance will be carried out in the boundary barriers the cost would be around (1000 saplings x Rs. 200/sapling).	2,00,000
	Greenbelt development and maintenance will be carried out in the quarried out top benches (200 saplings x Rs. 200/sapling).	40,000
	Greenbelt development and maintenance will be carried out in the Panchayat Road (300 saplings x Rs. 200/sapling).	60,000
	Total Cost	94,69,000

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	Rs.94,69,000/-
B. EMP Cost	Rs.7,60,000/-
Total Project Cost (A+ B)	Rs.1,02,29,000/-

C. The applicant Indents to involve corporate environment responsibilities (CER) activity like Water Purifier, Plantation, Books to Library, sanitary facility, Painting for class rooms and as per requirement to the nearby School at 2.0% from the total project cost. The Cost would be around **Rs.2,05,000/-.**

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.

Rs.2,05,000/-

Total Cost	Rs.1,04,34,000/-
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The Total cost would be around one crore four lakhs and thirty four thousand only.

**11.0 PROGRESSIVE QUARRY CLOSURE PLAN****11.1 Introduction:**

The entire area is proposed for a short period of 10 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.

11.2 Present and Post Land use pattern:LAND USE TABLE – 16

Description	Present area (Ha)	Area required during the first five year (Ha)	Area at the end of lease period (Ha)
Area Under Quarry	Nil	2.05.00	2.05.00
Site Services	Nil	0.01.00	0.01.00
Roads	Nil	0.02.00	0.02.00
Green Belt	Nil	0.23.00	0.40.00
Unutilized Area	2.62.00	0.31.00	0.14.00
Grand Total	2.62.00	2.62.00	2.62.00

11.3 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.

11.4 Progressive quarry closure plan preparation:

Name and address of the Qualified Person who prepared the progressive closure plan and name, address and register number of the executing agency who is involved in the Preparation of progressive quarry closure plan.

Name : **P. Viswanathan, M.Sc.,**
 Qualified Person (As per Rule 15(I)(a) and (I)(b) of MCR, 2016)

Address : No. 4/366-D, Selva Nagar,
 Kamaraj Nagar Colony, Near Omega Church,
 Salem District – 636 014.

Mobile : +91 97916 09929

Email : viswa2727@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 and authorized 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 equipments.
- Protective equipment like dust masks, ear-plugs/ muffs and other equipments 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.

**(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 or 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 of 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 – 17

ACTIVITY		YEAR										RATE	COST (Rs.)
		I	II	III	IV	V	VI	VII	VIII	IX	X		
Plantation under safety zone	No. of sapling	115	115	115	115	115	85	85	85	85	85	Rs.200 Per sapling	2,00,000
	Cost	23000	23000	23000	23000	23000	17000	17000	17000	17000	17000		
7Plantation in quarried out top benches and approach road	No. of sapling	Approach Road		Quarried out top Benches									1,00,000
		150	150	25	25	25	25	25	25	25	25		
	Cost	30000	30000	5000	5000	5000	5000	5000	5000	5000	5000		
Wire Fencing for 730 Mtrs length		219000	-	-	-	-	-	-	-	-	-	Rs. 300 Per Meter	2,19,000
Garland Drain with settling tanks for 630 Mtrs length		189000	-	-	-	-	-	-	-	-	-	Rs. 300 Per Meter	1,89,000
Total													7,08,000

**12.0 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

P. Viswanathan

P. Viswanathan, M.Sc.,
Qualified Person

Place: Salem

Date: 03.07.2024.

This Mining Plan is approved subject
to the Conditions Indicated in the
Mining Plan approved Letter
No. 817/Mines/2023
Dated 07.2024

This Mining Plan is approved as per the
Powers conferred under rule 41(2) of Tamil
Nadu Minor Mineral Concession Rules, 1959

24/07/24
DEPUTY DIRECTOR
Geology and Mining
Tiruppur

TOPOGRAPHICAL VIEW OF MORATTUPALAYAM ROUGH STONE AREA
GRAVEL QUARRY LEASE APPLIED AREA.





ந.க.எண்.817/கனிமம்/ 2023

புவியியல் மற்றும் சுரங்கத்துறை
மாவட்ட ஆட்சியர் அலுவலகம்,
திருப்பூர்.

நாள்: 21.06.2024

குறிப்பாணை

பொருள் : கனிமங்களும் சுரங்கங்களும் - சிறு கனிமம் - திருப்பூர் மாவட்டம் - ஊத்துக்குளி வட்டம் - மொரட்டுப்பாளையம் கிராமம் - பட்டா புல எண்கள். 376/1B(0.62.00), 376/2 (0.98.50), 375/10 (0.04.00), 375/11 (0.10.50), 375/12 (0.03.00), 375/13 (0.09.50), 375/14 (0.21.00), 375/15 (0.24.50) மற்றும் 375/16 (0.29.00) ஆக மொத்தம் 2.62.0 ஹெக்டர் பரப்பில் சாதாரண கற்கள் மற்றும் கிராவல் மண் குவாரி குத்தகை உரிமம் கோரி திரு. A.A. குமரேசன் என்பவர் விண்ணப்பம் அளித்தது - புலத்தணிக்கை அறிக்கை சமர்ப்பிக்கப்பட்டது - தகுதியான நிலப்பரப்பாக கருதி ஏற்பளிக்கப்பட்ட சுரங்க திட்டம் மற்றும் சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணைய இசைவினை பெற்று சமர்ப்பிக்கக் கோருதல் - தொடர்பாக.

- பார்வை :
1. திரு. A.A. குமரேசன், த/பெ. ஆறுமுகம், 3-109, மொரட்டுப்பாளையம், ஊத்துக்குளி வட்டம், திருப்பூர் என்பவரின் மனு நாள்: 28.12.2023.
 2. இவ்வலுவலக கடிதம் ந.க.எண். 817/கனிமம்/2023 நாள்: 28.12.2023.
 3. வட்டாட்சியர், ஊத்துக்குளி கடிதம் ந.க. 688/2024/அ1 நாள்: 20.02.2024.
 4. சார் ஆட்சியர் (பொ), திருப்பூர் கடிதம் மூ.மு.எண். 650/2024/அ3 நாள்: 30.04.2024.
 5. வட்டார வளர்ச்சி அலுவலர், ஊத்துக்குளி கடிதம் ந.க. 355/2024/ஆ2 நாள்: 22.06.2024.
 6. உதவி புவியியலாளர் (கனிமம்), திருப்பூர் புலத்தணிக்கை அறிக்கை நாள்: 06.06.2024.
 7. மற்றும் உரிய ஆவணங்கள்

திருப்பூர் மாவட்டம், ஊத்துக்குளி வட்டம், மொரட்டுப்பாளையம் கிராமம், புல எண்கள். 376/1B(0.62.00), 376/2 (0.98.50), 375/10 (0.04.00), 375/11 (0.10.50), 375/12 (0.03.00), 375/13 (0.09.50), 375/14 (0.21.00), 375/15 (0.24.50) மற்றும் 375/16 (0.29.00) ஆக மொத்தம் 2.62.0 ஹெக்டர் பரப்புள்ள பட்டா பூமியிலிருந்து 10 வருடங்களுக்கு சாதாரண கற்கள் மற்றும் கிராவல் மண் வெட்டியெடுக்க திரு. A.A. குமரேசன், த/பெ. ஆறுமுகம், 3-109, மொரட்டுப்பாளையம், ஊத்துக்குளி வட்டம், திருப்பூர் என்பவர் பார்வை 1-ல் கண்டுள்ளவாறு உரிய ஆவணங்களுடன் விண்ணப்பம் அளித்துள்ளார்.

2. மேற்படி விண்ணப்பங்கள் தொடர்பாக, வட்டார வளர்ச்சி அலுவலர், ஊத்துக்குளி, வட்டாட்சியர், ஊத்துக்குளி, சார் ஆட்சியர் (பொ), திருப்பூர், மற்றும் உதவி புவியியலாளர்



(கனிமம்) மற்றும் தனி வருவாய் ஆய்வாளர் (கனிமம்) திருப்பூர் ஆகியோர் புலத்தணிக்கை மேற்கொண்டு திருப்பூர் மாவட்டம், ஊத்துக்குளி வட்டம், மொரட்டுப்பாளையம் கிராமம், புல எண்கள். 376/1B(0.62.00), 376/2 (0.98.50), 375/10 (0.04.00), 375/11 (0.10.50), 375/12 (0.03.00), 375/13 (0.09.50), 375/14 (0.21.00), 375/15 (0.24.50) மற்றும் 375/16 (0.29.00) ஆக மொத்தம் 2.62.0 ஹெக்டேர் பரப்பில் திரு. A.A. குமாரேசன், த/பெ. ஆறுமுகம் என்பவருக்கு சாதாரண கற்கள் மற்றும் கிராவல் மண் குவாரி உரிமம் வழங்க கீழ்க்கண்ட நிபந்தனைகளுக்குட்பட்டு அனுமதி வழங்கலாம் என பரிந்துரை செய்துள்ளனர்.

நிபந்தனைகள்:

- 1959ம் வருடத்திய தமிழ்நாடு சிறு கனிம சலுகை விதிகள், அட்டவணை IIல் கண்டுள்ளபடி குவாரி செய்யப்படும் கனிமங்களுக்குரிய சீனியரேஜ் தொகை அவ்வப்போது செலுத்தி கனிமம் கொண்டு செல்லப்பட வேண்டும்.
- புலத்தை சுற்றி அமைந்துள்ள பட்டா நிலங்களுக்கு 7.5 மீட்டர் பாதுகாப்பு இடைவெளி விட்டு குவாரி பணிபுரிய வேண்டும்.
- அனுமதி கோரும் புலத்திற்கு தென்கிழக்கு திசையில் செல்லும் கிராமத்து சாலைக்கு 10 மீட்டர் பாதுகாப்பு இடைவெளி விட்டு குவாரிப்பணி மேற்கொள்ள வேண்டும்.
- மேலும் அனுமதி கோரும் புலத்தில் அமைந்துள்ள Crusher இயந்திரங்களை குவாரி குத்தகை உரிமம் நிறைவேற்றுவதற்கு முன்னதாக அகற்றிட வேண்டும்.
- தகுதிவாய்ந்த பிளாஸ்டருடன் கூடிய லேசான வெடிபொருட்களைப் பயன்படுத்தி குவாரி நடவடிக்கை மேற்கொள்ளப்பட வேண்டும்.
- குத்தகை உரிமம் கோரும் புலத்திற்கு DGPS முறையில் அளவிட்டு செய்து அதற்கான சான்றினை சமர்ப்பிக்க வேண்டும்.
- அனுபவம் வாய்ந்த வெடிபொருள் பயன்படுத்துவோர் மூலம் குறைந்த அளவு சக்தி கொண்ட வெடிபொருட்களை பயன்படுத்தி அருகிலுள்ள பட்டாதாரர்களுக்கு எவ்வித இடையூறுமின்றி / அருகிலுள்ள பட்டா மற்றும் அரசு புலங்களில் எவ்வித ஆக்கிரமிப்பும் இன்றி குவாரிப்பணி மேற்கொள்ள வேண்டும்.
- விதிகளின் படி ஏற்பளிக்கப்பட்ட சுரங்கத்திட்டத்தினை உரிய காலத்திற்குள் சமர்ப்பிக்க வேண்டும்.
- குவாரி உரிமம் வழங்க உள்ள பகுதிக்கு சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையத்தின் முன் அனுமதி பெற்று சமர்ப்பிக்கும் பட்சத்தில் மட்டுமே குவாரி உரிமம் வழங்கப்படும்.

3. எனவே, வட்டார வளர்ச்சி அலுவலர், ஊத்துக்குளி, வட்டாட்சியர், ஊத்துக்குளி, சார் ஆட்சியர்(பொ), திருப்பூர், மற்றும் உதவிப் புவியியலாளர் (கனிமம்) மற்றும் தனி வருவாய் ஆய்வாளர் (கனிமம்), திருப்பூர் ஆகியோரின் பரிந்துரை மற்றும் நிபந்தனைகளின் அடிப்படையில், திருப்பூர் மாவட்டம், ஊத்துக்குளி வட்டம், மொரட்டுப்பாளையம் கிராமம், புல எண்கள். 376/1B(0.62.00), 376/2 (0.98.50), 375/10 (0.04.00), 375/11 (0.10.50), 375/12 (0.03.00), 375/13 (0.09.50), 375/14 (0.21.00), 375/15 (0.24.50) மற்றும் 375/16 (0.29.00) ஆக மொத்தம் 2.62.0 ஹெக்டேர் பரப்பில் மட்டும் 1959ம் வருட தமிழ்நாடு சிறுகனிம விதிகள், விதி எண்.19-ன் படி மேற்கண்ட நிபந்தனைகளுக்குட்பட்டு 10 (பத்து) வருட



காலத்திற்கு திரு. A.A. குமரேசன், த/பெ. ஆறுமுகம் என்பவருக்கு சாதாரண கற்கள் மற்றும் கிராவல் மண் குவாரி உரிமம் வழங்குவதற்குரிய தகுதியான நிலப்பரப்பாக கருதப்படுகிறது.

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

துணை இயக்குநர்,
புவியியல் மற்றும் சுரங்கத்துறை,
திருப்பூர்.

27/6/24

பெறுநர்:

திரு. A.A. குமரேசன்,
த/பெ. ஆறுமுகம்,
3-109, மொரட்டுப்பாளையம்,
ஊத்துக்குளி வட்டம்,
திருப்பூர்.

27/6/24

District **PERIYAR COIMBATORE**
Taluk **PERUNDURAI**

Village

No. **(15A) 76**

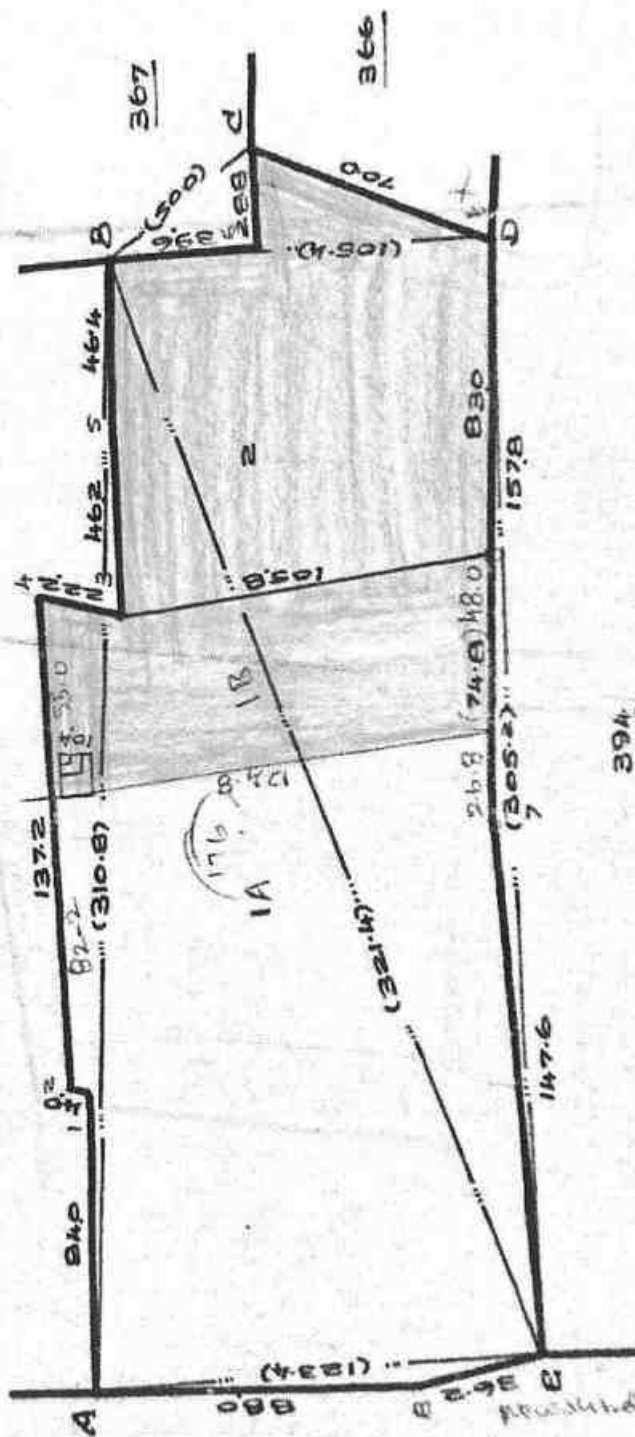
Name **MORATTUP PALLA**
Area **3.72.5 Hect**



Field No. **376**

		B		
		1234		
		87.8	60	8
		A		
		D		
		1054		
		41.2		
		B		
		3214		
		2880	1000	D
		E		
		3052		
		1578	28	7
		D		
		C		
		500		
		324	238	6
		B		
		3108		
		2644	08	5
A	176	2218		
		2188	4.4	3
	C-B	1782		
	C-G	1694		
2	5.4	844		
1	1.4	842		
		A		

375



LEASE APPLIED AREA

Compared by
M. Kambarani
19.9.72

Scale

Inch = One Chain
1:11.11 = 2000 ft.

Prepared by
P. Krishnappa
14.9.72

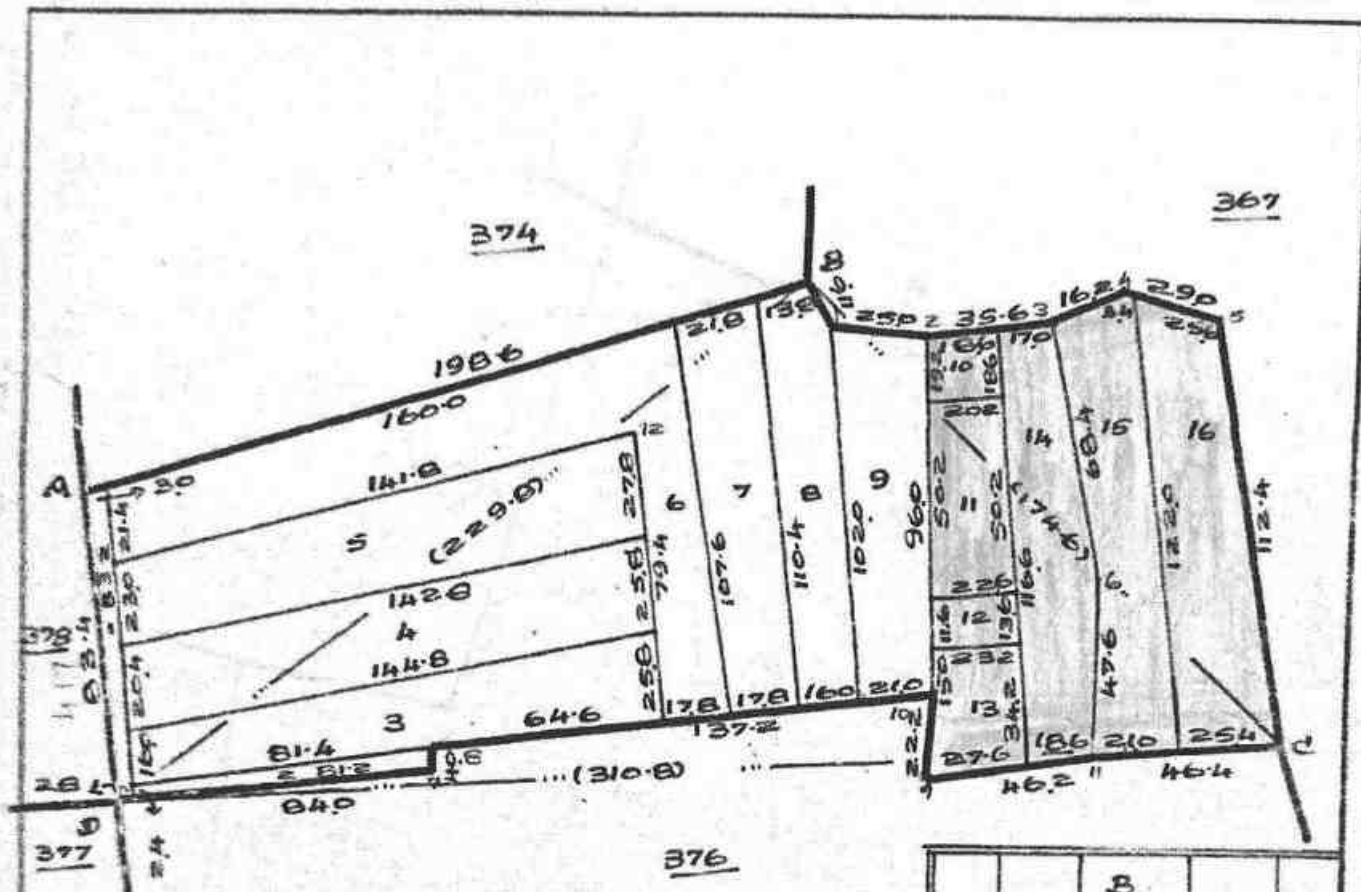
District **PERIYAR**
~~COIMBATORE~~
 Taluk **PERUNDURAI**
~~ERODE~~

Survey Old No. 21 New No. 21



Village { No. **154** } 76
 Name **MORATTUP PALAYAM**
 Area **3.225 Hect Acres**

Field No. 375



		B		
		229.8		
		167.6	34	12
A	704	44.2		
		D		
		C		
		310.8		
		264.4	0.8	11
10	176	221.8		
		218.8	4.4	9
B	54	84.4		
7	14	84.2		
		D		
		C		
		174.6		
		108.2	1.8	6
5	68.2	85.6		
4	55.8	59.4		
3	40.2	54.2		
2	13.0	31.4		
		11.6	2.4	1
		B		

LEASE APPLIED AREA

Compared by
 n. Karthammani

Scale

1 Inch = One Chain
 1:414:2000 ft.

19.7.72

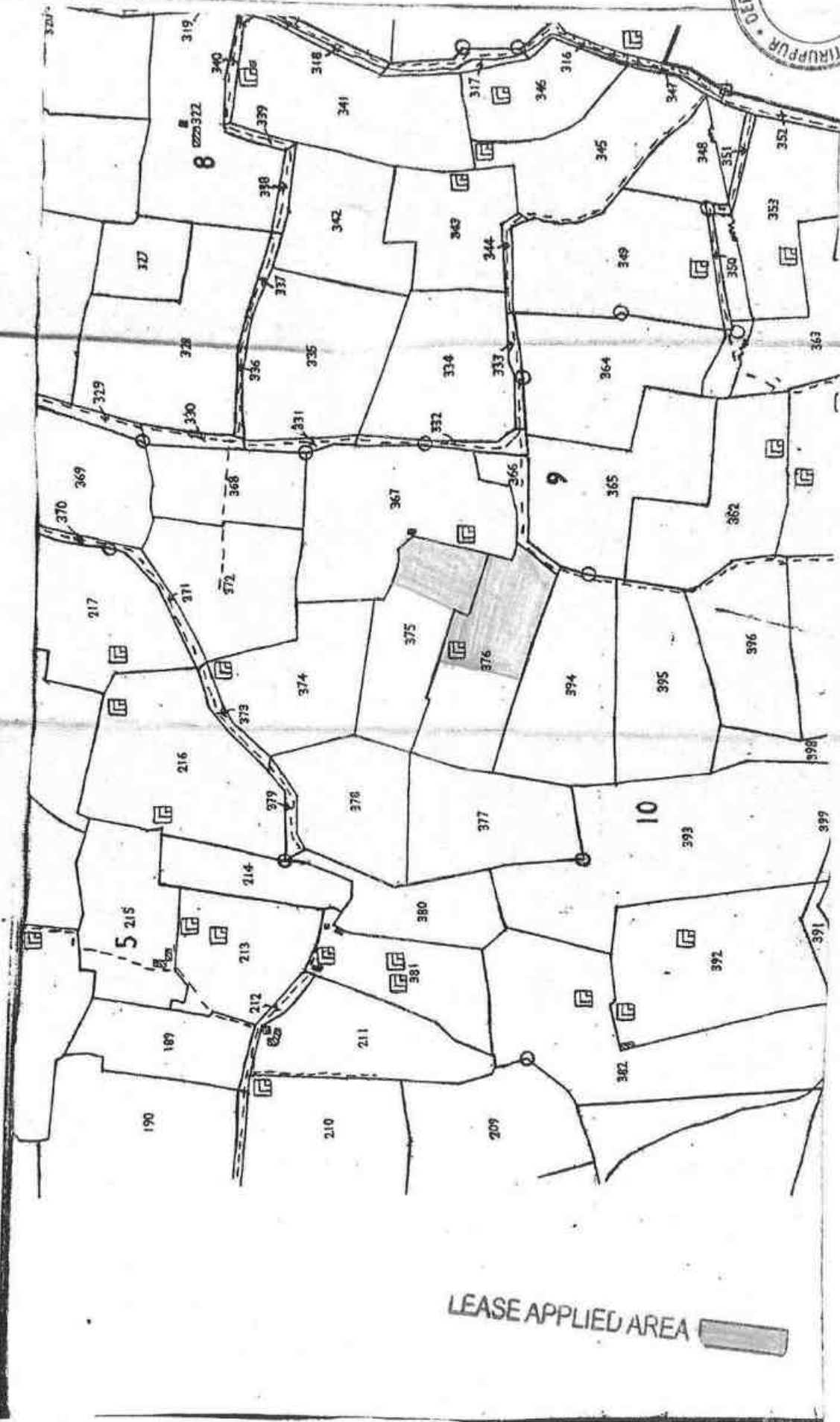
158

80 A

Prepared By

J. Krishnaveni

18.9.72



LEASE APPLIED AREA



தமிழ்நாடு அரசு

வருவாய்த் துறை

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

மாவட்டம் : திருப்பூர்

வட்டம் : ஊத்துக்குளி

வருவாய் கிராமம் : மொரட்டுப்பாளையம்

பட்டா எண் : 1633

உரிமையாளர்கள் பெயர்

1. ஆறுமுகம் மகன் குமரேசன்

புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக்ட - ஏர்	ரூ - பை	ஹெக்ட - ஏர்	ரூ - பை	ஹெக்ட - ஏர்	ரூ - பை	
375	10	0 - 4.00	0.11	--	--	--	--	2023/0103 /32/542056--- -- 09-12-2023
375	11	0 - 10.50	0.29	--	--	--	--	2023/0103 /32/542056--- -- 09-12-2023
375	12	0 - 3.00	0.08	--	--	--	--	2023/0103 /32/542056--- -- 09-12-2023
375	13	0 - 9.50	0.26	--	--	--	--	2023/0103 /32/542056--- -- 09-12-2023
375	14	0 - 21.00	0.58	--	--	--	--	2023/0103 /32/542056--- -- 09-12-2023
375	15	0 - 24.50	0.67	--	--	--	--	2023/0103 /32/542056--- -- 09-12-2023
375	16	0 - 29.00	0.80	--	--	--	--	2023/0103 /32/542056--- -- 09-12-2023
376	1B	0 - 62.00	2.10	--	--	--	--	2023/0105 /32/323791--2023 /32/09/000301SD -- 29-11-2023
376	2	0 - 98.50	2.72	--	--	--	--	2023/0103 /32/542056--- -- 09-12-2023
		2 - 62.00	7.61					

குறிப்பு2 :



- மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <https://eservices.tn.gov.in> என்ற இணைய தளத்தில் 32/09/081 /01633/60123 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
- இத் தகவல்கள் 21-12-2023 அன்று 09:59:57 AM நேரத்தில் அச்சடிக்கப்பட்டது.
- கைப்பேசி கேமராவின் 2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

1432 ஆம் பச்சலியில்

திருப்பூர்

மாவட்டம்

இளந்திசை

ANNEXURE



மாண்புமிகு

நில வரித் திட்டத்தின்படி
புலன்களின் விபரம்.சாகுபடி
யாளரின்
பெயர்.

