

DRAFT EIA/EMP REPORT

FOR

ROUGH STONE AND GRAVEL QUARRY

Extent – 3.11.5 ha

**FIRST FIVE YEAR PRODUCTION CAPACITY OF 4,37,744m³
OF ROUGHSTONE AND 50,456m³ OF GRAVEL**

**DEPTH – 25m BGL (2m Gravel+23m Rough stone) for the First 5
years**

**SURVEY Nos. 277/1A, 277/1B, 277/1C, 277/1D, 277/1E, 277/1F,
277/2 & 280/2**

**VILLAGE - SIRUTHAMUR, TALUK -UTHIRAMERUR,
DISTRICT – KANCHEEPURAM,
STATE - TAMILNADU.**

CATEGORY – B1

Thiru.N. Kanniyappan

S/o. Narayanapillai

No,55, Mariyamman Koil Street,

Neerkundram Village, Aanampakkam Post,

Uthiramerur Taluk,

Kancheepuram District.

ENVIRONMENTAL CONSULTANT

GEO TECHNICAL MINING SOLUTIONS



No: 1/213-B, Ground Floor, Natesan Complex

Oddapatti, Collectorate Post office,

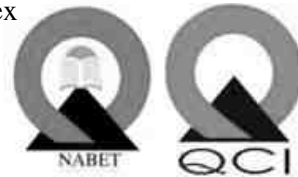
Dharmapuri-636705. Tamil Nadu.

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NABET ACC. NO: NABET/EIA/2124/SA 0184

Valid till: Dec 31, 2023



ENVIRONMENTAL LAB

ACCURACY ANALABS LABORATORY

NABL Accredited & Recognised Laboratory

Baseline Study Period – March - May, 2022

APRIL-2023

List of Quarries within 500 Meter Radius

Proposed Quarries					
ID	Name of the Owner	Name of the Village, and Taluk, & S.F. Nos.	Extent in (ha)	Status	Remarks
P1.	N. Kanniyappan , S/o. Narayanapillai, No.55, Mariyamman Koil Street, Neerkundram Village, Aamambakkam Post, Salavakkam Via, Uthiramerur Taluk, Kancheepuram.	Sirudhamur Village, Uthiramerur Taluk 277/1A,277/1C, 277/1E,277/1F, 277/2, 280/2,277/1B,277/1D	3.11.50	Applied area	-
P2.	M.S. Blue Stones, No.192, 1st Floor, Ambattur Plots, Red Hills Road, Ambattur, Chennai - 600 053.	Sirudhamur Village, Uthiramerur Taluk 167/1 (Part-1) Govt. Land	3.00.00	Under Processing	-
P3.	V. Sekar, S/o. Vadivel, No.28&29, S 1 Dream Homes, Dr. K.V.K. Nagar, Selaiyur, Chennai - 600 073.	Sirudhamur Village, Uthiramerur Taluk 167 /1 (Part-2) Govt. Land	3.00.00	Under Processing	-
P4.	Thiru..S.Hemaprasath, S/o. G. Shanmugavel (late), No.97, Rajaveethi, Walajabad Taluk, Kancheepuram District.	Sirudhamur Village, Uthiramerur Taluk 170/2170/3,170/4,236/ IB,236/IC,236/ID and 220/1 A 1 P	4.88.00	Under Processing	-
P5.	S. Rajendiran, S/o. Sevugaperumal, No.2/4, Jothi Nagar Main Road, Ekkattuthangal, Chennai - 32.	Sirudhamur Village, Uthiramerur Taluk 275/IB,275/2A,238/1,23 8/IC,238/1 D.	3.35.50	Under Processing	-
		Total	17.35.00		
Existing Quarries					
SL. No.	Name of the Owner	Name of the Village & S.F. No.	Extent (ha)	Lease Period	
E1.	R. Selvendrakumar, S/o.Rajendiran, No.2/4, Jothinagar main road, Ekkattuthangal, Chennai -32	Sirudhamur Village, Uthiramerur Taluk 308/1,2,3A,3B,3C, 3D,3E,3F,5,6,7A, 7B,8,9,10A,10B, 10C,11.	2.92.50	08.11.2018 To 07.11.2023	-
		Total	2.92.50		

Abandoned Quarries					
Sl.No.	Name of the Owner	Name of the Village & S.F. No.	Extent (ha)	Lease Period	
EX1	M/s. NAPC Mines & Ores Pvt. Ltd., Khivraj Complex- II, 480, Anna Salai, Nandhanam, Chennai -35.	Sirudhamur Village, Uthiramerur Taluk 171/18 (Govt. Land)	2.00.0	04.06.2009 To 03.06.2014 Lease Expired	-
	Total Cluster Extent		2.00.0		

Source: i). AD Letter – Rc.No.257/Q3/2020 dated 30.09.2021

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

TERMS OF REFERENCE (ToR) COMPLIANCE

Thiru.N. Kanniyappan

“ToR issued vide Letter No. SEIAA-TN/F.No. 8904/SEAC/ToR-1126/2021,

Dated:23.03.2022

SPECIFIC CONDITIONS		
1.	The proponent shall furnish a letter stating that the exact distance between Kavanipakkam RF & least boundary of the project site.	DFO letter details will be submitted along with the final EIA/EMP report.
2.	The proponent shall carry out the cumulative & comprehensive impact study due to mining operations carried out in the quarry cluster specifically with reference to the environment in terms of air pollution, water pollution, & health impacts, accordingly the Environment Management plan should be prepared keeping the concerned quarry and the surrounding habitations in the mind.	Cumulative impact study dealing with air pollution, water pollution, & health impacts has been discussed in section 7.4, pp. 156-161 under chapter VII. Based on the cumulative study results, environmental management plan has been prepared and added in pp. 168-185 under chapter X.
3.	The certified existing EC compliance report shall be included in the EIA report.	Not Applicable. This project proposal comes under fresh lease category for quarrying of Rough Stone & Gravel.

4	The entire cluster of mine lease area along with green belt shall be video graphed through drone and submit the same along with EIA report.	The video/photographic evidences will be submitted along with the final EIA report.
5.	If the proponent has already carried out the mining activity in the proposed mining lease after 15.01.2016, then the proponent shall furnish the following details from AD/DD mines,	
a)	<p>What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?</p> <p>a). What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?</p> <p>b). Quantity of minerals mined out.</p> <p>c). Highest production achieved in any one year</p> <p>d)Detail of approved depth of mining.</p> <p>e). Actual depth of the mining achieved earlier</p> <p>f). Name of the person already mined in that leases area.</p> <p>g). If EC and CTO already obtained, the copy of the same shall be submitted.</p> <p>h). Whether the mining was carried out as per the approved mine plan (or EC if issued with stipulated benches.</p>	<p>Not Applicable.</p> <p>This project proposal comes under fresh lease category for quarrying of Rough Stone & Gravel.</p> <p>Precise Area Communication Letter R.C.257/Q3/2020, Dated:06.09.2021.</p> <p>Approved mining plan Enclosed annexure-III Refer p.no.272.</p>
6.	All corner coordinates of the mine lease area, superimposed on a High Resolution	Project area lease boundary coordinates details are given in Chapter II and Figure No. 2.3. Refer: p.no.12.

	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).	Geology map of the project area covering 10km radius map has been included in Chapter II and Figure No. 2.4. Refer: p. no. 13 Geomorphology Map of the Study Area covering 10 km radius map has been included in Chapter II and Figure No. 2.5. Refer: p.no. 14
7.	The proponent shall furnish photographs of adequate fencing, green belt along the periphery including replantation of existing trees & safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan.	The green belt development proposal has been discussed in the Chapter IV and section 4.6.2.2. Refer: pp.135-138. The photographs of Wire fencing will be submitted along with final EIA report
8.	The Project Proponent shall provide the details of mineral reserves and mineable reserves, planned production capacity, proposed working methodology with justifications, the anticipated impacts of the mining operations on the surrounding environment and the remedial measures for the same.	The details of mineral reserves have been provided in pp.15 under chapter II and section 2.5.
9.	The Project Proponent shall provide the Organization chart indicating the appointment of various statutory officials and other competent persons to be appointed as per the provisions of Mines Act'1952 and the MMR, 1961 for carrying out the quarrying operations scientifically and	Standard operating procedures as per DGMS for safety and health aspects of the workers and for surrounding habitants during mining operations should be followed. The safety and the health aspects of workers have been discussed in section 4.4.2, under chapter IV, pp.128-129.

	systematically in order to ensure safety and to protect the environment.	
10	The Project Proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD / TWAD 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.	Detailed hydrogeological studies were conducted for the period of 3 months (March-May, 2022). Results have been discussed in section 3.3.5 pp.40-51 under chapter III.
11	The proponent shall furnish the baseline data for the environmental and ecological parameters with regard to surface water/ground water quality, air quality, soil quality & flora/fauna including traffic/vehicular movement study.	The details have been provided in sections 3.1-3.4, pp.28-66 under chapter III. Traffic details have been given in section 3.8, pp.113-115 under chapter III.
12	A tree survey study shall be carried out (nos. name of the species, age, diameter etc.,) both within the mining leases applied area & 300m buffer zone and its management during mining activity.	The details have been provided in sections 3.6.5.1, pp.70-88 under chapter III. The details of green belt development proposal have been included in Chapter IV and section 4.6.2. Refer: pp.134-138.

13	A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.	Mine closure details have been provided in section 2.6.3-2.6.4 in pp.19 and mine closure plan plates have been given in Figures 2.8 pp.20 under chapter II.
14	The Public hearing advertisement shall be published in one major National daily and one most circulated vernacular daily.	The information about the public hearing will be updated in the final EIA report
15	The recommendation for the issue of "Terms of Reference" is subjected to the outcome of the Hon'ble NGT, Principal Bench, New Delhi in O.A.No.186 of 2016 (M.A.No. 350/2016) and O.A.No.200/2016 and O.A.No.580/2016(M.A.No.1182/2016) and O.A. No. 102/2017 and O.A. No. 404/2016 (M.A.No758/2016, M.A.No 920/2016, M.A.No. 1122/2016, M.A.No.12/2017 & M.A.No. 843/2017) and O.A.No 405/2016 and O.A.No 520 of 2016 (M.A.No. 981/2016, M.A.No.982/2016 & M.A.No. 384/2017).	This EIA draft has been prepared in accordance with the Terms of Reference issued by SEIAA as per the order of the Hon'ble NGT, Principal Bench, New Delhi.
16	The purpose of green belt around the project is to capture the fugitive emissions and to attenuate the noise generated, in addition to the improvement in the aesthetics. A wide range of indigenous plant species should be planted as given in the appendix in consultation with the DFO, State Agriculture University and local school/ college authorities. The	The detailed greenbelt development plan has been provided in the section 4.6.2, p.134-138 under chapter IV.

	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 the mixed manner.	
17	Taller/one year old Saplings raised in appropriate size of bags; preferably eco-friendly bags should be planted in proper espacement 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.	The FAE of ecology and biodiversity has advised the project proponent that saplings of one year old raised in the eco-friendly bags should be purchased and planted with the spacing of 3 m between each plant around the proposed project area as per the advice of local forest authorities/botanist
18	A Disaster management Plan shall be prepared and included in the EIA/EMP Report.	Details regarding disaster management plan have been provided in Section 7.3, pp.152-156 under chapter VII.
19	A Risk Assessment and management Plan shall be prepared and included in the EIA/EMP Report.	The details have been provided in section 7.2, pp.149 -152 under chapter VII.
20	The Socio-economic studies should be carried out within a 5 km buffer zone from the mining activity. Measures of socio-economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.	The socio – economic studies were carried out and the result have been discussed in section 3.7, pp.98-112 under chapter III

21	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. This project proposal comes under fresh lease category for quarrying of Rough Stone & Gravel. Precise Area Communication Letter R.C.257Q3/2020,Dated:06.09.2021.Approved mining plan Enclosed annexure-III Refer p.no.272.
22	Concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this Terms of Reference besides attracting penal provisions in the Environment (Protection) Act, 1986.	The EIA report has been prepared keeping in mind the fact that concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may lead to withdrawal of this terms of reference besides attracting penal provisions in the Environment (Protection) Act, 1986.
ADDITIONAL CONDITIONS		
1	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.	The concerns raised during the public consultation and all the activities proposed will be updated in the final EIA report.
2	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	Greenbelt development plan as discussed in section 4.6.2 pp.134-138 under chapter IV has been designed to reduce the impact of carbon emission on the environment.

	control of other emission and climate mitigation activities.	
3	The environmental impact assessment should study the biodiversity, the natural ecosystem, the soil micro flora, fauna and soil seed bank and suggest measures to maintain natural ecosystem.	The matter including the results of the soil's micro flora, fauna and soil seed banks and the suitable remedial measures will be included in the final EIA report.
4	Action should specifically suggested for sustainable management of the area and restoration of ecosystem for flow of goods and services.	The FAE of ecology and biodiversity has advised the project proponent that replantation work, particularly for the project area where plants of 4 years old exist should be carried out in the vacant areas available.
5.	The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.	An analysis for food chain in aquatic ecosystem is under process and report will be added to the final EIA report.
6.	The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.	The impact of mining on soil environment has been discussed in section 4.2, under chapter IV, pp.117-118.
7.	The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.	This report has included studies of ecology and biodiversity covering vegetation, endemic, vulnerable and endangered indigenous flora and fauna in section 3.6, pp. 66-98. According to the ecological report, there is no endemic, vulnerable and endangered indigenous flora and fauna.
8.	The Environmental Impact Assessment should study impact on standing trees and the existing trees	The ecological details have been provided in section 3.6.5.1, pp.70 under chapter III.

	should be numbered and action suggested for protection.	
9.	The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.	All the studies including wetlands, water bodies, river streams, lakes and farmer sites have been included in Table 3.3 in chapter III, p.32
10	The Environmental Impact Assessment should hold detailed study on EMP with budget for green belt development and mine closure plan including disaster management plan.	The details have been given in Table 10.9 and pp.180-184 under chapter X.
11	The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock	The information will be included in the final EIA report.
12	The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site.	There are no Protected Areas, National Parks, Corridors and Wildlife pathways near project site. The list of reserve forests within 10 km radius has been provided in Table 3.3 under chapter III, p.32.
13	The Project proponent shall study and furnish the impact of project on plantations in adjoining Patta lands, Horticulture, Agriculture and livestock.	The impact of project on the land environment has been discussed in section 4.1 under chapter IV, p.116-117.
14	The project proponent shall study and furnish the details on potential fragmentation impact of natural environment, by the activities.	The impacts of the proposed project have been discussed in chapter IV, pp.116-141.
15	The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and	The impact of the proposed project on aquatic plants and animals in water bodies has been

	possible scars on the landscape, damage to nearby caves, heritage site, and archaeological sites possible land form changes visual and aesthetic impacts.	discussed in sections 4.6.5-4.6.6 under chapter IV, pp.139-141.
16	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 & microplastic on aquatic environment and fresh water systems due to activities, contemplated during mining may be investigated and reported.	The matter on plastic waste management has been given in section 7.5 under chapter VII, p.161.
17	The project proponent shall detail study on impact of mining on Reserve forests free ranging wildlife.	The project proponent shall do barbed wire fencing work and develop a green belt around the lease area to prevent wildlife from entering the site among other environmental protection measures.
18	The project proponent shall furnish the NOC from District Forest officer, Kancheepuram before Obtaining EC.	DFO letter details will be Submitted along with the final EIA 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.	The proposed site for quarrying is a patta land. Document is enclosed along with the approved mining plan in Annexure III.
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.	All the documents related to mining plan, EIA and public hearing are compatible to each other and have been provided in the annexure part.
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).	Project area lease boundary coordinates details are given in Chapter II and Figure No. 2.3. Refer: p.no.12. Geology map of the project area covering 10km radius map has been included in Chapter II and Figure No. 2.4. Refer: p. no.13 Geomorphology Map of the Study Area covering 10 km radius map has been included in Chapter II and Figure No. 2.5. Refer: p.no.14
5.	Information should be provided in Survey of India Toposheet in 1:50,000 scale indicating geology 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.	Water, soil, air and noise sampling locations have been provided in toposheets of survey of India.
6.	Details about the land proposed for mining activities should be given	The applied area was inspected by the officers of Department of Geology along with revenue

	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.	officials and found that the land is fit for quarrying under the policy of State Government.
7.	It should be clearly stated whether the proponent company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA Report with description of the prescribed operating process/procedures to bring into focus any infringement/deviation/violation of the environmental or forest norms/conditions? The hierarchical system or administrative order of the Company to deal with the environmental issues and for ensuring compliance with the EC conditions may also be given. The system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large, may also be detailed in the EIA Report.	The proponent has framed Environmental Policy and the same has been discussed in section 10.1, p.168 under chapter X.
8.	Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study	It is an opencast quarrying operation involving semi mechanized method. As the rock is a hard, compact and homogeneous body, the height 5m

	<p>in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided.</p>	<p>and width of the bench 5m will be maintained as with 90⁰ bench angles.</p> <p>Quarrying activities will be carried out under the supervision of competent persons like Mines Manager, Mines Foreman and Mining Mate.</p> <p>Necessary permissions will be obtained from DGMS after obtaining environmental clearance.</p>
9.	<p>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.</p>	<p>The study area considered for this study is of 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.</p>
10	<p>Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.</p>	<p>Land use of the study area delineating forest area, agricultural land, grazing land, water bodies, human settlements and other ecological features has been discussed in Figure 3.1, p.28-29 under chapter III.</p> <p>Land use plan of the project area showing pre-operational, operational and post-operational phases are discussed in Table 2.7, p.19 under chapter II.</p>
11	<p>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</p>	<p>Not Applicable.</p> <p>There is no waste anticipated during this quarry operation. The entire quarried out rough stone will be transported to the needy customers.</p>

	use, R&R issues, if any, should be given.	Hence, no dumps are proposed outside the lease area.
12	<p>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.</p>	<p>Not Applicable.</p> <p>There is no forest land involved within the proposed project area. Moreover, a certificate from DFO will be obtained and attached with the final EIA report</p>
13	<p>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.</p>	<p>Not Applicable.</p> <p>The proposed project area does not involve any forest land.</p>
14	<p>Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest</p>	<p>Not Applicable.</p> <p>There are neither forests nor forest dwellers / forest dependent communities in the mine lease area. There shall be no forest impacted families (PF) or people (PP). Thus, the rights of</p>

	Rights) Act, 2006 should be indicated.	Traditional Forest Dwellers will not be compromised on account of the project, p.72 under chapter III.
15	The vegetation in the RF / PF areas in the study area, with necessary details, should be given.	No Reserve Forest is found within 1 km radius. And details of vegetation found in the forests occurring beyond the 1 km radius have been given in chapter III, p.72.
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 is no any wildlife/protected area within 10 km radius from the periphery of the project area. Information regarding the same has been given in p.32 under chapter III.
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.	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, p.32 under chapter III.

18	<p>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.</p>	<p>A detailed biological study was carried out in both core and buffer zones and the results have been discussed in p.91-98 under chapter III.</p> <p>There is no schedule I species of animals observed within study area as per Wildlife Protection Act, 1972 and no species falls in vulnerable, endangered or threatened category as per IUCN. There is no endangered red list species found in the study area.</p>
19	<p>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</p>	<p>Not Applicable.</p> <p>Project area / Study area is not declared in 'Critically Polluted' Area and does not come under 'Aravalli Range.</p>

	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).	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 programs prepared and submitted accordingly, integrating the sectoral programs 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	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.

	shifting of village(s) including their R&R and socio-economic aspects should be discussed in the report.	
22	<p>One season (non-monsoon) [i.e., March-May (Summer Season); October-December (post monsoon season); December – February (winter season)] primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report. Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the predominant downwind direction. The mineralogical composition of PM10, particularly for free silica, should be given.</p>	<p>Baseline data were collected for the period of March to May 2022 as per CPCB notification and MoEF & CC Guidelines. Primary baseline data and the results have been included in sections 3.0-3.7, pp.25-98 under chapter III.</p>
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	<p>Air quality modelling for prediction of incremental GLCs of pollutants was carried out using AERMOD view 9.6.1. The model results</p>

	<p>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 predominant wind direction may also be indicated on the map.</p>	<p>have been given in section 4.4.2.3, pp.120-127 under the chapter IV.</p>
24	<p>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.</p>	<p>The water requirement for the project, its availability and source have been provided in Table 2.10, p.23 under chapter II.</p>
25	<p>Necessary clearance from the competent authority for drawl of requisite quantity of water for the project should be provided.</p>	<p>Not Applicable.</p> <p>Water for dust suppression, greenbelt development and domestic use will be sourced from accumulated rainwater/seepage water in mine pits and purchased from local water vendors through water tankers on daily requirement basis.</p> <p>Drinking water will be sourced from the approved water vendors.</p>
26	<p>Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.</p>	<p>Part of the working pit will be allowed to collect rain water during the spell of rain. The water thus collected will be used for greenbelt development and dust suppression.</p> <p>The mine closure plan has been prepared for converting the excavated pit into rain water</p>

		harvesting structure and serve as water reservoir for the project village during draught season.
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 environment including surface water and ground water have been discussed in section 4.3, pp. 118-120 under the chapter IV.
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 hydrogeological 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 should be furnished.	The ground water table is found at the depth of 50-55m below ground level. The depth of quarry is 25m BGL Therefore, the mining activity will not intersect the ground water table. Data regarding the occurrence of groundwater table have been provided in p.44-51 under the chapter III.
29	Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out.	Not Applicable. There are no streams, seasonal or other water bodies passing within the project area. Therefore, no modification or diversion of water bodies is anticipated.

30	Information on site elevation, working depth, groundwater table etc. should be provided both in AMSL and BGL. A schematic diagram may also be provided for the same.	The Highest elevation of the project area is 57m AMSL. Ultimate depth of the mine is 25m below ground level (BGL). Depth to the water level in the area is 50-55m BGL.
31	A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and submitted, keeping in mind, the same will have to be executed prior to 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.	Greenbelt development plan has been given in section 4.6.2, pp.134-138 under chapter IV.
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	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

	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.	area. Details have been provided in section 3.8, pp.113-115 under chapter III.
33	Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.	Infrastructure & other facilities will be provided to the mine workers after the grant of quarry lease and the same has been discussed in section 2.6.6, p.22 under chapter II
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.	Mine closure plan is a part of approved mining plan enclosed in Annexure III.
35	Occupational health impacts of the project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.	Occupational health impacts of the project and preventive measures have been explained in detail in section 4.4.2 pp.128-129 under chapter IV.

36	Public health implications of the project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.	No public health implications are anticipated due to this project. Details of CSR and CER activities have been discussed in sections 8.6 and 8.7 in pp.165-166 under chapter VIII.
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.	No negative impact on socio-economic environment of the study area is anticipated and this project shall benefit the Socio-Economic environment by offering employment for 28 people directly as discussed in section 8.1, p.164 under chapter VIII.
38	Detailed environmental management plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project.	Detailed environment management plan for the project to mitigate the anticipated impacts has been included in pp.168-185 under chapter X.
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.	The outcome of public hearing will be updated in the final EIA/EMP report.

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 is pending in any court against this 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.	Project cost is Rs. 69,50,000/- CER cost is Rs. 1,39,000/- In order to implement the environmental protection measures, an amount of Rs.24.08 lakhs as capital cost and Rs.23.88 lakhs as recurring cost is proposed considering present market scenario for the proposed project in Table 10.9 p.180-184 under chapter X.
42	A Disaster management plan shall be prepared and included in the EIA/EMP report.	Details regarding disaster management plan have been provided in section 7.3, pp.150-154 under chapter VII.
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.	Benefits of the project details have been given in p.164 – 167 under chapter VIII.
44	Besides the above, the below mentioned general points are also to be followed:	
a)	Executive summary of the EIA/EMP report	Enclosed as a separate booklet.
b)	All documents to be properly referenced with index and continuous page numbering.	All the documents have been properly referenced with index and continuous page numbering.
c)	Where data are presented in the report, especially in tables, the period in which the data were collected and the sources should be indicated.	List of tables and source of the data collected have been mentioned.

d)	Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF&CC/NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the Project	Baseline monitoring reports are enclosed with this report in chapter III. Original Baseline monitoring reports will be submitted in the final EIA report during appraisal.
e)	Where the documents provided are in a language other than English, an English translation should be provided.	Not Applicable.
f)	The questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.	The questionnaire will be enclosed along with final EIA/EMP report.
g)	While preparing the EIA report, the instructions for the proponents and instructions for the consultants issued by MoEF&CC vide O.M. No. J-11013/41/2006-IA. II (I) dated 4 th August, 2009, which are available on the website of this Ministry, should be followed.	Instructions issued by MoEF & CC O.M. No. J-11013/41/2006-IA. II (I) dated 4 th August, 2009 have been followed while preparing the EIA report.
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	Not applicable.

	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.	The application to obtain the report of the status of compliance of the conditions stipulated in the environment clearance for the existing operations of the project is under process. The report will be submitted to the respective authority at the time of EIA presentation.
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.	Surface & geological plans have been included in Annexures III, p.366. Progressive closure plan and sections has been included in Annexures III, pp.371-372.

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LIST OF ABBREVIATIONS AND ACRONYMS

AAQ	Ambient Air Quality
AMSL	Above Mean Sea Level
AGL	Above Ground Level
BGL	Below Ground Level
BMTPC	Building Materials & Technology Promotion Council
BW	Bore Well
CPCB	Central Pollution Control Board
CER	Corporate Environment Responsibility
CSR	Corporate Social Responsibility
CTE	Consent to Establish
CTO	Consent to Operate
DGM	Department of Geology & Mining
DGMS	Directorate General of Mines Safety
DGPS	Differential Global Positioning System
DMF	District Mineral Foundation
EC	Environment Clearance
EMP	Environment Management Plan
EIA	Environmental Impact Assessment
EMC	Environmental Management Cell
FAE	Functional Area Experts
FDS	Fine Dust Samplers
GIS	Geographical Information System
GW	Ground Water
GLC	Ground Level Concentration
GPS	Global Positioning System
GSI	Geological Survey of India
GTMS	Geo Technical Mining Solution
HEMM	Heavy Earth Moving Machinery
HMV	Heavy Motor Vehicle
HSD	High Speed Diesel
HP	Horse Power
IMD	India Meteorological Department
IUCN	International Union for Conservation of Nature
ISRO	Indian Space Research Organization
LEQ	Equivalent Noise Level
LC/ LU	Land Cover/ Land Use
LC	Least Concern

LMV	Light Motor Vehicle
HSE	Health, Safety and Environment
Ha	Hectare
KLD	Kilo Liters Per -Day
KM	Kilo Meter
MMR	Metalliferous Mines Regulations
MMDR	Mines And Minerals Development and Regulation
MOEF & CC	Ministry of Environment Forest and Climate Change
M	Meter
NE	Northeast
NW	Northwest
NAAQ	National Ambient Air Quality Standards
NABET	National Accreditation Board for Education & Training
NABL	National Accreditation Board for Testing and Calibration Laboratories
NH	National Highway
NOC	No Objection Certificate
NONEL	Non-Electric
NNRMS	National Natural Resources Management System
NL	Not Listed
NT	Near Threatened
OW	Open Well
PCU	Passenger Car Unit
PFR	Pre-Feasibility Report
pH	Potential of Hydrogen
PM	Particulate Matter
PSI	Pounds Per Square Inch
PPE	Personal Protective Equipment
PPV	Peak Particle Velocity
QCI	Quality Council of India
RET	Rare Endangered Threatened Species
RDS	Respiratory Dust Samplers
RF	Reserve Forest
SW	Surface Water
SE	Southeast
SW	Southwest
SEIAA	State Environmental Impact Assessment Authority
SEAC	State Expert Appraisal Committee
SOI	Survey of India

SH	State Highway
SPM	Suspended Particulate Matter
TDS	Total Dissolved Solids
TM	Team Member
TS	Transport Service
TNPCB	Tamil Nadu Pollution Control Board
TOR	Terms of Reference
VES	Vertical Electric Sounding
WW	Well Water
NO ₂	Nitrogen Dioxide
SO ₂	Sulphur Dioxide
µg/m ³	Micro Gram Per Meter Cube
µm	Micro Meter
Dia.	Diameter
CUM	Cubic Meter
dB	Decibel
gm/sec	Gram Per Second
gm/cc	Gram Per Cubic Meter
hr/day	Hour Per Day
kg	Kilogram
kg/hr	Kilogram Per Hour
kg/ha	Kilogram Per Hectare
m	Meter
mg/kg	Milligrams Per Kilogram
mg/l	Milligram Per Litter
mm	Millimeter
Sq.km	Square Kilometre

CHAPTER I

INTRODUCTION

1.0 PREAMBLE

Environmental Impact Assessment (EIA) study is a process used to identify the environmental, social and economic impacts of a project prior to decision-making. EIA systematically examines both beneficial and adverse consequences of the proposed project and ensure that these impacts are considered during the project designing. According to the Ministry of Environment and Forests, Govt. of India, EIA notification S.O. 1533(E) of 14th September 2006 and its subsequent amendments as per Gazette Notification S.O. 3977 (E) of 14th August 2018, all the mining projects are broadly classified into two categories, i.e., category A and category B, based on the spatial extent of the projects. The category B projects are further divided into B1 and B2 on the basis of the guidelines issued of the Ministry of Environment and Forests. All mining projects included in category B1 require an EIA report for obtaining environmental clearance from the State Environment Impact Assessment Authority (SEIAA). As the proposed project falls within the cluster of quarries of overall extent of greater than 5 ha and less than 50 ha in the case of non-coal mine lease, the proposed project falls under the category B1 and the project requires preparation and submission of an EIA report after public consultation to SEIAA for obtaining environmental clearance 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.

In compliance with ToR obtained vide letter No. SEIAA-TN/F.No.8904/ToR-1126/2021 dated 23.03.2022, this EIA report has been prepared for the project proponent, Mr.N. Kanniyappan applied for rough stone and gravel quarry lease in the patta land falling in S. F. Nos. 277/1A,277/1B,277/1C,277/1D,277/1E,277/1F,277/2 & 280/2 over an extent of 3.11.5 ha in Siruthamur Village, Uthiramerur Taluk, Kancheepuram District and Tamil Nadu. This EIA report takes into account the rough stone quarries within the cluster of 500 m radius from the periphery of the proposed project site. The cluster contain three proposed projects, known as P1, P2, P3, P4 and P5 one existing project, known as E1. All the projects mentioned above have been taken for cluster extent calculation as per MoEF & CC Notification S.O. 2269(E) Dated 1st July 2016. The total extent of all the quarries is 20.27.5 ha, also known as the cluster extent. The quarries involved in the calculation of cluster extent are shown in Figure 1.1.

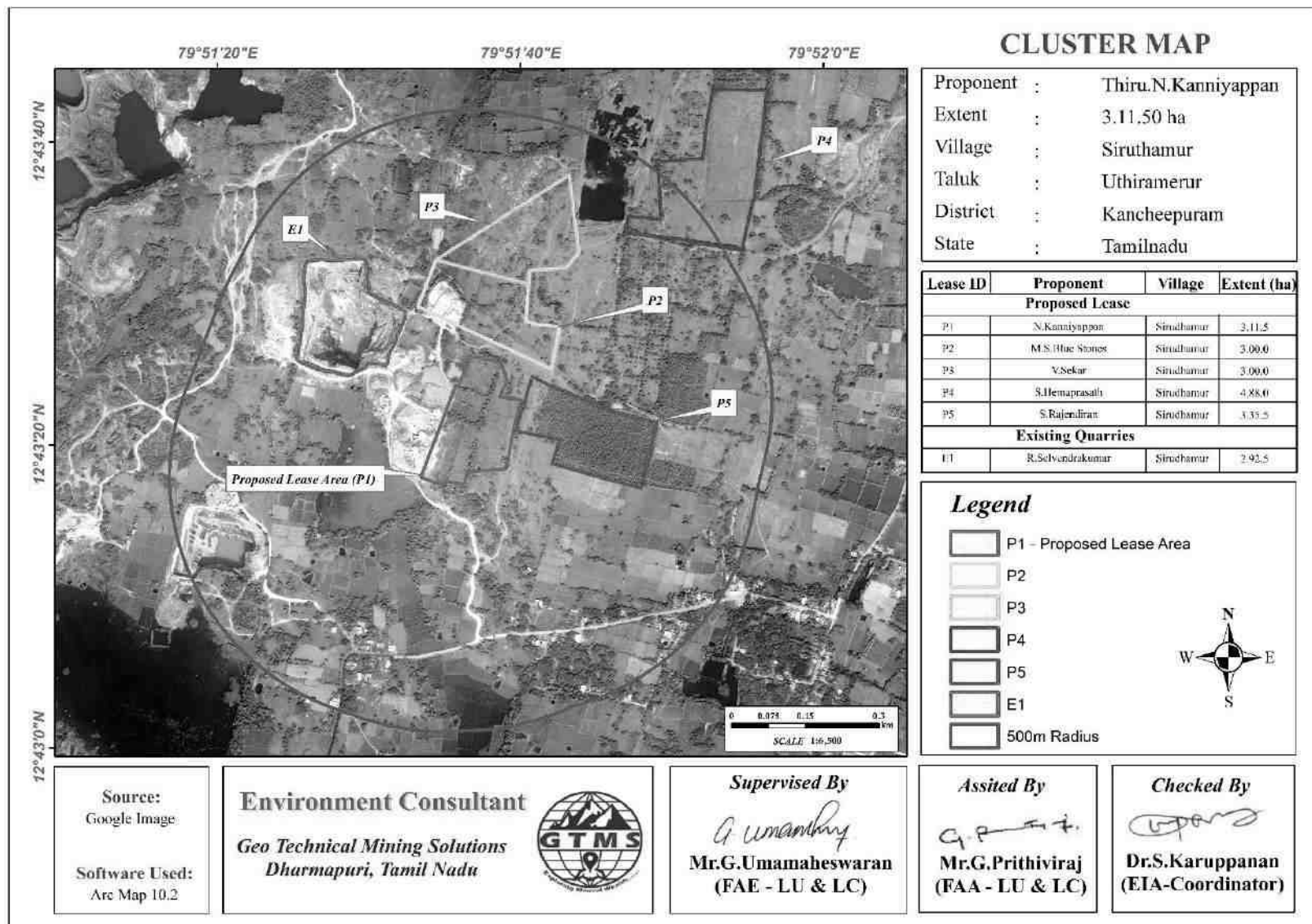


Figure 1.1 Location of the proposed and existing rough stone and gravel quarries in the cluster of 500m radius

1.1 PURPOSE OF THE REPORT

The purpose of the report is to study baseline environmental conditions in and around the proposed project area for the period of **March to May 2022** according to the provisions of MoEF & CC Office Memorandum dated 29.08.2017 and MoEF & CC Notification, S.O. 996 (E) dated 10.04.2015, to analyse impacts and provide mitigation measures.

1.2 ENVIRONMENTAL CLEARANCE

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

- ❖ Screening
- ❖ Scoping
- ❖ Public consultation &
- ❖ Appraisal

1.2.1 Screening

Screening is the first stage of the EIA process. In this stage, the State level Expert Appraisal Committee (SEAC) examined the application of EC made by the proponent in Form 1 through online (proposal No. SIA/TN/ MIN/ 70818/2021, dated 06.01.2022) and decided that the project requires detailed environmental studies for the preparation of EIA report. Therefore, the proponent submitted application for Terms of Reference (ToR) on 25.01.2022.

1.2.2 Scoping

During scoping, the SEAC framed a comprehensive Terms of Reference (ToR) based on the information provided in the Form 1 and information collected from the proposed project site visit and issued ToR to the proponent vide letter No. SEIAA-TN/F.No.8904/SEAC/ToR-1126/2021 dated 23.03.2022 for the preparation of an EIA report.

1.2.3 Public Consultation

In this stage, an application along with the draft of EIA and EMP report will be made to the Member Secretary of the Tamil Nadu Pollution Control Board (TNPCB) to conduct Public Hearing ensuring public participation at the project site or in its close proximity in the district. During public hearing, an opportunity will be given to the people living nearby the project site to express their opinions about the impact of the proposed project on the environment. The outcome of the public hearing meeting will be updated in the final EIA report for appraisal.

1.2.4 Appraisal

In this stage, an application along with final EIA report including the outcome of the public consultations will be made to the SEIAA. The application thus made will be scrutinized by the SEAC. Then, the SEAC will make recommendations to grant EC or reject the application to the SEIAA.

1.3 TERMS OF REFERENCE (ToR)

- ❖ Compliance to ToR issued vide ToR letter No. SEIAA-TN/F.No.8904/SEAC/ToR-1126/2021 dated 23.03.2022.

1.4 POST ENVIRONMENT CLEARANCE MONITORING

For category B projects, irrespective of its clearance by MoEF/SEIAA, the project proponent shall prominently advertise in the newspapers indicating that the project has been accorded environmental clearance and the details of MoEF website where it is displayed.

After obtaining EC, the project proponent will submit a half-yearly compliance report of stipulated environmental clearance terms and conditions to MoEF & CC Regional Office & SEIAA on 1st June and 1st December of every year.

1.5 TRANSFERABILITY OF ENVIRONMENTAL CLEARANCE

A prior environmental clearance granted for a specific project or activity to an applicant may be transferred during its validity to another legal person entitled to undertake the project or activity on application by the transferor or the transferee with a written “no objection” by the transferor, to, and by the regulatory authority concerned, on the same terms and conditions under which the prior environmental clearance was initially granted, and for the same validity period (EIA Guidance Manual for Mining of Minerals, 2010).

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. The generic structure of the EIA document should be as under:

- ❖ Introduction
- ❖ Project Description
- ❖ Description of the Environment
- ❖ Anticipated Environmental Impact & Mitigation Measures
- ❖ Analysis of Alternatives (Technology & Site)
- ❖ Environmental Monitoring Program
- ❖ Additional Studies
- ❖ Project Benefits
- ❖ Environmental Cost Benefit Analysis
- ❖ Environmental Management Plan (EMP)
- ❖ Summary & Conclusion
- ❖ Disclosure of Consultants engaged.

1.7 IDENTIFICATION OF THE PROJECT PROPONENT

The profile of the project proponent who has involved in this quarrying project has been given in Table 1.1.

1.1 Details of Project Proponent

Name of the Project Proponent	Thiru.N. Kanniyappan
Address	S/o. Narayanapillai No,55, Mariyamman Koil Street, Neerkundram Village, Aanampakkam Post, Uthiramerur Taluk, Kancheepuram District
Status	Proprietor

1.8 BRIEF DESCRIPTION OF THE PROJECT

The proposed project deals with excavation of rough stone and gravel which is primarily used in construction projects. The method adopted for rough stone and gravel excavation is open cast mining method involving formation of benches with 5m height and 5m width. The proposed project site is located in Siruthamur Village, Uthiramerur Taluk, Kancheepuram District, and Tamilnadu State. Some of the important features of the proposed project have been provided in Table 1.2.

1.2 Brief Description of The Project

Name of the Quarry	Thiru. N. Kanniyappan Rough Stone & Gravel Quarry	
Toposheet No	57- P/14	
Latitude	12°43'17.34"N to 12°43'25.86"N	
Longitude	79°51'33.42"E to 79°51'40.03"E	
Highest Elevation	57m AMSL	
Proposed Depth of Mining five years period	25m BGL (2m Gravel +23mRoughstone	
Geological Resources	Rough Stone in m³	Gravel m³
	13,36784	62,176
Minable Reserves	6,10,354	50,456
Five-year Production	4,37,744	50,456
Existing Pit Dimension	-	
Ultimate Pit Dimension	158m (L) x 136m (W) x 25m (D)	

Water Level in the surrounding area	50-55m BGL	
Method of Mining	Opencast Semi Mechanized Mining involving drilling and blasting	
Topography	The applied lease area is exhibits plain with altitude of 57m maximum and minimum of 55m from the MSL. The area is sloping towards Southwestern side covered clayey soil with Rough Stone which does not sustain any type of vegetation.	
Machinery proposed	Jack Hammer	2
	Compressor	1
	Excavator	1
	Tippers	4
Blasting Method	Controlled blasting method by shot hole drilling and small dia. of 25mm slurry explosives are proposed to be used for shattering and heaping effect for removal and winning of Rough Stone. No deep hole drilling is proposed.	
Project Cost	Rs. 69,50,000/-	
CER Cost @ 2% of Project Cost	Rs. 1,39,000/-	
Proposed Water Requirement	3.8 KLD	
Nearest Habitation	0.350 km South	

Source: Approved mining plan

1.9 SCOPE OF THE STUDY

The main scope of the EIA study is to quantify the cumulative impact of the quarries in the cluster on the study area and formulate the effective mitigation measures for each individual lease. 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, and dust generation has been provided in this report. The baseline monitoring study has been carried out during the period of **March to May 2022** for various environmental components such as land, soil, air, water, noise, ecology, etc. 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. The sampling methodologies for the various environmental parameters required for the study, frequency of sampling, method of sample analysis, etc., are given in Table 3.1 in chapter III.

1.10 REFERENCES

The report has been prepared using the following references:

- ❖ Guidance Manual of Environmental Impact Assessment for Mining of Minerals, Ministry of Environment and Forests, February, 2010
- ❖ EIA Notification, 14th September, 2006
- ❖ Terms of Reference (ToR) issued by SEIAA.
- ❖ Approved Mining Plan of this Project.
- ❖ The Water (Prevention and Control of Pollution) Act, 1974
- ❖ The Air (Prevention and Control of Pollution) Act, 1981
- ❖ The Environment (Protection) Act, 1986
- ❖ The Forest (Conservation) Act, 1988
- ❖ The Wildlife (Protection) Act, 1972

CHAPTER II

PROJECT DESCRIPTION

2.0 GENERAL INTRODUCTION

The open cast mining method, also known as open-pit mining has been proposed to extract the mineral deposit. It is the most commonly used surface mining method all over the world and is generally suitable for mining low-grade mineral deposits that are found close to the surface of the earth and distributed uniformly over a large area. Open pits are also termed quarries when the pits are used for the extraction of building materials and dimension stones.

Opencast mining starts with the development of benches, the widths of which will be determined in such a way to accommodate the use of heavy machinery. The walls of open pits will be dug at an angle that will be decided based on well-established industry standards to provide safety. In some cases where the walls are composed of weak material such as soil and highly weathered rocks, dewatering holes will be drilled horizontally to relieve the water pressure to avoid wall collapse inside the mine site.

The required mine-related infrastructures will be established close to the open pit. The mining infrastructures may include an administration building, a maintenance garage, and a warehouse. The materials mined from open pits will be brought to the surface using trucks. The waste rocks will be piled up in a suitable location, usually close to the open pit. The structure produced by the waste rock pile is known as a waste dump. The dimension of the waste dump will be determined based on industrial safety standards to prevent the rocks from falling into the surrounding area.

2.1 DESCRIPTION OF THE PROJECT

The proponent, **Mr.N. Kanniyappan** is involved in the undertaking of establishment, construction, development, and closure of open cast mines. He, through the exploration phase, identified the proposed project site as the one that has a great potential of producing an economically viable quantity of rough stone and gravel. Therefore, the proponent had applied for quarry lease on 20.10.2020 to extract rough stone and gravel. The precise area communication letter was issued by Department of Geology and Mining, Kancheepuram vide Rc.No. 257/Q3/2020(Mines), Dated 06.09.2021. Based on the precise area communication letter, mining plan was prepared. The mining plan thus prepared was approved by Assistant Director of Geology and Mining, Kancheepuram (Rc.No.257/Q3/2020(Mines), Dated 30.09.2021.). The overall view of the project site is shown in Figure 2.1.



Figure 2.1 Overall View of Proposed Project Site

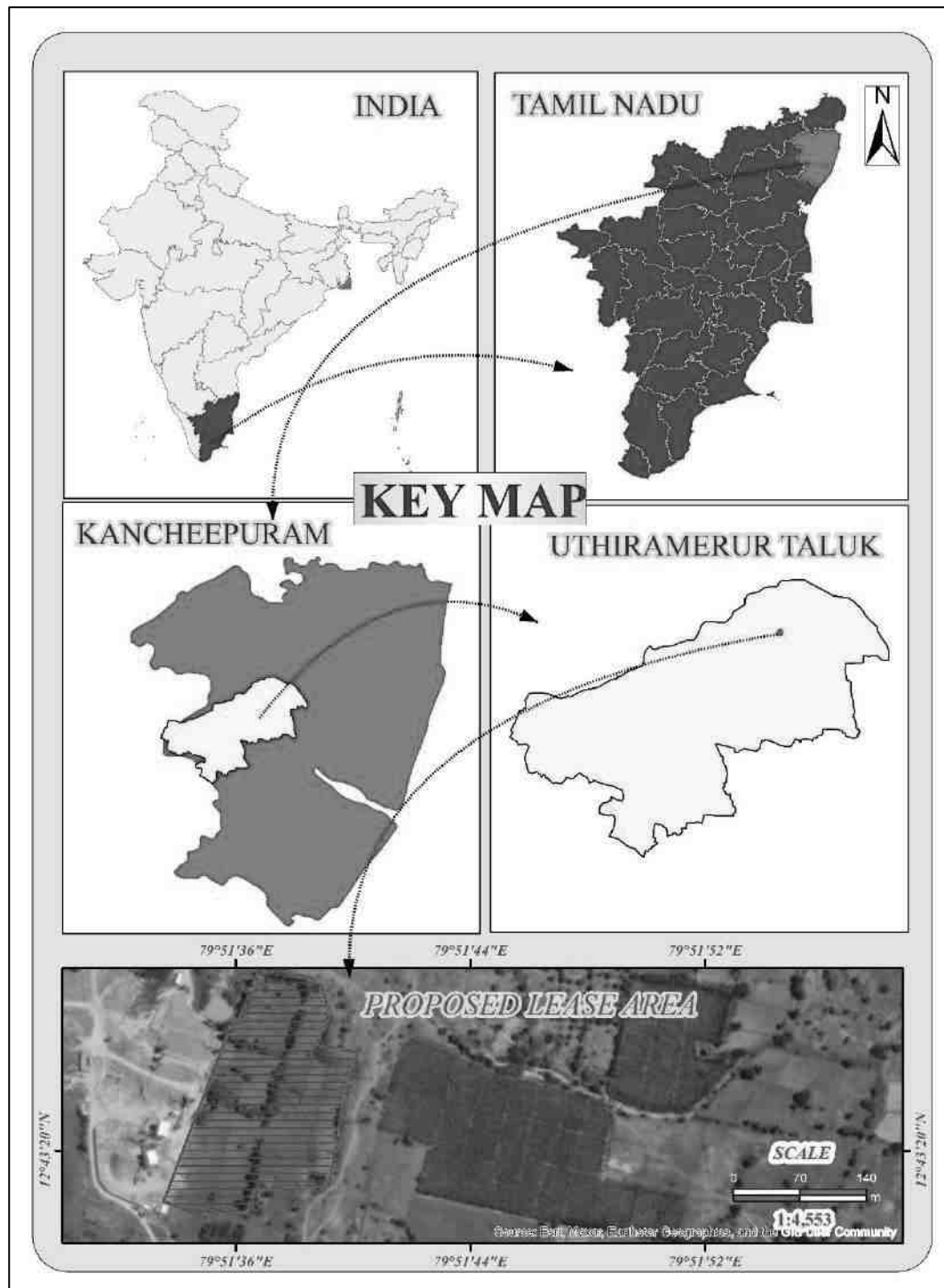


Figure 2.2 Key Map Showing location of the project site

2.2 LOCATION AND ACCESSIBILITY

The proposed quarry project is located in Siruthamur Village, Uthiramerur Taluk and Kancheepuram District, as shown in Figure 2.2. The project area is located about 21 km Southwest of Kancheepuram, 16 km Southwest of Uthiramerur and 1 km Northeast of Siruthamur Village. The area lies between Latitudes from 12°43'17.34"N to 12°43'25.86"N and Longitudes from 79°51'33.42"E to 79°51'40.03"E. The maximum altitude of the project area is 57m AMSL. Accessibility details to the proposed project site have been given in Table 2.1.

Table 2.1 Site Connectivity to the Project Area

Nearest Roadways	Melavalampattam-Nelvoy Road (MDR-789)	1.87 km West
	Salavakkam -Tirumukkudal village Road	1km NE
	Chengalpattu -kancheepuram Road (SH 132B)	5.32km North
Nearest Town	Chengalpattu	12 km SE
Nearest Railway Station	Palur	7 km NE
Nearest Airport	Chennai	43 km NE
Nearest Seaport	Chennai	61 km NE

2.3 LEASEHOLD AREA

- ❖ The extent of the proposed project site is 3.11.5 ha.
- ❖ The proposed project is site specific.
- ❖ There is no mineral beneficiation or processing proposed inside the project area.
- ❖ There is no forest land involved in the proposed area and is devoid of major vegetation and trees.

2.3.1 Corner Coordinates

The boundary corner geographic coordinates are given in Table 2.2 and the proposed project site with boundary coordinates has been shown in Figure 2.3.

Table 2.2 Corner Geographic Coordinates of Proposed Project

Pillar ID	Latitude	Longitude	Pillar ID	Latitude	Longitude
1	12°43'22.95"N	79°51'40.03"E	9	12°43'23.86"N	79°51'35.71"E
2	12°43'20.90"N	79°51'39.52"E	10	12°43'23.88"N	79°51'35.89"E
3	12°43'18.42"N	79°51'39.05"E	11	12°43'25.86"N	79°51'36.72"E
4	12°43'18.21"N	79°51'36.50"E	12	12°43'25.77"N	79°51'37.36"E
5	12°43'17.41"N	79°51'36.29"E	13	12°43'25.49"N	79°51'38.44"E
6	12°43'17.60"N	79°51'35.04"E	14	12°43'25.24"N	79°51'38.78"E
7	12°43'17.34"N	79°51'34.92"E	15	12°43'24.21"N	79°51'39.13"E
8	12°43'17.86"N	79°51'33.42"E	16	12°43'23.19"N	79°51'38.63"E

2.4 GEOLOGY AND GEOMORPHOLOGY

This section discusses about the geology and geomorphology of the study area of 10 km radius, as given below.

2.4.1 Geology

The study area of 10km radius mainly consists of granite, granitoid gneiss, sandstone, sand and silt, and ultramafic rocks, The massive formation of charnockite lies in the peninsular gneissic complex the general trend of the gneissic rock NE -SE direction and the regional trend observed is NNE-SSW to NW-SE direction. Spatial distribution of rocks has been shown in Figure 2.4.

2.4.2 Geomorphology

Geomorphologically, the study area is made up of shallow flood plain, and alluvial plain moderately weathered/ moderately buried pediplain, pediment, channel bar, linear ridge, as shown in Figure 2.5.

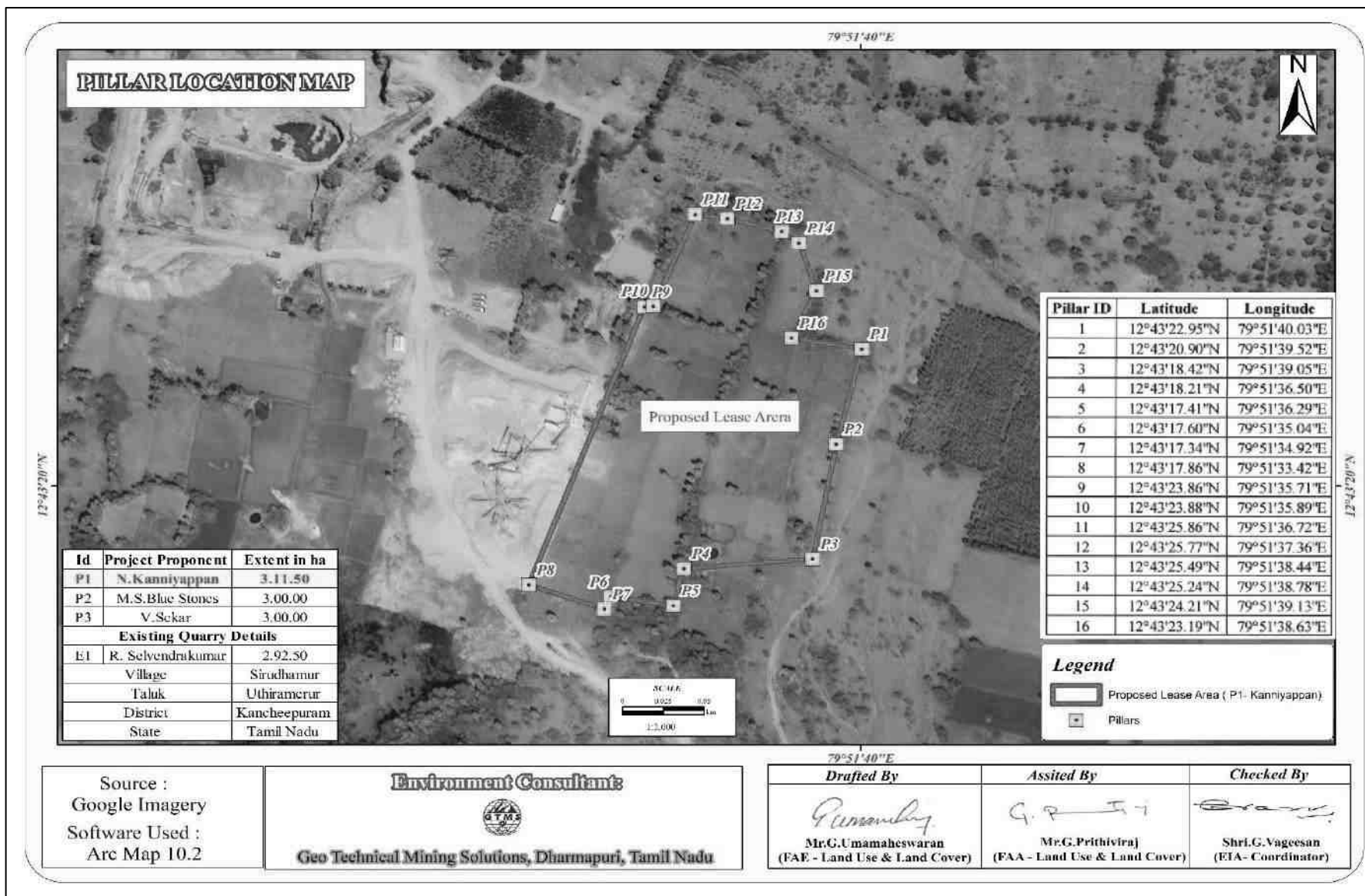


Figure 2.3 Google Earth Image Showing Lease Area with Pillars

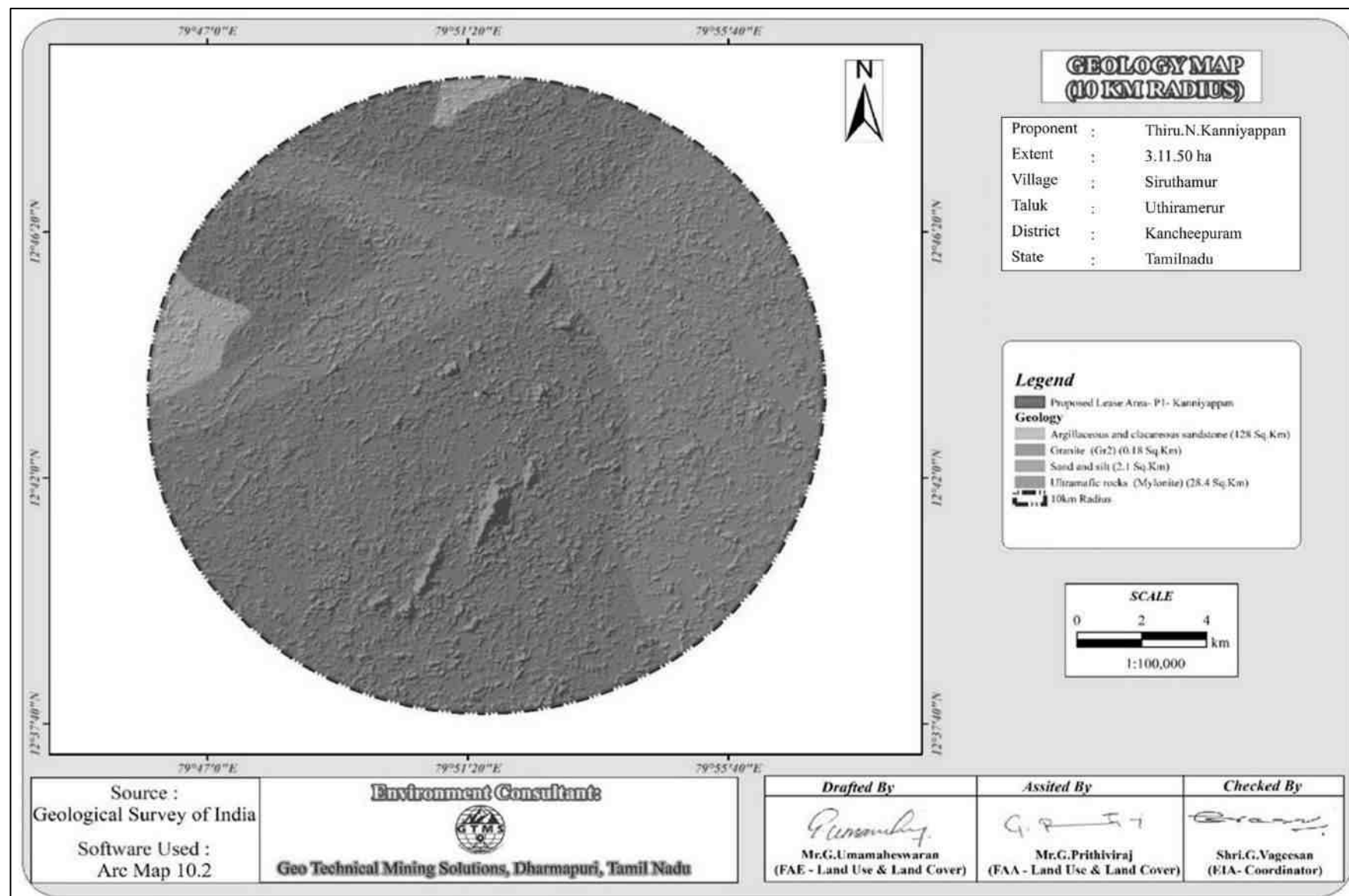


Figure 2.4 Geology Map of 10 km Radius from the Proposed Project Site

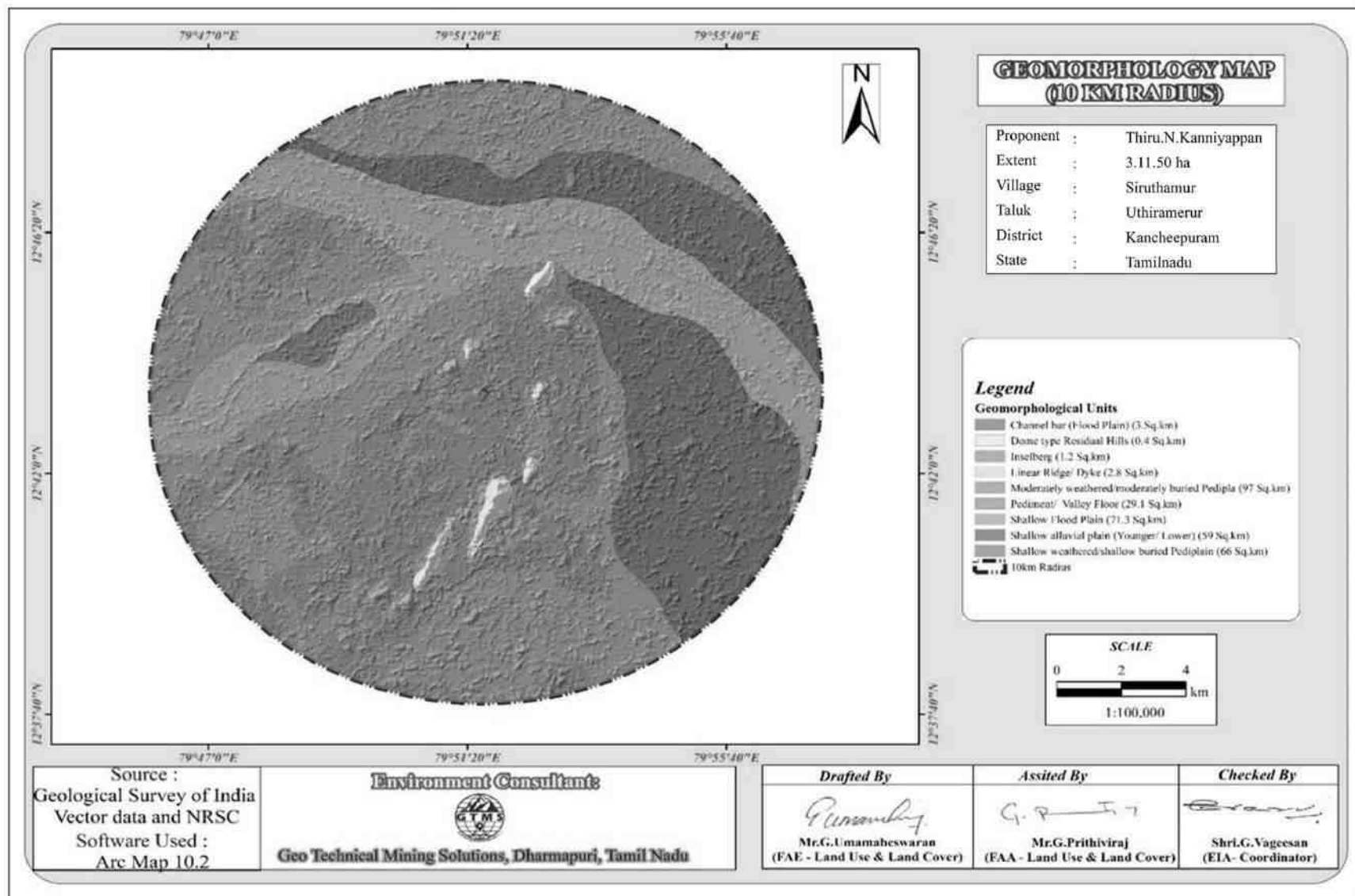


Figure 2.5 Geomorphology Map of 10km Radius from the Proposed Project Site

2.5 QUANTITY OF RESERVES

The resources and reserves of rough stone and gravel were calculated based on cross-section method by plotting sections to cover the maximum lease area for the proposed project. Based on the availability of geological resources, the mineable reserves are calculated by considering excavation system of bench formation and leaving essential safety distance of 7.5m and 10m distance as per precise area communication letter and deducting the locked-up reserves during bench formation (also called as Bench Loss). The mineable reserves are calculated up to the depth of 25m (first five years period) considering there is no waste / overburden / side burden (100% Recovery anticipated) for the proposed project. The plate used for reserve estimation has been shown in Figure 2.6 and 2.7 results of geological resources and reserves have been shown in Table 2.3.

Table 2.3 Estimated Resources and Reserves of the Project

Resource Type	Rough Stone in m³	Gravel in m³
Geological Resource in m ³	13,36,784	62,176
Mineable Reserves in m ³	6,10,354	50,456
Production for five-year plan period	4,37,744	50,456

Based on the year wise development and production plan and sections, the year wise production results have been given in Table 2.4.

Table 2.4 Year-Wise Production Details

Year	Rough Stone (m³)	Gravel m³
I	87,310	22,440
II	83,190	14,960
III	84,874	13,056
IV	88,440	---
V	93,930	---
Total	4,37,744	50,456

Source: Approved Mining Plan & ToR

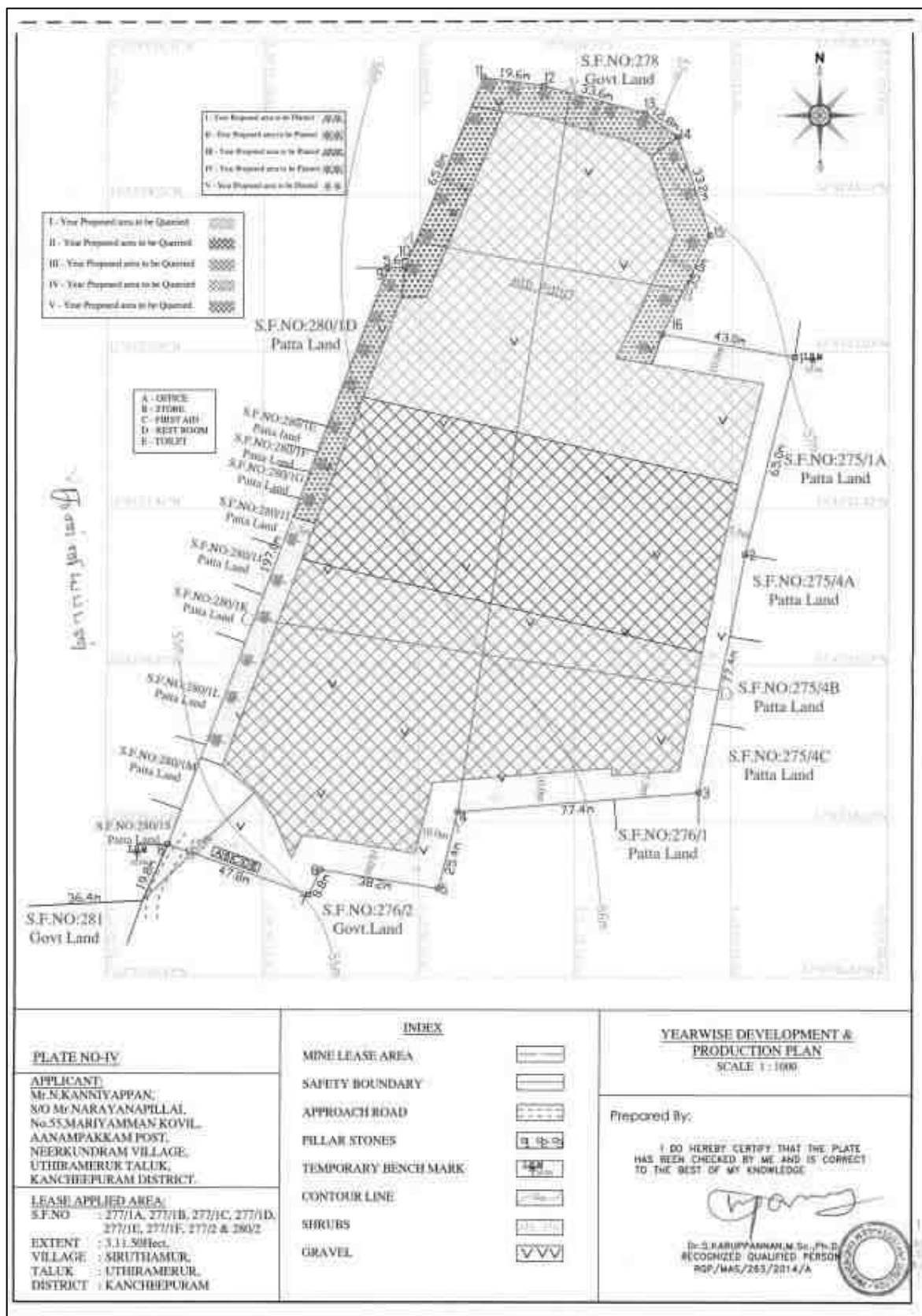


Figure 2.6 yearwise development and production plan

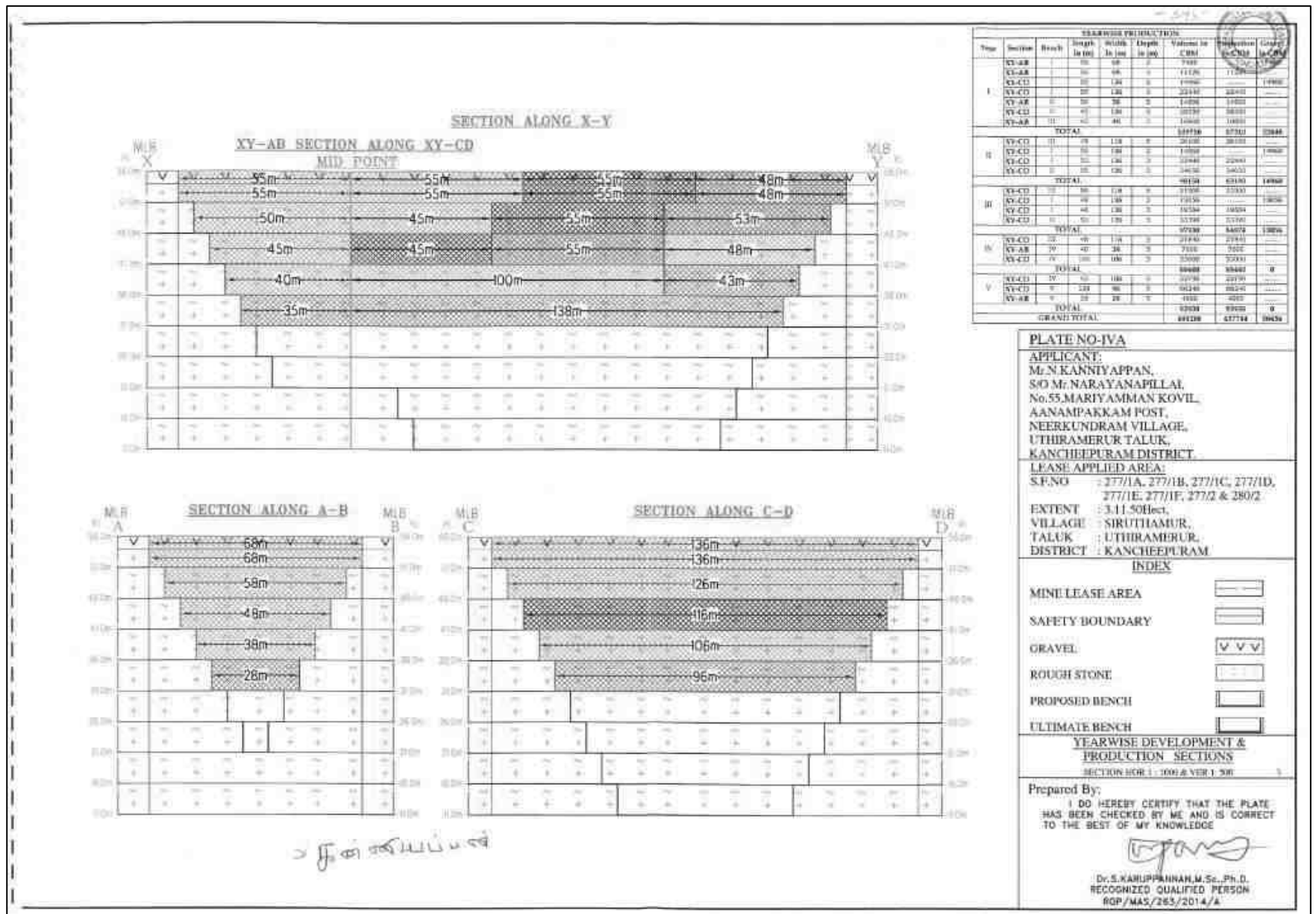


Figure 2.7 yearwise development and production sections

2.6 MINING METHOD

The quarrying operation is proposed to be carried out by opencast Semi mechanized mining method with the bench height and width of 5 m each. The open cast mining method offers several benefits to the proponent when compared to the more complex underground mining methods. The most important benefits include relatively smaller capital and operating costs, lesser safety hazards, ease of use for mass production, small closure costs, no restrictions on the use of heavy machinery if required, and easy drainage of subsurface water. Moreover, it provides a reasonable return on investments to the proponent and contributes to the growth of the local economy.

Excavators will be used in this method. In addition, drilling and blasting activities are inevitable in any quarry operations. In this project, shallow drilling with spacing of 1.2 m, burden of 1 m, and the depth of 1.5 m is proposed. After drilling, blasting operation will be carried out to remove overburden and weathered portions. This blasting is carried out for splitting the blocks from parent rock mass.

2.6.1 Magnitude of Operation

Based on the results of estimated production for the 5 years, details about the size of operation have been provided in Table 2.5.

Table 2.5 Operational Details for Proposed Project

	Rough Stone	Gravel
First five-year production	4,37,744	50,456
Number of Working Days /Annum	300	300
Production of /Day (m ³)	292	56
No. of Lorry Loads	49	9

2.6.2 Extent of Mechanization

List of machineries proposed for the quarrying operation is given in Table 2.6.

Table 2.6 Machinery Details

S. No.	Type	No of Unit	Capacity	Make	Motive Power
1	Jack Hammers	2	1.2 m to 2 m	Atlas Copco	Compressed Air
2	Compressor	1	400 psi	Escorts formtrac	Diesel Drive
3	Excavator with Bucket / Rock Breaker	1	300 HP	Tata Hitachi	Diesel Drive
Haulage & Transport Equipment					
4	Tipper	4	15tons	BMW	Diesel Drive

2.6.3 Progressive Quarry Closure Plan

The progressive quarry closure plan (Figure 2.8 & 2.9) of the proposed project shows past, present, and future land use statistics. According to the land use results, as shown in Table 2.7, about 3.11.5 ha of land is used for quarrying; Whereas, at the end of the mine life, about 2.39.0 ha of land will have been quarried; about 0.32.8 ha of land will be used for green belt development; about 0.36.7 ha of land will be left unutilized; and the rest will be used for roads and infrastructures.

Table 2.7 Land use data at present, during scheme of mining, and at the end of mine life

Description	Present Area (ha)	Area at the end of life of quarry (ha)
Area under quarry	Nil	2.39.0
Infrastructure	Nil	0.01.00
Roads	Nil	0.02.00
Green Belt	Nil	0.32.8
Unutilized area	3.11.5	0.36.7
Total	3.11.50	3.11.50

2.6.4 Quarry Closure Budget

As the proposed project has the enormous potential for continuous operations even after the expiry of lease period, mine closure plan is not proposed for now. Based on the progressive mine closure plan for the scheme period, the mine closure cost is given in Table 2.8.