முதல் போகம்

நில அளவை எண்.	உட்பிரிவு எண்.	பரப்பு.	தீர்வை.	ஒரு போகம் அல்லது இரு போகம்.	கைப்பற்று தாரகூடைய பெயரும் எண்ணும் அல்லது அனுபோக தாரகூடைய பெயர்.	நிலத்தின் எந்த பகுதி யாவது சாகுபடியாளரால் பயிரிடப்பட்டுள்ளதா.	எந்த மாதத்தில் பயிர் செய்யப்பட்டது எந்த மாதத்தில் அறுவடை செய்யப்பட்டது.	பயிரின் பெயர்.	பயிரின் பரப்பு.	2.50" 145" பரப்பில் உள்ளது.	விளைச்சல் அளவு விழுக்காடு.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
375	10	0.0400	0.11	1165	கொநாணி	-	-	-	-	-	-
	11	0.1050	0.29	1165	கொநாணி	-	-	-	-	-	-
	12	0.0300	0.08	1165	கொநாணி	-	-	-	-	-	-
	13	0.0950	0.26	1165	கொநாணி	-	-	-	-	-	-
	14	0.2100	0.58	1165	கொநாணி	-	-	-	-	-	-
	15	0.2400	0.67	1165	கொநாணி	-	-	-	-	-	-
	16	0.2900	0.80	1165	கொநாணி	-	-	-	-	-	-
376	13	2.7400	9.26	1165	கொநாணி	-	-	-	-	-	-
	2	0.9800	2.72	1165	கொநாணி	-	-	-	-	-	-

மாண்புமிகு

திருப்பூர் மாவட்டம்
இளந்திசை
மாண்புமிகு
திருப்பூர் மாவட்டம்.



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154. மொரட்டுப்பாளையம் ஊர்.

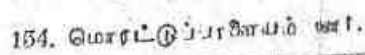
1	2	3	4	5	6	7	8	9	10	11	12
364	2	333 334-டி	ர	4	...	8-2	4	2 77	1 28 0	3 41	221 கை. ராமசாமிக் கவுண்டர்.
	3	332	ர	4	...	8-2	4	2 77	0 45 5	1 28	182 ம. மலையாட் கவுண்டர்.
	4	333	ர	4	...	8-2	4	2 77	1 02 0	2 53	40 ம. கருப்பக் கவுண்டர்.
365	1	334-எ	ர	4	...	8-2	4	2 77	4 03 5	11 27	295 செ. ராமசாமிக் கவுண்டர் (1), அ. பொன்னுசாமிக் கவுண்டர் (2).
	2	330-எ	ர	4	...	8-1	3	3 88	0 19 5	0 68	292 க. குப்புசாமிக் கவுண்டர் (1), க. நாச்சிமுத்துக் கவுண்டர் (2).
	3	330-எ	ர	4	...	8-1	3	3 88	1 46 5	4 95	298 கை. ராமசாமிக் கவுண்டர் (1), கை. சின்னசாமிக் கவுண்டர் (2).
366	...	335	ர	4	...	...	...	...	4 22 5	13 71	...
					...	...	...	...	0 55 5	...	வண்டிப் பாதை.
367	1	336 337-டி	ர	4	...	8-2	4	2 77	0 05 5	0 16	446 அ. கருப்பக் கவுண்டரும் மற்றும் எட்டு பேர்களும் க.
	2	333 337-டி 333	ர	4	...	8-2	4	2 77	5 25 5	14 55	42 அ. கருப்பக் கவுண்டர்.
368	1	339	ர	4	...	8-2	4	2 77	5 31 0	14 70	139 செ. பழனிசாமிக் கவுண்டர்.
	2	336	ர	4	...	8-2	4	2 77	1 18 5	3 14	407 செ. கருப்பசாமிக் கவுண்டரும் மற்றும் நான்கு பேர்களும் க.
	3	339	ர	4	...	8-2	4	2 77	0 01 0	0 11	297 செ. திருமுத்திக் கவுண்டர்.
					...	...	...	...	2 41 5	6 69	...

கிராம நிர்வாக அலுவலர்
(கருப்பம் மற்றும் இரட்டைப் பதிலாக)
மொரட்டுப்பாளையம் குழு
கருப்பம் மற்றும் இரட்டைப் பதிலாக
கருப்பம் மற்றும் இரட்டைப் பதிலாக

* விவரப்படிக்கப் பட்டிருக்கிறது.

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இ விவரப்படுத்தியப் பரீட்சையும்.



1	2	3	4	5	6	7	8	9	10	11	
							ந.பெ. 388. ஏர்ஸ். ந.பெ.				
375	6	344	ர	4	...	8-1	3	3 38	0 54.0	1 58	354 ப. கைத்தமலைக் கவுண்டர் (1), ப. சென்னிமலைக் கவுண்டர் (2), ப. தங்கமுத்துக் கவுண்டர் (3).
	7	344	ர	4	...	8-1	3	3 38	0 20.0	0 68	358 செ. அம்மாசைக் கவுண்டர் (1), செ. கருப்பக் கவுண்டர் (2), செ. கைத்தமலைக் கவுண்டர் (3).
	8	344	ர	4	...	8-1	3	3 38	0 15.0	0 61	308 ப. கைத்தமலைக் கவுண்டர் (1), ப. சென்னிமலைக் கவுண்டர் (2).
	9	344	ர	4	...	8-1	3	3 38	0 22.5	0 76	289 ரா. மலையாக் கவுண்டர் (1), ரா. கருப்பக் கவுண்டர் (2).
10	387-எ	ர	4	...	8-2	4	2 77	0 04.0	0 11	234 ப. தங்கமுத்துக் கவுண்டர்.	
11	387-எ	ர	4	...	8-2	4	2 77	0 10.5	0 29	298 ப. கைத்தமலைக் கவுண்டர் (1), ப. சென்னிமலைக் கவுண்டர் (2).	
12	387-எ	ர	4	...	8-2	4	2 77	0 08.0	0 08	284 ப. தங்கமுத்துக் கவுண்டர்.	
13	387-எ	ர	4	...	8-2	4	2 77	0 09.5	0 23	293 ப. கைத்தமலைக் கவுண்டர் (1), ப. சென்னிமலைக் கவுண்டர் (2).	
14	387-எ	ர	4	...	8-2	4	2 77	0 21.0	0 68	353 செ. அம்மாசைக் கவுண்டர் (1), செ. கருப்பக் கவுண்டர் (2), செ. கைத்தமலைக் கவுண்டர் (3).	
15	387-எ	ர	4	...	8-2	4	2 77	0 24.5	0 67	288 ப. கைத்தமலைக் கவுண்டர் (1), ப. சென்னிமலைக் கவுண்டர் (2).	
16	387-எ	ர	4	...	8-2	4	2 77	0 29.0	0 60	289 ரா. மலையாக் கவுண்டர் (1), ரா. கருப்பக் கவுண்டர் (2).	
1	344	ர	4	...	8-1	3	3 38	3 22.5	10 27		
								2 74.0	9 28	881 நா. சின்னத்தம்பிக் கவுண்டர் (1), நா. பொன்னுசாமிக் கவுண்டர் (2), நா. காளியப்பக் கவுண்டர் (3), நா. முத்துசாமிக் கவுண்டர் (4).	

கிணறு.

தமிழ்நாடு சட்டப் பேரவை

(முற்றும் நிரப்பி இப்படி பதிவுசெய்ய)

கிராம நிர்வாக அலுவலர்
(மற்றும் சென்னை இலாப பதிலாளர்)
மொரட்டுப்பாளையம் குருப்
ஊத்துக்குளி லட்டம்
திருப்பூர் மாவட்டம்



1	2	3	4	5	6	7	8	9	10	11	
								கு.பை. நெய். ஏரி. ல். கு.பை.			
876	2	837-எ	ர	பு	...	8-2	4	2 77	0 85.5	2 72	300 ந. காளியப்பக் கவுண்டர் (1), ந. ராஜசாமிக்க கவுண்டர் (2).
									3 72.5	11 93	
877	1	845	ர	பு	...	8-1	8	8 85	2 10.5	7 12	169 கை. மலையாக்க கவுண்டர்.
	2	846									
	2	847	ர	பு	...	8-8	5	2 00	0 48.0	0 53	159 கை. மலையாக்க கவுண்டர்.
	3	848	ர	பு	...	8-8	5	2 00	1 03.5	2 07	465 மா. நல்லாள்.
									3 67.0	10 05	
878	...	845	ர	பு	...	8-1	3	3 89	3 24.0	10 95	225 ரா. ராமசாமிக்க கவுண்டர்.
		846									
879	...	842	ர	பு	...	...	...	...	0 27.6	...	...
880	...	849-இ	ர	பு	...	8-8	5	2 00	2 22.0	4 44	332 ர. கருப்பண்ணக் கவுண்டர் (1), செ. கருப்பக் கவுண்டர் (2), செ. ராமசாமிக்க கவுண்டர் (3), செ. நாச்சிமுத்துக் கவுண்டர் (4).
891	①	849-எ2	ர	பு	...	8-8	5	2 00	1 32.5	2 85	135 செ. பழனிக்கு கவுண்டர்.
	②	849-எ3	ர	பு	...	8-8	5	2 00	1 39.5	2 77	100 இளவீர் ர. சென்னியப்பக் கவுண்டர், (காப்பாளர் தர்யர் வள்ளியம்மாள்).
									2 71.0	5 42	
892	...	849-சி	ர	பு	...	8-8	5	2 00	7 22.0	14 41	421 பெ. வேலப் பண்ணாடியும் மற்றும் ஐந்து பேர்களும்.
893	...	849-இ	ர	பு	...	8-8	5	2 00	10 44.0	20 85	301 வெ. சுப்பிரமணிய அய்யர் (1), வெ. ராமச்சந்திர அய்யர் (2).
894	①	849-பு	ர	பு	...	8-8	5	2 00	0 08.5	0 17	451 சீ. கருப்ப நாயக்க குமார் மற்றும் ஒன்பது பேர்களும்.

கிராம நிர்வாக அலுவலர் (மற்றும் பிறப்பு இறப்பு பதிவாளர், மொரட்டுப்பாடையம் ஊர்) உத்தரவுக்குள் வட்டம் திருப்பூர் மாவட்டம்.

* விவரப்படி அய்யர் பரிசுக்கவும்.



அ-பதிவேடு விவரங்கள்

மாவட்டம் : திருப்பூர்

வட்டம் : ஊத்துக்குளி

கிராமம் : மொரட்டுப்பாளையம்

1. புல எண்	375	9. மண் வயனமும் ரகமும்	8 - 2
2. உட்பிரிவு எண்	10	10. மண் தரம்	4
3. பழைய புல உட்பிரிவு எண்	337-A	11. தீர்வை (ரூ - ஹெ)	2.77
4. பகுதி	P	12. பரப்பு (ஹெக்டேர் - ஏர்)	0 - 4.00
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - பை)	0.11
6. நிலத்தின் வகை	பஞ்சை	14. பட்டா எண்	1633
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
8. இரு போகமா	-	16. பெயர்	1.குமரேசன்

குறிப்பு 1:



1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <https://eservices.tn.gov.in> என்ற இணைய தளத்தில் 80123 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.



அ-பதிவேடு விவரங்கள்

மாவட்டம் : திருப்பூர்

வட்டம் : ஊத்துக்குளி

கிராமம் : மொரட்டுப்பாளையம்

1. புல எண்	375	9. மண் வயனமும் ரகமும்	8 - 2
2. உட்பிரிவு எண்	11	10. மண் தரம்	4
3. பழைய புல உட்பிரிவு எண்	337-A	11. தீர்வை (ரூ - ஹெ)	2.77
4. பகுதி	P	12. பரப்பு (ஹெக்டேர் - ஏர்)	0 - 10.50
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - பை)	0.29
6. நிலத்தின் வகை	பஞ்சை	14. பட்டா எண்	1633
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
8. இரு போகமா	-	16. பெயர்	1.குமரேசன்

குறிப்பு 1:



1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <https://eservices.tn.gov.in> என்ற இணைய தளத்தில் 80123 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.



அ-பதிவேடு விவரங்கள்

மாவட்டம் : திருப்பூர்

வட்டம் : ஊத்துக்குளி

கிராமம் : மொரட்டுப்பாளையம்

1. புல எண்	375	9. மண் வயனமும் ரகமும்	8 - 2
2. உட்பிரிவு எண்	12	10. மண் தரம்	4
3. பழைய புல உட்பிரிவு எண்	337-A	11. தீர்வை (ரூ - ஹெ)	2.77
4. பகுதி	P	12. பரப்பு (ஹெக்டேர் - ஏர்)	0 - 3.00
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - பை)	0.08
6. நிலத்தின் வகை	பஞ்சை	14. பட்டா எண்	1633
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
8. இரு போகமா	-	16. பெயர்	1.குமரேசன்

குறிப்பு 1:



1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <https://eservices.tn.gov.in> என்ற இணைய தளத்தில் 80123 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.

அ-பதிவேடு விவரங்கள்

மாவட்டம் : திருப்பூர்

வட்டம் : ஊத்துக்குளி

கிராமம் : மொரட்டுப்பாளையம்

1. புல எண்	375	9. மண் வயனமும் ரகமும்	8 - 2
2. உட்பிரிவு எண்	13	10. மண் தரம்	4
3. பழைய புல உட்பிரிவு எண்	337-A	11. தீர்வை (ரூ - ஹெ)	2.77
4. பகுதி	P	12. பரப்பு (ஹெக்டேர் - ஏர்)	0 - 9.50
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - பை)	0.26
6. நிலத்தின் வகை	பஞ்சை	14. பட்டா எண்	1633
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
8. இரு போகமா	-	16. பெயர்	1.குமரேசன்

குறிப்பு 1:



1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <https://eservices.tn.gov.in> என்ற இணைய தளத்தில் 80123 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.



அ-பதிவேடு விவரங்கள்

மாவட்டம் : திருப்பூர்

வட்டம் : ஊத்துக்குளி

கிராமம் : மொரட்டுப்பாளையம்

1. புல எண்	375	9. மண் வயனமும் ரகமும்	8 - 2
2. உட்பிரிவு எண்	14	10. மண் தரம்	4
3. பழைய புல உட்பிரிவு எண்	337-A	11. தீர்வை (ரூ - ஹெ)	2.77
4. பகுதி	P	12. பரப்பு (ஹெக்டேர் - ஏர்)	0 - 21.00
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - பை)	0.58
6. நிலத்தின் வகை	பஞ்சை	14. பட்டா எண்	1633
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
8. இரு போகமா	-	16. பெயர்	1.குமரேசன்

குறிப்பு 1:



1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <https://eservices.tn.gov.in> என்ற இணைய தளத்தில் 80123 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.

அ-பதிவேடு விவரங்கள்

மாவட்டம் : திருப்பூர்

வட்டம் : ஊத்துக்குளி

கிராமம் : மொரட்டுப்பாளையம்

1. புல எண்	375	9. மண் வயனமும் ரகமும்	8 - 2
2. உட்பிரிவு எண்	15	10. மண் தரம்	4
3. பழைய புல உட்பிரிவு எண்	337-A	11. தீர்வை (ரூ - ஹெ)	2.77
4. பகுதி	P	12. பரப்பு (ஹெக்டேர் - ஏர்)	0 - 24.50
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - பை)	0.67
6. நிலத்தின் வகை	புஞ்சை	14. பட்டா எண்	1633
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
8. இரு போகமா	-	16. பெயர்	1.குமரேசன்

குறிப்பு 1:



1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <https://eservices.tn.gov.in> என்ற இணைய தளத்தில் 80123 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.

அ-பதிவேடு விவரங்கள்

மாவட்டம் : திருப்பூர்

வட்டம் : ஊத்துக்குளி

கிராமம் : மொரட்டுப்பாளையம்

1. புல எண்	375	9. மண் வயனமும் ரகமும்	8 - 2
2. உட்பிரிவு எண்	16	10. மண் தரம்	4
3. பழைய புல உட்பிரிவு எண்	337-A	11. தீர்வை (ரூ - ஹெ)	2.77
4. பகுதி	P	12. பரப்பு (ஹெக்டேர் - ஏர்)	0 - 29.00
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - பை)	0.80
6. நிலத்தின் வகை	புஞ்சை	14. பட்டா எண்	1633
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
8. இரு போகமா	-	16. பெயர்	1.குமரேசன்

குறிப்பு 1:



1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <https://eservices.tn.gov.in> என்ற இணைய தளத்தில் 80123 என்ற குறிப்பு எண்ணை உள்ளிடு செய்து உறுதி செய்துகொள்ளவும்.



அ-பதிவேடு விவரங்கள்

மாவட்டம் : திருப்பூர்

வட்டம் : ஊத்துக்குளி

கிராமம் : மொரட்டுப்பாளையம்

1. புல எண்	376	9. மண் வயனமும் ரகமும்	8 - 1
2. உட்பிரிவு எண்	1B	10. மண் தரம்	3
3. பழைய புல உட்பிரிவு எண்	376-1	11. தீர்வை (ரூ - ஹெ)	3.38
4. பகுதி	P	12. பரப்பு (ஹெக்டேர் - ஏர்)	0 - 62.00
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - பை)	2.10
6. நிலத்தின் வகை	பஞ்சை	14. பட்டா எண்	1633
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
8. இரு போகமா	-	16. பெயர்	1.குமரேசன்

குறிப்பு 1:



1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <https://eservices.tn.gov.in> என்ற இணைய தளத்தில் 80123 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.



அ-பதிவேடு விவரங்கள்

மாவட்டம் : திருப்பூர்

வட்டம் : ஊத்துக்குளி

கிராமம் : மொரட்டுப்பாளையம்

1. புல எண்	376	9. மண் வயனமும் ரகமும்	8 - 2
2. உட்பிரிவு எண்	2	10. மண் தரம்	3
3. பழைய புல உட்பிரிவு எண்	337-A	11. தீர்வை (ரூ - ஹெ)	2.77
4. பகுதி	P	12. பரப்பு (ஹெக்டேர் - ஏர்)	0 - 98.50
5. அரசு / ரபத்துவாரி	ரபத்துவாரி	13. மொத்த தீர்வை (ரூ - பை)	2.72
6. நிலத்தின் வகை	புஞ்சை	14. பட்டா எண்	1633
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
8. இரு போகமா	-	16. பெயர்	1.குமரேசன்

குறிப்பு 1:



1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <https://eservices.tn.gov.in> என்ற இணைய தளத்தில் 80123 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.

ANNEXURE



भारत सरकार
INDIA

கும்பேசன் ஆறுமுகம்
Kumaresan Arumugam

பிறந்த நாள்/ DOB: 22/03/1979

ஆண் / MALE

5776 0366 4924

ஆதார் - சாதாரண மனிதனின் அடையாளம்

आधार विधि पहचान प्राधिकरण
INDIA

முகவரி:

S/O: ஆறுமுகம், 3/109,
மொரட்டுப்பாளையம்,
மொரட்டுப்பாளையம்,
திருப்பூர்,
தமிழ்நாடு - 638752

Address:

S/O: Arumugam, 3/109,
MORATTUPALAYAM,
Morattupalayam, Tiruppur,
Tamil Nadu - 638752

5776 0366 4924



170



அறிவியல் புலம்
FACULTY OF SCIENCE

பெரியார் பல்கலைக்கழக ஆட்சிக்குழு 2010 ஆம் ஆண்டு ஏப்ரல் மாதம்
நடந்த பயன்பாட்டுப்புவியமைப்பியல் தேர்வில்
அரசு கலைக் கல்லூரி, சேலம் - 636 007 (தன்னாட்சி) பயின்ற
P விஸ்வநாதன் என்பவர்

முதல் வகுப்பு A++ தரத்தில் தேர்ச்சி பெற்றார் என்று தக்க
தேர்வாளர்கள் சான்றளித்தபடி அறிவியல் நிறைஞர் என்னும்
பட்டத்தை அவருக்குப் பல்கலைக்கழக இலச்சினையுடன் வழங்குகிறது.

*The Syndicate of the Periyar University hereby makes known
that VISWANATHAN P has been
admitted to the DEGREE OF MASTER OF SCIENCE in
APPLIED GEOLOGY
he/she having been certified by duly appointed Examiners to be qualified
to receive the same and was placed in the FIRST CLASS
WITH A++ GRADE at the Examination held in APR-2010 through
GOVERNMENT ARTS COLLEGE, SALEM - 636 007 (AUTONOMOUS).*



Given under the seal of this university

நாள்
Dated 28-02-2011
சேலம் 636011, தமிழ்நாடு, இந்தியா
Salem 636011, Tamil Nadu, India.

பதிவாளர்
Registrar

துணைவேந்தர்
Vice-Chancellor

TIN. No. : 3312 2703755
C.S.T. No. : 880783 / 29.11.2005
Area Code : 142



ANNEXURE

Ph : Mines : 0427-2403645
Fact : 0427-2400048



SUDHARSHAAN MINING CORPORATION

Mfrs : Dead Burnt Magnesite, Lightly Calcined Magnesite, Dunite Chips & Powder.
S.F. No. 77, Kuduvampatty Road, Vinayagampatti, SALEM - 636 008.

Date : 28.12.2015.....

EXPERIENCE CERTIFICATE

This is to certify that **Shri.P.Viswanathan, S/o. P.Paramasivam, Geologist**, has worked in our Magnesite Mines from **13.09.2010 to 25.11.2015** as our company Geologist. During his service he used to maintain all records and returns submitted to Government Departments.

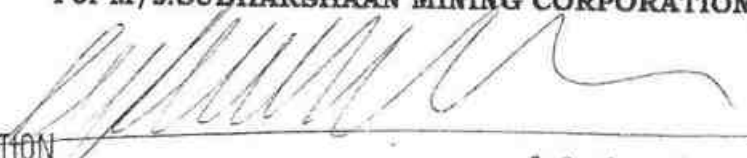
His nature of work in the mines was to show the plan of working and demarcate Magnesite reserve areas. He was looking after production of Magnesite and was maintaining quality of the Mineral as per the specifications given by the buyers.

During his tenor of his service he was very sincere and prompt in his duties.

I wish him the best of luck in all his future endeavours.

For M/s.SUDHARSHAAN MINING CORPORATION,

SUDHARSHAAN MINING CORPORATION
SF-77, KUDUVAMPATTI ROAD,
SALEM - 636 008, Tamilnadu.


G.PASUPATHY,
Proprietor

28 Dec 2015

Res: "Garuda" 14/315, Kalliyapillai Garden Road Cross, Fairlands, Salem - 636 004, Tamilnadu.



INDEX

Q.L.APPLIED AREA: ●

TOPO SHEET NO. : 58 E/ 08

LATITUDE : 11°08'20.63"N to 11°08'28.34"N
LONGITUDE : 77°25'36.57"E to 77°25'42.56"E

APPLICANT :

Thiru. A.A.KUMARESAN,
S/o.ARUMUGAM,
NO.3-109, MORATTUPALAYAM,
UTHUKULI TALUK,
TIRUPPUR DISTRICT.

LOCATION OF Q.L.A AREA:

SF.Nos : 376/1B,2 375/10, 11,12,13,14,15&16
EXTENT : 2.62.0 HA.
VILLAGE : MORATTUPALAYAM,
TALUK : UTHUKULI,
DISTRICT : TIRUPPUR,
STATE : TAMILNADU.