Table 2.8 Mine Closure Budget

Activity	Capital Cost	Recurring Cost/Annum
600 plants inside the lease area	124600	18690
900 plants outside the lease area	280350	28035
Wire Fencing (3.11.5 ha)	623000	31150
Renovation of Garland Drain (3.11.5 ha)	31150	15575
Total	1059100	93450

Source: Environment Management Plan

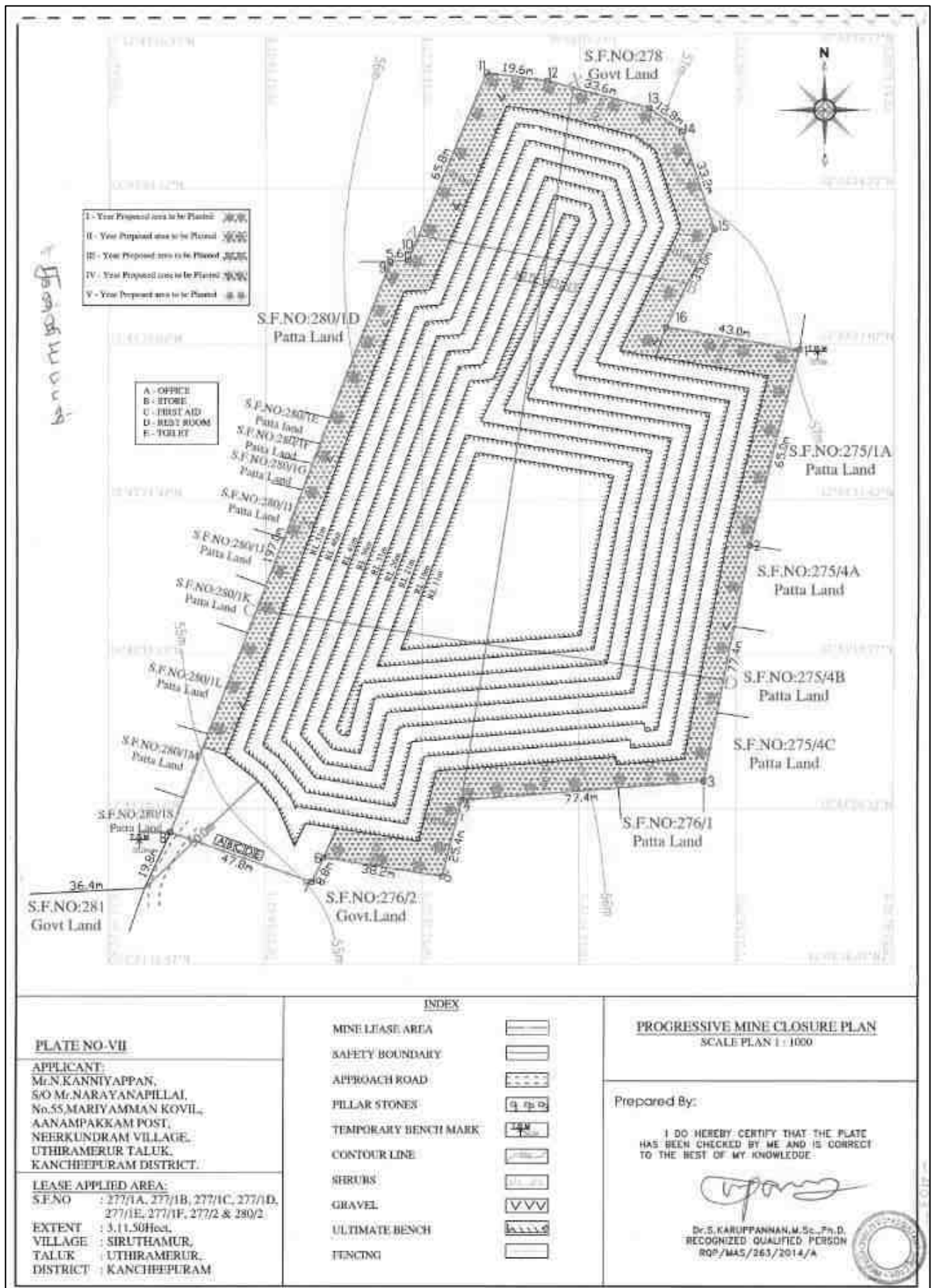


Figure 2.8 Progressive Quarry Closure Plan

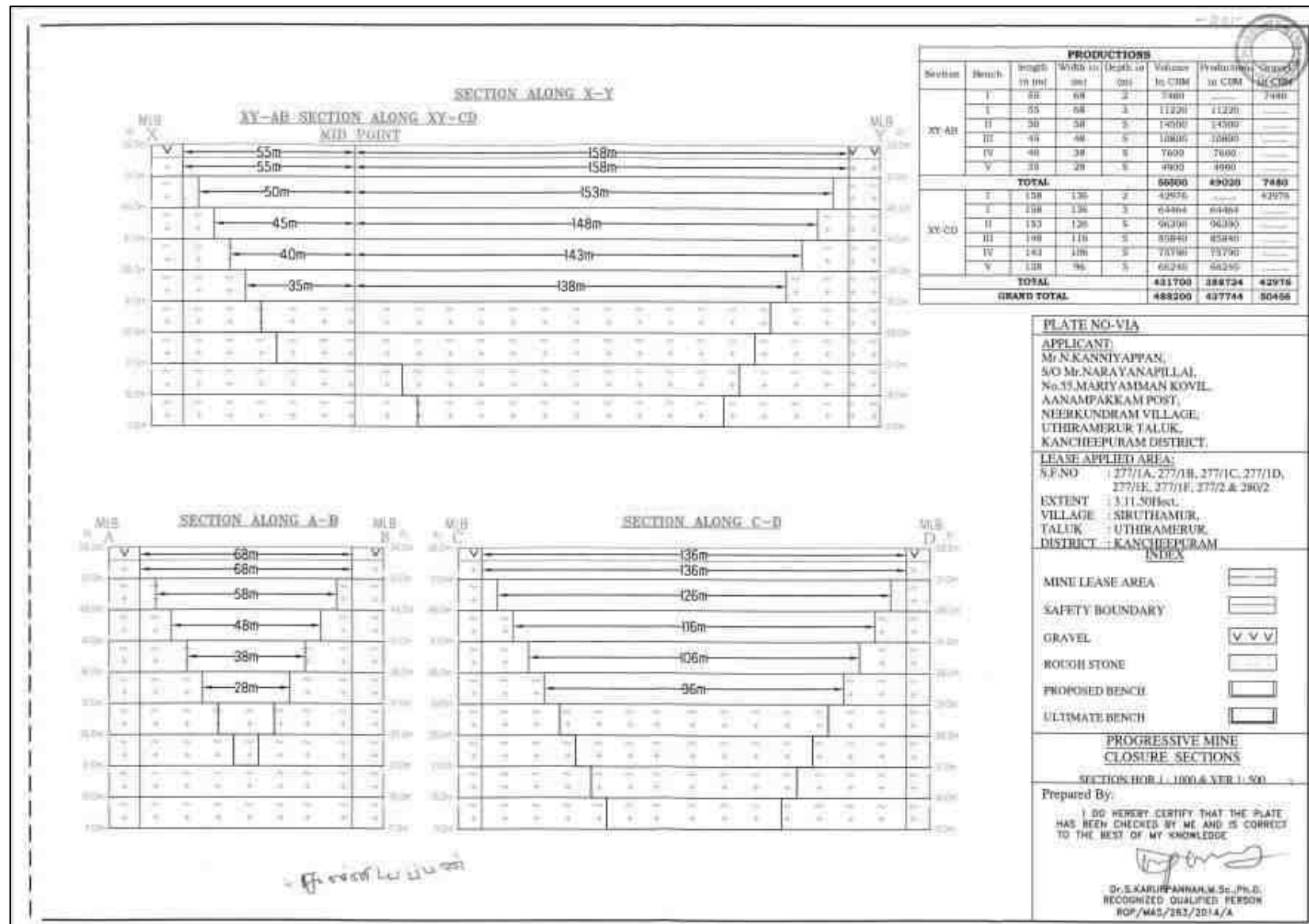


Figure 2.9 Progressive Quarry Closure Sections

2.6.5 Conceptual Mining Plan

The ultimate pit size is designed based on certain practical parameters such as economical depth of mining, safety zones, permissible area, etc. Details of ultimate pit dimensions have been derived from Figure 2.10 and given in Table 2.9.

Table 2.9 Ultimate Pit Dimension

Pit	Length (m)	Width (m) (Max)	Depth(m)
I	160	136	25

Source: Approved Mining Plan & ToR

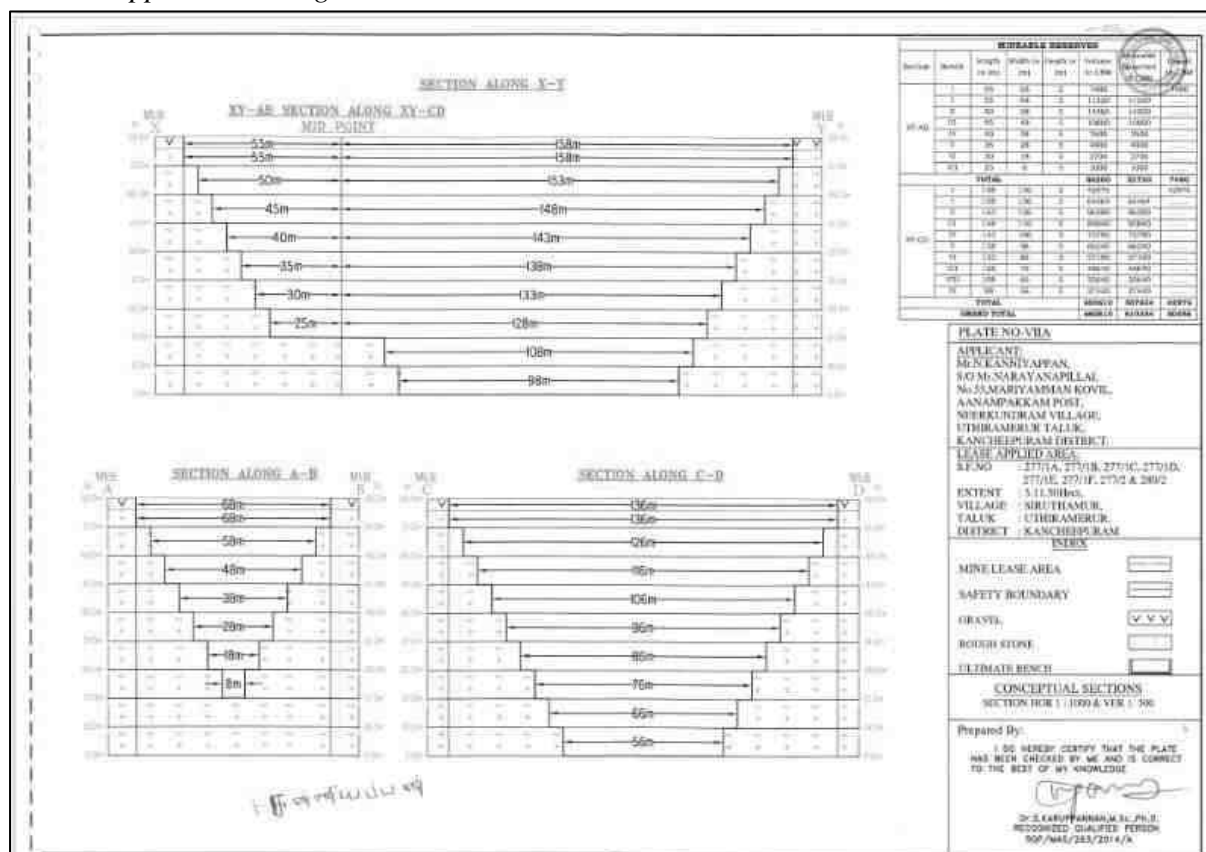


Figure 2.10 Conceptual Sections

2.6.6 Infrastructures

Infrastructures like mines office, temporary rest shelters for workers, latrine and urinal facilities have been proposed as per the mine rule and will be established after the grant of quarry lease. There is no proposal for the mineral processing or ore beneficiation plants in this project.

2.6.6.1 Other Infrastructure Requirement

No workshops are proposed inside the project area. Hence, there will not be any process effluent generation from the proposed lease area. Domestic effluent from the mine office will

be discharged to septic tank and soak pit. As there is no toxic effluent expected to generate in the form of solid, liquid or gaseous form, there is no requirement of waste treatment plant.

2.6.7 Water Requirement

Detail of water requirement in KLD is given in Table 2.10.

Table 2.10 Water Requirement for the Project

Purpose	Quantity	Source
Dust Suppression	1.0 KLD	Existing bore wells nearby the lease area
Green Belt development	1.5 KLD	Existing bore wells nearby the lease area
Drinking & Domestic	1.3 KLD	Existing bore wells and approved water vendors
Total	3.8 KLD	

Source: Prefeasibility Report

2.6.8 Energy Requirement

As per the data shown in Table 2.11, High speed Diesel (HSD) will be used for quarrying machineries. Around 350,195litres of HSD will be used for rough stone extraction and 8409 litres of HSD for removal of Gravel during this 5 years plan period. The diesel will be brought to the site from nearby diesel pumps.

Table 2.11 Fuel Requirement Details

	Rough Stone	Gravel
Quantity of material to be quarried out in five years in m ³	4,37,744	50,456
Average rate of fuel consumption for an excavator in litres/hour	16	10
Capacity of the excavator in m ³ / hour	20	60
Time required in hours	21887	841
Total diesel consumption in litres	350195	8409

2.6.9 Capital Requirement

The project proponent will invest Rs. 69,50,000 to the project. The breakup summary of the investment has been given in Table 2.12.

Table 2.12 Capital Requirement Details

S. No.	Description	Cost (Rs.)
1	Operational Cost	64,25,000
2	EMP Cost	5,25,000
Total Project Cost		69,50,000

Source: Approved Mining Plan

2.7 MANPOWER REQUIREMENT

The skilled, competent qualified statutory persons will be engaged for quarrying operation, preference will be given to the local community. Number of employees required for this project have been provided in Table 2.13.

Table 2.13 Employment Potential for the proposed project

S. No.	Category	Role	Nos.
1.	Skilled	Mines Manager/Mines Foreman	1
		Accountant cum & Admin	1
		Jack hammer operator	2
		Blaster/Mate	1
		Tipper Driver	6
		Mechanic	1
2.	Semi – skilled	Security	1
3.	Unskilled	Helper /Greaser	3
		Musdoor / Labours	9
		Co-operator and Cleaner	4
	Total		28

Source: Prefeasibility Report

2.8 PROJECT IMPLEMENTATION SCHEDULE

The commercial operation will commence after the grant of Environmental Clearance. CTO and CTE 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. Expected time schedule for the quarrying operation is given Table 2.14.

Table 2.14 Expected Time Schedule

S. No.	Particulars	Time Schedule (in Months)					Remarks if any
		1 st	2 nd	3 rd	4 th	5 th	
1	Environmental Clearance						
2	Consent to Establish						Project Establishment Period
3	Consent to operate						Production starting period.
Time line may vary; subjected to rules and regulations /& other unforeseen circumstances							

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

CHAPTER III

DESCRIPTION OF THE ENVIRONMENT

3.0 GENERAL

This chapter presents a regional background to the baseline data at the very onset, which will help in better appreciation of micro-level field data, generated on several environmental and ecological attributes of the study area. The baseline status of the project environment is described section wise for better understanding of the broad-spectrum conditions. 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 **March-May 2022** with CPCB guidelines. Environmental data have been collected with reference to cluster quarries by **Accuracy Analabs NABL Accreditation, ISO 9001: 2015 certified Laboratory and MoEF notified laboratory** for the below attributes:

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

Study Area

An area of 10 km radius (aerial distance) around 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 against which the potential impacts of the project can be assessed. The study area has been divided into two zones: **core zone** and **buffer zone**. Core zone is considered as cluster and buffer zone as 10km radius from the periphery of the cluster. Both core and buffer zones are taken as the study area.

Study Period

The baseline study was conducted during the pre-monsoon season, i.e., **March-May 2022**.

Study Methodology

- ❖ The project area was surveyed in detail with the help of total station and the boundary pillars were picked up with the help of GPS. The boundary coordinates were

superimposed on the satellite imagery to understand the relief of the area, besides Land use pattern of the area was studied through the Bhuvan (ISRO).

- ❖ Soil samples were collected and analysed for relevant physio-chemical characteristics, exchangeable cations, nutrients & micro nutrients etc., in order to assess the impact due to mining activities and to recommend saplings for Greenbelt development.
- ❖ Ground water samples were collected during the study period from the existing bore wells, while surface water was collected from ponds 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 the proposed mines.
- ❖ An onsite meteorological station was setup in cluster area to collect data about wind speed, wind direction, temperature, relative humidity, rainfall and general weather conditions were recorded throughout the study period.
- ❖ In order to assess the Ambient Air Quality (AAQ), samples of ambient air were collected using 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.
- ❖ The noise level measurements were also made at various locations in different intervals of time with the help of sound level meter to establish the baseline noise levels in the impact zone.
- ❖ Baseline biological studies were carried out to assess the ecology of the study area to study the existing flora and fauna pattern of the area.
- ❖ Socio-economic survey was conducted at village and household level in the study area to understand the present socio-economic conditions and assess the extent of impact due to the proposed mining project.

The sampling methodologies for the various environmental parameters required for the study, frequency of sampling, method of sample analysis, etc., are given in Table 3.1.

Table 3.1 Monitoring Attributes and Frequency of Monitoring

Attribute	Parameters	Frequency of Monitoring	No. of Locations	Protocol
Land Use/ Land Cover	Land-use Pattern within 10 km radius of the study area	Once during the study period	Study Area	Satellite Imagery Primary Survey
*Soil	Physico-Chemical characteristics	Once during the study period	8 (1 core & 7 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	8 (1 core & 7 buffer)	IS 5182 Part 1-23 National Ambient Air Quality Standards, CPCB
*Noise Levels	Ambient noise	Hourly observation for 24 hours per location	8 (1 core & 7 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 Accuracy Analabs Laboratory in association with GTMS

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

3.1 LAND ENVIRONMENT

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

3.1.1 Land Use/ Land Cover

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

Table 3.2 LULC Statistics of the Study Area

S. No.	CLASSIFICATION	AREA (hectare)	AREA (%)
1	Crop land	14435	47%
2	Land with or without Scrub	2085	6.8%
3	Land affected by salinity/alkalinity Coastal	1711	5.6%
4	Manmade features	8	0.0
5	Mining/Industrial waste lands	52	0.2%
6	Fallow land	3001	9.8%
7	Dense forest	1458	4.8
8	Water Bodies	3501	11.4%
9	Plantations	3525	11.5%
10	Sands-Desertic/ Coastal	37	0.1%
11	Barren rocky/ stony waste/ sheet rock area	518	1.7%
12	Settlement	359	1.2%
Total Area		30691	100.00

Source: LISS III Satellite Imagery

From the land use/land cover map (Fig.3.1), the table (3.2) it is inferred that the majority of the land in the study area is Cropland land covering 47% of the total land area, followed by Plantations (11.5%), Water Bodies (11.4%), Fallow land (9.8%), Land with or without scrub (6.8%), Land affected by salinity (5.6%), Dense Forest (4.8%), and Settlement (1.2%).

The total mining area within the study area is 52 ha. The cluster area of 12.04ha contributes about 0.04% of the total mining area within the study area. This small percentage of mining activities shall not have any significant impact on the environment.

3.1.2 Topography

The applied lease area is plain terrain with altitude of 57m maximum and minimum of 55m from the MSL.

3.1.3 Drainage Pattern of the Area

Drainage pattern is the pattern formed by the streams, rivers, and lakes in a particular drainage basin over time that reveals characteristics of the kind of rocks and geological structures in a landscape. They are governed by the topography of the land, whether a particular region is dominated by hard or soft rocks, and the gradient of the land. There are no streams, canals or water bodies crossing within the project area. The drainage pattern of the proposed area is dendritic – sub dendritic indicating uniform lithology beneath the surface, as shown in Figure 3.2

3.1.4 Seismic Sensitivity

The proposed project site falls in the seismic Zone III, moderate risk zone as per BMTPC, as shown in Vulnerability Atlas of Seismic zone of India IS: 1893 – 2002. The project area falls in the hard rock terrain on the peninsular shield of south India which is highly stable. (Source: https://moes.gov.in/writereaddata/files/LS_EN_20032020_385.pdf)

3.1.5 Environmental Features in the Study Area

There are no Wildlife Sanctuaries, National Park and Archaeological monuments within the project area. No Protected and Reserved Forest area is located within the project area. Therefore, there will be no need of acquisition/diversion of forest land. The details related to the environment sensitivity around the proposed mine lease area i.e., 10 km radius and the nearby water bodies are given in the Tables 3.3 & 3.4.

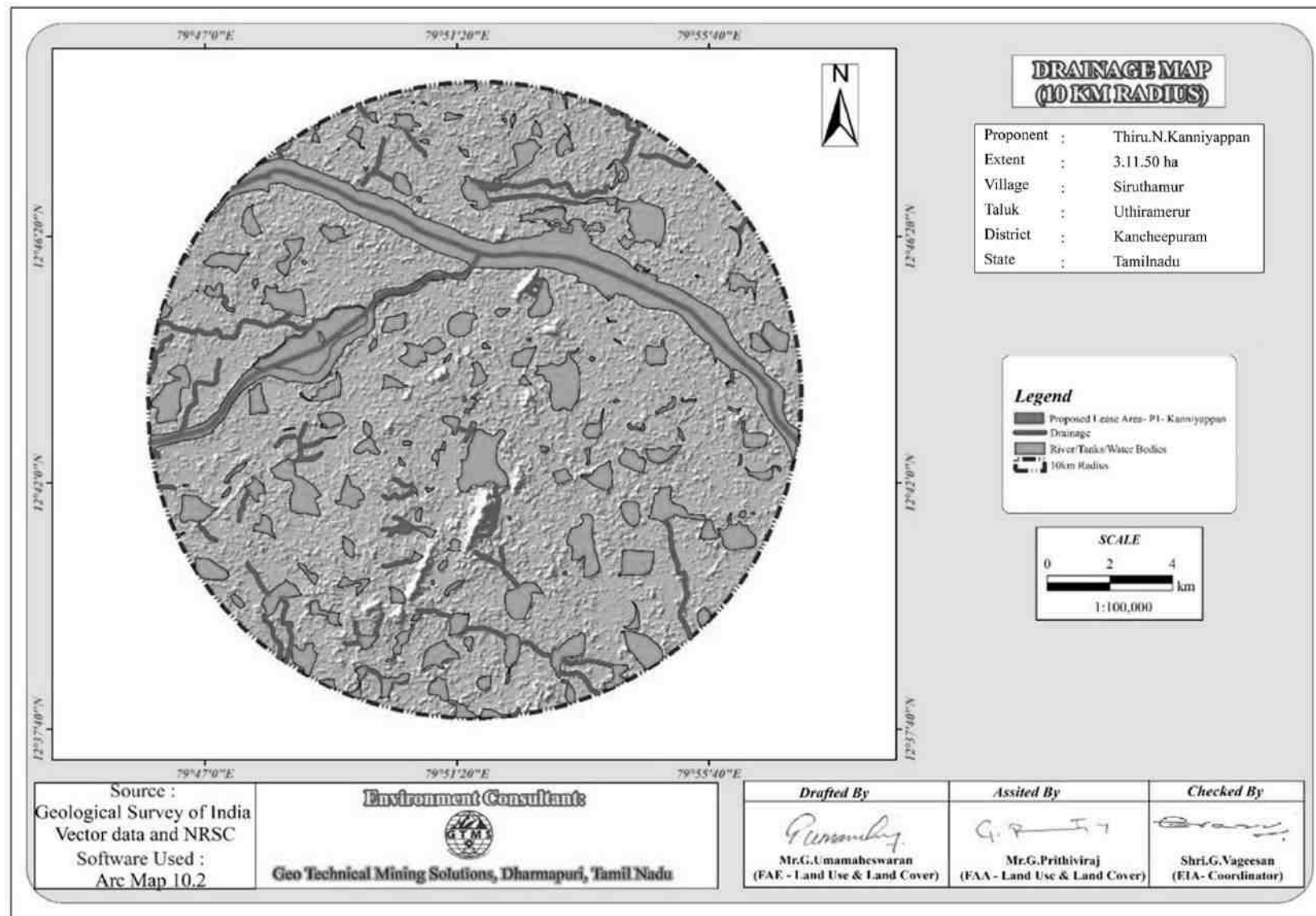


Figure 3.2 Drainage map of 10km radius from the proposed project site

Table 3.3 Details of Environmentally Sensitive Ecological Features in the Study Area

SI. No	Sensitive Ecological Features	Name	Areal Distance in km from cluster
1	National Park / Wild life Sanctuaries	Karikili birds' sanctuary	13.5km South
		Vedathangal birds' sanctuary	19.3km South
2	Reserve Forest	Kavanippakkam R. F	1.1km East
		Idaimichi R. F	2.6km SE
		Marudam RF	7.1km SW
3	Lakes/Reservoirs/ Dams/Streams/Rivers	Pinayur Near Lake	0.72km North
		Small Pond	70m SW
		Sirudamur Near Lake	0.6km NW
		Lake	0.93km SE
		Kavanipakkam Lake	2.5km NE
		Cheyar River	3.96km NW
		Palar River	4.45km North
4	Tiger Reserve/Elephant Reserve/ Biosphere Reserve	None	Nil within 10km radius
5	Critically Polluted Areas	None	Nil within 10km radius
6	Mangroves	None	Nil within 10km radius
7	Mountains/Hills	None	Nil within 10km radius
8	Notified Archaeological Sites	Thirumukkoodal Sri Appan Prasanna Venkatesa Perumaal Temple	4.31km North
9	Industries/ Thermal Power Plants	None	Nil within 10km radius
10	Defence Installation	None	Nil within 10km radius

Source: Survey of India Toposheet

Table 3.4 Water Bodies nearby the Proposed Project Site

S. No.	Name	Distance & Direction
1	Pinayur Near Lake	0.72km North
2	Small Pond	70m SW
3	Lake Near Sirudamur	0.6km NW
4	Lake	0.93km SE
5	Kavanipakkam Lake	2.5km NE
6	Cheyar River	3.96km NW
7	Palar River	4.45km North

Source: Village Cadastral Map and Field Survey

3.2 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 shown in Table 3.5 and Figure 3.3. The objective of the soil sampling is:

- ❖ to determine the baseline soil characteristics of the study area
- ❖ to study the impact of proposed activity on soil characteristics and
- ❖ to study the impact on agriculture production

Table 3.5 Soil Sampling Locations

S. No.	Sampling ID	Location	Distance & Direction	Coordinates
1	S1	Core	-	12°43'18.18"N 79°51'34.27"E
2	S2	Padoor	4.1km SW	12°42'36.97"N 79°49'24.76"E
3	S3	Kattankulam	4.1km SSW	12°41'58.18"N 79°49'44.88"E
4	S4	Pazhaveri	1.8km NNE	12°44'19.25"N 79°52'05.50"E
5	S5	Sirudamur	2.5km NNW	12°44'35.28"N 79°50'54.56"E
6	S6	Vayalakkavoor	4km NWW	12°44'05.80"N 79°49'23.38"E
7	S7	Edamichi	3.4km SE	12°41'53.89"N 79°52'53.41"E
8	S8	Thirumukkudal	3.2km N	12°45'9.17"N 79°51'34.05"E

Source: On-site monitoring/sampling by **Accuracy Analabs (P) Limited**, in association with GTMS

3.2.1 Methodology

For studying soil quality, sampling locations were selected to assess the existing soil conditions in and around the project site representing various land use conditions. The samples were collected into the soil up to 30-cm depth. Eight (8) locations were selected for soil sampling on the basis of soil types, vegetative cover, industrial & residential activities including infrastructure facilities, which would accord an overall idea of the soil characteristics. The samples were analysed for physical and chemical characteristics. The samples were sent to laboratory for analysis. The samples were filled in Polythene bags, coded and sent to laboratory for analysis and the details of methodology are given in Table 3.6.

Table 3.6 Details of Soil Sampling Methodology

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 depth levels and mixed to provide a representative sample for analysis. They were stored in airtight polythene bags and analysed at the laboratory.

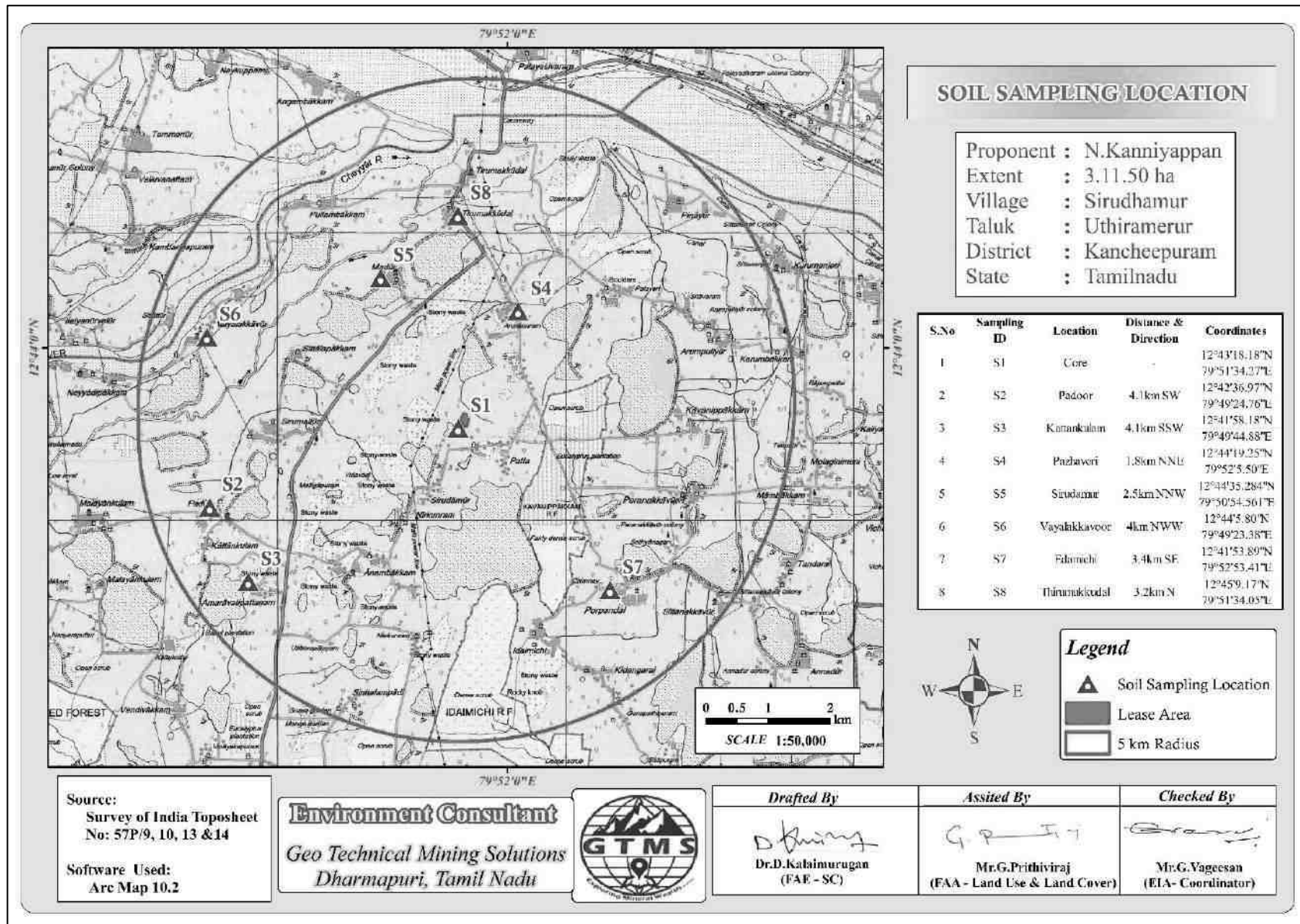


Figure 3.3 Google earth image showing soil sampling locations within 5km radius around the proposed project site

Table 3.7 Soil Quality of the Study Area

S.No	Parameters	Units	S-1	S-2	S-3	S-4	S-5	S-6	S-7	S-8
1	pH @ 25°C	-	7.14	6.09	7.06	7.26	7.09	66.98	7.08	7.12
2	EC @ 25°C	µs/cm	58.97	92.45	62.76	120.4	68.87	65.98	86.85	95.43
3	Dry matter content	-	94.71	94.87	92.46	94.51	90.25	90.54	89.76	93.45
4	Water content	%	5.29	5.13	7.54	5.49	9.75	9.45	10.24	6.55
5	Organic Matter	%	1.52	0.48	0.94	0.72	1.06	1.24	0.94	1.42
6	Soil Texture	%	Sandy Loam	Sandy Loam	Sandy Loam	Sandy Loam	Sandy Loam	Sandy Loam	Sandy Loam	Sandy Loam
7	(i) Grain size distribution	%	56.68	33.12	54.9	39.52	45.54	56.62	40.35	52.3
8	(ii) Silt	%	32.56	41.68	29.6	37.63	32.65	32.58	35.63	35.32
9	(iii) Clay	%	10.76	25.2	15.5	22.85	21.81	10.80	24.02	12.38
10	Phosphorus	mg/Kg	1.24	0.89	1.33	1.9	0.97	1.18	1.09	1.15
11	Sodium	mg/Kg	585	592	654	420	487	546	514	654
12	Potassium	mg/Kg	910	485	497	308	365	905	469	765
13	Total nitrogen	mg/Kg	122	75.1	98.8	120	133	132	150	128
14	Total sulphur	%	BDL (D.L.0.02)	BDL (D.L.0.02)	BDL (D.L.0.02)	BDL (D.L.0.02)	BDL (D.L.0.02)	BDL (D.L.0.02)	BDL (D.L.0.02)	BDL (D.L.0.02)

Source: Sampling Results by Accuracy Analabs (P) Limited

3.2.2 Soil Testing Results

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 pH and organic matter, water content, nitrogen, phosphorous and potassium. The physico-chemical characteristics of the soil & test results in Table 3.7.

3.2.3 Results and Discussion

Physical Characteristics

- ❖ The soil texture found in the study area is sandy loam.
- ❖ PH of the soil varies from 6.09 to 7.26 indicating slightly alkaline nature.
- ❖ Electrical conductivity of the soil varies from 58.97 to 120.4 $\mu\text{S}/\text{cm}$ and
- ❖ The water content varies from 5.13 to 10.24 %.

Chemical Characteristics

- ❖ Nitrogen ranges between 75.1 and 150 mg/kg.
- ❖ Phosphorus ranges between 0.89 and 1.90 mg/kg.
- ❖ Potassium ranges between 308 and 910 mg/kg.
- ❖ Sodium ranges between 420 and 654 mg/kg.
- ❖ Dry matter content ranges between 89.76 and 94.71.

3.3 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 critical water quality 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.

3.3.1 Surface Water Resources

There are numerous water bodies around the lease area of 5 km radius. For this water quality study, two surface water samples were collected and analysed for important water quality parameters. The results have been given in Table 3.9.

3.3.2 Ground Water Resources

Groundwater occurs in all the crystalline formations of Achaeon and Recent alluvium. The occurrence and behaviour of groundwater are controlled by rainfall, topography,

geomorphology, geology, structures etc. The movement of the groundwater is controlled by the intensity of weathering and fracturing. Dug wells and bore wells are the most common ground water abstraction structures in the area. The diameter of the dug well is in the range of 7 to 10 m and depths of dug wells range from 9 to 15 m below ground level. The dug wells yield up to 1 lps in summer months and few wells remains dry. The yield is adequate for irrigating one or two crops in the monsoon period.

3.3.3 Methodology

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

- ❖ Drainage pattern
- ❖ Location of residential areas /likely impact areas
- ❖ Likely areas which can represent baseline conditions

One surface water and three open well, and two bore well water samples were collected from the study area and were analysed for physico-chemical conditions, heavy metals and bacteriological contents in order to assess the effect of mining and other activities on surface and ground water. The samples were analysed as per the procedures specified by CPCB, IS-10500:2012 and 'Standard Methods for the Examination of Water and Wastewater' published by American Public Health Association (APHA). The list of water sampling locations has been given in Table 3.8 and the spatial occurrence of water sampling locations in Figure 3.4.

Table 3.8 Water Sampling Locations

S. No.	Sampling ID	Location	Distance & Direction	Coordinates
1	SW1	Sirudamur	0.5 km NNE	12°43'37.81"N,79°51'45.78"E
2	SW2	Kattankulam	4 km SW	12°41'59.49"N,79°49'44.52"E
3	GW3	Pazhaveri	1.8 km NE	12°44'19.15"N,79°52'4.02"E
4	GW4	Sirudamur	0.3 km SSE	12°43'07.05"N,79°51'41.90"E
5	GW5	Vayalakkavoor	4.4 km NWW	12°44'5.30"N,79°49'19.78"E
6	GW6	Edamichi	3.6 km SE	12°41'52.24"N,79°53'0.28"E

Source: On-site monitoring/sampling by **Accuracy Analabs (P) Limited**, in association with GTMS.

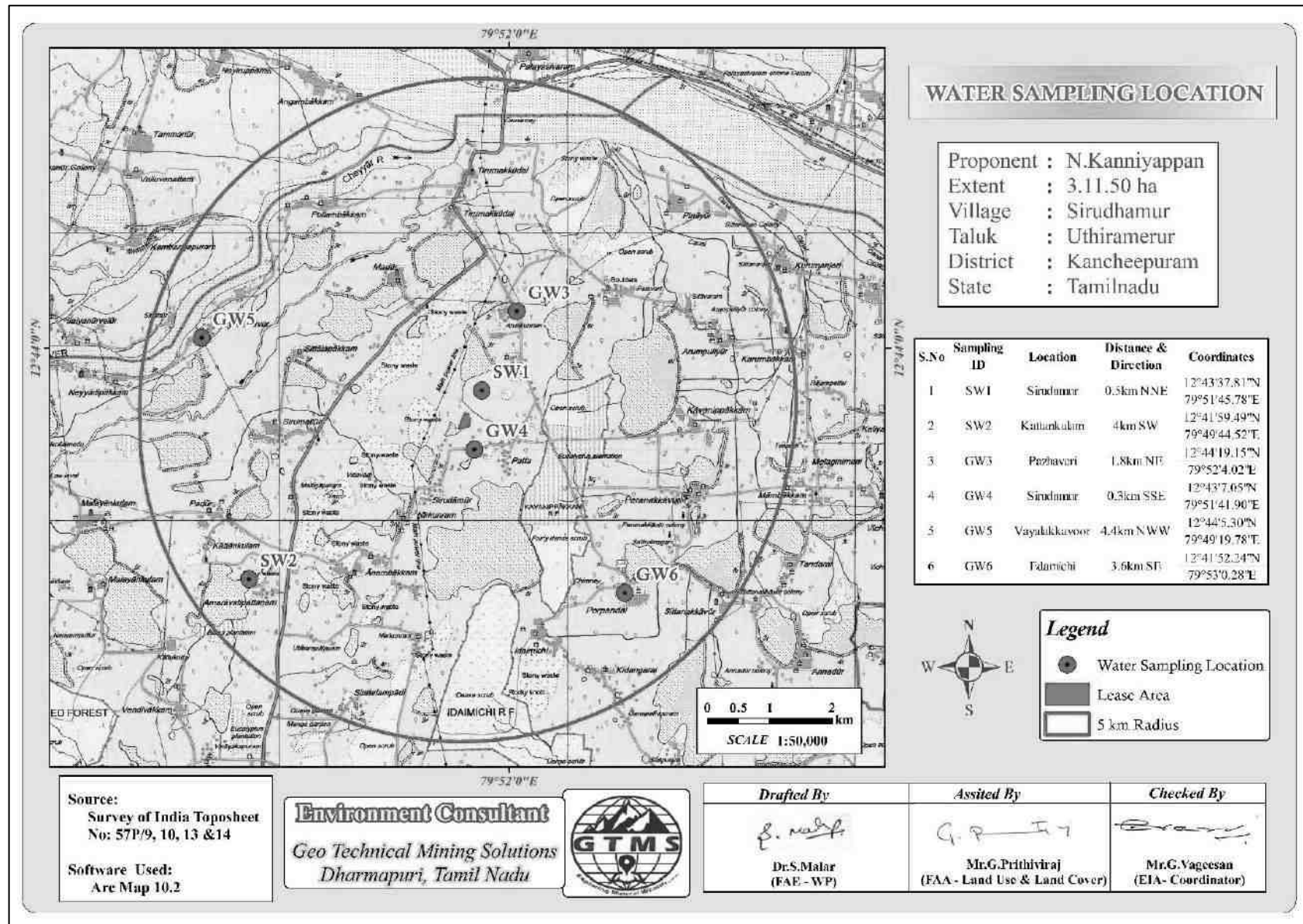


Figure 3.4 Google earth image showing water sampling locations within 5k m radius around the proposed project site

Table 3.9 Surface Water Sampling Quality Results

Sl. No.	Parameter	Unit	RESULT		CPCB Designated Best Use
			SW1	SW2	
1	Color	Hazen	6	5	300
2	Turbidity	NTU	5	5	Not specified
3	pH@ 25°C	-	7.1	6.9	6.5 – 8.5
4	Electrical Conductivity @ 25°C	µs/cm	495	344	Not specified
5	Total Dissolved Solids	mg /l	142	72	1500
6	Total Hardness	mg/l	48	41.74	600
7	Calcium as Ca	mg/l	54.72	21.6	200
8	Magnesium as Mg	mg/l	27	18	100
9	Sodium	mg/l	13	11	200
10	Potassium	mg/l	3	2	12
11	Chloride as Cl ⁻	mg/l	52	42	600
12	Sulphate as SO ₄ ⁻	mg/l	37	28	400
13	Iron as Fe	mg/l	BDL	BDL	Not specified

Source: Sampling Results by **Accuracy Analabs (P) Limited**

Table 3.10 Ground Water Sampling Quality Results

S. No.	Parameters	Units	RESULTS				Standards as Per IS 10500: 2012	
			GW1	GW2	GW3	GW4	Acceptable Limit	Permissible Limit
1.	Color	Hazen	Agreeable	Agreeable	Agreeable	Agreeable	5	15
2.	Turbidity	NTU	< 1	< 1	< 1	< 1		
3.	pH@ 25°C	-	7.59	7.73	7.63	7.35	6.5-8.5	No relaxation
4.	Electrical Conductivity @ 25°C	µs/cm	632	474	961	698	Not specified	Not specified
5.	TDS	mg /l	686	289	586	912	500	2000
6.	Total Hardness	mg /l	302	290	296	561	200	600
7.	Calcium as Ca	mg/l	91	32	85	92	75	200
8.	Magnesium as Mg	mg/l	17	21	19	20	30	100
9.	Sodium	mg/l	16	13	18	16	50	200
10	Potassium	mg/l	12	8	9	11.6	10	12

11.	Total Alkalinity	mg/l	334	186	284	181	200	600
12.	Chloride as Cl ⁻	mg/l	145	148	138	275	500	1000
13.	Sulphate as SO ₄ ⁻	mg/l	61	32	72	84	200	400
14.	Iron as Fe	mg/l	0.14	0.1	0.14	0.17	0.3	No relaxation
15.	Fluoride as F	mg/l	0.52	0.41	0.58	0.72	1.0	1.5

Source: Sampling Results by **Accuracy Analabs (P) Limited**

3.3.4 Results and Discussion

Results of important surface and ground water quality parameters have been shown in Tables 3.9 and 3.10 and have been discussed in the following sections.

Surface Water

- ❖ The pH of surface water sample is 6.9 and 7.1
- ❖ Turbidity is 5 NTU.
- ❖ TDS is 72-142 mg/l, whereas TH is 41-48 mg/l.
- ❖ Calcium is 21.6-54.72 mg/l and magnesium 18-27 mg/l.
- ❖ Chloride is 42-52 mg/l and sulphate 28-37 mg/l.

Ground Water

- ❖ The pH of the water samples ranges from 7.35 to 7.59.
- ❖ TDS are found in the range of 289 - 912 mg/l.
- ❖ The total hardness varies between 290 -561 mg/l.
- ❖ Calcium varies from 32 to 92mg/l and magnesium from 17 mg/l to 21.
- ❖ Chloride varies from 138 to 275 mg/l; sulphate from 32-84 mg/l; and fluoride from 0.41 to 0.72 mg/l.
- ❖ When speaking about microbiological parameters, the water samples from all the locations meet the requirement.

When compared to IS 10500:2012 all the parameters thus analysed fall within the prescribed limits.

3.3.5 Hydrogeological Studies

The area within 10 km radius consists of numerous open wells and deep wells. The groundwater potential study was conducted to ascertain the water yielding capacity of the wells in the study area. For this study, groundwater prospecting map was prepared, as shown in Figure 3.5. The map shows that wells located in the major portion of the study area can be capable of yielding 50-100 liters of water per minute.

3.3.5.1 Post-and Pre-Monsoon Groundwater Levels

The ground water levels were measured from 9 open wells and 9 bore wells within the study area of 2 km radius from the periphery of the proposed lease area. The groundwater levels thus collected have been provided in Tables 3.11-3.12a.

Table 3.11 Water Level of Open Wells During Post-Monsoon

Station ID	Depth to Static Water Table BGL(m) Post-Monsoon Season				Latitude	Longitude
	Oct- 2021	Nov-2021	Dec- 2021	Average		
DW1	8.4	8.7	9.2	8.7	12°43'28.40"N	79°52'6.84"E
DW2	9.5	9.7	10.0	9.7	12°44'1.75"N	79°52'20.99"E
DW3	8.7	8.9	9.5	9.0	12°43'46.25"N	79°52'4.20"E
DW4	9.6	9.8	10.1	9.8	12°44'8.27"N	79°51'58.66"E
DW5	10.2	11.4	11.9	11.1	12°42'25.86"N	79°51'20.67"E
DW6	9.7	10.2	10.8	10.2	12°42'56.67"N	79°51'27.49"E
DW7	7.6	8.5	8.9	8.3	12°43'23.50"N	79°51'51.94"E
DW8	8.2	8.7	9.1	8.6	12°43'46.15"N	79°51'42.60"E
DW9	8.5	8.9	9.4	8.9	12°42'57.47"N	79°51'5.97"E

Source: Onsite monitoring data

Table 3.11a Water Level of Open Wells During Pre-Monsoon

Station ID	Depth to Static Water Table BGL(m) Pre-Monsoon Season				Latitude	Longitude
	Mar-2022	Apr-2022	May-2022	Average		
DW1	15.4	15.7	16.2	15.7	12°43'28.40"N	79°52'6.84"E
DW2	14.6	15.7	16.8	15.7	12°44'1.75"N	79°52'20.99"E
DW3	16.4	17.2	17.8	17.1	12°43'46.25"N	79°52'4.20"E
DW4	15.6	15.8	16.1	15.8	12°44'8.27"N	79°51'58.66"E
DW5	13.2	14.4	15.7	14.4	12°42'25.86"N	79°51'20.67"E
DW6	15.7	15.9	16.5	16	12°42'56.67"N	79°51'27.49"E
DW7	16.6	17.3	17.8	17.2	12°43'23.50"N	79°51'51.94"E
DW8	16.1	16.7	17.5	16.7	12°43'46.15"N	79°51'42.60"E
DW9	16.5	16.9	17.4	16.9	12°42'57.47"N	79°51'5.97"E

Source: Onsite monitoring data

Table 3.12 Water Level of Bore wells During Post-Monsoon

Station Code	Depth to Static Potentiometric Surface BGL(m)				Latitude	Longitude
	Oct-2021	Nov- 2021	Dec-2021	Average		
BW1	48.2	48.7	49.2	48.7	12°42'43.37"N	79°51'19.54"E
BW2	51.4	52.6	53.5	52.5	12°42'48.50"N	79°50'47.57"E
BW3	50.7	51.2	52.6	51.5	12°43'5.50"N	79°51'29.20"E
BW4	49.5	50.7	51.3	50.5	12°43'11.00"N	79°51'54.56"E
BW5	52.6	53.5	53.9	53.3	12°43'8.48"N	79°51'44.35"E
BW6	51.7	52.4	53.7	52.6	12°43'25.61"N	79°51'7.96"E
BW7	48.3	48.7	49.2	48.7	12°43'41.35"N	79°51'38.03"E
BW8	49.2	50.6	51.7	50.5	12°44'18.22"N	79°51'52.89"E
BW9	50.1	51.6	52.4	51.3	12°43'54.98"N	79°51'15.69"E

Source: Onsite monitoring data

Table 3.12a Water Level of Borewells During Pre-Monsoon

Station Code	Depth to Static Potentiometric Surface BGL(m)				Latitude	Longitude
	Mar-2022	Apr-2022	May-2022	Average		
BW1	56.7	57.2	58.2	57.3	12°42'43.37"N	79°51'19.54"E
BW2	55.6	56.1	57.4	56.3	12°42'48.50"N	79°50'47.57"E
BW3	56.2	57.6	58.1	57.3	12°43'5.50"N	79°51'29.20"E
BW4	57.1	57.9	58.4	57.8	12°43'11.00"N	79°51'54.56"E
BW5	55.8	56.9	57.5	56.7	12°43'8.48"N	79°51'44.35"E
BW6	56.2	57.4	58	57.2	12°43'25.61"N	79°51'7.96"E
BW7	58.3	58.7	59.2	58.7	12°43'41.35"N	79°51'38.03"E
BW8	56.6	57.4	58.7	57.6	12°44'18.22"N	79°51'52.89"E
BW9	55.3	56.1	57.4	56.2	12°43'54.98"N	79°51'15.69"E

Source: Onsite monitoring data

3.3.5.2 Groundwater Level and Flow Direction

As the groundwater moves from the points of highest static groundwater elevation to the points of lowest static groundwater elevation under the influence of gravity, data regarding depth to groundwater levels are essential to infer the direction of groundwater movement within the study area. Knowledge of groundwater flow direction is must in choosing location for background groundwater quality monitoring well and in locating recharge and discharge areas. Therefore, Dug well data regarding groundwater elevations were collected from 9 Dug wells at various locations within 2km radius around the proposed project site for the season from

Post monsoon 2021 and pre monsoon 2022. The data thus collected from 9 dug wells have been provided in Tables 3.11-3.11a. According to the data, average depths to the static water table in dug wells range from 8.3 to 11.1m in post monsoon season 2021 and 14.4 to 17.2m in the pre monsoon season 2022; Open well groundwater elevation map showing the direction of groundwater flow during post-monsoon 2021 are shown in Figures 3.6 and Open well groundwater elevation map showing the direction of groundwater flow during pre-monsoon 2022 are shown in Figure 3.6a. The depths to static water table and potentiometric surface data were used to calculate static groundwater table and potentiometric surface elevations for Dug wells, respectively to draw contour lines connecting groundwater elevation (also known as equipotential hydraulic head) to determine the groundwater flow direction perpendicular to the contour lines. From the maps of groundwater flow direction, it is understood that most of the dug well groundwater underneath the proposed project site flows towards the dug well number 2 and 5 located in SW and NE direction of the proposed project site. On the basis of the groundwater flow information, dug well 2 and 5 can be chosen for water quality monitoring purpose as these wells may get easily affected by the contaminants resulting from the mining activities in future.

Bore well data regarding groundwater elevations were collected from 9 bore wells at various locations within 2km radius around the proposed project site for the season from Post monsoon 2021 and pre monsoon 2022. The data thus collected from 9 bore wells have been provided in Tables 3.12-3.12a. According to the data, average depths to the static water table in dug wells range from 48.7 to 53.3m in post monsoon season 2021 and 56.2 to 58.7m in the pre monsoon season 2022; Bore well groundwater elevation map showing the direction of groundwater flow during post-monsoon 2021 are shown in Figures 3.7 and bore well groundwater elevation map showing the direction of groundwater flow during pre-monsoon 2022 are shown in Figure 3.7a. From the maps of groundwater flow direction in deeper aquifers (bore well around 2km radius inferred that most of the bore well groundwater underneath the proposed project site flows towards the bore well number 2,3,8 and 9 located in and around the proposed project site. On the basis of the groundwater flow information, bore well number 2,3,8 and 9 can be chosen for water quality monitoring purpose as these wells may get easily affected by the contaminants resulting from the mining activities in future.

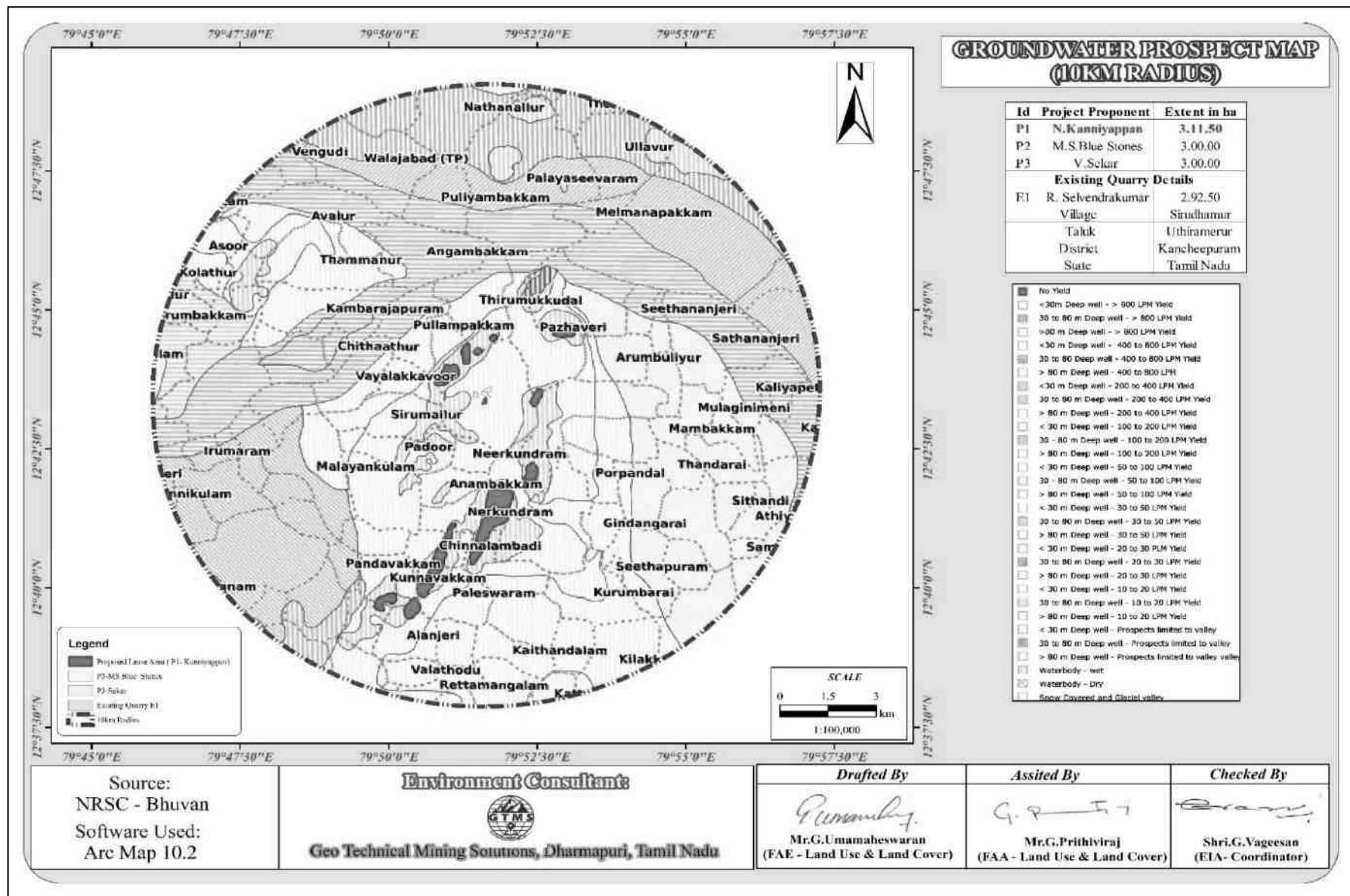


Figure 3.5 Groundwater prospecting map of 10km radius from the proposed project site

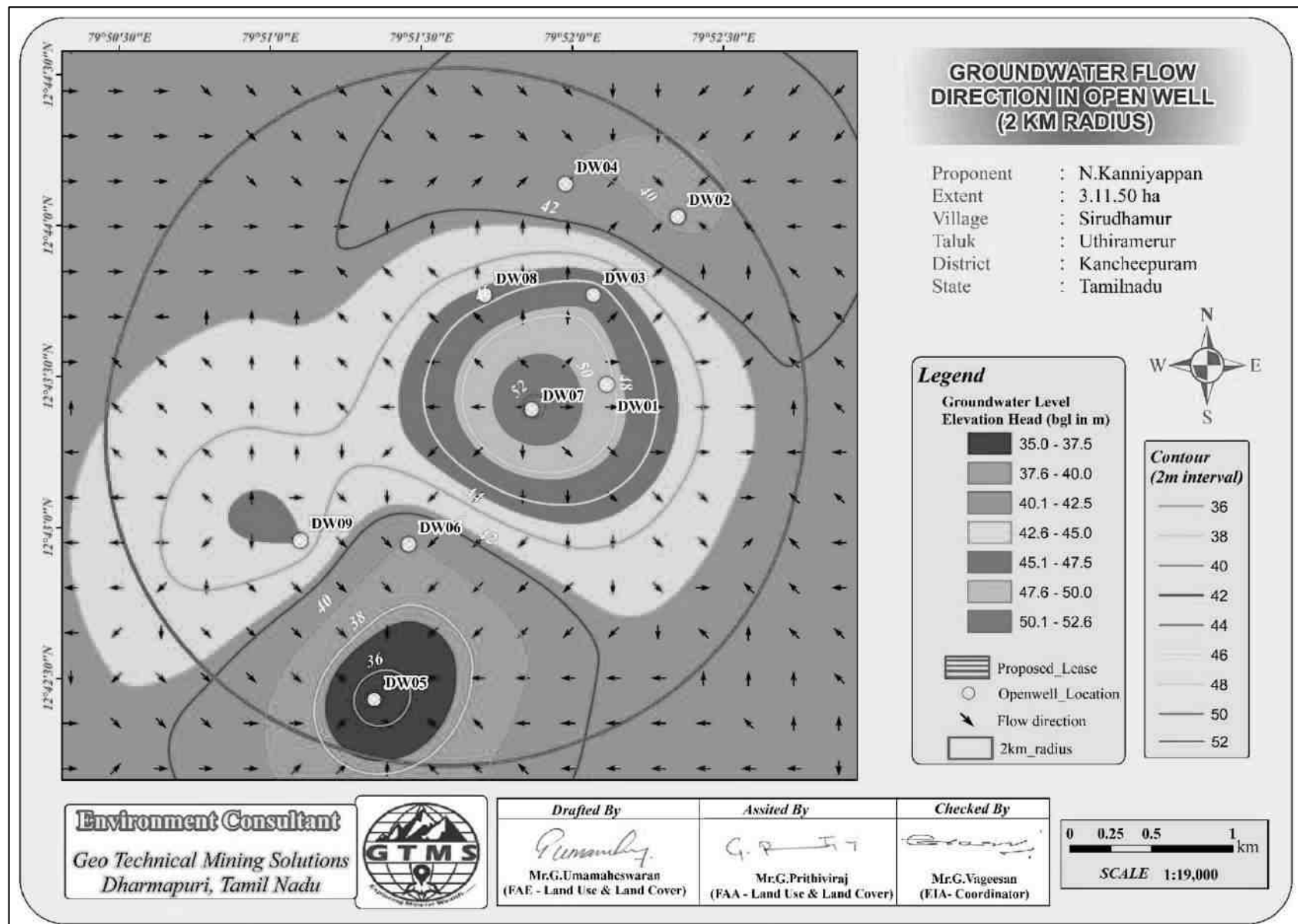


Figure 3.6 Open well groundwater elevation map showing the direction of groundwater flow during post-monsoon

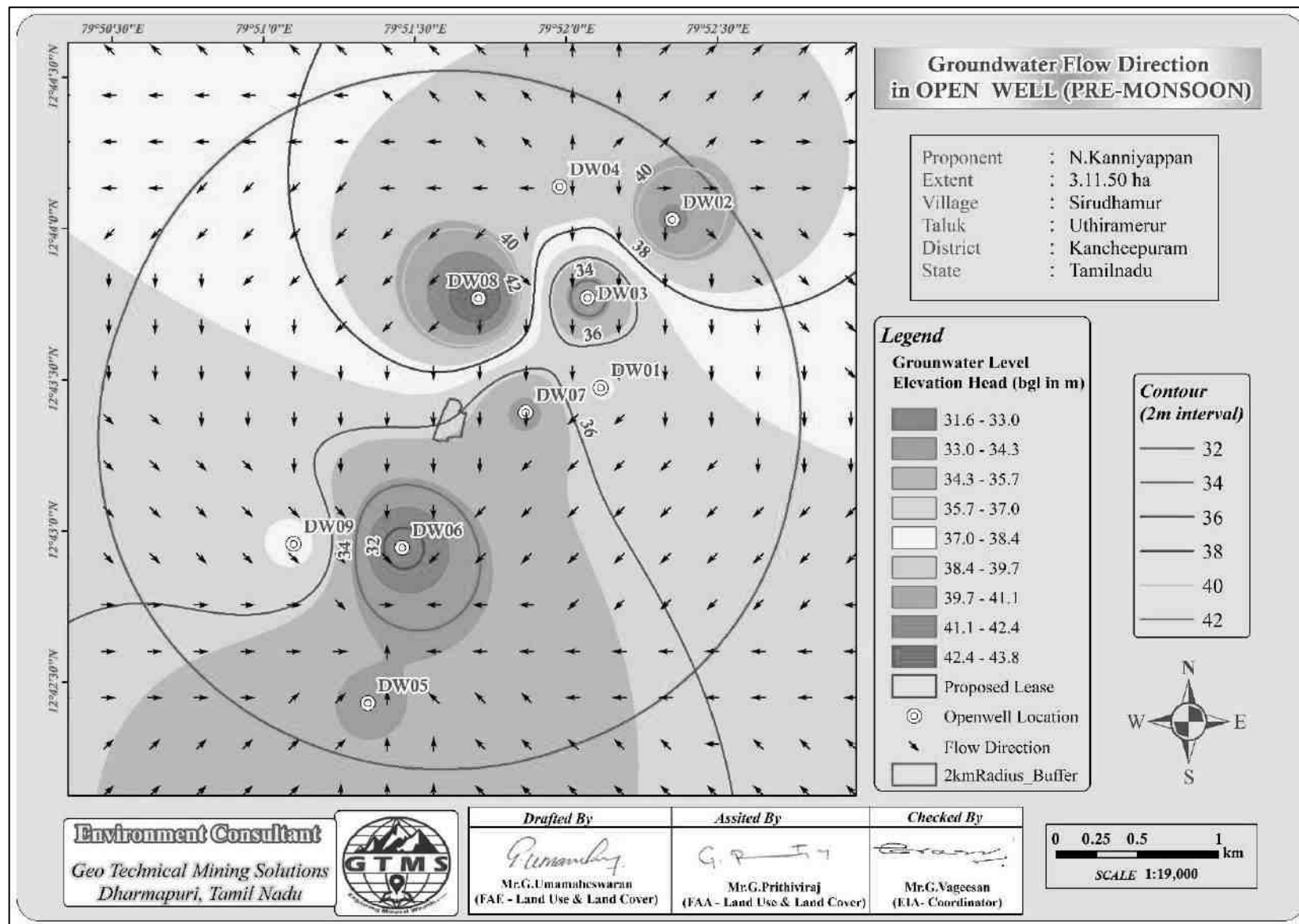


Figure 3.6a Open well groundwater elevation map showing the direction of groundwater flow during pre-monsoon

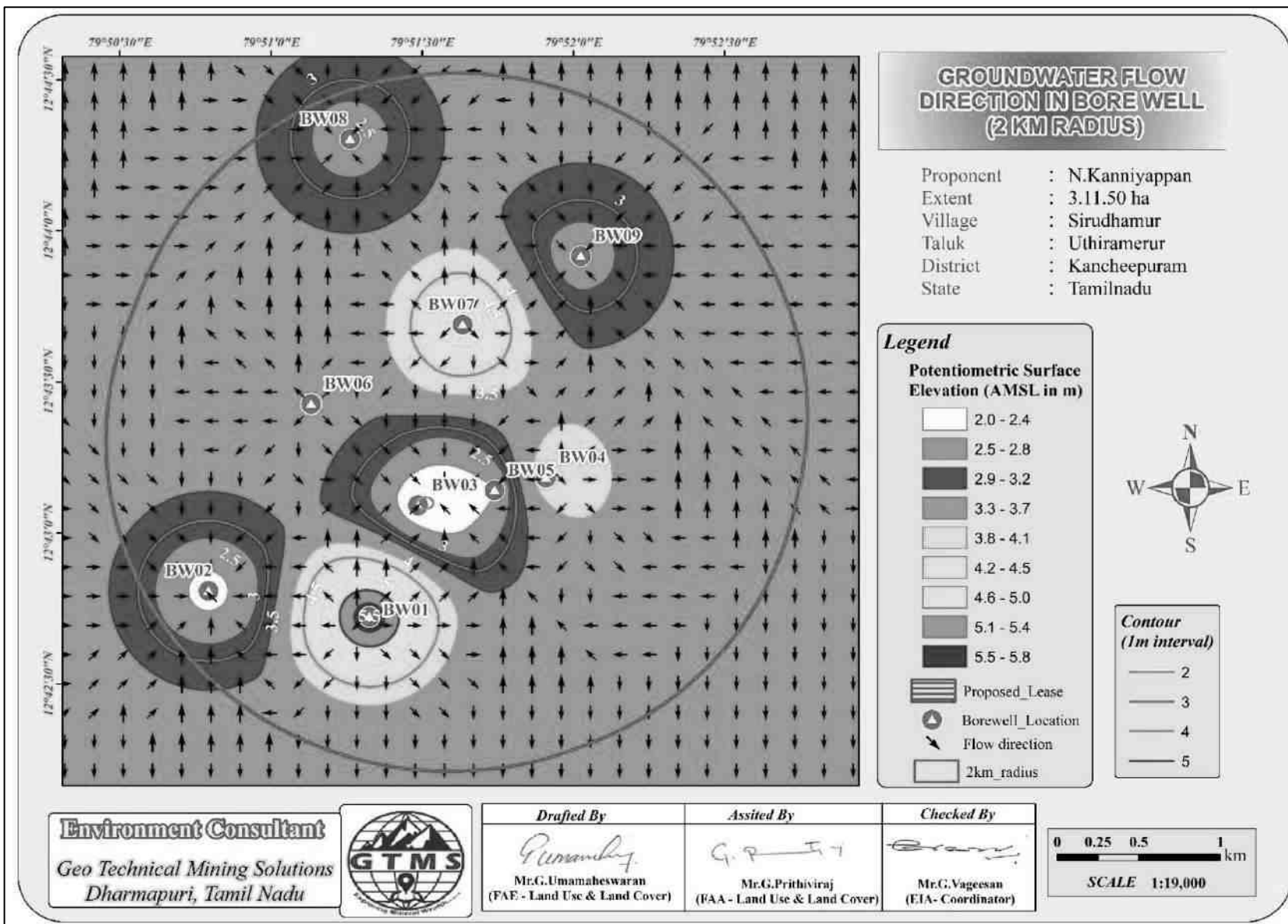


Figure 3.7 Borewell groundwater elevation map showing the direction of groundwater flow during post-monsoon

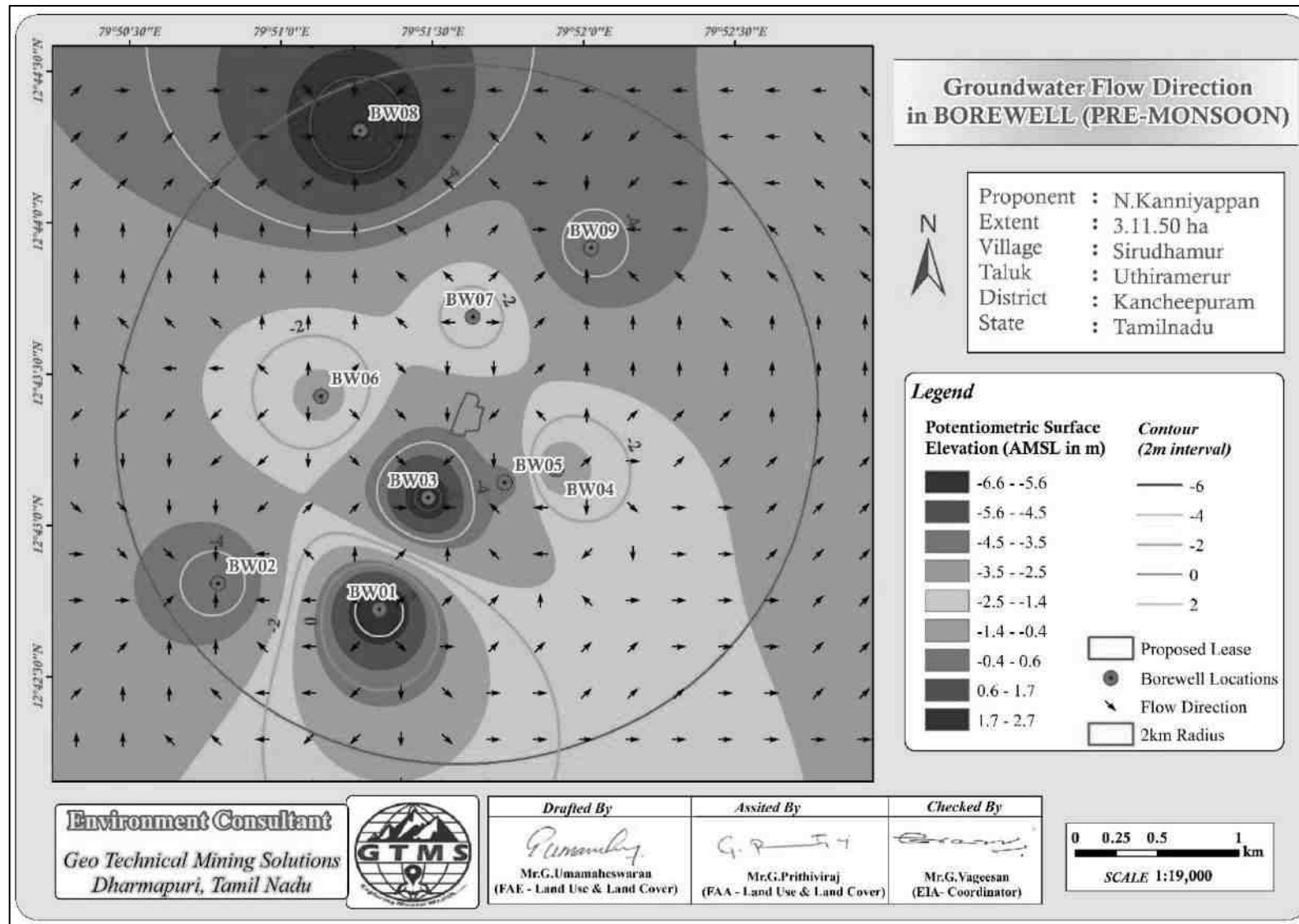


Figure 3.7a Borewell groundwater elevation map showing the direction of groundwater flow during pre-monsoon

3.3.5.3 Electrical Resistivity Investigation

For understanding subsurface hydrogeological conditions geophysical investigation is carried out. The geophysical investigation is especially useful in the areas where there are no adequate exploratory well data about the aquifer conditions. Electric resistivity method is one of the well-known geophysical methods for delineating lateral as well vertical discontinuities in the resistivities of the earth's subsurface layers. It is mainly applied to locate aquifers in the field of hydrogeology. The present study makes use of vertical electric sounding (VES) to delineate earth's subsurface layers. The electrical resistivity investigation used four electrodes collinear set up where current is sent through outer electrodes into the ground and the inner electrodes measure the potential difference, as shown in Figure 3.8.

3.3.5.4 Methodology and Data Acquisition

The present study uses Schlumberger array for making vertical electrical sounding measurements since it is least influenced by lateral inhomogeneities and is capable of providing higher depth of investigation. The main goal of the present study is to search the vertical inhomogeneities that is consistent with the measured data.

For a Schlumberger, the apparent resistivity can be calculated as follows:

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

ΔV = potential difference

G = Geometric Factor.

The field equipment deployed for the study is a deep resistivity meter with a model of SSR – MP – ATS. This Signal Stacking Resistivity meter is a high-quality data acquisition system incorporating several innovation features for earth resistivity measurements. For more information about the instrument, refer to the manufacturer's manual.

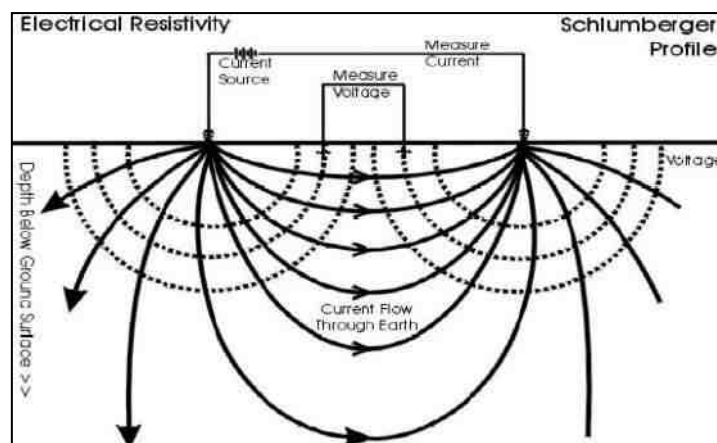


Figure 3.8 Principle of Electrical Resistivity Investigation



Figure 3.9 Geophysical Survey within the lease area

3.3.5.5 Data Presentation

The Geophysical VES data obtained from the project site have been shown in Table 3.13. The field data obtained from a detailed geophysical investigation were plotted with the help of software provided by the manufacturer (I.G.I.S) for interpretation. The plot for the purpose of interpretation has been shown in Figure 3.10.

Table 3.13 Vertical Electrical Sounding Data

Location Coordinates - 10°33'46.54"N 77°26'22.43"E					
S. No.	AB/2 (m)	MN/2 (m)	Geometrical Factor (G)	Resistance in Ω	Apparent Resistivity in Ωm
1	2	0.5	11.79	13.426	158
2	4	0.5	49.50	6.325	313
3	6	0.5	112.36	4.123	463
4	8	0.5	200.37	2.985	598
5	10	0.5	313.51	2.346	736
6	15	2	173.65	6.099	1059
7	20	2	311.16	4.389	1366
8	25	5	188.58	8.859	1671
9	30	2	704.03	2.768	1949
10	35	2	959.40	2.301	2208
11	40	5	495.02	4.894	2423
12	45	5	628.60	4.214	2649
13	50	5	777.89	3.638	2830
14	60	10	550.03	5.756	3166
15	70	10	754.32	5.756	4342
16	80	10	990.05	4.621	4575
17	90	10	1257.20	3.912	4918
18	100	10	1555.79	3.236	5035
19	120	20	1100.05	5.768	6345
20	140	20	1508.64	4.125	6223
21	160	20	1980.09	3.056	6051
22	180	20	2514.40	2.359	5931
23	200	20	3111.57	1.934	6018

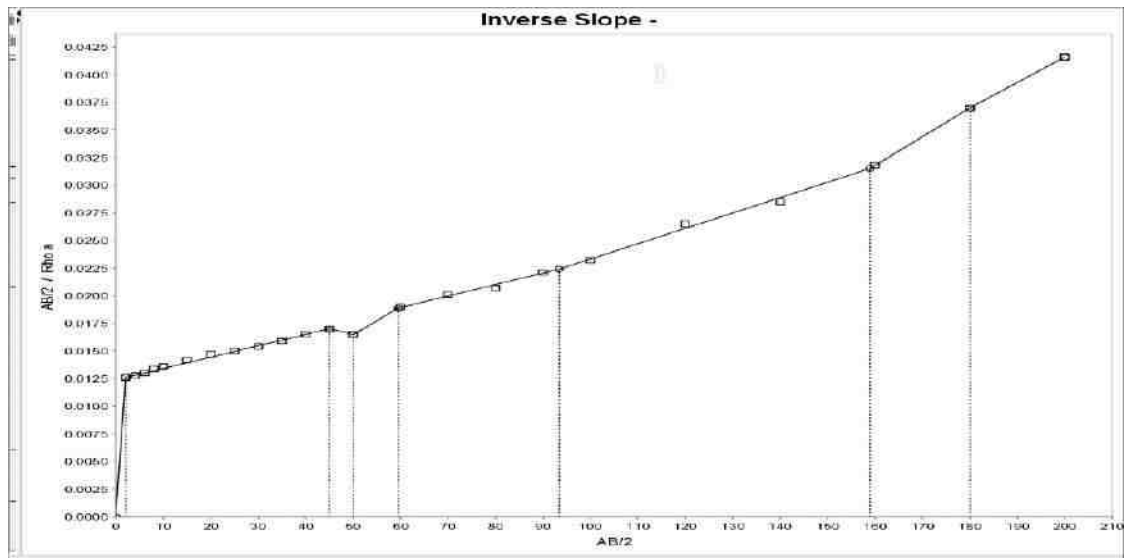


Figure 3.10 Inverse Slope used for the identification of fracture zones below the ground surface

3.3.5.6 Geophysical Data Interpretation

The rock formation of low resistivity values indicates occurrence of water at the depth of about 50-55m below ground level. The maximum depth proposed for the proposed project is 25m below ground level. Therefore, the mining operation will not affect the aquifer throughout the entire mine life period.

3.4 AIR ENVIRONMENT

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

The baseline studies on air environment include identification of specific air pollution parameters and their existing levels in ambient air. The ambient air quality with respect to the study zone of 5 km radius around the cluster forms the baseline information. The sources of air pollution in the region are mostly due to vehicular traffic, dust arising from unpaved village road and domestic & agricultural activities. The prime objective of the baseline air quality study was to establish the existing ambient air quality of the study area. These will also be useful for assessing the conformity to standards of the ambient air quality during the operation of proposed project in cluster.

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

3.4.1 Meteorology

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 the project sites by covering cluster quarries. The station was installed at a height of 3 m above the ground level as there are no obstructions facilitating flow of wind, wind speed, wind direction, humidity and temperature. Meteorological data obtained from the onsite monitoring station are provided in Table 3.14.

According to the onsite data, the temperature in March, 2022 varied from 25.5 to 36.9⁰C with the average of 29.72⁰C; in April 2022 from 25.88 to 36.46⁰C with the average of 30.14⁰C; and in May, 2022 from 25.33 to 34.31⁰C with the average of 28.98.5⁰C. During the period of the three months, relative humidity ranged from 73.88 to 77.58 % in average. The highest average humidity was measured in May 2022, whereas the lowest in March 2022. When speaking about wind speed, the wind speed in March, 2022 varied from 0.08 to 6.08m/s with the average of 3.43m/s; in April, 2022 from 0.03 to 8.10m/s with the average of 4.01m/s; and in May, 2022 from 0.06 to 6.29m/s with the average of 3.61m/s.

Table 3.14 Onsite Meteorological Data

S. No.	Parameters		March-2022	April-2022	May -2022
1	Temperature (⁰ C)	Min	25.75	25.88	25.53
		Max	36.49	36.46	34.31
		Avg	29.72	30.14	28.98
2	Relative Humidity (%)	Min	41.50	42.69	50.31
		Max	94.88	97.25	94.81
		Avg	73.88	74.61	77.58
3	Wind Speed (m/s)	Min	0.08	0.03	0.06
		Max	6.08	8.10	6.29
		Avg	3.43	4.01	3.61
4	Wind Direction (degree)	Min	0.00	5.66	1.02
		Max	359.78	343.15	356.50
		Avg	150.21	207.16	222.97
5	Surface Pressure(kPa)	Min	99.83	99.40	99.73
		Max	101.05	100.62	100.51
		Avg	100.44	100.05	100.12

Source: On-site monitoring/sampling by Accuracy Analabs Laboratory in association with GTMS

3.4.1.1 Climate

The Kancheepuram has a tropical climate. In winter, there is much less rainfall in summer in Kancheepuram. This climate is considered to be Aw according to the Köppen-Geiger climate classification. In Kancheepuram, the average annual temperature is 27.7 °C

81.9 °F. The rainfall here is around 967 mm | 38.1 inch per year. The least amount of rainfall occurs in February. The Average in this month is 10 mm/0.4 inch. With average of 195mm/7.7 inch, the most precipitation falls in October. The warmest month of the year is May, with an average temperature of 31.8 °C | 89.3 °F. The lowest average temperatures in the year occur in January, when it is around 23.6 °C | 74.5 °F. The difference in precipitation between the driest month and the wettest month is 185 mm | 7 inches. The variation in temperatures throughout the year is 8.2 °C | 14.8 °F.

Source: <https://en.climate-data.org/asia/india/tamil-nadu/kancheepuram-26316//>

3.4.1.2 Rainfall

Table 3.15 Rainfall Data

Actual Rainfall in mm					Normal Rainfall in mm
2017	2018	2019	2020	2021	
1191.7	833.0	1131.4	1258.4	1698.1	985

[Kanchipuram | TWAD \(tn.gov.in\)](#)

From the data for the period of 2017-21, the average annual rainfall has been calculated to be 1225.52. mm. Of the 5 years, the lowest rainfall (833 mm) occurred in the year 2018, while the highest rainfall (1698mm) in the year 2021.

3.4.1.3 Wind Pattern

Local wind pattern will largely influence the dispersion pattern of air pollutants and noise from the proposed project site. Analysis of wind pattern requires hourly site-specific data of wind speed and direction over a period of 3 months. The wind rose thus produced, as shown in Figure 3.12 reveals that:

- ❖ The measured average wind velocity during the study period is 3.69m/s.
- ❖ Predominant wind was dominant in the directions ranging from southwest to northeast.

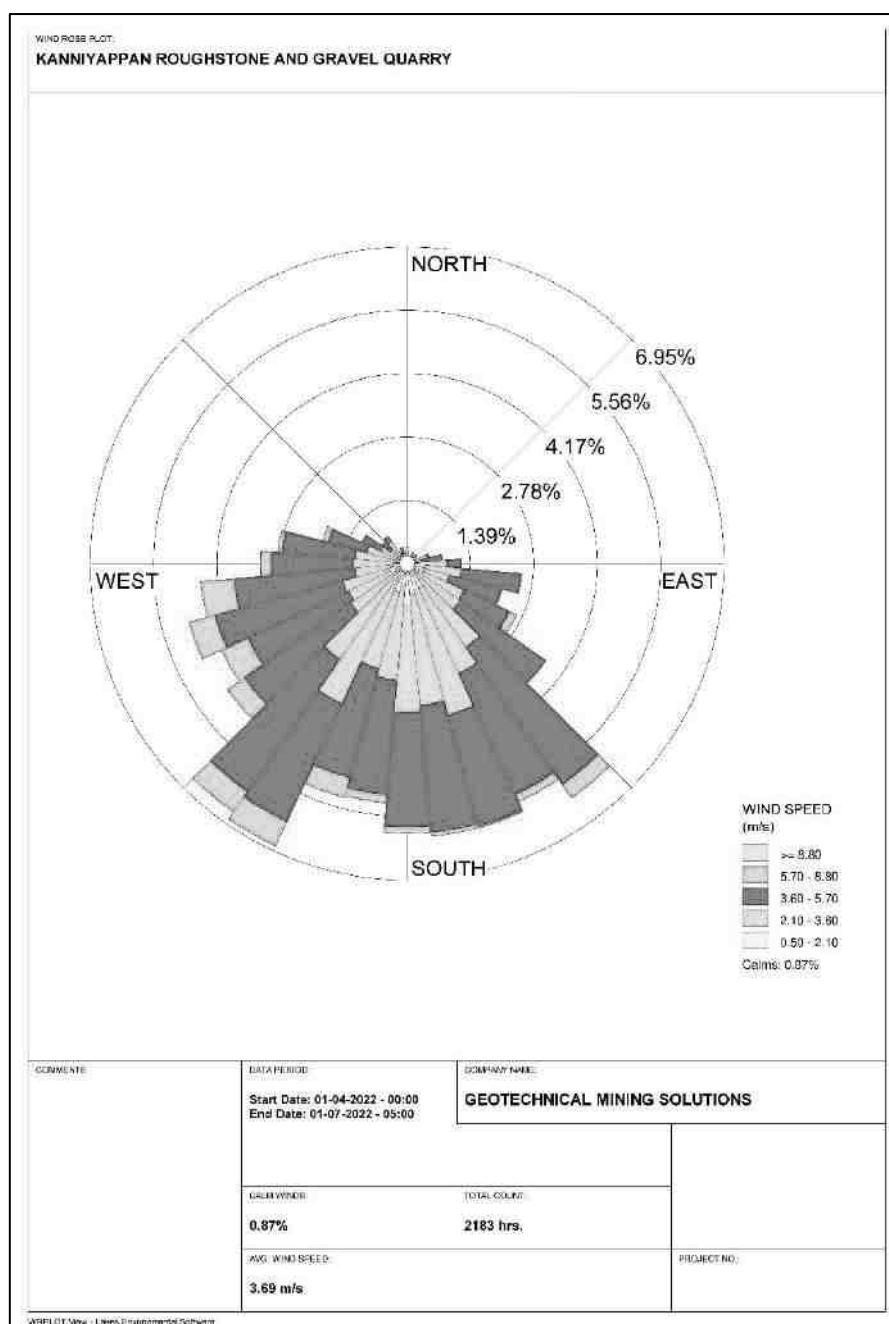


Figure 3.12 Onsite Wind Rose Diagram

3.4.2 Methodology and Objectives

The prime objective of the ambient air quality study is to assess the existing air quality of the 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

3.4.3 Sampling and Analytical Techniques

Table 3.16 Methodology and Instrument Used for AAQ 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 & Hoch heiser modified method)	Respirable Dust Sampler with gaseous attachment
Free Silica	NIOSH – 7601	Visible Spectrophotometry

Source: Sampling Methodology based on Accuracy Analabs Laboratory & CPCB Notification

Table 3.17 National Ambient Air Quality Standards

S. 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 10°0	60.0 10°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 value 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.

3.4.4 Frequency and Parameters for Sampling

Ambient air quality monitoring has been carried out with a frequency of two samples per week at Eight (8) locations, adopting a continuous 24 hourly (3 shift of 8-hour) schedule for the period March-May 2022. The baseline data of ambient air has been generated for PM₁₀, PM_{2.5}, sulphur dioxide (SO₂) and nitrogen dioxide (NO₂) Monitoring has been carried out as per the CPCB, MoEF guidelines and notifications.

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

3.4.5 Ambient Air Quality Monitoring Stations

Eight monitoring stations were set up in the study area as depicted in Figure 3.13 for the assessment of the existing ambient air quality. The sampling locations and concentrations of air pollutants measured from the proposed project site have been given in Tables 3.18.

Table 3.18 Ambient Air Quality (AAQ) Monitoring Locations

S. No	Location Code	Monitoring Locations	Distance & Direction	Coordinates
1	AAQ-1	Core	-	12°43'19.87"N, 79°51'35.87"E
2	AAQ-2	Padoor	1.67km SW	12°42'48.39"N, 79°50'46.86"E
3	AAQ-3	Kattankulam	4.0 SW	12°41'53.58"N, 79°49'51.00"E
4	AAQ-4	Pazhaveri	3.1 NE	12°44'30.33"N, 79°52'56.85"E
5	AAQ-5	Madhur	1.79km NW	12°44'19.05"N 79°51'12.97"E
6	AAQ-6	Vayalakkavoor	4.32km NW	12°44'10.33"N, 79°49'20.52"E
7	AAQ-7	Edamichi	3.94km SE	12°41'20.08"N, 79°52'28.96"E
8	AAQ-8	Thirumukkudal	3.82km North	12°45'30.23"N, 79°51'37.33"E

Source: On-site monitoring/sampling by Accuracy Analabs Laboratory in association with GTMS

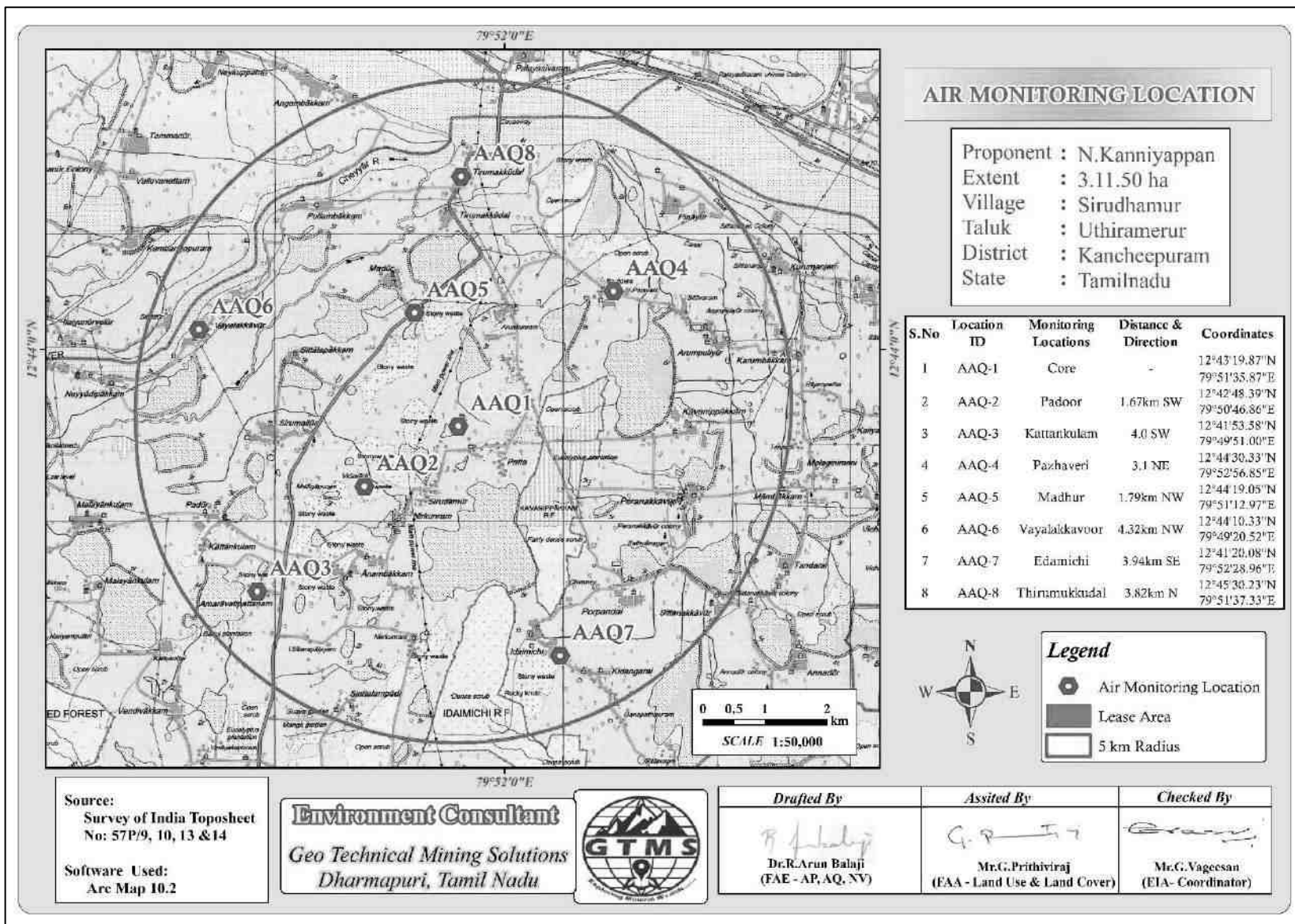


Figure 3.13 Google earth image showing ambient air quality monitoring station locations around 5km radius from the proposed project site

Table 3.19 Summary of AAQ Result

PM _{2.5}					
Station ID	Max	Min	Mean	98 th Percentile	STDEV
AAQ-1	35.4	25.9	32.40	35.26	2.22
AAQ-2	27.2	22.4	25.08	27.02	1.10
AAQ-3	21.7	17.5	20.27	21.70	1.24
AAQ-4	23.8	20.7	22.30	23.66	0.79
AAQ-5	26.8	17.8	24.39	26.80	2.48
AAQ-6	22.7	17.4	20.10	22.65	1.25
AAQ-7	25.9	18.9	23.30	25.72	1.97
AAQ-8	25.7	20.2	23.52	25.72	1.66
PM ₁₀					
Station ID	Max	Min	Mean	98 th Percentile	STDEV
AAQ-1	55.5	47.5	52.23	55.45	2.02
AAQ-2	47.1	42.7	45.23	47.01	1.35
AAQ-3	41.9	37.2	39.58	41.76	1.32
AAQ-4	43.0	38.9	40.99	42.82	1.12
AAQ-5	45.9	39.8	43.43	45.53	1.40
AAQ-6	42.0	36.2	38.86	41.36	1.45
AAQ-7	46.6	42.5	44.68	46.55	1.20
AAQ-8	44.7	37.9	42.18	44.61	1.70
SO ₂					
Station ID	Max	Min	Mean	98 th Percentile	STDEV
AAQ-1	14.4	8.6	11.53	14.03	1.39
AAQ-2	10.8	5.1	8.70	10.52	1.35
AAQ-3	7.8	4.7	5.89	7.70	0.90
AAQ-4	7.7	4.9	6.48	7.65	0.69
AAQ-5	8.9	6.1	7.23	8.76	0.82
AAQ-6	6.8	5.2	6.08	6.80	0.49
AAQ-7	10.0	7.2	8.66	9.95	0.77
AAQ-8	10.5	6.7	8.63	10.41	0.96
NO ₂					
Station ID	Max	Min	Mean	98 th Percentile	STDEV
AAQ-1	28.1	19.2	23.85	27.87	2.49
AAQ-2	25.6	19.8	22.24	25.19	1.63
AAQ-3	19.4	6.9	16.78	19.31	2.41
AAQ-4	20.7	16.4	18.75	20.56	1.41
AAQ-5	22.8	18.7	20.85	22.57	1.07
AAQ-6	21.4	15.6	18.70	21.03	1.28
AAQ-7	24.6	19.5	22.40	24.24	1.34
AAQ-8	25.9	17.7	21.72	24.89	1.75

Table 3.20 Maximum, Minimum, Average and 98th Percentile of Average Air Pollutant Concentrations over the Study Area

S.No.	Parameter	Pollutant Concentration. $\mu\text{g}/\text{m}^3$			
		PM _{2.5}	PM ₁₀	SO ₂	NO ₂
1	Maximum	26.15	45.84	9.61	23.56
2	Minimum	20.10	40.34	6.06	16.73
3	Mean	23.92	43.40	7.88	20.66
4	98 th percentile	26.07	45.64	9.48	23.21
5	NAAQ Norms	60	100	80	80

Legend: PM_{2.5}-Particulate Matter size less than 2.5 μm ; PM₁₀- Particulate Matter size less than 10 μm ; SO₂-Sulphur dioxide; NO_x-Oxides of Nitrogen; STDEV-Standard Deviation

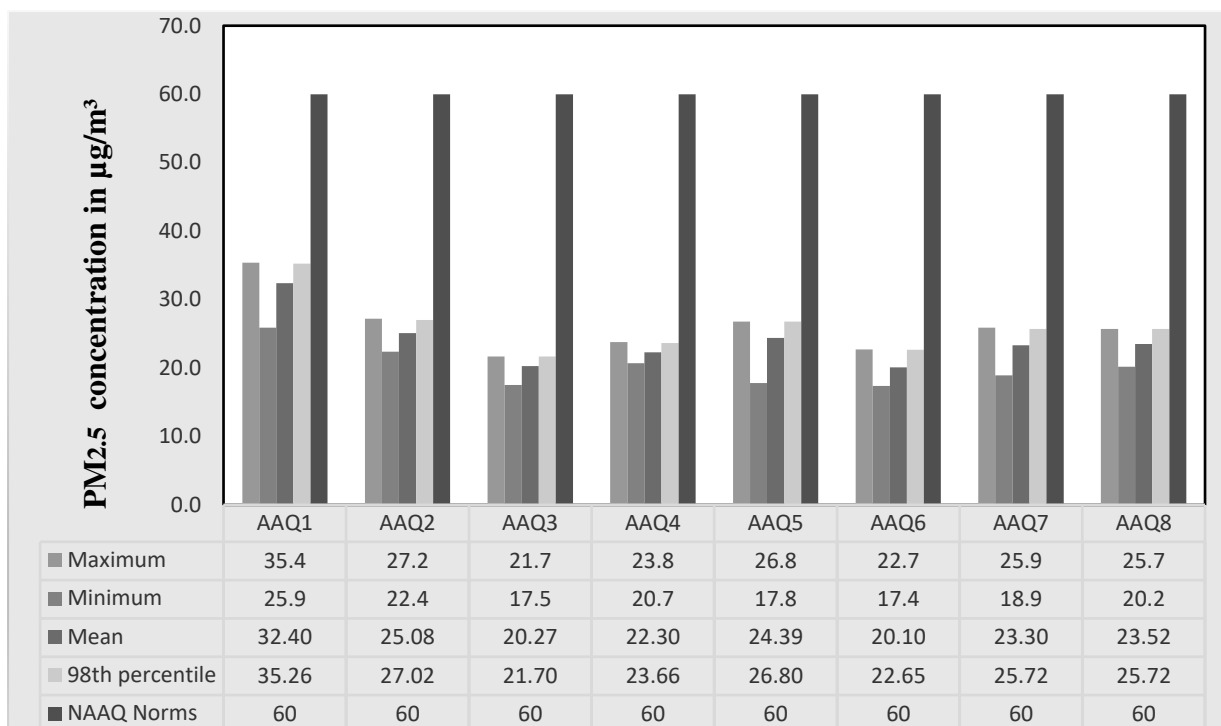


Figure 3.14 Bar chart showing maximum, minimum, and the average concentrations of PM_{2.5} measured from the eight air quality monitoring stations within 5km radius

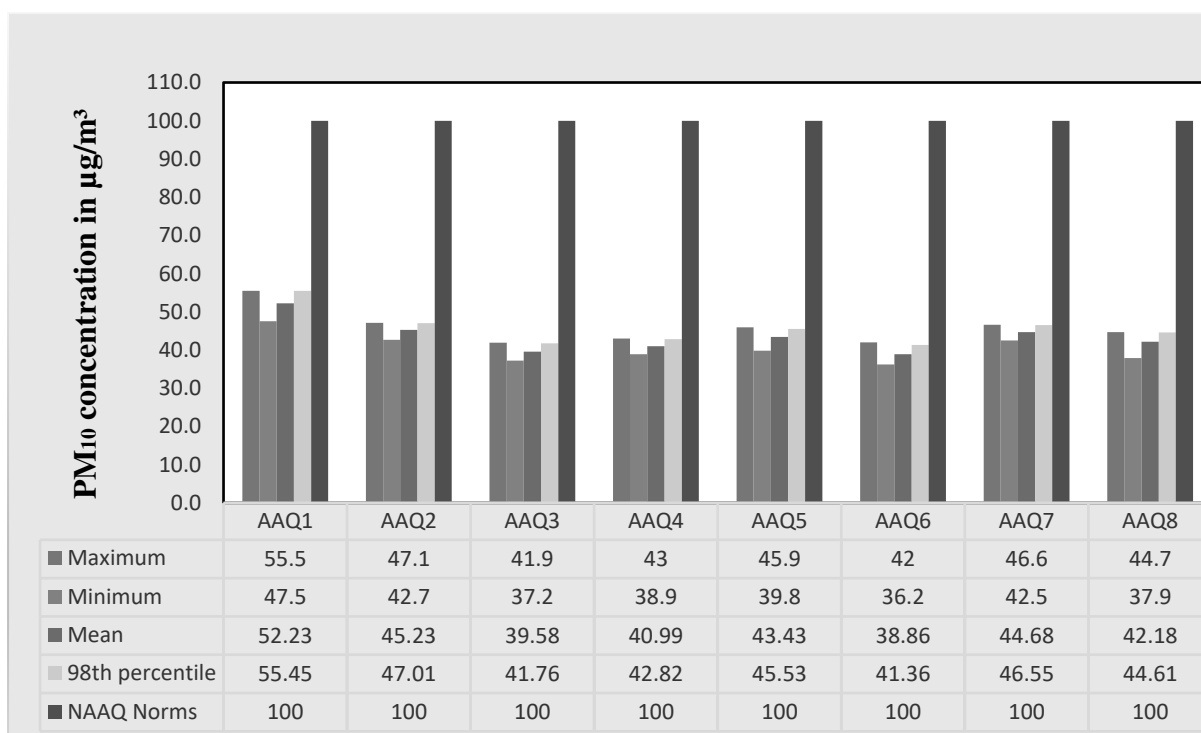


Figure 3.15 Bar chart showing maximum, minimum, and the average concentrations of PM₁₀ measured from the eight air quality monitoring stations within 5km radius

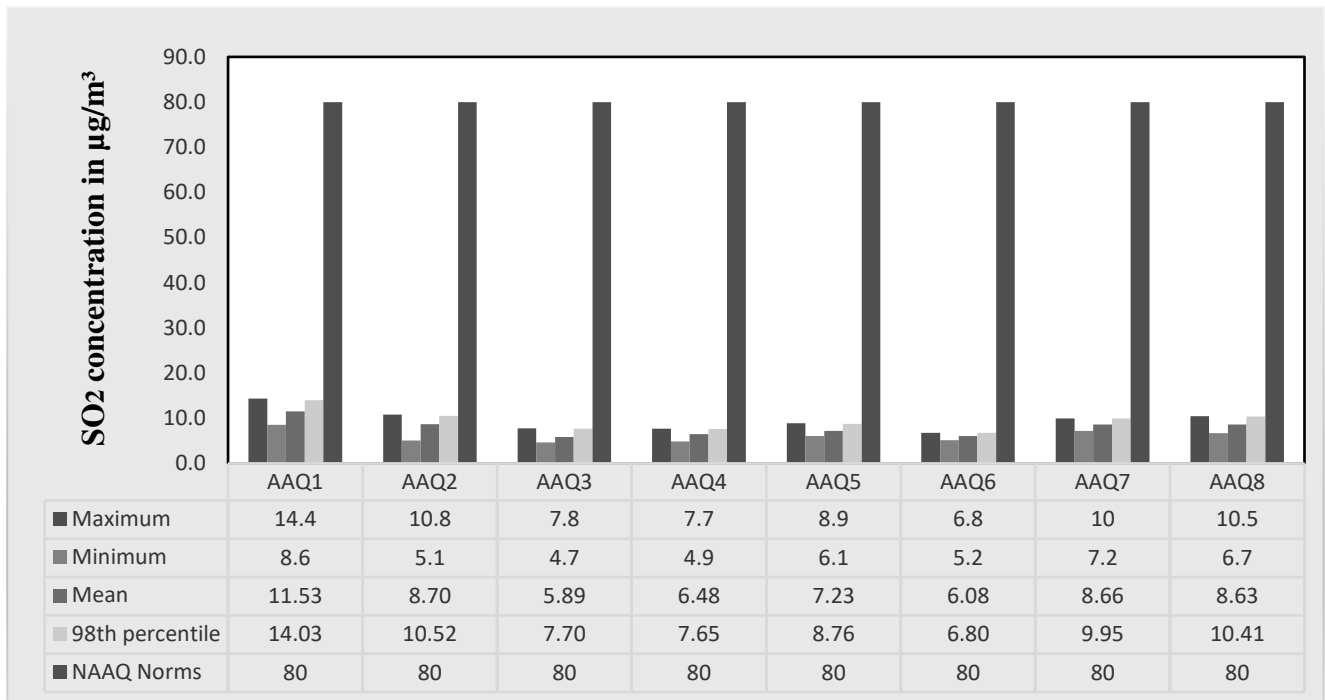


Figure 3.16 Bar chart showing maximum, minimum, and the average concentrations of SO₂ measured from the eight air quality monitoring stations within 5km radius

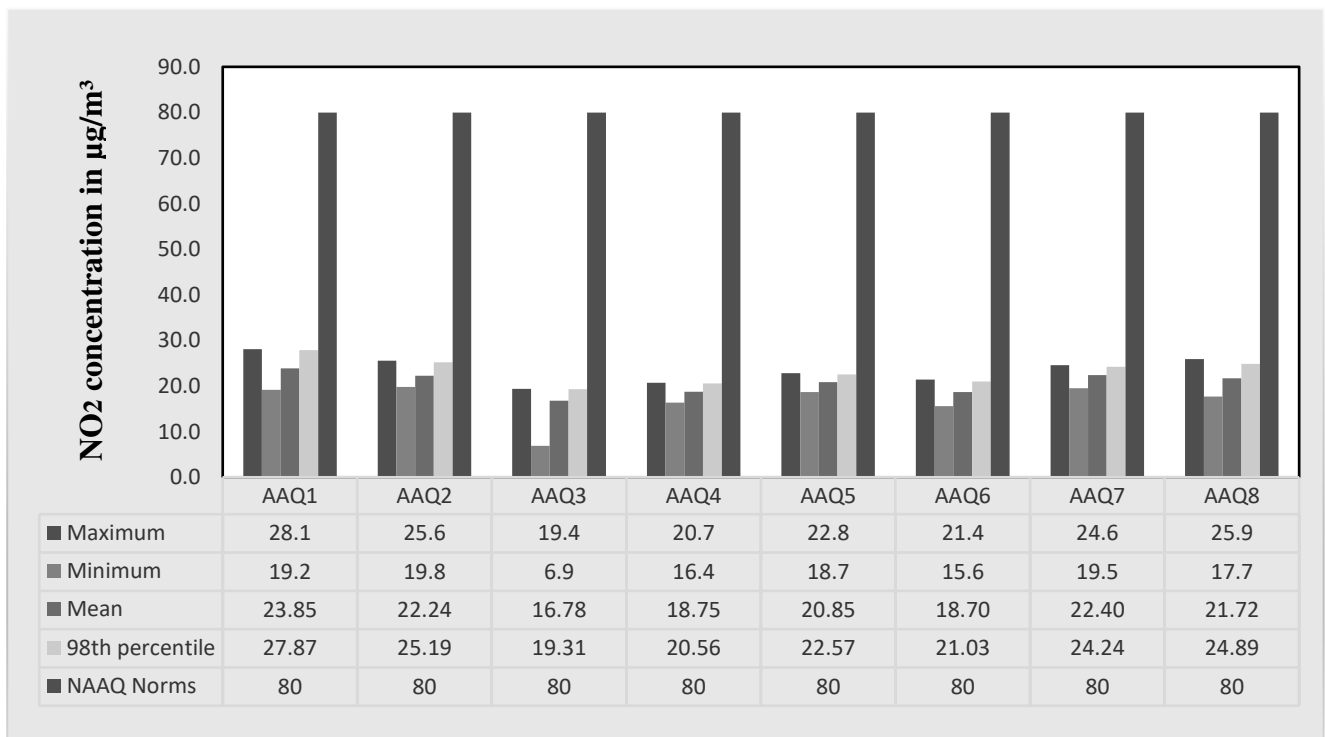


Figure 3.17 Bar chart showing maximum, minimum, and the average concentrations of NO_x measured from the eight air quality monitoring stations within 5km radius

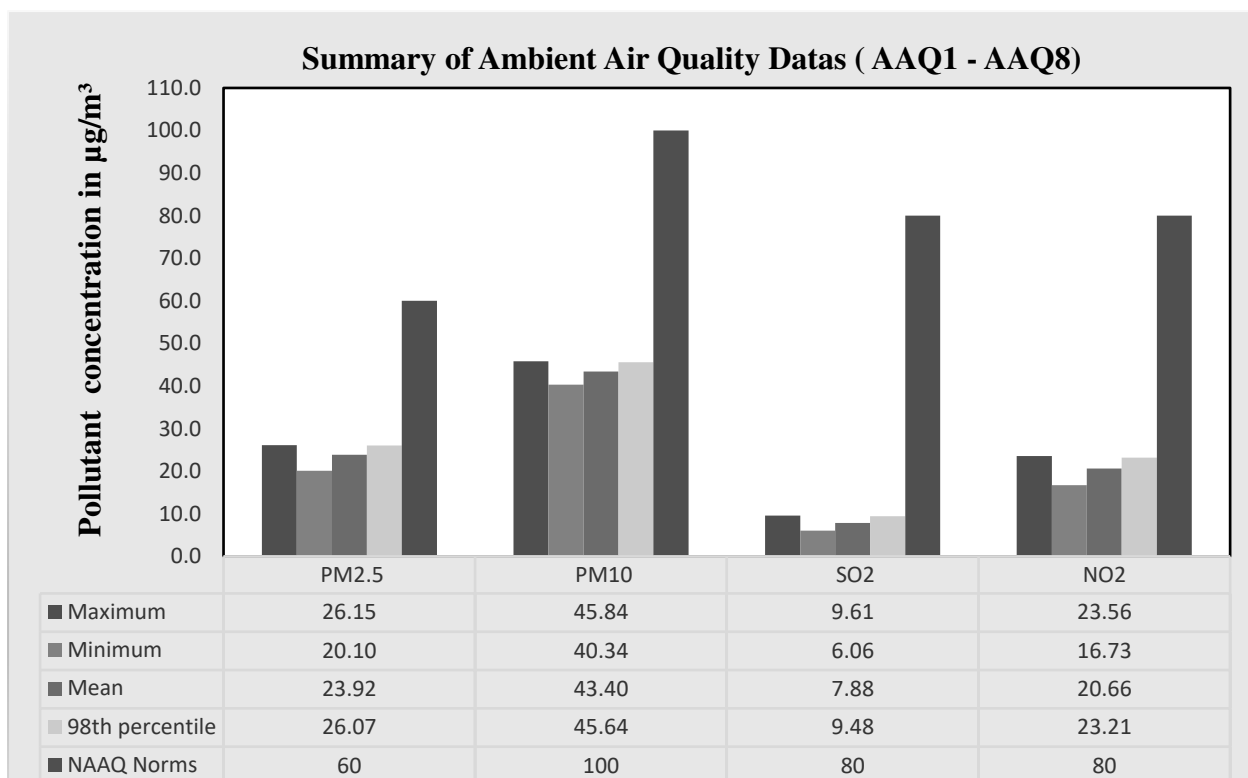


Figure 3.18 Bar chart showing maximum, minimum, and the average concentrations of pollutants in the atmosphere within 5km radius

3.4.6 Results & Discussion

As per the monitoring data, PM₁₀ ranges from 40.34 µg/m³ to 45.84µg/m³; PM_{2.5} from 20.10 µg/m³ to 26.15 µg/m³; SO₂ from 6.06µg/m³ to 9.61 µg/m³; NO₂ from 16.73 µg/m³ to 23.56µg/m³. The concentration levels of the pollutants fall within the acceptable limits of NAAQS prescribed by CPCB.

3.5 NOISE ENVIRONMENT

The vehicular movement on road and mining activities is the major sources of noise in the 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.

3.5.1 Identification of Sampling Locations

In order to assess the ambient noise levels within the study area, noise monitoring was carried out at eight (8) locations covering commercial, residential, rural areas within the

radius of 5km. A suitable noise monitoring methodology was chosen to meet the purpose and objectives of the study.

Table 3.21 Details of Noise Monitoring Locations

S. No	Location Code	Monitoring Locations	Distance & Direction	Coordinates
1	N1	Core	-	12°43'18.42"N, 79°51'35.82"E
2	N2	Sirudamur	0.35km SE	12°43'06.83"N, 79°51'40.96"E
3	N3	Kattankulam	3.98km SW	12°41'53.33"N, 79°49'53.30"E
4	N4	Pazhaveri	3.10km NE	12°44'28.97"N, 79°52'56.40"E
5	N5	Madhur	1.79km NW	12°44'19.05"N, 79°51'12.97"E
6	N6	Vayalakkavoor	4.25km NW	12°44'11.80"N, 79°49'23.81"E
7	N7	Edamichi	3.91km SE	12°41'20.08"N, 79°52'26.90"E
8	N8	Thirumukkudal	3.81km North	12°45'29.69"N, 79°51'37.19"E

Source: On-site monitoring/sampling by Accuracy Analabs Laboratory in association with GTMS

3.5.2 Method of Monitoring

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

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

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

T = Time interval of observation

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

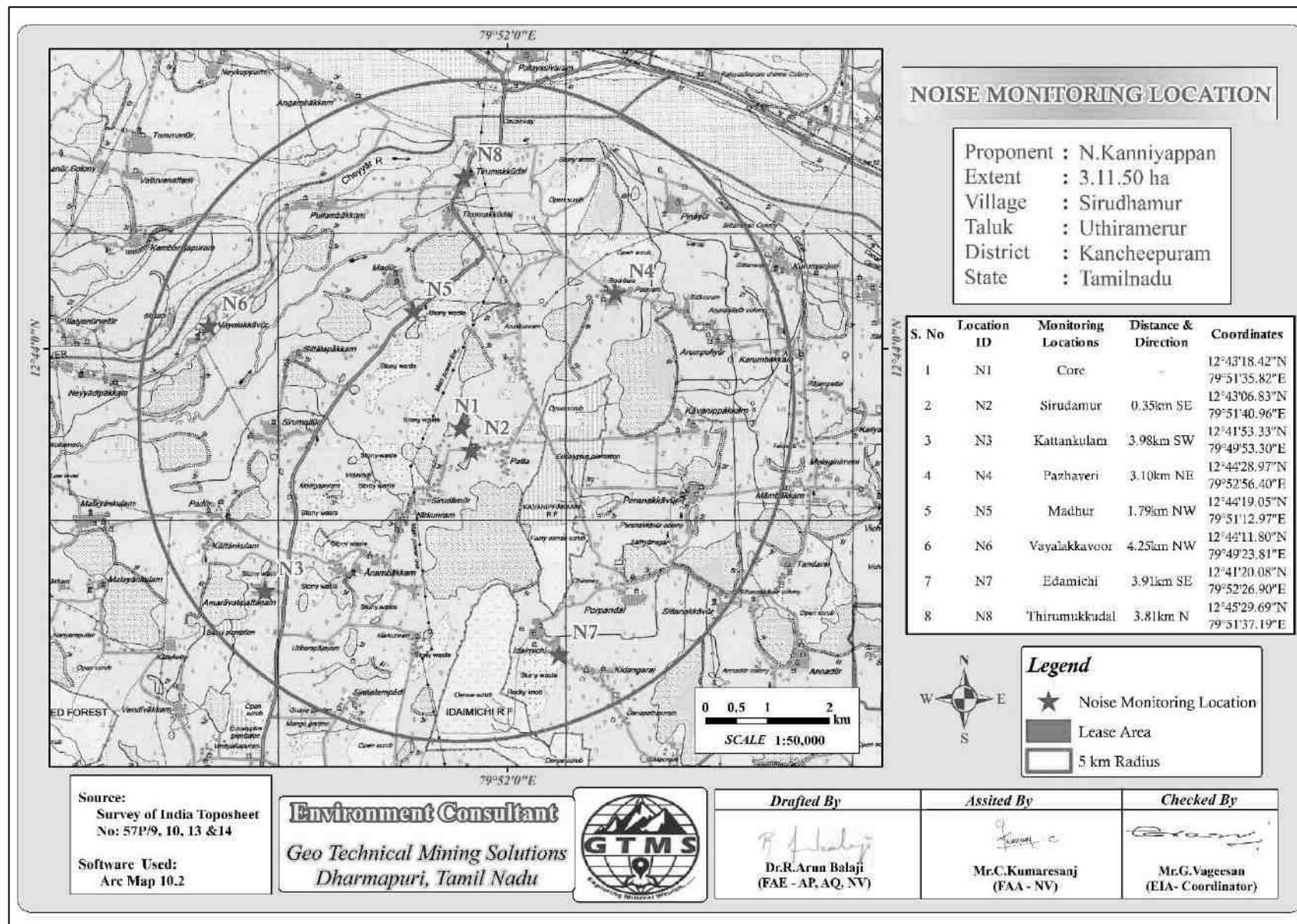


Figure 3.19 Google earth image showing Noise level monitoring station locations around 5km radius from the proposed project site

3.5.3 Analysis of Ambient Noise Level in the Study Area

The Digital Sound pressure level has been measured by a sound level meter (Model: HTC SL-1352). An analysis of the different Leq data obtained during the study period has been made. Variation was noted during the day-time as well as night-time. The results are presented in below Table 3.22.

Day time: 6:00 hours to 22.00 hours.

Night time: 22:00 hours to 6.00 hours.

Table 3.22 Ambient Noise Quality Result

S. No.	Locations	Noise level (dB (A) Leq)		Ambient Noise Standards
		Day Time	Night Time	
1	Core	48.6	36.5	Industrial Day Time- 75 dB (A) Night Time-70 dB (A)
2	Sirudamur	45.6	35.6	
3	Kattankulam	42.5	30.9	Residential Day Time- 55 dB (A) Night Time- 45 dB (A)
4	Pazhaveri	42.9	31.5	
5	Madhur	40.2	29.8	
6	Vayalakkavoor	39.8	30.8	
7	Edamichi	38.0	27.6	
8	Thirumukkudal	44.9	33.0	

Source: On-site monitoring/sampling by Accuracy Analabs Laboratory in association with GTMS

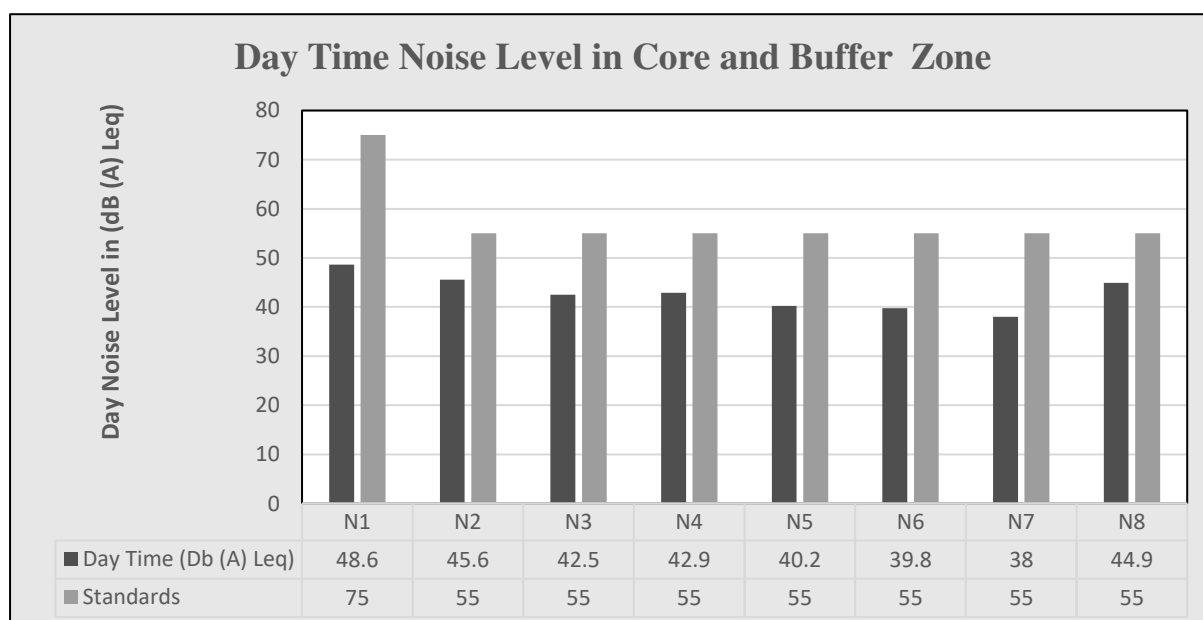


Figure 3.20 Bar chart showing day time noise levels measured in core and buffer zones

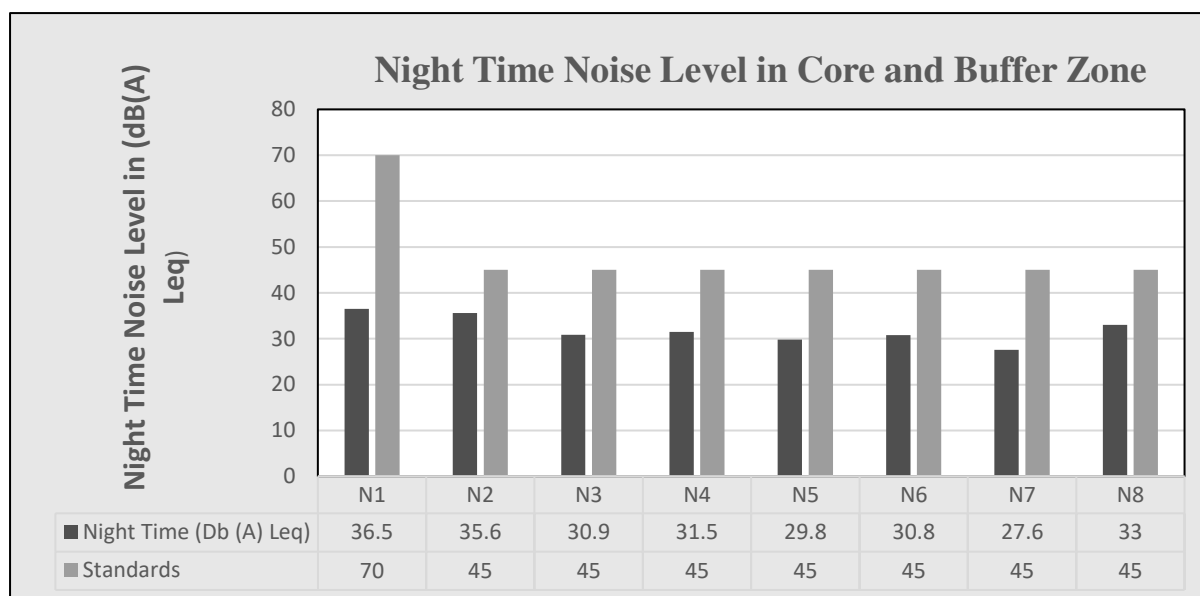


Figure 3.21 Bar chart showing night time noise levels measured in core and buffer zones

3.5.4 Results & Discussion

Ambient noise levels were measured at 8 locations around the proposed project area. Noise levels recorded in core zone during day time was 48.6 dB (A) Leq and during night time was 36.5 dB (A) Leq. Noise levels recorded in buffer zone during day time varied from 38 to 45.6dB (A) Leq and during night time from 27.6 to 35.6 dB (A) Leq. Thus, the noise level for industrial and residential area meets the requirements of CPCB.

3.6 ECOLOGICAL ENVIRONMENT

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

3.6.1 Scope of Work

Scope of work for this study includes identification of ecologically sensitive receptors based on literature survey, field investigations, and their mitigation with conservation action plan. The study was carried out in the core as well as buffer zone of the Proposed Rough stone quarry. The study was carried out systematically and scientifically using primary and

secondary data in order to bring out factual information on the ecological conditions of the mine site and 10 km radius study area.

The study involved assessment of general habitat type, vegetation pattern, preparation of inventory of flora and fauna of terrestrial ecosystem within 10 km radius from the boundary of the proposed quarry site. Biological assessment of the site was done to identify ecologically sensitive areas and whether there are any rare, endangered, endemic or threatened (REET) species of flora & fauna in the core area as well its buffer zone to be impacted. The study has also been designed to suggest suitable mitigation measures, if necessary, for protection of wildlife habitats and conservation of REET species if any.

3.6.2. Study area ecology

The core area extent of 3.11.5 Ha of Rough stone and gravel quarry has an impact on diversity of flora and fauna of surrounding area but present work was carried out on detailed study of the impacts of rough stone quarry on ecology and biodiversity of core lease area with the proper mitigation and sustainable management plan. The quarry lease applied area is a plain topography whereas in buffer zone some places agricultural land is dominated. The following methods were applied during the baseline study of flora, fauna and diversity assessment.

3.6.3 Objectives of Biological Studies

The present study was undertaken with the following objectives:

- ❖ To study the likely impact of the proposed mining project on the local biodiversity and to suggest mitigation measures, if required, for vulnerable biota.
- ❖ To assess the nature and distribution of vegetation (Terrestrial and Aquatic) in and around the mining activity.
- ❖ To collect details of flora and fauna, Endemic, Rare, Endangered and Threatened (RET Species) separately from the core and buffer area and to clearly indicate the schedule of fauna present.
- ❖ To prepare the necessary plan along with budgetary provisions for their conservation in consultation with State Forest and Wildlife Department and details furnished, in case of any schedule- I fauna found in the study area.
- ❖ To devise effective management & conservation measures for biodiversity.

3.6.4 Methodology of Sampling

The present study was carried out in steps as below:

- ❖ Field survey was conducted by visual encounter survey for flora present within the 10 km radius study area of proposed mine site.
- ❖ After surveying the core and buffer areas, a detailed floral inventory has been compiled. List of all plants of the study area was prepared and their habitats were recorded.
- ❖ Verification of Rare, Endangered and Threatened Flora species from IUCN Red Data Book.

Agricultural crops

Paddy, is the main crop grown. Different fruits like Banana, papaya, mangoes, guava and vegetables like brinjal, drumsticks, onion, also grown by the local people.

3.6.4.1 Site selection criteria

Selection of sampling locations was made with reference to topography, land use, vegetation pattern, etc. The observations were taken on natural vegetation, roadside plantation and non-forest area (agricultural field, in plain areas, Village wasteland, etc.) for quantitative representation of different species. A methodology of Sampling Flora and fauna studies were carried out during the Pre monsoon season to assess the list of terrestrial plant and animal species that occur in the core area and the buffer area up to 10 km radius from the project site. No damage is created to flora and fauna during the sampling.

In order to provide representative ecological status for the study area, the 10-km buffer zone has been divided into four quartiles for biodiversity sampling, i.e., NE (Quartile-1), NW (Quartile-2) SW (Quartile-3) and SE (Quartile-4). Each of the quartiles have been examined for representative flora on randomly sampled quadrats for trees (25x25-m), shrubs (10x10-m) and herbs (2x2-m) depending upon prevailing geographical conditions and biodiversity aspects of study area.

3.6.4.2 Phyto-Sociological Survey

Phyto sociological parameters, such as *Density, Frequency, Abundance and Importance Value Index* of individual species (Trees) were determined in randomly placed quadrates of different sizes in the study area. Relative frequency, and relative density were calculated and the sum of these three represented Importance Value Index (IVI) for various species. For shrubs, herbs and grasses, *Density, Frequency, Relative Density & Relative Frequency were found*. Sample plots were selected in such a way to get maximum representation of different types of vegetation and plots were laid out in different part of the

study area of 10 km radius. Analysis of the vegetation will help in determining the relative importance of each species in the study area and to reveal if any economically valuable species is threatened in the process.

Table 3.23 Calculation of Density, Frequency (%), Dominance, Relative Density, Relative Frequency, Relative Dominance & Important Value Index

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

3.6.4.3 Shannon – Wiener Index, Evenness and Richness

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

Table 3.24 Calculation of Species Diversity by Shannon – Wiener Index, Evenness and Richness

Description	Formula
Species diversity – Shannon – Wien Index	$H' = -\sum (p_i \ln p_i)$ Where p_i : Proportion of total sample represented by species i : number of individuals of species i / total number samples
Evenness	H'/H_{\max} $H_{\max} = \ln(s)$ = maximum diversity possible S =No. of species
Species Richness by Margalef	$RI = S - 1/\ln N$ Where S = Total Number of species in the community N = Total Number of individuals of all species in the community

3.6.4.4 Quadrats Method

Quadrats of 25 × 25m were laid down randomly within core and 10km buffer area; each quadrat was laid to assess the trees (>5 cm GBH) and one, 10 × 10m sub-quadrat nested within the quadrat for shrubs. The quadrats were laid randomly to cover the area to maximize the sampling efforts and minimize the species homogeneity, such as small stream area, trees in agricultural bunds, tank bunds, farm forestry plantations, wildlife areas, natural forest area, avenue plantations, house backyards, etc. In each quadrat individuals belonging to tree (25 × 25m) and shrub (10 × 10m) were recorded separately and have been identified on the field. Quadrat sampling methods is given in Figure 3.22.

3.6.5 Flora

Flora study was conducted using the above said methodology to inventory the existing terrestrial plants in both core and buffer zones. Details of plants have been described in the succeeding sections.

3.6.5.1 Flora in Core Zone

Taxonomically a total of 23 species belonging to 15 families have been recorded from the core mining lease area. The lease applied area is flat terrain. Based on habitat classification of the enumerated plants the majority of species were Herbs (09) followed by trees (05) Shrub (04) Climbers (02) Grass (03) and the result of core zone of flora studies shows that Fabaceae and Lamiaceae are the main dominating species and Species Richness (margalef Index) in the study area it mentioned in Table 3.25-3.27. Moreover, no species are found as threatened category. The proposed lease area following plant types such as *Prosopis juliflora*, *Borassus flabellifer*, *Azadirachta indica* are abundant in meagre amount. The project proponent plan to removing all the trees and regeneration in the adjacent safety area. The regenerated trees are possible to growing only for forty percentage, hence we recommend to project proponent 1:10 ratio of new seedling planning to established within the safety barriers, nearest forests land, road side and government porampoke lands.

3.6.5.2 Flora in Buffer Zone

Similar type of environment also in buffer area but with more flora diversity compare than core zone area because nearby agriculture land but presently there are no cultivation. It contains a total of 91 species belonging to 41 families have been recorded from the buffer zone. The floral (81) varieties among them Trees (31), shrubs (18) and herbs (20) and Climbers (12) Creepers (5), Grasses (4) Cactus (1) were identified. The result of buffer zone of flora studies shows that Fabaceae and Poaceae, are the main dominating species and Species Richness

(margalef Index) in the study area it mentioned in Table 3.28-3.30. There is no Rare, Endangered and Threatened Flora species in mining area and their surrounding area. Details of flora with the scientific name were mentioned in Table 3.28.



Figure 3.22 Ecological survey using Quadrat method in field

However, the information required as per the Standard Terms of Reference (ToR):

Tor 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. Impact, if any, of change of land use should be given.

The mine lease area is exhibiting a slightly elevated terrain. Kavanippakkam Reserve Forest has located about 1.1km East side on the Idaimichi RF 2.6 km on the Southeast side and marudam RF 7.1km on the southwest side, all the reserve forest away from the proposed project site. Even in the 10 Km buffer zone around the mine lease area, Hence, no certificate from the Forest department is required. No Biosphere reserves 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.

Tor No: 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.

The mine lease area is flat terrain. Kavanippakkam Reserve Forest has located about 1.1km East side on the Idaimichi RF 2.6 km on the Southeast side and Marudam RF 7.1km on the southwest side, all the reserve forest away from the proposed project site. No 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.

Tor No: 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.

As stated earlier, no forest land is involved in the proposed project in any manner. Hence no forest clearance is required.

Tor No: 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.

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.

Tor No: 15) The vegetation in the RF / PF areas in the study area, with necessary details, should be given.

The mine lease area is exhibiting a slightly elevated terrain. Kavanippakkam Reserve Forest has located about 1.1km East side on the Idaimichi RF 2.6 km on the Southeast side and Marudam RF 7.1km on the southwest side, all the reserve forest away from the proposed project site. It is a dense Scrub Forest Land, mostly containing *Calliea cinerea*, *Catunaregam spinosa*, *Carissa spinarum*, *Albizia amara*, *Buchanania lanzan*, and *Dodonaea viscosa*. Reserve Forest Details mentioned in Figure 3.23

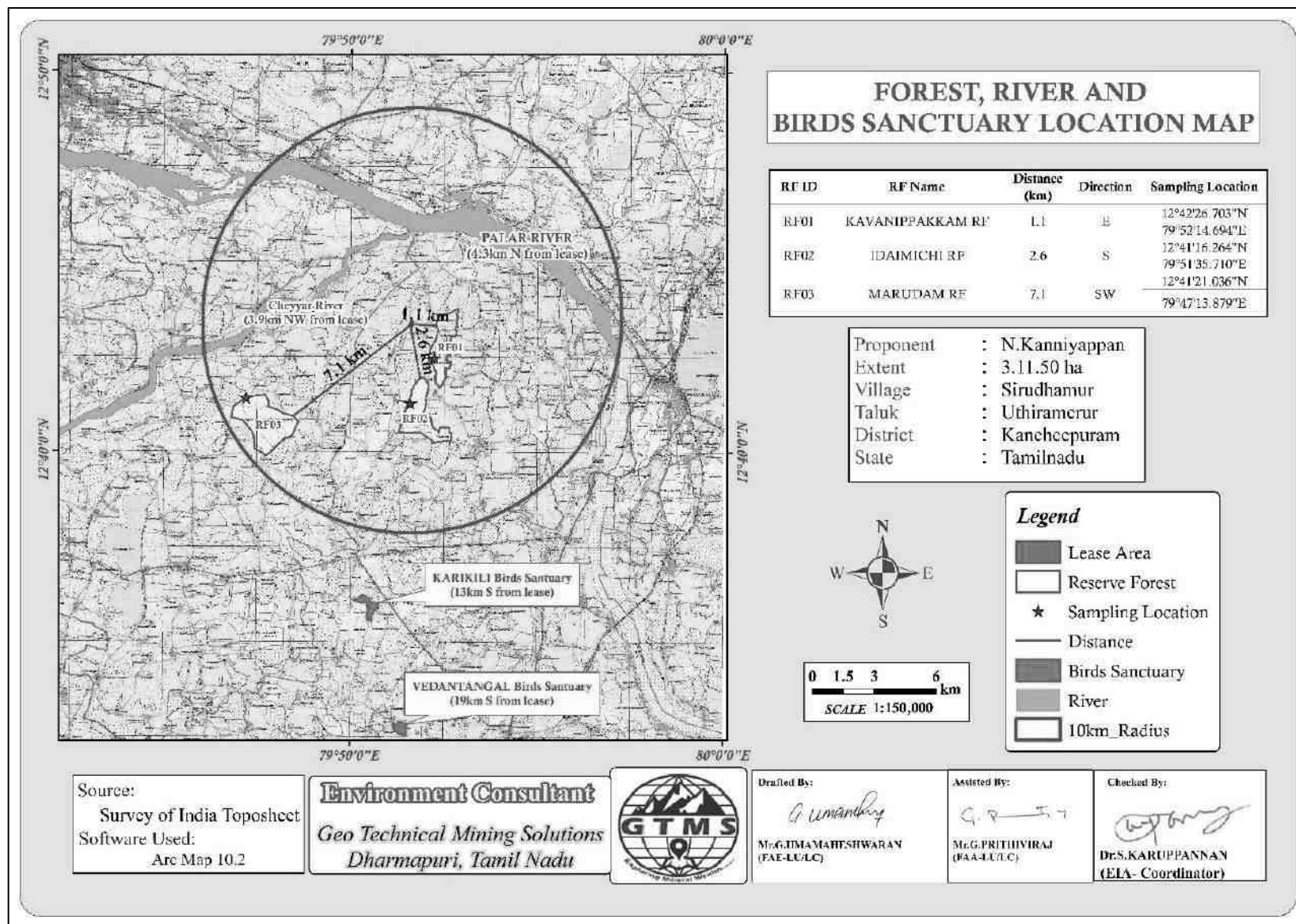


Figure 3.23 Toposheet showing forest and river locations around 10km radius from the proposed project site

Table 3.25 Flora in Core Zone

S.No	Local Name	Scientific name	Family name	Total No. of species	Total Quadrants with species	Total No. of Quadrants	Density	Frequency (%)	Abundance	Relative Density	Relative Frequency	IVI	IUCN Conservation Status
Tree													
1	Velikathan maram	<i>Prosopis juliflora</i>	Fabaceae	3	2	5	0.6	40.0	1.5	17.6	16.7	34.3	Not Listed
2	Pongam oiltree	<i>Pongamia pinnata</i>	Fabaceae	2	1	5	0.4	20.0	2.0	11.8	8.3	20.1	Not Listed
3	Panai maram	<i>Borassus flabellifer</i>	Arecaceae	4	3	5	0.8	60.0	1.3	23.5	25.0	48.5	Not Listed
4	Vembu	<i>Azadirachta indica</i>	Meliaceae	5	4	5	1.0	80.0	1.3	29.4	33.3	62.7	Not Listed
5	Eshamaram	<i>Phoenix Reclinata</i>	Arecaceae	2	2	5	0.6	40.0	1.5	17.6	16.7	34.3	Not Listed
Shrubs													
6	Erukku	<i>Calotropis gigantea</i>	Apocynaceae	6	5	10	0.6	50.0	1.2	21.4	20.8	42.3	Not Listed
7	Avarai	<i>Senna auriculata</i>	Fabaceae	9	8	10	0.9	80.0	1.1	32.1	33.3	65.5	Not Listed
8	Sappathikalli	<i>Cereus pterogonus</i>	Cactaceae	8	7	10	0.8	70.0	1.1	28.6	29.2	57.7	Not Listed
9	Unichedi	<i>Lantana camara</i>	Verbenaceae	5	4	10	0.5	40.0	1.3	17.9	16.7	34.5	Not Listed
herbs													
10	Thumbai	<i>Leucas aspera</i>	Lamiaceae	6	5	15	0.4	33.3	1.2	6.0	5.8	11.8	Not Listed
11	Poolai poondu	<i>Aerva lanata</i>	Amaranthaceae	7	6	15	0.5	40.0	1.2	7.0	7.0	14.0	Not Listed
12	Korai	<i>Cyperus rotundus</i>	Cyperaceae	5	4	15	0.3	26.7	1.3	5.0	4.7	9.7	Not Listed
13	Nerunji	<i>Tribulus terrestris</i>	Zygophyllales	8	7	15	0.5	46.7	1.1	8.0	8.1	16.1	Not Listed
14	Nayuruv	<i>Achyranthes aspera</i>	Amaranthaceae	6	5	15	0.4	33.3	1.2	6.0	5.8	11.8	Not Listed
15	Pink Blumea	<i>Blumea axillaris</i>	Asteraceae	5	4	15	0.3	26.7	1.3	5.0	4.7	9.7	Not Listed
16	Rail Pindu	<i>Croton bonplandianus</i>	Euphorbiaceae	6	5	15	0.4	33.3	1.2	6.0	5.8	11.8	Not Listed
17	Communist pacha	<i>Chromolaena odorata</i>	Asteraceae	7	6	15	0.5	40.0	1.2	7.0	7.0	14.0	Not Listed
18	veattukayapundu	<i>Tridax Procumbens</i>	Asteraceae	8	7	15	0.5	46.7	1.1	8.0	8.1	16.1	Not Listed
19	Mosukkattan	<i>Passiflora foetida</i>	Passifloraceae	6	5	15	0.4	33.3	1.2	6.0	5.8	11.8	Not Listed
20	Perandai	<i>Cissus quadrangularis</i>	Vitaceae	9	8	15	0.6	53.3	1.1	9.0	9.3	18.3	Not Listed
21	Arugam Pill	<i>Cynodon dactylon</i>	Poaceae	10	9	15	0.7	60.0	1.1	10.0	10.5	20.5	Not Listed

Table 3.26 Calculation of Species Diversity in Core Zone

S.No	Common name	Scientific name	No. of Species	Pi	ln (Pi)	Pi x ln (Pi)
Tree						
1	Velikathan maram	<i>Prosopis juliflora</i>	3	0.18	-1.73	-0.31
2	Pongam oiltree	<i>Pongamia pinnata</i>	2	0.12	-2.14	-0.25
3	Panai maram	<i>Borassus flabellifer</i>	4	0.24	-1.45	-0.34
4	Vembu	<i>Azadirachta indica</i>	5	0.29	-1.22	-0.36
5	Eshamaram	<i>Phoenix Reclinata</i>	2	0.12	-2.14	-0.25
H (Shannon Diversity Index) =1.54						
Shrubs						
6	Erukku	<i>Calotropis gigantea</i>	6	0.21	-1.54	-0.33
7	Avarai	<i>Senna auriculata</i>	9	0.32	-1.13	-0.36
8	Sappathikalli	<i>Cereus pterogonus</i>	8	0.29	-1.25	-0.36
9	Unichedi	<i>Lantana camara</i>	5	0.18	-1.72	-0.31
H (Shannon Diversity Index) =1.36						
Herbs						
10	Thumbai	<i>Leucas aspera</i>	6	0.07	-2.63	-0.19
11	Poolai poundu	<i>Aerva lanata</i>	7	0.08	-2.47	-0.21
12	Korai	<i>Cyperus rotundus</i>	5	0.06	-2.81	-0.17
13	Nerunji	<i>Tribulus terrestris</i>	8	0.10	-2.34	-0.23
14	Nayuruv	<i>Achyranthes aspera</i>	6	0.07	-2.63	-0.19
15	Pink Blumea	<i>Blumea axillaris</i>	5	0.06	-2.81	-0.17
16	Rail Pindu	<i>Croton bonplandianus</i>	6	0.07	-2.63	-0.19
17	Communist pacha	<i>Chromolaena odorata</i>	7	0.08	-2.47	-0.21
18	veattukayapundu	<i>Tridax Procumbens</i>	8	0.10	-2.34	-0.23
19	Mosukkattan	<i>Passiflora foetida</i>	6	0.07	-2.63	-0.19
20	Perandai	<i>Cissus quadrangularis</i>	9	0.11	-2.22	-0.24
21	Arugam Pill	<i>Cynodon dactylon</i>	10	0.12	-2.12	-0.25
H (Shannon Diversity Index) =2.46						

Table 3.27 Species Richness in Core Zone

Details	H	H max	Evenness	Species Richness (Margalef Index)
Tree	1.54	1.61	0.96	1.44
Shrubs	1.36	1.61	0.98	0.90
Herbs	2.46	2.48	9.99	2.49

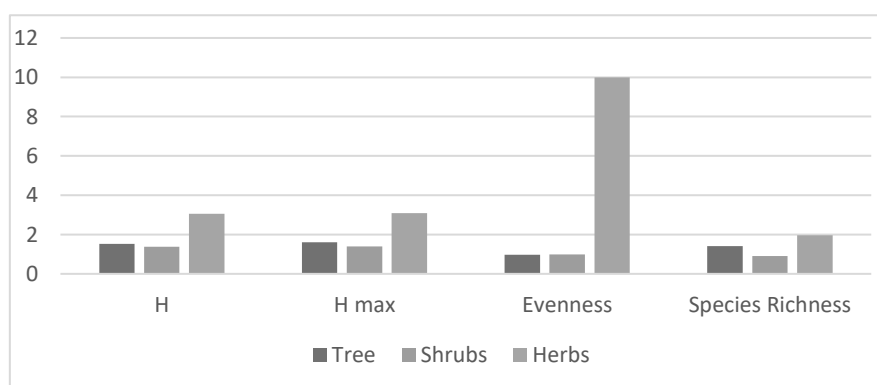


Figure 3.24 Floral diversity species Richness (Index) in Core zone

Table 3.28 Flora in Buffer Zone

S.No	Local Name	Scientific name	Family name	Total No. of species	Total of Quadrants with species	Total No. of Quadrants	Density	Frequency (%)	Abundance	Relative Density	Relative Frequency	IVI	IUCN Conservation Status
TREE													
1	Vembu	<i>Azadirachta indica</i>	Meliaceae	2	1	10	0.2	10.0	2.0	2.0	1.4	3.4	Not Listed
2	Pongam oiltree	<i>Pongamia pinnata</i>	Fabaceae	4	3	10	0.4	30.0	1.3	4.0	4.3	8.2	Not Listed
3	Karuvelam	<i>Acacia nilotica</i>	Mimosaceae	2	1	10	0.2	10.0	2.0	2.0	1.4	3.4	Not Listed
4	Thennai maram	<i>Cocos nucifera</i>	Arecaceae	3	2	10	0.3	20.0	1.5	3.0	2.9	5.8	Not Listed
5	Puliyamaram	<i>Tamarindus indica</i>	Legumes	2	1	10	0.2	10.0	2.0	2.0	1.4	3.4	Not Listed
6	Athi	<i>Ficus recemosa</i>	Moraceae	3	2	10	0.3	20.0	1.5	3.0	2.9	5.8	Not Listed
7	Vazhaimaram	<i>Musa</i>	Musaceae	5	4	10	0.5	40.0	1.3	5.0	5.7	10.7	Not Listed
8	Nettilinkam	<i>Polylathia longifolia</i>	Annonaceae	3	2	10	0.3	20.0	1.5	3.0	2.9	5.8	Not Listed
9	Amanakku	<i>Ricinus communis</i>	Euphorbiaceae	2	1	10	0.2	10.0	2.0	2.0	1.4	3.4	Not Listed
10	Perumungil	<i>Bambusa bambos</i>	Poaceae	4	3	10	0.4	30.0	1.3	4.0	4.3	8.2	Not Listed
11	Karungali	<i>Acacia sundra</i>	Legumes	2	1	10	0.2	10.0	2.0	2.0	1.4	3.4	Not Listed
12	Sapota	<i>Manilkara zapota</i>	Sapotaceae	4	3	10	0.4	30.0	1.3	4.0	4.3	8.2	Not Listed
13	Eucalyptus	<i>Eucalyptus globules</i>	Myrtaceae	2	1	10	0.2	10.0	2.0	2.0	1.4	3.4	Not Listed
14	Navalmaram	<i>Sygygium cumini</i>	Myrtaceae	3	2	10	0.3	20.0	1.5	3.0	2.9	5.8	Not Listed
15	Ezhumuchaipalam	<i>Citrus lemon</i>	Rutaceae	5	4	10	0.5	40.0	1.3	5.0	5.7	10.7	Not Listed
16	Alamaram	<i>Ficus benghalensis</i>	Moraceae	2	1	10	0.2	10.0	2.0	2.0	1.4	3.4	Not Listed
17	Panai maram	<i>Borassus flabellifer</i>	Arecaceae	3	2	10	0.3	20.0	1.5	3.0	2.9	5.8	Not Listed
18	Manga	<i>Mangifera indica</i>	Anacardiaceae	4	3	10	0.4	30.0	1.3	4.0	4.3	8.2	Not Listed
19	Thekku	<i>Tectona grandis</i>	Verbenaceae	2	1	10	0.2	10.0	2.0	2.0	1.4	3.4	Not Listed
20	Nelli	<i>Emblica officinalis</i>	Phyllanthaceae	5	4	10	0.5	40.0	1.3	5.0	5.7	10.7	Not Listed
21	Karuvelam maram	<i>Vachellia nilotica</i>	Fabaceae	4	3	10	0.4	30.0	1.3	4.0	4.3	8.2	Not Listed

22	Vadanarayani	<i>Delonix elata</i>	Fabaceae	3	2	10	0.3	20.0	1.5	3.0	2.9	5.8	Not Listed
23	Marudaani	<i>Lawsonia inermis</i>	Lythraceae	5	4	10	0.5	40.0	1.3	5.0	5.7	10.7	Not Listed
24	Pappali maram	<i>Carica papaya L</i>	Caricaceae	4	3	10	0.4	30.0	1.3	4.0	4.3	8.2	Not Listed
25	Nochi	<i>Vitex negundo</i>	Verbenaceae	3	2	10	0.3	20.0	1.5	3.0	2.9	5.8	Not Listed
26	Vilvam	<i>Aegle marmelos</i>	Rutaceae	2	1	10	0.2	10.0	2.0	2.0	1.4	3.4	Not Listed
27	Nuna maram	<i>Morinda citrifolia</i>	Rubiaceae	4	3	10	0.4	30.0	1.3	4.0	4.3	8.2	Not Listed
28	Koyya	<i>Psidium guajava</i>	Myrtaceae	5	4	10	0.5	40.0	1.3	5.0	5.7	10.7	Not Listed
29	Seethapazham	<i>Annona reticulata</i>	Annonaceae	4	3	10	0.4	30.0	1.3	4.0	4.3	8.2	Not Listed
30	vagai	<i>albizia lebbbeck</i>	Fabaceae	3	2	10	0.3	20.0	1.5	3.0	2.9	5.8	Not Listed
31	Savuku	<i>Casuarina equisetifolia</i>	Casuarinaceae	2	1	10	0.2	10.0	2.0	2.0	1.4	3.4	Not Listed
SHRUBS													
32	Avarai	<i>Senna auriculata</i>	Fabaceae	7	6	15	0.5	40.0	1.2	5.8	5.9	11.7	Not Listed
33	Sundaika	<i>Solanum torvum</i>	Solanaceae	8	7	15	0.5	46.7	1.1	6.7	6.9	13.5	Not Listed
34	Arali	<i>Nerium indicum</i>	Apocynaceae	9	8	15	0.6	53.3	1.1	7.5	7.8	15.3	Not Listed
35	Idlipoo	<i>xoracoc cineea</i>	Rubiaceae	6	5	15	0.4	33.3	1.2	5.0	4.9	9.9	Not Listed
36	Neermulli	<i>Hydrophila auriculata</i>	Acanthaceae	7	6	15	0.5	40.0	1.2	5.8	5.9	11.7	Not Listed
37	Icham	<i>Phoenix pusilla</i>	Arecaceae	5	4	15	0.3	26.7	1.3	4.2	3.9	8.1	Not Listed
38	Chaturakalli	<i>Euphorbia antiquorum</i>	Euphorbiaceae	8	7	15	0.5	46.7	1.1	6.7	6.9	13.5	Not Listed
39	Kattamanakku	<i>Jatropha curcas</i>	Euphorbiaceae	6	5	15	0.4	33.3	1.2	5.0	4.9	9.9	Not Listed
40	Thuthi	<i>Abutilon indicum</i>	Meliaceae	7	6	15	0.5	40.0	1.2	5.8	5.9	11.7	Not Listed
41	Chemparuthi	<i>Hibiscus rosa-sinensis</i>	Malvaceae	8	7	15	0.5	46.7	1.1	6.7	6.9	13.5	Not Listed
42	Kundumani	<i>Abrus precatorius</i>	Fabaceae	6	5	15	0.4	33.3	1.2	5.0	4.9	9.9	Not Listed
43	Erukku	<i>Calotropis gigantea</i>	Apocynaceae	7	6	15	0.5	40.0	1.2	5.8	5.9	11.7	Not Listed
44	Kealaka	<i>carissa carandas</i>	Apocynaceae	5	4	15	0.3	26.7	1.3	4.2	3.9	8.1	Not Listed
45	cirututti	<i>Hibiscus vitifolius</i>	Malvaceae	6	5	15	0.4	33.3	1.2	5.0	4.9	9.9	Not Listed