PLATE NO - I

DATE OF SURVEY : 01.07.2024

LOCATION PLAN

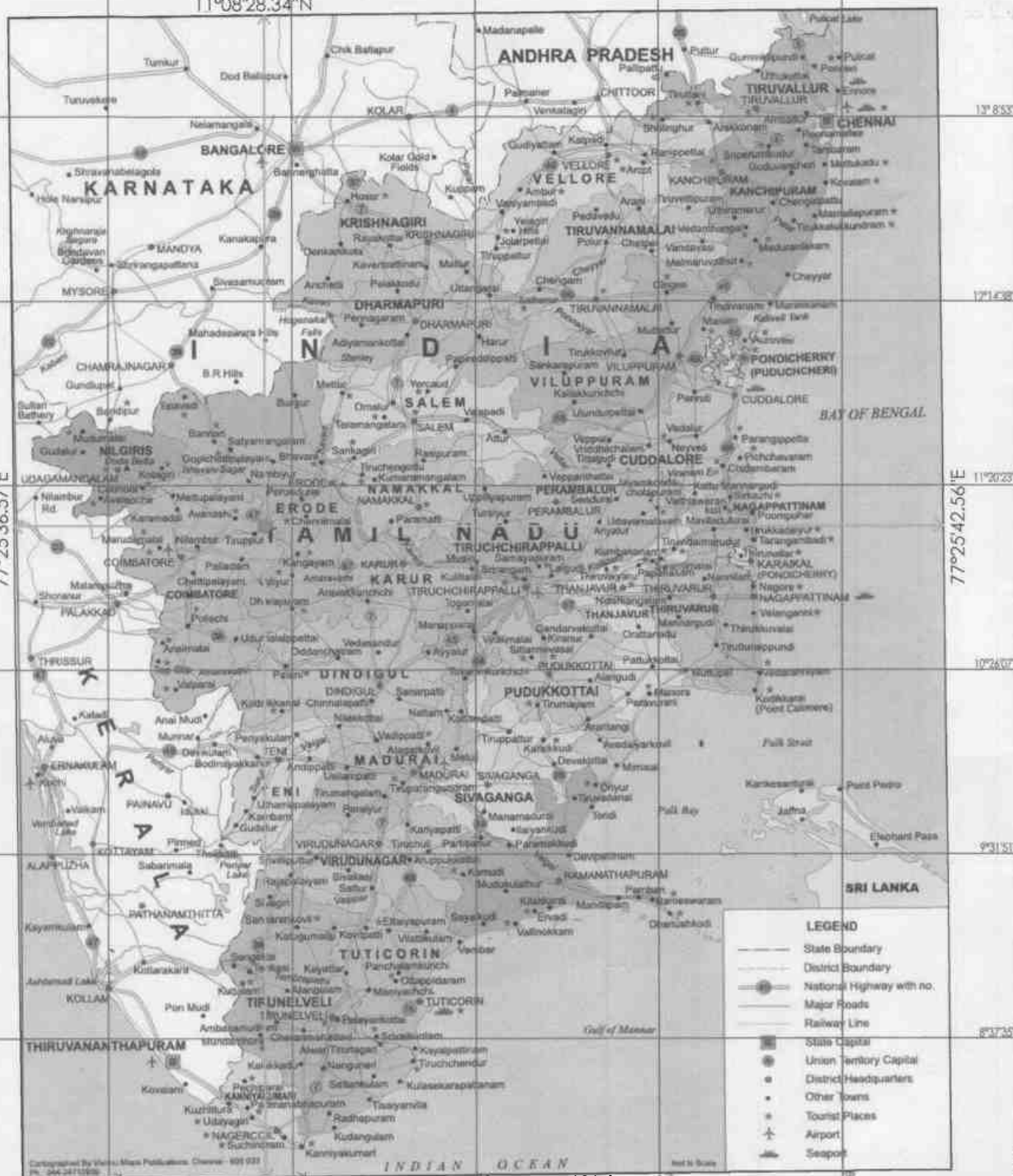
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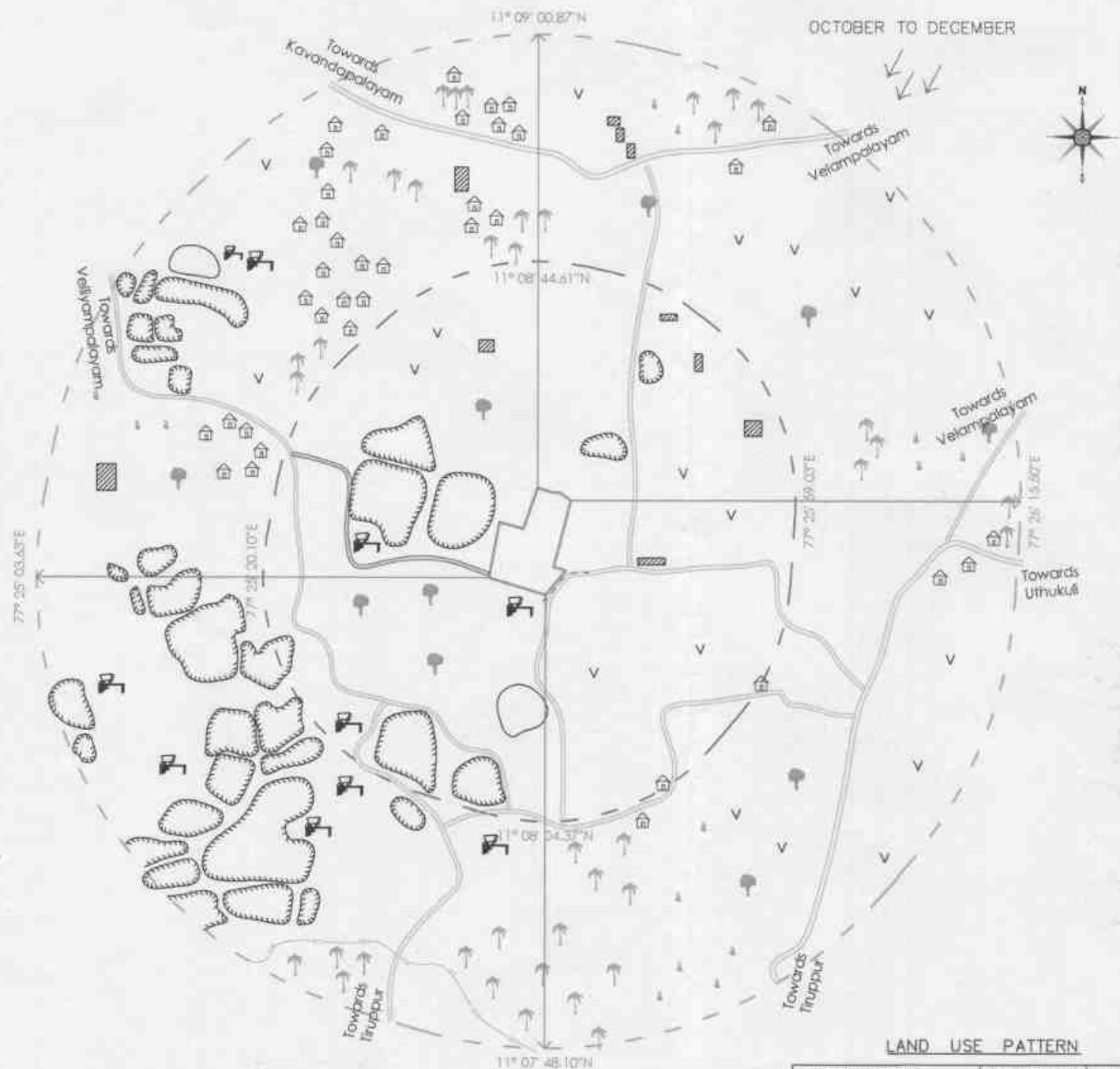
PREPARED BY :

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

P. Viswanathan

P. VISWANATHAN, N.Sc.,
QUALIFIED PERSON
Under Rule 15(i)(a) and (b) of MCR, 2016





JULY TO SEPTEMBER

TOPO SHEET NO. : 58 E/ 08

LATITUDE : 11°08'20.63"N to 11°08'28.34"N
LONGITUDE : 77°25'36.57"E to 77°26'15.50"E

LAND USE PATTERN

DESCRIPTION	PERCENTAGE	INDEX
QUARRY PITS & CRUSHER	(12%)	Q.P.
TREES & COCONUT FARM	(08%)	T.C.F.
SEASONAL AGRI LAND	(36%)	S.A.L.
ROADS & ODAI	(06%)	R.O.
HABITATION	(08%)	H.
BARREN LAND	(30%)	V.V.
TOTAL	100%	

INDEX

- Q.L. APPLIED AREA
- 1 Km RADIUS
- 500m RADIUS
- SEASONAL AGRICULTURE LAND
- TREES & COCONUT FARM
- HABITATION
- QUARRY PIT & CRUSHER UNIT
- WIND DIRECTION
- VILLAGE ROAD
- APPROACH ROAD
- BARREN LAND
- ODAI

APPLICANT :

Thiru. A.A.KUMARESAN,
S/o.ARUMUGAM,
NO.3-109, MORATTUPALAYAM,
UTHUKULI TALUK,
TIRUPPUR DISTRICT.

LOCATION OF Q.L.A AREA:

SF.Nos : 376/18, 2 375/10, 11, 12, 13, 14, 15 & 16
EXTENT : 2.62.0 HA,
VILLAGE : MORATTUPALAYAM,
TALUK : UTHUKULI,
DISTRICT : TIRUPPUR,
STATE : TAMILNADU.

PLATE NO - I-B

DATE OF SURVEY : 01.07.2024

ENVIRONMENTAL & LAND USE PLAN

SCALE: 1:10,000

PREPARED BY :

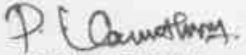
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PLATE IS TRUE AND CORRECT TO THE BEST OF MY
KNOWLEDGE BASED UPON THE LEASE MAP
AUTHENTICATED BY STATE GOVERNMENT

P. Viswanathan
P. VISWANATHAN, M.Sc.,
QUALIFIED PERSON

Under Rule 15(i)(a) and (b) of MCR, 2016

PLATE NO : I-C
ROUTE MAP



<u>INDEX</u> Q.L.APPLIED AREA  STATE HIGHWAY  PANCHAYAT ROAD  APPROACH ROAD 	<u>APPLICANT :</u> Thiru. A.A.KUMARESAN, S/o.ARUMUGAM, NO.3-109, MORATTUPALAYAM, UTHUKULI TALUK, TIRUPPUR DISTRICT. <u>LOCATION OF Q.L.A AREA:</u> SF.Nos :376/1B,2 375/10 . 11,12,13,14,15&16 EXTENT :2.62.0 HA, VILLAGE : MORATTUPALAYAM, TALUK : UTHUKULI, DISTRICT : TIRUPPUR STATE : TAMILNADU.	<u>SCALE :</u> NOT TO SCALE <u>PREPARED BY:</u> 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  P.VISWANATHAN,M.Sc., QUALIFIED PERSON Under Rule 15(1)(a)and(b)of MCR,2016
---	--	---



BOUNDARY CO-ORDINATES

S.N.	LATITUDE	LONGITUDE
1	11° 08' 21.90"N	77° 25' 36.57"E
2	11° 08' 25.89"N	77° 25' 37.36"E
3	11° 08' 25.40"N	77° 25' 39.10"E
4	11° 08' 28.34"N	77° 25' 40.15"E
5	11° 08' 27.99"N	77° 25' 41.27"E
6	11° 08' 27.98"N	77° 25' 41.80"E
7	11° 08' 27.40"N	77° 25' 42.56"E
8	11° 08' 23.87"N	77° 25' 41.63"E
9	11° 08' 22.63"N	77° 25' 41.27"E
10	11° 08' 22.36"N	77° 25' 42.19"E
11	11° 08' 20.63"N	77° 25' 40.69"E
12	11° 08' 21.43"N	77° 25' 38.08"E

DATUM : UTM-WGS84, ZONE 43 NORTH



INDEX

- Q.L. APPLIED AREA BOUNDARY
- 10m & 7.5m SAFETY DISTANCE
- TEMPORARY BENCH MARK
- GRAVEL
- SHRUBS
- APPROACH ROAD
- VILLAGE ROAD

APPLICANT :

THIRU. A.A.KUMARESAN,
S/o. ARUMUGAM,
NO.3-109, MORATTUPALAYAM,
UTHUKULI TALUK,
TIRUPPUR DISTRICT.

LOCATION OF Q.L.A. AREA:

SF.Nos : 376/1B, 2 375/10, 11, 12, 13, 14, 15 & 16
EXTENT : 2.62.0 HA.
VILLAGE : MORATTUPALAYAM,
TALUK : UTHUKULI,
DISTRICT : TIRUPPUR,
STATE : TAMILNADU.

PLATE NO - II

DATE OF SURVEY : 01.07.2024

QUARRY LEASE PLAN & SURFACE PLAN

SCALE: 1:1000

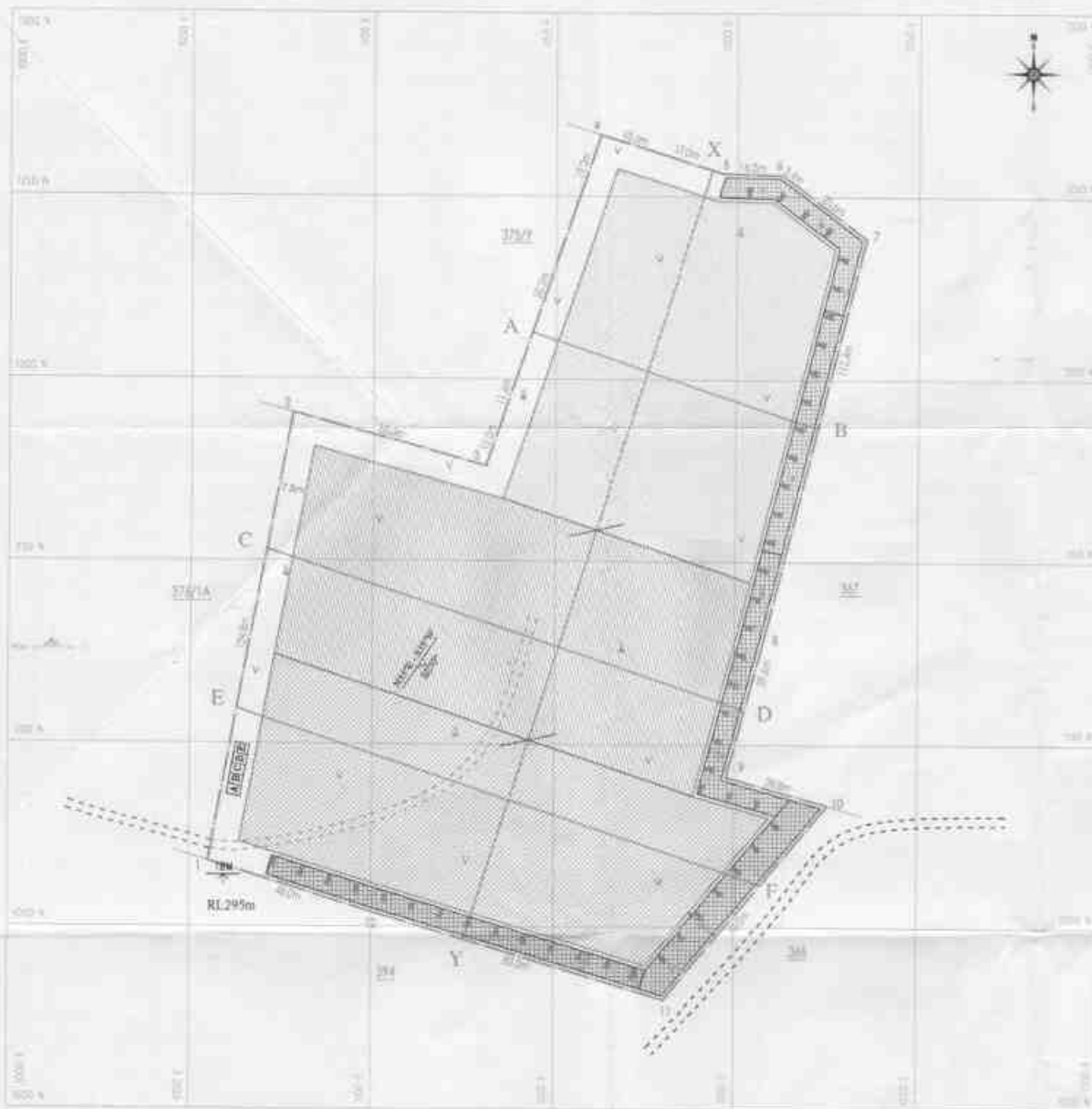
PREPARED BY :

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

P. Viswanathan

P. VISWANATHAN, M.Sc.,
QUALIFIED PERSON

Under Rule 150(a) and (b) of MCR-2018



BOUNDARY CO-ORDINATES

S.N.	LATITUDE	LONGITUDE
1	11°08'21.90"N	77°25'36.57"E
2	11°08'25.87"N	77°25'37.34"E
3	11°08'25.40"N	77°25'36.10"E
4	11°08'28.34"N	77°25'40.15"E
5	11°08'27.99"N	77°25'41.27"E
6	11°08'27.98"N	77°25'41.80"E
7	11°08'27.40"N	77°25'42.54"E
8	11°08'25.87"N	77°25'41.63"E
9	11°08'22.63"N	77°25'42.27"E
10	11°08'22.56"N	77°25'42.19"E
11	11°08'20.63"N	77°25'40.49"E
12	11°08'21.43"N	77°25'30.08"E

DATUM : UTM WGS84, ZONE 43 NORTH

SITE SERVICES
(Proposed)

A - DRAINAGE
B - ROADWAY
C - STREET LIGHTING
D - ROAD MARKING
E - FENCE

INDEX

- Q.L. APPLIED AREA BOUNDARY
- 10m & 7.5m SAFETY DISTANCE
- TEMPORARY BENCH MARK
- GRAVEL
- ROUGHSTONE
- STRIKE & DIP
- SHRUBS
- VILLAGE ROAD
- APPROACH ROAD
- QUARRY HAUL ROAD
- D.O.E. DEPTH OF ESTIMATION

APPLICANT:

THIRU. A.A. KUMARASAN,
S/O. ARUMUGAM,
H.O.S-10P, MORATTUPALAYAM,
UTHUKULI TALUK,
TIRUPPUR DISTRICT.

LOCATION OF Q.L.A. AREA:

SF. Nos. : 1374/18.2, 375/10, 11, 12, 13, 14, 15 & 16
EXTENT : 2.62.0 HA,
VILLAGE : MORATTUPALAYAM,
TALUK : UTHUKULI,
DISTRICT : TIRUPPUR,
STATE : TAMILNADU.

PLATE NO. - III

DATE OF SURVEY : 01.07.2024

TOPOGRAPHY, GEOLOGICAL PLAN,
FIRST FIVE YEARWISE
DEVELOPMENT & PRODUCTION
PLAN & SECTIONS

SCALE : 1:1000

PREPARED BY:

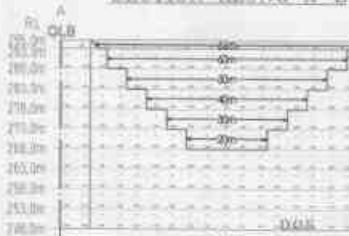
THIS IS TO CERTIFY THAT THE INFORMATION IN THIS
PLATE IS TRUE AND CORRECT TO THE BEST OF MY
KNOWLEDGE BASED UPON THE LEGAL MAP
AUTHENTICATED BY STATE GOVERNMENT

P. V. Srinivasan
P. V. SRINIVASAN, S.E.,
QUALIFIED PERSON
Under Rule 15(2)(b) of the Survey Act, 1908

SECTION ALONG X-Y



SECTION ALONG A-B



SECTION ALONG C-D

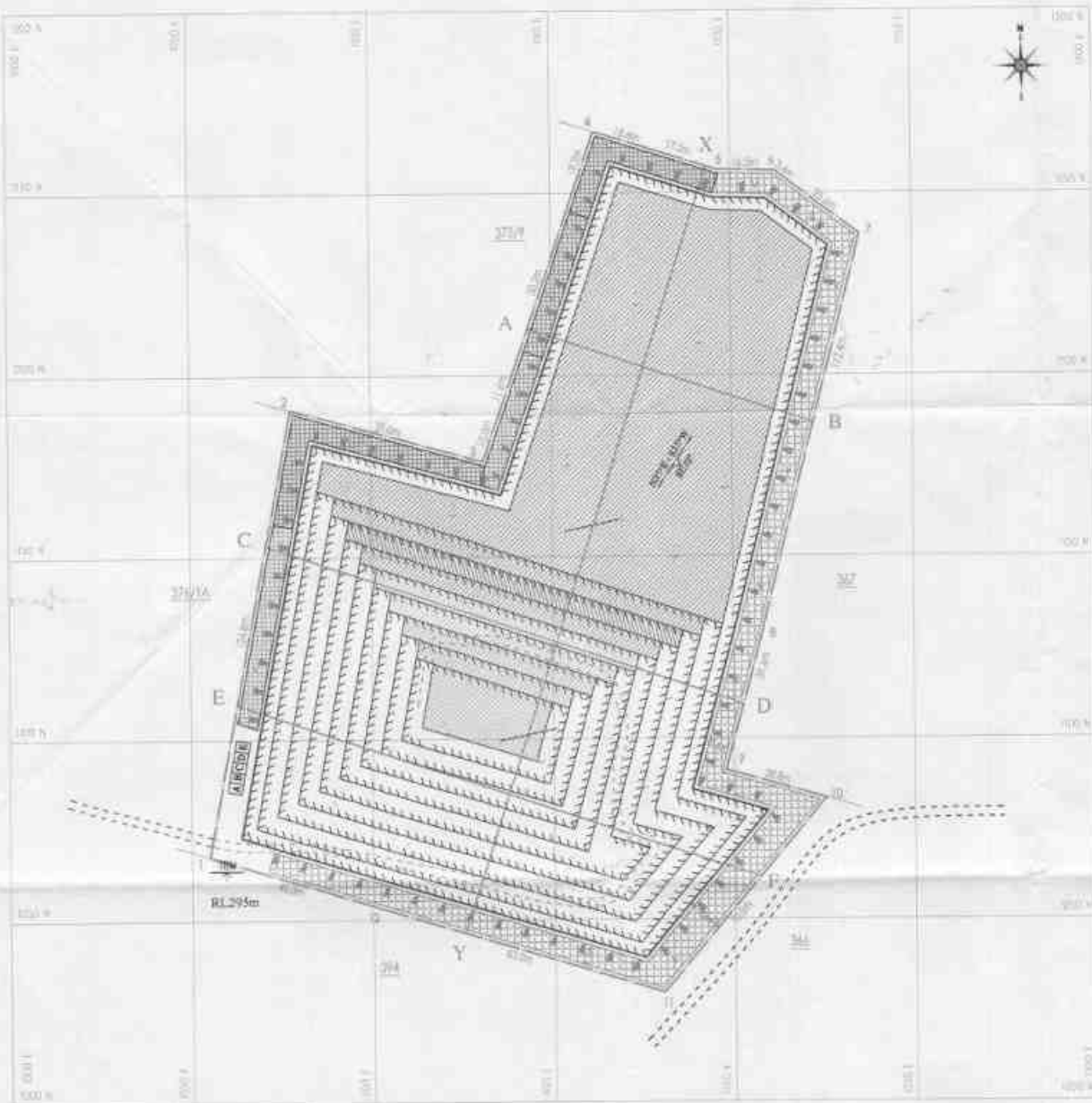


SECTION ALONG E-F



- I - yr Proposed area to be Flashed
- II - yr Proposed area to be Flashed
- III - yr Proposed area to be Flashed
- IV - yr Proposed area to be Flashed
- V - yr Proposed area to be Flashed

- I - yr Proposed area to be Quarried
- II - yr Proposed area to be Quarried
- III - yr Proposed area to be Quarried
- IV - yr Proposed area to be Quarried
- V - yr Proposed area to be Quarried



S.N.	LATITUDE	LONGITUDE
1	11°08'21.90"N	77°25'36.57"E
2	11°08'25.87"N	77°25'37.34"E
3	11°08'35.40"N	77°25'38.10"E
4	11°08'26.34"N	77°25'40.19"E
5	11°08'27.99"N	77°25'41.27"E
6	11°08'27.98"N	77°25'41.80"E
7	11°08'27.40"N	77°25'42.54"E
8	11°08'23.87"N	77°25'41.63"E
9	11°08'23.63"N	77°25'41.27"E
10	11°08'22.36"N	77°25'42.19"E
11	11°08'20.63"N	77°25'40.69"E
12	11°08'31.43"N	77°25'38.09"E

DATUM : UTM-WGS84, ZONE 43 NORTH

SOIL SURVEY
 A - TOPSOIL
 B - SUBSOIL
 C - FIRST BEDROCK
 D - SECOND BEDROCK
 E - PILES

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- Q.L. APPLIED AREA BOUNDARY
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- STRIKE & DIP
- SHRUBS
- VILLAGE ROAD
- APPROACH ROAD
- QUARRY HAUL ROAD
- QUARRY PIT
- PLANTATION

APPLICANT :

THIRU. A.A.KUMARESAN,
 S/O. ARUMUGAM,
 NO.3-109, MGRATTUPALAYAM,
 UTHUKULI TALUK,
 TIRUPPUR DISTRICT.

LOCATION OF Q.L.A. AREA:

SF.No. : 376/18.2 375/10, 11, 12, 13, 14, 15 & 16
 EXTENT : 2.62.0 HA,
 VILLAGE : MORATTUPALAYAM,
 TALUK : UTHUKULI,
 DISTRICT : TIRUPPUR,
 STATE : TAMILNADU.