46	rigida	Ehretia rigida	Boraginaceae	7	6	15	0.5	40.0	1.2	5.8	5.9	11.7	Not Listed
47	Marul-umattai	Xanthium strumarium L	Asteraceae	5	4	15	0.3	26.7	1.3	4.2	3.9	8.1	Not Listed
48	Venmalar	Ligustrum vulgare	Oleaceae	6	5	15	0.4	33.3	1.2	5.0	4.9	9.9	Not Listed
49	Unishedi	Lantana camara	Verbenaceae	7	6	15	0.5	40.0	1.2	5.8	5.9	11.7	Not Listed
HERBS&CLIMBER &CREEPER &GRASSES													
50	Nayuruv	Achyranthes aspera	Amaranthaceae	6	5	25	0.2	0.1	0.1	0.4	87.5	7.9	Not Listed
51	Veetukaayapoondur	Tridax procumbens	Asteraceae	7	6	25	0.3	24.0	1.2	2.5	2.4	4.9	Not Listed
52	Koraikkilangu	Cyperus articulatus	Cyperaceae	5	4	25	0.2	16.0	1.3	1.8	1.6	3.4	Not Listed
53	Kuppaimeni	Acalypha indica	Euphorbiaceae	7	6	25	0.3	24.0	1.2	2.5	2.4	4.9	Not Listed
54	Chempu	Colocasia indica	Araceae	6	5	25	0.2	20.0	1.2	2.1	2.0	4.1	Not Listed
55	Karisilanganni	Eclipta prostrata	Asteraceae	8	7	25	0.3	28.0	1.1	2.8	2.8	5.7	Not Listed
56	Korai	Cyperus rotundus	Cyperaceae	6	5	25	0.2	20.0	1.2	2.1	2.0	4.1	Not Listed
57	Kunnakora	Cyperus compressus	Cyperaceae	8	7	25	0.3	28.0	1.1	2.8	2.8	5.7	Not Listed
58	Milagai	Capsicum frutescens	Solanaceae	7	8	25	0.3	32.0	0.9	2.5	3.3	5.7	Not Listed
59	Kanamvazha	Commelina benghalensis	Commelinaceae	6	5	25	0.2	20.0	1.2	2.1	2.0	4.1	Not Listed
60	Nai kadugu	Celome viscosa	Capparidaceae	5	4	25	0.2	16.0	1.3	1.8	1.6	3.4	Not Listed
61	Thumbai	Leucas aspera	Lamiaceae	7	6	25	0.3	24.0	1.2	2.5	2.4	4.9	Not Listed
62	Parttiniyam	Parthenium hysterophorus	Asteraceae	6	5	25	0.2	20.0	1.2	2.1	2.0	4.1	Not Listed
63	Mukurattai	Boerhavia diffusa	Nyctaginaceae	5	4	25	0.2	16.0	1.3	1.8	1.6	3.4	Not Listed
64	Thulasi	Ocimum tenuiflorum	Lamiaceae	9	8	25	0.4	32.0	1.1	3.2	3.3	6.4	Not Listed
65	Manathakkali	Solanum nigrum	Solanaceae	8	7	25	0.3	28.0	1.1	2.8	2.8	5.7	Not Listed
66	Kumipoondur	Gomphrena celosioides	Amaranthaceae	6	5	25	0.2	20.0	1.2	2.1	2.0	4.1	Not Listed
67	Kattuthulasi	Ocimum sanctum	Lamiaceae	9	8	25	0.4	32.0	1.1	3.2	3.3	6.4	Not Listed
68	Kattukolingi	Tephrosia purpurea	Fabaceae	7	6	25	0.3	24.0	1.2	2.5	2.4	4.9	Not Listed
69	Wight, Contrib	Blumea axillaris	Asteraceae	6	5	25	0.2	20.0	1.2	2.1	2.0	4.1	Not Listed

70	Kovai	<i>Coccinia grandis</i>	Cucurbitaceae	5	4	25	0.2	16.0	1.3	1.8	1.6	3.4	Not Listed
71	Perandai	<i>Cissus quadrangularis</i>	Vitaceae	9	8	25	0.4	32.0	1.1	3.2	3.3	6.4	Not Listed
72	Mudakkotan	<i>Cardiospermum helicacabum</i>	Sapindaceae	6	5	25	0.2	20.0	1.2	2.1	2.0	4.1	Not Listed
73	Karkakartum	<i>Clitoria ternatea</i>	Fabaceae	7	6	25	0.3	24.0	1.2	2.5	2.4	4.9	Not Listed
74	Nannari	<i>Hemidesmus indicus</i>	Asclepiadaceae	5	4	25	0.2	16.0	1.3	1.8	1.6	3.4	Not Listed
75	Kovakkai	<i>Coccinia grandis (L.)</i>	Cucurbitaceae	6	5	25	0.2	20.0	1.2	2.1	2.0	4.1	Not Listed
76	Malli	<i>Jasminum augustifolium</i>	Oleaceae	7	6	25	0.3	24.0	1.2	2.5	2.4	4.9	Not Listed
78	Musumusukkai	<i>Mukia maderaspatana</i>	Cucurbitaceae	8	7	25	0.3	28.0	1.1	2.8	2.8	5.7	Not Listed
79	Mosukkattan Poonaipiduku	<i>Passiflora foetida</i>	Passifloraceae	7	6	25	0.3	24.0	1.2	2.5	2.4	4.9	Not Listed
80	Ptruukodi	<i>Helinus integrifolius</i>	Rhamnaceae	6	5	25	0.2	20.0	1.2	2.1	2.0	4.1	Not Listed
81	Kattuppirantai	<i>Causonis trifolia</i>	Vitaceae	7	6	25	0.3	24.0	1.2	2.5	2.4	4.9	Not Listed
82	Vallikeerai	<i>Ipomoea aquatica</i>	Convolvulaceae	5	4	25	0.2	16.0	1.3	1.8	1.6	3.4	Not Listed
83	Siru Puladi	<i>Desmodium triflorum</i>	Fabaceae	6	5	25	0.2	20.0	1.2	2.1	2.0	4.1	Not Listed
84	Sithrapaalavi	<i>Euphorbia prostrata</i>	Euphorbiaceae	7	6	25	0.3	24.0	1.2	2.5	2.4	4.9	Not Listed
85	Korai	<i>Cyperus rotundus</i>	Poaceae	6	5	25	0.2	20.0	1.2	2.1	2.0	4.1	Not Listed
86	Malai Mookuthi Poondur	<i>Wedelia trilobata</i>	Asteraceae	7	6	25	0.3	24.0	1.2	2.5	2.4	4.9	Not Listed
87	Nellu	<i>Oryza sativa</i>	Poaceae	9	8	25	0.4	32.0	1.1	3.2	3.3	6.4	Not Listed
88	Pullu	<i>Eragrostis ferruginea</i>	Poaceae	10	9	25	0.4	36.0	1.1	3.5	3.7	7.2	Not Listed
89	Chevvarakupul	<i>Chloris barbata</i>	Amaranthaceae	8	7	25	0.3	28.0	1.1	2.8	2.8	5.7	Not Listed
90	Arugampul	<i>Cynodon dactylon</i>	Poaceae	11	10	25	0.4	40.0	1.1	3.9	4.1	7.9	Not Listed
91	kathalai	<i>Opuntia guatemalensis</i>	Cactaceae	9	8	25	0.4	32.0	1.1	3.2	3.3	6.4	Not Listed

Table 3.29 Calculation of Species Diversity in buffer Zone

S.No	Common name	Scientific name	No. of Species	Pi	ln (Pi)	Pi x ln (Pi)
Tree						
1	Vembu	<i>Azadirachta indica</i>	2	0.02	-3.92	-0.08
2	Pongam oiltree	<i>Pongamia pinnata</i>	4	0.04	-3.23	-0.13
3	Karuvelam	<i>Acacia nilotica</i>	2	0.02	-3.92	-0.08
4	Thennai maram	<i>Cocos nucifera</i>	3	0.03	-3.52	-0.10
5	Puliyamaram	<i>Tamarindus indica</i>	2	0.02	-3.92	-0.08
6	Athi	<i>Ficus recemosa</i>	3	0.03	-3.52	-0.10
7	Vazhaimaram	<i>Musa</i>	5	0.05	-3.01	-0.15
8	Nettilinkam	<i>Polylathia longifolia</i>	3	0.03	-3.52	-0.10
9	Amanakku	<i>Ricinus communis</i>	2	0.02	-3.92	-0.08
10	Perumungil	<i>Bambusa bambos</i>	4	0.04	-3.23	-0.13
11	Karungali	<i>Acacia sundra</i>	2	0.02	-3.92	-0.08
12	Sapota	<i>Manilkara zapota</i>	4	0.04	-3.23	-0.13
13	Eucalyptus	<i>Eucalyptus globules</i>	2	0.02	-3.92	-0.08
14	Navalmaram	<i>Sygygium cumini</i>	3	0.03	-3.52	-0.10
15	Ezhumuchaipalam	<i>Citrus lemon</i>	5	0.05	-3.01	-0.15
16	Alamaram	<i>Ficus benghalensis</i>	2	0.02	-3.92	-0.08
17	Panai maram	<i>Borassus flabellifer</i>	3	0.03	-3.52	-0.10
18	Manga	<i>Mangifera indica</i>	4	0.04	-3.23	-0.13
19	Thekku	<i>Tectona grandis</i>	2	0.02	-3.92	-0.08
20	Nelli	<i>Emblica officinalis</i>	5	0.05	-3.01	-0.15
21	Karuvelam maram	<i>Vachellia nilotica</i>	4	0.04	-3.23	-0.13
22	Vadanarayani	<i>Delonix elata</i>	3	0.03	-3.52	-0.10
23	Marudaani	<i>Lawsonia inermis</i>	5	0.05	-3.01	-0.15
24	Pappali maram	<i>Carica papaya L</i>	4	0.04	-3.23	-0.13
25	Nochi	<i>Vitex negundo</i>	3	0.03	-3.52	-0.10
26	Vilvam	<i>Aegle marmelos</i>	2	0.02	-3.92	-0.08
27	Nuna maram	<i>Morinda citrifolia</i>	4	0.04	-3.23	-0.13
28	Koyya	<i>Psidium guajava</i>	5	0.05	-3.01	-0.15
29	Seethapazham	<i>Annona reticulata</i>	4	0.04	-3.23	-0.13
30	vagai	<i>albizia lebbeck</i>	3	0.03	-3.52	-0.10
31	Savuku	<i>Casuarina equisetifolia</i>	2	0.02	-3.92	-0.08
H (Shannon Diversity Index) =3.38						
Shrubs						
32	Avarai	<i>Senna auriculata</i>	7	0.06	-2.84	-0.17
33	Sundaika	<i>Solanum torvum</i>	8	0.07	-2.71	-0.18
34	Arali	<i>Nerium indicum</i>	9	0.08	-2.59	-0.19
35	Idlipoo	<i>xoracoc cinea</i>	6	0.05	-3.00	-0.15
36	Neermulli	<i>Hydrophila auriculata</i>	7	0.06	-2.84	-0.17
37	Icham	<i>Phoenix pusilla</i>	5	0.04	-3.18	-0.13
38	Chaturakalli	<i>Euphorbia antiquorum</i>	8	0.07	-2.71	-0.18
39	Kattamanakku	<i>Jatropha curcas</i>	6	0.05	-3.00	-0.15

40	Thuthi	<i>Abutilon indicum</i>	7	0.06	-2.84	-0.17
41	Chemparuthi	<i>Hibiscu rosa-sinensis</i>	8	0.07	-2.71	-0.18
42	Kundumani	<i>Abrus precatorius</i>	6	0.05	-3.00	-0.15
43	Erukku	<i>Calotropis gigantea</i>	7	0.06	-2.84	-0.17
44	Kealaka	<i>carissa carandas</i>	5	0.04	-3.18	-0.13
45	cirututti	<i>Hibiscus vitifolius</i>	6	0.05	-3.00	-0.15
46	rigida	<i>Ehretia rigida</i>	7	0.06	-2.84	-0.17
47	Marul-umattai	<i>Xanthium strumarium</i> L	5	0.04	-3.18	-0.13
48	Venmalar	<i>Ligustrum vulgare</i>	6	0.05	-3.00	-0.15
49	Unishedi	<i>Lantana camara</i>	7	0.06	-2.84	-0.17
H (Shannon Diversity Index) =2.88						
HERBS&CLIMBER &CREEPER &GRASSES						
50	Nayuruv	<i>Achyranthes aspera</i>	6	0.02	-3.86	-0.08
51	Veetukaayapoond	<i>Tridax procumbens</i>	7	0.02	-3.71	-0.09
52	Koraikkilangu	<i>Cyperus articulatus</i>	5	0.02	-4.04	-0.07
53	Kuppaimeni	<i>Acalypha indica</i>	7	0.02	-3.71	-0.09
54	Chempu	<i>Colocasia indica</i>	6	0.02	-3.86	-0.08
55	Karisilanganni	<i>Eclipta prostrata</i>	8	0.03	-3.57	-0.10
56	Korai	<i>Cyperus rotundus</i>	6	0.02	-3.86	-0.08
57	Kunnakora	<i>Cyperus compressus</i>	8	0.03	-3.57	-0.10
58	Milagai	<i>Capsicum frutescens</i>	7	0.02	-3.71	-0.09
59	Kanamvazha	<i>Commelina benghalensis</i>	6	0.02	-3.86	-0.08
60	Nai kadugu	<i>Celome viscosa</i>	5	0.02	-4.04	-0.07
61	Thumbai	<i>Leucas aspera</i>	7	0.02	-3.71	-0.09
62	Parttiniyam	<i>Parthenium hysterophorus</i>	6	0.02	-3.86	-0.08
63	Mukurattai	<i>Boerhavia diffusa</i>	5	0.02	-4.04	-0.07
64	Thulasi	<i>Ocimum tenuiflorum</i>	9	0.03	-3.46	-0.11
65	Manathakkali	<i>Solanum nigrum</i>	8	0.03	-3.57	-0.10
66	Kumipoond	<i>Gomphrena celosioides</i>	6	0.02	-3.86	-0.08
67	Kattuthulasi	<i>Ocimum sanctum</i>	9	0.03	-3.46	-0.11
68	Kattukolingi	<i>Tephrosia purpurea</i>	7	0.02	-3.71	-0.09
69	Wight, Contrib	<i>Blumea axillaris</i>	6	0.02	-3.86	-0.08
70	Kovai	<i>Coccinia grandis</i>	5	0.02	-4.04	-0.07
71	Perandai	<i>Cissus quadrangularis</i>	9	0.03	-3.46	-0.11
72	Mudakkotan	<i>Cardiospermum helicacabum</i>	6	0.02	-3.86	-0.08
73	Karkakartum	<i>Clitoria ternatea</i>	7	0.02	-3.71	-0.09
74	Nannari	<i>Hemidesmus indicus</i>	5	0.02	-4.04	-0.07
75	Kovakkai	<i>Coccinia grandis (L.)</i>	6	0.02	-3.86	-0.08
76	Malli	<i>Jasminum augustifolium</i>	7	0.02	-3.71	-0.09
78	Musumusukkai	<i>Mukia maderaspatana</i>	8	0.03	-3.57	-0.10
79	Mosukkattan Poonaipiduku	<i>Passiflora foetida</i>	7	0.02	-3.71	-0.09

80	Ptruukodi	<i>Helinus integrifolius</i>	6	0.02	-3.86	-0.08
81	Kattuppirantai	<i>Causonis trifolia</i>	7	0.02	-3.71	-0.09
82	Vallikeerai	<i>Ipomoea aquatica</i>	5	0.02	-4.04	-0.07
83	Siru Puladi	<i>Desmodium triflorum</i>	6	0.02	-3.86	-0.08
84	Sithrapaalavi	<i>Euphorbia prostrata</i>	7	0.02	-3.71	-0.09
85	Korai	<i>Cyperus rotandus</i>	6	0.02	-3.86	-0.08
86	Mookuthi Poondur	<i>Wedelia trilobata</i>	7	0.02	-3.71	-0.09
87	Nellu	<i>Oryza sativa</i>	9	0.03	-3.46	-0.11
88	Pullu	<i>Eragrostis ferruginea</i>	10	0.04	-3.35	-0.12
89	Chevvarakupul	<i>Chloris barbata</i>	8	0.03	-3.57	-0.10
90	Arugampul	<i>Cynodon dactylon</i>	11	0.04	-3.25	-0.13
91	kathalai	<i>Opuntia guatemalensis</i>	9	0.03	-3.46	-0.11
H (Shannon Diversity Index) =3.69						

Table 3.30 Species Richness (Index) in Buffer Zone

Details	H	H max	Evenness	Species Richness
Tree	3.38	3.43	0.98	6.50
Shrubs	2.88	2.89	1.00	3.55
Herbs	3.69	3.71	0.99	7.08

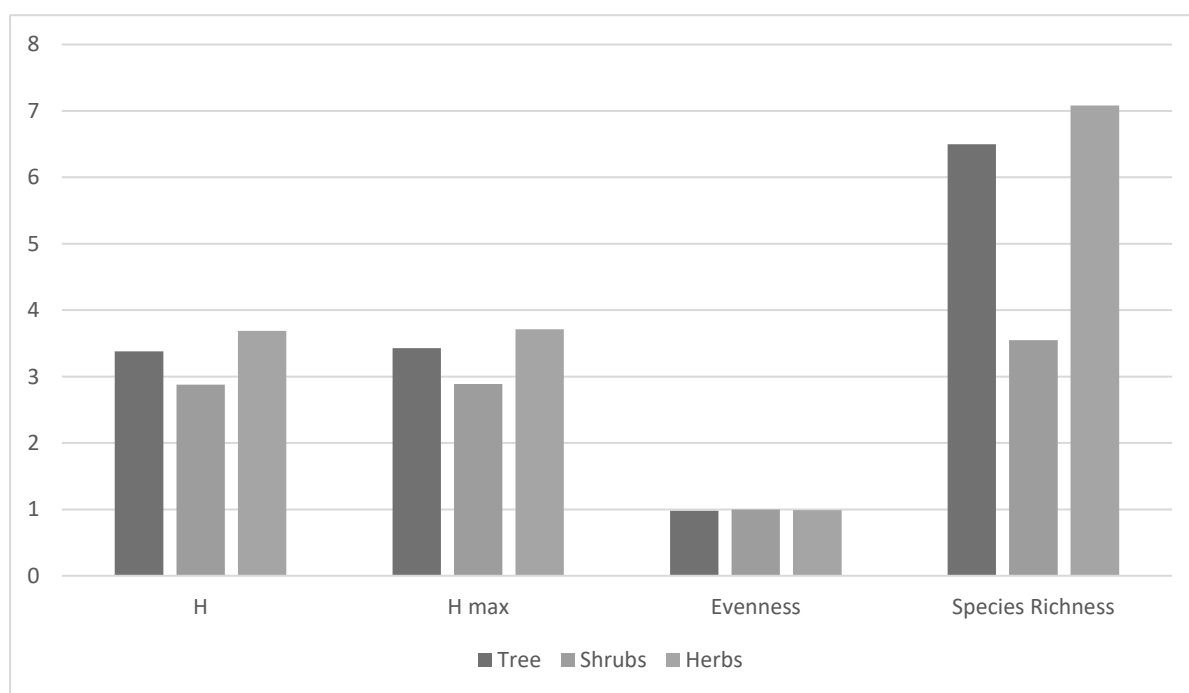


Figure 3.25 Floral diversity species Richness (Index) in buffer zone



Borassus flabellifer



Helinus integrifolius



Cissus quadrangularis



Leucas aspera



Ipomoea carnea



carissa carandas



Ocimum tenuiflorum



Tephrosia purpurea



Phoenix Reclinata



croton bonplandianus



Chloris barbata



Blumea axillaris



Ruellia nudiflora



Ficus hispida



Andrographis echinoides



Ehretia rigida



Prosopis juliflora



Hibiscus vitifolius L



Xanthium strumarium L



Jatropha gossypifolia L



Panicum maximum



Cayratia trifolia (L.)



Coccinia grandis (L.)



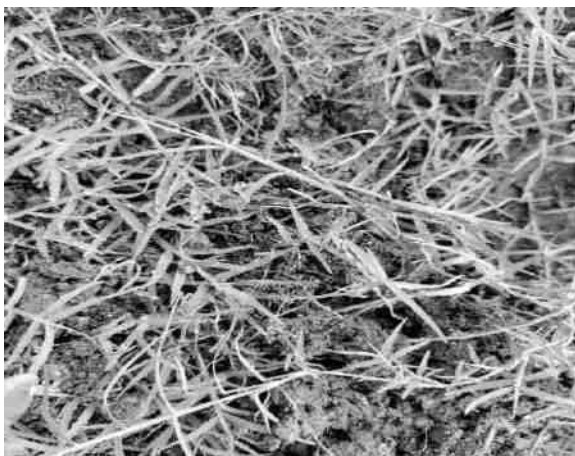
Ligustrum vulgare



Lantana camara



Parthenium hysterophorus



Cynodondactylon (L.)



Opuntia guatemalensis



Azadirachta indica



Tectona grandis



Eucalyptus obliqua



Casuarina equisetifolia

Figure 3.26 Flora in Core and buffer Area

3.6.5.3 Aquatic Vegetation

The field survey for assessing the aquatic vegetation was also undertaken during the study period. The list of aquatic plants observed in the study area is given in Table 3.31.

Table 3.31 Aquatic Vegetation

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>Carex cruciata</i>	Cross Grass	Koraipullu	NA
5	<i>Cynodon dactylon</i>	Scutch grass	Arugampul	LC
6	<i>Cyperus exaltatus</i>	Tall Flat Sedge	Koraikizhangu	LC

*LC- Least Concern, NA-Not yet assessed

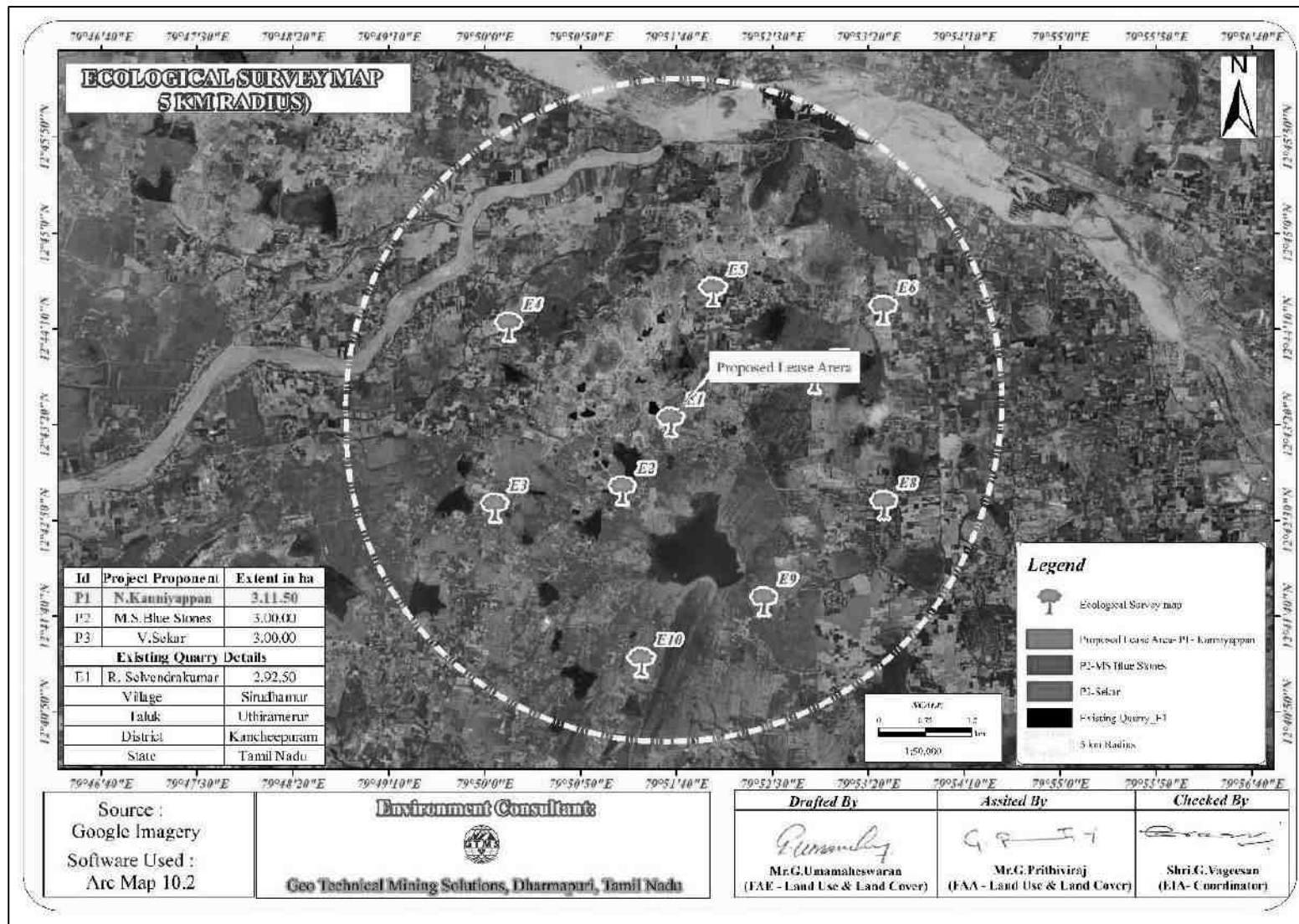


Figure:3.27 Ecological Survey Map 5Km Radius



Figure 3.28 Baseline study field Photographs

List out endangered and endemic species as per the schedule of the Wildlife Protection Act 1972

1. Rare and Endangered Flora in the Study Area

The IUCN Red List is the world's most comprehensive inventory of the global conservation status of plant and animal species. It uses a set of criteria to evaluate the extinction risk of thousands of species and subspecies. These criteria are relevant to all species and all regions of the world. With its strong scientific base, the IUCN Red List is recognized as the most authoritative guide to the status of biological diversity. Among the enumerated flora in the study area, none of them were assigned any threat category.

2. Endemic Plants of the Study Area

De Candolle (1855) first used the concept of “**Endemic**”, which is defined as an area of a taxonomic unit, especially a species which has a restricted distribution or habitat, isolated from its surrounding region through geographical, ecological or temporal barriers. Among recorded plant species none are assigned the status of endemic plant of this region.

3. Biodiversity Hotspots

There are no particular Biodiversity Hotspots in the study area. There is no threat to the Flora and Fauna species.

4. Reserved Forest / Forest / Social Forest / wild life sanctuary etc.

The mine lease area is exhibiting a slightly elevated terrain. Kavanippakkam Reserve Forest has located about 1.1km East side on the Idaimichi RF 2.6km on the Southeast side and Marudam RF 7.1km on the southwest side, all the reserve forest away from the proposed project site. There are no PF and National park, Wild life sanctuary, Ramsar site, Wildlife Corridors, Tiger/Elephant Reserves, Biosphere Reserves are located near to mining lease area. Hence it is not coming under any violation.

3.6.6 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 Red Data Book and Indian Wildlife Protection Act, 1972. There are no rare, endangered, threatened (RET) and endemic species present in core area.

3.6.6.1 Fauna Methodology

The study of fauna takes substantial amount of time to understand the specific faunal characteristics of the area. The assessment of fauna has been done on the bases of primary data collected from the lease sites. The presence was also confirmed from the local inhabitants depending on the animal sightings and the frequency of their visits in the project area. In addition, officials, local peoples were another source of information for studying the fauna of the area. Field activities are physical/active search, covering rocks, burrows, hollow inspection and location of nesting sites and habitat assessment etc. Taxonomical identification was done by the field guide book and wildlife ENVIS data base ([wiienvis.nic.in/Database/Schedule Species Database](http://wiienvis.nic.in/Database/ScheduleSpeciesDatabase)) and Zoological Survey of India (ZSI). Detailed faunas are mentioned in the Table 3.32 and 3.33.

3.6.6.1.1 Survey and Monitoring of Mammals

Intensive survey has been done by line transect methods (Walking and in vehicle) for all major habitats for surveying of mammals by direct and indirect evidence. Indirect methods such as faecal matter (i.e., scat) and pug mark by establishing 10 × 100 -m linear transects depending on the habitat (i.e., existing wildlife game routes/forest trails used).

Direct observation technique has been used for surveying large and medium sized mammals. But this technique is perfectly suitable for surveying of diurnal mammals; however, good photographs were also taken for species identification.

3.6.6.1.2 Survey and Monitoring of Birds

Birds are sampled by using point count methods, and opportunistic bird sightings. By the bird vocal sounds and photographs, the species were identified in consultation with village local people. Point count: in these methods, the observer will stand in a randomly chosen point and birds seen or heard in 50m radius are recorded for 5min. This observation is repeated in another point at least 30m from the first point. We have enumerated 20-point counts in each quartile, which constitute a total of 80-point counts (20 x 4) within 10 km radius area.

Opportunistic bird sightings: while traveling in study area, many bird species will be detected in survey time. Such species are recoded by their appearance or by their call.

3.6.6.1.3 Survey and monitoring of reptiles

Several survey techniques such as standard walk transect visual encounter survey methods were used to sampling reptiles in each and every habitat of the study area. While doing this survey, photographs were taken for identification of species. Species identification was done by using standard field guides in consultation with village people expert.

The butterfly was enumerated by 2 linear transects of 10 × 100 m were laid within each quartile at minimum interval of 1 km. Further, amphibians and fishes documented in existing literature and secondary information in consultation with local people and wildlife experts.

3.6.6.2 Fauna in Core Zone

A total of 16 varieties of species observed in the Core zone Of Siruthamur Village, Rough stone and gravel quarry (Table 3.32) among them numbers of Insects 6 Reptiles 3 Mammals 1 and Avian 6 A total of 16 species belonging to 15 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 four species are under schedule IV according to Indian wild life Act 1972. A total nine species of bird were sighted in the mining lease area. Dominant species are mostly birds and insects and no amphibians were observed

during the field visit. There are no critically endangered, endangered, vulnerable and endemic species were observed.

Table 3.32 Fauna in Core Zone

SI. No	Common name/English Name	Family Name	Scientific Name	Schedule list wildlife Protection act 1972	IUCN Red List data
INSECTS					
1	Red-veined darter	Libellulidae	<i>Sympetrum fonscolombii</i>	NL	LC
2	Grasshopper	Acrididae	<i>Hieroglyphus sp</i>	NL	LC
3	Blue tiger	Nymphalidae	<i>Tirumala limniace</i>	Schedule IV	LC
4	Stick insect	Lonchodidae	<i>carausius morosus</i>	NL	LC
5	Mottled emigrant	Peridae	<i>Catopsilia pyranthe</i>	NL	LC
6	Acraea violae	Nymphalidae	<i>Acraea violae</i>	NL	LC
REPTILES					
1	Garden lizard	Agamidae	<i>Calotes versicolor</i>	NL	LC
2	Common house gecko	Gekkonidae	<i>Hemidactylus frenatus</i>	NL	LC
3	Fan-Throated Lizard	Agamidae	<i>Sitanaponticeriana</i>	NL	LC
MAMMALS					
1	Indian Field Mouse	Muridae	<i>Mus booduga</i>	Schedule IV	NL
AVES					
1	Asian green bee-eater	Meropidae	<i>Meropsorientalis</i>	NL	LC
2	Common myna	Sturnidae	<i>Acridotheres tristis</i>	NL	LC
3	Cattle egret	Ardeidae	<i>Bubulcus ibis</i>	NL	LC
4	House crow	Corvidae	<i>Corvus splendens</i>	NL	LC
5	Koel	Cuculidae	<i>Eudynamys scolopaceus</i>	Schedule IV	LC
6	Grey drongo	Dicruridae	<i>Dicrurus leucophaeus</i>	Schedule IV	LC

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

3.6.6.3 Fauna in Buffer Zone

Taxonomically a total of 36 species belonging to 34 families have been recorded from the buffer mining lease area. Based on habitat classification the majority of species were Birds 16 followed by Insects 10 Reptiles 4 Mammals 3 and, Amphibians 3 There are four Schedule II species and twenty-six are under schedule IV according to Indian wild life Act 1972. A total 20 species of bird were sighted in the mining lease area. There are no critically endangered, endangered, vulnerable and endemic species were observed.

Dominant species are mostly birds and insects and three amphibians were observed during the extensive field visit (*Hoplobatrachus tigerinus*), (*Rana hexadactyla*), (*Sphaerotherca breviceps*). The result of core & Buffer zone of fauna studies shows that Nymphalidae and

Agamidae, Mantidae are the main dominating species in the study area, it is mentioned in Table. 3.33 There is no schedule I Species in study area. There are no critically endangered, endangered, vulnerable and endemic species were observed.

Table 3.33 Fauna in Buffer Zone

S. No.	Common Name/English Name	Family Name	Scientific Name	Schedule List Wildlife Protection Act 1972	IUCN Red List Data
INSECTS					
1	Tawny coster	Nymphalidae	<i>Danaus chrysippus</i>	Schedule IV	LC
2	Milkweed butterfly	Nymphalidae	<i>Danainae</i>	NL	LC
3	Blue tiger	Nymphalidae	<i>Tirumala limniace</i>	Schedule IV	LC
4	Mottled emigrant	Peridae	<i>Catopsilia pyranthe</i>	NL	LC
5	Striped tiger	Nymphalidae	<i>Danaus plexippus</i>	Schedule IV	LC
6	Ant	Formicidae	<i>Camponotus Vicinus</i>	NL	NL
7	Lesser grass blue	Lycaenidae	<i>Danaus plexippus</i>	Schedule IV	LC
8	Praying mantis	Mantidae	<i>mantis religiosa</i>	NL	NL
9	Grasshopper	Acrididae	<i>Hieroglyphus sp</i>	NL	LC
10	Common Tiger	Nymphalidae	<i>Danaus genutia</i>	Schedule IV	LC
REPTILES					
1	Chameleon	Chamaeleonidae	<i>Chameleon zeylanicus</i>	Sch II (Part II)	LC
2	Garden lizard	Agamidae	<i>Calotes versicolor</i>	NL	LC
3	Green Vine snake	Colubridae	<i>Ahaetulla nasuta</i>	Schedule IV	LC
4	Rat snake	Colubridae	<i>Ptyas mucosa</i>	Sch II (Part II)	LC
MAMMALS					
1	Indian palm squirrel	Sciuridae	<i>Funambulus palmarum</i>	Schedule IV	LC
2	Indian Field Mouse	Muridae	<i>Mus booduga</i>	Schedule IV	LC
3	Home mouse	Muridae	<i>Mus musculus tyleri</i>	NL	LC
AVES					
1	House crow	Corvidae	<i>Corvus splendens</i>	NL	LC
2	Cattle egret	Ardeidae	<i>Bubulcus ibis</i>	NL	LC
3	Black drongo	Dicruridae	<i>Dicrurus macrocercus</i>	Schedule IV	LC

4	Red-vented Bulbul	Pycnonotidae	<i>Pycnonotus cafer</i>	Schedule IV	LC
5	Indian pond heron	Ardeidae	<i>Ardeola grayii</i>	Schedule IV	LC
6	Asian green bee-eater	Meropidae	<i>Merops orientalis</i>	NL	LC
7	Small Sunbird	Nectariniidae	<i>Nectarinia asiatica</i>	Schedule IV	LC
8	Common myna	Sturnidae	<i>Acridotheres tristis</i>	NL	LC
9	Blue Rock Pigeon	Columbidae	<i>Columba livia</i>	Schedule IV	LC
10	Common Coot	Rallidae	<i>Fulica atra</i>	Schedule IV	LC
11	Small Sunbird	Nectariniidae	<i>Nectarinia asiatica</i>	Schedule IV	LC
12	Shikra	Accipitridae	<i>Accipiter badius</i>	NL	LC
13	Common quail	Phasianidae	<i>Coturnix coturnix</i>	Schedule IV	LC
14	Small blue Kingfisher	Alcedinidae	<i>Alcedo atthis</i>	Schedule IV	LC
15	Rose-ringed parakeet	Psittaculidae	<i>Psittacula krameri</i>	NL	LC
16	Grey Francolin	Phasianidae	<i>Francolinus pondicerianus</i>	Schedule IV	LC
AMPHIBIANS					
1	Indian Burrowing frog	Dicroglossidae	<i>Sphaerotheca breviceps</i>	Schedule IV	LC
2	Green Pond Frog	Ranidae	<i>Rana hexadactyla</i>	Schedule IV	LC
3	Tiger Frog	Chordata	<i>Hoplobatrachus tigerinus</i> (<i>Rana tigerina</i>)	Schedule IV	LC

*NL-Not listed, LC-Least concern, NT-Near threatened.

Table 3.34 Aquatic Fauna Vegetation

S.No	Common Name	Scientific Name
1	Pale carplet	Amblyupharngodon mola
2	Catla catla	Labeo Catla
3	Karnataka labeo	Labio calbasi
4	Mrigal carp	Cirrhina mrigala
5	Mrigel	Cirrhina reba

Tor No: 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.

Out of the total mine lease area of 3.11.5 Ha, just about 2.39.0 Ha is proposed to be used for mining activity during the first five years as per the mining plan. Blasting, noise and vibrations and other disturbances including dust generation are likely to have an adverse impact

on wildlife. But these impacts are unlikely to extend beyond 500 m from the actual mine area. There are two Schedule II species and twenty-two species are under schedule IV according to Indian wild life Act 1972. A total 16 species of bird were sighted in the buffer zone 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 10 Km radius. Hence no specific conservation for conservation of any RET species or Wildlife is envisaged.

Tor No: 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.

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 reserved or even protected forests within the project area. Hence submission of clearance from the National Board of Wildlife does not arise.

Tor No: 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.

A detailed biological study of the study area [core zone and buffer zone of 10 km radius of the periphery of the mine lease] has been carried out and the results are presented under ToR point No.15 in Tables 3.32 to 3.33. There are two Schedule II species and twenty-Five species are under schedule IV according to Indian wild life Act 1972. A total 16 species of bird were sighted in the study area. The main threat to the bird is the use of pesticides in agriculture.

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.

Tor No: 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.

Only about 0.32.8 Ha of the mine lease area is going to be used for Greenbelt Development during the first five years. Regional trees like *Azadirachta indica*, *Albizia lebbbeck*, *Delonix regia* *Tectona grandis*, and *Casuarina* will be planted along the Lease boundary and avenues as well as over non-active dumps.

3.6.6.4. Rare and Endangered fauna of the study area

1. As per Indian Wild Life (Protection) Act, 1972,

Wild Life (Protection) Act, 1972, as amended on 17th January 2003, is an Act to provide for the protection of wild animals, birds and plants and for matters connected therewith or ancillary or incidental thereto with a view to ensuring the ecological and environmental security of the country. Some of the sighted faunas were given protection by the Indian Wild Life (Protection) Act, 1972 by including them in different schedules. Here no endemic, endangered migratory fauna found in the area. This area is not also a migratory path of any faunal species.

2. As per IUCN RED (2013) List,

The IUCN Red List is the world's most comprehensive inventory of the global conservation status of plant and animal species. It uses a set of criteria to evaluate the extinction risk of thousands of species and subspecies. These criteria are relevant to all species and all regions of the world. With its strong scientific base, the IUCN Red List is recognized as the most authoritative guide to the status of biological diversity. Among reported species Schedule II and IV in the buffer zone are presented below,

1. Schedule II species

Chameleon, Rat snake, Saw scaled viper, Russell's viper.

2. Schedule IV species

Green Pond Frog, Indian Burrowing frog, Black drongo, Red-vented Bulbul, Koel, Indian Field Mouse, Indian palm squirrel, Lesser grass, Common Indian crow, striped tiger, Common Tiger, Blue tiger, Tawny coster, Indian wall lizard, Indian pond heron, Grey Heron etc.,

3.6.7 Results and Discussion

There is no schedule I species of animals observed within study area as per Wildlife Protection Act 1972 and no species in vulnerable, endangered or threatened category as per IUCN. There is no endangered red list species found in the study area. Hence, this small mining operation over short period of time will not have any significant impact on the surrounding flora and fauna.

The study involved assessment of general habitat type, vegetation pattern, preparation of inventory of flora and fauna of terrestrial ecosystem within 10 km radius from the boundary of the proposed quarry site. Biological assessment of the site was done to identify ecologically sensitive areas and whether there are any rare, endangered, endemic or threatened (REET) species of flora & fauna in the core area as well its buffer zone to be impacted. The study has also been designed to suggest suitable mitigation measures, if necessary, for protection of wildlife habitats and conservation of REET species if any.

3.7 SOCIO-ECONOMIC ENVIRONMENT

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

It is expected that the socio-economic status of the area will substantially improve because of this proposed project. As the proposed project will provide direct and indirect employment and improve the infrastructural facilities in that area, thus leading to the improvement of their standard of living.

3.7.1 Objectives of the Study

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

- ❖ To study the socio-economic status of the people living in the study area of the proposed mining project
- ❖ To assess the impact of the project on quality of life of the people in the study area
- ❖ To recommend community development measures to be taken up in the study area

3.7.2 Scope of Work

- ❖ To study the socio-economic environment of the area from the secondary sources
- ❖ Data Collection & Analysis
- ❖ Prediction of project impact
- ❖ Mitigation Measures

3.7.3 District Profile

Kancheepuram district of Tamil Nadu has total population of 3,998,252 as per the Census 2011. Out of which 1,457,242 are males while 2,012,958 are females. In 2011 there were total 41,807 families residing in Kancheepuram district. The Average Sex Ratio of Kancheepuram district is 986. As per Census 2011 out of total population, 63.49% people live in Urban areas while 36.51% lives in the Rural areas. The average literacy rate in kancheepuram is 84.49%. Also, the Sex Ratio of Urban areas in Kancheepuram district is 986 while that of Rural areas is 986.

The population of Children of age 0-6 years in Kancheepuram district is 431,574 which is 10.79% of the total population. There are 220,341 male children and 211,233 female children between the age 0-6 years. Thus, as per the Census 2011 the Child Sex Ratio of Kancheepuram is 959 which is less than Average Sex Ratio (986) of Kancheepuram district.

The total literacy rate of Kancheepuram district is 84.49%. The male literacy rate is 89.89% and the female literacy rate is 79.02% in Kancheepuram district.

3.7.4 Socio-Economic Status of Study area

Siruthamur is a large village located in Uthiramerur Taluka of Kancheepuram district, Tamil Nadu with total 755 families residing. The Siruthamur village has population of 3097 of which 1555 are males while 1542 are females as per Population Census 2011. In Siruthamur village population of children with age 0-6 is 365 which makes up 11.79 % of total population of village. Average Sex Ratio of Siruthamur village is 992 which is lower than Tamil Nadu state average of 996. Child Sex Ratio for the Siruthamur as per census is 962, higher than Tamil Nadu average of 943. Siruthamur village has lower literacy rate compared to Tamil Nadu. In 2011, literacy rate of Siruthamur village was 70.28 % compared to 80.09 % of Tamil Nadu. In Siruthamur Male literacy stands at 80.42 % while female literacy rate was 60.09 %. As per

constitution of India and Panchyati Raaj Act, Siruthamur village is administrated by Sarpanch (Head of Village) who is elected representative of village. Our website, don't have information about schools and hospital in Siruthamur village.

Table 3.35 Siruthamur village Population Facts

Number of Households	755
Population	3,097
Male Population	1,555
Female Population	1,542
Children Population	365
Sex-ratio	992
Literacy	70.28%
Male Literacy	80.42%
Female Literacy	60.09%
Scheduled Tribes (ST)	49
Scheduled Caste (SC)	1,090

Source: <https://www.census2011.co.in/data/village/629769-sirudamur-tamil-nadu.html>

Table 3.36 Demographics Population of Siruthamur village

Total Population	Male Population	Female Population
3,097	1,555	1,542

Source: <https://www.census2011.co.in/data/village/629769-sirudamur-tamil-nadu.html>

3.7.4.1 Literacy of Siruthamur Village

Siruthamur village has lower literacy rate compared to Tamil Nadu. In 2011, literacy rate of Siruthamur village was 70.28 % compared to 80.09 % of Tamil Nadu. In Siruthamur Male literacy stands at 80.42 % while female literacy rate was 60.09 %.

3.7.4.2 Worker's profile of Siruthamur village

In Siruthamur village out of total population, 1520 were engaged in work activities. 86.58 % of workers describe their work as Main Work (Employment or Earning more than 6 Months) while 13.42 % were involved in Marginal activity providing livelihood for less than 6 months. Of 1520 workers engaged in Main Work, 402 were cultivators (owner or co-owner) while 581 were Agricultural labourer.

Table 3.37 Siruthamur Village Working Population

Type	Total	Male	Female
Main Worker	1,316	-	-
Marginal Workers	204	94	110

Source: <https://www.census2011.co.in/data/village/629769-sirudamur-tamil-nadu.html>

Table 3.38 Population and literacy data of study area

S. NO	Parameters/ Village Name	Total population of village	Total population male	Total population female	Population in the age group 0-6 Male	Population in the age group 0-6 Female	SC Population	ST Population	Total Literacy Rate	Female		
										SC	ST	Literacy Rate
1	Adavapakkam	765	396	369	41	28	499	8	465	241	2	243
2	Alanjeri	684	334	350	40	35	679	0	560	347	0	347
3	Alapakkam	517	246	271	26	30	76	0	318	43	0	43
4	Angambakkam	1907	963	944	116	103	1408	21	1167	696	9	705
5	Annadhur	1239	617	622	79	80	263	6	713	129	4	133
6	Arpakkam	2937	1475	1462	181	197	1626	320	1794	818	149	967
7	Arumbuliyur	1618	777	841	92	96	470	56	1025	247	29	276
8	Asoor	1234	609	625	67	65	741	17	822	378	10	388
9	Athiyur	681	350	331	42	30	255	8	451	134	5	139
10	Athur	1904	982	922	95	89	706	31	1234	355	15	370
11	Avalur	3960	1948	2012	240	205	240	73	2377	121	39	160
12	Chinnalambadi	434	227	207	20	18	91	0	274	41	0	41
13	Chitalapakkam	592	288	304	32	37	9	0	344	4	0	4
14	Chithaathur	322	159	163	9	9	0	6	161	0	3	3
15	Devariyambakkam	875	426	449	48	54	138	0	571	75	0	75
16	Edamichi	1414	701	713	63	69	514	0	1021	256	0	256
17	Edayambudur	1304	678	626	117	67	480	19	806	234	11	245
18	Elapakkam	207	98	109	14	22	155	45	100	85	23	108
19	Elayanarvelur	1079	544	535	67	57	554	0	643	281	0	281
20	Ezhichur	1373	658	715	74	78	937	0	886	490	0	490
21	Gindangarai	391	192	199	23	20	0	85	259	0	46	46
22	Irumaram	223	104	119	11	16	222	0	134	118	0	118
23	Kadalmangalam	890	431	459	38	46	408	8	579	210	3	213
24	Kaithandalam	644	334	310	39	32	157	0	367	75	0	75

25	Kaliyapettai	1640	829	811	102	93	471	8	1012	227	4	231
26	Kambarajapuram	1527	766	761	93	79	273	56	944	134	30	164
27	Karumbakkam	850	438	412	44	37	538	0	518	265	0	265
28	Kattankulam	1028	514	514	59	41	289	0	606	147	0	147
29	Kattuputhur	171	92	79	5	7	10	0	111	6	0	6
30	Kavampair	682	339	343	37	51	343	39	427	171	23	194
31	Kavanipakkam	780	382	398	39	39	509	0	508	260	0	260
32	Kavanthandalam	1619	796	823	66	68	392	67	970	200	31	231
33	Kavithandalam	1814	904	910	89	109	1359	19	1203	681	10	691
34	Kilakkadi	1072	541	531	52	53	369	20	754	185	9	194
35	Kilputhur	170	80	90	7	5	1	0	99	0	0	0
36	Kodithandalam	508	254	254	27	25	366	23	333	180	9	189
37	Kolathur	508	243	265	35	32	402	0	306	212	0	212
38	Kunnavakkam	1397	698	699	89	88	622	5	724	306	3	309
39	Kurumanjeri	666	330	336	40	43	41	16	451	21	8	29
40	Kurumbarai	1424	701	723	73	74	666	100	980	337	49	386
41	Magaral	2834	1399	1435	154	149	1777	36	1754	882	20	902
42	Maiyur	2931	1452	1479	156	158	1324	140	2054	666	69	735
43	Malayankulam	2390	1218	1172	140	110	937	58	1438	457	23	480
44	Mamandur	5503	2829	2674	258	284	2844	74	4080	1432	41	1473
45	Mambakkam	627	311	316	37	31	519	0	385	264	0	264
46	Mambudur	296	164	132	14	5	0	13	204	0	5	5
47	Marudham	1893	950	943	62	53	372	0	1345	189	0	189
48	Maruthuvambadi	1560	784	776	79	85	441	29	991	218	13	231
49	Melmanapakkam	1212	622	590	89	77	697	0	859	331	0	331
50	Melputhur	430	214	216	27	23	300	0	263	154	0	154
51	Mulaginimeni	381	201	180	25	18	0	0	241	0	0	0
52	Nariambakkam	35	14	21	1	0	0	0	24	0	0	0
53	Nariyambudur	20	11	9	2	1	0	11	8	0	5	5

54	Nathanallur	2158	1047	1111	113	145	651	72	1288	332	37	369
55	Neerkundram	314	153	161	7	14	88	0	225	47	0	47
56	Nelveli	667	322	345	38	50	577	0	403	297	0	297
57	Nerkundram	624	302	322	45	35	137	5	341	68	2	70
58	Neyyadivakkam	1360	666	694	62	78	682	48	896	366	24	390
59	Orakkattupettai	744	368	376	42	44	88	18	567	40	12	52
60	Ozhaiyur	888	444	444	46	47	583	0	554	288	0	288
61	Padoor	713	365	348	38	53	227	14	463	117	8	125
62	Palayaseevaram	5634	2792	2842	325	356	2442	33	3563	1234	15	1249
63	Paleswaram	802	400	402	52	54	356	14	450	172	8	180
64	Palur	840	449	391	60	39	468	29	493	212	12	224
65	Pandavakkam	220	114	106	9	9	4	0	127	3	0	3
66	Pazhaveri	727	362	365	36	40	368	5	477	178	2	180
67	Peranakkavur	926	478	448	54	64	634	9	586	309	4	313
68	Pilappur	1256	650	606	47	57	53	20	772	25	10	35
69	Pinayur	1068	520	548	46	58	377	6	759	199	3	202
70	Pinnampoondi	286	147	139	21	16	0	0	221	0	0	0
71	Porpandal	941	491	450	59	36	429	43	640	206	16	222
72	Pulipakkam	719	353	366	42	38	0	0	495	0	0	0
73	Pulivoy	491	237	254	16	32	217	19	324	112	11	123
74	Puliyambakkam	2158	1253	905	109	85	813	123	1550	393	60	453
75	Pullampakkam	872	424	448	64	58	671	44	494	343	20	363
76	Puthali	1032	510	522	66	76	766	27	674	389	13	402
77	Rettamangalam	637	307	330	25	42	431	115	369	220	59	279
78	Sadachivakkam	396	198	198	22	28	16	71	215	5	32	37
79	Salavakkam	3311	1635	1676	195	174	1144	39	2332	569	23	592
80	Sampathinallur	257	137	120	22	15	255	0	169	120	0	120
81	Sathananjeri	2166	1095	1071	131	130	1037	15	1387	514	10	524
82	Seethananjeri	494	247	247	23	31	285	21	374	142	10	152

83	Seethapuram	40	20	20	5	5	0	0	26	0	0	0
84	Sembulam	148	66	82	4	7	54	0	104	31	0	31
85	Sirudamur	1543	790	753	87	74	517	73	784	252	40	292
86	Sirumailur	1029	510	519	44	57	699	4	638	348	2	350
87	Sirupinayur	2053	1028	1025	123	123	1070	107	1269	535	51	586
88	Sithanakavoor	789	391	398	55	47	675	0	472	338	0	338
89	Sithandi	939	481	458	70	68	792	0	627	386	0	386
90	Thammanur	2116	1088	1028	134	114	667	151	1231	337	68	405
91	Thandarai	1305	644	661	62	79	246	5	801	127	2	129
92	Thirumukkudal	1673	850	823	91	80	888	44	1216	435	22	457
93	Thiruvanaikoil	598	288	310	37	40	430	81	386	219	40	259
94	Thollazhi	980	501	479	60	48	443	0	587	210	0	210
95	Thonankulam	435	216	219	28	24	287	24	270	142	12	154
96	Thottanaval	660	338	322	38	33	522	0	445	257	0	257
97	Ullavur	1749	908	841	101	100	928	38	1096	445	21	466
98	Uthukadu	4528	2288	2240	241	254	1853	36	3070	928	20	948
99	Vadathavoor	838	422	416	44	55	724	0	527	362	0	362
100	Valathodu	409	195	214	22	25	267	0	269	141	0	141
101	Vayalakkavoor	1429	752	677	90	56	809	0	890	369	0	369
102	Vendivakkam	202	107	95	10	11	44	0	110	22	0	22
103	Vengudi	1111	542	569	56	50	614	24	877	317	15	332
104	Vichoor	883	439	444	47	43	731	0	559	364	0	364
105	Villiambakkam	1344	673	671	70	52	4	34	879	2	17	19
106	Vinnamangalam	421	210	211	30	18	0	0	250	0	0	0

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

Table 3.39 Educational Facilities & Water & Drainage Facilities Data of Study Area

S.No.	Village Name	Govt Primary School	Govt Vocational Training School/ITI	Primary Health Sub Centre	Tap Water Untreated	River/Canal	Is the Area Covered under Total	Telephone (landlines)	Public Bus Service	Gravel (kuchha) Roads	Commercial Bank	Agricultural Credit Societies	Self - Help Group	Nutritional Centres- Anganwadi Centre	Community Centre with/without TV	Power Supply For Domestic Use
1	Adavapakkam	1	2	1	1	2	2	1	2	1	1	2	1	1	2	1
2	Alanjeri	1	2	0	2	2	2	1	2	1	2	2	1	1	1	1
3	Alapakkam	1	2	0	1	2	2	2	1	1	2	2	1	1	2	1
4	Angambakkam	1	2	0	1	2	2	1	2	1	2	2	1	1	1	1
5	Annadhur	1	2	1	1	2	2	1	1	1	2	2	1	1	1	1
6	Arpakkam	1	2	1	1	2	2	1	1	1	2	1	2	1	2	1
7	Arumbuliyur	1	2	1	1	2	2	1	1	1	1	1	1	1	2	1
8	Asoor	1	2	1	1	2	2	1	2	1	2	2	1	1	1	1
9	Athiyur	2	2	0	2	2	1	1	1	1	2	2	1	1	2	1
10	Athur	1	2	0	1	2	2	1	1	1	2	2	1	1	2	1
11	Avalur	1	2	1	1	2	1	1	1	1	2	2	1	1	1	1
12	Chinnalambadi	1	2	0	1	2	2	2	1	1	2	2	1	1	1	1
13	Chitalapakkam	1	2	0	2	2	2	2	1	1	2	2	1	1	1	1
14	Chithaathur	1	2	0	2	2	2	2	1	1	2	2	1	1	1	1
15	Devariyaambakkam	1	2	0	1	2	2	1	1	1	2	1	1	1	2	1
16	Edamichi	1	2	0	1	2	2	1	1	1	2	2	1	1	1	1
17	Edayambudur	1	2	0	1	2	2	1	2	1	2	1	1	1	2	1
18	Elapakkam	2	2	0	2	2	2	1	1	2	2	2	1	1	1	1
19	Elayanarvelur	1	2	1	1	2	2	1	1	1	2	2	1	1	1	1
20	Ezhichur	1	2	1	1	2	1	1	1	1	2	2	1	1	2	1
21	Gindangarai	1	2	0	1	2	1	1	1	1	2	2	1	1	2	1

22	Irumaram	2	2	0	1	2	2	1	2	1	2	2	1	2	2	1
23	Kadalmangalam	1	2	0	2	2	1	1	2	1	2	2	1	1	1	1
24	Kaithandalam	1	2	0	1	2	2	1	2	1	2	2	2	1	2	1
25	Kaliyapettai	1	2	0	1	2	2	1	2	1	2	1	1	1	2	1
26	Kambarajapuram	1	2	0	1	2	2	1	1	1	2	2	1	1	2	1
27	Karumbakkam	1	2	0	1	2	2	1	1	2	2	2	1	1	1	1
28	Kattankulam	2	2	0	2	2	2	1	1	1	2	2	1	1	2	1
29	Kattuputhur	1	2	0	2	2	2	1	2	1	2	2	1	1	2	1
30	Kavampair	1	2	0	1	2	2	1	2	1	2	2	1	1	2	1
31	Kavanipakkam	1	2	0	1	2	2	1	1	1	2	2	1	1	1	1
32	Kavanthandalam	1	2	0	1	2	1	1	1	1	2	1	1	1	2	1
33	Kavithandalam	1	2	1	1	2	2	1	1	1	2	2	1	1	1	1
34	Kilakkadi	1	2	1	1	2	2	1	1	1	2	2	1	1	2	1
35	Kilottivakkam	1	2	0	1	2	1	1	1	1	2	2	1	1	1	1
36	Kilputhur	1	2	0	1	2	2	2	1	1	2	2	1	1	1	1
37	Kodithandalam	2	2	0	2	2	2	2	1	2	2	2	1	1	2	1
38	Kolathur	1	2	0	1	2	2	2	1	1	2	2	1	1	2	1
39	Kunnavakkam	1	2	1	1	2	1	1	2	1	2	2	1	1	1	1
40	Kurumanjeri	2	2	0	2	2	2	1	1	1	2	2	1	1	2	1
41	Kurumbarai	2	2	0	1	2	2	1	1	1	2	2	1	1	2	1
42	Magaral	1	2	1	1	2	2	1	1	1	1	2	2	1	2	1
43	Maiyur	1	2	1	1	2	2	1	1	1	2	1	1	1	2	1
44	Malayankulam	1	2	1	1	2	2	1	1	1	2	2	1	1	1	1
45	Mamandur	1	2	1	1	2	1	1	1	1	2	1	1	1	1	1
46	Mambakkam	1	2	1	1	2	2	1	1	1	2	1	1	1	2	1
47	Mambudur	2	2	0	1	2	2	1	2	1	2	2	1	2	1	1
48	Marudham	1	2	0	2	2	1	2	1	1	2	1	1	1	1	1
49	Maruthuvambadi	1	2	0	1	2	2	1	1	1	2	2	1	1	1	1
50	Melmanapakkam	1	2	0	1	2	1	1	2	1	2	2	1	1	2	1

51	Melputhur	2	2	0	1	2	2	1	1	1	2	2	1	1	1	1
52	Mulaginimeni	2	2	0	1	2	2	2	1	1	2	2	1	2	2	1
53	Nariambakkam	2	2	0	2	2	2	2	2	1	2	2	2	2	2	1
54	Nariyambudur	2	2	0	2	2	2	2	2	1	2	2	2	2	2	1
55	Nathanallur	1	2	1	1	2	2	1	1	1	2	2	1	1	1	1
56	Neerkundram	1	2	0	1	2	2	2	1	1	2	2	1	1	2	1
57	Nelveli	1	2	0	2	2	2	2	1	1	2	2	1	1	2	1
58	Nerkundram	2	2	0	1	2	2	1	1	1	2	2	1	1	2	1
59	Neyyativakkam	1	2	1	1	2	1	1	1	1	2	1	1	1	2	1
60	Orakkattupettai	1	2	0	1	2	2	1	1	1	2	2	1	1	1	1
61	Ozhaiyur	1	2	1	1	2	2	1	1	1	2	2	2	1	2	1
62	Padoor	1	2	1	1	2	2	1	1	1	2	1	1	1	2	1
63	Palayaseevaram	1	2	1	1	2	2	1	1	1	1	2	1	1	1	1
64	Paleswaram	1	2	0	2	2	2	1	1	1	2	2	1	1	1	1
65	Palur	1	2	0	1	2	2	1	1	1	2	2	1	1	2	1
66	Pandavakkam	2	2	0	1	2	2	1	2	1	1	1	1	1	2	1
67	Pazhaveri	1	2	0	1	2	2	1	1	1	2	2	1	1	1	1
68	Peranakkavur	1	2	0	1	2	2	1	1	1	2	2	1	1	1	1
69	Pilappur	1	2	0	1	2	2	1	1	2	2	2	1	1	2	1
70	Pinayur	1	2	1	2	2	1	1	1	1	2	2	1	1	2	1
71	Pinnampoondi	2	2	0	1	2	2	1	1	1	2	2	1	2	2	1
72	Porpandal	1	2	1	1	2	2	1	1	1	2	2	1	1	2	1
73	Pulipakkam	1	2	1	1	2	2	1	1	1	2	2	1	1	2	1
74	Pulivoy	1	2	0	2	2	2	1	1	1	2	2	2	1	2	1
75	Puliyambakkam	1	2	0	2	2	1	1	2	1	2	2	1	1	2	1
76	Pullampakkam	1	2	0	1	2	1	1	1	1	2	2	1	1	1	1
77	Puthali	1	2	0	1	2	2	1	1	1	2	2	1	1	2	1
78	Rettamangalam	1	2	0	2	2	2	1	1	2	2	2	1	1	1	1
79	Sadachivakkam	1	2	0	1	2	2	1	2	1	2	2	1	1	2	1

80	Salavakkam	1	2	1	1	2	2	1	2	1	1	1	1	1	2	1
81	Sampathinallur	2	2	0	2	2	1	1	1	1	2	2	1	2	2	1
82	Sathananjeri	1	2	1	1	2	2	1	1	1	2	1	1	1	2	1
83	Seethananjeri	1	2	0	2	2	2	1	1	1	2	2	1	2	1	1
84	Seethapuram	2	2	0	2	2	2	2	1	1	2	2	1	2	2	1
85	Sembulam	2	2	0	1	2	2	2	1	1	2	2	1	2	2	1
86	Sirudamur	1	2	0	1	2	2	1	2	1	2	2	1	1	2	1
87	Sirumailur	1	2	0	1	2	2	1	1	1	2	2	1	1	2	1
88	Sirupinayur	1	2	0	1	2	2	1	1	1	2	2	1	1	1	1
89	Sithanakavoor	1	2	0	2	2	2	1	1	1	2	2	1	1	1	1
90	Sithandi	1	2	0	2	2	1	1	1	1	2	2	1	1	1	1
91	Thammanur	1	2	0	1	2	2	1	1	1	2	2	1	1	2	1
92	Thandarai	1	2	0	1	2	2	1	1	2	2	2	1	1	2	1
93	Thirumukkudal	1	2	1	1	2	2	1	1	1	2	2	1	1	2	1
94	Thiruvanaikoil	1	2	0	2	2	2	1	2	1	2	2	1	1	1	1
95	Thollazhi	1	2	0	2	2	2	1	1	1	2	2	1	1	2	1
96	Thonankulam	1	2	0	1	2	2	1	1	1	2	2	1	1	2	1
97	Thottanaval	1	2	0	1	2	2	1	2	1	2	2	1	1	1	1
98	Ullavur	1	2	0	1	2	2	1	1	1	2	2	1	1	1	1
99	Uthukadu	1	2	1	1	2	2	1	1	1	2	2	1	1	2	1
100	Vadathavoor	1	2	0	1	2	2	1	2	1	2	2	1	1	2	1
101	Valathodu	1	2	0	1	2	2	1	2	1	2	2	1	1	1	1
102	Vayalakkavoor	1	2	0	1	2	1	1	1	1	2	1	1	1	2	1
103	Vendivakkam	2	2	0	1	2	2	1	1	1	2	2	1	1	2	1
104	Vengudi	1	2	0	1	2	2	1	1	1	2	2	1	1	1	1
105	Vichoor	2	2	0	1	2	2	1	1	1	2	2	1	1	1	1
106	Villiambakkam	1	2	1	1	2	2	1	1	1	2	1	1	1	1	1
107	Vinnamangalam	1	2	0	2	2	2	1	1	1	2	2	1	1	1	1

Table 3.40 Other Facilities in the Study Area

S.NO	Village Name	Tractors	Carts Driven by Animals	Black Topped (pucca) ATM	Commercial Bank	Cooperative Bank	Agricultural Credit Societies	Public Distribution System (PDS) Shop	Mandis/Regular	Weekly Haat	Agricultural Marketing Societies	Power Supply for Agriculture Use	Power Supply for Commercial Use	Agricultural Commodities (First)	Manu factures Commo dities (First)	Handicrafts Commodities (First)	Forest Area (in Hectares)	Net Area Sown (in Hectares)
1	Adavapakkam	2	2	1	2	1	2	2	1	2	2	1	2	Paddy			2.15	58.23
2	Alanjeri	2	2	1	2	2	2	2	1	2	2	1	1	Paddy			62.67	49.01
3	Alapakkam	2	2	1	2	2	2	2	1	2	2	1	2	Paddy			0	64.61
4	Angambakkam	2	2	1	2	2	2	2	1	2	2	1	2	Paddy			0	155.42
5	Annadhur	2	2	1	2	2	2	2	1	2	2	1	1	Paddy			1	143.4
6	Arpakkam	2	2	1	2	2	1	1	1	2	2	1	1	Paddy	Hollw Blocks		0	272.18
7	Arumbuliyur	2	2	1	2	1	2	1	1	2	2	1	2	Paddy			0	184.94
8	Asoor	2	2	1	2	2	2	2	1	2	2	1	2	Paddy			0	77.95
9	Athiyur	2	2	1	2	2	2	2	1	2	2	1	1	Paddy			0	22.64
10	Athur	2	2	1	2	2	2	2	1	2	2	1	2	Paddy			0	238.45
11	Avalur	2	2	1	2	2	2	2	1	2	2	1	1	Paddy			0	312.79
12	Chinnalambadi	2	2	1	2	2	2	2	1	2	2	1	2	Paddy			21	52.31
13	Chitalapakkam	2	2	1	2	2	2	2	1	2	2	1	2	Paddy		Clay Pots	1	30.62
14	Chithaathur	2	2	2	2	2	2	2	1	1	2	1	2	Paddy			0	54.61
15	Devariya mbakka m	2	2	1	2	2	1	1	1	2	2	1	1	Paddy			0	92.42
16	Edamichi	2	2	1	2	2	2	2	1	2	2	1	1	Paddy		Clay Pots	180.42	161.61
17	Edayambudur	2	2	1	2	2	2	1	1	2	2	1	1	Paddy			20	106.18
18	Elapakkam	2	2	1	2	2	2	2	2	2	2	1	2	Paddy			1	67.64
19	Elayanarvelur	2	2	1	2	2	2	2	1	1	2	1	2	Paddy			0	165.01
20	Ezhichur	2	2	1	2	2	2	2	1	2	2	1	2	Paddy			0	136.79

21	Gindangarai	2	2	1	2	2	2	2	1	2	2	2	1	1	Paddy			0	41.28
22	Irumaram	2	2	1	2	2	2	2	1	2	2	2	2	2	Paddy			0	33.42
23	Kadalmangalam	2	2	1	2	2	2	2	1	2	2	2	1	1	Paddy			82	159.77
24	Kaithandalam	2	2	1	2	2	2	2	1	2	2	2	1	2	Paddy			0	121.23
25	Kaliyapettai	2	2	1	2	2	2	1	1	1	2	2	1	1	Paddy			2	116.88
26	Kambarajapuram	2	2	1	2	2	2	2	1	2	2	2	1	1	Paddy			0	304.98
27	Karumbakkam	2	2	1	2	2	2	2	1	2	2	2	1	1	Paddy			0	77.91
28	Kattankulam	2	2	1	2	2	2	2	1	2	2	2	1	1	Paddy			0	161.09
29	Kattuputhur	2	2	1	2	2	2	2	1	2	2	2	1	2	Paddy			2	56.79
30	Kavampair	2	2	1	2	2	2	2	1	2	2	2	1	2	Paddy			1	51.1
31	Kavanipakkam	2	2	1	2	2	2	2	1	2	2	2	1	2	Paddy			0	127.64
32	Kavanthandalam	2	2	1	2	2	1	1	1	2	2	2	1	2	Paddy			0	211.69
33	Kavithandalam	2	2	1	2	2	2	2	1	2	2	2	1	1	Paddy			0	184.15
34	Kilakkadi	2	2	1	2	2	2	2	1	2	2	2	1	1	Paddy			16.03	211.32
35	Kilottivakkam	2	2	1	2	2	2	2	2	2	2	2	1	1	Paddy			0	81.5
36	Kilputhur	2	2	1	2	2	2	2	1	2	2	2	1	2	Paddy			0	63.67
37	Kodithandalam	2	2	1	2	2	2	2	2	2	2	2	1	1	Paddy			0	52.05
38	Kolathur	2	2	1	2	2	2	2	1	2	2	2	2	2	Paddy			0	121.82
39	Kunnavakkam	2	2	1	2	2	2	2	1	2	2	2	1	1	Paddy			29.69	13.15
40	Kurumanjeri	2	2	1	2	2	2	2	1	2	2	2	1	2	Paddy			0	23.21
41	Kurumbarai	2	2	1	2	2	2	2	1	2	2	1	1	2	Paddy			0	188.85
42	Magaral	2	2	1	2	1	1	2	1	2	2	2	1	2	Paddy			0	203.23
43	Maiyur	2	2	1	2	2	1	1	1	2	2	2	1	2	Paddy			136.55	143.92
44	Malayankulam	2	2	1	2	2	2	2	1	2	2	2	1	1	Paddy		Baskets	0	246.27
45	Mamandur	2	2	1	1	2	2	1	1	2	2	2	1	1	Paddy			0	100.92
46	Mambakkam	2	2	1	1	2	1	1	1	2	2	2	1	2	Paddy			65.1	117.47
47	Mambudur	2	2	1	2	2	2	2	1	2	2	2	1	2	Paddy			0	90.83
48	Marudham	2	2	1	2	2	2	1	1	2	2	2	1	2	Paddy			2	247.24
49	Maruthuvambadi	2	2	1	2	2	2	2	1	2	2	2	2	2	Paddy			0	198.52
50	Melmanapakkam	2	2	1	2	2	2	2	1	2	2	2	1	2	Paddy			0	54.18
51	Melputhur	2	2	1	2	2	2	2	1	2	2	2	2	2	Paddy			0	55.16

52	Mulaginimeni	2	2	1	2	2	2	2	1	2	2	2	1	1	Paddy			0	68.67
53	Nariambakkam	2	2	1	2	2	2	2	2	2	2	2	2	2	Paddy			0	36.85
54	Nariyambudur	2	2	1	2	2	2	2	2	2	2	2	1	2	Paddy			104.47	11.42
55	Nathanallur	2	2	1	2	2	2	2	1	2	2	2	1	2	Paddy			0	190.74
56	Neerkundram	2	2	1	2	2	2	2	1	2	2	2	1	1	Paddy			0.48	34.03
57	Nelveli	2	2	1	2	2	2	2	1	2	2	2	1	2	Paddy			0	71.63
58	Nerkundram	2	2	2	2	2	2	2	1	2	2	2	1	1	Paddy			36.61	71.67
59	Neyyativakkam	2	2	1	2	2	2	1	1	2	2	2	1	2	Paddy			0	135.25
60	Orakkattupettai	2	2	1	2	2	2	2	1	2	2	2	1	1	Paddy			2	28.98
61	Ozhaiyur	2	2	1	2	2	2	2	1	2	2	2	1	2	Paddy			1	88.62
62	Padoor	2	2	1	2	2	1	1	1	2	2	2	1	2	Paddy			5	99.74
63	Palayaseevaram	2	2	1	2	1	2	2	1	2	2	2	1	1	Paddy			0	114.71
64	Paleswaram	2	2	1	2	2	2	2	1	2	2	2	1	2	Paddy			1	71.55
65	Palur	2	2	1	2	2	2	2	1	2	2	2	1	1	Paddy			0	278.1
66	Pandavakkam	2	2	1	1	1	1	1	1	2	2	2	1	2	Paddy			0	33.29
67	Pazhaveri	2	2	1	2	2	2	2	1	2	2	2	1	1	Paddy		Sculptures	31	116.48
68	Peranakkavur	2	2	1	2	2	2	2	1	2	2	2	1	1	Paddy			2	101.94
69	Pilappur	2	2	1	2	2	2	2	1	2	2	2	1	2	Paddy			134.99	124.95
70	Pinayur	2	2	1	2	2	2	2	1	2	2	2	1	2	Paddy			7	233.82
71	Pinnampoondi	2	2	1	2	2	2	2	2	2	2	2	1	1	Paddy			0	3.42
72	Porpandal	2	2	1	2	2	2	2	1	2	2	2	1	1	Paddy			5	118.81
73	Pulipakkam	2	2	1	2	2	2	2	1	2	2	2	1	1	Paddy			8.4	1.28
74	Pulivoy	2	2	1	2	2	2	2	2	2	2	2	1	1	Paddy			0	97.19
75	Puliyambakkam	2	2	1	2	2	2	2	1	2	2	2	1	2	Paddy			0	42.81
76	Pullampakkam	2	2	1	2	2	2	2	1	2	2	2	1	1	Paddy		Clay Pots	2	138.31
77	Puthali	2	2	1	2	2	2	2	1	2	2	2	1	2	Paddy			112.2	117.29
78	Rettamangalam	2	2	1	2	2	2	2	1	2	2	2	1	2	Paddy			1	37.98
79	Sadachivakkam	2	2	1	2	2	2	2	1	2	2	2	1	2	Paddy			2	70.81
80	Salavakkam	2	2	1	2	1	2	1	1	2	2	1	1	1	Paddy			2	259.18
81	Sampathinallur	2	2	1	2	2	2	2	1	2	2	2	1	1	Paddy			0	27.1
82	Sathananjeri	2	2	2	2	2	2	1	1	2	2	2	1	2	Paddy			2	298.75

83	Seethananjeri	2	2	1	2	2	1	2	1	2	2	2	1	2	Paddy			1	63.11
84	Seethapuram	2	2	1	2	2	2	2	2	2	2	2	2	1	Paddy			0	5.82
85	Sembulam	2	2	1	2	2	2	2	1	2	2	2	1	2	Paddy			0	29.93
86	Sirudamur	2	2	1	2	2	2	2	1	2	2	2	1	1	Paddy			0	122.24
87	Sirumailur	2	2	1	2	2	2	2	1	2	2	2	1	2	Paddy			75.03	24.76
88	Sirupinayur	2	2	1	2	2	2	2	1	2	2	2	1	1	Paddy			170.52	281.73
89	Sithanakavoor	2	2	1	2	2	2	2	1	2	2	2	1	1	Paddy			0	104.37
90	Sithandi	2	2	1	2	2	2	2	1	2	2	2	1	1	Paddy		Clay Pots	0	44.61
91	Thammanur	2	2	1	2	2	2	2	1	2	2	2	1	1	Paddy			0	160.62
92	Thandarai	2	2	1	1	2	2	2	1	2	2	2	1	2	Paddy			84.78	143.59
93	Thirumukkudal	2	2	1	2	2	2	2	1	2	2	1	1	1	Paddy	Cloth	Clay Pots	30	113.65
94	Thiruvanaikoil	2	2	1	2	2	2	2	1	2	2	2	1	1	Paddy			0	61.37
95	Thollazhi	2	2	1	2	2	2	2	1	2	2	2	1	2	Paddy			0	113.29
96	Thonankulam	2	2	1	2	2	2	2	1	2	2	2	1	1	Paddy			0	81.29
97	Thottanaval	2	2	1	2	2	1	2	1	2	2	2	1	1	Paddy			1	55.01
98	Ullavur	2	2	1	2	2	2	2	1	2	2	2	1	2	Paddy	Cement Slabs		0	153.4
99	Uthukadu	2	2	1	2	2	2	2	1	2	2	2	1	1	Paddy		Clay Pots	0	521.43
100	Vadathavoor	2	2	1	2	2	2	2	1	2	2	2	1	2	Paddy			61.39	91.19
101	Valathodu	2	2	1	2	2	2	2	1	2	2	2	1	1	Paddy			0	32.73
102	Vayalakkavoor	2	2	1	2	2	2	1	1	2	2	2	1	2	Paddy			3	200.32
103	Vendivakkam	2	2	1	2	2	2	2	1	2	2	2	1	2	Paddy			0	35.85
104	Vengudi	2	2	1	2	2	2	2	1	2	2	2	1	1	Paddy			0	13.05
105	Vichoor	2	2	1	2	2	2	2	1	2	2	2	1	1	Paddy			0	88.8
106	Villiambakkam	2	2	1	2	2	1	1	1	2	2	2	1	1	Paddy			0	89.83
107	Vinnamangalam	2	2	1	2	2	2	2	1	2	2	2	1	1	Paddy			2	64.24

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

3.7.5 Recommendation and Suggestion

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

3.7.6 Summary & Conclusion

The socio-economic study in the study area gives a clear picture of its population, average household size, literacy rate and sex ratio etc. It is also found that a part of population is suffering from a lack of permanent job to run their day-to-day life. Their expectation is to earn some income for their sustainability on a long-term basis.

The proposed project will aim to provide preferential employment to the local people there by improving the employment opportunity in the area and in turn the social standards will improve.

3.8 Traffic Density

The traffic survey conducted based on the transportation route of material, the rough stone is proposed to be transported mainly through Salavakkam panchayat road that connects to Salavakkam Tirumukkudal Road state highway Road on north western side.

Traffic density measurements were performed at two locations:

1. panchayat road
2. Salavakkam Tirumukkudal Road

Traffic density measurement were made continuously for 24 hours by visual observation and counting of vehicles under three categories, viz., heavy motor vehicles, light

motor vehicles and two/three wheelers. As traffic densities on the roads are high, two skilled persons were deployed simultaneously at each station during each shift- one person on either direction for counting the traffic. At the end of each hour, fresh counting and recording was undertaken.

Table 3.41 Traffic Survey Locations

Station Code	Road Name	Distance and Direction	Type of Road
TS1	panchayat road	0.34 km-South	Village road (Single Lane)
TS2	Salavakkam Tirumukkudal Road	1.13 km-West	Salavakkam Tirumukkudal Road

Source: On-site monitoring by GTMS FAE & TM

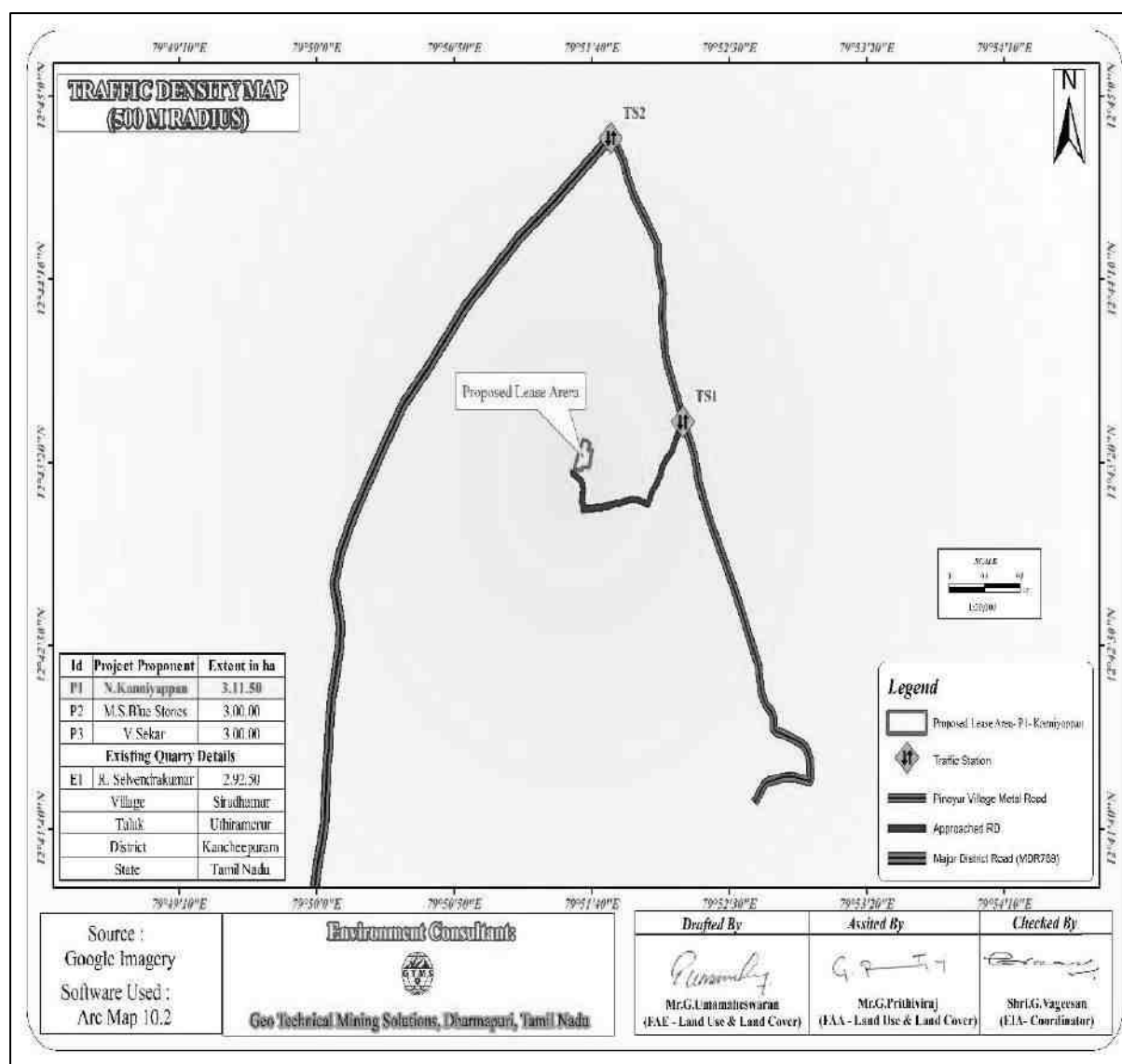


Figure 3.29 Traffic Density Map

Table 3.42 Existing Traffic Volume

Station code	HMV		LMV		2/3 Wheelers		Total PCU
	No	PCU	No	PCU	No	PCU	
TS1	107	321	15	15	109	55	391
TS2	135	405	28	28	152	76	509

Source: On-site monitoring by GTMS FAE & TM

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

Table 3.43 Rough Stone Hourly Transportation Requirement

Transportation of Rough Stone & Gravel per day		
Capacity of trucks	No. of Trips per day	Volume in PCU
15 tonnes	58	174

Source: Approved Mining Plan

Table 3.44 Summary of Traffic Volume

Route	Existing traffic volume in PCU	Incremental traffic due to the project	Total traffic volume	Hourly Capacity in PCU as per IRC – 1960 guidelines
panchayat road	391	174	565	1200
Salavakkam Tirumukkudal Road	509	174	683	1200

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

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

CHAPTER IV

ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

4.0 GENERAL

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

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

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

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

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

4.1 LAND ENVIRONMENT

4.1.1 Anticipated Impact

- ❖ Permanent or temporary change on land use and land cover.

- ❖ Change in topography of the mine lease area will change at the end of the life of the mine.
- ❖ Problems to agricultural land and human habitations due to dust, and noise caused by movement of heavy vehicles
- ❖ Degradation of the aesthetic environment of the core zone due to quarrying
- ❖ Soil erosion and sediment deposition in the nearby water bodies due to earthworks during the rainy season
- ❖ Siltation of water course due to wash off from the exposed working area

4.1.2 Common Mitigation Measures from Proposed Project

- ❖ 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.
- ❖ Green belt development along the boundary within safety zone. The small quantity of water stored in the mined-out pit will be used for greenbelt
- ❖ Thick plantation will be carried out on unutilized area, top benches of mined out pits, on safety barrier, etc.,
- ❖ 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 minimize 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.

4.2 SOIL ENVIRONMENT

The proposed project area is covered by thin layer of gravel formation and the average thickness is about 2m, the excavated gravel will be directly sold to needy customers in open market

4.2.1 Anticipated Impact on Soil Environment

Following impacts are anticipated due to mining operations:

- ❖ 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
- ❖ Exposure of subsurface materials which are unsuitable for vegetation establishment

4.2.2 Common Mitigation Measures from proposed project

- ❖ Run-off diversion – Garland drains will be constructed 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 sediment and reduce suspended sediment loads before runoff is discharged from the quarry site. Sedimentation ponds should be designed based on runoff, retention times, and soil characteristics. There may be a need to provide a series of sedimentation ponds to achieve the desired outcome.
- ❖ Retain vegetation – Retain existing or re-plant the vegetation at the site wherever possible.
- ❖ Monitoring and maintenance – Weekly monitoring and daily maintenance of erosion control systems so that they perform as specified specially during rainy season.

4.2.3 Waste Dump Management

The overburden in the form of Topsoil will be safely removed during the mining plan period. The quarried-out topsoil will be preserved within the applied area and utilized for construction of bund and backfilled in the part of the quarry pit also spread out the quarried out top bench to facilitate the greenbelt development.

4.3 WATER ENVIRONMENT

4.3.1 Anticipated Impact

The major sources of water pollution normally associated with mining and allied operations are:

- ❖ Generation of waste water from vehicle washing
- ❖ Washouts from surface exposure or working areas
- ❖ Domestic sewage
- ❖ Disturbance to drainage course in the project area
- ❖ Mine pit water discharge
- ❖ Increase in sediment load during monsoon in downstream of lease area
- ❖ This being a mining project, there will be no process effluent. Waste from washing of machinery may result in discharge of Oil & grease, suspended solids
- ❖ The sewage from soak pit may percolate to the ground water table and contaminate it
- ❖ Surface drainage may be affected due to Mining
- ❖ Abstraction of water may lead to depletion of water table

4.3.2 Details of water requirements in KLD

Table 4.1 Water Requirements

Purpose	Quantity	Source
Dust Suppression	1.0 KLD	From existing bore wells from nearby area
Green Belt development	1.5 KLD	From existing bore wells from nearby area
Drinking & Domestic purpose	1.3 KLD	Water will be sourced from approved water vendors for drinking and domestic purposes
Total	3.8 KLD	

Source: Approved Mining Plan Pre-Feasibility Report

4.3.3 Common Mitigation Measures for the Proposed Project

- ❖ Garland drainage system and settling tank will be constructed along the proposed mining lease area. The garland drainage will be connected to settling tank and sediments will be trapped in the settling tanks and only clear water will be discharged to the natural drainage
- ❖ Rainwater from the mining pits will be collected in sump and will be allowed to store and pumped out to surface settling 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
- ❖ Benches will be provided with inner slopes and through a system of drains and channels, rain water will be allowed to descent into surrounding drains to minimize the effects of erosion and water logging arising out of uncontrolled descent of water
- ❖ The water collected will be reused during storm for dust suppression and greenbelt development within the mines
- ❖ Interceptor traps/oil separators will be installed to remove oils and greases. Water from the tipper wash-down facility and machinery maintenance yard will be passed through interceptor traps/oil separators prior to its reuse
- ❖ Flocculating or coagulating agents will be used to assist in the settling of suspended solids during monsoon seasons
- ❖ Periodic (once every 6 months) analysis of ground water quality of quarry pit water and ground water of nearby villages will be conducted
- ❖ Domestic sewage from site office and 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 (once every 6 months) and analysing the quality of water in open well, bore wells and surface water

4.4 AIR ENVIRONMENT

4.4.1 Anticipated Impact from proposed project

- ❖ During mining at various stages of 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

4.4.1.1 Emission Estimation

An emission 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 emission estimation is given as below:

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

Where,

E = emissions

A = activity rate

EF = emission factor

ER = overall emission reduction efficiency, %

The proposed mining activity includes various activities like ground preparation, excavation, handling and transport of rough stone. These activities have been analysed systematically based on USEPA-Emission Estimation Technique Manual for Mining AP-42 to arrive at possible emissions to the atmosphere and estimated emissions are given in Table 4.2.

4.4.1.2 Frame work of Computation and Model Details

By using the above-mentioned inputs, Ground Level Concentrations (GLC) due to the quarrying activities have been estimated to know the incremental concentration in ambient air quality and impact in the study area. The effect of air pollutants upon receptors are influenced by concentration of pollutants and their dispersion in the atmosphere.

Air quality modelling is an important tool for prediction, planning and evaluation of air pollution control activities besides identifying the requirements for emission control to meet the regulatory standards and to apply mitigation measures to reduce impact caused by quarrying activities. Suspended Particulate Matter (SPM) is the major pollutant occurred during quarrying activities. The prediction includes the impacts 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.

The model was used to predict the impact on the ambient air environment at each receptor at various localities within 5km radius around the project site and the maximum incremental GLC at the project site. All the prediction models in Figures 4.1-4.4 shows the maximum concentrations of PM_{2.5}, PM₁₀, SO₂ and NO_x close to the proposed project site due to low to moderate wind speeds.

Table 4.2 Estimated Emission Rate

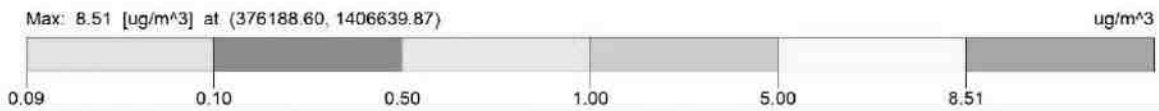
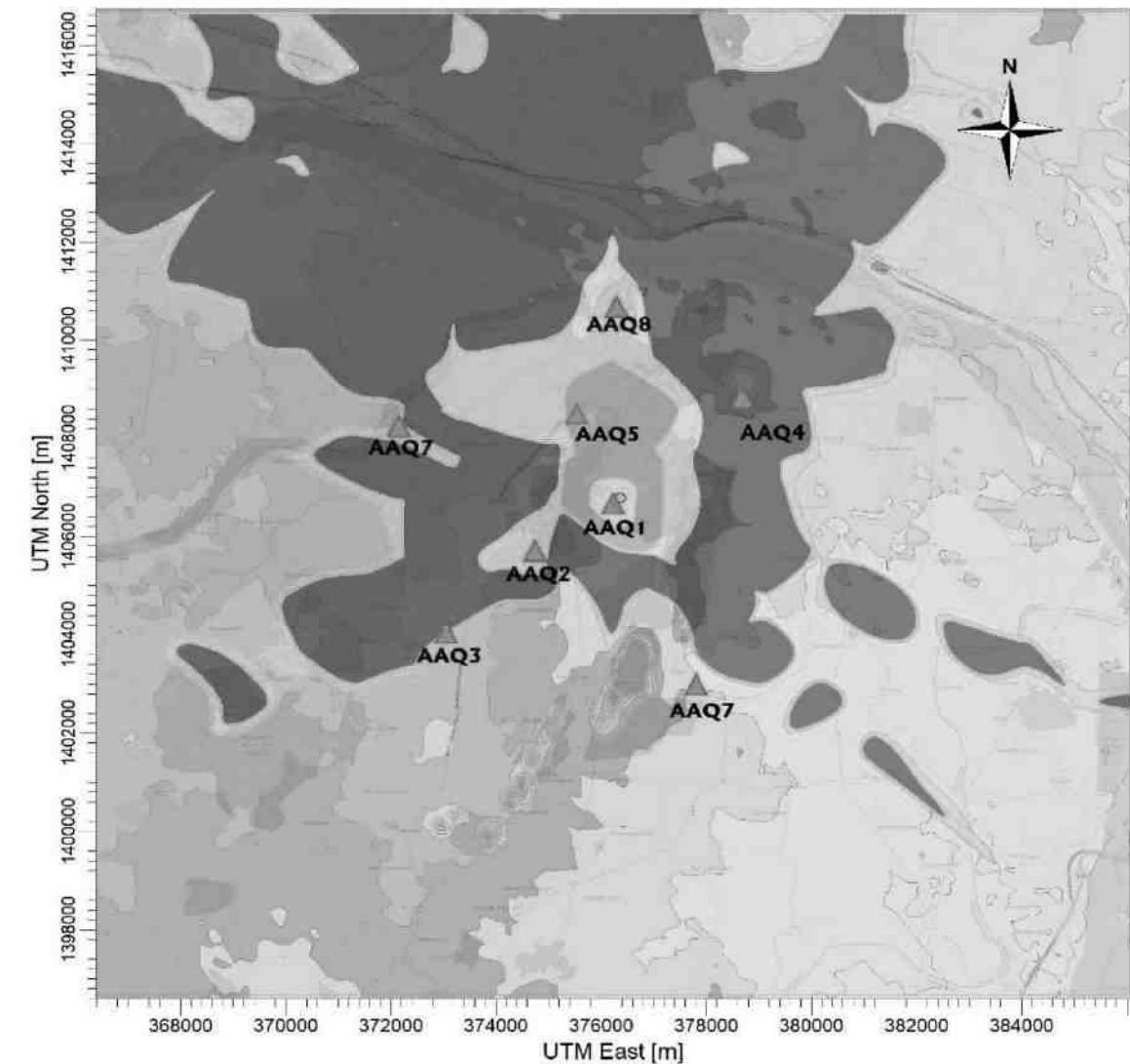
Activity	Pollutant	Calculated Value (g/s)	Lease Area in m ²	Calculated Value (g/s/m ²)
Overall Mine	PM ₁₀	0.041677074	31150	1.33795E-06
Overall Mine	PM _{2.5}	0.021660745	31150	6.95369E-07
Overall Mine	SO _x	0.0171782484	31150	5.51469E-07
Overall Mine	NO _x	0.020136933	31150	6.4645E-07

4.4.1.3 Modelling of Incremental Concentration

The air borne particulate matter such as PM₁₀ and PM_{2.5} generated by quarrying operation, transportation, and wind erosion of the exposed areas and emissions of sulphur dioxide (SO₂) and oxides of nitrogen (NO_x) due to excavation and loading equipment's and vehicles plying on haul roads are the significant air pollutants arising from mining operation, leading to an adverse impact on the ambient air environment in and around the project area.

Anticipated incremental concentration and net increase in emissions due to quarrying activities within 500m around the project area is predicted by open pit source modelling using AERMOD Software and the incremental values of the air pollutants were added to the base line data monitored at the proposed site to predict total GLC of the pollutants, as shown in Tables 4.3-4.6.

PROJECT TITLE:
KANNIYAPPAN ROUGHSTONE AND GRAVEL QUARRY-PM2.5



COMMENTS:	SOURCES: 1	COMPANY NAME: GEOTECHNICAL MINING SOLUTIONS	
	RECEPTORS: 449		
	OUTPUT TYPE: Concentration	SCALE: 1:127,000 0 5 km	
	MAX: 8.51 ug/m ³		PROJECT NO.:

AERMOD View - Lakes Environmental Software

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Figure 4.1 Predicted Incremental Concentration of PM_{2.5}

PROJECT TITLE:
KANNIYAPPAN ROUGHSTONE AND GRAVEL QUARRY-PM10

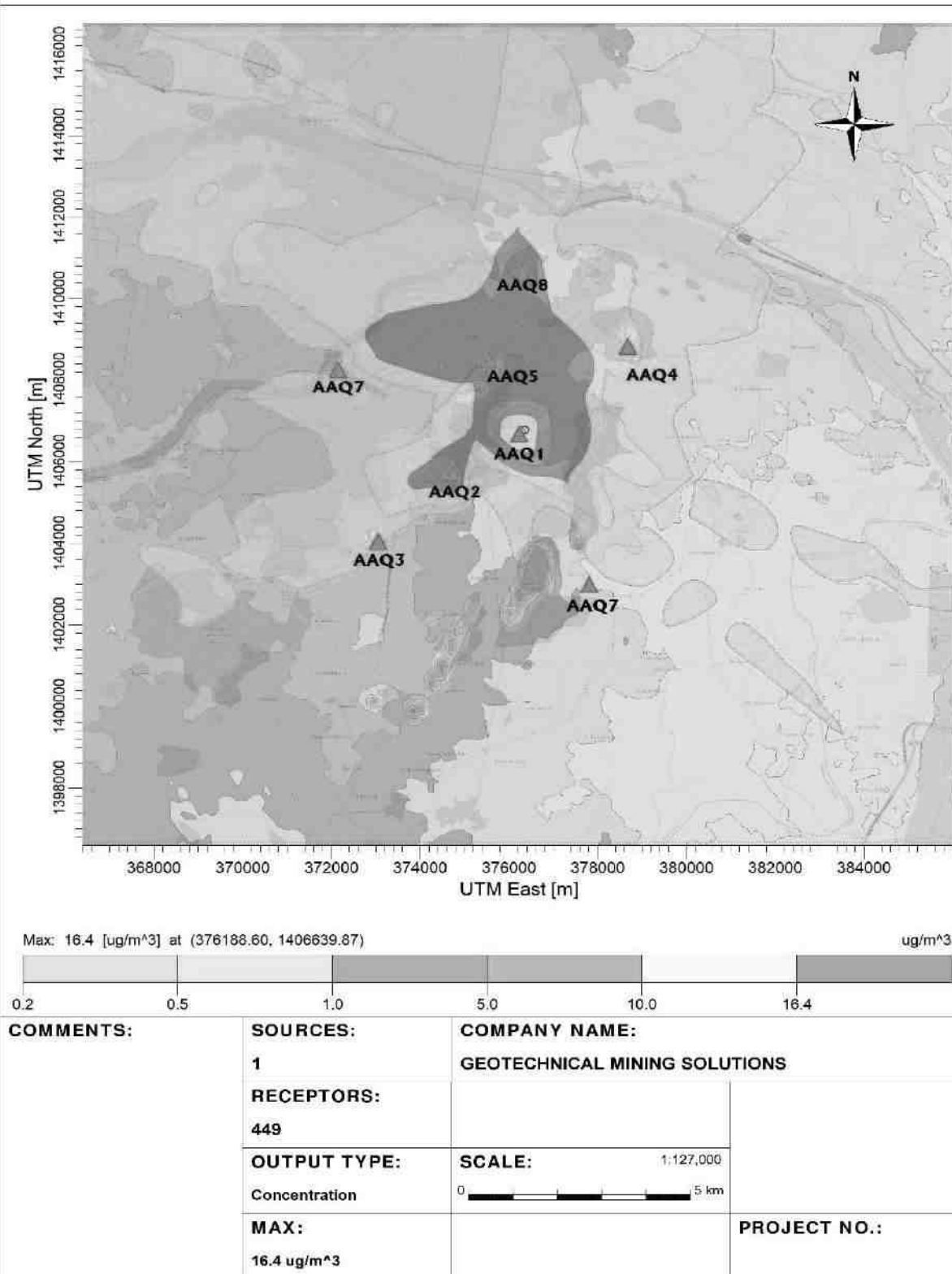
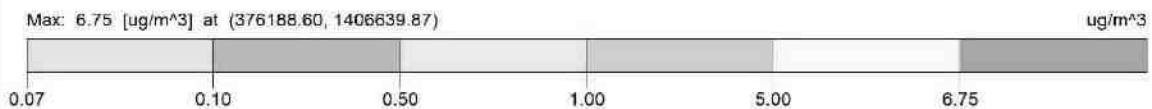
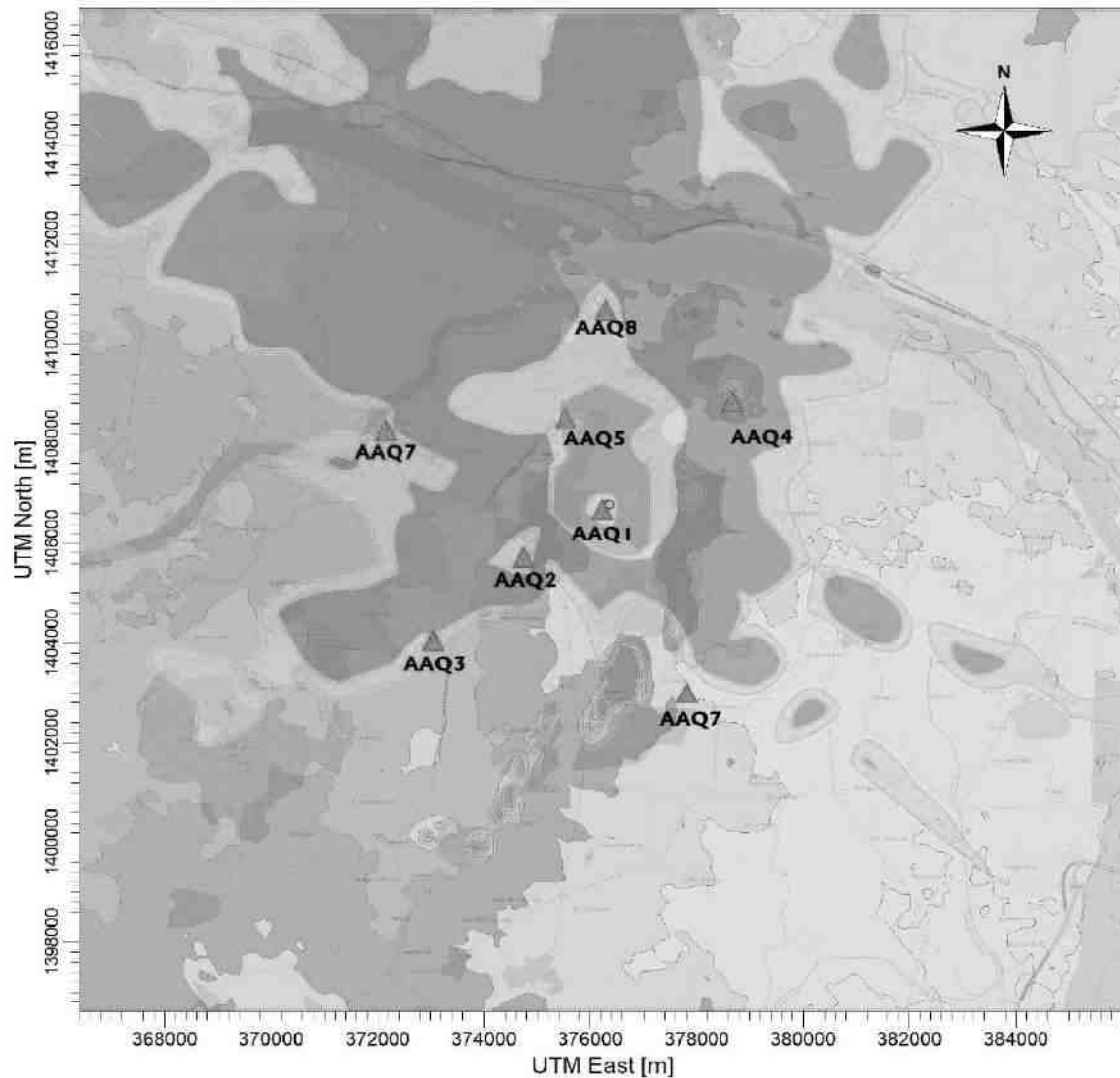



Figure 4.2 Predicted Incremental Concentration of PM₁₀

PROJECT TITLE:
KANNIYAPPAN ROUGHSTONE AND GRAVEL QUARRY- SO₂



COMMENTS:	SOURCES:	COMPANY NAME:	
	1	GEOTECHNICAL MINING SOLUTIONS	
	RECEPTORS:		
	449		
	OUTPUT TYPE:	SCALE: 1:127,000	
	Concentration	0  5 km	
	MAX:		PROJECT NO.:
	6.75 ug/m ³		

AERMOD View - Lakes Environmental Software

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Figure 4.3 Predicted Incremental Concentration of SO₂

PROJECT TITLE:
KANNIYAPPAN ROUGHSTONE AND GRAVEL QUARRY- NO_x

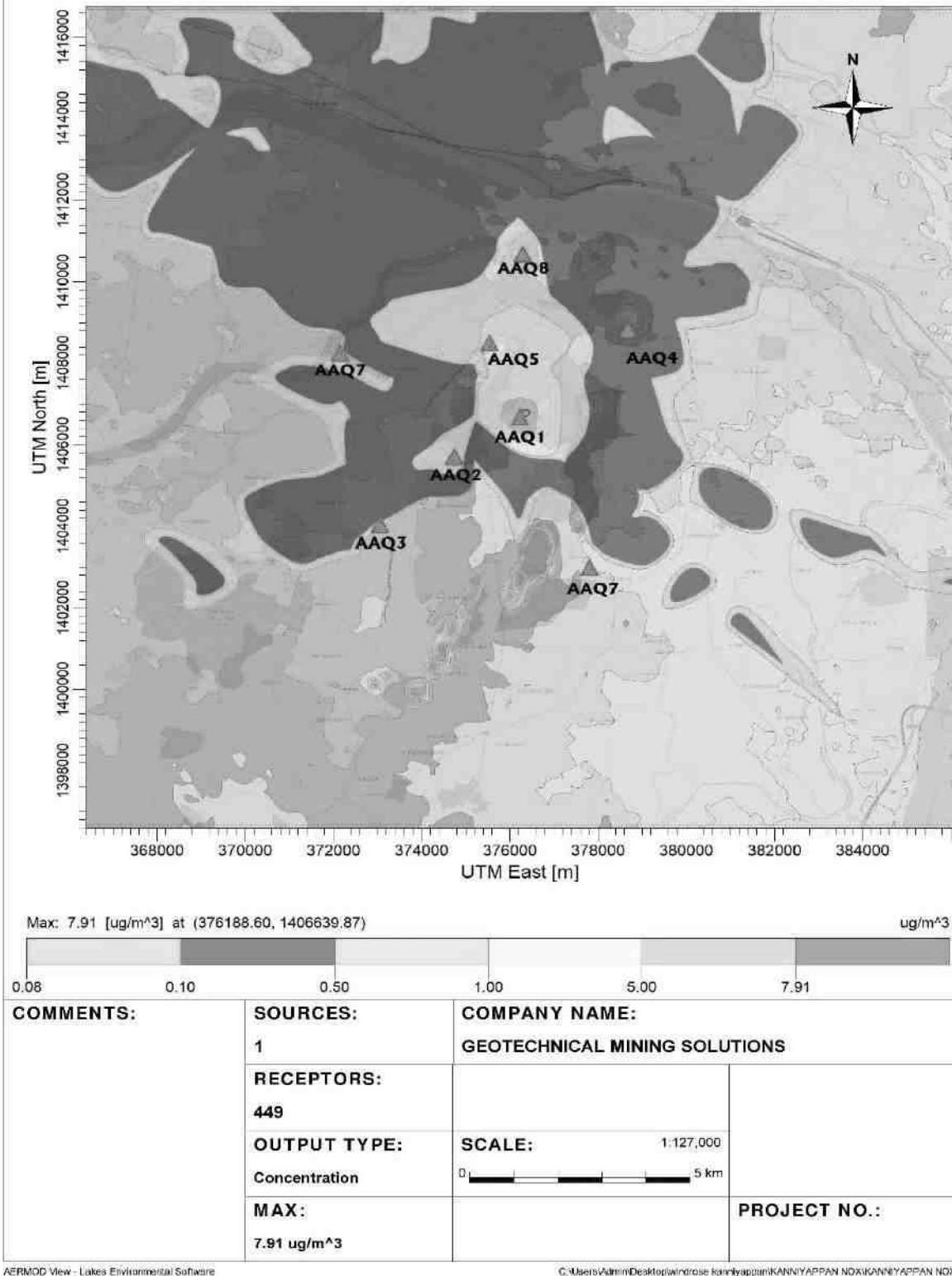


Figure 4.4 Predicted Incremental Concentration of NO_x

4.4.1.4 Model Results

The post project resultant concentrations of PM₁₀, PM_{2.5}, SO₂, and NO_x (GLC) has been given in Table 4.3-4.6.

Table 4.3 Incremental & Resultant GLC of PM_{2.5}

Station Code	Location	Average Baseline PM _{2.5} (µg/m ³)	Incremental value of PM _{2.5} dueto mining (µg/m ³)	Total PM _{2.5} (µg/m ³)
AAQ1	12°43'19.87"N, 79°51'35.87"E	32.40	8.5	40.9
AAQ2	12°42'48.39"N, 79°50'46.86"E	25.08	1	26.08
AAQ3	12°41'53.58"N, 79°49'51.00"E	20.27	0.1	20.37
AAQ4	12°44'30.33"N, 79°52'56.85"E	22.30	0.5	22.8
AAQ5	12°44'19.05"N 79°51'12.97"E	24.39	5	29.39
AAQ6	12°44'10.33"N, 79°49'20.52"E	20.10	0	20.1
AAQ7	12°41'20.08"N, 79°52'28.96"E	23.30	0	23.3
AAQ8	12°45'30.23"N, 79°51'37.33"E	23.52	1	24.52

Table 4.4 incremental and Resultant GLC OF PM₁₀

Station Code	Location	Average Baseline PM ₁₀ (µg/m ³)	Incremental value of PM ₁₀ dueto mining (µg/m ³)	Total PM ₁₀ (µg/m ³)
AAQ1	12°43'19.87"N, 79°51'35.87"E	52.23	16.36	68.59
AAQ2	12°42'48.39"N, 79°50'46.86"E	45.23	5	50.23
AAQ3	12°41'53.58"N, 79°49'51.00"E	39.58	0.5	40.08
AAQ4	12°44'30.33"N, 79°52'56.85"E	40.99	1	41.99
AAQ5	12°44'19.05"N 79°51'12.97"E	43.43	5	48.43
AAQ6	12°44'10.33"N, 79°49'20.52"E	38.86	0	38.86
AAQ7	12°41'20.08"N, 79°52'28.96"E	44.68	0	44.68
AAQ8	12°45'30.23"N, 79°51'37.33"E	42.18	5	47.18

Table 4.5 Incremental & Resultant GLC of SO₂

Station Code	Location	Average Baseline SO₂ (µg/m³)	Incremental value due to mining (µg/m³)	Total SO₂(µg/m³)
AAQ1	12°43'19.87"N, 79°51'35.87"E	11.53	6.74	18.27
AAQ2	12°42'48.39"N, 79°50'46.86"E	8.70	1	9.7
AAQ3	12°41'53.58"N, 79°49'51.00"E	5.89	0.1	5.99
AAQ4	12°44'30.33"N, 79°52'56.85"E	6.48	0.5	6.98
AAQ5	12°44'19.05"N 79°51'12.97"E	7.23	5	12.23
AAQ6	12°44'10.33"N, 79°49'20.52"E	6.08	0	6.08
AAQ7	12°41'20.08"N, 79°52'28.96"E	8.66	0	8.66
AAQ8	12°45'30.23"N, 79°51'37.33"E	8.63	1	9.63

Table 4.6 Incremental & Resultant GLC of NO_x

Station Code	Location	Average Baseline NO_x (µg/m³)	Incremental value due to mining (µg/m³)	Total NO_x (µg/m³)
AAQ1	12°43'19.87"N, 79°51'35.87"E	23.85	7.91	31.76
AAQ2	12°42'48.39"N, 79°50'46.86"E	22.24	1	23.24
AAQ3	12°41'53.58"N, 79°49'51.00"E	16.78	0.1	16.88
AAQ4	12°44'30.33"N, 79°52'56.85"E	18.75	0.5	19.25
AAQ5	12°44'19.05"N 79°51'12.97"E	20.85	5	25.85
AAQ6	12°44'10.33"N, 79°49'20.52"E	18.70	0	18.7
AAQ7	12°41'20.08"N, 79°52'28.96"E	22.40	0	22.4
AAQ8	12°45'30.23"N, 79°51'37.33"E	21.72	1	22.72

The values of cumulative concentration i.e., background + incremental concentration of pollutant in all the receptor locations are still within the prescribed NAAQ limits without effective mitigation measures. By adopting suitable mitigation measures, the pollutant levels in the atmosphere can be controlled further.

4.4.2 Common Mitigation Measures

Drilling

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

Advantages of Wet Drilling

- ❖ In this system dust gets suppressed close to its formation. Dust suppression becomes very effective and the work environment will be improved from the point of view 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

- ❖ Suitable time of blasting will be chosen according to the local conditions and water will be sprinkled on blasting face
- ❖ Blasting will be avoided when temperature inversion is likely to occur and strong wind blows towards residential areas
- ❖ Controlled blasting will be carried out using suitable explosive charge and short delay detonators, adequate stemming of holes at collar zone
- ❖ Blasting will be restricted to a particular time of the day i.e., at the time of lunch hours
- ❖ 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 and 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 to < 20 km/hr to avoid generation of dust
- ❖ Water sprinkling on haul roads and 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 and reduces pollution
- ❖ The un-metalled haul roads will be compacted weekly before being put into use
- ❖ Overloading of tippers will be avoided to prevent spillage
- ❖ It will be ensured that all transportation vehicles carry a valid PUC certificate
- ❖ Haul roads and service roads will be graded 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 tractors/tippers
- ❖ Green belt of adequate width will be developed around the project site

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 and tipper drivers
- ❖ Ambient air quality monitoring will be conducted every six months to assess effectiveness of mitigation measures proposed

4.5 NOISE ENVIRONMENT

Noise pollution is mainly due to operation like drilling, blasting and plying of trucks & HEMM. These activities will not cause any problem to the inhabitants of this area because there is no human settlement 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 1,10° 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 a mathematical 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 and 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.

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

4.5.1 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 4.7

Table 4.7 Activity and Noise Level Produced by Machinery

S. 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			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 4.8 Predicted Noise Incremental Values

Noise Monitoring Location	Distance From Project Site(m)	Baseline Noise Level (dBA)m During Day Time	Predicted Noise Level(dBA)	Total(dBA)
Core	100	48.6	57.16	57.73
Sirudamur	350	45.6	46.28	48.96
Kattankulam	3980	42.5	25.16	42.58
Pazhaveri	3100	42.9	27.33	43.02
Sirudamur	1790	40.2	32.10	40.83
Vayalakkavoor	4250	39.8	24.59	39.93
Edamichi	3910	38.0	25.32	38.23
Thirumukkudal	3810	44.9	25.54	44.95
NAAQ Standards	Industrial Day Time - 75 dB (A) & Night Time- 70 dB (A) Residential Day Time - 55 dB (A) & Night Time- 45 dB (A)			

The incremental noise level is found to be 57.73 dB (A) in core zone and ranges between 38.23 and 48.96 dB (A) in buffer zone. The noise level at different receptors in buffer zone is lower due to the distance involved and other topographical features adding to the noise attenuation. The noise level resulting from monitored values and calculated values at the receptors is based on the mathematical formula considering attenuation due to Green Belt as 4.9 dB (A) the barrier effect. From the above table, it can be seen that the ambient noise levels at all the locations are within permissible limits of Industrial area (core zone) & Residential area (buffer zone) as per the noise pollution (regulation and control) rules, 2000 (The Principal Rules were published in the Gazette of India, vide S.O. 123(E), dated 14.2.2000 and subsequently amended vide S.O. 1046(E), dated 22.11.2000, S.O. 1088(E), dated 11.10.2002, S.O. 1569 (E), dated 19.09.2006 and S.O. 50 (E), dated 11.01.2010 under the Environment (Protection) Act, 1986.).

4.5.2 Common Mitigation Measures

The following noise mitigation measures are proposed for control of noise:

- ❖ Usage of sharp drill bits while drilling which will help in reducing noise
- ❖ Secondary blasting will be totally avoided and hydraulic rock breaker will be used for breaking boulders
- ❖ Controlled blasting with proper spacing, burden, stemming and optimum charge/delay will be maintained
- ❖ 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

4.5.3 Ground Vibrations

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

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

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

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

Where,

V = peak particle velocity (mm/s)

K = site and rock factor constant (500)

Q = maximum instantaneous charge (kg)

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

R = distance from charge (m)

Table 4.9 Predicted PPV Values due to Blasting

Location ID	Maximum Charge in kgs	Nearest Habitation in m	PPV in mm/s
P1	82	350m	1.44

The peak particle velocity produced by the charge of 82.0 kg is well below that of 8 mm/s as per Directorate General of Mines Safety for safe level criteria through Circular No. 7 dated 29/8/1997. But the project proponent ensures that the charge per blast shall be less than 82.0 kg and that the proponent shall carry out blasting twice or thrice a day based on the onsite conditions under the supervision of competent person employed. However, as per statutory requirement control measures will be adopted to avoid the impacts due to ground vibrations and fly rocks due to blasting.

4.5.3.1 Common Mitigation Measures

- ❖ The blasting operations in the cluster quarries are carried out without deep hole drilling and blasting using delay detonators which reduce the ground vibrations
- ❖ Proper quantity of explosives, 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 in such a way that the predicted peak particle velocity shall not exceed 0.251mm/s
- ❖ Vibration monitoring will be carried out every 6 months to check the efficacy of blasting practices.

4.6 ECOLOGY AND BIODIVERSITY

4.6.1. Anticipated Impact on Flora

The impact of the mining activity on the biological environment is as follows:

- A. The mining lease area does not include any forest land. There will be no cutting of trees during the mining activity so no deforestation activity will be under taken.
- B. The existing vegetation within the ML area includes few trees and scrub vegetation which are sparsely scattered. They will not be disturbed due to the mining activity. So, the impact on the vegetation is very less.
- C. The transportation of Rough Stone and gravel quarry waste may create dust pollution which may create loss of biodiversity of the area.
- D. Dust in atmosphere, contributed by mining and associated activities, when deposited on the leaves of the plants in the surrounding areas may retard their growth.
- E. The growth of vegetation and agriculture in and around the complexes. Noise and vibrations due to blasting and operation of the machines drive away the wild animals and birds from the nearby areas.
- F. The lease area and its buffer zone are devoid of any Eco sensitive area. The impact on the biodiversity and wild life is minimal.

4.6.2 Mitigation Measures

4.6.2.1. Green Belt Development

The project site should have a land to develop greenbelt in and around the limits of the mine, along roads and other 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 by plantation services. To avoid dust emissions, the mined materials will be covered with tarpaulin during transportation.

- ❖ Plants that grow fast will be preferred.
- ❖ Preference for high canopy covers plants with local varieties.
- ❖ Perennial and evergreen plants will be preferred.
- ❖ It improves the ambient air quality by controlling Suspended Particulate Matter (SPM) in air.
- ❖ It helps in noise abatement for the surrounding area.
- ❖ It helps in settlement of new birds and insects within itself.
- ❖ It maintains the ecological balance.
- ❖ It increases the aesthetic value of site.

4.6.2.2. Green Belt Plan

Greenbelt is an important sink of air pollutants and noise. Green cover in mining area not only helps in reducing pollution level, but also improves the ecological conditions and prevents soil erosion to great extent. It further improves the aesthetics and beneficially influences the microclimate of the surrounding. However, green belts of the lease area will include the local species which are suitable for the area. Plant species, selected for greenbelt have rapid growth, ever green, large crown volume and small/pendulous leave with smooth surface. A combination of different plant species is sought while selecting trees for vegetation cover. Greenbelt should be developed in following areas:

- ❖ Along mine boundary
- ❖ Along the side of major roads
- ❖ On backfill areas

The species of plantation should be selected considering the soil quality, place of plantation, chances of survival, commercial value etc. Only indigenous species will be planted. Mixed plantation should be done keeping optimum spacing between the saplings.

4.6.2.3. Afforestation

More number of trees has been observed along the approach road in the lease area, which is developed by the lease owner. The 7.5m Safety distance along the boundary has been identified to be utilized for subsequent Afforestation. However, the afforestation should always be carried out in a systematic and scientific manner. Regional trees like *Azadirachta indica*, *Nerium indicum*, and *Albizia lebbeck* will be planted along the lease boundary and avenue plantation will be carried out in

respective proposed project. Recommended species for Greenbelt Development Plan is given in Table 4.10. The rate of survival expected to be 80% in this area. Afforestation Plan is given in Table 4.11 and budget of green belt development plan are given in Table 4.12.

After complete extraction of mineral, the pit will be allowed to collect rain 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.

4.6.2.4. Species Recommendation for Plantation granted in the district

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

- ❖ Natural growth of existing species and survival rate of various species
- ❖ Suitability of a particular plant species for a particular type of area
- ❖ Creating of biodiversity
- ❖ Fast growing, thick canopy copy, perennial and evergreen large leaf area
- ❖ Efficient in absorbing pollutants without major effects of natural growth
- ❖ The following species may be considering primary for plantation best suited for the prevailing climate condition in the area

4.6.2.5. Physiological Features of Plant Leaf for Efficient Dust Capture

The following Leaf functions are directly or indirectly help in efficient dust capture by

- ❖ plants Photosynthesis (production of carbohydrates from CO₂ and HO₂ using light energy)
- ❖ Transpiration (water absorbed by the roots and transported throughout the plant evaporates into the atmosphere)
- ❖ Water movement and Cooling
- ❖ Abscission (seasonal shedding of leaves in deciduous plants)
- ❖ Nutrient recycling and waste elimination
- ❖ There are two physiological Features, which are controlled by Leaf morphology & anatomical feature, help in dust capturing efficiency of leaf as well as plants.
- ❖ Photosynthesis Process
- ❖ Transpiration Process.

Table 4.10 Recommended Species for Greenbelt Development Plan

S. No	Botanical Name of the Plant	Family Name	Common Name	Category	Dust Capturing Efficiency Features
1	<i>Azadirachta indica</i>	Meliaceae	Neem, Vembu	Tree	Well distinct thick at both the layer Well distinct in Palisade & Spongy parenchyma. Spongy parenchyma is present at lower epidermis Many vascular bundles arranged almost parallel series
2	<i>Tectona grandis</i>	Lamiaceae	Teak	Tree	
3	<i>Polyalthia longifolia</i>	Annonaceae	Nettilingam	Tree	
4	<i>Albizia lebbbeck</i>	Fabaceae	Vagai	Tree	
5	<i>Delonix regia</i>	Fabaceae	Cemmayir konrai	Tree	
6	<i>Bauhinia racemosa</i>	Fabaceae	Aathi	Tree	
7	<i>Cassia fistula</i>	Fabaceae	Sarakondrai	Tree	
8	<i>Aegle marmelos</i>	Rutaceae	Vilvam	Tree	
9	<i>Pongamia pinnata</i>	Fabaceae	Pungam	Tree	
10	<i>Thespesia populnea</i>	Malvaceae	Puvarasu	Tree	

Source: Central Pollution Control Board (Ministry of Environment & Forests) Parivesh Bhawan', East Arjun Nagar Delhi-110 03

Table 4.11 Greenbelt Development Plan

S. No.	No. of trees proposed for plantation	Survival %	Area to be covered(m ²)	Name of the species	No. of trees expected to be grown
Plantation in the construction phase (3 months)	Number of plants inside the mine lease area			<i>Azadirachta indica</i> , <i>Albizia lebbbeck</i> , <i>Delonix regia</i> ,	498
	623	80%	5,607		
	Number of plants outside the mine lease area			<i>Tectona grandis</i> , etc.,	748
	935	80%	8,411		

Table 4.12 Budget for greenbelt development plan

Activity	Plantation in the construction phase(3Months)	Cost	Capital Cost (Rs.)	Recurring Cost-per annum
Plantation inside the mine lease area (in safety margins)	623	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))"	124600	18690
Plantation outside the area	935	Avenue Plantation @ 300 per plant (capital) for plantation outside the lease area and @ 30 per plant maintenance (recurring)	280350	28035
Total			404950	46725

4.6.3. Anticipated Impact on Fauna

- ❖ There is no Wildlife Sanctuary and Biosphere Reserve within 10 km radius of the project site
- ❖ No rare, endemic & endangered species are reported in the buffer zone. However, during the course of mining, the management will practice scientific method of mining with proper Environmental Management Plan including pollution control measures especially for air and noise, to avoid any adverse impact on the surrounding wildlife
- ❖ Fencing around the mine lease area to restrict the entry of stray animals
- ❖ Green belt development will be carried out which will help in minimizing adverse impact on the flora found in the area

4.6.3.1. Measures for protection and conservation of wildlife species

- ❖ Topsoil has a large number of seeds of native plant species in the mining area
Topsoil will be used for restoration and suitable surface for planted seedlings
- ❖ Checks and controls on the movement of vehicles in and out of the mine

- ❖ Undertaking mitigative measures for conducive environment to the flora and fauna in consultation with Forest Department
- ❖ Dust suppression system will be installed within mine and periphery of mine
- ❖ Plantation around mine area will help in creating habitats for small faunal species and to create better environment for various fauna. Creating and developing awareness for nature and wildlife in the adjoining villages

4.6.3.2. Mitigation Measures

- ❖ 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 and no work shall be carried out after 6.00 pm

4.6.4. Impact on Aquatic Biodiversity

Mining activities will not disturb the existing aquatic ecology as there is no effluent discharge proposed from the Rough Stone quarry. There is no natural perennial surface water body within the mine lease area. There are few seasonal water bodies on the North and eastern side. It is away from the applied lease area. There are no impacts to aquatic biodiversity. Aquatic biodiversity is observed in the water body.

4.6.5. Impact Assessment on Biological Environment

This chapter highlights the various impacts on ecology and biodiversity due to mining activity. It addresses the baseline data and its Effect on flora and wild life fauna especially threatened species (Critically Endangered, Endangered, and Vulnerable) in core mining lease area. A detail of impact and assessments was mentioned in Table 4.13.

Table 4.13 Ecological impact assessments

S. No	Attributes	Assessment
1	Activities of the project affects the breeding/nesting sites of birds and animals	No breeding and nesting site was identified in mining lease site. The fauna sighted mostly migrated from buffer area.
2	Located near an area populated by rare or endangered species	No endangered, critically endangered, vulnerable species sighted in core mining lease area.

3	Proximity to national park/wildlife sanctuary/reserve forest /mangroves/ coastline/estuary/sea	No national park or eco-sensitive zone around 10km radius. Kavanippakkam Reserve Forest has located about 1.1km East side on the idaimichi RF 2.6 km on the Southeast side and marudam RF 7.1km on the southwest side, all the reserve forest away from the proposed project site.
4	Proposed project restricts access to waterholes for wildlife	No.
5	Proposed mining project impact surface water quality that also provide water to wildlife	No scheduled or threatened wildlife animal sighted regularly core in core area.
6	Proposed mining project increase siltation that would affect nearby biodiversity area.	Surface runoff management such as drains is constructed properly. So, there will be no siltation affect in nearby mining area.
7	Risk of fall/slip or cause death to wild animals due to project activities	No.
8	The project release effluents into a water body that also supplies water to a wildlife	No water body near to core zone so chances of water become polluted is low.
9	Mining project effect the forest Based livelihood/ any specific forest product on which local livelihood depended	No.
10	Project likely to affect migration routes	No migration route observed during monitoring period.
11	Project likely to affect flora of an area, which have medicinal value	No.
12	Forestland is to be diverted, has carbon high sequestration	No. There was no forest land diverted.
13	The project likely to affect wetlands, Fish breeding grounds, marine ecology	No. Wetland was not present in near core mining lease area. No breeding and nesting ground is present in core mining area.

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

4.6.6. Impact evaluation

Table 4.14 Impact Evaluation for Biological Resources

Impact Evaluation Element	Change in the biological resources of the area due to mine development & operation and generation of emissions.			
Potential Effect/ Concern	Loss of habitat, Impact on health of biological receptors due to area and line sources of air emissions including fugitive dust emissions during rough stone and gravel quarry development & operation activities.			
Characteristics of Impacts				
Nature	Positive		Negative	Neutral
	○		●	○
Type	Direct	Indirect	Cumulative	
	●	○	○	
Extent	Project Area	Local	Zonal	Regional
	●	○	○	○
Duration	Short – term		Long- term	
	○		●	
Intensity	Low		Medium	High
	●		○	○
Frequency	Remote (R)	Occasional (O)	Periodic (P)	Continuous (C)
	○	○	○	●
Significance of Impact				
Significance	Insignificant	Minor	Moderate	Major
	●	○	○	○

*Note: Mark ‘●’ indicates the Yes and ‘○’ indicates the No.

CHAPTER V

ANALYSES 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.N. Kanniyappan rough stone and gravel quarry project at Siruthamur Village is a mining project for excavation of rough stone and gravel, which is site specific. The project area has 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 the mine site is mineral specific.

5.3 FACTORS BEHIND SELECTION OF PROPOSED TECHNOLOGY

Semi Mechanized open cast mining operation with drilling and blasting method will be used to extract rough stone and gravel in the area. The proposed 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 tractors / trippers and transported to the need by 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 this project. 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 VI

ENVIRONMENTAL MONITORING PROGRAMME

6.0 GENERAL

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

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

6.1 METHODOLOGY OF MONITORING MECHANISM

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

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

The responsibilities of this cell will be:

- ❖ Implementation of pollution control measures
- ❖ Monitoring programme implementation
- ❖ Post-plantation care
- ❖ To check the efficiency of pollution control measures taken

- ❖ Any other activity as may be related to environment
- ❖ Seeking expert's advice when needed.

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

The sampling and analysis report of the monitored environmental attributes will be submitted to the Tamil Nadu Pollution Control Board (TNPCB) at a frequency of half-yearly and yearly by each proposed project proponent. The half-yearly reports are submitted to Ministry of Environment and Forest, Regional Office and SEIAA-TN 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), as shown in Figure 6.1.

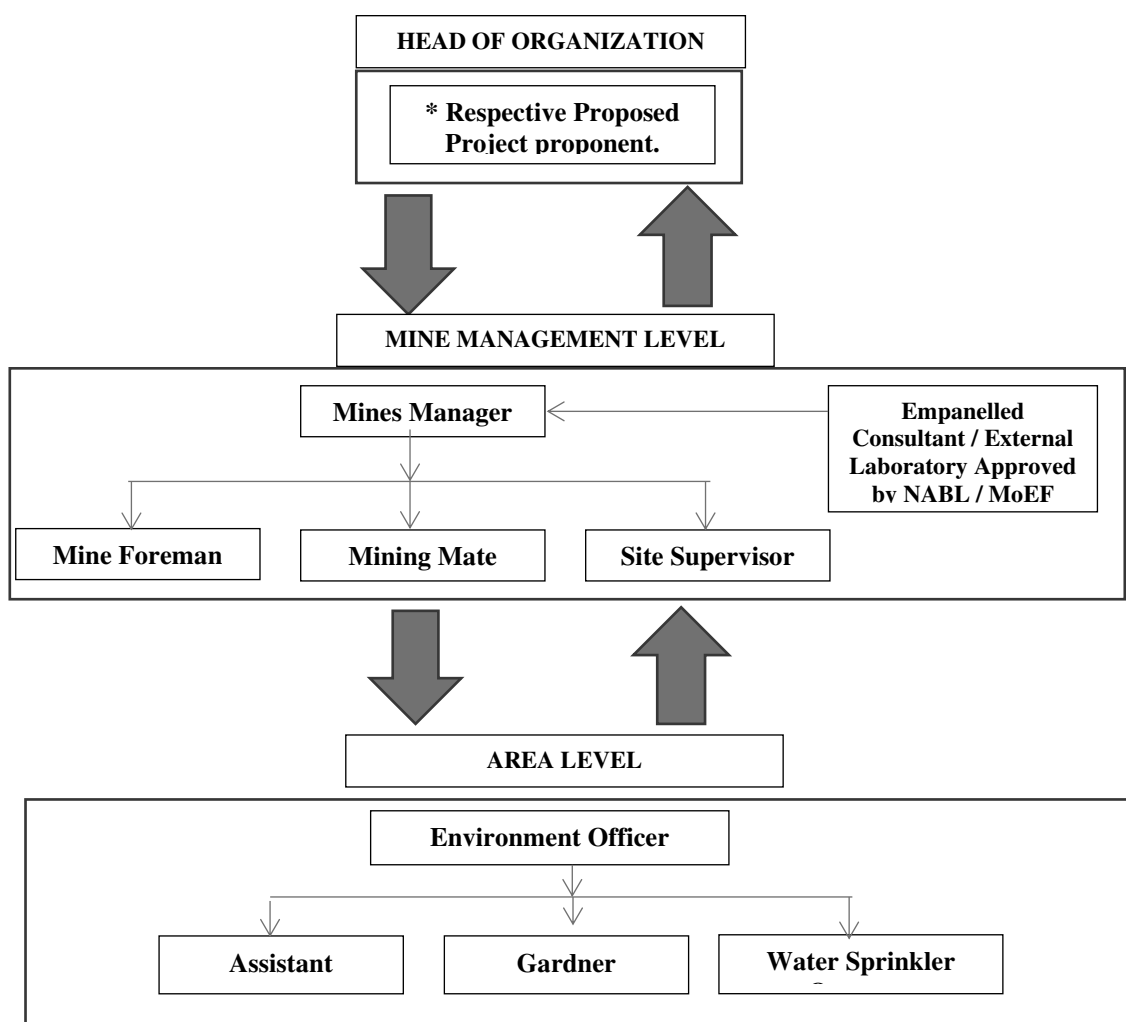


Figure 6.1 Proposed environmental monitoring chart

6.2 IMPLEMENTATION SCHEDULE OF MITIGATION MEASURES

The mitigation measures proposed in chapter IV 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 for Proposed Project

S. No.	Recommendations	Time Period	Schedule
1	Land Environment Control Measures	Before commissioning of the project	Immediately after the commencement of project
2	Soil Quality Control Measures	Before commissioning of the project	Immediately after the commencement of project
3	Water Pollution Control Measures	Before commissioning of the project and along with mining operation	Immediately and as project progress
4	Air Pollution Control Measures	Before commissioning of the project and along with mining operation	Immediately and as project progress
5	Noise Pollution Control Measures	Before commissioning of the project and along with mining operation	Immediately and as project progress
6	Ecological Environment	Phase wise implementation every year along with mine operations	Immediately and as project progress

6.3 MONITORING SCHEDULE AND FREQUENCY

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

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

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

The details of monitoring are detailed in Table 6.2.

Table 6.2 Proposed Monitoring Schedule Post EC for the Proposed Quarry

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

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

6.4 BUDGETARY PROVISION FOR EMP

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

The proposed capital cost for Environmental Monitoring Programme is Rs 5,25,000/- and the recurring cost is Rs 1,05,000/- per annum for each Proposed Project.

Table 6.3 Environment Monitoring Budget

S. No.	Parameter	Capital Cost	Recurring Cost Per Annum
1	Air Quality	Rs. 5,25,000/-	Rs. 1,05,000/-
2	Meteorology		
3	Water Quality		
4	Hydrology		
5	Soil Quality		
6	Noise Quality		
7	Vibration Study		
Total		Rs. 5,25,000/-	Rs. 1,05,000/-

Source: Approved Mining Plan

6.5 REPORTING SCHEDULES OF MONITORED DATA

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

Periodical reports to be submitted to:

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

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

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

CHAPTER VII

ADDITIONAL STUDIES

7.0 GENERAL

Additional studies deal with:

- ❖ Risk Assessment
- ❖ Disaster Management Plan
- ❖ Cumulative Impact Study
- ❖ Plastic Waste Management
- ❖ Post-COVID Health Management Plan

7.1 PUBLIC CONSULTATION FOR PROPOSED PROJECT

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 made and the public opinions on the proposed project will be updated in the final EIA/EMP report.

7.2 RISK ASSESSMENT FOR PROPOSED PROJECT

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

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

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

Table 7.1 Risk Assessment& Control Measures for Proposed Project

S. No	Risk factors	Causes of risk	Control measures
1	Accidents due to explosives and heavy mining machineries	Improper handling and unsafe working practice	<p>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;</p> <p>Workers will be sent to the Training in the nearby Group Vocational Training Centre Entry of unauthorized persons will be prohibited;</p> <p>Fire-fighting and first-aid provisions in the mine office complex and mining area;</p> <p>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</p> <p>Working of quarry, as per approved plans and regularly updating the mine plans;</p> <p>Cleaning of mine faces on daily basis shall be daily done in order to avoid any overhang or undercut;</p> <p>Handling of explosives, charging and firing shall be carried out by competent persons only under the supervision of a Mine Manager;</p> <p>Maintenance and testing of all mining equipment as per manufacturer 's guidelines.</p>
2	Drilling	<p>Improper and unsafe practices</p> <p>Due to high pressure of compressed air, hoses may burst</p> <p>Drill Rod may break</p>	<p>Safe operating procedure established for drilling (SOP) will be strictly followed.</p> <p>Only trained operators will be deployed.</p> <p>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,</p> <p>Drilling shall not be carried on simultaneously on the benches at places directly one above the other.</p>

			Periodical preventive maintenance and replacement of worn-out accessories in the compressor and drill equipment as per operator manual. All drills unit shall be provided with wet drilling shall be maintained in efficient working in condition. Operator shall regularly use all the personal protective equipment.
4	Blasting	<p>Fly rock, ground vibration, Noise and dust.</p> <p>Improper charging, stemming & Blasting/fining of blast holes</p> <p>Vibration due to movement of vehicles</p>	<p>Restrict maximum charge per delay as per regulations and by optimum blast hole pattern, vibrations will be controlled within the permissible limit and blasting can be conducted safely. SOP for Charging, Stemming & Blasting/Firing of Blast Holes will be followed by blasting crew during initial stage of operation</p> <p>Shots are fired during daytime only.</p> <p>All holes charged on any one day shall be fired on the same day. The danger zone will be distinctly demarcated (by means of red flags)</p>
5	Transportation	<p>Potential hazards and unsafe workings contributing to accident and injuries</p> <p>Overloading of material</p> <p>While reversal & overtaking of vehicle</p> <p>Operator of truck leaving his cabin when it is loaded.</p>	<p>Before commencing work, drivers personally check the 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.</p> <p>Not allow any unauthorized person to ride on the vehicle nor allow any unauthorized person to operate the vehicle.</p> <p>Concave mirrors should be kept at all corners</p> <p>All vehicles should be fitted with reverse horn with one spotter at every tipping point</p> <p>Loading according to the vehicle capacity</p> <p>Periodical maintenance of vehicles as per operator manual</p>

6	Natural Calamities	Unexpected happenings	Escape Routes will be provided to prevent inundation of storm water Fire Extinguishers & Sand Buckets
7	Failure of mine benches and pit slope	Slope geometry, Geological structure	Ultimate or over all pit slope shall be below 60° and each bench height shall be 5m height.

Source: Analysed and Proposed by FAE & EC

7.3 DISASTER MANAGEMENT PLAN FOR PROPOSED PROJECT

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

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

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

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

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

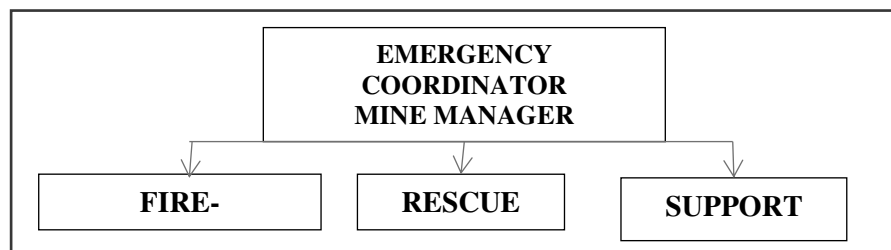


Figure 7.1 Disaster management team layout for proposed project

The emergency organization shall be headed by emergency coordinator who will be qualified competent mines manager. In his absence senior most people available at the mine

shall be emergency coordinator till arrival of mines manager. There would be three teams for taking care of emergency situations – Fire-Fighting Team, Rescue Team and Support Team. The proposed composition of the teams is given in Table 7.2.

Table 7.2 Proposed Teams for Emergency Situation

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

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

7.3.1 Roles and Responsibilities of Emergency Team

(a) Emergency coordinator (EC)

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

(b) Incident controller (IC)

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

(c) Communication and advisory team

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

(d) Roll call coordinator

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

(e) Search and rescue team

There shall be a group of people trained and equipped to carry out 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.,

7.3.2 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

7.3.3 Proposed Fire Extinguishers

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

Table 7.3 Proposed Fire Extinguishers at Different Locations in P1

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

7.3.4 Alarm System

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.

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

7.4 CUMULATIVE IMPACT STUDY

The Cumulative Impact is mainly anticipated due to drilling & blasting and excavation and transportation activities in all the quarries within the cluster and major impact anticipated is on Air & Noise Environment and Ground Vibrations due to blasting. For this cumulative study, only two proposed projects, known as P1,P2,P3,P4 and P5 were taken into consideration. The details of P1 have been given in Table 1.2 and the details of P2 to P5 in Table 7.4.&7.7.

Table 7.4 Salient Features of Proposed Project Site (P2)

Name of the Quarry	M.S. Blue Stones	
Toposheet No	57- P/14	
Latitude between	12° 43'26"63 N to 12°43'35.25" N	
Longitude between	79°51'34.24" E to 79°51'42.81" E	
Highest Elevation	56m AMSL	
Proposed Depth of Mining five years period	15m BGL (2m Gravel +13mRoughstone)	
Geological Resources	Rough Stone in m ³	Top Soil in m ³
	14,73,038	30,062
Minable Reserves	6,17,232	24,608
Five-year Production	306684	24608
Existing Pit Dimension	-	
Ultimate Pit Dimension	264m (L) x 92m (W) x 15m (D)	
Method of Mining	Opencast Semi Mechanized Mining involving drilling and blasting	
Topography	Flat Terrain	
Machinery proposed	Jack Hammer	1
	Compressor	1
	Excavator	1
	Tippers	3
Blasting Method	Controlled blasting method by shot hole drilling and small dia. of 25mm slurry explosives are proposed to be used for shattering and heaping effect for removal and winning of Rough Stone. No deep hole drilling is proposed.	

Table 7.5 Salient Features of Proposed Project Site (P3)

Name of the Quarry	Thiru. V. Sekar Rough stone quarry	
Toposheet No	57- P/14	
Latitude between	12° 43'30" N to 12°43'37" N	
Longitude between	79°51'34" E to 79°51'43" E	
Highest Elevation	56m AMSL	
Proposed Depth of Mining five years period	22m BGL (1m Top Soil +21mRoughstone)	
Geological Resources	Rough Stone in m ³	Top Soil in m ³
	14,66,962	29,938
Minable Reserves	6,59,050	25,125
Five-year Production	3,29,770	25,125
Ultimate Pit Dimension	213m (L) x 116m (W) x 22m (D)	
Topography	Flat Terrain	

Machinery proposed	Jack Hammer	1
	Compressor	1
	Excavator	1
	Tippers	3
Blasting Method	Controlled blasting method by shot hole drilling and small dia. of 25mm slurry explosives are proposed to be used for shattering and heaping effect for removal and winning of Rough Stone. No deep hole drilling is proposed.	

Table 7.7 Salient Features of Proposed Project Site (P4)

Name of the Quarry	Mr. S. Hemprasath Rough Stone and Gravel Quarry	
S.F.No	170/2, 170/3, 170/4, 236/1B, 236/1C, 236/1D, 220/1A1(P)	
Toposheet No	57-P/14	
Latitude	12°43'32.87"N to 12°43'43.47"N	
Longitude	79°51'46.88"E to 79°51'56.28"E	
Proposed depth as per ToR	25 m BGL	
Geological Resources	Rough Stone in m ³	Gravel in m ³
	1547025	48865
Mineable Reserves	Rough Stone in m ³	Gravel in m ³
	601517	31734
Proposed reserves for five years	Rough Stone in m ³	Gravel in m ³
	442582	31734
Method of Mining	Open-Cast Semi Mechanized Method	
Topography	Flat Terrain	
Machinery proposed	Jack Hammer	3
	Compressor	1
	Hydraulic Excavator	1
	Tippers	5
Blasting Method	Controlled blasting method by shot hole drilling and small dia. of 25mm slurry explosives are proposed to be used for shattering and heaping effect for removal and winning of Rough Stone. No deep hole drilling is proposed.	

Table 7.6 Salient Features of Proposed Project Site (P5)

Name of the Quarry	Mr. S. Rajendiran Rough Stone & Gravel Quarry	
Toposheet No	57-P/14	
Latitude	12°43'17.16"N to 12°43'24.52"N	
Longitude	79°51'39.66"E to 79°51'49.00"E	

Proposed Depth as per ToR	50 m BGL		
Ultimate Pit Dimension	Length(m)	Width(m)	Depth(m)
	172	121	50
Geological Resources	Rough Stone in m ³	Gravel in m ³	
	1609056	67044	
Mineable Reserves	Rough Stone in m ³	Gravel in m ³	
	638665	55070	
Proposed reserves for five years	Rough Stone in m ³	Gravel in m ³	
	638665	55070	
Topography	Flat Topography		
Machinery proposed	Jack Hammer	4	
	Compressor	1	
	Hydraulic Excavator	1	
	Tippers	4	
Blasting Method	Controlled blasting method by shot hole drilling and small dia. of 25mm slurry explosives are proposed to be used for shattering and heaping effect for removal and winning of Rough Stone. No deep hole drilling is proposed.		

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

7.4.1 Air Environment

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

Table 7.8 Cumulative Production Load of Rough Stone

Quarry	Production for five years	Annual Production in m ³	Daily Production in m ³	Number of Lorry Load Per Day
P1	437744	87549	324	54
P2	309684	61937	229	38
P3	329770	65954	244	41
P4	442582	88516	328	55
P5	638665	127733	473	79
Total	2158175	431635	1598	267

Table 7.9 Cumulative Production Load of Gravel

Quarry	Production for 3 Years (m ³)	Yearly Production(m ³)	Daily Production in m ³	Number of Lorry Load Per Day
P1	50456	10091	37	6
P2	--	--	--	--
P3	--	--	--	--

P4	31734	10578	39	7
P5	55070	18357	68	11
Grand Total	137260	39026	144	24

The cumulative study shows that the overall production of rough stone from the 5 quarry is 1598 m³ per day with a capacity of 267 trips per day, gravel from the 5 quarry is 144 m³ per day with a capacity of 24 trips per day.

7.4.1.1 Cumulative Impact of Air Pollutants

The results on the cumulative impact of the 5 proposed projects on air environment of the cluster have been provided in Table 7.10 The cumulative values resulting from the 5 projects for each pollutant do not exceed the permissible limits set by CPCB.

Table 7.10 Cumulative Impact Results from the 5 proposed projects

Pollutants	Baseline Data(µg/m ³)	Incremental Values (µg/m ³)					Cumulative Value (µg/m ³)
		P1	P2	P3	P4	P5	
PM _{2.5}	32.40	8.51	4.02	4.41	5.51	4.41	59.0
PM ₁₀	52.23	16.40	7.60	7.35	8.40	7.35	98.13
SO ₂	11.53	6.75	4.78	5.09	6.75	5.09	39.01
NO ₂	23.85	7.91	5.60	5.96	7.91	5.96	53.72

7.4.2 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.

Table 7.11 Predicted Noise Incremental Values from Cluster

Location ID	Distance (m)	Direction	Background Value (Day) dB(A)	Incremental Value dB(A)	Total Predicted dB(A)	Residential Area Standards dB(A)
Habitation Near P1	350	S	45.6	46.28	48.96	55
Habitation Near P2	530	S	45.6	42.67	47.39	
Habitation Near P3	720	S	45.6	40.01	46.66	
Habitation Near P4	850	S	45.6	46.28	48.96	
Habitation Near P5	370	S	45.6	45.80	48.71	
Cumulative Noise (dB(A))					53.4	

The cumulative analysis of noise due to 5 proposed projects shows that habitation near P1, P2, P3, P4 and P5 will receive about 53.4 dB (A), as shown in Table 7.11. The cumulative results for the habitation in consideration do not exceed the limit set by CPCB for residential areas for day time.

7.4.3 Ground Vibrations

Cumulative results of ground vibrations due to mining activities in the all the 6 mines have been shown in Table 7.12.

Table 7.12 Ground Vibrations at 6 Mines

Location ID	Maximum Charge in kgs	Nearest Habitation in m	PPV in mm/s
P1	82	350	1.44
P2	58	530	0.56
P3	61	720	0.35
P4	82	850	0.34
P5	119	370	1.77
E1	71	660	0.46
Total			4.92

Source: Blasting Calculations

From the above table, the charge per blast is considered as maximum in each mine and the resultant cumulative 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.

7.4.4 Socio Economic Environment

Socio Economic benefits of the 5 proposed projects were calculated and the results have been shown in Table 7.13 the 5 projects together will contribute Rs. **25,00,000** towards CER fund.

Table 7.13 Socio Economic Benefits From 5 Mines

Location ID	Project Cost	CER as per SEAC Suggestion (Rs.)
P1	69,50,000	5,00,000
P2	5,70,70,000	5,00,000
P3	5,70,70,000	5,00,000
P4	40,90,590	5,00,000
P5	44,25,000	5,00,000
Total	12,96,05,590	25,00,000

Table 7.14 Employment Benefits From 5 Mines

Description of quarries	Employment
P1	28
P2	21
P3	21
P4	28
P5	29
Total	127

A total of 127 people will get employment due to 5 proposed mine in cluster

Table 7.15 Greenbelt Development Benefits From 5 Mines

CODE	No of Trees proposed to be planted	Area Covered Sq.m	Name of the Species	No. of Trees expected to be grown
P1	1558	14018	Neem, Casuarina, etc	1246
P2	1500	13500		1,200
P3	1500	13500		1,200
P4	2440	21960		1,952
P5	1678	15098		1,342
Total	8676	78076		6940

Based on the proposed mining plans it's anticipated that 8676 native tree species like Neem, Casuarina, etc will be planted in the project premises over a period of 5 Years with Survival Rate of 80%. The expected growth is around 6940 Trees over an area of 78076 Sq.m. in Proposed Quarry.

7.5 PLASTIC WASTE MANAGEMENT PLAN FOR PROPOSED PROJECT

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.