PLATE NO - III-A

DATE OF SURVEY : 01.07.2024

**TOPOGRAPHY, GEOLOGICAL PLAN,
 SECOND FIVE YEARWISE
 DEVELOPMENT & PRODUCTION
 PLAN & SECTIONS**

SCALE : 1:1000

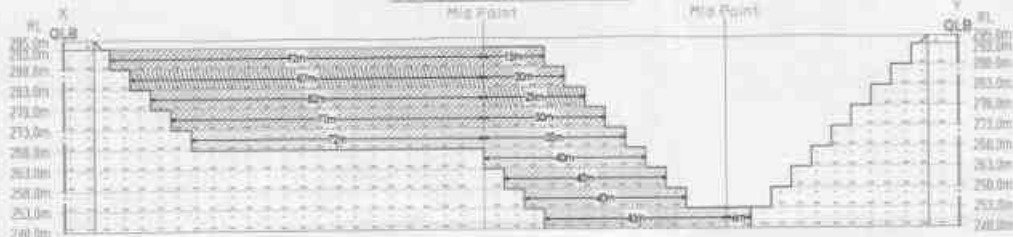
PREPARED BY :

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

P. V. Venkatesh

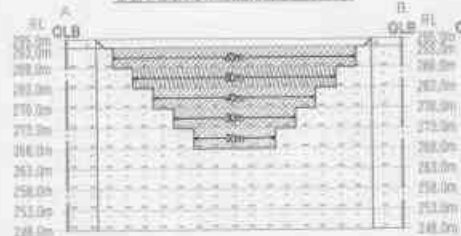
P. V. VENKATESH, S.O.,
 QUALIFIED PERSON
 Under Rule 150(E) of the MCR, 2018

SECTION ALONG X-Y

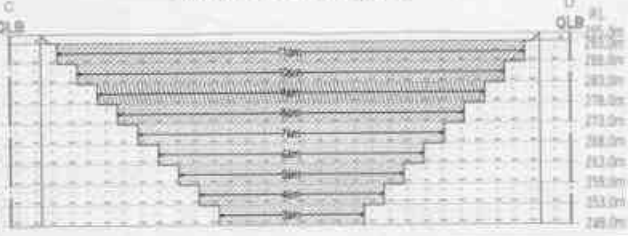


Proposed Pit Dimension (max)
 XY-AB = 95mX60mX2m(d)
 XY-CD = 60mX122mX42m(d)
 XY-EF = 49mX132mX42m(d)
 (for 1st 5 years)

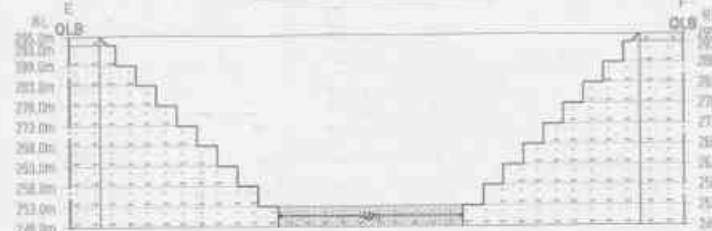
SECTION ALONG A-B



SECTION ALONG C-D

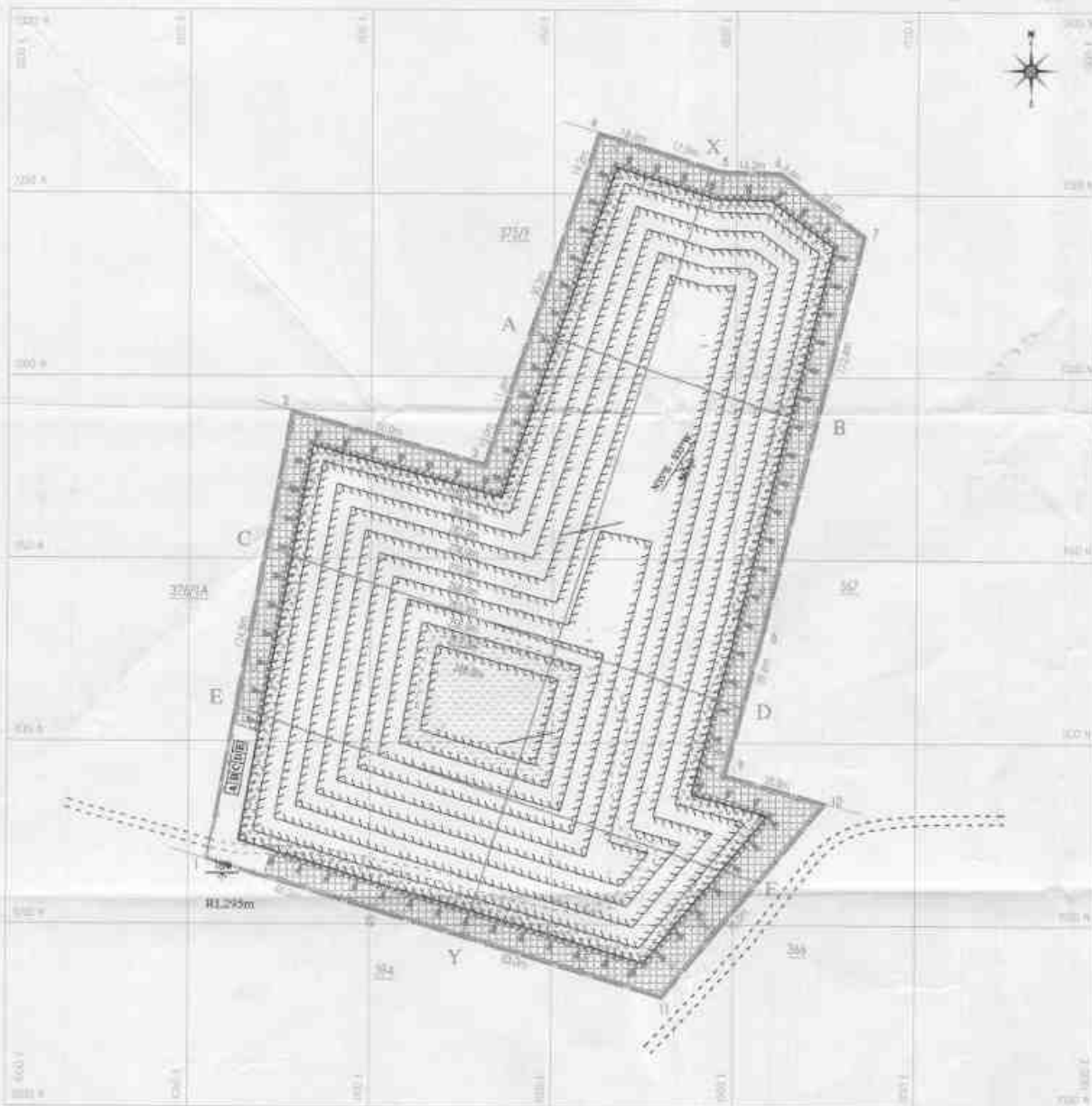


SECTION ALONG E-F



- VI - 1st Proposed area to be Planted
- VII - 2nd Proposed area to be Planted
- VIII - 3rd Proposed area to be Planted
- IX - 4th Proposed area to be Planted
- X - 5th Proposed area to be Planted

- VI - 1st Proposed area to be Quarried
- VII - 2nd Proposed area to be Quarried
- VIII - 3rd Proposed area to be Quarried
- IX - 4th Proposed area to be Quarried
- X - 5th Proposed area to be Quarried



BOUNDARY CO-ORDINATE

S.N.	LATITUDE	LONGITUDE
1	11°08'21.90"N	77°25'36.57"E
2	11°08'26.89"N	77°25'37.36"E
3	11°08'25.40"N	77°25'39.10"E
4	11°08'26.34"N	77°25'40.15"E
5	11°08'27.39"N	77°25'41.27"E
6	11°08'27.98"N	77°25'41.80"E
7	11°08'27.40"N	77°25'42.56"E
8	11°08'23.87"N	77°25'41.83"E
9	11°08'22.63"N	77°25'41.27"E
10	11°08'22.36"N	77°25'42.19"E
11	11°08'25.63"N	77°25'40.69"E
12	11°08'21.43"N	77°25'38.06"E

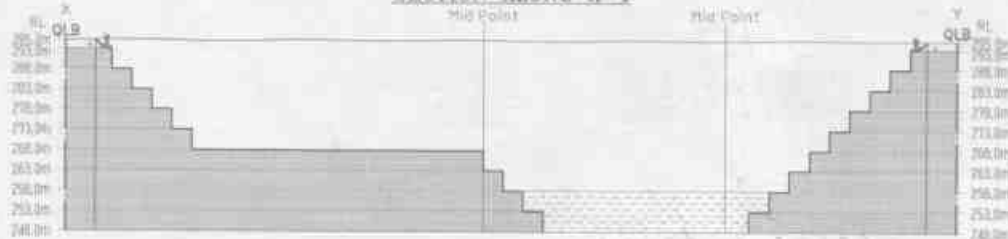
DATUM: UTM-WGS84 ZONE 43 NORTH

SITE SERVICES
 A-GRIDS
 B-STRUCK BENCH
 C-TRAIL AND BENCH
 D-REPT MOUNTAIN
 E-TRAIL

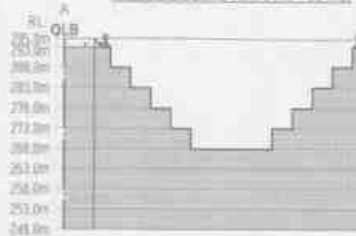
INDEX

- Q.L. APPLIED AREA BOUNDARY
- 10m & 7.5m SAFETY DISTANCE
- TEMPORARY BENCH MARK
- GRAVEL
- ROUGHSTONE
- STRIKE & DIP
- SHRUBS
- VILLAGE ROAD
- APPROACH ROAD
- QUARRY HAUL ROAD
- QUARRY PIT
- PLANTATION
- BARBED WIRE FENCING
- EXISTING LAND FORM
- SOIL LAYER
- REHABILITATED LAND FORM
- PROPOSED GARLAND DRAIN
- OLD SURFACE LEVEL
- FINISHED SURFACE LEVEL
- RAIN WATER STORAGE

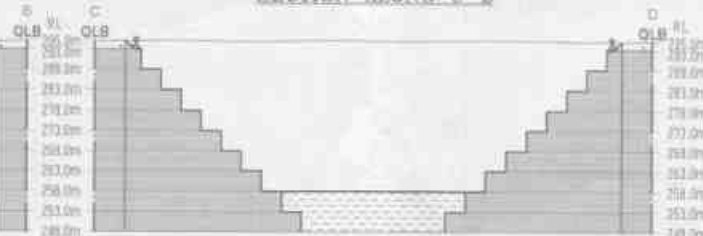
SECTION ALONG X-Y



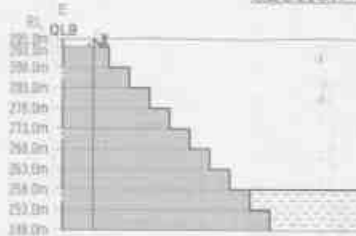
SECTION ALONG A-B



SECTION ALONG C-D



SECTION ALONG E-F



LAND USE PATTERN

DESCRIPTION	PRESENT AREA IN HA	AREA REQUIRED DURING THE FIRST TEN YEARS OF PLAN PERIOD (TA)	AREA AT THE END OF LEASE PERIOD (TA)
QUARRYING PIT	NA	2.050	2.050
INFRASTRUCTURE	NA	0.010	0.010
ROADS	NA	0.020	0.020
GREEN BELT	NA	0.210	0.400
UNUTILIZED AREA	2.620	0.310	0.140
TOTAL	2.620	2.620	2.620

APPLICANT:

THIRU. A.A.KUMARASAN,
 S/O ARUMUGAM,
 NO.3-109, MORATTUPALAYAM,
 UTHUKUL TALUK,
 TIRUPPUR DISTRICT.

LOCATION OF Q.L.A. AREA:

SF. Nos. : 376/18,2 375/10, 11, 12, 13, 14, 158/16
 EXTENT : 2.620 HA.
 VILLAGE : MORATTUPALAYAM,
 TALUK : UTHUKUL,
 DISTRICT : TIRUPPUR,
 STATE : TAMILNADU.

PLATE NO - IV

DATE OF SURVEY : 01.07.2024

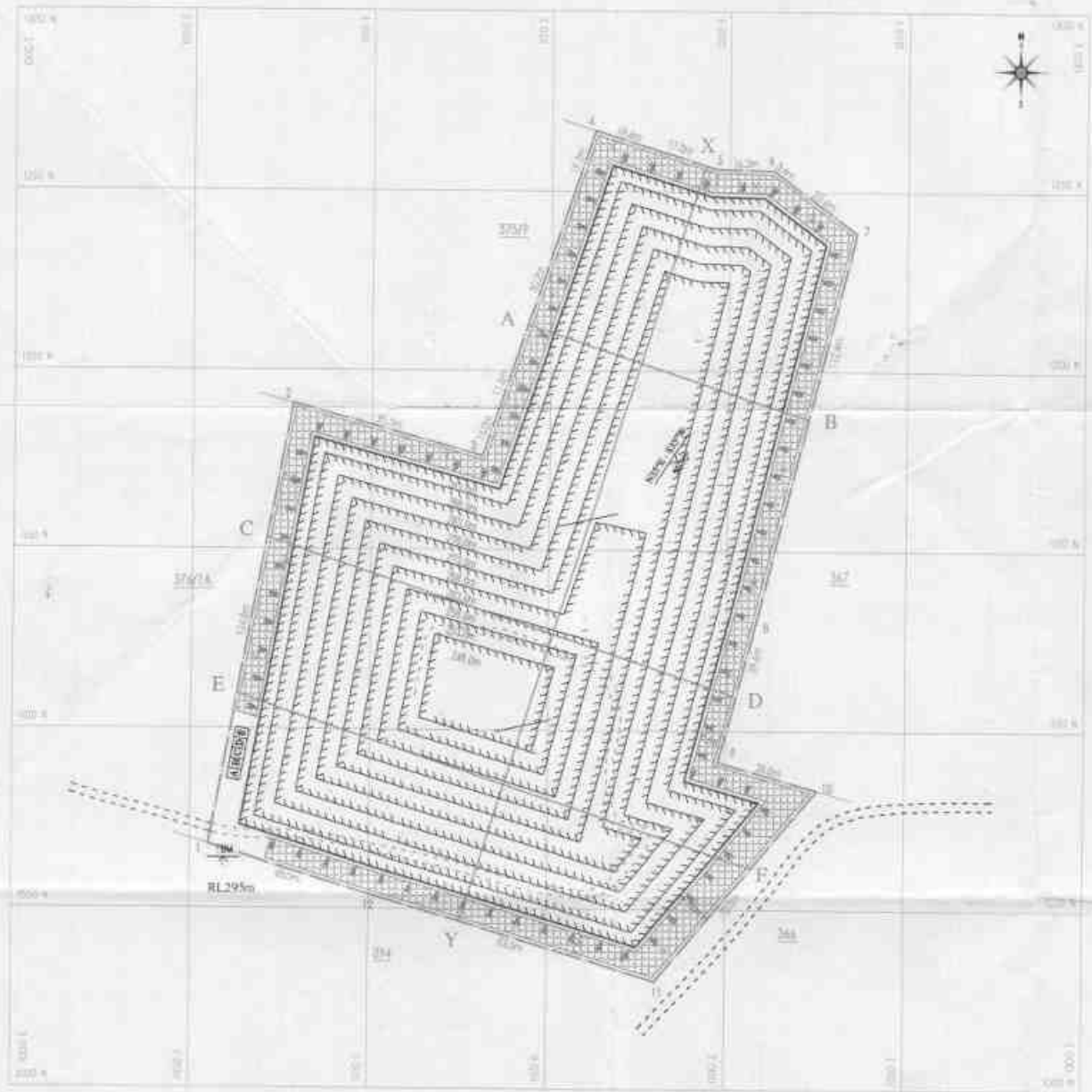
PROGRESSIVE QUARRY CLOSURE PLAN & SECTIONS

SCALE: 1:1000

PREPARED BY:

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

 P. K. NARASIMHAM SWAMY
 QUALIFIED PERSON
 Under Rule 130(b) of the Mines Act, 1923



BOUNDARY COORDINATES		
S.N.	LATITUDE	LONGITUDE
1	11°08'21.87"N	77°25'36.57"E
2	11°08'25.87"N	77°25'37.56"E
3	11°08'25.47"N	77°25'39.10"E
4	11°08'28.54"N	77°25'40.15"E
5	11°08'27.97"N	77°25'41.27"E
6	11°08'27.95"N	77°25'41.80"E
7	11°08'27.47"N	77°25'42.54"E
8	11°08'22.67"N	77°25'41.63"E
9	11°08'22.67"N	77°25'41.27"E
10	11°08'22.34"N	77°25'42.19"E
11	11°08'20.67"N	77°25'40.64"E
12	11°08'21.47"N	77°25'38.08"E

DATUM : UTM-WGS84, ZONE-43 NORTH

WITH SURVEY	
A-SURVEY	
B-SURVEY	
C-SURVEY	
D-SURVEY	
E-SURVEY	

INDEX	
	Q.L. APPLIED AREA BOUNDARY
	10m & 7.5m SAFETY DISTANCE
	TEMPORARY BENCH MARK
	GRAVEL
	ROUGHSTONE
	STRIKE & DIP
	SHRUBS
	VILLAGE ROAD
	APPROACH ROAD
	QUARRY HAUL ROAD
	QUARRY PIT
	PLANTATION

APPLICANT :
Thiru. A.A.KUMARAN,
S/O.ARUMUGAM,
NO.3-109, MORATTUPALAYAM,
UTHUKULI TALUK,
TRIPPUR DISTRICT.

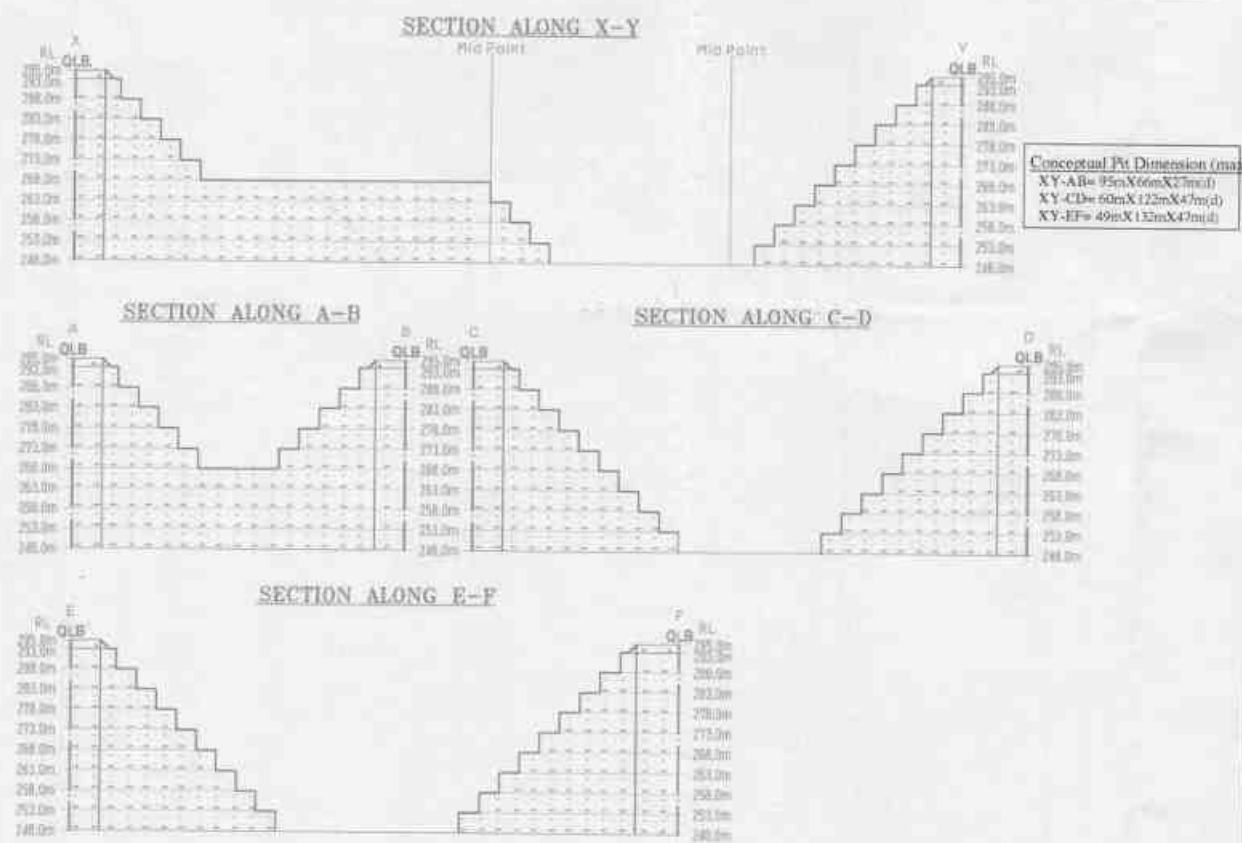
LOCATION OF Q.L.A. AREA:
SF.No. : 376/1B.2 375/10, 11, 12, 13, 14, 15, 16
EXTENT : 2.42.0 HA,
VILLAGE : MORATTUPALAYAM,
TALUK : UTHUKULI
DISTRICT : TRIPPUR,
STATE : TAMILNADU.

PLATE NO - V
DATE OF SURVEY : 01.07.2024

CONCEPTUAL PLAN & SECTIONS
SCALE : 1:1000

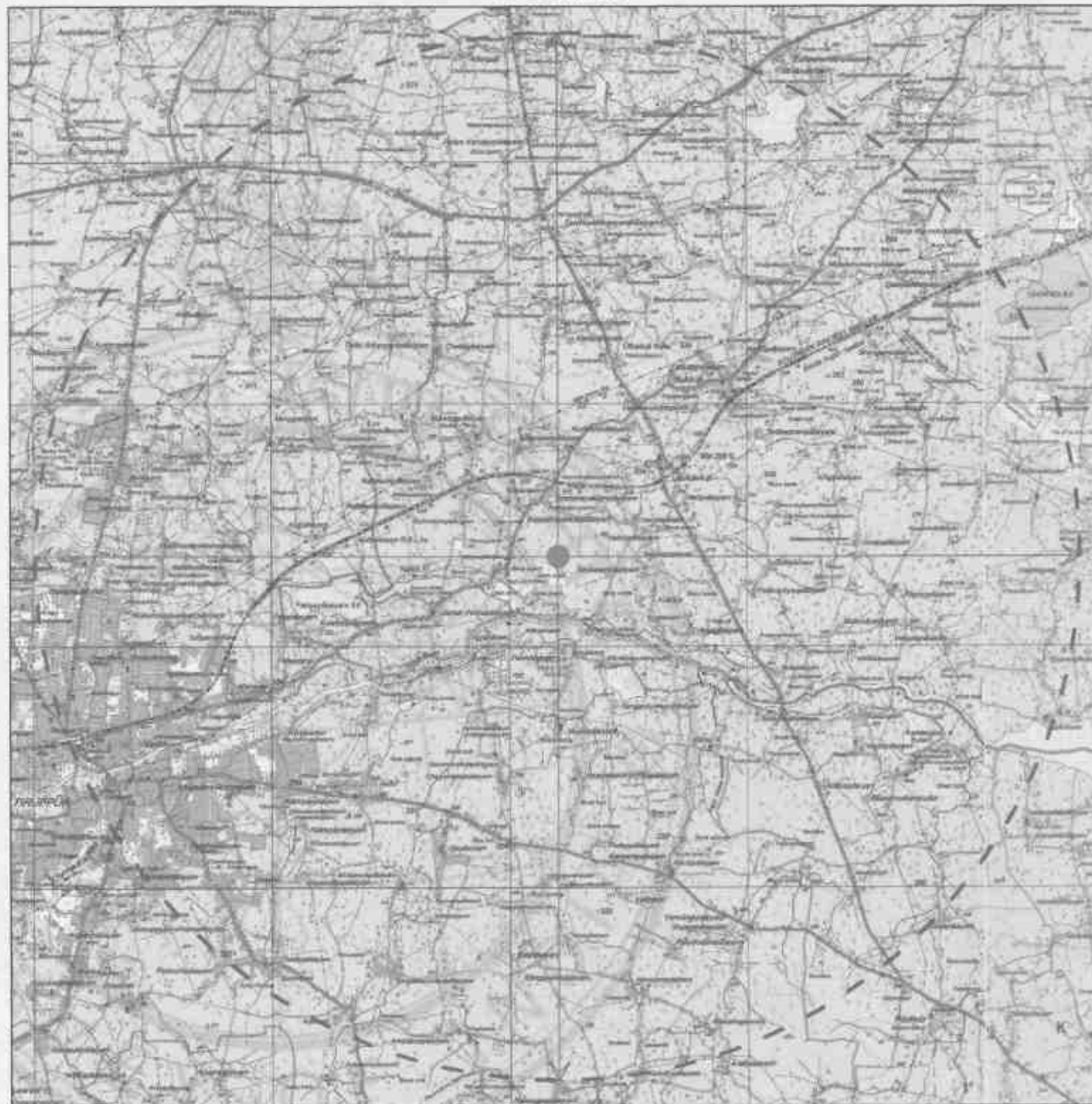
PREPARED BY :
THIS IS TO CERTIFY THAT THE INFORMATION IN THIS
PLAN IS TRUE AND CORRECT TO THE BEST OF MY
KNOWLEDGE BASED UPON THE LEAD MAP
AUTHENTICATED BY STATE GOVERNMENT

P. SRINIVASAN, B.E.,
QUALIFIED PERSON
Under Rule 100(3)(b)(i) of MCR, 2016



Conceptual Pit Dimension (max)
XY-AB= 95mX66mX27m(d)
XY-CD= 60mX122mX47m(d)
XY-EF= 49mX132mX47m(d)

77° 20' 07.21"E



11° 13' 53.63"N

11° 02' 55.34"N



77° 31' 11.95"E

INDEX

Express highway: with toll; with bridge; with distance stone.
 Roads metalled: according to importance.
 Roads, double carriageway: according to importance.
 Unmetalled road. Cart-track. Pack-track with pass. Foot-path.
 Streams: with track in bed; undefined. Canal.
 Dams: masonry or rock-filled; earthwork. Weir.
 River; dry with water channel; with island & rocks. Tidal river.
 Submerged rocks. Shoal. Swamp. Reeds.
 Wells: lined; unlined. Tubewell. Spring. Tanks: perennial.
 Embankments: road or rail; tank. Broken ground.
 Railways, broad gauge: double; single with station.
 Railways, other gauges: double; single with distance stone; do.
 Mineral line or tramway. Kiln. Cutting with tunnel.
 Contours with sub-features. Rocky slopes. Cliffs.
 Sand features: (1) flat. (2) sand-hills (permanent).
 Towns or Villages: inhabited; deserted. Fort.
 Huts: permanent; temporary. Tower. Antiquities.
 Temple. Chhatra. Church. Mosque. Idgah. Tomb. Graves.
 Lighthouse. Lightship. Buoys: lighted; unlighted. Anchorage.
 Mine. Vine on trellis. Grass. Scrub.
 Palms: palmyra; other. Plantain. Conifer. Bamboo. Other trees.
 Areas: cultivated; Wooded. Surveyed trees.
 Boundary, international.
 Boundary, state: demarcated; undemarcated.
 Boundary, district: subdivision; tahsil or taluk; forest.
 Boundary pillars: surveyed; unlocated.
 Heights: triangulated: station: point; approximate.
 Bench-mark: geodetic; tertiary: canal.
 Post office. Telegraph office. Overhead tank.
 Rest house or inspection bungalow. Circuit house.
 Camping Ground. Forest: reserved; protected.
 Spaces names: administrative; locality or tribal.
 Hospital. Dispensary. Veterinary: Hospital/Dispensary.
 Aerodrome. Helipad. Tourist site.
 Powerline: with pylons surveyed; with poles unsurveyed.

APPLICANT :

Thiru. A.A.KUMARESAN,
 S/o ARUMUGAM,
 NO.3-109, MORATTUPALAYAM,
 UTHUKULI TALUK,
 TIRUPPUR DISTRICT.

LOCATION OF Q.L.A. AREA:

SF.Nos : 376/1B.2 375/10.11,12,13,14,15&16
 EXTENT : 2.62.0 HA.
 VILLAGE : MORATTUPALAYAM,
 TALUK : UTHUKULI,
 DISTRICT : TIRUPPUR,
 STATE : TAMILNADU.

PLATE NO - I-A

DATE OF SURVEY : 01.07.2024

**TOPO SKETCH OF QUARRY LEASE
 APPLIED AREA FOR 10Km RADIUS**

SCALE: 1:1,00,000

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

P. Viswanathan
 P.VISWANATHAN, M.Sc.,
 QUALIFIED PERSON

Under Rule 15(i)(a) and (b) of MCR, 2016

TOPO SHEET NO. : 58 E/ 08

LATITUDE : 11°08'20.63"N to 11°08'28.34"N
 LONGITUDE : 77°25'36.57"E to 77°25'42.56"E

10km RADIUS :

Q.L. APPLIED AREA :

**TOPOGRAPHICAL VIEW OF MORATTUPALAYAM ROUGH STONE
AND GRAVEL QUARRY LEASE APPLIED AREA**

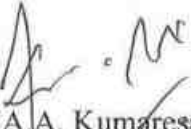


Name of the Applicant : **Thiru. A.A. Kumaresan,**
S/o. Arumugam
Address : No. 3-109, Morattupalayam,
Uthukuli Taluk, Tiruppur District,
Tamil Nadu State – 638 752.

Location:

S.F.No. : 376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15
and 375/16
Extent : 2.62.0 Ha
Village : Morattupalayam
Taluk : Uthukuli
District : Tiruppur

Signature of the Applicant


(A.A. Kumaresan)


கிராம நிர்வாக அலுவலர்
(Village Administrative officer)
(மற்றும் சிறப்பு இறப்பு பதிவுள்ள)
மொரட்டுபாளையம் குருப்
அலுவலகம்
உதகுலி வட்டம்
திருப்பூர் மாவட்டம்.

திருப்பூர் மாவட்டம் ஊத்துக்குறி வட்டம்
 ஊத்துக்குறி உள்வட்டம், மொரட்டுப்பாளையம் கிராமம்
 கல்யாண தெருவில் வீடு கட்டி 3/109 எண் 10 கட்டியால்
 உயிர்த்து. திரு A. அனந்தன் மகன் திரு. A.A. குமாரன்
 எண்பதுக்கு மொரட்டுப்பாளையம் கிராமம் 40 எண்கள்
 376/13, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14,
 375/15, 375/16-ல் 4.07 அக் 2.62.00 பகுதியானது மட்ட
 எண் 1633-ன் படி பாதிக்கப்பட்டிருக்கிறது.

மேற்படி 40 எண்களை சிவசுந்தரி 500.00 ரூபாய்
 சிவசுந்தரியால் மொரட்டுப்பாளையம் கிராமத்தின் ஊத்துக்குறி
 அங்கீகரிக்கப்பட்ட ATCP திட்டமொன்று மூலமாக உயர்
 அங்கீகரிக்கப்பட்ட, கையாள், மது, கெட்டியானது போன்ற
 உயர்வாகியிருக்கின்றன, 40 எண்கள் கிடைக்காதது, தேவிய தெருவில்
 போன்றவை மூலம் அரசு கட்டிடங்கள் எதுவும் கிடைக்க
 எண் 1633-ன் தெருவில் கட்டிடங்கள்

திருப்பூர்
 கிராம நிர்வாக அலுவலர்
 (மற்றும் பிறப்பு இறப்பு பதிவாளர்)
 மொரட்டுப்பாளையம் குழு
 ஊத்துக்குறி வட்டம்
 திருப்பூர் மாவட்டம்.

நாள் : 20.08.2024

அனுப்பநர்:

தலைமை ஆசிரியர்,
அரசு மேல்நிலைப்பள்ளி,
மொரட்டுப்பாளையம்,
ஊத்துக்குளி தாலுகா,
திருப்பூர் மாவட்டம் - 638 752.

பெறுநர்:

மாநில சுற்றுசூழல் மதிப்பீட்டு தாக்க ஆணையம்,
பனகல் மாளிகை,
சென்னை - 600 015.

பொருள்:

எங்கள் பள்ளியில் கூட்ட மேடையுடன் கூடிய கலையரங்கம்
அமைத்து தர கேட்டல் - பணிகள் செய்துதருதல் - தொடர்பாக.

ஐயா,

நான் மேற்கண்ட பள்ளியில் தலைமை ஆசிரியராகப் பணிபுரிந்து வருகிறேன். எங்கள் பள்ளியில் 466 மாணவ மாணவிகள் கல்வி பயின்று வருகின்றனர், இந்நிலையில் திருப்பூர் மாவட்டம், ஊத்துக்குளி வட்டம், மொரட்டுப்பாளையம் கிராமத்தில் புல எண்கள்: 376/18, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 மற்றும் 375/16 ஆகிய காலப்பகுதிகளில் 2.62.0 ஹெக்டர் பரப்பில் சாதாரணக்கல் மற்றும் கிராவல் மண் எடுத்து சுரங்கத்தொழில் செய்ய, மொரட்டுப்பாளையம் கிராமம் கல்பாவில் வசிக்கும் (அமரர்) A. ஆறுமுகம் அவர்களின் மகன் திரு.A.A.குமரேசன் அவர்கள் உரிய வழிமுறைகளில் மனு செய்து நடவடிக்கையெடுத்து வருகிறார். அவரிடம் எங்கள் பள்ளிக்குத் தேவையான புதிய கலையரங்கம் கூட்ட மேடை அமைத்துத்தர கேட்டுக் கொண்டபடி, இந்தப் பணிகளைச் செய்து தர முழு மனதுடன் சம்மதித்தள்ளார் என்பதை பணிவுடன் தெரிவித்துக் கொள்கிறேன்.

திட்ட ஒருங்கிணைப்பாளர் (Project Proponent) திரு.A.A. குமரேசன் எங்கள் பள்ளிக்கு செய்து தர ஒப்புக்கொண்டுள்ள பணிகள்

பணியின் விவரங்கள்:

கூட்ட மேடையுடன் கூடிய புதிய கலையரங்கம்.

நன்றி



தங்கள் உண்மையுள்ள
தலைமையாசிரியர்
அரசு மேல்நிலைப்பள்ளி
மொரட்டுப்பாளையம்
திருப்பூர் - 638 752
(தலைமையாசிரியர்)

SRI SELVANAYAGIAMMAN EXPLOSIVES

P.Thirunavukarasu
(Explosive Blasting Contractor)

94451-30006
NO.52, Kaveri Street
Bhavani Tk, Erode Dt.

Magazine at: 97/2, Thalavaipalayam Village, Uthukuli (Tk), Tirupur(Dt)

Date: 26.07.2024

To
A.A.Kumaresan
S/o. Arumugam
No.3-109, Morattupalayam, Uthukuli Taluk,
Tirupur District, Tamilnadu – 638752.

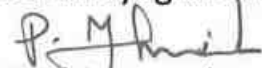
Sub: Regarding blasting work using explosives in your proposed quarry.

We are having explosives license in Form 22 holding No: E/SC/TN/22/339 (E10241) situate in Survey S.F.No.97/2 Thalavaipalayam Village, Uthukuli Taluk, Tirupur District. Our office functions at Address No.52, Kaveri Street, Bhavani (Tk), Erode (Dt).

We are enacting 2 explosives vans for transporting detonators and class 2 separately for our Magazine to our site and well experienced and licensed blasters and shot firer for safe Blasting work since 5 years without untoward incident.

We are willing to undertake work on contract basis at your SF.No.376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 and 375/16 over an extent of an 2.62.0 Ha. Morattupalayam Village, Uthukuli Taluk, Tirupur District.

Thanking You,

Signature
For Sri Selvanayagamman Explosives

P. Thirunavukarasu
Proprietor

Enclosure:

1. License Copy

अनुमति प्रपत्र फॉर्म-3 LICENCE FORM-3
(विस्फोटक नियम, 2008 की अनुसूची V के भाग I के अनुच्छेद 3(क) से (ग) देखिए।)
(See article 3(a) to (g) of Part I of Schedule V of Explosives Rules, 2008)

(या) उपरोक्त के लिए एक समय पर वर्ग 1, 2, 3, 4, 5 या वर्ग 7 के विस्फोटक या किसी मैगजीन में वर्ग 6 के विस्फोटक रखने के लिए।
(Licence to possess or for use explosives of class 1, 2, 3, 4, 5, 6 or 7 in a magazine)

अनुमति सं. (Licence No.): E/SC/TN/22/339(F/10241)

वार्षिक फीस (Annual Fee Rs): 3000/-



1. Licence is hereby granted to

SRI SELLANAYAGI AMMAN EXPLOSIVES (अधिमोही / Occupier: P. THIRUNAVU KARASU), 57, Cauvery Street, Minnam, Town Village - Bhavani, District-ERODE, State-Tamil Nadu, Pincode - 638301

को अनुमति अनुदान की जाती है।

2. अनुमतिधारी की प्रकृति Status of licensee: Partnership Firm

3. अनुमति निम्नलिखित प्रयोजनों के लिए विधिवत है।

license for use of: Safety Fuse, Electric and/or Ordinary Detonators, Nitrate Mixture, - के उपयोग के लिए

Licence is valid only for the following purpose

4. अनुमति विस्फोटकों के निम्नलिखित किस्मों प्रकार और मात्रा के लिए विधिवत है।

Licence is valid for the following kinds and quantity of explosives:- (क) (2)

क्र. सं.	नाम और विवरण	वर्ग और प्रमाण	उप-प्रमाण	समाप्त किसी एक समय में
Sr. No	Name and Description	Class & Division	Sub-division	Quantity at any one time
1.	Nitrate Mixture	2.1	0	750 Kg
2.	Safety Fuse	6.1	0	5000 Mtrs
3.	Electric and/or Ordinary Detonators	6.2	0	5000 Nos

(ख) किसी एक कलेंडर मास में खरीदे जाने वाले विस्फोटक की मात्रा (अनुच्छेद 3(क) और (ग) के अन्तर्गत अनुमति के लिए)
(In Quantity of explosives to be purchased in a calendar month applicable for licence under article 3(b) and (g):

15 times
as above.

5. निम्नलिखित रेखाचित्र (रेखाचित्रों) से अनुमति परिसर की पुष्टि होती है।

रेखाचित्र सं. (Drawing No): E/SC/TN/22/339(F/10241)

The licensed premises shall conform to the following drawing(s):

6. अनुमति परिसर निम्नलिखित पते पर स्थित है। The licensed premises are situated at following address

Survey No(s): S.E.97/2, ग्राम (Town/Village): Thalavopalayam, Thuthukali taluka

जिला (District):

THIRUPUR

राज्य (State):

Tamil Nadu

दूरभाष (Phone):

7502930006

ई.मेल (E-Mail):

पुलिस थाना (Police Station): Thuthukali
पिनकोड (Pincode)
फैक्स (Fax)

7. अनुमति परिसर से निम्नलिखित सुविधाएं अवस्थित हैं।

Main room, lobby and detonator room

The licensed premises consist of following facilities

8. अनुमति स्वयं-स्वयं पर यथासंशोधित विस्फोटक अधिनियम, 1884 और उसके अधीन विरचित विस्फोटक नियम, 2008 के उपबंधों, शर्तों और अतिरिक्त शर्तों और शर्तों के अधीन प्रदान 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. उपबंधित क्रम सं. 5 से यथा कथित रेखाचित्र (स्थान, संरचनात्मक राखी और अन्य विवरण दर्शाते हुए)।

2. अनुमति अधिकारी द्वारा हस्ताक्षरित इस अनुमति की शर्तों और अतिरिक्त शर्तों।

3. दूरी प्रमाण DI-2 Distance Form DI-2.

9. यह अनुमति तारीख 31 मार्च 2008 तक विधिवत रहेगी। This licence shall remain valid till 31st day of March 2008.

यह अनुमति अधिनियम या उसके अधीन विरचित नियमों या अनुसूची V के भाग 4 के प्रति निर्दिष्ट सेट-VII के अधीन तथा उपस्थित इस अनुमति की शर्तों को ध्यान में रखते हुए प्रदान की जाती है। इस अनुमति परिसर में इससे संबंधित अन्य नियमों के अंतर्गत प्रदान की जाने वाली सुविधाओं का उपयोग किया जा सकता है।
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 - 06/09/2014

संयुक्त मुख्य विस्फोटक नियंत्रक

Joint Chief Controller of Explosives
South Circle, Chennai

Amendments:

• Amendment of Quantity of Explosives/Monthly Purchase Limit dated - 17/08/2011

• Amendment of Quantity of Explosives/Monthly Purchase Limit dated - 05/04/2012

Transfers:

• Change in Licensee Name/Address/Status dated - 26/03/2018

नवीकरण के सूचना के लिए स्थान
Space for Intimation of Renewal

नवीकरण की तारीख
Date of Renewal

समाप्ति की तारीख
Date of Expiry

अनुमति अधिकारी के हस्ताक्षर और स्टाम्प
Signature of licensing authority and stamp

05/03/2020

31/03/2025

Sd/-
Jt. Chief Controller of Explosives, South Circle, Chennai

कानूनी चेतावनी: विस्फोटकों को गलत ढंग से रखने या उनका दुरुपयोग विधि के अधीन गंभीर दंडित 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.

From

Dr. S.Vediappan, M.Sc., Ph.D.,
Deputy Director,
Dept. of Geology and Mining,
Tiruppur.

To

Thiru. A.A. Kumaresan,
S/o. (Late). Arumugam,
3/109, Morattupalayam,
Uthukuli R.S. Via., Uthukuli Taluk,
Tiruppur District.

R.c. No. 211/2020/Mines Dated : 04.08.2020.

Sub: Mines and Minerals – Minor Mineral – Rough Stone and Gravel – Tiruppur District – Uthukuli Taluk – Morattupalayam Village – Patta land in S.F.No. 378 (Part) over an extent of 2.67.0 Hectares – Quarry lease application preferred by Thiru. A.A. Kumaresan, S/o. (Late). Arumugam - Precise area communicated - Mining Plan Submitted for approval - Approval accorded - regarding.

- Ref: 1. Thiru. A.A. Kumaresan, S/o. (Late). Arumugam, 3/109, Morattupalayam, Uthukuli R.S. Via., Uthukuli Taluk, Tiruppur District quarry lease application dated: 06.03.2020.
2. The District Collector's, Tiruppur letter R.C. No. 211/Mines/2020 dated 17.07.2020.
3. Mining Plan submitted by Thiru. A.A. Kumaresan, S/o. (Late). Arumugam in letter dated 30.07.2020.

1. Thiru. A.A. Kumaresan, S/o. (Late). Arumugam has preferred application for the grant of Rough Stone and Gravel quarry lease in Patta land in S.F.No. 378 (Part) over an extent of 2.67.0 Hectares of Morattupalayam Village of Uthukuli Taluk of Tiruppur District.

2. Based on reports and records available, precise area has been communicated to the applicant with a direction to submit mining plan and also to submit environmental clearance as stipulated in rule 41 and 42 of Tamil Nadu Minor Mineral Concession Rules, 1959 vide memo dated 17.07.2020.

3. Accordingly, Thiru. A.A. Kumaresan, S/o. (Late). Arumugam has submitted the Draft Mining Plan and the same has been examined in detail and it is found correct. Therefore, in exercise of the powers delegated under Rule 42 of Tamil Nadu Minor Mineral Concession Rules, 1959, and as per the guidelines / instructions

issued by the Commissioner of Geology and Mining, Chennai vide letter Roc.No.3868/LC/2012 dated 19.11.2012, the mining plan submitted by Thiru. A.A. Kumaresan, S/o. (Late). Arumugam in respect of the subject area is hereby approved subject to the following conditions:

- i. That the mining plan is approved without prejudice to any other Law applicable to the quarry lease from time to time whether such Laws are made by the Central Government, State Government or any other authority.
- ii. This approval of the mining plan does not in any way imply the approval of the Government in terms of any other provisions of 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.
- iii. That the mining plan is approved without prejudice to any other order or direction from any court of competent jurisdiction.
- iv. 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.
- v. 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.
- vi. Safety distances mentioned in the precise area has to be maintained for the entire duration of the lease period.
- vii. Waste material should be dumped within the lease granted area as earmarked in the Mining Plan.
- viii. Necessary Environmental Clearance has to be obtained by the applicant from the competent authority before the grant of quarry lease as per the rules.
- ix. 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.
- x. If any violation is found during quarrying operation, the penal provisions of Tamil Nadu Minor Mineral Concession Rules shall attract.

- xi. The applicant should strictly adhere to the statutory and safety requirements.

Encl: Approved Mining Plan.

S. G. 217
14.08.2010
Deputy Director,
Geology and Mining,
Tiruppur.

Copy to

- 10/8/10*
4/8/10
1. The Director,
Department of Geology and Mining,
Guindy, Chennai - 600 032.
 2. The Chairman ,
State Level Environment Impact Assessment Authority,
Panagal park Building, Saidapet, Chennai -600 015.
 3. Thiru. A. Jagannathan, RQP,
Reg.off.No.17, Advaita Ashram Road,
Alagapuram, Salem-636 004.

From

Dr. S.Vediappan, M.Sc., Ph.D.,
Deputy Director,
Dept. of Geology and Mining,
Tiruppur.

To

Thiru. P. Dharmaselvan,
S/o. Periyasamy Gounder,
3/85, Thimmanaickenpalayam,
Uthukuli Taluk,
Tiruppur District – 638 752.

R.c. No. 171/2020/Mines Dated : 10.07.2020.

Sub: Mines and Minerals – Minor Mineral – Rough Stone and Gravel – Tiruppur District – Uthukuli Taluk - Morattupalayam Village – Patta land in S.F.No. 396/2A over an extent of 1.82.0 Hectares – Quarry lease application preferred by Thiru. P. Dharmaselvan, S/o. Periyasamy Gounder - Precise area communicated - Mining Plan Submitted for approval - Approval accorded - regarding.

- Ref: 1. Thiru. P. Dharmaselvan, S/o. Periyasamy Gounder, 3/85, Thimmanaickenpalayam, Uthukuli Taluk, Tiruppur District – 638 752 quarry lease application dated: 26.02.2020.
2. The District Collector's, Tiruppur letter R.C. No. 171/Mines/2020 dated 19.06.2020.
3. Mining Plan submitted by Thiru. P. Dharmaselvan, S/o. Periyasamy Gounder in letter dated 06.07.2020.

1. Thiru. P. Dharmaselvan, S/o. Periyasamy Gounder has preferred application for the grant of Rough Stone and Gravel quarry lease in Patta land in S.F.No. 396/2A (1.82.0) and 397/2A, (0.43.0) over an extent of 2.25.0 Hectares of Morattupalayam Village of Uthukuli Taluk of Tiruppur District.

2. Based on reports and records available, precise area has been communicated to the applicant with a direction to submit mining plan over an extent of 1.82.0 Hect. in S.F. No. 396/2A only and environmental clearance as stipulated in rule 41 and 42 of Tamil Nadu Minor Mineral Concession Rules, 1959 vide memo dated 19.06.2020.

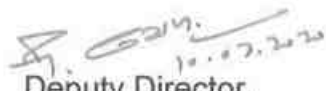
3. Accordingly, Thiru. M. Subramaniam, S/o. Marappa Gounder has submitted the Draft Mining Plan and the same has been examined in detail and it is found correct. Therefore, in exercise of the power delegated under Rule 42 of Tamil Nadu Minor Mineral Concession Rules, 1959, and as per the guidelines / instructions issued by the Commissioner of Geology and Mining, Chennai vide letter Roc.No.3868/LC/2012 dated 19.11.2012, the mining plan submitted by Thiru. M. Subramaniam, S/o. Marappa Gounder in respect of the subject area is hereby approved subject to the following conditions:

- i. That the mining plan is approved without prejudice to any other Law applicable to the quarry lease from time to time whether such Laws are made by the Central Government, State Government or any other authority.
- ii. This approval of the mining plan does not in any way imply the approval of the Government in terms of any other provisions of 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.
- iii. That the mining plan is approved without prejudice to any other order or direction from any court of competent jurisdiction.
- iv. 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.
- v. 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.
- vi. Safety distances mentioned in the precise area has to be maintained for the entire duration of the lease period.
- vii. Waste material should be dumped within the lease granted area as earmarked in the Mining Plan.
- viii. Necessary Environmental Clearance has to be obtained by the applicant from the competent authority before the grant of quarry lease as per the rules.
- ix. 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.

- x. If any violation is found during quarrying operation, the penal provisions of Tamil Nadu Minor Mineral Concession Rules shall attract.
- xi. The applicant should strictly adhere to the statutory and safety requirements.

Encl: Approved Mining Plan.


Deputy Director,
Geology and Mining,
Tiruppur.

Copy to

- 
- 1. The Director,
Department of Geology and Mining,
Guindy, Chennai - 600 032.
 - 2. The Chairman ,
State Level Environment Impact Assessment Authority,
Panagal park Building, Saidapet, Chennai -600 015.
 - 3. Thiru. A. Jagannathan, RQP,
Reg.off.No.17, Advaita Ashram Road,
Alagapuram, Salem-636 004.

R.C. No. 344 / Mines / 2019 Dated : 11.01.2020.

Sub: Mines and Minerals – Minor Mineral – Rough Stone and Gravel permission in S.F. No. 367/2A (Part) of Morattupalayam Village – Uthukuli Taluk - total Extent 1.66.0 Hectares – Tmt. R. Chithra, W/o. (late). Rangasamy - Precise area communicated - Mining Plan Submitted for approval- Approved - regarding.

- Ref: 1. Application for Rough Stone / Gravel quarry permission preferred by Tmt. R. Chithra, W/o. (late). Rangasamy dated: 5.8.2019.
2. G.O. Ms. No. 79 / Industries (MMC 1) Department dated 06.04.2015.
3. The District Collector's, Tiruppur letter R.C. No. 344 / Mines / 2019 dated 25.12.2019
4. Mining Plan submitted by Tmt R. Chithra, W/o. (late). Rangasamy in letter dated 03.01.2020

Tmt. R. Chithra, W/o. (late). Rangasamy has submitted three copies of Mining Plan prepared by RQP for approval in connection with the grant of Rough Stone and Gravel Quarry permission in S.F. No. 367/2A (Part) over an extent of 1.66.0 Hectare of Morattupalayam Village of Uthukuli Taluk in Tiruppur District.

The Mining Plan has been verified in detail and found that it has been prepared in accordance with the guidelines/ instructions issued by the Commissioner of Geology and Mining in letter R.C. No. 3868 / LC / 2012 dated 19.11.2012.

Therefore in exercise of the powers conferred under Rule 41(2) of Tamil Nadu Minor Mineral Concession Rules, 1959, read with G.O. (Ms). No.79 / Industries (MMC 1) Department dated 06.04.2015, the mining plan is hereby approved, subject to the following conditions:

Part-I:-

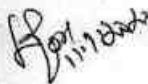
- (i) The mining plan is approved without prejudice to any other Law applicable to the quarry lease from time to time whether such laws are made by the Central Government, State Government or any other authority.
- (ii) This approval of the mining plan does not in any way convey the approval of the Government in terms or 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, Explosives Act, 1884 (Central Act IV of 1884) Minor Mineral Concession and Development Rules, 2010 and the Rules made there under and the Tamil Nadu Minor Mineral Concession Rules, 1959.
- (iii) The mining plan is approved without prejudice to any other order or direction from any court of competent jurisdiction.
- (iv) The validity of the mining plan is co-terminus with the lease period.
- (v) Quarrying shall be done in accordance with 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.
- (vi) 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.
- (vii) The applicant should provide 7.5 mts safety distance to the adjoining patta lands.

Encl.: One copy of Approved
Mining Plan.


Assistant Director,
Geology and Mining,
Tiruppur

Copy to

Dr. P. Thangaraju, M.Sc., Ph.D.,
Recognized Qualified Person,
260-B, New, No. 17,
Advaitha Ashram Road,
Alagapuram post, Salem District.



TEST REPORT

Report No	EHS360/TR/2023-24/001	Report Date	05-03-2025
Site Location	M/s. A.A. Kumaresan, S.F.Nos. 376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 and 375/16 ,Morattupalayam Village, Uthukuli Taluk, Tiruppur District		
Sampling Method	IS 5182	Sample Drawn by	Laboratory
Sample Name	Air	Sample Code	EHS360/001
Sample Description	Ambient Air Quality Monitoring	Sample Condition	Good
Sampling Location	AAQ 1 – Project Area- 11° 8'27.72"N 77°25'41.47"E		

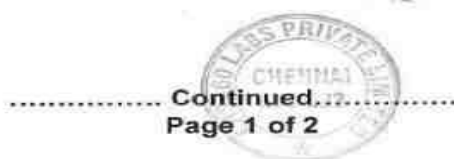
Date	Period. hrs	PM10(µg/m3)	PM2.5(µg/m3)	SO2 (µg/m3)	NO2 (µg/m3)	O3 (µg/m3)	NH3 (µg/m3)	CO (mg/ m3)
02.12.2024	7:00-7:00	43.7	18.1	6.5	20.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
03.12.2024	7:15-7:15	44.2	18.2	6.3	20.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
09.12.2024	7:00-7:00	44.8	18.4	6.7	20.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
10.12.2024	7:15-7:15	44.6	19.1	6.4	21.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
16.12.2024	7:00-7:00	44.2	19.4	6.1	21.2	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
17.12.2024	7:15-7:15	42.5	19.6	6.3	21.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
23.12.2024	7:00-7:00	42.8	19.1	5.8	20.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
24.12.2024	7:15-7:15	43.6	19.4	5.9	20.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
30.12.2024	7:00-7:00	42.4	19.8	5.4	20.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
31.12.2024	7:15-7:15	44.5	19.4	5.2	21.9	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
06.01.2025	7:00-7:00	42.7	19.5	5.3	21.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
07.01.2025	7:15-7:15	43.3	18.1	6.4	22.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
13.01.2025	7:00-7:00	43.6	17.4	6.1	22.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
14.01.2025	7:15-7:15	44.2	17.8	6.5	21.9	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
20.01.2025	7:00-7:00	41.4	17.3	6.2	21.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
21.01.2025	7:15-7:15	42.4	17.4	7.8	21.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
27.01.2025	7:00-7:00	42.7	17.6	7.3	20.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
28.01.2025	7:15-7:15	43.5	18.5	6.4	21.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
03.02.2025	7:00-7:00	44.8	18.7	6.9	20.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
04.02.2025	7:15-7:15	42.2	18.6	7.1	20.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
10.02.2025	7:00-7:00	43.4	18.0	7.2	22.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
11.02.2025	7:15-7:15	43.5	18.8	6.8	22.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
17.02.2025	7:00-7:00	43.8	18.4	6.1	22.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
18.02.2025	7:15-7:15	45.1	19.8	7.3	22.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
24.02.2025	7:00-7:00	44.6	18.2	5.5	22.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
25.02.2025	7:15-7:15	42.1	19.9	5.3	23.2	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

A. K. K.
(K. K. K.)



Authorized Signatory

A. K. K.
Santhosh Kumar, A
Managing Director

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.

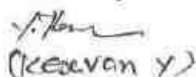
TEST REPORT

Report No	EHS360/TR/2023-24/001	Report Date	05-03-2025
Site Location	M/s. A.A. Kumaresan, S.F.Nos. 376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 and 375/16 ,Morattupalayam Village, Uthukuli Taluk, Tiruppur District		
Sampling Method	IS 5182	Sample Drawn by	Laboratory
Sample Name	Air	Sample Code	EHS360/001
Sample Description	Ambient Air Quality Monitoring	Sample Condition	Good
Sampling Location	AAQ 1 – Project Area- 11° 8'27.72"N 77°25'41.47"E		

Date	Period. hrs	SPM ($\mu\text{g}/\text{m}^3$)	As (ng/m^3)	C6H6 ($\mu\text{g}/\text{m}^3$)	BaP (ng/m^3)	Pb ($\mu\text{g}/\text{m}^3$)	Ni (ng/m^3)
02.12.2024	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)
03.12.2024	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)
09.12.2024	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)
10.12.2024	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)
16.12.2024	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)
17.12.2024	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)
23.12.2024	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)
24.12.2024	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)
30.12.2024	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)
31.12.2024	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)
06.01.2025	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)
07.01.2025	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)
13.01.2025	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)
14.01.2025	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)
20.01.2025	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)
21.01.2025	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)
27.01.2025	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)
28.01.2025	7:15-7:15	65.0	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
03.02.2025	7:00-7:00	66.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
04.02.2025	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)
10.02.2025	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)
11.02.2025	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)
17.02.2025	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)
18.02.2025	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)
24.02.2025	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)
25.02.2025	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)
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


 (Keavan Y)


Authorized Signatory


 Ashok Kumar .A
 Managing Director

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.