7.5.1 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

S.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 POST COVID HEALTH MANAGEMENT PLAN FOR PROPOSED PROJECT

COVID – 19 diseases caused by SARS-CoV-2 Coronavirus is relatively a new disease, with fresh information being known on a dynamic basis about the natural history of the disease, especially in terms of post-recovery events.

After acute COVID-19 illness, recovered patients may continue to report wide variety of signs and symptoms including fatigue, body ache, cough, sore throat, difficulty in breathing, etc. As of now there is limited evidence of post-COVID sequelae and further research is required and is being actively pursued. A holistic approach is required for follow up care and well-being of all post COVID recovering patients.

7.6.1 Post-COVID Follow Up Protocol

- ❖ Continue COVID appropriate behaviour (use of mask, hand & respiratory hygiene, physical distancing).
- ❖ Drink adequate amount of warm water (if not contra-indicated).
- ❖ Make sure your workplaces are clean and hygienic
- ❖ Surfaces (e.g., desks and tables) and objects (e.g., telephones, helmet) need to be wiped with disinfectant regularly

- ❖ Put sanitizing hand rub dispensers in prominent places around the workplace. Make sure these dispensers are regularly refilled
- ❖ Display posters promoting hand-washing
- ❖ Make sure that staff, contractors and customers have access to places where they can wash their hands with soap and water
- ❖ Display posters promoting respiratory hygiene.
- ❖ Brief your employees, contractors and customers that if COVID-19 starts spreading in your community anyone with even a mild cough or low-grade fever (37.3°C or more) need to stay at home. They should also stay home (or work from home) if they have had to take simple medications, such as paracetamol/acetaminophen, ibuprofen or aspirin, which may mask symptoms of infection
- ❖ Keep communicating and promoting the message that people need to stay at home even if they have just mild symptoms of COVID-19.
- ❖ Consider whether a face-to-face meeting or event is needed. Could it be replaced by a teleconference or online event?
- ❖ Could the meeting or event be scaled down so that fewer people attend?
- ❖ Pre-order sufficient supplies and materials, including tissues and hand sanitizer for all employees. Have surgical masks available to offer anyone who develops respiratory symptoms.
- ❖ It is also suggested by the Ministry of AYUSH that the use of Chyawanprash in the morning (1 teaspoonful) with Luke warm water/milk is highly recommended (under the direction of Registered Ayurveda physician) as in the clinical practice Chyawanprash is believed to be effective in post-recovery period.
- ❖ If there is persistent dry cough / sore throat, do saline gargles and take steam inhalation. The addition of herbs/spices for gargling/steam inhalation. Cough medications, should be taken on advice of medical doctor or qualified practitioner of Ayush.
- ❖ Look for early warning signs like high grade fever, breathlessness, Sp O₂ < 95%, unexplained chest pain, new onset of confusion, focal weakness.
- ❖ Avoid smoking and consumption of alcohol.
- ❖ Communicate to your employees and contractors about the plan and make sure they are aware of what they need to do – or not do – under the plan. Emphasize key points such as the importance of staying away from work even if they have only mild symptoms or have had to take simple medications (e.g., paracetamol, ibuprofen) which may mask the symptoms.

The plan should address how to keep your business running even if a significant number of employees, contractors and suppliers cannot come to your place of business - either due to local restrictions on travel or due to illness.

CHAPTER VIII

PROJECT BENEFITS

8.0 GENERAL

One proposed project for quarrying rough stone and gravel at Siruthamur Village aims to produce 4,37,744m³ rough stone over a period of 5 Years & 50,456 m³ 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 28 persons for carrying out mining operations and give preference to the local people in providing employment in this cluster. In addition, there will be opportunity for indirect employment to many people in the form of contractual jobs, business opportunities, service facilities etc. the economic status of the local people will be enhanced due to mining project.

8.2 SOCIO-ECONOMIC WELFARE MEASURES PROPOSED

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

8.3 IMPROVEMENT IN PHYSICAL INFRASTRUCTURE

The proposed quarries are located in Siruthamur Village, Uthiramerur Taluk and Kancheepuram District of Tamil Nadu and the area have communications, roads and other facilities already well established. The following physical infrastructure facilities will further improve due to proposed mine.

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

8.4 IMPROVEMENT IN SOCIAL INFRASTRUCTURE

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

8.5 OTHER TANGIBLE BENEFITS

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

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

8.6 CORPORATE SOCIAL RESPONSIBILITY

Individual 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 reorientation.

Under this program me, the project proponent will take-up following programmes for social and economic development of villages within 10 km of the project site. For this purpose, separate budget will be provided every year. For finalization of these scheme's proponent will interact with Local Self Government. 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 Siruthamur 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.

8.7 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, being a green field project & capital investment is \leq 100 crores, the proposed project shall contribute 2% of capital investment towards CER as per directions of EAC/SEAC. Total project cost is Rs.69, 97,000 and Rs.5,00,000 is allocated for CER. The proposed utilization of the budget of CER activities is given in Table 8.1.

Table 8.1 CER Action Plan

S. No.	Activity	Budget (Rs.in Lakh)
1	The applicant Indents to involve in corporate environment responsibilities (CER) activities such as renovation of existing toilet, plantation within the school premises, donating environment related books to the nearby school library, etc.	Rs.5,00,000
	Total	Rs.5, 00,000

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

CHAPTER IX

ENVIRONMENTAL COST BENEFIT ANALYSIS

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

CHAPTER X

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 to improve the supportive capacity of the receiving bodies. The EMP presented in this chapter discusses the administrative aspects 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.N.Kanniyappan will:

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

10.1.1 Description of the Administration and Technical Setup

The Environment Monitoring Cell discussed under chapter VI 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/ wastewater 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, wastewater 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 program.
- ❖ Compliance to statutory provisions, norms of State Pollution Control Board, Ministry of Environment and Forests and the conditions of the environmental clearance as well as the consents to establish and consents to operate.

10.2 LAND ENVIRONMENT MANAGEMENT

Landscape of the area will be changed due to the quarrying operation, restoration of the land by converting the quarry pit into temporary reservoir and the remaining part of the area (unutilized areas, infrastructure, haul Roads) will be utilized for greenbelt development. Aesthetic of the environment will not be affected. There is no major vegetation in the project area. During the course of quarrying operation and after completion of the quarrying operation thick plantation will be developed under greenbelt development program. A detailed land environment management plan has been provided in Table 10.1.

Table 10.1 Proposed Controls for Land Environment

Control	Responsibility
Design vehicle wash-down areas so that all runoff water is captured and passed through oil water separators and sediment catchment devices.	Mines Manager
Refueling to be undertaken in a safe location away from vehicle movement pathways & 100m away of any watercourse. Refueling activity to be under visual observation at all times. Drainage of refueling areas to sumps with oil/water separation.	Mine Foreman & Mining Mate
Soil and groundwater testing as required following up a particular incident of contamination.	Mines Manager
At conceptual stage, the mining pits will be converted into Rain Water	Mines Manager

Harvesting. Remaining area will be converted into greenbelt area.	
No external dumping i.e., outside the project area.	Mine Foreman
Garland drains with catch pits / settlement traps to be provided all around the project area to prevent run off affecting the surrounding lands.	Mines Manager
The periphery of Project area will be planted with thick plantation to arrest the fugitive dust, which will also act as acoustic barrier.	Mines Manager

Source: Proposed by FAEs & EIA Coordinator

10.3 SOIL MANAGEMENT

There is no top soil in the lease area except gravel. Therefore, there is no control measures proposed for this project.

10.4 WATER MANAGEMENT

In the proposed quarrying project, no process is involved for the effluent generation, only oil & grease from the machinery wash and domestic sewage from mines office is anticipated. The quarrying operation is proposed up to a depth of 25 m. The water table in the area is at 50 to 55 m below ground level. Hence, the proposed project will not intersect the ground water table during entire quarry period. A detailed water environment management plan has been provided in Table 10.2.

Table 10.2 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 FAEs & EIA Coordinator

10.5 AIR QUALITY MANAGEMENT

The proposed quarrying activity would result in the increase of particulate matter concentrations in the ambient air. Daily water sprinkling on the haul roads, approach roads in the vicinity will 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. A detailed ambient air environment management plan has been provided in Table 10.3.

Table 10.3 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 assess 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 FAEs & EIA Coordinator

10.6 NOISE POLLUTION CONTROL

There will be intermittent noise levels due to vehicular movement, trucks loading, drilling and blasting and cutting activities. No mining activities are planned during night time. A detailed noise environment management plan has been provided in Table 10.4.

Table 10.4 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	Mining Mate

zones in the mines	
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 is carried out in the project area and in surrounding villages to assess the impact due to the mining activities and the efficacy of the adopted noise control measures. Additional noise control measures will be adopted if required as per the observations during monitoring	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 FAEs & EIA Coordinator

10.7 GROUND VIBRATION AND FLY ROCK CONTROL

The Rough stone quarry operation creates vibration due to the blasting and movement of Heavy Earth moving machineries, fly rocks due to the blasting. A detailed ground vibration management plan has been provided in Table 10.5.

Table 10.5 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 FAEs & 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 program 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 1558 saplings are proposed to be planted in and around the lease area. Of the total saplings, about 80% of the saplings is expected to survive in the environment. The main objectives of the greenbelt development plan are to:

- ❖ Combat the dispersal of dust in the adjoining areas.
- ❖ Protect the erosion of the soil and conserve moisture of the soil.
- ❖ Increase the rate of recharge of ground water.

- ❖ 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. The proposed green belt development plan has been given in Table 10.6.

Table 10.6 Proposed Greenbelt Development Plan

S. No.	No. of trees proposed for plantation	No. of trees expected to be grown@ 80 %	Area to be covered(m²)	Name of the species
Plantation in the construction phase (3 months)	Number of plants inside the mine lease area			Azadirachta indica, Albizia lebbeck, Delonix regia, Tectona grandis, etc.,
	623	498	5607	
	Number of plants outside the mine lease area			
	935	748	8411	
Total	1558	1246	14018	

Source: Proposed by FAEs & EIA Coordinator

A well-planned green belt of trees 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.

10.9 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, Sperm Count 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 (Table 10.7) keep upgrading the database of medical history of the employees.

Table 10.7 Medical Examination Schedule

S. 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 color 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 centers. 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 Program

The Proponents will provide special induction program along with machinery manufacturers for the operators and co-operators to run and maintain the machinery effectively and efficiently. The training program for the supervisors and office staffs will be arranged in the group vocational training centers 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, as shown in Table 10.8.

Table 10.8 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	<ul style="list-style-type: none"> ✓ Employee rights, ✓ Supervisor responsibilities ✓ Self-rescue ✓ Respiratory devices ✓ Transportation controls ✓ Communication systems ✓ Escape and emergency evacuation ✓ Ground control hazards ✓ Occupational health hazards ✓ Electrical hazards and 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	<ul style="list-style-type: none"> ✓ 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	<ul style="list-style-type: none"> ✓ Required health and safety standards ✓ Transportation controls ✓ Communication

				systems ✓ Escape ways, emergency evacuations ✓ Fire warning ✓ Ground control hazards ✓ First aid on 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 FAEs & 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 shown in Table 10.9. The Table 10.10 gives overall investment on the environmental safeguards and recurring expenditure for successful monitoring and implementation of control measures.

Table 10.9 EMP Budget for Proposed Project

Attribute	Mitigation measures	Provision for Implementation	Capital Cost (Rs.)	Recurring Cost/annum (Rs.)
Air Environment	Compaction, gradation and drainage on both sides	Rental Dozer & drainage construction on haul road @ Rs. 10,000/- per hectare and yearly maintenance @ Rs. 10,000/- per hectare	31150	31150
	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
	Air quality will be regularly monitored as per norms within ML area & ambient area	Yearly compliance as per CPCB norms	0	50000
	Muffle blasting – To control fly rocks during blasting	Blasting face will be covered with sand bags / steel mesh / old tyres / use 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	50000	5000
	No overloading of trucks/tippers/tractors	Manual Monitoring through Security guard	0	5000
	Stone carrying trucks will be covered by tarpaulin to avoid escape of fines to the	Monitoring if trucks will be covered by tarpaulin	0	10000

	atmosphere			
	Enforcing speed limits of 20 km/hr within ML area	Installation of Speed Governors @ Rs. 5000/- per tipper/dumper deployed	20000	0
	Regular monitoring of exhaust fumes as per RTO norms	Monitoring of Exhaust Fumes	0	5000
	Regular sweeping and maintenance of roads for at least about 200 m from quarry entrance	Provision for 2 labours @ Rs.10,000/labour (Contractual)	0	20000
	Installing wheel wash system near exit gate of quarry	Installation + Maintenance + Supervision	50000	20000
Noise Environment	Source of noise will be transportation vehicles, and 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 implementations that are	Provision made in OHS part	0	0

	required will be kept adequately near blasting site at the time of charging.			
	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 tons of blasted material	0	1181909
Water Environment	Water Management	Provision for garland drain @ Rs. 10,000/- per hectare with maintenance of Rs. 5,000/- per annum	31150	15575
Waste Management	Waste management (Spent Oil, Grease etc.,)	Provision for domestic waste collection and disposal through authorized agency (capital cost, recurring cost for collection /disposal).	25000	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
Implementation	Size 6' X 5' with blue background and	Fixed display board at the quarry entrance	10000	1000

of EC, Mining Plan & DGMS Condition Occupational Health and Safety	white letters as mentioned in MoM Appendix II by the SEAC TN	as permanent structure		
	Workers will be provided with Personal Protective Equipment	Provision of PPE @ Rs. 4000/- per employee with recurring based on wear and tear (say, @ Rs. 1000/- per employee)	112000	28000
	Health checkup for workers will be provisioned	IME & PME Health checkup @ Rs. 1000/- per employee	0	28000
	First aid facility will be provided	Provision of 2 Kits per Hectare @ Rs. 2000/-	0	12460
	Mine will have safety precaution signages, boards.	Provision for signages and boards made	10000	2000
	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	623000	31150
	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	155750	31150
	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
Development of Green Belt	Green belt development - 500 trees per hectare (200 Inside Lease Area & 300 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))"	124600	18690
		Avenue Plantation @ 300 per plant (capital) for plantation outside the lease area and @ 30 per plant maintenance (recurring)	280350	28035
Mine Closure Activity	Closure includes Greenbelt development, wire fencing, drains	Provision made in Closure Cost	0	0
Total EMP Budget			2408000	2388119

Table 10.10 Estimation of Overall EMP Budget After Adjusting 5% Annual Inflation

Ist Year	IInd Year	IIIrd Year	IVth Year	Vth Year	Total
4796119	2507525	2632901	2764546	2902773	15,603,864

In order to implement the environmental protection measures, an amount of **Rs. 2408000/-** as capital cost and recurring cost as **Rs. 2388119/-** as recurring cost/annum is proposed considering present market price considering present market scenario for the proposed project. After the adjustment of 5% inflation per year, the overall EMP cost for 5 years will be **Rs. 15,603,864/-** as shown in Table 10.9.

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 XI

SUMMARY AND CONCLUSION

11.0 INTRODUCTION

This EIA report is prepared by considering Cumulative load of all proposed & existing quarries of Siruthamur Rough Stone and Gravel Cluster Quarries consisting of 5 Proposed and One Existing Quarries and 1 expired quarry with total extent of Cluster of 20.27.5 ha in Siruthamur Village, Uthiramerur Taluk, Kancheepuram District and Tamil Nadu State, cluster area calculated as per MoEF & CC Notification S.O. 2269(E) dated 1st July 2016.

This EIA Report is prepared in compliance with ToR obtained – **ToR Letter No.SEIAA-TN/F.No.8904/SEAC/ToR-1126/2021 dated: 23.03.2022.**

And the Baseline Monitoring study has been carried out during the period of to April 2022 - June 2022.

11.1 PROJECT DESCRIPTION

Table 11.1 Salient Features- Proposed quarry

Name of the Quarry	Thiru. N. Kanniyappan Rough stone and Gravel quarry	
Toposheet No	57- P/14	
Latitude between	12° 43'17.34" N to 12°43'25.86" N	
Longitude between	79°51'33.42" E to 79°51'40.03" E	
Highest Elevation	57m AMSL	
Proposed Depth of Mining five years period	25 m BGL	
Geological Resources	Rough Stone in m ³	Gravel in m ³
	1336784	62176
Minable Reserves	610354	50456
Five-year Production	437744	50456
Existing Pit Dimension	-	
Ultimate Pit Dimension	158m (L) x 136m (W) x 45m (D)	
Water Level in the surrounding area	50-55m BGL	
Method of Mining	Opencast Semi Mechanized Mining involving drilling and blasting	

Topography	The proposed lease area is flat terrain with elevated about 1-2meters and altitude of 53m maximum and minimum 52m from the MSL. The area is sloping towards SE side covered with Gravel which does not sustain any type of vegetation.	
Machinery proposed	Jack Hammer	2
	Compressor	1
	JCP	1
	Tippers	2
Blasting Method	Controlled blasting method by shot hole drilling and small dia. of 25mm slurry explosives are proposed to be used for shattering and heaping effect for removal and winning of Rough Stone. No deep hole drilling is proposed.	
Project Cost	Rs. 69,50.000/-	
CER Cost @ 2% of Project Cost	1,39,000/-	
Proposed Water Requirement	3.8KLD	
Nearest Habitation	0.350 km South	

Table 11.2 Land Use Pattern of the Proposed Project

Land Use Pattern		
Description	Present area in (ha)	Area at the end of life of quarry (ha)
Area under quarry	Nil	2.39.0
Infrastructure	Nil	0.01.0
Roads	Nil	0.02.0
Green Belt	3.11.5	0.36.7
Un – utilized area	Nil	0.32.8
Grand Total	3.11.5	3.11.5

Source: Approved mining plan

Table 11.3 Resources and Reserves of Proposed Project

PARTICULARS	DETAILS	
	Rough Stone in m ³ (5 Year Plan period)	Gravel in m ³ (3 Year Plan period)
Geological Resources	1336784	62176
Mineable Reserves	610354	50456
Production for five-year plan period	437744	50456
Mining Plan Period	5 Years	
Number of Working Days	1500Days	
Production per day	292	56
No of Lorry loads (6m ³ per load)	49	10
Total Depth of Mining	45m BGL	

Source: Approved mining plan

Table 11.4 Ultimate Pit Dimension

Pit	Length (Max) (m)	Width (Max) (m)	Depth (Max)
I	158	136	45 m bgl

Source: Approved mining plan

Table 11.5 Water Requirement of the Proposed Project

Purpose	Quantity	Source
Dust Suppression	1.0 KLD	From existing bore wells from nearby area
Green Belt development	1.5 KLD	From existing bore wells from nearby area
Drinking & Domestic purpose	1.3 KLD	Water will be sourced from approved water vendors for drinking and domestic purposes
Total	3.8KLD	

Source: Prefeasibility report

11.2 DESCRIPTION OF THE ENVIRONMENT

The baseline monitoring study was carried out during February to April 2022 to assess the existing environmental scenario in the area. For the purpose of EIA studies, project area was considered as the core zone and area outside the project area up to 10km radius from the periphery of the project site was considered as buffer zone.

Baseline Environmental data has been collected with reference to proposed mine for:

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

11.2.1 Land Environment

The existing land use pattern of the study area based on the latest satellite imagery is given below:

Table 11.6 Land Use / Land Cover Statistics for 10 Km Radius

S. No.	CLASSIFICATION	AREA (hectare)	AREA (%)
1	Crop land	14435	47%
2	Land with or without Scrub	2085	6.8%
3	Land affected by salinity/alkalinity Coastal	1711	5.6%
4	Manmade features	8	0.0
5	Mining/Industrial waste lands	52	0.2%
6	Fallow land	3001	9.8%
7	Dense forest	1458	4.8
8	Water Bodies	3501	11.4%
9	Plantations	3525	11.5%
10	Sands-Desertic/ Coastal	37	0.1%
11	Barren rocky/ stony waste/ sheet rock area	518	1.7%
12	Settlement	359	1.2%
Total Area		30691	100.00

Source: Survey of India Toposheet and Landsat Satellite Imagery

From the land use/land cover map (Fig.3.1), the table (11.6) it is inferred that the majority of the land in the study area is Cropland land covering 47% of the total land area, followed by Plantations (11.5%), Water Bodies (11.4%), Fallow land (9.8%), Land with or without scrub (6.8%), Land affected by salinity (5.6%), Dense Forest (4.8%), and Settlement (1.2%).

The total mining area within the study area is 52ha. The cluster area of 12.04ha contributes about 0.04% of the total mining area within the study area. This small percentage of mining activities shall not have any significant impact on the environment.

The proposed project site falls in the seismic Zone III, moderate risk zone as per BMTPC, as shown in 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.

11.3 SOIL CHARACTERISTICS

11.3.1 Physical Characteristics

- ❖ The soil texture found in the study area is sandy loam.
- ❖ PH of the soil varies from 6.09 to 7.26 indicating slightly alkaline nature.
- ❖ Electrical conductivity of the soil varies from 58.97 to 120.4 $\mu\text{s}/\text{cm}$ and
- ❖ The water content varies from 5.13 to 10.24 %.

11.3.2 Chemical Characteristics

- ❖ Nitrogen ranges between 75.1 and 150 mg/kg.
- ❖ Phosphorus ranges between 0.89 and 1.90 mg/kg.
- ❖ Potassium ranges between 308 and 910 mg/kg.
- ❖ Sodium ranges between 420 and 654 mg/kg.
- ❖ Dry matter content ranges between 89.76 and 94.71.

11.4 WATER ENVIRONMENT

11.4.1 Surface Water

- ❖ The pH of surface water sample is 6.9 and 7.1
- ❖ Turbidity is 5 NTU.
- ❖ TDS is 72-142 mg/l, whereas TH is 41-48 mg/l.
- ❖ Calcium is 21.6-54.72 mg/l and magnesium 18-27 mg/l.
- ❖ Chloride is 42-52 mg/l and sulphate 28-37 mg/l.

11.4.2 Ground Water

- ❖ The pH of the water samples ranges from 7.35 to 7.59.
- ❖ TDS are found in the range of 289 - 9122 mg/l.
- ❖ The total hardness varies between 290 -561 mg/l.
- ❖ Calcium varies from 32 to 92mg/l and magnesium from 17 mg/l to 21.
- ❖ Chloride varies from 138 to 275 mg/l; sulphate from 32-84 mg/l; and fluoride from 0.41 to 0.72 mg/l.
- ❖ When speaking about microbiological parameters, the water samples from all the locations meet the requirement.

When compared to IS 10500:2012 all the parameters thus analyzed fall within the prescribed limits.

11.5 AIR ENVIRONMENT

11.5.1 Site Specific Meteorology

Site specific meteorology during the study period was recorded by an automated weather station.

Table 11.7 Meteorological Data Recorded at Site

S. No.	Parameters		April-2022	May-2022	June-2022
1	Temperature (⁰ C)	Min	25.75	25.88	25.53
		Max	36.49	36.46	34.31
		Avg	29.72	30.14	28.98
2	Relative Humidity (%)	Min	41.50	42.69	50.31
		Max	94.88	97.25	94.81
		Avg	73.88	74.61	77.58
3	Wind Speed (m/s)	Min	0.08	0.03	0.06
		Max	6.08	8.10	6.29
		Avg	3.43	4.01	3.61
4	Wind Direction (degree)	Min	0.00	5.66	1.02
		Max	359.78	343.15	356.50
		Avg	150.21	207.16	222.97
5	Surface Pressure(kPa)	Min	99.83	99.40	99.73
		Max	101.05	100.62	100.51
		Avg	100.44	100.05	100.12

Source: On-site monitoring/sampling by Accuracy Analabs Laboratory in association with GTMS

11.5.2 Ambient Air Quality Results

The results of ambient air quality monitoring for the period (**April, May and June 2022**) are presented in the report. Data has been complied for three months.

As per the monitoring data, PM₁₀ ranges from 40.34 µg/m³ to 45.84µg/m³; PM_{2.5} from 20.10 µg/m³ to 26.15 µg/m³; SO₂ from 6.06µg/m³ to 9.61 µg/m³; NO₂ from 16.73 µg/m³ to 23.56µg/m³. The concentration levels of the pollutants fall within the acceptable limits of NAAQS prescribed by CPCB.

11.6 NOISE ENVIRONMENT

Ambient noise levels were measured at 8 locations around the proposed project area. Noise levels recorded in core zone during day time was 48.6 dB (A) Leq and during night time was 36.5 dB (A) Leq. Noise levels recorded in buffer zone during day time varied from 38 to 45.6dB (A) Leq and during night time from 27.6 to 35.6 dB (A) Leq. Thus, the noise level for industrial and residential area meets the requirements of CPCB.

11.7 Biological Environment

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. Hence this small mining operation over short period of time will not have any significant impact on the surrounding flora and fauna.

11.8 Socio-Economic Environment

An attempt has been made to assess the impact of the proposed mining project at Siruthamur Village on Socio-economic aspect of the study area. The various attributes that have been taken into account are population composition, employment generation, occupational shift, household income and consumption pattern. Implementation of the Proposed Mine Project will generate both direct and indirect employment. Besides, Mining operation will be legally valid and it will bring income to the state exchequer. At present seasonal agriculture is the main occupation of the people as more than half of the population depends on it. With the implementation of the proposed mining project the occupational pattern of the people in the area will change making more people engaged in mining-based activities rather in seasonal agriculture.

11.9 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES FOR PROPOSED PROJECT

The summary of anticipated adverse environmental impacts due to the proposed project and mitigation measures are given below:

Table 11.8 Anticipated Impacts & Mitigation Measures

Impact	Mitigation Measure
Land Environment	
❖ Destruction of natural landscapes	❖ Mining will be carried out as per approved mine plan in scientific and systematic way
❖ Changes in soil characteristics	❖ Safety Zone or Buffer area will be maintained and will not be mined and instead plantation will be carried out in the safety zone
❖ Soil erosion and slope instability	❖ Barbed wire fencing will be provided all along the proposed mine boundary

	<ul style="list-style-type: none"> ❖ At conceptual stage, the land use pattern of the quarry will be changed into Greenbelt area and temporary reservoir ❖ Construction of garland ❖ Construction of garland drains all around the quarry pit and construction of settling traps at strategic location in lower elevations to prevent soil erosion due to surface runoff during rainfall and also to collect the storm water for various uses within the proposed area
Water Environment	
<ul style="list-style-type: none"> ❖ Decrease in aquifer recharge and increase in surface runoff; ❖ Disturbance to land drainage, overload and erosion of watercourses; ❖ Changes to the surface over which water flows; ❖ Changes to surface and groundwater resources quantity and quality due to stream blockage and contamination by particulate matter or waste; ❖ Contamination of aquifers due to removal of the natural filter medium. 	<ul style="list-style-type: none"> ❖ Construction of garland drains all around the quarry pit and construction of settling traps at strategic location in lower elevations to prevent soil erosion due to surface runoff during rainfall and also to collect the storm water for various uses within the proposed area ❖ De-silting will be carried out before and immediately after the monsoon season and the settling tank and drains will be cleaned weekly, especially during monsoons ❖ Domestic sewage from site office & urinals/latrines provided in project area will be discharged through septic tank followed by soak pit system. ❖ Tippers & HEMM will be washed in a designated area and the washed water will be routed through drains to a settling tank, which has an oil & grease trap, only clear water will be reused for greenbelt development.
Air Environment	
<ul style="list-style-type: none"> ❖ Generation of Fugitive Dust 	<ul style="list-style-type: none"> ❖ Haul roads will be well maintained by sprinkling water twice a day

<ul style="list-style-type: none"> ❖ Dust will be generated mainly during excavation, loading & unloading activities. ❖ Gaseous pollutants will be generated mostly by the traffic. ❖ Reduction in visibility due to dust plumes. ❖ Coating of surfaces leading to annoyance and loss of amenity. ❖ Physical and/or chemical contamination and corrosion. ❖ Increase in the concentration of suspended particles in runoff water. ❖ Coating of vegetation leading to reduced photosynthesis, ❖ Inhibited growth, destroying of foliage, degradation of crops; ❖ Increase in health hazards due to inhalation of dust. 	<ul style="list-style-type: none"> ❖ The access road will be cleaned and brushed to ensure that mud and dust deposits do not accumulate. ❖ To ensure that dust and debris is minimized on the access road, all the tipper drivers will be instructed to use water spray system on all the tyres and spray water on the loaded material that is provided at the compound area before leaving the site ❖ Speed restrictions will be imposed to avoid spillage of loaded materials upon the road and to reduce wear and tear of the road. ❖ Weekly inspections of the condition of the access road by competent person employed, and immediate action will be taken to address any potholes or damage to the road surface. ❖ Dust wetting agents can be mixed with the water applied to haul roads during hot, dry weather conditions to increase the duration that the road surface remains damp. ❖ Personal Protective Equipment's will be provided to all workers ❖ All drilling rods used will have dust suppression systems fitted which injects water into the hole. ❖ Wet gunny bags will be used as a cover while drilling. ❖ The blast zone will be kept damp by the application of water from the rain gun fitted to the water tanker prior to each blast to control any fugitive dust emissions that could arise from the surface during detonation. ❖ A daily visual inspection shall be conducted by the site manager who will keep a daily log of all process operations and site activities and note any
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	<p>malfunctions which could lead to abnormal emissions from the quarry operations.</p> <ul style="list-style-type: none"> ❖ A site speed limit of 20 km/h will be set to minimize the potential for dust generation ❖ Weekly maintenance program me to identify machinery due for maintenance, based on the number of hours it has been in operation. ❖ Air filters are renewed after every 1000 hours of use, unless otherwise indicated by an on-board computer system. ❖ All site machineries & tippers will be serviced and maintained 6 months once and drivers will report any defects immediately to the site manager to enable repairs to be carried out promptly.
Noise & Vibration	
<ul style="list-style-type: none"> ❖ Annoyance and deterioration of the quality of life; ❖ Propelling of rocks fragments by blasting. ❖ Shaking of buildings and people due to blasting; 	<ul style="list-style-type: none"> ❖ 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 favorable 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;

	<ul style="list-style-type: none"> ❖ 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.
Biological Environment	
<ul style="list-style-type: none"> ❖ Direct impacts include land clearance and excavation causing destruction of flora and fauna and loss of habitats; ❖ Indirect impacts include habitat degradation due to noise, dust, and human activity. 	<ul style="list-style-type: none"> ❖ Only some common herbs, shrubs and grass will be cleared. So, there will be no impact on the biodiversity. ❖ Green belt development with suitable species will enhance the biodiversity of the project area. ❖ The core zone or buffer zone does not encompass any threatened flora or fauna species.
Socio-Economic Environment	
<ul style="list-style-type: none"> ❖ Health and safety of workers and the general public; ❖ Increase in traffic volumes and sizes of road vehicles; ❖ Economic issues, including the increase in employment opportunities; 	<ul style="list-style-type: none"> ❖ The mining activity puts negligible change in the socio-economic profile. ❖ Around 28 local workers will get employment opportunities along with periodical training to generate local skills. ❖ New patterns of indirect employment/ income will generate. ❖ Regular health check-up camp. ❖ Assistance to schools and scholarship to children will be provided.
Occupational Health & Safety	

<ul style="list-style-type: none"> ❖ Exposure to Dust ❖ Noise and Vibration Exposure ❖ Physical Hazards ❖ Respiratory hazards due to Dust exposure 	<ul style="list-style-type: none"> ❖ Provision of rest shelters for mine workers with amenities like drinking water etc. ❖ All safety measures like use of safety appliances, such as dust masks, helmets, shoes, safety awareness programs, awards, posters, slogans related to safety etc. ❖ Training of employees for use of safety appliances and first aid in vocational training center. ❖ Weekly maintenance and testing of all equipment as per manufacturers' guidelines. ❖ Pre placement and Yearly Medical Examination of all workers by a medical Officer ❖ First Aid facility will be provided at the mine site. ❖ Close surveillance of the factors in working environment and work practices which may affect environment and worker's health by the mines manager employed. ❖ Working of mine as per approved mining plan and environmental plans
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11.10 ANALYSIS OF ALTERNATIVES

There are no alternatives suggested as the proposed mining area has the following advantages

- ❖ The mineral deposit occurs in a non-forest area.
- ❖ There is no habitation within the applied lease area; hence no R & R issues exist.
- ❖ There is no river, stream, nallas and water bodies in the or passing through the applied mine lease area.
- ❖ 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 accessible.
- ❖ Mine connectivity through road and rail is good.
- ❖ The proposed mining operations do not intersect the ground water level. Hence, no impact on ground water environment.

11.11 ENVIRONMENTAL MONITORING PROGRAM

Environmental Monitoring program will be conducted for various environmental components as per conditions stipulated in Environmental Clearance Letter issued by SEIAA & Consent to Operate issued by TNPCB.

Table 11.9 Post Project Monitoring Program for Proposed Project

S.NO.	ACTIVITY	SCHEDULE
Air Pollution Monitoring		
1	Ambient Air Monitoring of parameters specified by TNPCB/SEIAA in their CTO/EC Order within the Applied Area	Once in every Six Months
2	Ambient Air Monitoring of parameters specified by TNPCB/SEIAA in their CTO/EC Order outside the Applied Area	Once in every Six Months
Water Quality Monitoring		
3	Monitoring water quality of rain water collected in mine pit area. Rain water will be used for plantation purpose.	Once in every Six Months
4	Monitoring of samples of tube well and open well or Surface Water bodies in nearby location. Parameters as per IS: 10500:1991	Once in every Six Months
5	Monitoring of water spray units	Log-sheet of water spray will be maintained on daily basis
Noise Quality Monitoring		
6	Noise in the ambient atmosphere within and outside the applied area	Once in every Six Months
Greenbelt Maintenance		
7	Monitor schedule for Greenbelt development as per approved mining plan	Once in every Six Months
Soil Quality Monitoring		
8	Grab Samples within and around the applied area	Once in every Six Months

11.12 ADDITIONAL STUDIES

11.12.1 Public Consultation for Proposed Project

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.

11.12.2 Risk Analysis & Disaster Management Plan for Proposed Project

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, and 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.

In the unlikely event that a consequence has occurred, disaster management kicks in. This includes instituting procedures pertaining to a number of issues such as communication, rescue, and rehabilitation. These are addressed in the disaster management plan. Both, the RA and DMP, are living documents and need to be updated whenever there are changes in operations, equipment, or procedures. Assessment is all about preventing accidents and taking necessary steps to prevent it from happening.

The Disaster Management Plan (DMP) is a guide, giving general considerations, directions, and procedures for handling emergencies likely to arise from planned operations. The DMP has been prepared on the basis of the Risk Assessment and related findings covered in the report.

11.13 PROJECT BENEFITS FOR PROPOSED PROJECT

Various benefits are envisaged due to the proposed mine and a comprehensive description of various advantages and benefits anticipated from the proposed project to the locality, neighborhood, region and nation as a whole are:

- ❖ Improved road communication
- ❖ Rain water harvesting structures to augment the water availability for irrigation and plantation and ground water recharge
- ❖ Creation of community assets (infrastructure) like school buildings, village roads/ linked roads, dispensary & health Centre, community Centre, market place etc.,
- ❖ Strengthening of existing community facilities through the Community Development Program
- ❖ Skill development & capacity building like vocational training

- ❖ Awareness program and community activities, like health camps, medical aids, sports & cultural activities, plantation etc.

In order to implement the environmental protection measures, an amount of **Rs. 2408000/-** as capital cost and recurring cost as **Rs. 2388119/-** as recurring cost/annum is proposed considering present market price considering present market scenario for the proposed project. After the adjustment of 5% inflation per year, the overall EMP cost for 5 years will be **Rs. 15,603,864/-**.

11.14 CONCLUSION

EIA study was performed as per the approved ToR and Standard ToR. Various environmental attributes were studied relating with aspects of mining activities. The related impacts were identified and evaluated. Considering all the possible ways to mitigate the environmental concerns Environmental Management Plan was prepared and accordingly fund was allocated. The EMP has been dynamic, flexible and subject to periodic review. CER activities were identified and for its time bound implementation, fund has been allocated.

The project will increase the revenue of the State Govt. as well as it will help in the social upliftment of the local community. The green belt development program will help in increasing the green cover in the area. Thus, the proposed project is not likely to affect the environment or adjacent ecosystem adversely.

The mine management will be responsible for the project review of 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 XII

DISCLOSURES OF CONSULTANT

The Project Proponent – **Thiru. N. KANNIYAPPAN** have engaged **Geo Technical 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 TECHNICAL MINING SOLUTIONS

No: 1/213B Natesan Complex,
Oddapatti, Dharmapuri – 636705,
Tamil Nadu, India.
Email: info.gtmsdpi@gmail.com
Web: www.gtmsind.com
Phone: 04342 232777.

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

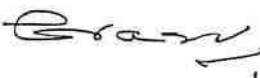
S.No.	Name of the expert	In house/ Empanelled	Sector	Functional Area	Categor y
Approved Functional Area Experts & EC					
1.	Shri. G. Vageesan	EIA Coordinator (EC) In-house	1(a)(i)	Mining	B
2.	Dr.S. Karuppannan	In-house FAE	1(a)(i)	LU, HG, GEO	B
3.	Dr.M. Vijayprabhu	In-house FAE	1(a)(i)	HG, LU, GEO	B
4.	Dr.J. Rajarajeswari	In-house, FAE	1(a)(i)	EB, SC	B
5.	Dr.G. Prabakaran	In-house, FAE	1(a)(i)	SE	B
6.	Dr.R. Arunbalaji	In-house, FAE	1(a)(i)	AP, AQ, NV	B
7.	Mr.J.N. Manikandan	Empanelled FAE	1(a)(i)	RH, SHW, AP	B
8.	Dr.S. Malar	In-house, FAE	1(a)(i)	WP	B
9.	Mr.G. Umamaheswaran	In-house, FAE	1(a)(i)	HG, LU, GEO	B
10.	Mr.S. Gopalakrishnan	In-house, FAE	1(a)(i)	HG, GEO	B
11.	Mr.P. Venkatesh	In-house, FAE	1(a)(i)	AP	B
12.	Dr.D.Kalaimurugan	In-house, FAE	1(a)(i)	SC	B
Approved Functional Area Associates					
13.	Mr.G. Prithiviraj	FAA	1(a)(i)	LU, HG	B
14.	Mr.C. Kumaresan	FAA	1(a)(i)	NV	B
15.	Mr.P. Vellaiyan	FAA	1(a)(i)	HG, GEO	B

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



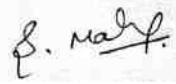
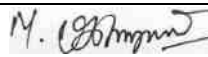

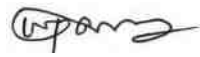


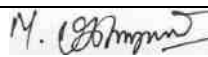
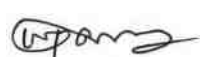

DECLARATION BY EXPERTS CONTRIBUTING TO THE EIA & EMP






Declaration by experts contributing to the Cluster EIA/EMP for Siruthamur Village Rough Stone and Gravel Quarry project over a Cluster Extent of 20.27.5 hectares in Siruthamur Village, Uthiramerur Taluk, Kancheepuram 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 : Mr.G.Vageesan
 Designation : EIA Coordinator
 Signature : 
 Date : 18.11.2022
 Period of Involvement : January 2021 to till date



FUNCTIONAL AREA EXPERTS ENGAGED IN THE PROJECT


S. No.	Functional Area	Involvement	Name of the Expert/s	Signature
1	AP	<ul style="list-style-type: none"> Identification of different sources of air pollution due to the proposed mine activity 	Mr. J.N. Manikanda	
		<ul style="list-style-type: none"> Prediction of air pollution and propose mitigation measures / control measures 	Mr.P.Venkatesh	
2	WP	<ul style="list-style-type: none"> 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.S. Malar	
3	HG	<ul style="list-style-type: none"> Interpretation of ground water table and predict impact and propose mitigation measures. Analysis and description of aquifer Characteristics 	Dr.M. Vijay Prabhu	
			Mr.G. UmaMaheswaran	
			Dr.S. Karuppannan	
4	GEO	<ul style="list-style-type: none"> 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. 	Mr.G. Gopala Krishnan	
			Mr.G. UmaMaheswaran	
			Dr.M. Vijay Prabhu	
			Dr.S. Karuppannan	
5	SE	<ul style="list-style-type: none"> Revision in secondary data as per Census of India, 2011. Impact Assessment & Preventive Management 	Dr.G. Prabhakaran	

		Plan ○ Corporate Environment Responsibility.		
6	EB	○ Collection of Baseline data of Flora and Fauna. ○ Identification of species labelled as Rare, Endangered and threatened as per IUCN list. ○ Impact of the project on flora and fauna. ○ Suggesting species for greenbelt development.	Dr.J. Rajarajeshwari	
7	RH	○ Identification of hazards and hazardous substances ○ Risks and consequences analysis ○ Vulnerability assessment ○ Preparation of Emergency Preparedness Plan ○ Management plan for safety.	Mr.J.N. Manikandan	
8	LU	○ Construction of Land use Map ○ Impact of project on surrounding land use ○ Suggesting post closure sustainable land use and mitigative measures.	Dr.S. Karuppannan	
9	NV	○ Identify impacts due to noise and vibrations ○ Suggesting appropriate mitigation measures for EMP.	Dr.R. Arun Balaji	
10	AQ	○ Identifying different source of emissions and propose predictions of incremental	Dr.R. ArunBalaji	

		GLC using AERMOD. ○ Recommending mitigations measures for EMP		
11	SC	○ Assessing the impact on soil environment and proposed mitigation measures for soil conservation	Dr.J. Rajarajeshwari	
			D.Kalaimurugan	
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.J.N. Manikandan	

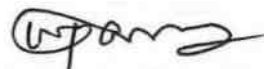
LIST OF FUNCTIONAL AREAS ASSOCIATE ENGAGED IN THIS PROJECT

S.No.	Name	Functional Area	Involvement	Signature
1	Mr.G. Prithiviraj	LU, HG	○ Site visit with FAE ○ Provide inputs & Assisting FAE with sources of Air Pollution, its impact and suggest control measures ○ Analyse & provide inputs and assist FAE with meteorological data, emission estimation, AERMOD modelling and suggesting control measures	
3	Mr.C. Kumaresan	NV	○ Assist in Resources & Reserve Calculation and preparation of Production Plan & Conceptual Plan	

5	Mr.P. Vellaiyan	HG; GEO	<ul style="list-style-type: none"> ○ Site visit with FAE ○ Assist FAE with collection of data ○ Provide inputs by analysing primary and secondary data 	
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DECLARATION BY THE HEAD OF THE ACCREDITED CONSULTANT ORGANIZATION

I, **Dr. S. KARUPPANNAN**, Managing Partner, **Geo Technical Mining Solutions**, hereby, confirm that the above-mentioned Functional Area Experts and Team Members prepared the Cluster EIA/EMP for Siruthamur village Rough Stone and Gravel project over a cluster extent of 20.27.5 hectares in Siruthamur Village, Uthiramerur Taluk, Kancheepuram District of Tamil Nadu. It is also certified that information furnished in the EIA report is true and correct to the best of our knowledge.

Signature : 

Date : 18.11.2022

Name : **Dr. S. Karuppannan**

Designation : Managing Partner

Name of the EIA Consultant Organization : Geo Technical Mining Solutions

NABET Certificate No & Issue Date : NABET/EIA/2124/SA0184

Validity : Valid till 30.12.2023

ANNEXURE – I

COPY OF TOR LETTER



TMT. P. RAJESWARI, I.F.S.,
MEMBER SECRETARY

STATE LEVEL ENVIRONMENT IMPACT
ASSESSMENT AUTHORITY – TAMIL NADU
3rd Floor, Panagal Maaligai,
No.1 Jeenis Road, Saidapet,
Chennai-15.
Phone No.044-24359973
Fax No. 044-24359975

TERMS OF REFERENCE (ToR)

Lr No.SEIAA-TN/F.No.8904/SEAC/ToR-1126/2021 Dated:23.03.2022

To

Thiru.N.Kanniyappan ✓
S/o.Narayanapillai ✓
No.55, Mariyamman Kovil, Aanampakkam Post ✓
Neerkundram ✓
Uthiramerur Taluk ✓
Kancheepuram District-603107 ✓

Sir / Madam,

Sub: SEIAA, Tamil Nadu – Terms of Reference with Public Hearing (ToR) for the Proposed Rough stone & gravel quarry lease over an extent of 3.11.5 Ha in S.F.No. 277/1A, 277/1B, 277/1C, 277/1D, 277/1E, 277/1F, 277/2 & 280/2, Siruthamur Village, Uthiramerur Taluk, Kancheepuram District, Tamil Nadu by Thiru Kanniyappan - 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/ 70818/2021, dated: 06.01.2022
2. Your application seeking Terms of Reference submitted on: 25.01.2022
3. Minutes of the 251st meeting of SEAC held on 04.03.2022, minutes received on 19.03.2022
4. Minutes of the 495th meeting of SEIAA held on 23.03.2022.

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

The proponent, Thiru.N.Kanniyappan has submitted application seeking ToR for B1 category project in Form-I, for the Proposed Rough stone & gravel quarry lease over an extent of 3.11.5 Ha in


MEMBER SECRETARY
SEIAA-TN

S.F.No. 277/1A,277/1B,277/1C,277/1D,277/1E,277/1F,277/2 & 280/2, Siruthamur Village, Uthiramerur Taluk, Kancheepuram District, Tamil Nadu, and has furnished Pre-feasibility report.

Discussion by SEAC and the Remarks:-

The proposal was placed in 251th SEAC meeting held on 4.3.2022. The project proponent has given a detailed presentation. The details of the project furnished by the proponent are given in the website (parivesh.nic.in).

The project proponent gave detailed presentation. SEAC noted the following:

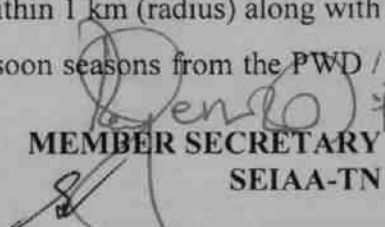
1. The Project Proponent Thiru.Kanniyappan has applied for Terms for Reference for the proposed Rough stone & gravel quarry lease over an extent of 3.11.5 Ha in S.F.No. 277/1A, 277/1B, 277/1C, 277/1D, 277/1E, 277/1F, 277/2 & 280/2, Siruthamur Village, Uthiramerur Taluk, Kancheepuram District, Tamil Nadu.
2. The project/activity is covered under Category "B1" of Item 1(a) "Mining Projects" of the Schedule to the EIA Notification, 2006.
3. The PP has furnished the mining plan for the period of 10 years & the Production for the 1st five years states that total quantity should not exceed 437744m³ of Rough stone & 50456 m³ of gravel with an ultimate depth of mining is 25m (2m gravel +23m rough stone) below ground level.

Based on the presentation made by the proponent and the documents furnished, SEAC decided to **recommend the proposal for the grant of Terms of Reference (TOR) with Public Hearing** for the production for the five years states that total quantity should not exceed 437744m³ of Rough stone & 50456 m³ of gravel with an ultimate depth of mining is 25m (2m gravel +23m rough stone) below ground level, Subject to the following TORs, in addition to the standard terms of reference for EIA study for non-coal mining projects and details issued by the MOEF & CC to be included in EIA/EMP Report:

1. The proponent shall furnish a letter stating that the exact distance between kavanipakkam RF & least boundary of the project site.
2. The Proponent shall carry out the cumulative & comprehensive impact study due to mining operations carried out in the quarry cluster specifically with reference to the environment in terms of air pollution, water pollution & health impacts, accordingly the Environment Management plan should be prepared keeping the concerned quarry and the surrounding habitations in the mind.
3. The certified existing EC compliance report shall be included in the EIA Report.
4. The entire Cluster of mine lease area along with green belt shall be video graphed through

Drone and submit the same along with EIA report.

5. If the proponent has already carried out the mining activity in the proposed mining lease area after 15.01.2016, then the proponent shall furnish the following details from AD/DD, mines,
 - a) What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?
 - b) Quantity of minerals mined out.
 - c) Highest production achieved in any one year
 - d) Detail of approved depth of mining.
 - e) Actual depth of the mining achieved earlier.
 - f) Name of the person already mined in that leases area.
 - g) If EC and CTO already obtained, the copy of the same shall be submitted.
 - h) Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches.
6. 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).
7. 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.
8. 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.
9. The Project Proponent shall provide the Organization chart indicating the appointment of various statutory officials and other competent persons to be appointed as per the provisions of Mines Act'1952 and the MMR, 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the environment.
10. The Project Proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD /


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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.

11. 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.
12. 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.
13. A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.
14. The Public hearing advertisement shall be published in one major National daily and one most circulated vernacular daily.
15. The recommendation for the issue of "Terms of Reference" is subjected to the outcome of the Hon'ble NGT, Principal Bench, New Delhi in O.A No.186 of 2016 (M.A.No.350/2016) and O.A. No.200/2016 and O.A.No.580/2016 (M.A.No.1182/2016) and O.A.No.102/2017 and O.A.No.404/2016 (M.A.No. 758/2016, M.A.No.920/2016, M.A.No.1122/2016, M.A.No.12/2017 & M.A. No. 843/2017) and O.A.No.405/2016 and O.A.No.520 of 2016 (M.A.No. 981/2016, M.A.No.982/2016 & M.A.No.384/2017).
16. The purpose of Green belt around the project is to capture the fugitive emissions, carbon sequestration and to attenuate the noise generated, in addition to improving the aesthetics. A wide range of indigenous plant species should be planted as given in the **appendix** in consultation with the DFO, State Agriculture University 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.
17. Taller/one year old Saplings raised in appropriate size of bags, preferably eco-friendly bags should be planted in proper espacement 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.
18. A Disaster management Plan shall be prepared and included in the EIA/EMP Report.
19. A Risk Assessment and management Plan shall be prepared and included in the EIA/EMP

Report.

20. 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.
21. 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.
22. Concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this Terms of Reference besides attracting penal provisions in the Environment (Protection) Act, 1986.

Appendix

List of Native Trees for Planting

1. Aegle marmelos – Vilvam
2. Adenanthura pavonina - Manjadi
3. Albizia lebbbeck – Vaagai
4. Albizia amara - Usil
5. Bauhinia purpurea - Mantharai
6. Bauhinia racemosa - Aathi
7. Bauhinia tomentosa – Iruvathi
8. Buchanania aillaris - Kattuma
9. Borassus flabellifer - Panai
10. Butea monosperma - Murukka maram
11. Bobax ceiba – Ilavu, Sevvilavu
12. Calophyllum inophyllum - Punnai
13. Cassia fistula - Sarakondrai
14. Cassia roxburghii- Sengondrai
15. Chloroxylon sweitenia - Purasa maram
16. Cochlospermum religiosum – Kongu, Manjal Ilavu
17. Cordia dichotoma – Mookuchali maram
18. Creteva adansonii – Mavalingum

19. *Dillenia indica* – Uva, Uzha
20. *Dillenia pentagyna* – Siru Uva, Sitruzha
21. *Diospyros ebenum* - Karungali
22. *Diospyros chloroxylon* – Vaganai
23. *Ficus amplissima* – Kal Itchi
24. *Hibiscus tiliaceous* – Aatru poovarasu
25. *Hardwickia binata* – Aacha
26. *Holoptelia integrifolia* - Aayili
27. *Lannea coromandelica* - Odhiam
28. *Lagerstroemia speciosa* - Poo Marudhu
29. *Lepisanthus tetraphylla* - Neikottai maram
30. *Limonia acidissima* - Vila maram
31. *Litsea glutinosa* –Pisin pattai
32. *Madhuca longifolia* - Illuppai
33. *Manilkara hexandra* – Ulakkai Paalai
34. *Mimusops elengi* - Magizha maram
35. *Mitragyna parvifolia* - Kadambu
36. *Morinda pubescens* – Nuna
37. *Morinda citrifolia* – Vellai Nuna
38. *Phoenix sylvestre* - Eachai
39. *Pongamia pinnata* – Pungam
40. *Premna mollissima* – Munnai
41. *Premna serratifolia* – Narumunnai
42. *Premna tomentosa* - Purangai Naari, Pudanga Naari
43. *Prosopis cinerea* - Vanni maram
44. *Pterocarpus marsupium* - Vengai
45. *Pterospermum canescens* – Vennangu, Tada
46. *Pterospermum xylocarpum* - Polavu
47. *Puthranjiva roxburghii* – Puthranjivi
48. *Salvadora persica* – Ugaa Maram
49. *Sapindus emarginatus* - Manipungan, Soapu kai
50. *Saraca asoca* - Asoca
51. *Streblus asper* - Piraya maram

52. Strychnos nuxvomica – Yetti
53. Strychnos potatorum - Therthang Kottai
54. Syzygium cumini - Naval
55. Terminalia bellerica - Thandri
56. Terminalia arjuna - Ven marudhu
57. Toona ciliate – Sandhana vembu
58. Thespesia populnea - Puvarasu
59. Walsura trifoliata – valsura
60. Wrightia tinctoria - Vep

Discussion by SEIAA and the Remarks:-

The subject was placed in the 495th Authority meeting held on 23.03.2022. 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 condition in addition to the following conditions:

1. 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.
2. 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.
3. The Environmental Impact Assessment should study the biodiversity, the natural ecosystem, the soil micro flora, fauna and soil seed banks and suggest measures to maintain the natural Ecosystem.
4. Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.
5. The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.
6. The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.

7. The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.
8. The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection.
9. The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.
10. The Environmental Impact Assessment should hold detailed study on EMP with budget for Green belt development and mine closure plan including disaster management plan.
11. The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock.
12. The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site.
13. The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock.
14. The project proponent shall study and furnish the details on potential fragmentation impact of natural environment, by the activities.
15. 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.
16. 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.
17. The project proponent shall detailed study on impact of mining on Reserve forests free ranging wildlife.
18. The project proponent shall furnish the NOC from District Forest officer, Kancheepuram before Obtaining EC.

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


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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:

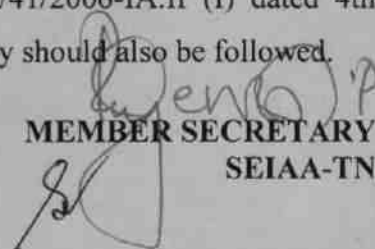
1. Project name and location (Village, District, State, Industrial Estate (if applicable).
2. Process description in brief, specifically indicating the gaseous emission, liquid effluent and solid and hazardous wastes.
3. Measures for mitigating the impact on the environment and mode of discharge or disposal.
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.


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Copy to:

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

ANNEXURE – II

COPY OF 500M RADIUS LETTER

From
K. Vijayaragavan, M.Sc.,
Assistant Director,
Dept. of Geology and Mining,
Kancheepuram.

To
Thiru. N. Kanniyappan
S/o. Mr. Narayanapillai,
No.55, Mariyamman Kovil,
Aanampakkam post,
Neerkundram Village, Uthiramerur
Taluk, Kancheepuram District.

Rc.No.257/Q3/2020, Dated.30.09.2021

Sir,

Sub: Mines & Minerals – Minor Mineral – Rough stone and Gravel - Kancheepuram District –Uthiramerur Taluk – Sirudhamur Village - S.F. Nos. 277/1A, 277/1C, 277/1E, 277/1F, 277/2, 280/2, 277/1B, 277/1D - over an extent of 3.11.50 Hectares of patta lands – Quarry lease application preferred by Thiru. N. Kanniyappan S/o. Narayanapillai – Details of quarries situated within 500 meter radial distance – furnished - reg.

- Ref: 1. Precise are notice issued by the Assistant Director, Geology and Mining, Chengalpattu in Rc.No.257/Q3/2020, dated.06.09.2021.
2. Representation of Thiru. N. Kanniyappan S/o. Narayanapillai dated.28.09.2021.

With reference to your letter in the reference 2nd cited, the details of existing, proposed and abandoned quarries located within 500 meter radius from the proposed Rough Stone and Gravel quarry, over an extent of 3.11.50 Hectares of patta lands in S.F.Nos. S.F. Nos. 277/1A(0.16.00), 277/1C(0.16.50), 277/1E(0.16.50), 277/1F(0.15.50), 277/2(1.17.50), 280/2(0.97.50), 277/1B(0.16.00), 277/1D(0.16.00) of Siruthamur Village, Uthiramerur Taluk, Kancheepuram District are as follows.

I. Existing quarries:

Sl. No.	Name of the lessee / permit holder	Name of the Mineral	Taluk & Village	S.F. Nos.	Extent (in hecets)	Lease period	Remar
1.	R. Selvendrakumar, S/o. Rajendiran, No.2/4, Jothinagar main road, Ekkattuthangal, Chennai - 32	Roughstone & Gravel	Uthiramerur Sirudhamur	308/1,2 , 3A, 3B, 3C, 3D, 3E, 3F, 5, 6, 7A, 7B, 8, 9, 10A, 10B, 10C, 11	2.92.50	08.11.2018 To 07.11.2023	Operatio

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II. Proposed Quarries :

Sl. No.	Name of the lessee / permit holder	Name of the Mineral	Taluk & Village	S.F. Nos.	Extent (in hecets)	Remarks
1.	N. Kanniyappan S/o. Narayanapillai, No.55, Mariyamman Koil Street, Neerkundram Village, Aamambakkam Post, Salavakkam Via, Uthiramerur Taluk, Kancheepuram.	Roughstone & Gravel	Uthiramerur Sirudhamur	277/1A, 277/1C, 277/1E, 277/1F, 277/2, 280/2, 277/1B, 277/1D	3.11.50	Under Processing (Present Application)
2.	M.S. Blue Stones, No.192, 1 st Floor, Ambattur Plots, Red Hills Road, Ambattur, Chennai - 600 053.	Roughstone & Gravel	Uthiramerur Sirudhamur	167/1 (Part-1) Govt. Land	3.00.00	Under Processing
3.	V. Sekar, S/o. Vadivel, No.28&29, SI Dream Homes, Dr.K.V.K. Nagar, Selaiyur, Chennai - 600 073.	Roughstone & Gravel	Uthiramerur Sirudhamur	167/1 (Part-2) Govt. Land	3.00.00	Under Processing
4.	S. Hemprasath S/o. G. Shanmugavel (late), No.97, Rajaveethi, Walajabad Taluk, Kancheepuram District.	Roughstone & Gravel	Uthiramerur Sirudhamur	170/2, 170/3, 170/4, 236/1B, 236/1C, 236/1D and 220/1A1(P)	4.88.00	Under Processing
5.	S. Rajendiran, S/o. Sevugaperumal, No.2/4, Jothi Nagar Main Road, Ekkattuthangal, Chennai - 32.	Roughstone & Gravel	Uthiramerur Sirudhamur	275/1B, 275/2A, 238/1A, 238/1B, 238/1C, 238/1D	3.35.50	Under Processing

III. Abandoned quarries :

Sl. No.	Name of the lessee / permit holder	Name of the Mineral	Taluk & Village	S.F. Nos.	Extent (in hecets)	Lease period
1.	M/s. NAPC Mines & Ores Pvt. Ltd., Khivraj Complex- II, 480, Anna Salai, Nandhanam, Chennai - 35.	Roughstone & Gravel	Uthiramerur Sirudhamur	171/1B (Govt. Land)	2.00.00	04.06.2009 To 03.06.2014 Lease Expired

[Signature]
Assistant Director,
Geology and Mining,
Kancheepuram.

ANNEXURE – III

**Approved Mining Plan Along with Mining
Plan AD/DD Letter /Original Mining Plan
Plates**

MINING PLAN

FOR SIRUTHAMUR VILLAGE ROUGH STONE AND GRAVEL MINING LEASE

WITH PROGRESSIVE QUARRY CLOSURE PLAN

Patta- Ryotwari land /Opencast-Semi Mechanized mining/Non-forest/Non-Captive Use-
"B2" Category

Lease period 10 Years from the date of lease execution

(For the ensuring mining plan prepared for the period of first five years)

(Prepared under rule 41 (3) (i) of Tamil Nadu Minor Mineral Concession Rules, 1959 for a fresh mining lease)

LOCATION OF PROPOSED LEASE AREA

STATE : TAMILNADU
DISTRICT : KANCHEEPURAM
TALUK : UTHIRAMERUR
VILLAGE : SIRUTHAMUR
S.F.NO : 277/1A, 277/1B, 277/1C, 277/1D,
277/1E, 277/1F, 277/2 & 280/2
EXTENT : 3.11.5HECTARES

ADDRESS OF THE APPLICANT

Mr.N.KANNIYAPPAN

S/o.Mr.Narayanapillai,
No.55, Mariyamman kovil, Aanampakkam post
Neerkundram Village, Uthiramerur Taluk,
Kancheepuram District-603107
Mobile No: +919940551261

PREPARED BY

**Dr. S.KARUPPANNAN.M.Sc., Ph.D.,
RQP/MAS/263/2014/A**



GEO TECHNICAL MINING SOLUTIONS

(A NABET Accredited & ISO Certified Company)



No: 1/213-B, Ground Floor, Natesan Complex,
Oddapatti, Collectorate Post office, Dharmapuri-636705

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E-mail: info.gtmsdpi@gmail.com,

Website: www.gtmsind.com



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5.	Copy of computer chitta & sale deed documents	V
6.	Photo copy of the proposed lease area	VI
7.	Copy of agreement from explosive license holder, explosive license & Blaster certificate	VII
8.	Copy of ID Proof of the authorized signature	VIII
9.	Copy of RQP Certificate	IX

**LIST OF PLATES**

Sl. No.	Description	Plate No.	Scale
1	Key Map	I	Not to scale
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14	Conceptual Plan/Final Mine Closure Plan	VII	1:1000
15	Conceptual Plan/Final Mine Closure sections	VIIA	HOR 1:1000 VER 1:500



Mr.N.KANNIYAPPAN,
S/o.Mr.Narayanapillai,
No.55, Mariyamman kovil,Aanampakkam
Neerkundram Village, Uthiramerur Taluk,
Kancheepuram District-603107
Tamil Nadu, Mobile No:9940551261

CONSENT LETTER FROM THE APPLICANT

The mining plan in respect of rough stone and gravel quarry lease over an extent of 3.11.5hectares in S.F.No's: 277/1A, 277/1B, 277/1C, 277/1D, 277/1E, 277/1F, 277/2 and 280/2 of Siruthamur Village, Uthiramerur Taluk, Kancheepuram District has been prepared by

Dr. S. KARUPPANNAN., M.Sc., Ph.D., Regn. No. RQP/MAS/263/2014/A

I request the Assistant Director, Department of Geology and Mining, Kancheepuram District to make further correspondence regarding modifications of the mining plan with the said Recognized Qualified Person on this following address,

Dr.S.KARUPPANNAN,M.Sc.,Ph.D.
RQP/MAS/263/2014/A
GEO TECHNICAL MINING SOLUTIONS
(A NABET accredited & ISO certified Company)
No: 1/213-B, Ground Floor, Natesan Complex,
Oddapatti, Collectorate Post office, Dharmapuri-636705
Ph: +91 9443937841, +917010076633,
E-mail: info.gtmsdpi@gmail.com,
Website: www.gtmsind.com

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

Place: Kancheepuram, TN

Date:


Signature of the Applicant
(N. KANNIYAPPAN)

1233 கையெழுத்து



Mr.N.KANNIYAPPAN,
S/o.Mr.Narayanapillai,
No.55, Mariyamman kovil,Aanampakkam
Neerkundram Village, Uthiramerur Taluk,
Kancheepuram District-603107
Tamil Nadu,Mobile No:9940551261

DECLARATION

The mining plan in respect of rough stone and gravel quarry lease over an extent of 3.11.5hectares in S.F.No's: 277/1A, 277/1B, 277/1C, 277/1D, 277/1E, 277/1F, 277/2 and 280/2 of Siruthamur Village, Uthiramerur Taluk, Kancheepuram District have been prepared with my consultation and I have understood the contents and agree to implement the same in accordance with the Mining Laws.

Place: Kancheepuram, TN

Date:

Signature of the applicant
(N. KANNIYAPPAN)



Dr.S.KARUPPANNAN,M.Sc.,Ph.D.

RQP/MAS/263/2014/A

GEO TECHNICAL MINING SOLUTIONS

(A NABET accredited & ISO certified Company)

No: 1/213-B, Ground Floor, Natesan Complex,

Oddapatti, Collectorate Post office, Dharmapuri-636705

Ph: +91 9443937841, +917010076633,

E-mail: info.gtmsdpi@gmail.com,

Website: www.gtmsind.com

CERTIFICATE

Certified that, in preparation of mining plan for rough stone and gravel quarry lease over an extent of 3.11.5hectares of patta Land in S.F.No's: 277/1A, 277/1B, 277/1C, 277/1D, 277/1E, 277/1F, 277/2 and 280/2 of Siruthamur Village, Uthiramerur Taluk, Kancheepuram District prepared to **Mr.N.Kanniyappan**, Kancheepuram-603107, Covers all the provisions of Mines Act, Rules, and Regulations etc made there under and whenever specific permission are required, the applicant will approach the Director General of Mines Safety, Chennai. The standards prescribed by DGMS in respect of Mines Health will be strictly implemented.

Place: Dharmapuri, TN

Date:28/09/2021

Signature of the Recognized Qualified Person.

Dr. S. KARUPPANNAN, M.Sc., Ph.D.,

RQP/MAS/263/2014/A

GEO TECHNICAL MINING SOLUTIONS

1/213-B, Ground Floor, Natesan Complex,

Collectorate Post Office, Oddapatti,

Dharmapuri - 636 705. Tamil Nadu, India.



MINING PLAN

FOR SIRUTHAMUR VILLAGE ROUGH STONE AND GRAVEL MINING LEASE WITH PROGRESSIVE QUARRY CLOSURE PLAN

Patta-ryothwaryi land/Opencast-Semi Mechanized mining/Non- Forest/Non-Captive Use-
"B2" Category

Lease period 10 Years from the date of lease execution

(For the ensuring mining plan prepared for the period of first five years)

(Prepared under rule 41 (3) (i) of Tamil Nadu Minor Mineral Concession Rules, 1959 for a fresh mining lease)

INTRODUCTORY NOTES:

- a) **Introduction:** The mining plan with progressive quarry closure plan is prepared for Mr.N.Kanniyappan S/o. Mr.Narayanapillai has residing at No.55, Mariyamman kovil, Aanampakkam-Post, Neerkundran Village, Uthiramerur Taluk, Kancheepuram District-603107 and filed with application for new proposals has submitted to Assistant Director, Department of Geology and Mining (ADG & M), Kancheepuram dated 20.10.2021 grant of quarry lease for rough stone and gravel, over an extent of 3.11.5hectares in S.F.No's: 277/1A, 277/1B, 277/1C, 277/1D, 277/1E, 277/1F, 277/2 and 280/2 of Siruthamur Village, Uthiramerur Taluk, Kancheepuram District.
- b) **Lease area particulars:** The Assistant Director, Department of Geology and Mining, District Collectorate, Kancheepuram has directed to the applicant Mr.N.Kanniyappan through his precise area communication letter Roc. No. 257/Q3/2020 dated 06.09.2021, before execution of lease deed should submit the mining plan for approval, obtain Environmental Clearance from the competent authority of State Level Environment Impact Assessment Authority-Tamilnadu (SEIAA) and no objection certificate (NOC) for Tamilnadu Pollution Control Board (TNPCCB) as per EIA Notification 2006 and S.O.141 (E) dated 15th January, 2016, 1st July 2016 & S.O.3977 (E), dated 14th August 2018 and MoEF & CC office memorandum vide letter no. L-11011/175/2018- IA-II (M) dated: 12th December, 2018. Accordingly, the mining plan and progressive quarry closure plan has prepared for a grant of quarrying of rough stone and gravel over an extent of 3.11.5hectares in S.F.No's. 277/1A, 277/1B, 277/1C, 277/1D, 277/1E, 277/1F, 277/2 and 280/2 of Siruthamur Village, Uthiramerur Taluk, Kancheepuram District for a period of 10 years under

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Rule 19(1), 20 and 33 of Tamilnadu Minor Mineral Concession Rules, 1959 subject to the following conditions,

1. The applicant around the quarry work area should be left out a safety distance of 7.5metres and 10meters should be left out to the adjacent patta and Government poramboke lands respectively as while quarrying.
2. Should not cause any hindrance to the nearby the public and public property during quarrying activities.
3. A 50meters safety distance left out periya thangal (Water Tank) is situated on southwestern side in S.F.No.281 and should not cause any hindrance to while quarrying.
4. The applicant should be preparing and submitted mining plan to grant lease area under 41 of Tamilnadu Minor Mineral Concession Rules, 1959.
5. Environment Clearance has to be submitted by the applicant issued by State Level Environment Impact Assessment Authority before grant of lease as per under 42 of Tamilnadu Minor Mineral Concession Rules, 1959.

- c) **Preparation and Submission of Mining Plan:** The mining plan with progressive quarry closure plan has been prepared under rule 41 (3) (i) and submission under rule 41, 42 of Tamilnadu Minor Mineral Concession Rules, 1959 for a mining lease as per conditions mentioned in the precise area communication letter **Roc. No.257 /Q3/2020 dated 06.09.2021.**
- d) **Geological Resources and Minal Reserves:** Geological resource of rough stone are estimated as **1336784Cbm** and gravel is **62176Cbm** (Refer Plate No's.III & IIIA). Minal reserves of rough Stone are estimated about **610354Cbm** and gravel is **50456Cbm** up to depth of 45m from below the ground level (R.L.56-11m) (Refer Plate No's. VII & VIIA) after leaving necessary safety distance from the lease boundary for a period of ten years.
- e) **Proposed Production Schedule:** Total proposed production of rough stone is **437744Cbm** and gravel **50456Cbm** up to depth of 25m from below the ground level (R.L. 56-31m) which is 2m gravel and 23m rough stone (Refer Plate No's.IV & IVA) for the first 5 years plan period. Average production shall be **87549Cbm** of rough stone and **16819Cbm** of gravel per year.



f) Environmental sensitivity of the proposed lease area:-

- 1. Interstate Boundary:** No interstate boundary around 10Km radius periphery of proposed lease area.
- 2. Wildlife Protection Act, 1972:** There is no wild life animal sanctuary within radius of 10Km from the project site area under the Wildlife (Protection) Act, 1972.
- 3. Indian Reserve Forest Act, 1980:** The reserve forest within permissible limit. The Kavanippakkam reserve forest is situated about 1.22km away on the eastern side of the proposed area.
- 4. CRZ Notification, 1991:** There is no sea coastal zone found around 10km radius and this project site doesn't attract CRZ Notification, 1991.

g). Environmental measures to be adopted shall be during the ongoing activity period,

- i) Wet drilling method is to be adopted to control dust emissions.
- ii) Roads shall be graded to mitigate the dust emission
- iii) Unnecessary land degradation should be avoided or damaged land should be reclaimed or rehabilitated.
- iv) Dust Control at source while drilling and blasting,
- v) Dust suppression at loading point and transport haul roads,
- vi) Noise Control in blasting, control of fly rock missiles and vibration by doing peak particle velocity with in standard as prescribed by the DGMS and MOEF.
- vii) And any other conditions as stipulated by the concerned authorities should be followed to protect the environment.

1.0 GENERAL:

a.	Name of the Applicant	:	Mr. N. KANNIYAPPAN
	Applicant address	:	Mr.N.Kanniyappan, S/o.Mr.Narayanapillai, No.55, Mariyamman kovil, Aanampakkam, Neerkundram Village, Uthiramerur Taluk.
	District	:	Kancheepuram
	State	:	Tamil Nadu
	Pin code	:	603107
	Phone	:	+919940551261
	Fax	:	Nil
	Gram	:	Nil
	Telex	:	Nil
	E-mail	:	
b.	Status of the Applicant		
	Private individual	:	Private individual



	Cooperative Association	:	---
	Private company	:	---
	Public Company	:	---
	Public Sector Undertaking	:	---
	Joint Sector Undertaking	:	---
	Other (pl. specifies)	:	---
c.	Mineral(s) Which are occurring in the area and which the applicant intends to mine	:	Rough stone and gravel quarry lease
d.	Period for which the mining lease granted /renewed/proposed to be applied	:	The precise area has been communicated to the applicant for quarrying period of ten years.
e.	Name of the RQP preparing the Mining Plan	:	Dr. S.KARUPPANNAN., M.Sc.,Ph.D.,
	Address	:	GEO TECHNICAL MINING SOLUTIONS (A NABET accredited & ISO certified Company) No: 1/213-B, Ground Floor, Natesan Complex, Oddapatti, Collectorate Post office, Dharmapuri-636705 Ph: +91 9443937841, +917010076633, Website: www.gtmsind.com
	Phone	:	+91 9443937841, 9790462882.
	Fax	:	Nil
	e-mail	:	info.gtmsdpi@gmail.com
	Telex	:	Nil
	Registration Number	:	RQP/MAS/263/2014/A
	Date of grant/renewal	:	16.12.2014
	Valid upto	:	15.12.2024
f.	Name of the prospecting agency	:	The commissioner, Department of Geology and Mining
	Address	:	Department of Geology and Mining, Thiru Ve Ka Industrial Estate, Guindy, Chennai.
	Phone	:	044-22501874
g.	Reference No. and date of consent letter from the state government	:	The Precise area communication letter was received from the Assistant Director, Department of Geology and Mining, District Collectorate, Kancheepuram Vide Rc.No.257/Q3/2020 (Mines) dated 06.09.2021.

2.0 LOCATION AND ACCESSIBILITY:

a.	Details of the Area:	:	Refer plate no: IA & IB
	District & State	:	Kancheepuram, Tamilnadu
	Taluk	:	Uthiramerur
	Village	:	Siruthamur

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Khasra No./ Plot No./ Block Range / Felling Series etc.:

Survey No.	Sub division	Total Extent in Hect	Patta No.	Village and Name of the Land Owner	Mine lease Applied S.F. No.	Mine lease Applied Area out of total area in hect.
277	1A	0.16.0	4202	Mr.N.Kanniyappan S/o Mr.Narayanapillai	277/1A	0.16.0
277	1B	0.16.0			277/1B	0.16.0
277	1C	0.16.5			277/1C	0.16.5
277	1D	0.16.0			277/1D	0.16.0
277	1E	0.16.5			277/1E	0.16.5
277	1F	0.15.5			277/1F	0.15.5
277	2	1.17.5			277/2	1.17.5
280	2	0.97.5			280/2	0.97.5
Total Extent		3.11.5		Proposed lease area extent		3.11.5

Lease area (hectares)	:	3.11.5Hectares
Whether the area is recorded to be in forest (please specify whether protected, reserved etc)	:	The proposed lease area is recorded as patta land.
Ownership / Occupancy	:	This is a patta land of S.F.No. 277/1A, 277/1C, 277/1E, 277/1F, 277/2, 277/1B, 277/1D and 280/2 is registered on the name of Mr.N.Kanniyappan S/o Mr.Narayanapillai.(Ref. Annexure No: IV)
Existence of Public Road / Railway line if any nearby and approximate distance	:	<p>✓ Exploited materials shall be transported to through the village road is situated on the south side.</p> <p>✓ The District road-789 is situated about 1.93km away from the western side which is connecting Walajabad-Nelvay.</p> <p>✓ No NH-road found around 5km radius of the periphery of the site.</p> <p>✓ No Railway line situated around 5km radius.</p>
Toposheet No. with latitude and longitude	:	<p>Toposheet No. 57 P/14</p> <p>Latitude: From 12°43'17.34"N to 12°43'25.86"N</p> <p>longitude: From 79°51'33.42"E to 79°51'40.03"E</p>



Geo-Coordinates of the lease boundary:

Pillar ID	Latitude (mN)	Longitude (mE)
1	12°43'22.95"N	79°51'40.03"E
2	12°43'20.90"N	79°51'39.52"E
3	12°43'18.42"N	79°51'39.05"E
4	12°43'18.21"N	79°51'36.50"E
5	12°43'17.41"N	79°51'36.29"E
6	12°43'17.60"N	79°51'35.04"E
7	12°43'17.34"N	79°51'34.92"E
8	12°43'17.86"N	79°51'33.42"E
9	12°43'23.86"N	79°51'35.71"E
10	12°43'23.88"N	79°51'35.89"E
11	12°43'25.86"N	79°51'36.72"E
12	12°43'25.77"N	79°51'37.36"E
13	12°43'25.49"N	79°51'38.44"E
14	12°43'25.24"N	79°51'38.78"E
15	12°43'24.21"N	79°51'39.13"E
16	12°43'23.19"N	79°51'38.63"E

Land use pattern (Forest, Agricultural, Grazing, Barren etc.)

: It is a barren and vrgin land

b) *Attach a general location and vicinity map showing area boundaries and existing and proposed access routs. It is preferred that the area to be marked on a survey of India topographical map or a cadastral map or forest map as the case may be. However if none of these are available, the area should be shown on an accurate sketch map on scale of 1 : 5000.*

: Refer plate no-IA & IB

i) INFRASTRUCTURE AND COMMUNICATION:

a.	Nearest post office	:	Post office is available at Madur about 2.6km away from the site towards western side.
b.	Nearest police station	:	Police Station is available at Palur about 7.5km away from the site towards North side.
c.	Nearest fire station	:	Fire Station is available at Uttiramerur about 16.2km away from the site towards southern side.



d.	Nearest Medical facility	:	Primary health center is available at Padur about 4.0km away from the site towards SW side
e.	Nearest school	:	Primary School Education is available at Padur about 4.0km away from the site towards western side
f.	Nearest Taluk road	:	The District road-789 is situated about 2.8km away from the western side which is connecting Walajabad-Nelvay
g.	Nearest Rail Head	:	The Nearest Railway junction is available at Kancheepuram about 20.1km away from NW side.
h.	Nearest Railway station	:	The Nearest Railway station is available at Palayaseevaram about 7.0km away from North side.
i.	Nearest port facility	:	The Nearest Port is available at Chennai about 65.1kms away from eastern side.
j.	Nearest Airport	:	The Nearest Airport is available at Chennai about 47.5kms away from eastern side
k.	Nearest DSP office	:	The Nearest DSP office is available at Kancheepuram about 20.1kms away on the NW side.
l.	Nearest Villages	:	i. North - Sirumailur - 1.86km ii. South - Neerkundram - 1.30km iii. East - Kavanipakkam - 3.5km iv. West - Madur - 2.5km



PART – A

3.0 GEOLOGY AND MINERAL RESERVES:

(a) Briefly describe the topography and general geology and local/mine geology of the mineral deposit including drainage pattern:

(i)	Topography	: The lease area is exhibits plain topography which is 0-2meters above ground level and altitude of 57m maximum and minimum 55m from the MSL. The area is sloping towards SW side covered with clayey soil and falls in Toposheet no. 57 P/14.									
(ii)	<p>General Geology of district:</p> <p>a) Geology:</p> <p>The Kancheepuram area is endowed with a complex geological set up with crystalline rocks occurring in the southern part of the area and the northern part of the area the crystalline rocks occur at depths covered by sedimentary formations ranging from Gondwana to recent. The depth at which the crystalline rocks occur progressively increase towards north. The eastern part comprises unconsolidated sediments of fluvio-marine and marine origin. The Precambrian crystalline rocks are represented by charnockites and contain several enclave's mafic granulite. Garnetiferous and biotite gneisses are also encountered as linear bands.</p> <p>b) Soils:</p> <p>The analysis of the soil type reveals that the proposed lease area is predominantly covered by river alluvium is transported and is seen in coastal area.</p> <p>c) Lineaments:</p> <p>The general trend of the gneiss is NE-SW direction and the regional trend observed is NNE-SSW to NW-SE direction. The deposition of Gondwana rocks, the sedimentary rocks, in faulted troughs and in the rugges topography of crystalline rocks took place during Jurassic period. The insitu soils laterites and alluvial deposits were deposited along the palar and cheyyar rivers during the quaternary period. The data have been checked by field studies and survey of India topographical maps at the 1: 1,0 0,000 scale. Order of superposition of the as given below,</p> <table border="1"> <thead> <tr> <th>Age</th><th>Group</th><th>Rock Formation</th></tr> </thead> <tbody> <tr> <td>Recent</td><td>Alluvium and beach sands</td><td>Sand, gravel, silt and clay</td></tr> <tr> <td>Pleistocene</td><td>Laterite, soils,</td><td>Laterites, sandy clay, silt</td></tr> </tbody> </table>		Age	Group	Rock Formation	Recent	Alluvium and beach sands	Sand, gravel, silt and clay	Pleistocene	Laterite, soils,	Laterites, sandy clay, silt
Age	Group	Rock Formation									
Recent	Alluvium and beach sands	Sand, gravel, silt and clay									
Pleistocene	Laterite, soils,	Laterites, sandy clay, silt									



		talus	
	-----Unconformity-----		
	Lower Cretaceous to Jurassic	Sandstones & Shales	Fine to medium grained sand stone with clay intercalations of greenish soft shale
	-----Unconformity-----		
	Archaean	Crystalline formations	Charnockites, granites and associated basic and ultra-basic intrusive

(iii)

Local / Mine Geology of the Mineral Deposit:

)

a). Topography of the proposed lease area:

The lease area is exhibits plain topography which is 0-2meters above ground level and altitude of 57m maximum and minimum 55m from the MSL. The area is sloping towards SW side covered with clayey soil and charnockite composed mainly of quartz, perthite or antiperthite and orthopyroxene (usually hypersthene) formed at high temperature and pressure, commonly found in granulite facies metamorphic regions, as an end-member of the charnockite series. charnockite is extensively quarried for rough stone productivity / which is used as blue metals for construction of building.

b). Mode of origin:

The charnockite series originally was assumed to have developed by the fractional crystallization of silicate magma. Subsequent studies have shown, however, that many, if not all, of the rocks are metamorphic, formed by recrystallization at high pressures and moderately high temperatures.

c). Physiography of the rocks:

Dark colour and clouding of the feldspars are typical features of these rocks as bluish in quartz.

d). Chemical composition of rocks:

Charnockite, any member of a series of metamorphic rocks with variable chemical composition, the term is often limited to the characteristic ortho pyroxene granite of the series. The alkali feldspar may be intermediate between microcline and orthoclase, the fine micro perthitic texture being common. **Order of superposition of the proposed lease area,**

Age	Group	Rock Formation
Recent to sub recent	----	Fine to medium grained clayey soil
Archaean	Charnockite group	Charnockite.



(iv)	Drainage Pattern	:	The periya thangal is situated on eastern side in S.F.No.281 which is 50m safety distance left out and drainage is sub-dendritic in nature.
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(b) *The topographic plan of the lease area prepared on a scale of 1 : 1000 or 1 : 2000 with contour interval of 3 to 10m depending upon the topography of the area should be taken as the base plan for preparation of geological plan. The details of exploration already carried out including evidences of mineral existence should be shown on the geological plan:*

a. Present status:	:	No exploration carried out. The proposed lease area is a fresh lease grant and outcrops well exposed in this proposed lease area. Hence, RQP personally examined during mining survey.
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b. Surface Plan	:	Surface plan is prepared as 1: 1000 Scales with ground level at various places in grid pattern with various lithological considerations of the surface.
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(c) Geological sections should be prepared at suitable intervals on a scale of 1: 1000 / 1: 2000:	:	Geological plan is prepared as 1: 1000 Scales (Plate No.III) with ground level at various places, lithological factors in grid pattern like length, width and depth and sections are prepared boundary to boundary perpendicular to the strike of the rock with proper scale of 1:1000 is horizontal axis, 1:500 as vertical axis. It is given as plate No-IIIA.
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(d) *Broadly indicate the year wise future programme of exploration, taking into consideration the future production programme planned in next five years as in table below :-*

Year	No.of boreholes	Total meterage	No.of pits and dimensions	No.of trenches and dimensions
First	N.A	---	---	N.A
Second	N.A	---	---	N.A
Third	N.A	---	---	N.A
Fourth	N.A	---	---	N.A
Fifth	N.A	---	---	N.A

No future programmed proposed in this area. Its massive and hard homogeneous parent rock. Hence exploration proposal is not required to this mining project.



- (c) *Indicate geological and recoverable reserves and grade, duly supported by standard method of estimation and calculations along with required sections (giving split up of various categories i.e. proved, probable, possible). Indicate cut-off grade. Availability of resources should also be indicated for the entire leasehold.*

The geological resources were computed by drawing cross section method with respect to the boundaries of the lease area. We divide the lease area into two cross sections by make a regular shape and obtain the maximum volume of material clutched from the quarry. The two cross sections are XY-AB and XY-CD. XY represent the horizontal lines and AB, CD are the vertical lines which finalize the deposits in the irregular shape of the lease area. Geological resource of gravel is estimated as **62176Cbm** and rough stone is estimated as **1336784Cbm** up to a depth of 45m below ground level and its R.L lies between 56-11m. (Refer Plate No. III).

The gravel obtained up to depth of 0-2m in average and rough stone signs from 3 - 45m depth below the ground level.

GEOLOGICAL RESOURCES							
Section	Bench	length in (m)	Width in (m)	Depth in (m)	Volume In CBM	Geological Resources in CBM	Gravel in CBM
XY-AB	I	65	88	2	11440	.....	11440
	I	65	88	3	17160	17160	.....
	II	65	88	5	28600	28600	.....
	III	65	88	5	28600	28600	.....
	IV	65	88	5	28600	28600	.....
	V	65	88	5	28600	28600	.....
	VI	65	88	5	28600	28600	.....
	VII	65	88	5	28600	28600	.....
	VIII	65	88	5	28600	28600	.....
	IX	65	88	5	28600	28600	.....
TOTAL					257400	245960	11440
XY-AB	I	168	151	2	50736	.....	50736
	I	168	151	3	76104	76104	.....
	II	168	151	5	126840	126840	.....
	III	168	151	5	126840	126840	.....
	IV	168	151	5	126840	126840	.....
	V	168	151	5	126840	126840	.....
	VI	168	151	5	126840	126840	.....
	VII	168	151	5	126840	126840	.....
	VIII	168	151	5	126840	126840	.....
	IX	168	151	5	126840	126840	.....
TOTAL					1141560	1090824	50736
GRAND TOTAL					1398960	1336784	62176



- (f) *Indicate mineable reserves by slice plan / level plan method, as applicable, as per the proposed mining parameters.*

The mineable reserves of gravel estimated as **50456Cbm** and rough stone estimated as **610354Cbm** up to depth of 45m (0-2m gravel + 3-45m rough stone) from surface by deducting the reserves blocked under benches from the total geological resources and the commercially viable rough stone has been prepared on 1: 1000 Scales (Refer plate no.VII). Sections are prepared as scale of 1:1000 in horizontal axis and 1:500 as vertical axis (Plate No. VIIA).

MINEABLE RESERVES							
Section	Bench	length in (m)	Width in (m)	Depth in (m)	Volume In CBM	Mineable Reserves in CBM	Gravel in CBM
XY-AB	I	55	68	2	7480	.....	7480
	I	55	68	3	11220	11220	.....
	II	50	58	5	14500	14500	.....
	III	45	48	5	10800	10800	.....
	IV	40	38	5	7600	7600	.....
	V	35	28	5	4900	4900	.....
	VI	30	18	5	2700	2700	.....
	VII	25	8	5	1000	1000	.....
TOTAL					60200	52720	7480
XY-CD	I	158	136	2	42976	.....	42976
	I	158	136	3	64464	64464	.....
	II	153	126	5	96390	96390	.....
	III	148	116	5	85840	85840	.....
	IV	143	106	5	75790	75790	.....
	V	138	96	5	66240	66240	.....
	VI	133	86	5	57190	571901	.....
	VII	128	76	5	48640	48640	.....
	VIII	108	66	5	35640	35640	.....
	IX	98	56	5	27440	27440	.....
TOTAL					600610	557634	42976
GRAND TOTAL					660810	610354	50456

**4.0 MINING:**

- a. Briefly describe the existing / proposed method for developing / working the deposit with all design parameters.
(Note: In case of pocket deposits, sequence of development/working may be indicated on the same plan)
- : The mining operation is opencast, semi-mechanized methods are adopted and on single shift basis only. Under the regulation 106 (2) (a) of the Metalliferous Mines Regulations, 1961 in all opencast working in hard rock, the benches and sides should be properly benched and sloped. The bench height should not exceed 5m and the bench width should not less than the bench height. The slope of the benches should not exceed 45° from horizontal.

- b. *Indicate quantum of development and tonnage and grade of production expected pit wise as in table below.*

The proposed production of rough stone estimated as **437744Cbm** and gravel **50456Cbm** up to depth of 25m which is 0-2m gravel and 3-23m rough stone from below the ground level (R.L. 56-31m) from the surface level for the first five years plan period.

Year	Pit No.(s)	Topsoil (Cbm)	ROM (Cbm)	Saleable rough stone (Cbm) @ 100%	Rough stone rejects(Cbm)	Sub grade/ Weathered rock in (Cbm)	Saleable Gravel (Cbm)	Rough stone to Overburden ratio
First	I	---	109750	87310	---	---	22440	---
Second	I	---	98150	83190	---	---	14960	---
Third	I	---	97930	97930	---	---	13056	---
Fourth	I	---	88440	88440	---	---	---	---
Fifth	I	---	93930	93930	---	---	---	---
Total	---	---	488200	437744	---	---	50456	---

- c. *Composite plans and Year wise sections (In case of 'A' class mines):*
- : Not applicable



Composite plans and Yearwise sections (In case of 'B' class mines):

YEARWISE PRODUCTION								
Year	Section	Bench	length in (m)	Width in (m)	Depth in (m)	Volume In CBM	Production in CBM	Gravel in CBM
I	XY-AB	I	55	68	2	7480	.....	7480
	XY-AB	I	55	68	3	11220	11220	.....
	XY-CD	I	55	136	2	14960	.....	14960
	XY-CD	I	55	136	3	22440	22440	.....
	XY-AB	II	50	58	5	14500	14500	.....
	XY-CD	II	45	126	5	28350	28350	.....
	XY-AB	III	45	48	5	10800	10800	.....
TOTAL						109750	87310	22440
II	XY-CD	III	45	116	5	26100	26100	.....
	XY-CD	I	55	136	2	14960	.....	14960
	XY-CD	I	55	136	3	22440	22440	.....
	XY-CD	II	55	126	5	34650	34650	.....
TOTAL						98150	83190	14960
III	XY-CD	III	55	116	5	31900	31900	.....
	XY-CD	I	48	136	2	13056	.....	13056
	XY-CD	I	48	136	3	19584	19584	.....
	XY-CD	II	53	126	5	33390	33390	.....
TOTAL						97930	84874	13056
IV	XY-CD	III	48	116	5	27840	27840	.....
	XY-AB	IV	40	38	5	7600	7600	.....
	XY-CD	IV	100	106	5	53000	53000	.....
TOTAL						88440	88440	.....
V	XY-CD	IV	43	106	5	22790	22790	.....
	XY-CD	V	138	96	5	66240	66240	.....
	XY-AB	V	35	28	5	4900	4900	.....
TOTAL						93930	93930	.....
GRAND TOTAL						488200	437744	50456

- d. Attach supporting composite plan and section showing pit layouts, dumps, stacks of sub-grade mineral, if any, etc. : The proposed area is fresh lease. (Refer Plate No: III)
- e. **Indicate proposed rate of production when the mine is fully developed and the expected life of the mine and the year from which effected:**
The proposed production is 7296Cbm/month. At this rate of production, the expected life of quarry is calculated for 10 years approved periods and production



details are given as below:

Rough Stone

Minable reserves of rough stone	= 610354Cbm
First five years production	= 437744Cbm
Remaining minable reserves for next five years	= 172610Cbm

Gravel:

Minable reserves of Gravel	= 50456Cbm
First five years production of gravel	= 50456Cbm

The regular working of the quarry and its production depends upon the demand from the market. The market is always fluctuating and flexible one. Accordingly, there is a possibility to increase or decrease the production. The year wise production, anticipated the life of quarry etc., are only a tentative figure.

- f. *Attach a note furnishing a conceptual mining plan for the entire lease period (for "B" category mines) and upto the life of the mine (for "A" category mines) based on the geological, mining and environments considerations:*

i) Time frame of completion of mineral exploration program in leasehold area: Give broad description identified potential areas to be covered in the given time frame:	: Considering the indefinite depth persistence of the rough stone deposit is proved beyond the workable limits about depth of 45m below the ground level (R.L.56-11m) from the petrogenetic character of the charnockite rock as well as from the actual mining practice in the area and with the current trend of rough stone production the quarry may sustain for 5 years.
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- ii) Whether ultimate pit limit has been determined and demarcated on surface and geological plan: -

The ultimate pit limit has been determined and demarcated at end of ten years plan periods as given below

ULTIMATE PIT – SECTION XY-AB						
Bench	Years	Bench R. L	Overburden/ Mineral	L (m)	W (m)	D (m)
I	First 5 years	R.L.56-54m	Gravel	55	68	2
I		R.L.54-51m	Rough stone	55	68	3
II		R.L.51-46m	Rough stone	50	58	5
III		R.L.46-41m	Rough stone	45	48	5
IV		R.L.41-36m	Rough stone	40	38	5
V		R.L.36-31m	Rough stone	35	28	5
VI	Remainin g periods of 5 years	R.L.31-26m	Rough stone	30	18	5
VII		R.L.26-21m	Rough stone	25	8	5
			Total Depth			35m

ULTIMATE PIT – SECTION XY-CD						
Bench	Years	Bench R. L	Overburden/ Mineral	L (m)	W (m)	D (m)
I	First 5 years	R.L.56-54m	Gravel	160	136	2
I		R.L.54-51m	Rough stone	160	136	3
II		R.L.51-46m	Rough stone	155	126	5
III		R.L.46-41m	Rough stone	150	116	5
IV		R.L.41-36m	Rough stone	145	106	5
V		R.L.36-31m	Rough stone	140	96	5
VI	Remaining periods of 5 years	R.L.31-26m	Rough stone	135	86	5
VII		R.L.26-21m	Rough stone	130	76	5
VIII		R.L.21-16m	Rough stone	111	66	5
IX		R.L.16-11m	Rough stone	101	56	5
			Total Depth			45m

- iii) Whether the site for disposal of waste rock or an un-saleable material have/has been examined for adequacy of land and suitability of long-term use : There is no waste rock will be proposed in this lease area.



	in the event of continuation of mining activity: -	
	iv) Whether back filling of pits after recovery of mineral upto techno-economically feasible depth envisaged. If so, describe the broad features of the proposal:	: As the depth of persistence of the deposit may likely to continue for further depth, it is proposed not to backfilled the quarry pit.
	v) Whether post mining land use envisaged: -	: At the end of mining activities over the quarry pit may be utilized fish culture or storage of rain water reservoir used for irrigation purposes.
g.	Open cast Mines:	
	i). Describe briefly giving salient features of the mode of working (Mechanized, Semi-Mechanized, manual)	: The mining operation is opencast, semi-mechanized methods are adopted and on single shift basis only. Under the regulation 106 (2) (a) of the Metalliferous Mines Regulations, 1961 in all open cost workings in hard rock, the benches and sides should be properly benched and sloped. The bench height should not exceed 5m and the bench width should not less than the bench height. The slope of the benches should not exceed 45° from horizontal. Machineries like tractor mounted compressor attached with Jack hammers is proposed to drilling and blasting. Hydraulic excavators and tipper combination are adapted.
	ii) Describe briefly the layout of mine workings, the layout of faces and sites for disposal of overburden/waste. A reference to the plans enclosed under 4(b) and 4(d) will	: The rough stone is proposed to quarry at 5m bench height & width conventional opencast semi-mechanized method. It is a semi mechanized quarrying operation using shot hole drilling with the help of tractor mounted compressor attached with jack hammers,



suffice	smooth blasting and waste and are removal using hydraulic excavator and loaded directly to the tippers and transported to the needy customer. Bench height = 5mts. Bench width = 5mts.						
a. Details of Topsoil/ Overburden	:	There is no topsoil shall be removed.					
b. Rough Stone waste and side burden waste:-	:	There is no waste or side burden shall be proposed.					
h. Underground Mines:	:	Not applicable					
i. Extent of mechanization:	Describe briefly including the calculation for adequacy and type of machinery and equipment proposed to be used in different mining operations.						
(1) Drilling Machines:							
Drilling of shot holes will be carried out using tractor mounted compressor and jack hammer. Depth of holes shall be 1 to 2m bench height and spacing shall be 0.75m and burden shall be 0.60m from the preface. Details of drilling equipments are given below.							
Type	No s	Dia of hole (mm)	Size / Capacity	Make	Motive power	H.P.	
Jack Hammer	2	32 mm	Hand held	Atlas copco	Diesel	60	
Compressor	1	---	Air	Escorts Formtrac	Diesel	42	
(2) Loading Equipment:							
Hydraulic excavator (0.90m ³ capacities) and attached with rock breaker shall utilized for internal transport sizeable rough stone lumps and deliver to the consumer area.							
(3) Haulage and Transport Equipment							
(a) Haulage within the mining leasehold:							
Type	Nos	Size / Capacity	Make	Motive power	H.P.		
Tipper	4	15 M.T	BMW	Diesel	110		
Whether the dumpers are fitted with exhaust conditioner should be indicated: The dump is not used in this quarry area, hence it's a small B2							

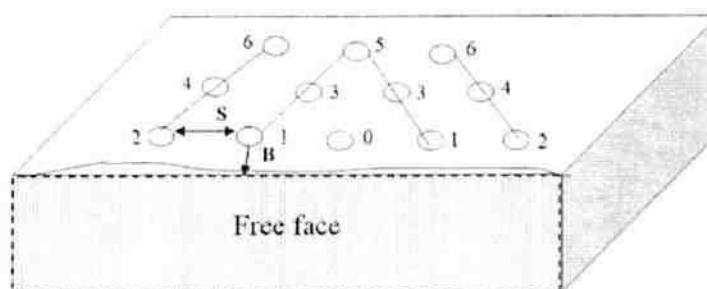


category mine.					
(b) Transport from mine head to the destination		:	Transport from the mine head to customers crusher area.		
c. Describe briefly the transport system (please specify)		:	Hydraulic excavator and tippers utilized for internal transport sizeable rough stone lumps and deliver to the customers crusher area.		
d. Ore transported by: own trucks / hired trucks		:	Hired tippers and hydraulic excavator for initially production purposes.		
e. Main destination to which ore is transported (giving to and from distance)		:	The excavated stone materials road metal will be supplied to the consumers like road laying, earth filling, building construction, etc		
f. Details of hauling / transport equipment:					
Type	Nos	Size / Capacity	Make	Motive power	H.P.
Tipper	2	15 M.T	BMW	Diesel	110
(4).Miscellaneous:					
Describe briefly any allied operations and machineries related to the mining of the deposit not covered earlier.					
(A) Operations		:	The mining operation is opencast, semi mechanized methods are adopted and on single shift basis only.		
(B) Machineries deployed		:	Machineries like Tractor mounted compressor attached with Jack hammers is proposed to drilling and blasting. Hydraulic excavators and tipper combination are adapted. (Refer Part-A- 4 (i))		
5. BLASTING :					
a) <i>Broad blasting parameters like charge per hole, blasting pattern, charge per delay, maximum number of holes blasted in a round, manner and sequence of firing, etc.</i>					
Blasting pattern:					
The quarrying operation is proposed to carried by opencast, semi mechanized mining in conjunction with conventional method of mining using					

jack hammer drilling and blasting for shattering effect and loosen the rough stone.

Depth of each hole	: 1.5m
Diameter of hole	: 30-32mm
Spacing between hole	: 1.2m
Burden for hole	: 1.0m
Pattern of hole	: Zigzag -Multi rows
Inclination of hole	: 80° from horizontal
Use of delay detonators	: 25 millisecond relay
Detonating fuse	: " Detonating" cord
Quantity of rock broken per day	: 292Cbm x 2.8 = 818MT
Blasting efficiency @ 95%	: 1.17 x 95% = 1.05MT / hole
Charge per hole	: 140 gms of 25mm dia cartridge
Quantity of rock broken per day	: 818MT per day
Requirement of explosive per day (6M.T per kg of explosives)	: 136kg per day
Number of holes per day	: 818/1.05= 779 holes per day

BLASTING PATTERN DRAWING



Staggered "V" pattern of blasting design

Spacing	=	1.2m
Burden	=	1.0m
Depth of hole	=	1.5m
No of holes proposed per day	=	779holes

b) type of explosives used / to be used:

Following explosives are recommended for efficient blasting with safe practice.

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 primary blasting is proposed.

c) Measures proposed to minimize ground vibration due to blasting:

The control blasting measures is being adopted for minimizing ground vibration and fly rock.

Shallow depths jackhammer drilling and blasting is proposed to be carried out with minimum use of explosive mainly to give hearing effect in rough stone



for easy excavation and to control fly rock.

Delay detonators:

Delay blasting permits to divide the shot to 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

No of holes	: 779holes
Yield	: 818tons
Powder factor	: 6 Tons/Kg of explosives
Total explosive required	: 136kg-Slurry explosives
Charge per hole	: 0.5kg
Blasting at day time only	: 12.00p.m - 1.00p.m

c) Powder factor in ore and overburden / waste / development heading / stope	: Powder factor is proposed as 6 tones per kg of explosives
d) Whether secondary blasting is needed, if so describe it briefly	: Irrespective of the method of primary blasting employed, it may be necessary to re-blast a proportion of the rock on the quarry floor so as to reduce it to a size suitable for handling by the excavators and crushers.
e) Storage of explosives (like capacity and type of explosive magazine)	: <ol style="list-style-type: none"> 1.The applicant will engage an authorized explosive agency to carry out the small amount of blasting and it will be supervised by competent and statutory foreman/mines manager. 2.The blasting time at a day is proposed to be 1 PM to 2 PM. 3.First Aid Box will be keeping ready



		at all the time.
		4. Necessary precautionary announcement will be carried out before the blasting operation.
6.	MINE DRAINAGE	
	a) Likely depth of water table based on observations from nearby wells and water bodies	: The ground water table is reported as of 55m in summer and 50m in rainy season from the general ground level in the adjacent bore wells of the area.
	b) Workings expected to be _____ m. above / reach below water table by the year _____.	: Proposed mining depth is 45m from below the ground level. Now, the present mining lease shall be proposed above the water table and hence, quarrying may not affect the ground water.
	c) Quantity and quality of water likely to be encountered, the pumping arrangements and places where the mine water is finally proposed to be discharged	: The ground water may not rise immediately in this type of mining. However, the rain water percolation and collection of water from the seepage shall be less than 300 Lpm and it shall be pumped about periodically by a stand by diesel powered Centrifugal pump motivated with 7.5 H.P. Motor.
7.	STACKING OF MINERAL REJECTS AND DISPOSAL OF WASTE:	
	a) Indicate briefly the nature and quantity of top soil, overburden / waste and mineral rejects likely to be generated during the next five years: No stacking proposed in this mining plan.	
	b) Land chosen for disposal of waste with proposed justification	: There is no topsoil shall be removed.
	c) Attach a note indicating the manner of disposal and configuration, sequence of buildup of dumps along with the proposals	: No weathered rock or overburden or waste are shall proposed.



	for the stacking of sub-grade ore, to be indicated Yearwise.	
8.	USES OF MINERAL:	
	a) Describe briefly the end-use of the mineral (sale to intermediary parties, captive consumption, export, industrial use)	: The excavated rough stone materials are one of the most valuable natural building materials, it is important to realize that because of their different compositions and characteristics, different stone types can be used only for specific purposes. For instance, aggregates are mostly used for building roads and footpaths., etc.
	b) Indicate physical and chemical specifications stipulated by buyers	: Rough stone used for its strong physical properties – crushed and sorted into various sizes for use in concrete, coated with bitumen to make asphalt or used 'dry' as bulk fill in construction. Mostly used in roads, concrete and building products. So, there is no chemical specifications are specified.
	c) Give details in case blending of different grades of ores is being practiced or is to be practiced at the mine to meet specifications stipulated by buyers.	: Not blending process is involved.
9.	OTHERS	
	Describe briefly the following a) Site services	: Infrastructure required for such mines like office, stores, canteen, first aid station, shelter latrine and bath rooms have been provide as per the Metalliferous Mines Rules, 1961 as a welfare amenity for mine laborers.



Being a manual mine no stock of spares, lubricant and fuels are required to be maintained at the mine site. Approach road is available from the mine road to the site.

b) Employment potential:

As per Mines safety under the provisions of Metalliferous Mines Rules, 1961 under the Mines Act, 1952, whenever the workers are employed more than 10, it is preferred to have a qualified mining mate to keep all the production workers directly under his control and supervision.

The following man power is proposed for quarrying rough stone and gravel during the five years period the same manpower will be utilize for this mining plan period to achieve the proposed production and to comply the provisions of the MMR,1961 norms.

1.	Highly Skilled	Quarry Manager	1No.
		Mines Forman	---
		Mechanical Engineer	---
		Accountant cum & admin	1No.
2.	Skilled	Earth moving Operator	2 No.
		Driver	6 Nos.
		Mechanic	1 No.
		Blaster/Mat	---
3.	Semi – skilled	Helpers, Greaser's	3 Nos
4.	Unskilled	Musdoor / Labours	10 Nos
		Cleaners	3Nos
		Attendant's	1No
	Total =		28Nos

10 MINERAL PROCESSING/BENEFICIATIONS:

a) If processing / beneficiations of the ore or minerals mined is planned to be conducted on site or adjacent to the extraction area, briefly describe the nature of the processing /beneficiation. This should indicate size and grade of feed material and concentrate (finished marketable product), recovery rate.

: Excavated rough stone and gravel materials shall be directly sale to the needy customer.

The recovery of rough stone in this quarry is 100%. Also can be used by the applicant in his own crusher for required size (i.e 1/4", 1/2", 1/3" and 1")

b) Explain the disposal method for

: No water shall be used for quarrying or



tailings or waste from the processing plant (quantity and quality of tailings proposed to be discharged, size and capacity of tailing pond, toxic effect of such tailings, if any, with process adopted to neutralize any such effect before their disposal and dealing of excess water from the tailing dam).	any other processing except drinking water to be drawn from public sources. Some stagnation of rain water in the pit shall be used for drilling and spraying haul roads. Therefore, need for tailing dam doesn't arise. But tailing control of rain water flow during rainy season has to be done by decanting the SPM in a pit before passing the water in to natural system.
c) A flow sheet or schematic diagram of the processing procedure should be attached.	: Not applicable
d) Specify quantity and type of chemicals to be used in the processing plant.	: Not applicable
e) Specify quantity and type of chemicals to be stored on site / plant.	: Not applicable
f) Indicate quantity (KLD per day) of water required for mining and processing and sources of supply of water. Disposal of water and extent of recycling.	: Drinking is 0.300KLD, utilized water is 1.0KLD, Dust suppression is 1.0KLD and green belt is 1.5KLD. Minimum quantity of water 3.800KLD per day has to be maintained as per the mine's rules, 1960. It is proposed to make an own borewell for providing uninterrupted supply of RO drinking water, dust suppression and green belt development.



PART – B

11.0 ENVIRONMENTAL MANAGEMENT PLAN :

a) Attach a note on the status of baseline information with regard to the following :

11.1	Existing land use pattern indicating the area already degraded due to quarrying /pitting, dumping, roads, processing plant, workshop, township etc in a tabular form. The present and proposed land use pattern is given as below.																														
	<table border="1"> <thead> <tr> <th>Sl. No.</th><th>Land Use</th><th>Present Area (Hect)</th><th>Area in use during the quarrying period (Hect)</th></tr> </thead> <tbody> <tr> <td>1.</td><td>Under quarrying area</td><td>Nil</td><td>2.39.0</td></tr> <tr> <td>2</td><td>Infrastructure</td><td>Nil</td><td>0.01.0</td></tr> <tr> <td>3</td><td>Roads</td><td>Nil</td><td>0.02.0</td></tr> <tr> <td>4</td><td>Unutilized</td><td>3.11.5</td><td>0.36.7</td></tr> <tr> <td>5</td><td>Green belt</td><td>Nil</td><td>0.32.8</td></tr> <tr> <td></td><td>Total =</td><td>3.11.5</td><td>3.11.5</td></tr> </tbody> </table>	Sl. No.	Land Use	Present Area (Hect)	Area in use during the quarrying period (Hect)	1.	Under quarrying area	Nil	2.39.0	2	Infrastructure	Nil	0.01.0	3	Roads	Nil	0.02.0	4	Unutilized	3.11.5	0.36.7	5	Green belt	Nil	0.32.8		Total =	3.11.5	3.11.5		
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11.2	Water Regime	:	Water table in this area is noticed at a depth of 55m in summer and 50m in rainy season from the general ground level and presently the quarrying of rough stone is proposed up to a depth of 45m bgl. Hence, it will not affect the ground water depletion of this area. It is proposed to make an own borewell for providing uninterrupted supply of RO drinking water, dust suppression and green belt development.																												
11.3	Flora and Fauna	:	There is no major flora found in this area and except acacia bushes, no other valuable trees are noticed in the lease area. Further, neither flora of botanical interest nor fauna of zoological interest is noticed in this area.																												
11.4	Quality of air, ambient noise level and water	:	Air or dust expected to be generated from drilling process, hauling roads, places of excavation etc., will be suppressed by																												



		periodical wetting of land by water spraying. Quarrying of rough stone and gravel will be carried out by drilling and blasting by using low power explosives, and hence, noise will be very minimum. However, periodical noise level monitoring will be carried out every six months around the quarry site.																									
11.5	Climatic conditions	: The temperature ranges from a maximum of 37 °C to a minimum of 25°C. Like the rest of the state, April to June is the hottest months and December to January are the coldest. Rainfall of this area is southwest monsoon, with an onset in June and lasting up to September, brings rainfall of 517.1 mm, with September being the rainiest month.																									
11.6	Human Settlement: The nearest villages are found in the buffer zone with population as per 2011 census. The Siruthamur village of 755 houses 3097 peoples both Male (1555) and Female (1542). <table><tr><th>S.No</th><th>Village</th><th>Direction</th><th>Distance in Kms</th><th>Population</th></tr><tr><td>1</td><td>Sirumailur</td><td>North</td><td>1.86km</td><td>1702</td></tr><tr><td>2</td><td>Neerkundram</td><td>South</td><td>1.30km</td><td>2297</td></tr><tr><td>3</td><td>Kavanipakkam</td><td>East</td><td>3.5km</td><td>1665</td></tr><tr><td>4</td><td>Madur</td><td>West</td><td>2.5km</td><td>1029</td></tr></table>		S.No	Village	Direction	Distance in Kms	Population	1	Sirumailur	North	1.86km	1702	2	Neerkundram	South	1.30km	2297	3	Kavanipakkam	East	3.5km	1665	4	Madur	West	2.5km	1029
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11.7	Public buildings, places of worship and monuments	: No infrastructure like residential building, places of special interest like archeological monuments, Sanctuaries, etc., are found around 10km radius.																									
11.8	Attach plans showing the locations of sampling stations	: The proposed ambient air quality, water quality Ambient noise level and vibration are periodically tested for every season (6																									



		months once) around 5km radius as per the guidance of MoEF and EIA Notification 2006 and also covering DGMS norms.
11.9	Does area (partly or fully) fall under notified area under Water (Prevention & Control of Pollution), Act, 1974	: The proposed area not fall under notified area under Water (Prevention & Control of Pollution), Act, 1974

b) Attach an Environmental Impact Assessment Statement describing the impact of Mining and beneficiation on environment on the following over the next five years (and upto conceptual plan period for 'A' category mines)

i)	<p>Land area indicating the area likely to be degraded due to quarrying / pitting, dumping, roads, workshop, processing plant, township etc:</p> <p>Due to quarrying and exploitation of the rough stone and gravel, there will impact in the form i.e. change in the ground profile, pits, and dumps. The details of the land use pattern, during the ensuing plan period and till lease period is shown in the tabular form:</p> <table border="1"> <thead> <tr> <th>Sl. No.</th><th>Land Use</th><th>Present Area (Hect)</th><th>Area in use during the quarrying period (Hect)</th></tr> </thead> <tbody> <tr> <td>1.</td><td>Under quarrying area</td><td>Nil</td><td>2.39.0</td></tr> <tr> <td>2</td><td>Infrastructure</td><td>Nil</td><td>0.01.0</td></tr> <tr> <td>3</td><td>Roads</td><td>Nil</td><td>0.02.0</td></tr> <tr> <td>4</td><td>Unutilized</td><td>3.11.5</td><td>0.36.7</td></tr> <tr> <td>5</td><td>Green belt</td><td>Nil</td><td>0.32.8</td></tr> <tr> <td></td><td>Total =</td><td>3.11.5</td><td>3.11.5</td></tr> </tbody> </table>			Sl. No.	Land Use	Present Area (Hect)	Area in use during the quarrying period (Hect)	1.	Under quarrying area	Nil	2.39.0	2	Infrastructure	Nil	0.01.0	3	Roads	Nil	0.02.0	4	Unutilized	3.11.5	0.36.7	5	Green belt	Nil	0.32.8		Total =	3.11.5	3.11.5
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ii).	Air quality	Air or dust expected to be generated from drilling process, hauling roads, places of excavation etc., will be suppressed by periodical wetting of land by water spraying.																													
iii).	Water quality	A water sample from the open bore wells was tested to NABL approved lab to assess hardness, salinity, colour, specific gravity, etc.																													
iv).	Noise levels	Quarrying of rough stone and gravel will be carried out by drilling and blasting by using low power explosives, and hence, noise will be																													



		very minimum. However, periodical noise level monitoring will be carried out every six months around the quarry site.
v).	Vibration levels (due to blasting)	No deep hole blasting envisaged. Small dia shot holes are used for breaking boulders. The maximum peak particles velocity shall be recorded using mini seismograph devices as per the guidance of MoEF and EIA Notification 2006 and also covering DGMS norms.
vi).	Water regime	It is proposed to make an own borewell for providing uninterrupted supply of RO drinking water, dust suppression and green belt development.
vii).	Socio-economics	1. To provide Employment opportunities of the nearby villagers. 2. For the cultural development of the nearby villagers.
viii).	Historical monuments etc.	There are no historical monuments, etc found around 10km radius.

c) Attach an Environmental Management Plan (supported by appropriate plans and sections) defining the time bound action proposed to be taken with sequence & timing in the following areas (or diagrams should be used):

i).	Temporary storage and utilization of topsoil	:	There is no topsoil shall be removed.
ii).	Yearwise proposal for reclamation of land affected by abandoned quarries and other mining activities during first five years (and upto conceptual plan period for 'A' category mines) clarifying the extent of back filling and re-contouring and / or alternative use of unfilled / partially filled excavations / road sides / slopes and mine. In case abandoned quarries/ pits are proposed to be used as	:	The present mining is proposed to an average depth of 25m below ground level (R.L.56-31m) has been envisaged as workable depth for safe & economic mining during the lease period. The mined-out area will be fenced on top of open cast working with S1 fencing. Low lying areas with water logging shall be used for fish culture. No immediate proposals for closure of pit as the rough stone persist still at deeper level.



	reservoir, their size, water holding capacity and proposal for utilization of such water be given.																															
iii).	<p><i>Programme of afforestation, Yearwise for the initial five years (and upto conceptual plan period for 'A' category mines) indicating the number of plants with name of species to be afforested under different areas in hectares.</i></p> <p>7.5m safety barrier, nearby school area and nearest panchayat approach roads has been identified to be utilized for greenbelt appropriate native species of Neem, Pungan and other regional trees will be planted in a phased manner as described below</p> <table><tr><th>Year</th><th>Place</th><th>Type of trees</th><th>No.of plants</th><th>Rate of survival</th></tr><tr><td>First</td><td>Lease boundary & approach road</td><td>Neem, Pungan, Palam and other regional trees</td><td>100</td><td>80%</td></tr><tr><td>Second</td><td>Lease boundary & approach road</td><td>Neem, Pungan, Palam and other regional trees</td><td>100</td><td>80%</td></tr><tr><td>Third</td><td>Lease boundary & approach road</td><td>Neem, Pungan, Palam and other regional trees</td><td>100</td><td>80%</td></tr><tr><td>Fourth</td><td>Lease boundary & approach road</td><td>Neem, Pungan, Palam and other regional trees</td><td>100</td><td>80%</td></tr><tr><td>Fifth</td><td>Lease boundary & approach road</td><td>Neem, Pungan, Palam and other regional trees</td><td>100</td><td>80%</td></tr></table>		Year	Place	Type of trees	No.of plants	Rate of survival	First	Lease boundary & approach road	Neem, Pungan, Palam and other regional trees	100	80%	Second	Lease boundary & approach road	Neem, Pungan, Palam and other regional trees	100	80%	Third	Lease boundary & approach road	Neem, Pungan, Palam and other regional trees	100	80%	Fourth	Lease boundary & approach road	Neem, Pungan, Palam and other regional trees	100	80%	Fifth	Lease boundary & approach road	Neem, Pungan, Palam and other regional trees	100	80%
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iv).	Stabilization and vegetation of dumps along with waste dump management Year wise for the first five years (and upto conceptual plan period for 'A' category mines).	: No waste or rejects shall be proposed.																														
v).	Measures to control erosion / sedimentation of water courses.	: Not applicable. There are no major dumps are stabilizing in this quarry area.																														
vi).	Treatment and disposal of water from mine.	: It will not be harmful and it does not require any treatment before discharging into the natural courses.																														



vii).	Measures for minimizing adverse effects on water regime.	:	There is no water to be pumped out will be very pure and portable and therefore, it will not affect any water regime surrounding the quarry.
viii).	Protective measures for ground vibrations / air blast caused by blasting.	:	It is a small B2 category open cost, semi mechanized mining and no heavy machinery shall be used. The only smooth blasting is proposed, therefore no change for ground vibration or noise from the quarry.
ix).	Measures for protecting historical monuments and for rehabilitation of human settlements likely to be disturbed due to mining activity.	:	No historical monuments and for rehabilitation of human settlements doesn't to be disturbed during mining activity.
x).	Socioeconomic benefits arising out of mining.	:	The nearest villages are will get employment benefits.

d). Monitoring schedules for different environmental components after the commencement of mining and other related activities. (for 'A' category mines only)

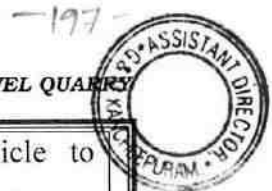
Not applicable. It is B2 category quarry

12.0 PROGRESSIVE MINE CLOSURE PLAN:

12.1	Steps proposed for phased restoration, reclamation of already mined out area.	:	The present mining is proposed to an average depth of 25m below ground level (R.L.56-31m). The mined-out area will be fenced on top of open cast working with SI fencing to arrest the entry of cattle's and public in to the quarry site.
12.2	Measures to be under taken on mine closure as per Act & Rules	:	Measures will be taken as per the Acts and Rules. The quarried pit will be fenced by barbed wire fencing. Green belt development at the rate of 100 trees per year will be proposed. No



			immediate proposals for closure of pit as the rough stone persist still at deeper level.
12.3	Mitigation measures to be undertaken for safety and restoration/ reclamation of the already mined out area	:	The quarry lease is a fresh mining lease.
12.4	Mine closure activity	:	The mined-out area will be fenced on top of opencast working with S1 fencing. Low lying areas with water logging shall be used for fish culture. No immediate proposals for closure of pit as the rough stone persist still at deeper level.
12.5	Safety and security	:	Safety measures implement to the prevent access to surface opening excavations will be taken as Metalliferous mine rules, 1960, it is a small open cast mining method adopted. Safety provisions like helmet, goggles, safety shoes, dust mask, Ear muffs etc. have to be provided as per the circulars and amendments made for mine labours under the guidance of DGMS being a mechanized operation.
12.6	Disaster management and Risk Assessment	:	Opencast mining method is adopted in this quarry. If the benches are made with proposed height and width no risk will be there. Even then if any minor or major accident happens the quarry staffs having First aid facilities with first aid box with all necessary medicine and stretches etc., to give first aid treatment at the site and will



		arrange immediately the vehicle to reach nearest hospital, if any disaster happens the lessee is capable to meet such eventualities. At the time of any accident during mining activity, proposal of first aid facility at quarry and one vehicle always ready at quarry site.
12.7	Care and maintenance during temporary discontinuance	: During temporary discontinuance the working place will be fenced completely and a board of discontinuance will be changed on the main entrance of the working place. One watch man will be kept on the quarry area for security purposes also look after the survival of the plants.
12.8	Economic repercussions of closure of quarry and man power entrenchments	: During the five years mining period the employment potential will be generated, general financial status and socio-economic conditions of approx. 26 labors will be improved. During the next five-year compensations will be given as per rules.

12.9 Proposed Financial Estimate / Budget for (EMP) Environment Management:

A	Fixed Asset Cost:	
	1. Land Cost	: Rs.46,00,000/-
	2. Labour Shed	: Rs. 1,50,000/-
	3. Sanitary Facility	: Rs. 50,000/-
	4. Fencing	: Rs. 2,00,000/-
	Total	: Rs. 50,00,000/-
B	B. Machinery cost	: Rs.10,00,000/- (Hire Basis)
C	EMP Cost: per year (Minimum 2 station * 2 season):	
	1. Air quality test	: Rs. 30,000/-
	2. Water quality sampling(2No's)	: Rs. 25,000/-



	3. Noise test	:	Rs. 25,000/-
	4. Soil analysis	:	Rs. 25,000/-
	Total cost	:	Rs. 1,05,000/- per year
	Total cost for 5 Years	:	Rs. 5,25,000
D	Total Expenditure cost (for five years)		
	1. Drinking Water Facility	:	Rs. 1,00,000/-
	2. Sanitary Maintenance	:	Rs. 75,000/-
	3. Water Sprinkling	:	---
	4. Afforestation etc.,	:	Rs. 1,50,000/-
	5. Safety Kits	:	Rs. 1,00,000/-
	Total	:	Rs. 4,25,000/-
E	Total Project Cost (A+B+C+D)	:	Rs. 69,50,000/-

13.0 FINANCIAL ASSURANCE:

Not applicable, it is a small B2 rough stone and gravel quarry.

14.0 CERTIFICATES:

All required certificates are enclosed.

15.0 PLAN AND SECTIONS, ETC:

Plan and Sections are submitted along with mining plan.

16.0 ANY OTHER DETAILS INTEND TO FURNISH BY THE APPLICANT

- (i) Care and precautionary measures will be taken for the safety of workers as per Rules and Acts.
- (ii) The applicant will endeavor every attempt to quarry the rough stone and gravel economically without any wastage and to improve the environment and ecology.
- (iii) The mining plan is prepared by incorporating the conditions stipulated in the precise area communication issued by the Assistant Director, Department of Geology and Mining, District collectorate, Kancheepuram vide letter **Rc.No. 257/Q3/2020 Dated 06.09.2021**.
- (iv) Total proposed production of rough stone is **437744Cbm** and gravel **50456Cbm** up to depth of 25m from below the ground level (R.L. 56-31m) which is 2m gravel and 23m rough stone (Refer Plate No's.IV & IVA) for the first 5 years plan period. Average production shall be **87549Cbm** of rough stone and **16819Cbm** of gravel per year.

**17.0 CSR Expenditure:**

CSR (Corporate Social responsibility) shall provide by the lessee @ 2.5% of average net profit of the company for the last three financial years to the neighboring villages on the provisions under section 135(1) of the companies Act, 2013 and Rule 3(2) companies CSR Rules, 2014 as circular no.05/01/2014.

Place: Dharmapuri, TN

Date: 28/09/2021

Signature of the Recognized Qualified Person.

Dr. S. KARUPPANNAN, M.Sc., Ph.D.,
RQP/MAS/263/2014/A
GEO TECHNICAL MINING SOLUTIONS
1/213-B, Ground Floor, Natesan Complex,
Collectorate Post Office, Oddapatti,
Dharmapuri - 636 705. Tamil Nadu, India.

**This Mining Plan is approved subject
to the conditions / stipulations
indicated in the Mining Plan approval
Letter No. RCNO.297/03/2020
Dated. .09.2021.**

**This Mining Plan is approved as per the
powers conferred Under Rule 41 (2) of
Tamil Nadu Minor Mineral Concession
Rules, 1959**

**Assistant Director of Geology and Mining,
Kanchipuram District**

By
30/9/21

நக.எண். 257/க்யூ3/2020
நாள்.06.09.2021

உதவி இயக்குநர் அலுவலகம்,
புவியியல் மற்றும் சுரங்கத்துறை,
காஞ்சிபுரம்.

-203- ANNEXURE - I



அறிவிக்கை

பொருள் : கனிமங்களும் குவாரிகளும் - சாதாரண கற்கள் மற்றும் கிராவல் மண் - காஞ்சிபுரம் மாவட்டம் - உத்திரமேரூர் வட்டம் - சிறுதாமூர் கிராமம் - புல எண்கள். 277/1A, 277/1C, 277/1E, 277/1F, 277/2, 280/2, 277/1B, 277/1D-ல் மொத்த பரப்பு 3.11.50 ஹெக்டேர் - புன்செய் பட்டா நிலம் - சாதாரண கற்கள் மற்றும் கிராவல் மண் வெட்டி எடுக்க திரு. N. கன்னியப்பன் த/பெ. நாராயணப்பிள்ளை என்பவர் தமிழ்நாடு சிறுகனிம சலுகை விதிகள் 1959 விதி எண்.19(1)-ன்கீழ் மனு செய்தது - தகுதி வாய்ந்த நிலப்பரப்பாக தெரிவித்தல் - தொடர்பாக.

- பார்வை :
1. திரு. N. கன்னியப்பன் த/பெ. நாராயணப்பிள்ளை, எண்.55, மாரியம்மன் கோயில் தெரு, நீர்குன்றம் கிராமம், ஆனம்பாக்கம் அஞ்சல், சாலவாக்கம் வழி, உத்திரமேரூர் வட்டம், காஞ்சிபுரம் மாவட்டம் - 603 107 என்பவரின் விண்ணப்பம் பெறப்பட்ட நாள். 20.10.2020.
 2. காஞ்சிபுரம் வருவாய் கோட்டாட்சியர் அறிக்கை எண். நக.1187/2021/அ1, நாள்.31.05.2021.
 3. காஞ்சிபுரம், புவியியல் மற்றும் சுரங்கத்துறை உதவி இயக்குநர் மற்றும் உதவி புவியியலாளர் அவர்களின் புலத்தணிக்கை அறிக்கை, நாள்: 02.09.2021.
 4. மற்றும் தொடர்புடைய ஆவணங்கள்

காஞ்சிபுரம் மாவட்டம், உத்திரமேரூர் வட்டம், சிறுதாமூர் கிராம விண்ணப்பப் புல எண்கள். 277/1A(0.16.00), 277/1C(0.16.50), 277/1E(0.16.50), 277/1F(0.15.50), 277/2(1.17.50), 280/2(0.97.50), 277/1B(0.16.00), 277/1D(0.16.00)-ல் மொத்த பரப்பு 3.11.50 ஹெக்டேர் பட்டா நிலத்தில் சாதாரண கற்கள் மற்றும் கிராவல்மண் வெட்டியக்க திரு. N. கன்னியப்பன் த/பெ. நாராயணப்பிள்ளை என்பவர் குவாரி குத்தகை உரிமம் கோரி விண்ணப்பித்துள்ளார்.

மேற்படி விண்ணப்பம் தொடர்பாக காஞ்சிபுரம் வருவாய் கோட்டாட்சியர், காஞ்சிபுரம் புவியியல் மற்றும் சுரங்கத்துறை, உதவி இயக்குநர் மற்றும் உதவி புவியியலாளர் ஆகியோர் மேற்காணும் விண்ணப்ப புலத்தில் தணிக்கை மேற்கொண்டு, உத்திரமேரூர் வட்டம், சிறுதாமூர் கிராம விண்ணப்பப் புல எண்கள். 277/1A (0.16.00), 277/1C(0.16.50), 277/1E (0.16.50), 277/1F (0.15.50), 277/2 (1.17.50), 280/2 (0.97.50), 277/1B (0.16.00), 277/1D (0.16.00)-ல் மொத்த பரப்பு 3.11.50 ஹெக்டேர் பரப்பளவில் குவாரி அனுமதி வழங்க கீழ்க்கண்ட நிபந்தனைகளுக்குட்பட்டு பரிந்துரை செய்துள்ளனர்.



1. விண்ணப்பப் புலங்களுக்கு அருகிலுள்ள அரசு புறம்போக்கு மற்றும் பட்டா நிலங்களுக்கு முறையே 10 மீட்டர் மற்றும் 7.5 மீட்டர் பாதுகாப்பு இடைவெளிவிட்டு குவாரிப்பணி செய்யப்பட வேண்டும்.
2. பொதுமக்களுக்கோ, பொது சொத்துக்களுக்கோ யாதொரு சேதமும் இன்றி பாதுகாப்பான முறையில் குவாரிப்பணி செய்ய வேண்டும்.
3. விண்ணப்பிக்கப்பட்ட புல எண்களுக்கு தென்மேற்கே புல எண்.281-ல் பெரிய தாங்கல் அமைந்துள்ளதால் பாதுகாப்பு இடைவெளி 50 மீட்டர் விட்டு குவாரிப்பணி செய்யப்பட வேண்டும்.
4. தமிழ்நாடு சிறுகனிம சலுகை விதிகள் 1959 விதி எண்.41-ன்படி விண்ணப்ப புலங்களுக்கு வரைவு சுரங்கத்திட்டம் (Mining Plan) ஒப்புதல் பெற சமர்ப்பிக்கப்பட வேண்டும்.
5. தமிழ்நாடு சிறுகனிம சலுகை விதிகள் 1959 விதி எண்.42-ன்படி விண்ணப்ப புலத்திற்கு மாநில அளவிலான சுற்றுச் சூழல் தாக்க மதிப்பீட்டு ஆணையத்தின் சுற்றுச்சூழல் ஒப்புதல் (Environment Clearance) பெற்று சமர்ப்பிக்கப்பட வேண்டும்.

எனவே காஞ்சிபுரம் வருவாய் கோட்டாட்சியர், காஞ்சிபுரம் புவியியல் மற்றும் சுரங்கத்துறை, உதவி இயக்குநர் மற்றும் உதவி புவியியலாளர் ஆகியோரின் பரிந்துரையின் அடிப்படையில் காஞ்சிபுரம் மாவட்டம், உத்திரமேரூர் வட்டம், சிறுதாமூர் கிராம விண்ணப்பப் புல எண்கள். 277/1A (0.16.00), 277/1C (0.16.50), 277/1E (0.16.50), 277/1F (0.15.50), 277/2 (1.17.50), 280/2 (0.97.50), 277/1B (0.16.00), 277/1D (0.16.00)-ல் மொத்த பரப்பு 3.11.50 ஹெக்டேரில் சாதாரண கற்கள் மற்றும் கிராவல்மண் வெட்டியெடுக்க பத்து வருட காலத்திற்கு குத்தகை உரிமம் வழங்க தகுதி வாய்ந்த நிலப்பரப்பாக திரு. N. கன்னியப்பன் த/பெ. நாராயணப்பிள்ளை என்பவருக்கு தெரிவிக்கப்படுகிறது. மேலும் குவாரி அனுமதி வழங்குவது தொடர்பாக வரைவு சுரங்கத் திட்டத்தை (Mining Plan) மூன்று மாத காலத்திற்குள் உதவி இயக்குநர் முன்பு சமர்ப்பித்து ஒப்புதல் பெறவும் குவாரி உரிமம் பெறுவது தொடர்பாக மாநில சுற்றுச் சூழல் தாக்க மதிப்பீட்டு ஆணையத்தின் (SEIAA) இசைவினை பெற்று சமர்ப்பிக்கவும் அறிவுறுத்தப்படுகிறது.

6/9/24

உதவி இயக்குநர்,
புவியியல் மற்றும் சுரங்கத்துறை,
காஞ்சிபுரம்.

பெறுநர்
திரு. N. கன்னியப்பன்
த/பெ. நாராயணப்பிள்ளை,
எண்.55, மாரியம்மன் கோயில் தெரு,
நீர்குன்றம் கிராமம், ஆனம்பாக்கம் அஞ்சல்,
சாலவாக்கம் வழி, உத்திரமேரூர் வட்டம், காஞ்சிபுரம் மாவட்டம் - 603 107.
நகல்:-

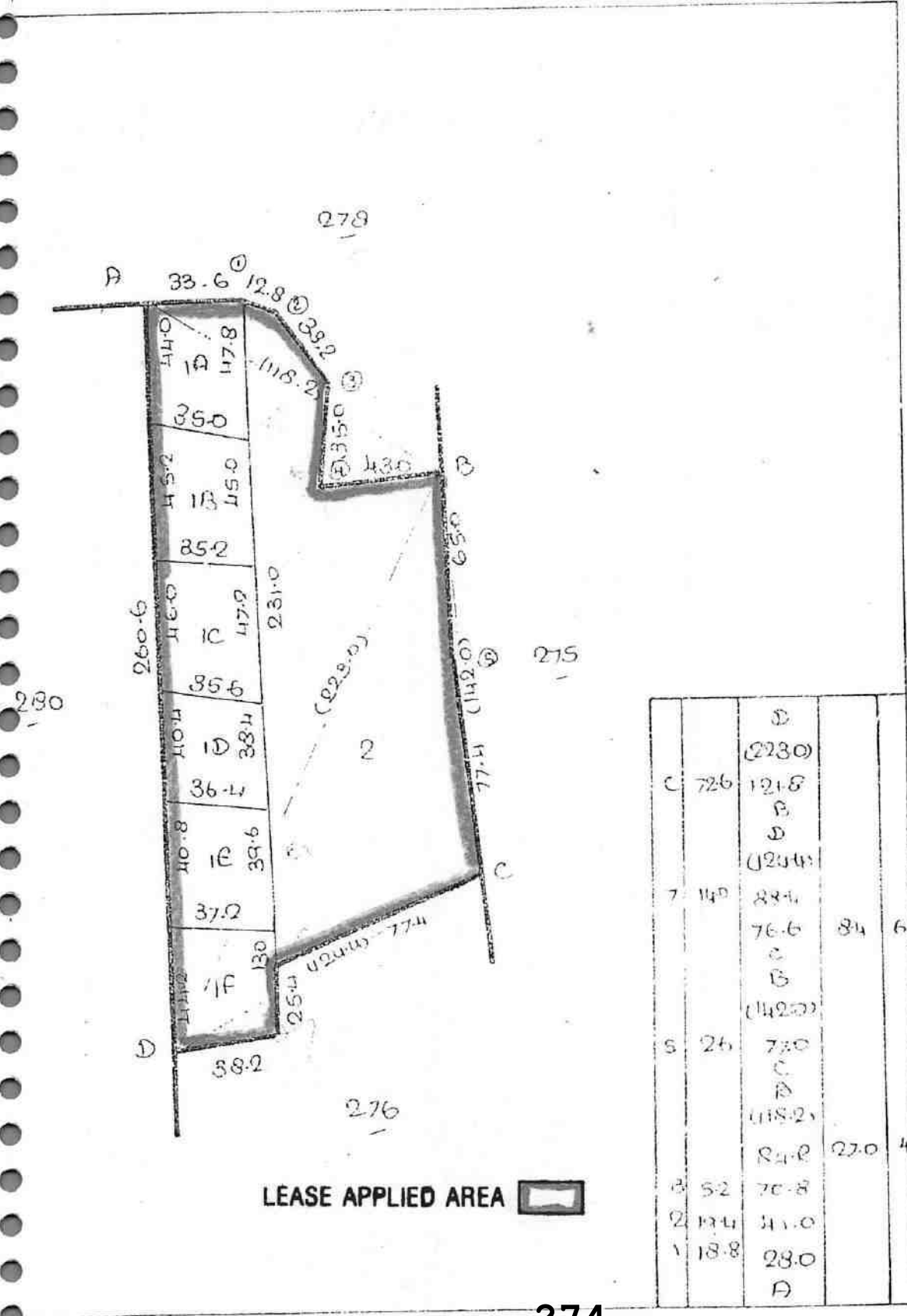
- 1) தலைவர், மாநில சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையம், சென்னை.
- 2) இயக்குநர், புவியியல் மற்றும் சுரங்கத்துறை, கிண்டி, சென்னை 600 032.

ANNEXURE



தமிழக அரசு
தேசிய கிராம
புது எண். 277

பரப்பு: கிராம. ர. 2.14.0 ஏ.அ.



LEASE APPLIED AREA

274

அளவு: 1. 2000.
கண்ணியப்பன்

தயாரித்த
[Signature]



சிவகங்கை

2-ஆம் பகுதி

சுமார் 280

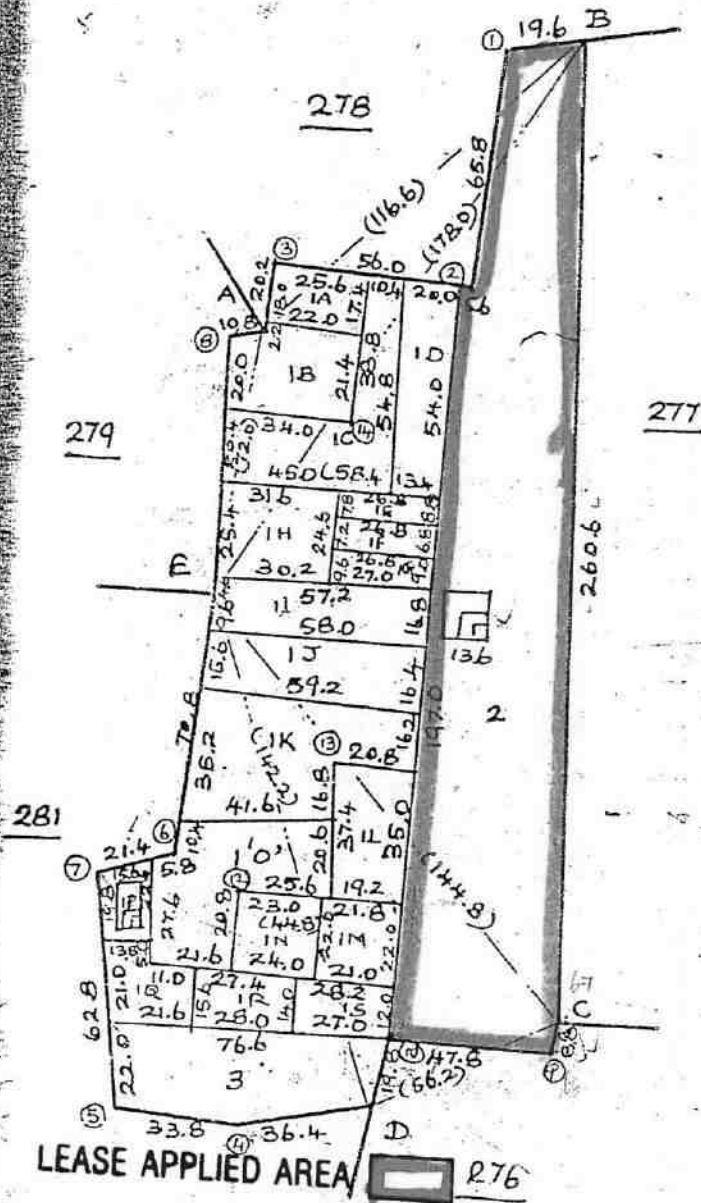
கிராமம்

சுமார் 83

பெயர் சிவதாமஸ்

பரப்பு: செக்டர்கள்

2. ஏ 37.0



12-ஆம் பகுதி
சுமார் 2020
கிராம நிர்வாக அலுவலர்
15.83, சிறுதாமஸ்
சுமார் 280 வட்டம்
சுமார் 280 வட்டம்

Dr. S. KARUPPANNAN, M.Sc., Ph.D.,
ROP/MAS/263/2014/A

15.83: 275

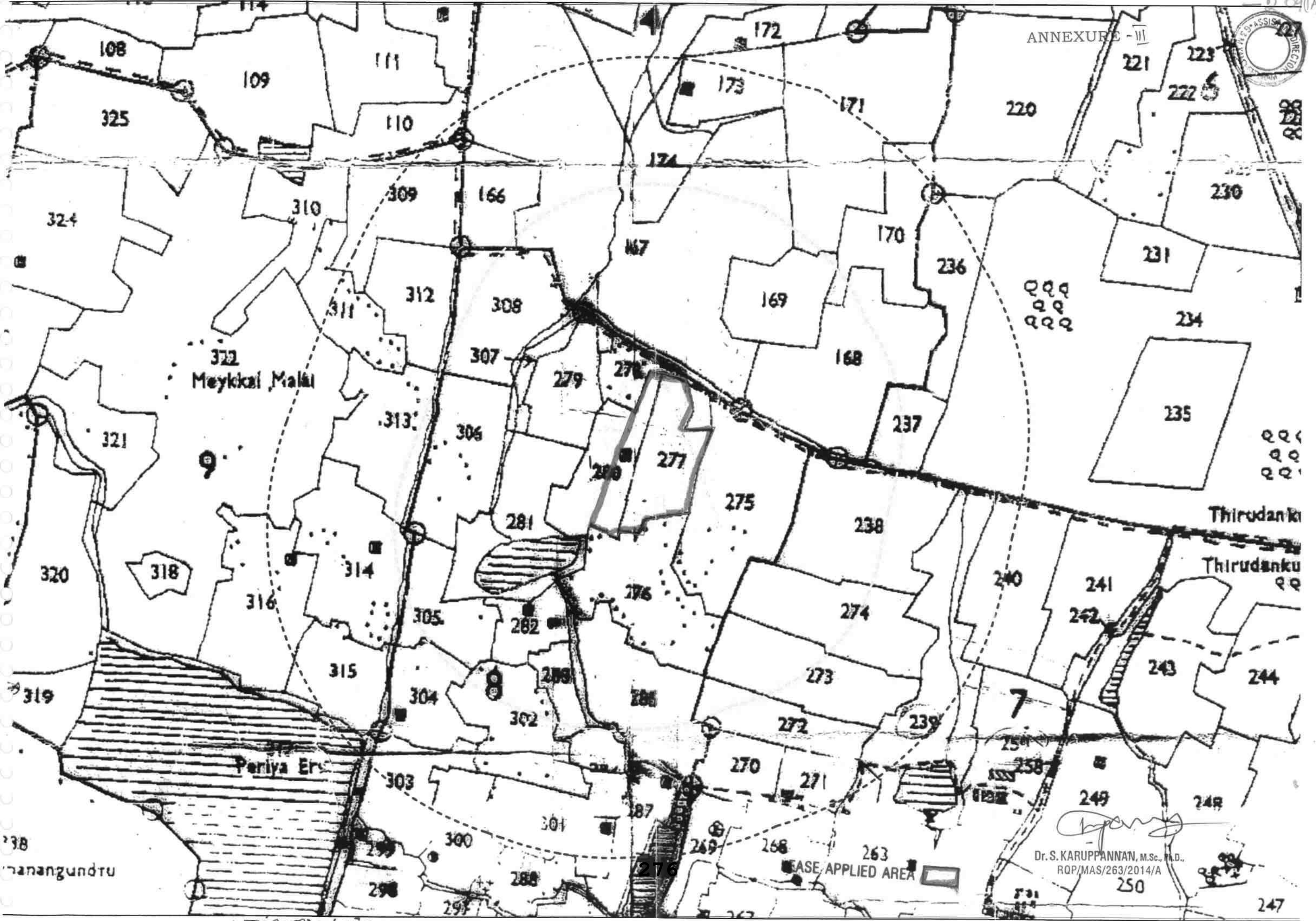
சுமார் 280

சுமார் 280

1	E	142.2			
2	W	43.6	73.6		
3	12	18.0	64.0		
4	W	46.0	61.2		
5	11	46.0	52.4		
6	D		56.2		
7	9	8.0	43.6	15.2	10
8	C		3.6		
9	E		(14.8)		
10			131.4	54.2	C
11	39.8	56.4			
12	57.6	35.2			
13	C				
14	E		(178.0)		
15			113.0	28.8	A
16	B				
17	E		72.0		
18			1.8	10.8	B
19	E		(142.2)		
20	7	53.8	80.4		
21	6	32.6	77.6		
22	5	66.8	19.6		
23	4	35.8	6.4		
24			D		
25			A		
26			(116.6)		
27			101.8	13.2	3
28	2	30.4	66.6		
29			16.2	12.0	
30			B		



ANNEXURE - III



Dr. S. KARUPPANNAN, M.Sc., M.D.
RQP/MAS/263/2014/A

EASE APPLIED AREA

nanangundru

சென்னை

அ-பதிவேடு விவரங்கள்

ANNEXURE -IV



மாவட்டம் : காஞ்சிபுரம்

வட்டம் : உத்திரமேரூர்

கிராமம் : சிறுதாமூர்

1. புல எண்	277	9. மண் வயனமும் ரகமும்	7 - 4
2. உட்பிரிவு எண்	1A	10. மண் தரம்	6
3. பழைய புல உட்பிரிவு எண்	-1A	11. தீர்வை (ரூ - ஹெ)	1.85
4. பகுதி	P	12. பரப்பு (ஹெக்டேர் - ஏர்)	0 - 16.00
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - பை)	0.30
6. நிலத்தின் வகை	பஞ்சை	14. பட்டா எண்	4202
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
8. இரு போகமா	-	16. பெயர்	1.கன்னியப்பன்

குறிப்பு 1:



1.

மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை.
இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 20358 என்ற
குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.



-213-

அ-பதிவேடு விவரங்கள்

மாவட்டம் : காஞ்சிபுரம்

வட்டம் : உத்திரமேரூர்

கிராமம் : சிறுதாமூர்

1. புல எண்	277	9. மண் வயனமும் ரகமும்	7 - 4
2. உட்பிரிவு எண்	1C	10. மண் தரம்	6
3. பழைய புல உட்பிரிவு எண்	-1C	11. தீர்வை (ரூ - ஹெ)	1.85
4. பகுதி	P	12. பரப்பு (ஹெக்டேர் - ஏர்)	0 - 16.50
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - பை)	0.30
6. நிலத்தின் வகை	பஞ்சை	14. பட்டா எண்	4202
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
8. இரு போகமா	-	16. பெயர்	1.கன்னியப்பன்

குறிப்பு 1:



1.

மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை.
இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 20358 என்ற
குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.



அ-பதிவேடு விவரங்கள்

மாவட்டம் : காஞ்சிபுரம்

வட்டம் : உத்திரமேரூர்

கிராமம் : சிறுதாமூர்

1. புல எண்	277	9. மண் வயனமும் ரகமும்	7 - 4
2. உட்பிரிவு எண்	1D	10. மண் தரம்	6
3. பழைய புல உட்பிரிவு எண்	-1D	11. தீர்வை (ரூ - ஹெ)	1.85
4. பகுதி	P	12. பரப்பு (ஹெக்டேர் - ஏர்)	0 - 16.00
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - பை)	0.30
6. நிலத்தின் வகை	பஞ்சை	14. பட்டா எண்	4202
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
8. இரு போகமா	1	16. பெயர்	1.கன்னியப்பன்

குறிப்பு 1:



1.

மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை.
இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 20358 என்ற
குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.



அ-பதிவேடு விவரங்கள்

மாவட்டம் : காஞ்சிபுரம்

வட்டம் : உத்திரமேரூர்

கிராமம் : சிறுதாமூர்

1. புல எண்	277	9. மண் வயனமும் ரகமும்	7 - 4
2. உட்பிரிவு எண்	1E	10. மண் தரம்	6
3. பழைய புல உட்பிரிவு எண்	-1E	11. தீர்வை (ரூ - ஹெ)	1.85
4. பகுதி	P	12. பரப்பு (ஹெக்டேர் - ஏர்)	0 - 16.50
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - பை)	0.30
6. நிலத்தின் வகை	பஞ்சை	14. பட்டா எண்	4202
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
8. இரு போகமா	-	16. பெயர்	1.கன்னியப்பன்

குறிப்பு 1:



1.

மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 20358 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.



அ-பதிவேடு விவரங்கள்

மாவட்டம் : காஞ்சிபுரம்

வட்டம் : உத்திரமேரூர்

கிராமம் : சிறுதாமூர்

1. புல எண்	277	9. மண் வயனமும் ரகமும்	7 - 4
2. உட்பிரிவு எண்	1F	10. மண் தரம்	6
3. பழைய புல உட்பிரிவு எண்	-1F	11. தீர்வை (ரூ - ஹெ)	1.85
4. பகுதி	P	12. பரப்பு (ஹெக்டேர் - ஏர்)	0 - 15.50
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - பை)	0.29
6. நிலத்தின் வகை	பஞ்சை	14. பட்டா எண்	4202
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
8. இரு போகமா	-	16. பெயர்	1.கன்னியப்பன்

குறிப்பு 1:



1.

மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 20358 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.



அ-பதிவேடு விவரங்கள்

மாவட்டம் : காஞ்சிபுரம்

வட்டம் : உத்திரமேரூர்

கிராமம் : கிறுதாமூர்

1. புல எண்	277	9. மண் வயனமும் ரகமும்	7 - 4
2. உட்பிரிவு எண்	2	10. மண் தரம்	6
3. பழைய புல உட்பிரிவு எண்	-2	11. தீர்வை (ரூ - ஹெ)	1.85
4. பகுதி	-	12. பரப்பு (ஹெக்டேர் - ஏர்)	1 - 17.50
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - பை)	2.18
6. நிலத்தின் வகை	பஞ்சை	14. பட்டா எண்	4202
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
8. இரு போகமா	1	16. பெயர்	1.கன்னியப்பன்

குறிப்பு 1:



1.

மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை.
இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 20358 என்ற
குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.