TEST REPORT

Report No	EHS360/TR/2023-24/002	Report Date	05-03-2025
Site Location	M/s. A.A. Kumaresan, S.F.Nos. 376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 and 375/16 ,Morattupalayam Village, Uthukuli Taluk, Tiruppur District		
Sampling Method	IS 5182	Sample Drawn by	Laboratory
Sample Name	Air	Sample Code	EHS360/002
Sample Description	Ambient Air Quality Monitoring	Sample Condition	Good
Sampling Location	AAQ 2 – Near Project Area- 11° 8'22.48"N 77°25'36.78"E		

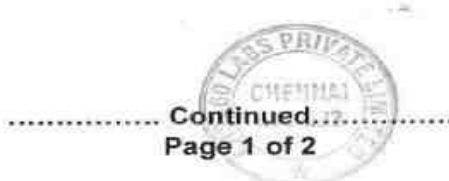
Date	Period. hrs	PM10(µg/m3)	PM2.5(µg/m3)	SO2 (µg/m3)	NO2 (µg/m3)	O3 (µg/m3)	NH3 (µg/m3)	CO (mg/ m3)
04.03.2024	7:00-7:00	45.9	23.4	7.9	23.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
05.03.2024	7:15-7:15	46.7	22.5	7.0	22.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
11.03.2024	7:00-7:00	44.5	22.6	6.8	22.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
12.03.2024	7:15-7:15	43.8	21.4	7.5	21.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
18.03.2024	7:00-7:00	43.0	20.5	6.1	22.9	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
19.03.2024	7:15-7:15	44.2	21.5	6.8	22.0	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
25.03.2024	7:00-7:00	40.6	20.6	6.1	21.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
26.03.2024	7:15-7:15	42.8	22.0	7.5	20.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
30.03.2024	7:00-7:00	43.7	21.7	6.9	20.9	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
31.03.2024	7:15-7:15	44.2	20.6	6.2	19.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
05.04.2024	7:00-7:00	41.9	21.7	7.5	20.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
06.04.2024	7:15-7:15	42.7	20.2	7.9	21.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
08.04.2024	7:00-7:00	44.6	20.8	6.9	21.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
09.04.2024	7:15-7:15	42.7	21.6	7.1	20.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
15.04.2024	7:00-7:00	44.1	20.7	7.8	19.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
16.04.2024	7:15-7:15	43.6	21.9	7.2	20.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
22.04.2024	7:00-7:00	45.0	22.0	6.5	21.9	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
23.04.2024	7:15-7:15	41.8	20.4	6.2	19.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
29.04.2024	7:00-7:00	40.9	21.6	7.8	20.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
30.04.2024	7:15-7:15	41.8	22.9	6.9	216	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
06.05.2024	7:00-7:00	40.9	20.9	7.0	20.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
07.05.2024	7:15-7:15	40.5	21.6	7.4	21.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
13.05.2024	7:00-7:00	42.6	21.7	7.6	20.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
14.05.2024	7:15-7:15	41.8	20.5	6.6	20.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
27.05.2024	7:00-7:00	42.6	22.6	6.8	214	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
28.05.2024	7:15-7:15	41.6	21.7	5.3	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

(Resavan Y)



Authorized Signatory

A.S.
Santhosh Kumar, A
Managing Director

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.

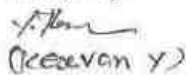
TEST REPORT

Report No	EHS360/TR/2023-24/002	Report Date	05-03-2025
Site Location	M/s. A.A. Kumaresan, S.F.Nos. 376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 and 375/16 ,Morattupalayam Village, Uthukuli Taluk, Tiruppur District		
Sampling Method	IS 5182	Sample Drawn by	Laboratory
Sample Name	Air	Sample Code	EHS360/002
Sample Description	Ambient Air Quality Monitoring	Sample Condition	Good
Sampling Location	AAQ 2 – Near Project Area- 11° 8'22.48"N 77°25'36.78"E		

Date	Period. hrs	SPM ($\mu\text{g}/\text{m}^3$)	As (ng/m^3)	C6H6 ($\mu\text{g}/\text{m}^3$)	BaP (ng/m^3)	Pb ($\mu\text{g}/\text{m}^3$)	Ni (ng/m^3)
02.12.2024	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)
03.12.2024	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)
09.12.2024	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)
10.12.2024	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)
16.12.2024	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)
17.12.2024	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)
23.12.2024	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)
24.12.2024	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)
30.12.2024	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)
31.12.2024	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)
06.01.2025	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)
07.01.2025	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)
13.01.2025	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)
14.01.2025	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)
20.01.2025	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)
21.01.2025	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)
27.01.2025	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)
28.01.2025	7:15-7:15	66.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
03.02.2025	7:00-7:00	66.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
04.02.2025	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)
10.02.2025	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)
11.02.2025	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)
17.02.2025	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)
18.02.2025	7:15-7:15	63.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
24.02.2025	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)
25.02.2025	7:15-7:15	62.6	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


 (Keelvan Y)

 *****End of Report*****
 Page 2 of 2

Authorized Signatory


 Santhosh Kumar .A.
 Managing Director

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.

TEST REPORT

Report No	EHS360/TR/2023-24/003	Report Date	05-03-2025
Site Location	M/s. A.A. Kumaresan, S.F.Nos. 376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 and 375/16 ,Morattupalayam Village, Uthukuli Taluk, Tiruppur District		
Sampling Method	IS 5182	Sample Drawn by	Laboratory
Sample Name	Air	Sample Code	EHS360/003
Sample Description	Ambient Air Quality Monitoring	Sample Condition	Good
Sampling Location	AAQ3 –Near Project Area- 11° 8'29.69"N 77°25'26.38"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)
02.12.2024	7:00-7:00	43.5	18.2	6.3	22.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
03.12.2024	7:15-7:15	43.4	18.6	5.9	21.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
09.12.2024	7:00-7:00	44.8	17.5	6.2	22.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
10.12.2024	7:15-7:15	44.3	17.9	6.0	21.9	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
16.12.2024	7:00-7:00	44.5	18.5	5.9	22.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
17.12.2024	7:15-7:15	45.1	17.1	5.3	21.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
23.12.2024	7:00-7:00	44.9	18.5	5.9	22.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
24.12.2024	7:15-7:15	44.5	17.6	6.2	21.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
30.12.2024	7:00-7:00	44.6	19.2	6.3	21.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
31.12.2024	7:15-7:15	44.3	18.7	5.9	22.0	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
06.01.2025	7:00-7:00	45.2	18.2	5.6	20.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
07.01.2025	7:15-7:15	45.8	19.8	6.3	20.9	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
13.01.2025	7:00-7:00	45.9	19.1	6.8	21.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
14.01.2025	7:15-7:15	45.5	18.8	5.6	21.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
20.01.2025	7:00-7:00	44.8	17.5	5.4	22.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
21.01.2025	7:15-7:15	45.5	18.9	5.8	20.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
27.01.2025	7:00-7:00	44.6	18.3	5.3	21.9	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
28.01.2025	7:15-7:15	43.1	19.4	5.9	21.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
03.02.2025	7:00-7:00	43.2	18.2	6.3	21.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
04.02.2025	7:15-7:15	43.7	17.3	6.7	22.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
10.02.2025	7:00-7:00	44.8	18.9	6.3	20.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
11.02.2025	7:15-7:15	44.5	18.4	6.1	22.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
17.02.2025	7:00-7:00	42.3	18.1	5.8	20.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
18.02.2025	7:15-7:15	42.1	19.5	5.5	21.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
24.02.2025	7:00-7:00	43.6	19.8	6.5	21.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
25.02.2025	7:15-7:15	43.5	19.2	6.7	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

(Resavan Y)

Continued.....
Page 1 of 2

Authorized Signatory

A.S.
Santhosh Kumar .A
Managing Director

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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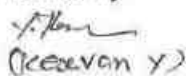
TEST REPORT

Report No	EHS360/TR/2023-24/003	Report Date	05-03-2025
Site Location	M/s. A.A. Kumaresan, S.F.Nos. 376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 and 375/16 ,Morattupalayam Village, Uthukuli Taluk, Tiruppur District		
Sampling Method	IS 5182	Sample Drawn by	Laboratory
Sample Name	Air	Sample Code	EHS360/003
Sample Description	Ambient Air Quality Monitoring	Sample Condition	Good
Sampling Location	AAQ3 –Near Project Area- 11° 8'29.69"N 77°25'26.38"E		

Date	Period. hrs	SPM ($\mu\text{g}/\text{m}^3$)	As (ng/m^3)	C6H6 ($\mu\text{g}/\text{m}^3$)	BaP (ng/m^3)	Pb ($\mu\text{g}/\text{m}^3$)	Ni (ng/m^3)
02.12.2024	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)
03.12.2024	7:15-7:15	64.0	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
09.12.2024	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)
10.12.2024	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)
16.12.2024	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)
17.12.2024	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)
23.12.2024	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)
24.12.2024	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)
30.12.2024	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)
31.12.2024	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)
06.01.2025	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)
07.01.2025	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)
13.01.2025	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)
14.01.2025	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)
20.01.2025	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)
21.01.2025	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)
27.01.2025	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)
28.01.2025	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)
03.02.2025	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)
04.02.2025	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)
10.02.2025	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)
11.02.2025	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)
17.02.2025	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)
18.02.2025	7:15-7:15	65.0	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
24.02.2025	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)
25.02.2025	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)
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



(Deeavan Y)


*****End of Report*****
Page 2 of 2

Authorized Signatory



Santhosh Kumar A
Managing Director

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.

TEST REPORT

Report No	EHS360/TR/2023-24/004	Report Date	05-03-2025
Site Location	M/s. A.A. Kumaresan, S.F.Nos. 376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 and 375/16 ,Morattupalayam Village, Uthukuli Taluk, Tiruppur District		
Sampling Method	IS 5182	Sample Drawn by	Laboratory
Sample Name	Air	Sample Code	EHS360/004
Sample Description	Ambient Air Quality Monitoring	Sample Condition	Good
Sampling Location	AAQ4 – Thirunagar-11° 6'12.41"N 77°23'58.21"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)
02.12.2024	7:00-7:00	45.2	18.9	5.6	24.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
03.12.2024	7:15-7:15	44.9	19.5	5.9	23.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
09.12.2024	7:00-7:00	45.4	20.2	5.1	24.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
10.12.2024	7:15-7:15	44.6	21.5	5.8	24.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
16.12.2024	7:00-7:00	45.3	21.9	5.3	24.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
17.12.2024	7:15-7:15	44.7	19.9	6.2	23.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
23.12.2024	7:00-7:00	45.1	21.1	4.3	23.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
24.12.2024	7:15-7:15	45.5	20.0	4.0	24.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
30.12.2024	7:00-7:00	46.8	19.2	4.9	24.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
31.12.2024	7:15-7:15	45.7	19.9	4.6	24.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
06.01.2025	7:00-7:00	46.6	20.5	5.4	23.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
07.01.2025	7:15-7:15	45.4	19.3	4.9	23.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
13.01.2025	7:00-7:00	45.3	19.8	6.8	23.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
14.01.2025	7:15-7:15	44.7	19.2	6.5	23.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
20.01.2025	7:00-7:00	44.1	19.6	5.2	24.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
21.01.2025	7:15-7:15	45.5	19.0	5.9	24.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
27.01.2025	7:00-7:00	44.3	19.4	5.1	23.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
28.01.2025	7:15-7:15	45.0	19.6	6.6	22.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
03.02.2025	7:00-7:00	45.8	19.1	6.9	22.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
04.02.2025	7:15-7:15	45.6	19.3	7.3	21.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
10.02.2025	7:00-7:00	46.3	19.5	7.1	22.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
11.02.2025	7:15-7:15	45.4	20.1	6.8	22.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
17.02.2025	7:00-7:00	45.9	21.5	6.8	22.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
18.02.2025	7:15-7:15	46.1	20.6	6.5	22.9	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
24.02.2025	7:00-7:00	45.9	21.3	5.8	21.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
25.02.2025	7:15-7:15	45.2	21.7	5.9	21.4	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

(Resavan Y)

Continued
Page 1 of 2

Authorized Signatory

A.S.
Santhosh Kumar, A
Managing Director

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.

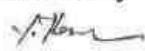
TEST REPORT

Report No	EHS360/TR/2023-24/004	Report Date	05-03-2025
Site Location	M/s. A.A. Kumaresan, S.F.Nos. 376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 and 375/16 ,Morattupalayam Village, Uthukuli Taluk, Tiruppur District		
Sampling Method	IS 5182	Sample Drawn by	Laboratory
Sample Name	Air	Sample Code	EHS360/004
Sample Description	Ambient Air Quality Monitoring	Sample Condition	Good
Sampling Location	AAQ4 – Thirunagar-11° 6'12.41"N 77°23'58.21"E		

Date	Period. hrs	SPM ($\mu\text{g}/\text{m}^3$)	As (ng/m^3)	C6H6 ($\mu\text{g}/\text{m}^3$)	BaP (ng/m^3)	Pb ($\mu\text{g}/\text{m}^3$)	Ni (ng/m^3)
02.12.2024	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)
03.12.2024	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)
09.12.2024	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)
10.12.2024	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)
16.12.2024	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)
17.12.2024	7:15-7:15	66.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
23.12.2024	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)
24.12.2024	7:15-7:15	62.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
30.12.2024	7:00-7:00	63.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
31.12.2024	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)
06.01.2025	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)
07.01.2025	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)
13.01.2025	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)
14.01.2025	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)
20.01.2025	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)
21.01.2025	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)
27.01.2025	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)
28.01.2025	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)
03.02.2025	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)
04.02.2025	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)
10.02.2025	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)
11.02.2025	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)
17.02.2025	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)
18.02.2025	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)
24.02.2025	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)
25.02.2025	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)
NAAQ* Standard		<200	<100	<60	<80	<80	<100

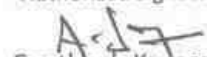
Note: BDL: Below Detection Limit ;DL: Detection Limit**Remarks:** The values observed for the pollutants given above are within the CPCB standards.

Verified by


 (Keeravani Y)

 *****End of Report*****
 Page 2 of 2

Authorized Signatory


 Santhosh Kumar .A
 Managing Director

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.

TEST REPORT

Report No	EHS360/TR/2023-24/005	Report Date	05-03-2025
Site Location	M/s. A.A. Kumaresan, S.F.Nos. 376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 and 375/16 ,Morattupalayam Village, Uthukuli Taluk, Tiruppur District		
Sampling Method	IS 5182	Sample Drawn by	Laboratory
Sample Name	Air	Sample Code	EHS360/005
Sample Description	Ambient Air Quality Monitoring	Sample Condition	Good
Sampling Location	AAQ5 Thenniswaranpalayam- 11° 9'27.20"N 77°27'45.12"E		

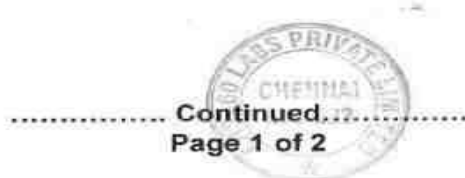
Date	Period. hrs	PM10(µg/m3)	PM2.5(µg/m3)	SO2 (µg/m3)	NO2 (µg/m3)	O3 (µg/m3)	NH3 (µg/m3)	CO (mg/ m3)
02.12.2024	7:00-7:00	42.5	18.5	6.2	21.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
03.12.2024	7:15-7:15	42.9	18.3	6.9	21.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
09.12.2024	7:00-7:00	43.6	19.5	5.8	22.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
10.12.2024	7:15-7:15	43.2	19.2	5.1	22.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
16.12.2024	7:00-7:00	44.6	18.6	5.6	23.2	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
17.12.2024	7:15-7:15	43.1	18.7	5.9	22.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
23.12.2024	7:00-7:00	42.9	19.6	6.2	21.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
24.12.2024	7:15-7:15	42.1	19.1	6.8	21.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
30.12.2024	7:00-7:00	44.6	18.7	6.1	23.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
31.12.2024	7:15-7:15	44.6	18.2	5.9	23.9	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
06.01.2025	7:00-7:00	42.8	18.3	5.5	21.9	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
07.01.2025	7:15-7:15	42.5	18.9	6.1	21.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
13.01.2025	7:00-7:00	41.3	19.6	5.8	23.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
14.01.2025	7:15-7:15	42.6	19.9	5.5	22.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
20.01.2025	7:00-7:00	42.5	20.1	5.7	23.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
21.01.2025	7:15-7:15	43.6	19.5	6.1	24.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
27.01.2025	7:00-7:00	43.4	19.3	6.4	22.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
28.01.2025	7:15-7:15	42.8	20.1	6.0	21.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
03.02.2025	7:00-7:00	42.3	21.2	6.4	21.9	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
04.02.2025	7:15-7:15	43.9	20.8	6.2	20.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
10.02.2025	7:00-7:00	43.5	19.3	5.1	21.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
11.02.2025	7:15-7:15	43.9	18.9	5.9	21.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
17.02.2025	7:00-7:00	41.6	18.5	5.3	21.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
18.02.2025	7:15-7:15	42.1	18.1	5.8	20.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
24.02.2025	7:00-7:00	42.5	20.1	6.1	21.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
25.02.2025	7:15-7:15	43.2	19.5	6.5	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

(Kedavan Y)



Authorized Signatory

A. J.
Santhosh Kumar A
Managing Director

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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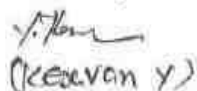
TEST REPORT

Report No	EHS360/TR/2023-24/005	Report Date	05-03-2025
Site Location	M/s. A.A. Kumaresan, S.F.Nos. 376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 and 375/16 ,Morattupalayam Village, Uthukuli Taluk, Tiruppur District		
Sampling Method	IS 5182	Sample Drawn by	Laboratory
Sample Name	Air	Sample Code	EHS360/005
Sample Description	Ambient Air Quality Monitoring	Sample Condition	Good
Sampling Location	AAQ5 Thenniswaranpalayam- 11° 9'27.20"N 77°27'45.12"E		

Date	Period. hrs	SPM ($\mu\text{g}/\text{m}^3$)	As (ng/m^3)	C6H6 ($\mu\text{g}/\text{m}^3$)	BaP (ng/m^3)	Pb ($\mu\text{g}/\text{m}^3$)	Ni (ng/m^3)
02.12.2024	7:00-7:00	66.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
03.12.2024	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)
09.12.2024	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)
10.12.2024	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)
16.12.2024	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)
17.12.2024	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)
23.12.2024	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)
24.12.2024	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)
30.12.2024	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)
31.12.2024	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)
06.01.2025	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)
07.01.2025	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)
13.01.2025	7:00-7:00	62.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
14.01.2025	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)
20.01.2025	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)
21.01.2025	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)
27.01.2025	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)
28.01.2025	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)
03.02.2025	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)
04.02.2025	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)
10.02.2025	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)
11.02.2025	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)
17.02.2025	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)
18.02.2025	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)
24.02.2025	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)
25.02.2025	7:15-7:15	62.7	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


(Keeravani Y)


*****End of Report*****
Page 2 of 2

Authorized Signatory


Santhosh Kumar A.
Managing Director

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.

TEST REPORT

Report No	EHS360/TR/2023-24/006	Report Date	05-03-2025
Site Location	M/s. A.A. Kumaresan, S.F.Nos. 376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 and 375/16, Morattupalayam Village, Uthukuli Taluk, Tiruppur District		
Sampling Method	IS 5182	Sample Drawn by	Laboratory
Sample Name	Air	Sample Code	EHS360/006
Sample Description	Ambient Air Quality Monitoring	Sample Condition	Good
Sampling Location	AAQ 6 Mannur-- 11° 6'29.73"N 77°27'7.92"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)
02.12.2024	7:00-7:00	41.8	17.2	5.6	20.9	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
03.12.2024	7:15-7:15	42.1	18.1	5.1	20.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
09.12.2024	7:00-7:00	41.6	18.5	5.9	19.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
10.12.2024	7:15-7:15	42.8	17.9	5.5	19.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
16.12.2024	7:00-7:00	42.1	18.5	5.3	19.9	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
17.12.2024	7:15-7:15	42.6	17.9	5.7	19.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
23.12.2024	7:00-7:00	41.3	18.8	5.4	19.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
24.12.2024	7:15-7:15	41.9	18.5	5.1	20.2	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
30.12.2024	7:00-7:00	42.1	17.6	5.8	20.9	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
31.12.2024	7:15-7:15	41.9	17.9	5.6	18.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
06.01.2025	7:00-7:00	42.3	19.5	5.4	20.2	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
07.01.2025	7:15-7:15	41.5	19.1	5.2	19.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
13.01.2025	7:00-7:00	42.5	18.5	5.9	18.9	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
14.01.2025	7:15-7:15	42.1	18.9	5.5	20.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
20.01.2025	7:00-7:00	43.1	18.1	5.1	20.0	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
21.01.2025	7:15-7:15	42.5	17.6	5.6	19.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
27.01.2025	7:00-7:00	42.8	17.9	5.4	19.9	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
28.01.2025	7:15-7:15	42.4	18.5	5.2	19.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
03.02.2025	7:00-7:00	42.9	18.3	5.8	20.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
04.02.2025	7:15-7:15	41.6	19.1	5.2	20.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
10.02.2025	7:00-7:00	42.5	17.9	5.7	19.2	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
11.02.2025	7:15-7:15	41.3	18.7	5.5	19.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
17.02.2025	7:00-7:00	42.2	18.5	5.1	19.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
18.02.2025	7:15-7:15	41.7	18.9	5.7	19.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
24.02.2025	7:00-7:00	41.8	17.6	5.2	20.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
25.02.2025	7:15-7:15	41.6	17.9	5.6	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

(Resavan Y)

Continued ..
Page 1 of 2

Authorized Signatory

(Signature)
Santhosh Kumar A.
Managing Director

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.

TEST REPORT

Report No	EHS360/TR/2023-24/006	Report Date	05-03-2025
Site Location	M/s. A.A. Kumaresan, S.F.Nos. 376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 and 375/16 ,Morattupalayam Village, Uthukuli Taluk, Tiruppur District		
Sampling Method	IS 5182	Sample Drawn by	Laboratory
Sample Name	Air	Sample Code	EHS360/006
Sample Description	Ambient Air Quality Monitoring	Sample Condition	Good
Sampling Location	AAQ 6 Mannur-- 11° 6'29.73"N 77°27'7.92"E		

Date	Period. hrs	SPM ($\mu\text{g}/\text{m}^3$)	As (ng/m^3)	C6H6 ($\mu\text{g}/\text{m}^3$)	BaP (ng/m^3)	Pb ($\mu\text{g}/\text{m}^3$)	Ni (ng/m^3)
02.12.2024	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)
03.12.2024	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)
09.12.2024	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)
10.12.2024	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)
16.12.2024	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)
17.12.2024	7:15-7:15	63.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
23.12.2024	7:00-7:00	63.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
24.12.2024	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)
30.12.2024	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)
31.12.2024	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)
06.01.2025	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)
07.01.2025	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)
13.01.2025	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)
14.01.2025	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)
20.01.2025	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)
21.01.2025	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)
27.01.2025	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)
28.01.2025	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)
03.02.2025	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)
04.02.2025	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)
10.02.2025	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)
11.02.2025	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)
17.02.2025	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)
18.02.2025	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)
24.02.2025	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)
25.02.2025	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)
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

(Signature)
(Keavan Y)



*****End of Report*****

Page 2 of 2

Authorized Signatory

(Signature)
Santhosh Kumar .A
Managing Director

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.

TEST REPORT

Report No	EHS360/TR/2023-24/007	Report Date	05-03-2025
Site Location	M/s. A.A. Kumaresan, S.F.Nos. 376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 and 375/16 ,Morattupalayam Village, Uthukuli Taluk, Tiruppur District		
Sampling Method	IS 5182	Sample Drawn by	Laboratory
Sample Name	Air	Sample Code	EHS360/007
Sample Description	Ambient Air Quality Monitoring	Sample Condition	Good
Sampling Location	AAQ7 Kallipalayam- 11°11'24.26"N 77°23'53.51"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)
02.12.2024	7:00-7:00	45.5	19.8	6.3	18.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
03.12.2024	7:15-7:15	44.9	19.5	6.1	18.9	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
09.12.2024	7:00-7:00	44.1	18.5	5.6	20.2	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
10.12.2024	7:15-7:15	43.5	18.9	5.1	20.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
16.12.2024	7:00-7:00	43.1	19.1	6.8	18.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
17.12.2024	7:15-7:15	42.6	18.5	6.5	19.2	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
23.12.2024	7:00-7:00	44.1	18.9	5.7	18.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
24.12.2024	7:15-7:15	42.9	19.8	6.4	19.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
30.12.2024	7:00-7:00	42.5	18.7	6.8	18.2	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
31.12.2024	7:15-7:15	42.6	19.2	5.6	18.9	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
06.01.2025	7:00-7:00	43.5	19.8	5.7	18.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
07.01.2025	7:15-7:15	44.9	18.1	6.1	19.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
13.01.2025	7:00-7:00	43.7	19.2	5.5	16.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
14.01.2025	7:15-7:15	43.6	19.7	6.8	19.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
20.01.2025	7:00-7:00	44.2	18.1	6.6	19.2	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
21.01.2025	7:15-7:15	42.1	19.5	5.2	19.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
27.01.2025	7:00-7:00	42.8	18.0	5.0	18.2	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
28.01.2025	7:15-7:15	43.6	19.5	5.8	18.9	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
03.02.2025	7:00-7:00	41.9	20.2	5.4	19.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
04.02.2025	7:15-7:15	42.4	20.8	5.6	19.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
10.02.2025	7:00-7:00	42.8	19.1	5.2	19.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
11.02.2025	7:15-7:15	43.1	20.8	6.8	20.9	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
17.02.2025	7:00-7:00	43.4	21.5	6.5	20.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
18.02.2025	7:15-7:15	44.1	20.1	5.3	19.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
24.02.2025	7:00-7:00	44.6	20.4	5.6	19.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
25.02.2025	7:15-7:15	44.3	20.6	5.4	18.5	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

(Resavan Y)

Continued.....
Page 1 of 2

Authorized Signatory

A. J.
Santhosh Kumar .A
Managing Director

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.

TEST REPORT

Report No	EHS360/TR/2023-24/007	Report Date	05-03-2025
Site Location	M/s. A.A. Kumaresan, S.F.Nos. 376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 and 375/16 ,Morattupalayam Village, Uthukuli Taluk, Tiruppur District		
Sampling Method	IS 5182	Sample Drawn by	Laboratory
Sample Name	Air	Sample Code	EHS360/007
Sample Description	Ambient Air Quality Monitoring	Sample Condition	Good
Sampling Location	AAQ7 Kallipalayam- 11°11'24.26"N 77°23'53.51"E		

Date	Period. hrs	SPM ($\mu\text{g}/\text{m}^3$)	As (ng/m^3)	C6H6 ($\mu\text{g}/\text{m}^3$)	BaP (ng/m^3)	Pb ($\mu\text{g}/\text{m}^3$)	Ni (ng/m^3)
02.12.2024	7:00-7:00	63.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
03.12.2024	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)
09.12.2024	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)
10.12.2024	7:15-7:15	63.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
16.12.2024	7:00-7:00	62.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
17.12.2024	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)
23.12.2024	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)
24.12.2024	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)
30.12.2024	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)
31.12.2024	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)
06.01.2025	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)
07.01.2025	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)
13.01.2025	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)
14.01.2025	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)
20.01.2025	7:00-7:00	63.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
21.01.2025	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)
27.01.2025	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)
28.01.2025	7:15-7:15	61.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
03.02.2025	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)
04.02.2025	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)
10.02.2025	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)
11.02.2025	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)
17.02.2025	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)
18.02.2025	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)
24.02.2025	7:00-7:00	63.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
25.02.2025	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

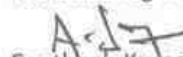
Note: BDL: Below Detection Limit ;DL: Detection Limit**Remarks:** The values observed for the pollutants given above are within the CPCB standards.

Verified by


 (Keavan Y.)

 *****End of Report*****
 Page 2 of 2

Authorized Signatory


 Santhosh Kumar .A.
 Managing Director

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.

TEST REPORT

Report No	EHS360/TR/2023-24/ 009	Report Date	05-03-2025
Site Location	M/s. A.A. Kumaresan, S.F.Nos. 376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 and 375/16 ,Morattupalayam Village, Uthukuli Taluk, Tiruppur District		
Sampling Method	IS 9989	Sample Drawn by	Laboratory
Sample Name	Noise Level Monitoring	Sample Code	EHS360/ 009
Sample Description	Ambient Noise	Sample Collected Date	25-02-2025

Location	N1 – Project Area- 11° 8'27.66"N77°25'40.47"E			N2 – Project Area–11° 8'22.10"N77°25'37.13"E		
Parameter	Min	Max	Parameter	Min	Max	Parameter
Time	dB(A)	dB(A)	Time	dB(A)	dB(A)	Time
06:00-07:00	32.6	39.5	37.3	32.8	38.5	36.5
07:00-08:00	31.4	39.4	37.0	34.1	40.3	38.2
08:00-09:00	33.8	40.5	38.3	34.8	41.6	39.4
09:00-10:00	35.4	41.5	39.4	32.6	39.5	37.3
10:00-11:00	32.3	41.5	39.0	32.9	44.6	41.9
11:00-12:00	31.7	38.5	36.3	32.9	40.3	38.0
12:00-13:00	33.9	41.2	38.9	32.4	41.7	39.2
13:00-14:00	32.6	40.7	38.3	33.6	42.4	39.9
14:00-15:00	35.1	44.6	42.1	32.7	40.2	37.9
15:00-16:00	31.2	39.4	37.0	31.5	40.5	38.0
16:00-17:00	33.7	41.3	39.0	32.5	41.7	39.2
17:00-18:00	34.6	44.2	41.6	36.5	44.3	42.0
18:00-19:00	32.3	40.7	38.3	34.2	43.7	41.2
19:00-20:00	31.8	39.3	37.0	33.8	41.4	39.1
20:00-21:00	32.9	40.5	38.2	31.2	39.5	37.1
21:00-22:00	32.3	41.7	39.2	32.8	40.6	38.3
22:00-23:00	33.5	35	34.3	33.9	41.5	39.2
23:00-00:00	31.7	35.5	34.0	31.4	35.5	33.9
00:00-01:00	32.8	34.7	33.9	32.8	34.5	33.7
01:00-02:00	31.6	35.4	33.9	33.5	40.2	38.0
02:00-03:00	33.5	37.9	36.2	31.8	34.7	33.5
03:00-04:00	31.2	35.6	33.9	32.6	35.5	34.3
04:00-05:00	32.7	36.8	35.2	33.7	36.6	35.4
05:00-06:00	31.5	35.5	33.9	32.4	35.5	34.2
Result	Day Means		38.3	Day Means		39.0
	Night Means		34.4	Night Means		34.7
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

(Resavam x)



*****End of Report*****
Page 1 of 1

Authorized Signatory

(Signature)
Santhosh Kumar .A
Managing Director

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.

TEST REPORT

Report No	EHS360/TR/2023-24/ 010	Report Date	05-03-2025
Site Location	M/s. A.A. Kumaresan, S.F.Nos. 376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 and 375/16 ,Morattupalayam Village, Uthukuli Taluk, Tiruppur District		
Sampling Method	IS 9989	Sample Drawn by	Laboratory
Sample Name	Noise Level Monitoring	Sample Code	EHS360/ 010
Sample Description	Ambient Noise	Sample Collected Date	25-02-2025

Location	N3 – Govindampalayam– 11° 8'48.38"N 77°24'31.02"E			N4 -Thirunagar- 11° 6'10.40"N 77°24'0.01"E		
Parameter	Min	Max	Parameter	Min	Max	Parameter
Time	dB(A)	dB(A)	Time	dB(A)	dB(A)	Time
06:00-07:00	33.3	40.6	38.3	31.6	38.4	36.2
07:00-08:00	33.4	41.8	39.4	33.8	41.2	38.9
08:00-09:00	35.2	42.3	40.1	35.2	44.6	42.1
09:00-10:00	32.6	43.3	40.6	34.1	43.2	40.7
10:00-11:00	34.9	38.2	36.9	32.6	41.7	39.2
11:00-12:00	35.5	41.7	39.6	33.8	41.6	39.3
12:00-13:00	36.1	40.6	38.9	36.4	44.5	42.1
13:00-14:00	34.6	43.2	40.8	31.7	40.9	38.4
14:00-15:00	32.2	41.4	38.9	32.8	40.2	37.9
15:00-16:00	37.4	46.6	44.1	33.9	42.4	40.0
16:00-17:00	32.6	40.7	38.3	34.1	43.5	41.0
17:00-18:00	32.7	40.3	38.0	32.5	41.7	39.2
18:00-19:00	31.6	38.5	36.3	33.6	41.2	38.9
19:00-20:00	32.5	38.3	36.3	32.7	40.8	38.4
20:00-21:00	33.3	40.4	38.2	31.8	39.6	37.3
21:00-22:00	33.6	35.5	34.7	33.5	41.4	39.0
22:00-23:00	32.9	37.1	35.5	32.6	38.8	36.7
23:00-00:00	33.5	34.6	34.1	32.8	33.8	33.3
00:00-01:00	32.6	35.5	34.3	31.4	35.5	33.9
01:00-02:00	33.9	36.6	35.5	32.8	34.8	33.9
02:00-03:00	31.9	35.8	34.3	31.6	37.4	35.4
03:00-04:00	32.2	38.8	36.6	32.9	35.9	34.7
04:00-05:00	32.5	36.6	35.0	33.4	35.5	34.6
05:00-06:00	32.7	37.5	35.7	32.8	35.8	34.6
Result	Day Means		38.5	Day Means		39.1
	Night Means		35.1	Night Means		34.3
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. K. Ram
(K. S. Ram)



*****End of Report*****
Page 1 of 1

Authorized Signatory

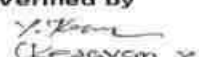
Santhosh Kumar A
Managing Director

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.

TEST REPORT

Report No	EHS360/TR/2023-24/ 011	Report Date	05-03-2025
Site Location	M/s. A.A. Kumaresan, S.F.Nos. 376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 and 375/16 ,Morattupalayam Village, Uthukuli Taluk, Tiruppur District		
Sampling Method	IS 9989	Sample Drawn by	Laboratory
Sample Name	Noise Level Monitoring	Sample Code	EHS360/ 011
Sample Description	Ambient Noise	Sample Collected Date	25-02-2025

Location	N5 –Thenniswaranpalayam– 11° 9'28.10"N 77°27'45.52"E			N6 -Mannur–11° 6'29.19"N 77°27'11.59"E		
Parameter	Min	Max	Parameter	Min	Max	Parameter
Time	dB(A)	dB(A)	Time	dB(A)	dB(A)	Time
06:00-07:00	32.6	40.5	38.1	32.8	40.4	38.1
07:00-08:00	34.5	43.7	41.2	31.7	39.3	37.0
08:00-09:00	31.6	39.3	37.0	32.6	40.1	37.8
09:00-10:00	32.8	40.2	37.9	33.8	41.7	39.3
10:00-11:00	32.6	40.5	38.1	31.4	42.5	39.8
11:00-12:00	33.8	41.6	39.3	32.5	40.3	38.0
12:00-13:00	31.9	39.8	37.4	33.9	41.7	39.4
13:00-14:00	32.6	40.6	38.2	35.4	43.4	41.0
14:00-15:00	32.5	41.3	38.8	32.6	41.5	39.0
15:00-16:00	36.4	44.5	42.1	33.6	41.2	38.9
16:00-17:00	35.2	43.5	41.1	34.1	43.4	40.9
17:00-18:00	36.1	45.7	43.1	32.5	40.5	38.1
18:00-19:00	33.4	41.6	39.2	33.8	41.7	39.3
19:00-20:00	32.5	40.3	38.0	35.1	44.3	41.8
20:00-21:00	31.8	38.6	36.4	32.8	40.2	37.9
21:00-22:00	32.5	40.4	38.0	33.5	41.7	39.3
22:00-23:00	31.2	35.7	34.0	31.4	39.2	36.9
23:00-00:00	33.6	39.7	37.6	33.2	41.4	39.0
00:00-01:00	32.4	35.9	34.5	31.8	36.6	34.8
01:00-02:00	33.6	35.5	34.7	32.6	35.8	34.5
02:00-03:00	31.7	32.8	32.3	32.9	37.4	35.7
03:00-04:00	32.1	37.5	35.6	32.1	36.8	35.1
04:00-05:00	33.9	35.5	34.8	33.6	36.5	35.3
05:00-06:00	31.2	34.5	33.2	32.7	35.6	34.4
Result	Day Means		38.7	Day Means		39.0
	Night Means		34.7	Night Means		35.5
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

 (Kesavam J)


 *****End of Report*****
 Page 1 of 1

Authorized Signatory

 Santhosh Kumar A
 Managing Director

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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TEST REPORT

Report No	EHS360/TR/2023-24/ 012	Report Date	05-03-2025
Site Location	M/s. A.A. Kumaresan, S.F.Nos. 376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 and 375/16 ,Morattupalayam Village, Uthukuli Taluk, Tiruppur District		
Sampling Method	IS 9989	Sample Drawn by	Laboratory
Sample Name	Noise Level Monitoring	Sample Code	EHS360/ 012
Sample Description	Ambient Noise	Sample Collected Date	25-02-2025

Location	N7 - Kallipalayam- 11°11'23.95"N 77°23'49.73"E		
Parameter	Min	Max	Result
Time	dB(A)	dB(A)	dB(A)
06:00-07:00	31.6	39.3	37.0
07:00-08:00	34.2	43.2	40.7
08:00-09:00	33.8	41.4	39.1
09:00-10:00	31.6	39.7	37.3
10:00-11:00	32.5	40.4	38.0
11:00-12:00	33.7	41.3	39.0
12:00-13:00	33.6	41.7	39.3
13:00-14:00	32.4	40.5	38.1
14:00-15:00	31.9	39.6	37.3
15:00-16:00	32.6	40.1	37.8
16:00-17:00	34.5	43.3	40.8
17:00-18:00	36.2	45.6	43.1
18:00-19:00	35.3	44.7	42.2
19:00-20:00	34.7	43.6	41.1
20:00-21:00	33.8	41.4	39.1
21:00-22:00	31.2	39.5	37.1
22:00-23:00	32.3	40.7	38.3
23:00-00:00	32.6	37.4	35.6
00:00-01:00	32.4	39.6	37.3
01:00-02:00	32.8	38.1	36.2
02:00-03:00	31.5	38.4	36.2
03:00-04:00	32.6	39.4	37.2
04:00-05:00	32.1	34.8	33.7
05:00-06:00	33.7	35.5	34.7
Result	Day Means		39.1
	Night Means		35.9

Verified by

(Signature)
(Keeavam y)



*****End of Report*****
Page 1 of 1

Authorized Signatory

(Signature)
Santhosh Kumar .A
Managing Director

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TEST REPORT

Report No	EHS360/TR/2023-24/ 013	Report Date	05-03-2025
Site Location	M/s. A.A. Kumaresan, S.F.Nos. 376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 and 375/16 ,Morattupalayam Village, Uthukuli Taluk, Tiruppur District		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Soil	Sample Code	EHS360/ 013
Sample Description	Soil 1	Sample Collected Date	25-02-2025
Qty. of Sample Received	2 KG	Sample Received On	26-02-2025
Sample Condition	Good	Test Commenced On	26-02-2025
Sampling Location	Project Area- 11° 8'21.97"N 77°25'39.41"E		
S. No	Test Parameters	Protocols	Results
01	pH @ 25°C	IS 2720 Part 26 - 1987 (Reaff:2016)	8.02
02	Conductivity @ 25°C	IS 14767 - 2000 (Reaff : 2016)	315 µmhos/cm
03	Water Holding Capacity	By Gravimetric Method	45.7 %
04	Bulk Density	By Cylindrical Method	1.02 g/cm ³
05	Porosity	By Gravimetric Method	43.8 %
06	Calcium as Ca	Food and Agriculture organization of the united Nation Rome 2007 : 2018	72.5 mg/kg
07	Magnesium as Mg		30 mg/kg
08	Chloride as Cl	APHA 23 rd Edn 2019 4500 Cl B	65.7 mg/kg
09	Soluble Sulphate as SO ₄	IS 2720 Part 27 : 1977 (Reaff:2015)	0.016 %
10	Total Phosphorus as P	IS 10158 : 1982 (Reaff: 2019)	2.45 mg/kg
11	Total Nitrogen as N	IS 14684 : 1999 (Reaff:2019)	413 mg/kg
12	Organic Matter	IS : 2720 Part 22: 1972 (Reaff: 2015)	1.67 %
13	Organic Carbon	IS : 2720 Part 22: 1972 (Reaff: 2015)	0.97 %

Verified by

A. Kumar
(Kumaresan Y)Continued on
Page 1 of 2

Authorized Signatory

A. Kumar
Santhosh Kumar A.
Managing Director

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.

TEST REPORT

Report No	EHS360/TR/2023-24/ 013	Report Date	05-03-2025
Site Location	M/s. A.A. Kumaresan, S.F.Nos. 376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 and 375/16 ,Morattupalayam Village, Uthukuli Taluk, Tiruppur District		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Soil	Sample Code	EHS360/ 013
Sample Description	Soil 1	Sample Collected Date	25-02-2025
Qty. of Sample Received	2 KG	Sample Received On	26-02-2025
Sample Condition	Good	Test Commenced On	26-02-2025
Sampling Location	Project Area- 11° 8'21.97"N 77°25'39.41"E		

S. No	Test Parameters	Protocols	Results
14	Texture :		
	Clay	Gravimetric Method	31.4 %
	Sand		29.7 %
	Silt		38.9 %
15	Manganese as Mn	USEPA 3050 B – 1996 & USEPA 6010 C - 2000	8.4 mg/kg
16	Zinc as Zn		2.1 mg/kg
17	Boron as B		3.05 mg/kg
18	Potassium as K		25 mg/kg
19	Cadmium as Cd		BDL (DL : 1.0 mg/kg)
20	Total Chromium as Cr		1.65
21	Copper as Cu		BDL (DL : 1.0 mg/kg)
22	Lead as Pb		0.58 mg/kg
23	Iron as Fe		17 mg/kg
24	Cation Exchange Capacity	USEPA 9080 – 1986	43 meq/100g of soil

Verified by

(Signature)
(Keelvan Y)



End of Report
Page 2 of 2

Authorized Signatory

(Signature)
Santhosh Kumar .A
Managing Director

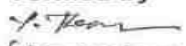
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TEST REPORT

Report No	EHS360/TR/2023-24/ 014	Report Date	05-03-2025
Site Location	M/s. A.A. Kumaresan, S.F.Nos. 376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 and 375/16 ,Morattupalayam Village, Uthukuli Taluk, Tiruppur District		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Soil	Sample Code	EHS360/ 014
Sample Description	Soil 2	Sample Collected Date	25-02-2025
Qty. of Sample Received	2 KG	Sample Received On	26-02-2025
Sample Condition	Good	Test Commenced On	26-02-2025
Sampling Location	Govindampalayam - 11° 8'47.63"N 77°24'30.79"E		

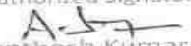
S.No	Test Parameters	Protocols	Results
01	pH @ 25°C	IS 2720 Part 26 - 1987 (Reaff:2016)	8.19
02	Conductivity @ 25°C	IS 14767 - 2000 (Reaff : 2016)	329 µmhos/cm
03	Water Holding Capacity	By Gravimetric Method	47.7 %
04	Bulk Density	By Cylindrical Method	1.02 g/cm ³
05	Porosity	By Gravimetric Method	47.1 %
06	Calcium as Ca	Food and Agriculture organization of the united Nation Rome 2007 : 2018	15.2 mg/kg
07	Magnesium as Mg		13.5 mg/kg
08	Chloride as Cl	APHA 23 rd Edn 2019 4500 Cl B	20 mg/kg
09	Soluble Sulphate as SO ₄	IS 2720 Part 27 : 1977 (Reaff:2015)	0.0024 %
10	Total Phosphorus as P	IS 10158 : 1982 (Reaff: 2019)	2.97 mg/kg
11	Total Nitrogen as N	IS 14684 : 1999 (Reaff:2019)	470 mg/kg
12	Organic Matter	IS : 2720 Part 22: 1972 (Reaff: 2015)	1.67 %
13	Organic Carbon	IS : 2720 Part 22: 1972 (Reaff: 2015)	0.97 %

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(Resavan Y)


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Managing Director

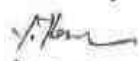
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TEST REPORT

Report No	EHS360/TR/2023-24/ 014	Report Date	05-03-2025
Site Location	M/s. A.A. Kumaresan, S.F.Nos. 376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 and 375/16 ,Morattupalayam Village, Uthukuli Taluk, Tiruppur District		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Soil	Sample Code	EHS360/ 014
Sample Description	Soil 2	Sample Collected Date	25-02-2025
Qty. of Sample Received	2 KG	Sample Received On	26-02-2025
Sample Condition	Good	Test Commenced On	26-02-2025
Sampling Location	Govindampalayam - 11° 8'47.63"N 77°24'30.79"E		

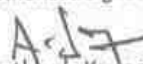
S.No	Test Parameters	Protocols	Results
14	Texture :		
	Clay	Gravimetric Method	33.3 %
	Sand		30.9 %
	Silt		35.8 %
15	Manganese as Mn	USEPA 3050 B – 1996 & USEPA 6010 C - 2000	5.16 mg/kg
16	Zinc as Zn		8.08 mg/kg
17	Boron as B		1.05 mg/kg
18	Potassium as K		64.2 mg/kg
19	Cadmium as Cd		BDL (DL : 1.0 mg/kg)
20	Total Chromium as Cr		2.02
21	Copper as Cu		BDL (DL : 1.0 mg/kg)
22	Lead as Pb		0.67 mg/kg
23	Iron as Fe		25 mg/kg
24	Cation Exchange Capacity	USEPA 9080 – 1986	40.13 meq/100g of soil

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 (Keavan Y)

 *****End of Report*****
 Page 2 of 2

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 Santhosh Kumar .A.
 Managing Director

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TEST REPORT

Report No	EHS360/TR/2023-24/ 015	Report Date	05-03-2025
Site Location	M/s. A.A. Kumaresan, S.F.Nos. 376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 and 375/16 ,Morattupalayam Village, Uthukuli Taluk, Tiruppur District		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Soil	Sample Code	EHS360/ 015
Sample Description	Soil 3	Sample Collected Date	25-02-2025
Qty. of Sample Received	2 KG	Sample Received On	26-02-2025
Sample Condition	Good	Test Commenced On	26-02-2025
Sampling Location	Thirunagar - 11° 6'9.80"N 77°24'0.79"E		

S. No	Test Parameters	Protocols	Results
01	pH @ 25°C	IS 2720 Part 26 - 1987 (Reaff:2016)	8.28
02	Conductivity @ 25°C	IS 14767 - 2000 (Reaff : 2016)	402 µmhos/cm
03	Water Holding Capacity	By Gravimetric Method	47.9 %
04	Bulk Density	By Cylindrical Method	1.02 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	20.9 mg/kg
07	Magnesium as Mg		14.7 mg/kg
08	Chloride as Cl	APHA 23 rd Edn 2019 4500 Cl B	18.24 mg/kg
09	Soluble Sulphate as SO ₄	IS 2720 Part 27 : 1977 (Reaff:2015)	0.0019 %
10	Total Phosphorus as P	IS 10158 : 1982 (Reaff: 2019)	4.13 mg/kg
11	Total Nitrogen as N	IS 14684 : 1999 (Reaff:2019)	445.1 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 %

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(Resavan Y)

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A. J.
Santhosh Kumar A
Managing Director

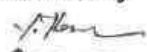
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TEST REPORT

Report No	EHS360/TR/2023-24/ 015	Report Date	08.06.2024
Site Location	M/s. A.A. Kumaresan, S.F.Nos. 376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 and 375/16 ,Morattupalayam Village, Uthukuli Taluk, Tiruppur District		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Soil	Sample Code	EHS360/ 015
Sample Description	Soil 3	Sample Collected Date	25-02-2025
Qty. of Sample Received	2 KG	Sample Received On	26-02-2025
Sample Condition	Good	Test Commenced On	26-02-2025
Sampling Location	Thirunagar - 11° 6'9.80"N 77°24'0.79"E		

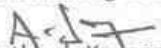
S. No	Test Parameters	Protocols	Results
14	Texture :		
	Clay	Gravimetric Method	31.9 %
	Sand		32.5 %
	Silt		35.6 %
15	Manganese as Mn	USEPA 3050 B – 1996 & USEPA 6010 C - 2000	6.17 mg/kg
16	Zinc as Zn		2.54 mg/kg
17	Boron as B		1.7 mg/kg
18	Potassium as K		61.75 mg/kg
19	Cadmium as Cd		BDL (DL : 1.0 mg/kg)
20	Total Chromium as Cr		2.66
21	Copper as Cu		BDL (DL : 1.0 mg/kg)
22	Lead as Pb		1.05 mg/kg
23	Iron as Fe		27.2 mg/kg
24	Cation Exchange Capacity	USEPA 9080 – 1986	44.03 meq/100g of soil

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(Keeravani Y)


*****End of Report*****
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Santhosh Kumar .A
Managing Director

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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TEST REPORT

Report No	EHS360/TR/2023-24/ 016	Report Date	05-03-2025
Site Location	M/s. A.A. Kumaresan, S.F.Nos. 376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 and 375/16 ,Morattupalayam Village, Uthukuli Taluk, Tiruppur District		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Soil	Sample Code	EHS360/ 016
Sample Description	Soil 4	Sample Collected Date	25-02-2025
Qty. of Sample Received	2 KG	Sample Received On	26-02-2025
Sample Condition	Good	Test Commenced On	26-02-2025
Sampling Location	Thenniswaranpalayam -11° 9'25.59"N 77°27'45.67"E		

S.No	Test Parameters	Protocols	Results
01	pH @ 25°C	IS 2720 Part 26 - 1987 (Reaff:2016)	8.55
02	Conductivity @ 25°C	IS 14767 - 2000 (Reaff : 2016)	489 µmhos/cm
03	Water Holding Capacity	By Gravimetric Method	46.8. %
04	Bulk Density	By Cylindrical Method	1.03 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	24.6 mg/kg
07	Magnesium as Mg		13.24 mg/kg
08	Chloride as Cl	APHA 23 rd Edn 2019 4500 Cl B	15.3 mg/kg
09	Soluble Sulphate as SO ₄	IS 2720 Part 27 : 1977 (Reaff:2015)	0.0027 %
10	Total Phosphorus as P	IS 10158 : 1982 (Reaff: 2019)	5.29 mg/kg
11	Total Nitrogen as N	IS 14684 : 1999 (Reaff:2019)	488 mg/kg
12	Organic Matter	IS : 2720 Part 22: 1972 (Reaff: 2015)	1.26 %
13	Organic Carbon	IS : 2720 Part 22: 1972 (Reaff: 2015)	0.73 %

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A. Kumar
(Kumaresan Y)Continued on
Page 1 of 2

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A. Kumar
Santhosh Kumar A.
Managing Director

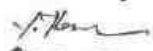
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TEST REPORT

Report No	EHS360/TR/2023-24/ 016	Report Date	05-03-2025
Site Location	M/s. A.A. Kumaresan, S.F.Nos. 376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 and 375/16 ,Morattupalayam Village, Uthukuli Taluk, Tiruppur District		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Soil	Sample Code	EHS360/ 016
Sample Description	Soil 4	Sample Collected Date	25-02-2025
Qty. of Sample Received	2 KG	Sample Received On	26-02-2025
Sample Condition	Good	Test Commenced On	26-02-2025
Sampling Location	Thenniswaranpalayam -11° 9'25.59"N 77°27'45.67"E		

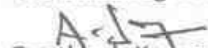
S.No	Test Parameters	Protocols	Results
14	Texture :		
	Clay	Gravimetric Method	30.1 %
	Sand		33.3 %
	Silt		36.6 %
15	Manganese as Mn	USEPA 3050 B – 1996 & USEPA 6010 C - 2000	3.16 mg/kg
16	Zinc as Zn		4.17 mg/kg
17	Boron as B		1.08 mg/kg
18	Potassium as K		49.57 mg/kg
19	Cadmium as Cd		BDL (DL : 1.0 mg/kg)
20	Total Chromium as Cr		4.26
21	Copper as Cu		BDL (DL : 1.0 mg/kg)
22	Lead as Pb		0.66 mg/kg
23	Iron as Fe		20.45 mg/kg
24	Cation Exchange Capacity	USEPA 9080 – 1986	35.46 meq/100g of soil

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(Keavan Y.)


*****End of Report*****
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Santhosh Kumar .A.
Managing Director

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TEST REPORT

Report No	EHS360/TR/2023-24/ 017	Report Date	05-03-2025
Site Location	M/s. A.A. Kumaresan, S.F.Nos. 376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 and 375/16 ,Morattupalayam Village, Uthukuli Taluk, Tiruppur District		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Soil	Sample Code	EHS360/ 017
Sample Description	Soil 5	Sample Collected Date	25-02-2025
Qty. of Sample Received	2 KG	Sample Received On	26-02-2025
Sample Condition	Good	Test Commenced On	26-02-2025
Sampling Location	Mannur		

S.No	Test Parameters	Protocols	Results
01	pH @ 25°C	IS 2720 Part 26 - 1987 (Reaff:2016)	8.15
02	Conductivity @ 25°C	IS 14767 - 2000 (Reaff : 2016)	340 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	46.5 %
06	Calcium as Ca	Food and Agriculture organization of the united Nation Rome 2007 : 2018	24.4 mg/kg
07	Magnesium as Mg		15.1 mg/kg
08	Chloride as Cl	APHA 23 rd Edn 2019 4500 Cl B	18.8 mg/kg
09	Soluble Sulphate as SO ₄	IS 2720 Part 27 : 1977 (Reaff:2015)	0.0019 %
10	Total Phosphorus as P	IS 10158 : 1982 (Reaff: 2019)	3.18 mg/kg
11	Total Nitrogen as N	IS 14684 : 1999 (Reaff:2019)	364.2 mg/kg
12	Organic Matter	IS : 2720 Part 22: 1972 (Reaff: 2015)	2.0 %
13	Organic Carbon	IS : 2720 Part 22: 1972 (Reaff: 2015)	1.16 %

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A. K. Kumar
(Kumaresan Y)

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Page 1 of 2

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A. J. Kumar
Santhosh Kumar A.
Managing Director

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TEST REPORT

Report No	EHS360/TR/2023-24/ 017	Report Date	05-03-2025
Site Location	M/s. A.A. Kumaresan, S.F.Nos. 376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 and 375/16 ,Morattupalayam Village, Uthukuli Taluk, Tiruppur District		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Soil	Sample Code	EHS360/ 017
Sample Description	Soil 5	Sample Collected Date	25-02-2025
Qty. of Sample Received	2 KG	Sample Received On	26-02-2025
Sample Condition	Good	Test Commenced On	26-02-2025
Sampling Location	Chinnaputhur- 11° 5'40.61"N 77°14'32.67"E		

S.No	Test Parameters	Protocols	Results
14	Texture :		
	Clay	Gravimetric Method	29.3 %
	Sand		34.8 %
	Silt		35.9 %
15	Manganese as Mn	USEPA 3050 B – 1996 & USEPA 6010 C – 2000	15.3 mg/kg
16	Zinc as Zn		2.09 mg/kg
17	Boron as B		7.15 mg/kg
18	Potassium as K		46.5 mg/kg
19	Cadmium as Cd		BDL (DL : 1.0 mg/kg)
20	Total Chromium as Cr		4.01
21	Copper as Cu		BDL (DL : 1.0 mg/kg)
22	Lead as Pb		1.09 mg/kg
23	Iron as Fe		17.11 mg/kg
24	Cation Exchange Capacity	USEPA 9080 – 1986	37.12 meq/100g of soil

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(Signature)
(Jeevan Y)



*****End of Report*****
Page 2 of 2

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(Signature)
Santhosh Kumar .A
Managing Director

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TEST REPORT

Report No	EHS360/TR/2023-24/ 018	Report Date	05-03-2025
Site Location	M/s. A.A. Kumaresan, S.F.Nos. 376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 and 375/16 ,Morattupalayam Village, Uthukuli Taluk, Tiruppur District		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Soil	Sample Code	EHS360/ 018
Sample Description	Soil 6	Sample Collected Date	25-02-2025
Qty. of Sample Received	2 KG	Sample Received On	26-02-2025
Sample Condition	Good	Test Commenced On	26-02-2025
Sampling Location	Kallipalayam - 11°11'23.67"N 77°23'49.24"E		

S. No	Test Parameters	Protocols	Results
01	pH @ 25°C	IS 2720 Part 26 - 1987 (Reaff:2016)	7.99
02	Conductivity @ 25°C	IS 14767 - 2000 (Reaff : 2016)	410 µmhos/cm
03	Water Holding Capacity	By Gravimetric Method	46.4 %
04	Bulk Density	By Cylindrical Method	1.1 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	25.0 mg/kg
07	Magnesium as Mg		16.5 mg/kg
08	Chloride as Cl	APHA 23 rd Edn 2019 4500 Cl B	19.8 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)	2.73 mg/kg
11	Total Nitrogen as N	IS 14684 : 1999 (Reaff:2019)	515 mg/kg
12	Organic Matter	IS : 2720 Part 22: 1972 (Reaff: 2015)	2.12 %
13	Organic Carbon	IS : 2720 Part 22: 1972 (Reaff: 2015)	1.23 %

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(Resavan Y)

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Page 1 of 2

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A. J.
Santhosh Kumar .A
Managing Director

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TEST REPORT

Report No	EHS360/TR/2023-24/ 018	Report Date	05-03-2025
Site Location	M/s. A.A. Kumaresan, S.F.Nos. 376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 and 375/16 ,Morattupalayam Village, Uthukuli Taluk, Tiruppur District		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Soil	Sample Code	EHS360/ 018
Sample Description	Soil 6	Sample Collected Date	25-02-2025
Qty. of Sample Received	2 KG	Sample Received On	26-02-2025
Sample Condition	Good	Test Commenced On	26-02-2025
Sampling Location	Kallipalayam - 11°11'23.67"N 77°23'49.24"E		

S. No	Test Parameters	Protocols	Results
14	Texture :		
	Clay	Gravimetric Method	32.9 %
	Sand		30.8 %
	Silt		36.3 %
15	Manganese as Mn	USEPA 3050 B – 1996 & USEPA 6010 C – 2000	4.11 mg/kg
16	Zinc as Zn		5.03 mg/kg
17	Boron as B		1.16 mg/kg
18	Potassium as K		61.2 mg/kg
19	Cadmium as Cd		BDL (DL : 1.0 mg/kg)
20	Total Chromium as Cr		2.16
21	Copper as Cu		BDL (DL : 1.0 mg/kg)
22	Lead as Pb		0.8 mg/kg
23	Iron as Fe		15.4 mg/kg
24	Cation Exchange Capacity	USEPA 9080 – 1986	44.19 meq/100g of soil

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(Signature)
(Keevan Y)



*****End of Report*****
Page 2 of 2

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(Signature)
Santhosh Kumar .A
Managing Director

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TEST REPORT

Report No	EHS360/TR/2023-24/019	Report Date	05-03-2025
Site Location	M/s. A.A. Kumaresan, S.F.Nos. 376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 and 375/16 ,Morattupalayam Village, Uthukuli Taluk, Tiruppur District		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Water	Sample Code	EHS360/019
Sample Description	Surface Water (SW-1)	Sample Collected Date	25-02-2025
Qty. of Sample Received	2 Litres	Sample Received On	26-02-2025
Sample Condition	Fit for Analysis	Test Commenced On	26-02-2025
Sampling Location	Koolipalayam Lake - 11° 7'50.03"N 77°23'29.91"E		

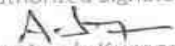
S.No.	Parameters	Test Method	RESULTS
	Discipline: Chemical		
1	Colour	IS 3025 Part 4:1983	5 Hazen
2	Odour	IS 3025 Part 5:2018	Agreeable
3	pH at 25°C	IS 3025 Part 11:1983	7.59
4	Conductivity @ 25°C	IS 3025 Part 14:2013	824 µmhos/cm
5	Turbidity	IS 3025 Part 10:1984	5.6 NTU
6	Total Dissolved Solids	IS 3025 Part 16:1984	486 mg/l
7	Total Hardness as CaCO ₃	IS 3025 Part 21:2009	154.06 mg/l
8	Calcium as Ca	IS 3025 Part 40:1991	27.8 mg/l
9	Magnesium as Mg	IS 3025 Part 46:1994	20.6 mg/l
10	Total Alkalinity as CaCO ₃	IS 3025 Part 23:1986	140 mg/l
11	Chloride as Cl	IS 3025 Part 32:1988	119 mg/l
12	Sulphate as SO ₄	IS 3025 Part 24:1986	68 mg/l
13	Iron as Fe	IS 3025 Part 53:2003	0.31 mg/l
14	Residual Free Chlorine	IS 3025 Part 26:1986	BDL (DL:0.1 mg/l)
15	Fluoride as F	APHA 23 rd Edn. 2017:4500 F,D	0.13 mg/l
16	Nitrate as NO ₃	IS 3025 Part 34:1988	7.55 mg/l

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 (Kumaresan A)


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 Page 1 of 2

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 Santhosh Kumar, A.
 Managing Director

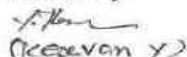
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TEST REPORT

Report No	EHS360/TR/2023-24/019	Report Date	05-03-2025
Site Location	M/s. A.A. Kumaresan, S.F.Nos. 376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 and 375/16 ,Morattupalayam Village, Uthukuli Taluk, Tiruppur District		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Water	Sample Code	EHS360/019
Sample Description	Surface Water (SW-1)	Sample Collected Date	25-02-2025
Qty. of Sample Received	2 Litres	Sample Received On	26-02-2025
Sample Condition	Fit for Analysis	Test Commenced On	26-02-2025
Sampling Location	Koolipalayam Lake - 11° 7'50.03"N 77°23'29.91"E		

S.No.	Parameters	Test Method	RESULTS
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 ₆ H ₅ OH	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)	11 mg/l
32	Chemical Oxygen Demand	IS 3025 Part 58:2006 (Reaff:2017)	30 mg/l
33	Dissolved Oxygen	IS 3025 Part 38:1989 (Reaff:2019)	5.5 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)	1.08 mg/l
36	Sulphide as H ₂ S	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)	15.5 mg/l
	Discipline: Biological	Group: Water	
40	Total Coliform	APHA 23 rd Edn. 2017:9221B	450 MPN/100ml
41	<i>Escherichia coli</i>	APHA 23 rd Edn. 2017:9221F	200 MPN/100ml

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*****End of Report*****
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Santhosh Kumar .A.
Managing Director

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TEST REPORT

Report No	EHS360/TR/2023-24/020	Report Date	05-03-2025
Site Location	M/s. A.A. Kumaresan, S.F.Nos. 376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 and 375/16 ,Morattupalayam Village, Uthukuli Taluk, Tiruppur District		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Water	Sample Code	EHS360/020
Sample Description	Surface Water (SW-2)	Sample Collected Date	25-02-2025
Qty. of Sample Received	2 Litres	Sample Received On	26-02-2025
Sample Condition	Fit for Analysis	Test Commenced On	26-02-2025
Sampling Location	Noyyal River - 11° 7'36.47"N 77°25'56.69"E		

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	7.09
4	Conductivity @ 25°C	IS 3025 Part 14:2013	962 µmhos/cm
5	Turbidity	IS 3025 Part 10:1984	4.9 NTU
6	Total Dissolved Solids	IS 3025 Part 16:1984	567 mg/l
7	Total Hardness as CaCO ₃	IS 3025 Part 21:2009	184.62 mg/l
8	Calcium as Ca	IS 3025 Part 40:1991	32.8 mg/l
9	Magnesium as Mg	IS 3025 Part 46:1994	25.0 mg/l
10	Total Alkalinity as CaCO ₃	IS 3025 Part 23:1986	176.1 mg/l
11	Chloride as Cl	IS 3025 Part 32:1988	121 mg/l
12	Sulphate as SO ₄	IS 3025 Part 24:1986	64.12 mg/l
13	Iron as Fe	IS 3025 Part 53:2003	0.22 mg/l
14	Residual Free Chlorine	IS 3025 Part 26:1986	BDL (DL:0.1 mg/l)
15	Fluoride as F	APHA 23 rd Edn. 2017:4500 F,D	0.11 mg/l
16	Nitrate as NO ₃	IS 3025 Part 34:1988	9.25 mg/l

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A. Kumar
(Kumaresan Y)Continued.....
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A. Kumar
Santhosh Kumar A
Managing Director

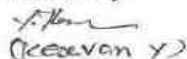
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TEST REPORT

Report No	EHS360/TR/2023-24/021	Report Date	05-03-2025
Site Location	M/s. A.A. Kumaresan, S.F.Nos. 376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 and 375/16 ,Morattupalayam Village, Uthukuli Taluk, Tiruppur District		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Water	Sample Code	EHS360/021
Sample Description	Surface Water (SW-2)	Sample Collected Date	25-02-2025
Qty. of Sample Received	2 Litres	Sample Received On	26-02-2025
Sample Condition	Fit for Analysis	Test Commenced On	26-02-2025
Sampling Location	Noyyal River - 11° 7'36.47"N 77°25'56.69"E		

S.No.	Parameters	Test Method	RESULTS
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 ₆ H ₅ OH	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)	15 mg/l
32	Chemical Oxygen Demand	IS 3025 Part 58:2006 (Reaff:2017)	50 mg/l
33	Dissolved Oxygen	IS 3025 Part 38:1989 (Reaff:2019)	5.2 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)	1.22 mg/l
36	Sulphide as H ₂ S	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)	25.3 mg/l
Discipline: Biological		Group: Water	
40	Total Coliform	APHA 23 rd Edn. 2017:9221B	490 MPN/100ml
41	<i>Escherichia coli</i>	APHA 23 rd Edn. 2017:9221F	280 MPN/100ml

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(Keelvan Y)


*****End of Report*****
Page 2 of 2

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Santhosh Kumar A.
Managing Director

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TEST REPORT

Report No	EHS360/TR/2023-24/022	Report Date	05-03-2025
Site Location	M/s. A.A. Kumaresan, S.F.Nos. 376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 and 375/16, Morattupalayam Village, Uthukuli Taluk, Tiruppur District		
Customer Name			
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Water	Sample Code	EHS360/022
Sample Description	Ground Water (WW-1)	Sample Collected Date	25-02-2025
Qty. of Sample Received	2 Litres	Sample Received On	26-02-2025
Sample Condition	Fit for Analysis	Test Commenced On	26-02-2025
Sampling Location	Near Habitation - 11° 8'36.58"N 77°25'22.22"E		

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)	6.98
4	Conductivity @ 25°C	IS 3025 Part 14:2013 (Reaff:2019)	854 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)	505 mg/l
7	Total Hardness as CaCO ₃	IS 3025 Part 21:2009 (Reaff:2019)	150.89 mg/l
8	Calcium as Ca	IS 3025 Part 40:1991 (Reaff:2019)	29 mg/l
9	Magnesium as Mg	IS 3025 Part 46:1994 (Reaff:2019)	19.1 mg/l
10	Total Alkalinity as CaCO ₃	IS 3025 Part 23:1986 (Reaff:2019)	141.3 mg/l
11	Chloride as Cl	IS 3025 Part 32:1988 (Reaff:2019)	132.0 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)	0.26 mg/l
14	Residual Free Chlorine	IS 3025 Part 26:1986 (Reaff:2019)	BDL (DL:0.1 mg/l)
15	Fluoride as F	APHA 23 rd Edn. 2017:4500 F,D	0.14 mg/l
16	Nitrate as NO ₃	IS 3025 Part 34:1988 (Reaff:2019)	5.02 mg/l

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 (Kumaresan Y)


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 Santhosh Kumar, A
 Managing Director

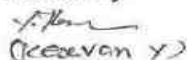
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TEST REPORT

Report No	EHS360/TR/2023-24/022	Report Date	05-03-2025
Site Location	M/s. A.A. Kumaresan, S.F.Nos. 376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 and 375/16 ,Morattupalayam Village, Uthukuli Taluk, Tiruppur District		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Water	Sample Code	EHS360/022
Sample Description	Ground Water (WW-1)	Sample Collected Date	25-02-2025
Qty. of Sample Received	2 Litres	Sample Received On	26-02-2025
Sample Condition	Fit for Analysis	Test Commenced On	26-02-2025
Sampling Location	Near Habitation - 11° 8'36.58"N 77°25'22.22"E		

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 ₆ H ₅ OH	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 ₂ S	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 23 rd Edn. 2017:9221B	160 MPN/100ml
38	<i>Escherichia coli</i>	APHA 23 rd Edn. 2017:9221F	< 1.8 MPN/100ml

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(Keeravani Y.)


*****End of Report*****
Page 2 of 2

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Santhosh Kumar .A.
Managing Director

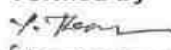
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TEST REPORT

Report No	EHS360/TR/2023-24/023	Report Date	05-03-2025
Site Location	M/s. A.A. Kumaresan, S.F.Nos. 376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 and 375/16 ,Morattupalayam Village, Uthukuli Taluk, Tiruppur District		
Customer Name			
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Water	Sample Code	EHS360/023
Sample Description	Ground Water (WW-2)	Sample Collected Date	25-02-2025
Qty. of Sample Received	2 Litres	Sample Received On	26-02-2025
Sample Condition	Fit for Analysis	Test Commenced On	26-02-2025
Sampling Location	Thenniswaranpalayam - 11° 9'34.85"N 77°27'47.50"E		

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)	7.91
4	Conductivity @ 25°C	IS 3025 Part 14:2013 (Reaff:2019)	915 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)	540 mg/l
7	Total Hardness as CaCO ₃	IS 3025 Part 21:2009 (Reaff:2019)	179.76 mg/l
8	Calcium as Ca	IS 3025 Part 40:1991 (Reaff:2019)	32.5 mg/l
9	Magnesium as Mg	IS 3025 Part 46:1994 (Reaff:2019)	24 mg/l
10	Total Alkalinity as CaCO ₃	IS 3025 Part 23:1986 (Reaff:2019)	170 mg/l
11	Chloride as Cl	IS 3025 Part 32:1988 (Reaff:2019)	132 mg/l
12	Sulphate as SO ₄	IS 3025 Part 24:1986 (Reaff:2019)	70.5 mg/l
13	Iron as Fe	IS 3025 Part 53:2003 (Reaff:2019)	0.22 mg/l
14	Residual Free Chlorine	IS 3025 Part 26:1986 (Reaff:2019)	BDL (DL:0.1 mg/l)
15	Fluoride as F	APHA 23 rd Edn. 2017:4500 F,D	0.20 mg/l
16	Nitrate as NO ₃	IS 3025 Part 34:1988 (Reaff:2019)	6.0 mg/l

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 (Resavan Y)


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 Page 1 of 2

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 Santhosh Kumar A.
 Managing Director

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TEST REPORT

Report No	EHS360/TR/2023-24/023	Report Date	05-03-2025
Site Location	M/s. A.A. Kumaresan, S.F.Nos. 376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 and 375/16 ,Morattupalayam Village, Uthukuli Taluk, Tiruppur District		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Water	Sample Code	EHS360/023
Sample Description	Ground Water (WW-2)	Sample Collected Date	25-02-2025
Qty. of Sample Received	2 Litres	Sample Received On	26-02-2025
Sample Condition	Fit for Analysis	Test Commenced On	26-02-2025
Sampling Location	Thenniswaranpalayam - 11° 9'34.85"N 77°27'47.50"E		

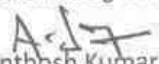
S.No.	Parameters	Test Method	RESULTS
17	Copper as Cu	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.01 mg/l)
18	Manganese as Mn	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)
19	Mercury as Hg	USEPA 200.8	BDL (DL:0.0005 mg/l)
20	Cadmium as Cd	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.001 mg/l)
21	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 ₆ H ₅ OH	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 ₂ S	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 23 rd Edn. 2017:9221B	170 MPN/100ml
38	<i>Escherichia coli</i>	APHA 23 rd Edn. 2017:9221F	< 1.8 MPN/100ml

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(Keavan Y.)


*****End of Report*****
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Santhosh Kumar A.
Managing Director

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TEST REPORT

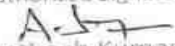
Report No	EHS360/TR/2023-24/024	Report Date	05-03-2025
Site Location	M/s. A.A. Kumaresan, S.F.Nos. 376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 and 375/16 ,Morattupalayam Village, Uthukuli Taluk, Tiruppur District		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Water	Sample Code	EHS360/024
Sample Description	Ground Water (BW-1)	Sample Collected Date	25-02-2025
Qty. of Sample Received	2 Litres	Sample Received On	26-02-2025
Sample Condition	Fit for Analysis	Test Commenced On	26-02-2025
Sampling Location	Near Project Area- 11° 8'28.21"N 77°25'57.15"E		

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)	7.98
4	Conductivity @ 25°C	IS 3025 Part 14:2013 (Reaff:2019)	665 µmhos/cm
5	Turbidity	IS 3025 Part 10:1984 (Reaff:2017)	< 1 NTU
6	Total Dissolved Solids	IS 3025 Part 16:1984 (Reaff:2017)	396 mg/l
7	Total Hardness as CaCO ₃	IS 3025 Part 21:2009 (Reaff:2019)	152 mg/l
8	Calcium as Ca	IS 3025 Part 40:1991 (Reaff:2019)	27.2 mg/l
9	Magnesium as Mg	IS 3025 Part 46:1994 (Reaff:2019)	20.4 mg/l
10	Total Alkalinity as CaCO ₃	IS 3025 Part 23:1986 (Reaff:2019)	129.5 mg/l
11	Chloride as Cl	IS 3025 Part 32:1988 (Reaff:2019)	50.6 mg/l
12	Sulphate as SO ₄	IS 3025 Part 24:1986 (Reaff:2019)	63.5 mg/l
13	Iron as Fe	IS 3025 Part 53:2003 (Reaff:2019)	0.56 mg/l
14	Residual Free Chlorine	IS 3025 Part 26:1986 (Reaff:2019)	BDL (DL:0.1 mg/l)
15	Fluoride as F	APHA 23 rd Edn. 2017:4500 F,D	0.26 mg/l
16	Nitrate as NO ₃	IS 3025 Part 34:1988 (Reaff:2019)	3.6 mg/l

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 (Kumaresan Y)
Continued.....
Page 1 of 2

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 Santhosh Kumar - A
 Managing Director

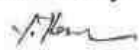
Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report.
 3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client.
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TEST REPORT

Report No	EHS360/TR/2023-24/024	Report Date	06.06.2024
Site Location	M/s. A.A. Kumaresan, S.F.Nos. 376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 and 375/16 ,Morattupalayam Village, Uthukuli Taluk, Tiruppur District		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Water	Sample Code	EHS360/024
Sample Description	Ground Water (BW-2)	Sample Collected Date	25-02-2025
Qty. of Sample Received	2 Litres	Sample Received On	26-02-2025
Sample Condition	Fit for Analysis	Test Commenced On	26-02-2025
Sampling Location	Near Project Area- 11° 8'28.21"N 77°25'57.15"E		

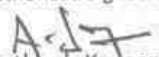
S.No.	Parameters	Test Method	RESULTS
17	Copper as Cu	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.01 mg/l)
18	Manganese as Mn	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)
19	Mercury as Hg	USEPA 200.8	BDL (DL:0.0005 mg/l)
20	Cadmium as Cd	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.001 mg/l)
21	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 ₆ H ₅ OH	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 ₂ S	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 23 rd Edn. 2017:9221B	90 MPN/100ml
38	<i>Escherichia coli</i>	APHA 23 rd Edn. 2017:9221F	< 1.8 MPN/100ml

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 (Keavan Y)

 *****End of Report*****
 Page 2 of 2

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 Santhosh Kumar .A
 Managing Director

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TEST REPORT

Report No	EHS360/TR/2023-24/024	Report Date	05-03-2025
Site Location	M/s. A.A. Kumaresan, S.F.Nos. 376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 and 375/16 ,Morattupalayam Village, Uthukuli Taluk, Tiruppur District		
Customer Name			
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Water	Sample Code	EHS360/024
Sample Description	Ground Water (BW-2)	Sample Collected Date	25-02-2025
Qty. of Sample Received	2 Litres	Sample Received On	26-02-2025
Sample Condition	Fit for Analysis	Test Commenced On	26-02-2025
Sampling Location	Thirunagar - 11° 6'10.71"N 77°24'1.91"E		

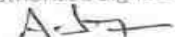
S.No.	Parameters	Test Method	RESULTS
	Discipline: Chemical	Group: Water	
1	Colour	IS 3025 Part 4:1983 (Reaff:2017)	5
2	Odour	IS 3025 Part 5:2018	Agreeable
3	pH at 25°C	IS 3025 Part 11:1983 (Reaff:2017)	7.88
4	Conductivity @ 25°C	IS 3025 Part 14:2013 (Reaff:2019)	788 µmhos/cm
5	Turbidity	IS 3025 Part 10:1984 (Reaff:2017)	1 NTU
6	Total Dissolved Solids	IS 3025 Part 16:1984 (Reaff:2017)	465 mg/l
7	Total Hardness as CaCO ₃	IS 3025 Part 21:2009 (Reaff:2019)	174.03 mg/l
8	Calcium as Ca	IS 3025 Part 40:1991 (Reaff:2019)	30.2 mg/l
9	Magnesium as Mg	IS 3025 Part 46:1994 (Reaff:2019)	24 mg/l
10	Total Alkalinity as CaCO ₃	IS 3025 Part 23:1986 (Reaff:2019)	140 mg/l
11	Chloride as Cl	IS 3025 Part 32:1988 (Reaff:2019)	110 mg/l
12	Sulphate as SO ₄	IS 3025 Part 24:1986 (Reaff:2019)	62.1 mg/l
13	Iron as Fe	IS 3025 Part 53:2003 (Reaff:2019)	0.28 mg/l
14	Residual Free Chlorine	IS 3025 Part 26:1986 (Reaff:2019)	BDL (DL:0.1 mg/l)
15	Fluoride as F	APHA 23 rd Edn. 2017:4500 F,D	0.15 mg/l
16	Nitrate as NO ₃	IS 3025 Part 34:1988 (Reaff:2019)	5.16 mg/l

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 (Kumaresan Y)


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 Page 1 of 2

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 Santhosh Kumar, A.
 Managing Director

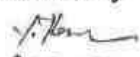
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TEST REPORT

Report No	EHS360/TR/2023-24/024	Report Date	05-03-2025
Site Location	M/s. A.A. Kumaresan, S.F.Nos. 376/1B, 376/2, 375/10, 375/11, 375/12, 375/13, 375/14, 375/15 and 375/16 ,Morattupalayam Village, Uthukuli Taluk, Tiruppur District		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Water	Sample Code	EHS360/024
Sample Description	Ground Water (BW-2)	Sample Collected Date	25-02-2025
Qty. of Sample	2 Litres	Sample Received On	26-02-2025
Sample Condition	Fit for Analysis	Test Commenced On	26-02-2025
Sampling Location	Thirunagar - 11° 6'10.71"N 77°24'1.91"E		

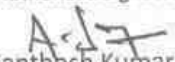
S.No.	Parameters	Test Method	RESULTS
17	Copper as Cu	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.01 mg/l)
18	Manganese as Mn	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)
19	Mercury as Hg	USEPA 200.8	BDL (DL:0.0005 mg/l)
20	Cadmium as Cd	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.001 mg/l)
21	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)
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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 ₆ H ₅ OH	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 ₂ S	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 23 rd Edn. 2017:9221B	140 MPN/100ml
38	<i>Escherichia coli</i>	APHA 23 rd Edn. 2017:9221F	< 1.8 MPN/100ml

Verified by


 (Keavan Y)

 *****End of Report*****
 Page 2 of 2

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 Santhosh Kumar A.
 Managing Director

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National Accreditation Board for Education and Training



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.