அ-பதிவேடு விவரங்கள்

மாவட்டம் : காஞ்சிபுரம்

வட்டம் : உத்திரமேரூர்

கிராமம் : சிறுதாமூர்

1. புல எண்	277	9. மண் வயனமும் ரகமும்	7 - 4
2. உட்பிரிவு எண்	B	10. மண் தரம்	6
3. பழைய புல உட்பிரிவு எண்	-1B	11. தீர்வை (ரூ - ஹெ)	1.85
4. பகுதி	P	12. பரப்பு (ஹெக்டேர் - ஏர்)	0 - 16.00
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - பை)	0.30
6. நிலத்தின் வகை	பஞ்சை	14. பட்டா எண்	4202
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
8. இரு போகமா	-	16. பெயர்	1.கன்னியப்பன்

குறிப்பு 1:



1.

மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 20358 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.



அ-பதிவேடு விவரங்கள்

மாவட்டம் : காஞ்சிபுரம்

வட்டம் : உத்திரமேரூர்

கிராமம் : சிறுதாமூர்

1. புல எண்	280	9. மண் வயனமும் ரகமும்	7 - 4
2. உட்பிரிவு எண்	2	10. மண் தரம்	6
3. பழைய புல உட்பிரிவு எண்	-2	11. தீர்வை (ரூ - ஹெ)	1.85
4. பகுதி	-	12. பரப்பு (ஹெக்டேர் - ஏர்)	0 - 97.50
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - பை)	1.81
6. நிலத்தின் வகை	பஞ்சை	14. பட்டா எண்	4202
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
8. இரு போகமா	1	16. பெயர்	1.கன்னியப்பன்

குறிப்பு 1:



1.

மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை.
இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 20358 என்ற
குறிப்பு எண்ணை உள்ளிடு செய்து உறுதி செய்துகொள்ளவும்.

Dr. S. KARUPPANNAN, M.Sc., Ph.D.,
RQP/MAS/263/2014/A



ANNEXURE



தமிழக அரசு

வருவாய்த் துறை

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

மாவட்டம் : காஞ்சிபுரம்

வட்டம் : உத்திரமேரூர்

வருவாய் கிராமம் : சிறுதாமூர்

பட்டா எண் : 4202

உரிமையாளர்கள் பெயர்

1. நாராயணப்பிள்ளை

மகன்

கன்னியப்பன்



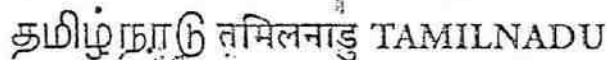
புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	
277	1A	0 - 16.00	0.30	--	--	--	--	2019/0103/03/179467- -- -- 05-12-2019
277	1C	0 - 16.50	0.30	--	--	--	--	2019/0103/03/179467- -- -- 05-12-2019
277	1E	0 - 16.50	0.30	--	--	--	--	2019/0103/03/179467- -- -- 05-12-2019
277	1F	0 - 15.50	0.29	--	--	--	--	2019/0103/03/179467- -- -- 05-12-2019
277	2	1 - 17.50	2.18	--	--	--	--	2019/0103/03/157315- -- -- 30-07-2019
280	2	0 - 97.50	1.81	--	--	--	--	2019/0103/03/179467- -- -- 05-12-2019
277	B	0 - 16.00	0.30	--	--	--	--	2019/0103/03/179467- -- -- 05-12-2019
277	1D	0 - 16.00	0.30	--	--	--	--	2019/0103/03/179467- -- -- 05-12-2019
		3 - 11.50	5.78					

குறிப்பு2 :



- மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <https://eservices.tn.gov.in> என்ற இணைய தளத்தில் 03/03/083/04202/40358 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
- இத் தகவல்கள் 23-10-2021 அன்று 04:54:06 PM நேரத்தில் அச்சடிக்கப்பட்டது.
- கைப்பேசி கேமராவின் 2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

சுன்னியப்பன்



AY 870507

உரிமம் எண்: 7372/B1/86 தேதி:

உரிமம் எண்: 7372/B1/86 தேதி: 26 NOV 2019



காஞ்சிபுரம் மாவட்டம், உத்திரமேரூர் வட்டம், சாவவாக்கம் சார்பதிவகத்தைச் சேர்ந்த 83 ஆம் எண் சிறுதாழூர் கிராமம், பிள்ளையார் கோயில் தெரு, விலாசத்தில் வசிக்கும் காலம் சென்ற திரு. கோவிந்தராஜப்பிள்ளை அவர்களின் குமாரத்தியும், திரு. துரைக்கண்ணு அவர்களின் மனைவியுமான க்மார் வயது 56 உள்ள திருமதி. சரசு -1, (வாக்காளர் அடையாள அட்டை எண்:

சின்ன ய்யன்

§. B. - barm

8. S-Selwa Farat

Referring to

10. 1870 年 10 月 10 日

1. பெரிய யயயன்
2. பெரிய யயயன்

5 கிராமத்துத் தன்னாய்வுப் பணி

|| श्रीगणेशाय नमः ||





தமிழ்நாடு தமிழ்நாடு TAMILNADU

For ப.சுண்முகம்

AY 870509

S.V.வாலாஜாபாத் தமிழ்நாடு

பரிமம் எண்: 7372/B1/86

26 NOV 2019

௩. கணக்கியல்
பின் கணக்கு

-3-

சிறுதாமூர் கிராமம், பிள்ளையார் கோயில் தெரு, எண். 162 விலாசத்தில் வசிக்கும் காலம் சென்ற திரு. R. சேகர் அவர்களின் மனைவி சுமார் வயது 46 உள்ள திருமதி. S. காமாட்சி -5, (ஆதார் அடையாள அட்டை எண். 735223171596) மேற்படி விலாசத்தில் வசிக்கும் மேற்படி காலம் சென்ற திரு. R. சேகர் அவர்களின் குமாரத்தி சுமார் வயது 23 உள்ள செல்வி S. ஆதித்யா -6, (வாக்காளர் அடையாள அட்டை எண். TRQ0887372) மேற்படி விலாசத்தில் வசிக்கும் மேற்படி காலம் சென்ற திரு. R. சேகர் அவர்களின் குமாரர் சுமார் வயது 21 உள்ள திரு. S. பூபாலன்-7, (ஒட்டுனர் உரிமம் எண். TN2120190003663) மேற்படி விலாசத்தில் வசிக்கும் மேற்படி காலம் சென்ற திரு. R. சேகர் அவர்களின் குமாரர் சுமார் வயது 18 உள்ள செல்வன் திரு. S. செல்வக்குமார்-8, (ஆதார் எண். 982511607701)

சுண்ணாம்புப் பூன்

PDH

6. S. Adhir

7. ρ -Barbaten

7. P. Barabara
8. S. S. Waterbury

9. ଅନୁସନ୍ଧାନ

10. $H = 1000$ ft

11. ନିମ୍ନଲିଖିତ କେଉଁ କେଉଁ ପଦ

சென்னை

1. பத்தகம் 2019 ம் வருடத்தில் 1272 ம் சீலமொலர்
43 தாள்களைக் கொண்டு 1272 ம் சீலமொலர்
3 வது தாள் 1272 ம் சீலமொலர்

288



தமிழ்நாடு தமிழ்நாடு TAMILNADU

S.பழனிவேல்
For ப.சண்முகம்

AY 870510



IV. கண்ணையன்
பின் இணைப்பு

S.V. வாலாஜாபாத் தமிழ்நாடு
உரிமம் எண்: 7372/B1/86 தேதி:

26 NOV 2019

1	புத்தகம் 2019ம் வருத்திய 1272ம் ஆவணம்
43	தாள்களைக் கொண்டு.
4	வது தாள்

பதிவு செய்யப்பட்டது

காஞ்சிபுரம் மாவட்டம், உத்திரமேரூர் வட்டம், சாலவாக்கம் சார்பதிவகத்தைச் சேர்ந்த 83 ஆம் எண் சிறுதாழூர் கிராமம், பிள்ளையார் கோயில் தெரு, எண். 1 விலாசத்தில் வசிக்கும் காலம் சென்ற திரு. இராஜகோபால் பிள்ளை அவர்களின் குமாரர் சுமார் வயது 43 உள்ள திரு.பச்சையப்பன் -9,(ஆதார் எண். 429829580823) காஞ்சிபுரம் மாவட்டம், உத்திரமேரூர் வட்டம், சாலவாக்கம் சார்பதிவகத்தைச் சேர்ந்த 83 ஆம் எண் சிறுதாழூர் கிராமம், எண். 29 விலாசத்தில் வசிக்கும் காலம் சென்ற திரு. ராகவப்பிள்ளை அவர்களின் குமாரர் சுமார் வயது 65 உள்ள திரு.துரைக்கண்ணு - 10,(வாக்காளர் அடையாள அட்டை எண். KBT1495027) காஞ்சிபுரம் மாவட்டம், உத்திரமேரூர் வட்டம், சாலவாக்கம் சார்பதிவகத்தைச் சேர்ந்த 83 ஆம் எண் சிறுதாழூர் கிராமம், எண். 29 விலாசத்தில் வசிக்கும் காலம் சென்ற திரு. ராகவப்பிள்ளை அவர்களின் குமாரர் சுமார் வயது 56 உள்ள திரு.ஜெயராமன்-11, (வாக்காளர் அடையாள அட்டை எண். TN/05/025/0316125) ஆகிய நாங்கள் சம்மதித்து எழுதிக் கொடுத்த புன்செய் நிலங்கள் சுத்த விகிகிரையப்பத்திரம்.

சுன்னையப்பன்



1. க.ப.க.

2. ச.ப.ப.

3. ப.ச.ப.

4. 289

5. க.ப.க.

சுன்னையப்பன்

6. ச.ப.ப.

7. ச.ப.ப.

8. ச.ப.ப.

9. ச.ப.ப.

10. ச.ப.ப.

11. ச.ப.ப.



தமிழ்நாடு தமிழ்நாடு TAMILNADU

S. பழனிவேல்

AY 870511

For ப.சண்முகம்

N. சின்னயப்பன்
நிர் இன்முகம்

S.V. வாலாஜாபாத் தமிழ்நாடு
உரிமம் எண்: 7372/B1/86 தேதி:

26 NOV 2019



-5-

மேல்கண்டவற்றால், 83 ஆம் எண் சிறுதாமர கிராமத்தில் இந்த சொத்து விவரத்தில் கண்டுள்ள
1. புன்செய் பழைய சர்வே எண். 277/1 ஏக்கர் 2.39 செண்ட் நிலத்தினை காலம் சென்ற குப்பு பிள்ளை
அவர்களின் குமாரர்கள் காலம் சென்ற திரு. கோவிந்தராஜிப்பிள்ளை-1, காலம் சென்ற திரு.
ராஜகோபால் பிள்ளை-2, நம்மில் 10வது இலக்கமிட்ட நபர் ராகவப்பிள்ளை குமாரர் திரு. துரைக்கண்ணு
பிள்ளை-3, ஆகிய மூவரும் சென்ற 02-02-1977 தேதியில் சுத்தக் கிரையம் பெற்று அந்த பத்திரமானது
வாலாஜாபாத் சார்பதிவகத்தில் தாக்கல் செய்யப்பட்டு 1 புத்தகம் 951 தொகுதி 205 முதல் 208
வரையான பக்கங்களில் 1977 ஆம் ஆண்டின் 128 ஆம் எண் ஆவணமாக பதிவு செய்யப்பட்டு மேற்படி
மூன்று நபர்களும் ஆண்டு அனுபவித்து வந்து இதில் கோவிந்தராஜிப்பிள்ளை மற்றும் ராஜகோபால்
பிள்ளை அவர்கள் காலாந்திரத்திற்கு பிறகு கோவிந்தராஜிப்பிள்ளை வாரிசுகளான 1 முதல் 3
இலக்கமிட்ட நபர்கள் ஆண்டு அனுபவித்து வருகின்றதும், ராஜகோபால் வாரிசுகளான 4வது நபர்
தேவகி அவர்களும், ராஜகோபால் வாரிசுகளில் திரு. சேகர் என்பவர் காலமாகி விட்டார்.

சின்னயப்பன்

1. DDK

6. S. Adhic

2. S. S. S. S. S.

7. S. S. S. S. S.

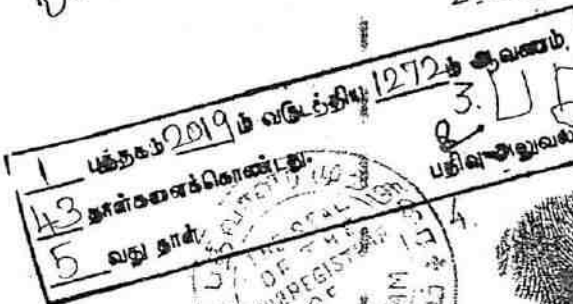
3. S. S. S. S. S.

8. S. S. S. S. S.

9. S. S. S. S. S.

10. S. S. S. S. S.

11. S. S. S. S. S.



290

சின்னயப்பன்



தமிழ்நாடு तमिलनाडु TAMILNADU

சுயம்சரி வெட்டு

AY 870512

For **ப.சஸ்ட்ரூகம்**

S.V.வாலாஜாபாத் தமிழ்நாடு

உரிமம் எண்: 7372/B1/86 தேதி: 26 NOV 2019

N. சண்முகம்
நிர்வாக



-6-

அதன்மேல் வாரியக்களான 5 முதல் 8 வரையான இலக்கமிட்ட நபர்களும், 9வது இலக்கமிட்ட நபரான ராஜகோபால் பிள்ளை வாரியகமான திரு. பச்சையப்பன் அவர்களும், 10வது இலக்கமிட்ட நபரான திரு. துரைக்கண்ணு நேரிடையாகவும், 11வது இலக்கமிட்ட நபரான திரு. ஜெயராமன், துரைக்கண்ணு அவர்களின் தம்பி என்ற முறையிலும், ஆண்டு அனுபவித்து வருகின்றதும், அவர்களது சுவாதினத்திலும், அனுபவித்திலும் இருந்து வருகின்ற சொத்துக்களாகும். தற்சமயம் உட்பிரிவின்படி இந்த நிலங்களானது புன்செய் சர்வே எண். 277/1A- எக்டர் 0.16.0 ஏர்ஸ் அல்லது ஏக்கர் 0.40 செண்ட் பூரா. புன்செய் சர்வே எண். 277/1D- எக்டர் 0.16.0 ஏர்ஸ் அல்லது ஏக்கர் 0.40 செண்ட் பூரா நிலமானது காலம் சென்ற ராஜகோபால் பிள்ளை த/பெ குப்பப்பிள்ளை அவர்களின் பெயரில் பட்டா எண். 474 ஆக தாக்கலாகி உள்ளது, புன்செய் சர்வே எண். 277/1C- எக்டர் 0.16.5 ஏர்ஸ் அல்லது ஏக்கர் 0.41 செண்ட் பூரா. புன்செய் சர்வே எண். 277/1F- எக்டர் 0.15.5 ஏர்ஸ் அல்லது ஏக்கர் 0.38 செண்ட் பூரா நிலங்களானது நம்மில் 2வது இலக்கமிட்ட நபர் வேளியப்பிள்ளை த/பெ கோவிந்தப்பிள்ளை அவர்களின் பெயரில் பட்டா எண். 447 ஆக தாக்கலாகி உள்ளது.

சின்ன யப்பன்

து, 1. ௮௪

2.827 *trans*

6. S. Adhiz

J. Boobahn

7.

S. S. Selvakumar

9. $P = \frac{1}{2} \rho v^2$

10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 1000 1001 1002 1003 1004 1005 1006 1007 1008 1009 1010 1011 1012 1013 1014 1015 1016 1017 1018 1019 1020 1021 1022 1023 1024 1025 1026 1027 1028 1029 1030 1031 1032 1033 1034 1035 1036 1037 1038 1039 1040 1041 1042 1043 1044

11. நிஜம ராமன்

1. க்கதம் 2019 ம் வருத்திய 1272 ம் சுவணம்
பொண்டி 1272 ம் சுவணம்
பதிவு 1272 ம் சுவணம்

$$\frac{43}{6} \text{ நாட்கள்}$$

16 வது தாள்

3. புது

A circular stamp with a star in the center and some illegible text around it, next to a fingerprint.

A close-up of a fingerprint and a circular stamp. The fingerprint is a latent print, and the stamp is partially visible to its left.

3. 6. 11
Kongara

291672H

Log. of



தமிழ்நாடு தமிலநாடு TAMILNADU

S. பழனிவேல்

AY 870513

For ப.சண்முகம்

N. கண்ணய்யப்பன்

S.V. வாலாஜாபாத் தமிழ்நாடு

நிர்ணயம்

உரிமம் எண்: 7372/B1/86 தேதி:

26 NOV 2019

1 புத்தகம் 2019 ம் வகுத்திய 1272 ம் ஆவணம்

43 தாள்களைக் கொண்டது.

7-7-வது தாள்

பதிவு சிவ்வலர்

புன்செய் சர்வே எண். 277/1E- எக்டர் 0.16.5 ஏர்ஸ் அல்லது ஏக்கர் 0.41 செண்ட் பூரா. புன்செய் சர்வே எண். 277/B- எக்டர் 0.16.0 ஏர்ஸ் அல்லது ஏக்கர் 0.40 செண்ட் பூரா நிலங்களானது நம்மில் 10வது இலக்கமிட்ட நபர் துரைக்கண்ணு பிள்ளை த/பெ ராகவபிள்ளை அவர்களின் பெயரில் பட்டா எண். 268 ஆக தூக்கலாகி உள்ளது, ஆக இந்த சொத்து விவரத்தில் கண்ட நிலங்களானது மேற்படி விவரப்படி நாம் ஆண்டு அனுபவித்து வருகின்றதும், மற்றும்

2. புன்செய் சர்வே எண் 280/2- ஏக்கர் 2.41 செண்ட்டில் ஏக்கர் 0.60 செண்ட் நிலமானது காலம் சென்ற குப்பு பிள்ளை அவர்களின் குமாரர்கள் காலம் சென்ற திரு. கோவிந்தராஜிப்பிள்ளை-1, காலம் சென்ற திரு. ராஜகோபால் பிள்ளை-2, நம்மில் 10வது இலக்கமிட்ட நபர் ராகவப்பிள்ளை குமாரர் திரு. துரைக்கண்ணு பிள்ளை-3, ஆகிய மூவரும் சென்ற 02-02-1977 தேதியில் சுத்தக் கிரையம் பெற்று அந்த பத்திரமானது வாலாஜாபாத் சார்பதிவகத்தில் தூக்கல் செய்யப்பட்டு 1 புத்தகம் 951 தொகுதி 205 முதல் 208 வரையான பக்கங்களில் 1977 ஆம் ஆண்டின் 128 ஆம் எண் ஆவணமாக பதிவு செய்யப்பட்டும், மேற்படி கோவிந்தராஜிப்பிள்ளை மற்றும் ராஜகோபால் பிள்ளை வாரிசுகள் ஆண்டு அனுபவித்து வருகின்றதும், நம்மில் 10வது நபர் துரைக்கண்ணு அவர்கள் நேரிடையாக ஆண்டு அனுபவித்து வருகின்றதும்,

சு. கண்ணய்யப்பன்



1. DDK

2. சண்முகம்

3. ப. சண்முகம்

4. 292

5. ச. சண்முகம்

6. S. Adh

7. S. S. S. S.

8. sseivakumar

9. S. S. S. S.

10. S. S. S. S.

11. S. S. S. S.



தமிழ்நாடு தமிழ்நாடு TAMILNADU

S.பழனிவேல்
For P.சண்முகம்
S.V.வாலாஜாபாத் தமிழ்நாடு
உரிமம் எண்: 7372/81/86 தேதி:

AY 870514

26 NOV 2019



N.சுன்னையப்பன்
சென்னை

-8-

3. புன்செய் சர்வே எண். 280/2- ஏக்கர் 2.41 செண்ட்டில் ஏக்கர் 0.60 செண்ட் நிலமானது நம்மில் 10வது இலக்கமிட்ட நபர் சென்ற 30-03-1977 தேதியில் சுத்தக் கிரையம் பெற்று அந்த பத்திரமானது வாலாஜாபாத் சார்பதிவுகத்தில் தூக்கல் செய்யப்பட்டு 1 புத்தகம் 955 தொகுதி 271 முதல் 273 வரையான பக்கங்களில் 1977 ஆம் ஆண்டின் 690 ஆம் எண் ஆவணமாக பதிவு செய்யப்பட்டும்,
4. புன்செய் சர்வே எண். 280/2- ஏக்கர் 2.41 செண்ட்டில் ஏக்கர் 1.20 செண்ட் நிலமானது நம்மில் 10வது இலக்கமிட்ட நபர் சென்ற 25-05-1985 தேதியில் சுத்தக் கிரையம் பெற்று அந்த பத்திரமானது சாலவாக்கம் சார்பதிவுகத்தில் தூக்கல் செய்யப்பட்டு 1 புத்தகம் 11 தொகுதி 487 முதல் 490 வரையான பக்கங்களில் 1985 ஆம் ஆண்டின் 336 ஆம் எண் ஆவணமாக பதிவு செய்யப்பட்டும்,

ஆக 3, 4 வரிசை எண்கள் கொண்ட நிலங்களானது தற்சமயம் நம்மில் 10வது இலக்கமிட்ட நபர் பெயரில் புன்செய் சர்வே எண். 280/2- எக்டர் 0.97.50 ஏர்ஸ் அல்லது ஏக்கர் 2.41 செண்ட் பூரா பட்டா எண். 268-ல் தூக்கலாகி உள்ளதும்,

சுன்னையப்பன்

1. சி/சு

2. சண்முகம்

6. S. Adhy
S. Babbar

7.

3. ப. ச. ச. ச. ச. ச.

8. S. Sewakumar

9. P. S. S. S. S.

10. P. S. S. S. S.

11. P. S. S. S. S.

1. பத்தகம் 2019 ம் வந்ததில் 1272 ம் ஆவணம்
43 தாள்களைக் கொண்டது
8 வது தாள்



4. 2931 0100

சுன்னையப்பன்



தமிழ்நாடு தமிழ்நாடு TAMILNADU

S.பழனிவேல்
For ப.சண்முகம்

AY 870515

S.V.வாலாஜாபாத் தமிழ்நாடு

உரிமம் எண்: 7372/B1/86 தேதி: 26 NOV 2019

1. கண்ணியப் படை
நிர்நகரம்

-9-

ஆக மேற்கண்ட நிலங்களானது எங்களுக்கு மேற்படி விவரப்படி கிடைத்து நாங்கள் அரசுக்கு செலுத்த வேண்டிய வரிவகையறாக்களை செலுத்திக் கொண்டு இன்றைய தேதிவரை நாங்கள் சர்வசுதந்திரமாய் சகலவிதமான அதிகாரங்களுடன் ஆண்டு அனுபவித்து வருகின்றதும், எங்களது சுவாதீனத்திலும் அனுபவித்திலும் இருந்து வருகின்ற சொத்துக்களாகும். இந்த சொத்து விவரத்தில் கண்ட சொத்துக்களை நாங்கள் இன்று தேதியில் தங்களுக்கு கிரையம் கொடுப்பதாக கிரையம் நிச்சயித்த ரூபாய். 16,11,350/- (எழுத்தால் ரூபாய். பதினாறு இலட்சத்து பதினோராயிரத்து முண்ணூற்று ஐம்பது) மட்டும். மேற்படி கிரையத் தொகையில் ரூபாய் 5,00,000/- (ஐந்து இலட்சம்) மேற்கு தாம்பரம், இந்தியன் வங்கி கிளை காசோலை எண். 151932 மூலமும் மற்றும் ரூபாய் 7,00,000/- (எழுத்தால் ரூபாய் ஏழு இலட்சம்) மேற்கு தாம்பரம், இந்தியன் வங்கி கிளை காசோலை எண். 827222 மூலமும், ரூபாய் 4,11,350/- (எழுத்தால் ரூபாய் நான்கு இலட்சத்து பதினோராயிரத்து முண்ணூற்று ஐம்பது) மேற்கு தாம்பரம், இந்தியன் வங்கி கிளை காசோலை எண். 827240 மூலமும், ஆக மேற்கண்ட கிரையத் தொகை ரூபாய் 16,11,350/-ம் மேற்கண்ட விவரப்படி எங்களது குடும்ப செலவினங்களுக்காக பெற்றுக் கொண்டோம்.

1. 物理

6. S. Adhiz

2. Boubouren

7.

8. y. selvakumar

9. $\int_0^1 x \cos x \, dx$

10. 11. 01

॥ ரஜஸ்வரூபன்

জমি মালিক লিখুন

2. Principles

3686667

4.  15 g of
Phthal

294
5. 5. 5. 5. 5.

1 மீதகம் 2019 ம் வருத்திய 1272ம் ஆணை
43 தாள்களைக் கொண்டுள்ளதால் 311
9 வரு தாள்

294

159-01



தமிழ்நாடு தமிழ்நாடு TAMILNADU

S. பழனிவேல்
For ப.சண்முகம்
S.V.வாலாஜாபாத் தமிழ்நாடு
உரிமம் எண்: 7372/B1/86 தேதி: 26 NOV 2019

AY 870516

ந.கன்னியசபன்
நிர்ணயம்

-10-

செய்துள்ள முயற்சியும் எங்களுக்கு சேர்ந்துவிட்ட படியால் சொத்து விவரத்தில் கண்ட சொத்துக்களை இன்றே தங்களின் சுவாதீனம் செய்துவிட்டோம். இது முதற்கொண்டு தாங்களே கைப்பற்றி தங்களின் பெயரில் பட்டா மாற்றம் செய்து கொண்டு சர்வ சுதந்திரமாய் சகலவித அதிகாரங்களுடன் புத்திர பெளத்திர பாரம்பரியமாய் தானாதி விநியாய விக் கிரையங்களுக்கு உரித்தாய் ஆண்டு அனுபவித்துக் கொள்ள வேண்டியது. இந்த கிரையச்சொத்துக்களின் பேரில் யாதொரு விதமான முன் கலன் அக்கு வில்லங்க தகாதாக்கள், வங்கி கடன்கள், பிறகடன்கள், டைட்டில் வாரிக் தகராறுகள், கோட்பட்டாச் செண்ட், நீதிமன்ற உறுத்துக்கட்டளைகள், ஐப்தி நடவடிக்கைகள், முன்கிரைய உடன்படிக்கைகள், மூல ஆவண வைப்பு உடன்படிக்கைகள், போன்ற எந்தவிதமான வில்லங்க தகாதாக்களும் இல்லை எனவும், அப்படி யாதாகிலும், இருப்பதாக பின்னிட்டு தெரிந்திடினும் அவைகளை நாங்களே முன்னின்று வில்லங்கத்தை தீர்த்து தருகிறோம். இந்த சொத்து விவரத்தில் கண்ட சொத்துக்கள் சம்மந்தமாக பிற்காலத்தில் ஆவணங்கள் ஏதாகிலும் எழுதிக் கொடுக்க வேண்டியிருந்தால் அவற்றையும் எவ்வித பிரதி பலனும் எதிர்பாராமல் எழுதிக் கொடுக்க சம்மதிக்கிறோம். இதுமுதற்கொண்டு இந்த சொத்து விவரத்தில் கண்ட சொத்துக்கள் மீது எங்களுக்கோ, எங்களுடைய வாரிக் களுக்குகோ எவ்வித உரிமையும், பாத்தியதையும், பின்தொடர்ச்சியும் கிடையாது என்று உறுதி கூறுகிறோம்.

1. A.D.R.

6. S. Adhy

S. S. S. S.

7.

8. S. S. S. S.

9. S. S. S. S.

10. S. S. S. S.

11. S. S. S. S.



5. க. ர. ர. ர. ர.



தமிழ்நாடு தமிழ்நாடு TAMILNADU

S.பழனிவேல்
For ப.சண்முகம்

AY 870517

N.சின்னைய்யன்
நிர்வாககர்

S.V.வாலாஜாபாத் தமிழ்நாடு
உரிமம் எண்: 7372/B1/86 தேதி:

26 NOV 2019



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சொத்து விவரம்

காஞ்சிபுரம் மாவட்டம், உத்திரமேரூர் வட்டம், சாலவாக்கம் சார்பதிவகத்தைச் சேர்ந்த
83-ம் எண். சிறுதாழமூர் கிராமத்திய பட்டா எண்கள். 268, 447 மற்றும் 474-ல் அடங்கிய.

வரிசை எண்.	பழைய சர்வே எண்	புதிய சர்வே எண்.	ஏக்கர்- செண்ட்	எக்டர் ஏர்ஸ்	சொத்தின் தன்மை
1	277/1	277/1A	0.40	0.16.0	புன்செய்
2	277/1	277/1D	0.40	0.16.0	புன்செய்
3	277/1	277/1C	0.41	0.16.5	புன்செய்
4	277/1	277/1F	0.38	0.15.5	புன்செய்
5	277/1	277/1E	0.41	0.16.5	புன்செய்
6	277/1	277/1B (277/B)	0.40	0.16.0	புன்செய்
7	280/2	280/2	2.41	0.97.5	புன்செய்
	மொத்தம்		4.81		

சின்னைய்யன் 1. சிபு

6. S. Adhik
S. Sivasan

7.



296

179

8. S. Sivasan

9. S. Sivasan

10. S. Sivasan

11. S. Sivasan



-12-

மேற்படி நிலங்களானது உத்திரமேரூர் ஊராட்சி ஒன்றியத்தைச் சேர்ந்த சிறுதாமூர் ஊராட்சி மன்றத்தின் எல்லைக்குட்பட்டது. மேற்படி சொத்துக்களின் தற்கால சந்தை மதிப்பு ரூபாய். 16,11,350/-தாளக்கூடியது. கிரையம் பெறுபவர்

கிரையம் கொடுப்பவர்கள்

சுன்னையப்பன்

1. சந்திரன்

2. சந்திரன்

3. பச்சையன்

4. சந்திரன்

5. சந்திரன்

6. சந்திரன்

7. சந்திரன்

8. சந்திரன்

9. சந்திரன்

10. சந்திரன்

11. சந்திரன்

சாட்சிகள்:-

S. Suresh Kumar (புருஷோத்தமன்) த/பெ துரைக்கண்ணு எண். 22 பிள்ளையார் கோயில் தெரு, சிறுதாமூர் மதுரா பட்டா வயது 36 ஓட்டுனர் உரிமம் எண். TN2120060006185

K. A. C. P. (அருள்குமார்) த/பெ கன்னியப்பன் எண். 1/60 மாரியம்மன் கோயில் தெரு நீர்குன்றம் கிராமம்,

1	பத்தகம் 2019 ம் வடிகேட்டிய 1272ம் ஆவணம்
43	தாள்களைக் கொண்டு.
12	வது தாள்

பதிவுசெலுவலர்



S. Suresh Kumar
S. SURESH KUMAR,
DOCUMENT WRITER,
L. No: B / 3279 / CGL / 2011,
Salavakkam - 603 107.

சுன்னையப்பன்



-13-

இணைப்பு

இந்திய முத்திரைச் சட்டம் விதி 3(1)ன் கீழ் பத்திரங்களின் மதிப்பை குறைப்பை தடுப்பதற்கான விவரப்பட்டியல் : 83 ஆம் எண் சிறுதாமூர் கிராமம்.

வரிசை எண்.	பழைய சர்வே எண்	புதிய சர்வே எண்.	ஏக்கர்-செண்ட்	எக்டர் ஏர்ஸ்	எழுதிக் கொடுப்பவரின் நடப்புவிடை மதிப்பு ரூபாய்
1	277/1	277/1A	0.40	0.16.0	1,34,000/-
2	277/1	277/1D	0.40	0.16.0	1,34,000/-
3	277/1	277/1C	0.41	0.16.5	1,37,350/-
4	277/1	277/1F	0.38	0.15.5	1,27,300/-
5	277/1	277/1E	0.41	0.16.5	1,37,350/-
6	277/1	277/1B (277/B)	0.40	0.16.0	1,34,000/-
7	280/2	280/2	2.41	0.97.5	8,07,350/-
	மொத்தம்		4.81		16,11,350/-

கிரையம் பெறுபவர்

கிரையம் கொடுப்பவர்கள்

சுன்னையப்பன்

புத்தகம் 2019 ம் வருத்திய 1272 ம் ஆவணம்
 43 இலாகைகள்கொண்டது.
 13 வது தாள்



சுருது

2 சிவசுப்பிரமணியன்

3 பசுபதி

4.  LTJ-அ

5 கிருஷ்ணன்

6 சி.அருண்

7. சி.அருண்

8 s. selvakumar

9. சி.அருண்

10. சி.அருண்

11 ராஜசுப்பிரமணியன்

சுன்னையப்பன்



தமிழக அரசு

வருவாய்த் துறை

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

மாவட்டம் : காஞ்சிபுரம்

வட்டம் : உத்திரமேரூர்

வருவாய் கிராமம் : சிறுதாமூர்

பட்டா எண் : 474

உரிமையாளர்கள் பெயர்

1. குப்ப பிள்ளை மகன் ராஜ கோபால் பிள்ளை -

நன்செய்

புன்செய்

மற்றவை

பரப்பு

தீர்வை

பரப்பு

தீர்வை

பரப்பு

தீர்வை

புல எண்

உட்பிரிவு

ஹெக் - ஏர்

ரூ - பை

ஹெக் - ஏர்

ரூ - பை

ஹெக் - ஏர்

ரூ - பை

277

1A

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--

0 - 16.00

0.30

--

--

277

1D

--

--

0 - 16.00

0.30

--

--

0 - 32.00

0.60

குறிப்பு2 :



1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 03/03/083/00474/40375 என்ற குறிப்பு எண்ணை உள்ளிடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 16-09-2019 அன்று 06:24:44 PM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின் 2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

1 புத்தகம் 2019 ம் வருடத்திய 1272ம் ஆவணம்
43 தாள்களைக் கொண்டது.
114 வலு தான்
பதிவு அலுவலர்



299 ப்பன்



தமிழக அரசு

வருவாய்த் துறை

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

மாவட்டம் : காஞ்சிபுரம்

வட்டம் : உத்திரமேரூர்

வருவாய் கிராமம் : சிறுதாமூர்

பட்டா எண் : 447

உரிமையாளர்கள் பெயர்

1.	கோவிந்தப் பிள்ளை			மகன்	வேளிப் பிள்ளை			-
		நன்செய்		புன்செய்		மற்றவை		
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
புல எண்	உட்பிரிவு	ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	
277	1C	--	--	0 - 16.50	0.30	--	--	
277	1F	--	--	0 - 15.50	0.29	--	--	
				0 - 32.00	0.59			

குறிப்பு2 :



1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 03/03/083/00447/40305 என்ற குறிப்பு எண்ணை உள்ளிடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 16-09-2019 அன்று 06:25:59 PM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின் 2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

1 புத்தகம் 2019 ம் வருத்திய 1272ம் சுவண்ம்
43 தாள்களைக் கொண்டது.
15 வது தாள்

பதிவு அலுவலர்



300

16-Sep-19, 6:26 PM

சுன்னியப் பட்டன்



தமிழக அரசு

வருவாய்த் துறை

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

மாவட்டம் : காஞ்சிபுரம்

வட்டம் : உத்திரமேரூர்

வருவாய் கிராமம் : சிறுதாமூர்

பட்டா எண் : 268

உரிமையாளர்கள் பெயர்

1. ராகவ பிள்ளை மகன் துரைக்கண்ணு பிள்ளை

நன்செய்		புன்செய்		மற்றவை	
பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை
புல எண்	உட்பிரிவு	ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை
277	1E	--	--	0 - 16.50	0.30
277	B	--	--	0 - 16.00	0.30
280	2	--	--	0 - 97.50	1.81
		1 - 30.00	2.41		

குறிப்பு2 :



1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 03/03/083/00268/20316 என்ற குறிப்பு எண்ணை உள்ளிடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 16-09-2019 அன்று 06:14:02 PM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின் 2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

1 புத்தகம் 2019-ம் வருடத்திய 1272ம் ஆவணம்
43 தாள்களாகக் கொண்டது.
16 வது தாள் பதிவு அலுவலர்



சுன்னியப் பட்டி
301

இ.நா.எண் 453/2009/195
 நாள்: 14-8-2009



வட்டாட்சியர் அலுவலகம்
உத்திரமேரூர்.

தமிழ்நாடு அரசு
Government of Tamil Nadu

Form No 6 படிவம் எண்-6
(See Rule.8 விதி 8ஐப் பார்க்க)

DEATH CERTIFICATE - இறப்பு சான்றிதழ்

(Issued Under Section 12/17 -ன் கீழ் வழங்கப்பட்டது.)

This is to certify that the following informations has been taken from the original record of Death which is the register for (Local area) of Taluk **Uthiramerur** of Kanchipuram District of State **Tamil Nadu**.

கீழ்க்கண்ட தகவல்கள் தமிழ்நாடு மாநிலம் கள்ளக்குறிச்சியூர் மாவட்டம் உத்திரமேரூர் வட்டம்
பிஸ்கூபிள் ஹவுஸ் ஸ்டேட் சி.சி. சி.சி.டி

அசல் இறப்பு பதிவேட்டிலிருந்து எடுக்கப்பட்டவை என சான்றிதழ் வழங்கப்படுகின்றது.

Name / பெயர்	:	குராஜ் கிராமால் பிள்ளை
Name of Father / Husband	:	கும்பபிள்ளை
தந்தை / கணவரின் பெயர்	:	
Permanent / நிலையான வீட்டு முகவரி	:	பிஷ்காபுர் கிராமம்
Residential Address	:	
Age / வயது	:	58
Sex / பாலினம்	:	ஆண்
Date of Death / இறந்த தேதி	:	17-2-2001
Place of Death / இறந்த இடம்	:	பிஷ்காபுர்
Registration No / பதிவு எண்	:	1
Date of Registration / பதிவு செய்த தேதி	:	17-2-2001

Date / ଖେତ୍ର :

1. பத்தல் 2019-ம் ஆண்டு 1272-ம் தவணை
43 தாக்கவளங்கொண்டது. dead Quarters Deputy General
17 வது தான் WITHINAMERUR, 1999
Signature of issuing authority
2019 சான்றிதழ் அளியப்பவரின் கையொப்பம்
Seal / முத்திரை

GOVT. HIGH SCHOOL
STETTANUR, P. O. 603 104

பெரிய பூங்கா

ப.மு 3309/2013/அ9
நாள் : - 06 - 2013



வட்டாட்சியர் அலுவலகம்
உத்திரமேரூர்.

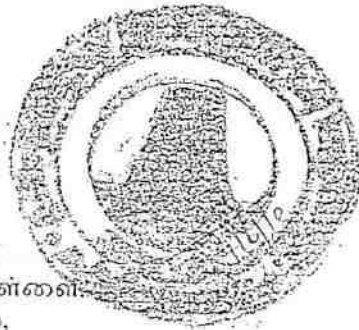


வாரிசு சான்றிதழ்

காஞ்சிபுரம் மாவட்டம், உத்திரமேரூர் வட்டம், எண்.83, சிறுதாழூர் கிராமத்தில் வசித்து வந்த திரு.ராஜகோபால்பிள்ளை த/பெ. குப்பிள்ளை என்பவர் 17-03-2001 அன்று இறந்துவிட்டார். இவருக்கு கீழ்க்கண்ட நபர்கள் வாரிசுதாரர்கள் ஆவார்கள்.

வ எண்	வாரிசுதாரர்கள் பெயர்கள்	வயது	இறந்தவருக்கு உறவுமுறை	திருமண நிலை
1	திருமதி . தேவகி, க/பெ.(லேட்)ராஜகோபால்பிள்ளை.	65	மனைவி	விதவை
2	திரு. சேகர், த/பெ.(லேட்)ராஜகோபால்பிள்ளை.	42	மகன்	திருமணமானவர்
3	திரு. பச்சையப்பன், த/பெ.(லேட்)ராஜகோபால்பிள்ளை.	35	மகன்	திருமணமானவர்
(மூன்று நபர்கள் மட்டும்)				

- குறிப்பு :-
- இறந்தவரின் தாய் திருமதி. அம்தாய் என்பவர் 30 வருடங்களுக்கு முன்பும் இவரது தந்தை திரு.குப்பிள்ளை என்பவர் 40 வருடங்களுக்கு முன்பும் இறந்துவிட்டனர்.
 - இச்சான்று கிராம நிர்வாக அலுவலர் மற்றும் வருவாய் ஆய்வாளர் விசாரணையின் அடிப்படையில் வழங்கப்படுகிறது.
 - இச்சான்று இறந்தவரின் பெயரில் உள்ள பட்டா மாற்றம் மற்றும் மின் இணைப்பு பெயர் மாற்றம் செய்யவும் வழங்கப்படுகிறது.



வட்டாட்சியர் 17/6/2013
உத்திரமேரூர்

பெறுநர் :

திருமதி : தேவகி,
க/பெ.(லேட்)ராஜகோபால்பிள்ளை,
எண்.83, சிறுதாழூர் கிராமம்,
உத்திரமேரூர் வட்டம்,
காஞ்சிபுரம் மாவட்டம்.

RECEIVED
GOVT. HIGH SCHOOL
SEETTANALICHERI-602 048
KANCHI PURAM DIST.

303

சுன்னியப்பன்





இ.சா.எண். 321/2015/48
நாள் : 4/2015



வட்டாட்சியர் அலுவலகம்,
உத்திரமேரூர்.

தமிழ்நாடு அரசு Government of Tamil Nadu

Form No.6 படிவம் எண்.5

(See Rule 8 விதி 8-ஐப் பார்க்க)

DEATH CERTIFICATE இறப்புச் சான்றிதழ்

(Issued Under Section 12/17 ன் கீழ் வழங்கப்பட்டது)

This is certify that the following information has been taken from the original record of Death which is the register for (local area) of Taluk Uthiramerur of Kancheepuram district of state Tamil Nadu

கீழ்க்கண்ட தகவல்கள் தமிழ்நாடு மாநிலம், காஞ்சிபுரம் மாவட்டம், உத்திரமேரூர் வட்டம், ஊரைச் சேர்ந்த 2015 ஆம் ஆண்டு அசல் இறப்பு பதிவேட்டிலிருந்து எடுக்கப்பட்டவை என சான்றிதழ் வழங்கப்படுகிறது.

Name / பெயர்	:	சேகர்
Name of Father / Husband	:	ராஜசேகரபாள்
Permanent / நிலையான முகவரி	:	83. திருதாழிர்
Age / வயது	:	45
Sex / பாலினம்	:	ஆண்
Deate of Death / இறந்த தேதி	:	16.06.2014
Place of Death / இறந்த இடம்	:	பரவாற்றில் கி.மீ. 88. திருதாழிர்
Registration No / பதிவு எண்	:	1
Date of Registration / பதிவு செய்த தேதி	:	26.02.2015
Date / தேதி	:	20/4/15

1 பத்தகம் 2019 ம் வருத்திய 1272ம் சுவணம்
43 தாள்களாகக் கொண்டது.
19 வது தாள்

பதிவு அலுவலர்

304

சான்றிதழ் அளிப்பவன்/வளர்ச்சி
Seal of the Registrar
Uthiramerur

No disclosure shall be made of particulars regarding the cause of death as entered in the Form

புறப்படும் பதிவுகள், இறப்பின் காரணம்

சாண் விபப்பன்

ப.மு.3927/2015/அ.4
நாள்.19-08-2015.



வட்டாட்சியர் அலுவலகம்,
உத்திரமேரூர்.

வாரிக் சான்று

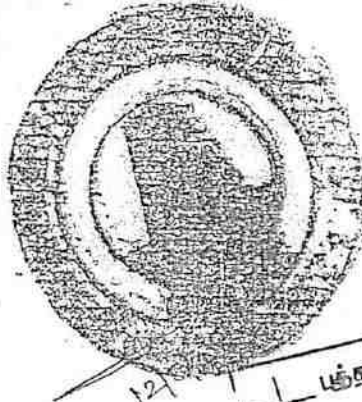
காஞ்சிபுரம் மாவட்டம், உத்திரமேரூர் வட்டம், நெ.83,கிறுதாழிர் கிராமத்தைச் சார்ந்த திரு.சேகர் த/பெ (லேட்) ராஜகோபால் என்பவர் 16.06.2014 அன்று இறந்துவிட்டார். அவருக்கு கீழ்க்கண்ட நபர்கள் வாரிகதாரர்கள் என சான்றளிக்கப்படுகிறது.

வ எண்	வாரிகதாரர்கள் பெயர்	வயது	இறந்தவருக்கு உறவுமுறை	திருமண நிலை
1	திருமதி.காமாட்சி க/பெ.(லேட்)சேகர்	37	மனைவி	விதவை
2	செல்வி.ஆதிலட்சுமி த/பெ.(லேட்)சேகர்	18	மகன்	மைனர்
3	செல்வன்.பூபாலன் த/பெ.(லேட்)சேகர்	17	மகன்	மைனர்
4	செல்வன்.செல்வகுமார் த/பெ.(லேட்)சேகர்	12	மகன்	மைனர்
5	திருமதி.தேவகியம்மாள் க/பெ.(லேட்)ராஜகோபால்	55	தாய்	விதவை
(இந்து நபர்கள் மட்டும்)				

- குறிப்பு :-
1. இறந்தவரின் தந்தை திரு.ராஜகோபால் என்பவர் 17.03.2001 அன்று இறந்துவிட்டார்.
 2. இச்சான்று கிராம நிர்வாக அலுவலர் மற்றும் வருவாய் ஆய்வாளர் விசாரணையின் அடிப்படையில் வழங்கப்படுகிறது.
 3. இச்சான்று இறந்தவரின் பெயரில் உள்ள சொத்துக்கள் பட்டா மாற்றம், மின் இணைப்பு பெயர் மாற்றம் மற்றும் வங்கி கணக்கு பெயர் மாற்றம் செய்ய வழங்கப்படுகிறது.

பெறுநர் :-

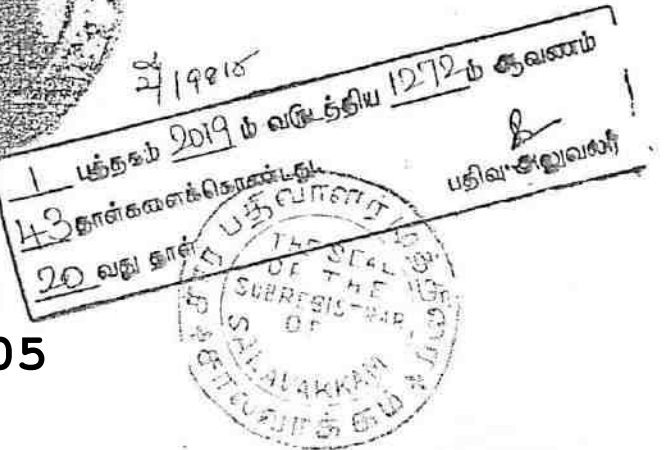
திருமதி.காமாட்சி
க/பெ.(லேட்)சேகர்
நெ.83,கிறுதாழிர் கிராமம்
உத்திரமேரூர் வட்டம்
காஞ்சிபுரம் மாவட்டம்.



வட்டாட்சியர்,
உத்திரமேரூர்.

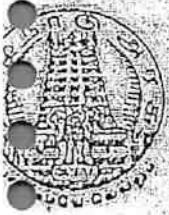
சுன்னி மயப்பதி

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மே 115 / 2012
மே 115 / 2012

படிவம் - 6 /



தமிழ்நாடு அரசு
Government of Tamilnadu
Department of Registration பதிவுத் துறை



DEATH CERTIFICATE - இறப்புச் சான்றிதழ்

(Issued under Section 12/17 of the Registration of Birth and Death Act, 1969 and Rule 8 of Tamilnadu Registration of Birth and Death Rules, 2000)

This is to certify that the following information has been taken from the original record of Death which is the register for (local area)

of Taluk of

District of State

தேசம் மாநிலம்

தகவல்கள் மாநிலம்

மேற்கண்ட வட்டம்

இறப்புப் பதிவேட்டிலிருந்து எடுக்கப்பட்டவை எனச் சான்றிதழ் வழங்கப்படுகின்றது.

Name / பெயர்

Name of Father / Husband

தந்தை/ கணவரின் பெயர்

Permanent Residential Address

நிலையான வீட்டு முகவரி

Age / வயது

Sex / பாலினம்

Date of Death / இறந்த தேதி

Place of Death / இறந்த இடம்

Registration No. / பதிவு எண்

Date of Registration / பதிவு செய்த தேதி

(True Extract / உண்மை வடிவம்)

Corrections / திருத்தம்:

Copy prepared by / நகல் தயாரித்தவர்:

Examined by / Reader / படித்தவர்:

ஆய்வு செய்தோர் Examiner / ஆய்வாளர்:

சார் பதிவாளர் அலுவலகம்

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சான்றிதழ்

சான்றிதழ்

சான்றிதழ்



ப.மு. 634/2014/அ.4
நாள்: 18-03-2014.



வட்டாட்சியர் அலுவலகம்,
உத்திரமேரூர்.

வாரிசு சான்றிதழ்

காஞ்சிபுரம் மாவட்டம், உத்திரமேரூர் வட்டம், நெ.83, சிறுதாழூர் மதுரா பட்டா கிராமத்தைச் சார்ந்த திரு.கோவிந்தராஜிப் பிள்ளை த/பெ குப்புப் பிள்ளை என்பவர் 02.03.1986 அன்று இறந்துவிட்டார். இவருக்கு கீழ்க்கண்ட நபர்கள் வாரிசுதாரர்கள் என சான்று அளிக்கப்படுகிறது.

வ. எண்	வாரிசுதாரர்கள் பெயர்	வயது	இறந்தவருக்கு உறவுமுறை	திருமண நிலை
1	திருமதி. எல்லம்மாள், க/பெ. (லேட்) கோவிந்தராஜிப் பிள்ளை.	73	மனைவி	விதவை
2	திருமதி. சரசு, க/பெ. துரைக்கண்ணு.	48	மகள்	திருமணமானவர்
3	திரு. வேளியப்பன், த/பெ. (லேட்) கோவிந்தராஜிப் பிள்ளை.	53	மகன்	திருமணமானவர்
4	திருமதி. பச்சையம்மாள், க/பெ. எல்லப்பன்.	38	மகள்	திருமணமானவர்
(நான்கு நபர்கள் மட்டும்)				

- குறிப்பு :-
1. இறந்தவரின் தாய், தந்தை இருவரும் சுமார் 40 வருடங்களுக்கு முன்பு இறந்துவிட்டனர்.
 2. இச்சான்று கிராம நிர்வாக அலுவலர் மற்றும் வருவாய் ஆய்வாளர் விசாரணையின் அடிப்படையில் வழங்கப்படுகிறது.
 3. இச்சான்று இறந்தவரின் பெயரில் உள்ள சொத்து பட்டா மாற்றம், மின் இணைப்பு பெயர் மாற்றம் மற்றும் வங்கி கணக்கு பெயர் மாற்றம் செய்யவும் வழங்கப்படுகிறது.

பெறுநர்:

திரு. வேளியப்பன்,
த/பெ. (லேட்) கோவிந்தராஜிப் பிள்ளை,
நெ.83, சிறுதாழூர் மதுரா பட்டா கிராமம்,
உத்திரமேரூர் வட்டம்,
காஞ்சிபுரம் மாவட்டம்.

வட்டாட்சியர்,
உத்திரமேரூர்.

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சுன்னையப்பன்





இ.சா.எண். 612/2015/அ12
நாள் : 31/8/2015



வட்டாட்சியர் அலுவலகம்,
உத்திரமேரூர்.

தமிழ்நாடு அரசு

Government of Tamil Nadu

Form No.6 படிவம் எண்.5

(See Rule 8 விதி 8-ஐப் பார்க்க)

DEATH CERTIFICATE இறப்புச் சான்றிதழ்

(Issued Under Section 12/17 ன் கீழ் வழங்கப்பட்டது)

This is certify that the following information has been taken from the original record of Death which is the register for (local area) of Taluk

Uthiramerur of Kancheepuram district of state Tamil Nadu

கீழ்க்கண்ட தகவல்கள் தமிழ்நாடு மாநிலம், காஞ்சிபுரம் மாவட்டம், உத்திரமேரூர் வட்டம், . சிறுதருர் ஊரைச் சேர்ந்த 2015 ஆம் ஆண்டு அசல் இறப்பு பதிவேட்டிலிருந்து எடுக்கப்பட்டவை என சான்றிதழ் வழங்கப்படுகிறது.

Name / பெயர்	:	சிவலிங்கன்
Name of Father / Husband	:	சேனவிந்தராத் பிள்ளை
Permanent / நிலையான முகவரி	:	புலிபுத்தூர்
Age / வயது	:	75
Sex / பாலினம்	:	புணர்
Deate of Death / இறந்த தேதி	:	5.8.2015
Place of Death / இறந்த இடம்	:	புலிபுத்தூர்
Registration No / பதிவு எண்	:	8
Date of Registration / பதிவு செய்த தேதி	:	17.8.2015

Date / தேதி :

1 முதல் 2019 ம் வருத்திய 1272 ம் ஆவரம்
43 தாள்கள்கொண்டது.
23 வது தாள்

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சுன்னியப் பன்



आयकर विभाग
INCOME TAX DEPARTMENT
KANNIYAPPAN N
NARAYANAN
06/10/1950
 Permanent Account Number
DXSPK5378D
N. Narayanan
 Signature

In case this card is lost / found, kindly inform / return to :
 Income Tax PAN Services Unit, UTHITSL
 Plot No. 3, Sector 11, CBD Belapur,
 Navi Mumbai - 400 614.
 इस कार्ड के खोने/पाने पर कृपया सूचित करें/लौटवा दें
 आयकर पैन सेवा यूनिट, UTHITSL
 प्लॉट नं: 3, सेक्टर 11, सी.बी.डी. बेलपुर,
 नवी मुंबई-400 614.

1. முதகம் 2019 ம் வருத்திய 1272ம் ஆவணம்
 2. தாள்களைக் கொண்டு
 24 வது தாள்
 பதிவுசெலுவல்



சுண்ணாம்பு

சுண்ணாம்பு

**ELECTION COMMISSION OF INDIA
IDENTITY CARD**

இந்தியத் தேர்தல் ஆணையம்
அடைமான அட்டை

TN/05/025/0316402



Elector's Name : Kanniyappan
வாக்காளரின் பெயர் : கன்னியப்பன்
Father / Mother /
Husband's Name : Narayanan
தந்தை/தாய்/கணவர் : நாராயணன்
பெயர்
Sex / பாலினம் : Male / ஆண்
Age as on 1.1.1996 : 40
1.1.1996 அன்று வயது : 40

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Address / முகவரி :
41 Neerkunram Village & Harijana Colony
Aanambakkam (P)
Uthiramerur (Tk)
Kancheepuram (Dt)

41 நீர்குன்றம் கிராமம் மற்றும் அரிஜனக் காலனி
ஆனம்பாக்கம் (ஊ)
உத்திரமேரூர் (வ)
காஞ்சிபுரம் (ம)

[Handwritten signature]

Facsimile Signature of the Electoral Registration Officer
for 025 - Uthiramerur Assembly Constituency

025 - உத்திரமேரூர்
உத்திரமேரூர் தொகுதிக்கு
அதிக்களியின் கல்வியுறுப்பினராகப் பதிவு

Place : Kancheepuram
இடம் : காஞ்சிபுரம்
Date / தாள் : 01.10.1998

This Card may be used as an Identity Card
under different Government Schemes.

இந்த அட்டையை அரசின் பல்வேறு திட்டங்களின்
கீழ் அடைமான அட்டையாகப் பயன்படுத்தலாம்.

சுன்னியப்பன்

1 புத்தகம் 2019 ம் வருத்திய 1272ம் ஆவணம்
43 தாள்களைக் கொண்டது.
25 வது தாள்

பதிவு ஆலுவலர்



சுன்னியப்பன் 310



ELECTION COMMISSION OF INDIA
IDENTITY CARD

இந்தியத் தோதல் ஆகாணயம்
அடையாள அட்டை

7M/05/025/0316003/



Elector's Name	: Sarasu
வாக்குமையிலில் பெயர்	: சரசு
Father / Mother / Husband's Name	: Duraiskannu
தந்தை/தாய்/கணவர் பெயர்	: துரைசகன்ணு
Sex / பாலினம்	: Female / பெண்
Age as on 1.1.1995	
1.1.1985 அன்று வயது	32

ഭൂമി: 253 | ഗോപാലി:

29. Sridhanur Village & Colony
Anambakkam (P)
Uthiramerur (Tk)
Kanchipuram (Dt)

29 வினாக்கள்: கிராமம் மற்றும் காவனி
ஆணைப்பாடகம் (ஊ)
உத்திரமேரூர் (வ)
காஞ்சிபுரம் (மா)

Facsimile Signature of the Electoral Registration Officer
for 025 - Uthiramerur Assembly Constituency

025 - உத்திரமேரூர்
சட்டமன்றத் தொகுதிக்கான வாக்குகள்ளிப்பதிஸ்
அதிகாரியின் கையொப்ப முத்திரை

Place : Kancheepuram
இடம் : காஞ்சிபுரம்
Date / நாள் : 01.10.1998

This Card may be used as an Identity Card under different Government Schemes.

இந்த அட்டைகளை அரசின் பஸ்கோறு திட்டங்களின் கீழ் அடைபாள் அட்டைப்பாசு பயன்படுத்தலாம்.

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1 ஆகஸ்ட் 2019 ம் வருடத்திய 1272 ம் சுவணம்
43 தாள்களைக் கொண்டது.
26 வது தாள் பதிவுசூலுவலி



ELECTION COMMISSION OF INDIA
IDENTITY CARD

இந்தியத் தேர்தல் ஆணையம்
வாக்காளர் அடையாள அட்டை
KBT1494327



Elector's Name Veniappan
வாக்காளர் பெயர் வெனியப்பன்
Father's Name Govindaraj
தந்தை பெயர் கோவிந்தராஜ்
Sex / பாலினம் Male ஆண்
Age as on 1.1.1999 41
11/1999 அன்று வயது

Address: 61
Sriratham Colony
Sriratham
Anandakkam
KANCHIPURAM - 603107
முகவரி 61
சீரத்தம் கிராமம் மற்றும் அனாக்கம்
கிராமம் (உள்)
ஆனந்தக்கம்
காஞ்சிபுரம் - 603107

Facsimile Signature of Electoral Registration Officer

காஞ்சிபுரம் பதிவு ஆட்சிதரமின் அலுவலர் முத்திரை
For 025 - Uthiramerur
Assembly Constituency

025 - உத்திரமேரூர்
சட்டமன்ற தொகுதி

Place KANCHIPURAM
இடம் காஞ்சிபுரம்
Date / தேதி : 12.8.2000

This card may be used as an identity card
under different Government Schemes



Handwritten signature

1 புத்தகம் 2019 ம் வருடத்திய 1272ம் ஆவணம்
43 தாள்களைக்கொண்டது.
27 வது தாள் பதிவு ஆலுவலர்





இந்திய அரசாங்கம்
Government of India

வேலியப்பன் கேள்
Veliappan G
பிறந்த நாள்/DOB: 19/01/1960
ஆண்/ MALE

3415 8787 5829
VID: 9128 4951 0973 9086

எனது அடையாளம், எனது அடையாளம்

இந்திய அடையாளம், அடையாளம்
Unique Identification Authority of India

முகவரி:
S/O Govindaraj Pillai, 1/783, 3வது
குறுக்கு தெரு, வெங்கடேஸ் நகரம், ஒட்டன்
தூரப்பக்கம், கங்கேரூர்.
தமிழ் நாடு - 600097

Address:
S/O Govindaraj Pillai, 1/783, 3rd Cross
Street, Venkateswara Nagar, Oggian
Thuraiyakkam, Kancheepuram,
Tamil Nadu - 600097

3415 8787 5829
VID: 9128 4951 0973 9086

1 டிசம்பர் 2019 ல் வருத்திய 1272ம் சீலணம்
43 நாள் கவனிக்கொண்டது.
28 வது நாள்
பதிவு செய்யப்பட்டது



சுண்ணாம்பு 313



ELECTION COMMISSION OF INDIA
IDENTITY CARD
இந்திய தேர்தல் ஆணையம்
பெயர் அடையாள அட்டை
TN/05/024/0075824

DUPLICATE

Elector's Name: Pachaiyammal
வாக்குரிமை பெற்றவர்: பச்சையம்மாள்
Relation's Name: Chellaperumal
உறவினர் பெயர்: செல்வபெருமாள்
Sex / பாலினம்: female / பெண்
Age as on 1.1.2006: 34
1.1.2006 ஆவது வயது: 34

TN/05/024/0075824

Address: 15
Ward 1 Kanchipuram kollat
Address: 15
Ward 1 Kanchipuram kollat
Village: 15
Ward 1 Kanchipuram kollat
Post: 603315
கிராமம்: 15
வார்ட்: 1
பஞ்சாயத்து: கஞ்சிபுரம் கல்லாட்டி
பி.சே.பி. (எம்):
பி.சே.பி.பெட்டி: 603315

Facsimile Signature of Elector / Registration Officer
காணொலிப் பதிவு செய்துள்ள தேர்தல் அதிகாரி
For 024 - Araniapakkam
Assembly Constituency
024 - அரணியபக்கம்
சட்டமன்றத் தொகுதி

Place: Madurantakam
இடம்: மதுரந்தகம்
Date / நாள்: 30/04/2005
This card may be used as an Identity Card
under different Government Schemes.
இந்த அட்டை வெவ்வேறு அரசுத் திட்டங்களுக்கு
பயன்படுத்தப்படும் அடையாள அட்டையாகப்
பயன்படுத்தப்படும்.

25/12/05

பச்சையம்மாள்

1 பத்தகம் 2019 ம் வருடத்திய 1272ம் ஆவணம்
43 தாள்களைக் கொண்டது.
29 வது தாள்
பதிவு ஆவணம்



-287-



**ELECTION COMMISSION OF INDIA
IDENTITY CARD**

இந்தியத் தேர்தல் ஆணையம்
அடையாள அட்டை

TN/05/025/0316144



Elector's Name : Devaki
வாக்காளரின் பெயர் : தேவகி
Father / Mother /
Husband's Name : Rajagopal
தந்தை/தாய்/கணவர்
பெயர் : இராஜகோபால்
Sex / பாலினம் : Female / பெண்
Age as on 1.1.1995 : 48
1.1.1995 அன்று வயது : 48

Address / முகவரி :
191 Sirudhamur Village & Colony
Aanambakkam (P)
Uthiramerur (Tk)
Kancheepuram (Dt)

191 சிறுதாழூர் கிராமம் மற்றும் காலனி
ஆனம்பாக்கம் (ஊ)
உத்திரமேரூர் (வ)
காஞ்சிபுரம் (மா)

[Handwritten Signature]

Facsimile Signature of the Electoral Registration Officer
for 025 - Uthiramerur Assembly Constituency

025 - உத்திரமேரூர்
சட்டமன்றத் தொகுதிக்கான வாக்காளர் பதிவு
அதிகாரியின் கையொப்ப முத்திரை

Place : Kancheepuram
இடம் : காஞ்சிபுரம்
Date / நாள் : 01.10.1998

This Card may be used as an Identity Card
under different Government Schemes.

இந்த அட்டையை அரசின் பல்வேறு திட்டங்களின்
கீழ் அடையாள அட்டையாகப் பயன்படுத்தலாம்.

[Handwritten Signature]

1 புத்தகம் 2019ம் வருடத்திய 1272ம் சுவணம்
43 தாள்களைக் கொண்டது.
30 வது தாள் பதிவுச் சுவணம்



[Handwritten Signature]

-281-



இந்திய அரசாங்கம்
Government of India

காமாட்சி செ
Kamatchi S



பிறந்த நாள் / DOB: 01/01/1973
பாலினம் / Female

7352 2317 1596



ஆதார் - சாதாரண மனிதனின் அதிகாரம்



இந்திய தனிப்பட்ட அடையாள ஆணைய அமைப்பு
Unique Identification Authority of India

முகவரி: காவலர் பெயர் செக், 162
பிள்ளையார் கோவில் தெரு, திருமுகுடல்
திருமுகுடல், திருமுகுடல்
தமிழ் நாடு 631606

Address: W/O: Sekar, 162,
pillyar koil Street,
SIRUDAMUR, SIRUDAMUR,
Thirumukkudal,
Kancheepuram,
Thirumukkudal, Tamil Nadu,
631606

7352 2317 1596

1947
1800-500 1947

help@uidai.gov.in

www.uidai.gov.in

காண்க

1	புகை 2019 ம் வருடதய 272 ம் ஆவணம்
43	தாக்கவளங்கொண்டது.
31	வரு தாள்
	பதிவுசெய்தவன்



316

பதிவுசெய்தவன்

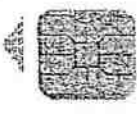
-293-



UNION OF INDIA Driving Licence (Tamil Nadu)

DL No TN21 20190003663

VT



Date of Issue

03-09-2019

Valid Till

01-06-2038



Name
BOOBALAN S

Date of Birth

02-06-1998

Blood Group

O+



Son/Daughter - Wife of
SEKAR R

NDG/2742/6

TN21 20190003663



LMV

03-09-2019



MCWG

03-09-2019

Badge Date

Badge No.

Address

162

PILLAIYAR KOIL STREET SIRUDAMUR VILLAGE THIRUMUKKU
UTHIRAMERUR T K, KANCHEEPURAM, TN 631606

Holder's Signature

Signature of Issuing Authority

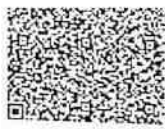
TN21 KANCHEEPURAM RTO

Boobalan S

1 புத்தகம் 2019 ம் வருடத்திய 272ம் ஆவணம்
43 தாள்களைக் கொண்டது.
33 வது தாள் பதிவுச் சீலுவவர்



318 ஈன் ஈயப் பன்



உங்கள் ஆதார் எண் / Your Aadhaar No. :
9825 1160 7701

ஆதார் - சாதாரண மனிதனின் அதிகாரம்



இந்திய அரசாங்கம்

Government of India

செல்வகுமார் சேகர்
Selvakumar Sekar



பிறந்த நாள் / DOB: 15/02/2000
ஆண் / Male

9825 1160 7701



ஆதார் - சாதாரண மனிதனின் அதிகாரம்

பருவகாலத்தால் அரசு மற்றும் அரசு சாரா சேவைகளை பயன்படுத்திக் கொள்ள ஆதார் உதவிகரமாக இருக்கும் .
Aadhaar is valid throughout the country.
Aadhaar will be helpful in availing Government and Non-Government services in future.



இந்திய ஒப்பீட்டு அமைப்பின் ஆணைய அமைப்பு
Unique Identification Authority of India

முகவரி: தந்தை / தாய் பெயர்: சேகர்
மாரியம்மன் கோவில் தெரு, சிறுதாமூர்
திருமுக்குடல், திருமுக்குடல்
காஞ்சிபுரம், தமிழ் நாடு, 631606

Address: S/O: Sekar,
MARIYAMMAN KOIL
STREET, SIRUDAMOOR,
Thirumukkudal,
Thirumukkudal,
Kancheepuram, Tamil Nadu,
631606

9825 1160 7701

1547
1800 300 1547

help@uidai.gov.in

www.uidai.gov.in

S. Selvakumar

1 டிசம்பர் 2019 ம் வருடத்திய 1272 ம் சேவணம்
43 நாட்களைக் கொண்டது.
34 வது நாள்
பதிவு செய்யப்பட்டது





Government of India



AADHAAR

தகவல்

- ஆதார் அடையாளத்திற்கான சான்று குடியரிமைக்கு அல்ல.
- அடையாள சான்றை இணையதளம் மூலம் உறுதிப்படுத்திக் கொள்ளவும்.

INFORMATION

- Aadhaar is proof of identity, not of citizenship.
- To establish identity, authenticate online.

- ஆதார் நாடு முழுவதிலும் செல்லுபடியாகும்.
- வருங்காலத்தில் அரசு மற்றும் அரசு சாரா சேவைகளை பயன்படுத்திக் கொள்ள ஆதார் உதவிகரமாக இருக்கும்.
- Aadhaar is valid throughout the country.
- Aadhaar will be helpful in availing Government and Non-Government services in future.



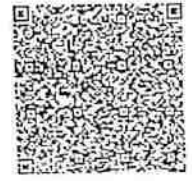
பதிவு அடையாளம் / Enrollment No. : 2043/88311/00557

To
Pachaiyappan R
பச்சையப்பன் ரா
S/O: Rajagopal
1
PILLAIYAR KOVIL STREET
siruthamoor
Thirumukkudal
Thirumukkudal, Kancheepuram
Tamil Nadu - 631606



KH405567902FT

40556790



உங்கள் ஆதார் எண் / Your Aadhaar No. :

4298 2958 0823

ஆதார் - சாதாரண மனிதனின் அதிகாரம்



பிறந்த தாள் : DOB: 10/02/1976
ஆண் / Male

4298 2958 0823



இந்திய அடையாள அமைப்பு
Unique Identification Authority of India

முதலி தந்தை : தாய் பெயர்:
ராஜகோபால், 1, பிள்ளையார் கோவில் தெரு
சிறுதாமூர், திருமுகுடல்
திருமுகுடல், காஞ்சிபுரம்
தமிழ் நாடு, 631606

Address: S/O: Rajagopal, 1,
PILLAIYAR KOVIL STREET,
siruthamoor, Thirumukkudal,
Thirumukkudal,
Kancheepuram, Tamil Nadu,
631606

4298 2958 0823

ஆதார் - சாதாரண மனிதனின் அதிகாரம்



help@uidai.gov.in

www.uidai.gov.in

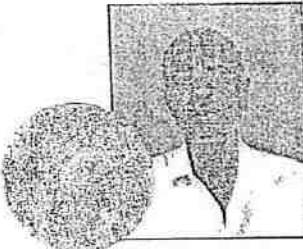
1 பத்தகம் 2019 ம் வருடத்திய 11 25 சூவணம்
43 தாள்களைக்கொண்டது.
35 வது தாள்
பதிவு: சிலுவலர்

சுன்னியப்பன்



ELECTION COMMISSION OF INDIA
IDENTITY CARD

இந்தியத் தேர்தல் ஆணையம்
வாக்காளர் அடையாள அட்டை
KBT1495027



Elector's Name : Duraikannu
வாக்காளர் பெயர் : துரைக்கண்ணு
Father's Name : Raghavan
தந்தை பெயர் : ராகவன்
Sex / பாலினம் : Male / ஆண்
Age as on 1.1.1999 : 45
11.1999 அன்று வயது

Address : 23
Siruthamur Colony
Siruthamur
Anambakkam
KANCHIPURAM - 603107
முகவரி : 29
சிறுதாமூர் கிராமம் மற்றும் காலனி
சிறுதாமூர் (ஊ)
ஆனம்பாக்கம்
காஞ்சிபுரம் - 603107

(Handwritten signature)

Facsimile Signature of Electoral Registration Officer
வாக்காளர் பதிவு அதிகாரியின் கையொப்ப முத்திரை

For 025 - Uthiramerur
Assembly Constituency
025 - உத்திரமேரூர்
சட்டமன்ற தொகுதி

Place : KANCHIPURAM
இடம் : காஞ்சிபுரம்

Date / நாள் : 13.6.2000

This card may be used as an Identity Card
Under different Government Schemes.

இந்த அட்டையை அரசின் பல்வேறு திட்டங்களின்
தீர்மானப்படி அடையாள அட்டையாக பயன்படுத்தலாம்.



(Handwritten signature)

1 பந்தம் 2019 ம் வருத்திய 1272ம் சுவணம்
43 தூங்குகைக்கொண்டது.
36 வது தான்
பதிவுசெய்தவர்



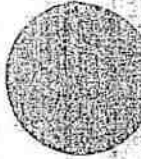
(Handwritten signature)



ELECTION COMMISSION OF INDIA
IDENTITY CARD

இந்தியத் தேர்தல் ஆணையம்
அட்டையான அட்டை

TW/05/025/0316125



Elector's Name : Jayaraman
வாக்குகளில் பெயர் : ஜெயராமன்
Father / Mother /
Husband's Name : Raghavan
தந்தை/தாய்/கணவர் : ராகவன்
பெயர் :
Sex / பாலினம் : Male / ஆண்
Age as on 1.1.1995 : 32
1.1.1995 அன்று வயது : 32

Address / முகவரி :
30 Shreeharur Villages & Colony
Aranthakulam (P)
Uthiramerur (T)
Kanchipuram (D)
30 சிறுதாழூர் கிராமம் மற்றும் காலனி
ஆனந்தகும் (ப)
உத்திரமேரூர் (த)
கங்கிபுரம் (ம)

Facsimile Signature of the Electoral Registration Officer
for 025 - Uthiramerur Assembly Constituency

025 - உத்திரமேரூர்
சட்டமன்றத் தொகுதிக்கான வாக்குகள் பதிவு
அதிகாரியின் கையொப்ப முத்திரை

Place : Kanchipuram
இடம் : கங்கிபுரம்
Date / நாள் : 01.03.1995

This Card may be used as an Identity Card
under different Government Schemes.

இந்த அட்டையை அரசின் பல்வேறு திட்டங்களில்
கீழ் அட்டையான அட்டையாகப் பயன்படுத்தலாம்.

ஜெயராமன்

1 பத்தகம் 2019 ம் வருடத்திய 1212ம் ஆவணம்

43 நாள் கணக்கொண்டது.

37 வது நாள்

பதிவுசெய்தவர்



சு. க. சாயப்பன்

 <p>TN21 2006 0006185</p> <p>27-12-2006</p> <p>20-05-1983</p> <p>PURUSHOTHAMAN D</p> <p>DURAIKANNU</p>		 <p>TN21 2006 0006185</p> <p>27-12-2006</p> <p>20-11-2018</p> <p>TN21 DLR/6006722/2018</p> <p>NO. 22 MELAKKAR NILL STREET PATTI PURUSHOTHAMAN KANDIGAI, DURAIPURAM</p>		 <p>8070</p> <p>01923/2005/1421</p> <p>27-12-2006</p> <p>20-11-2018</p> <p>TN21 DLR/6006722/2018</p> <p>NO. 22 MELAKKAR NILL STREET PATTI PURUSHOTHAMAN KANDIGAI, DURAIPURAM</p>
--	--	---	--	--

Purushothaman

1 புத்தகம் 2019 ம் வருத்திய 1272 ம் சுவணம்
 43 தாள்களைக் கொண்டது.
 38 வது தாள்
 பதிவுசெலுவலர்





இந்திய அரசாங்கம்
Government of India

க. கன்னியப்பன் K.
Kannappan K.
பெற்ற நாள்/DOB: 01/06/1986
ஆண்/MALE

9942 5320 3152
VID: 91 98 9290 0072 7917

எனது ஆதாரம் எனது அடையாளம்

இந்திய அரசாங்கம்
Unique Identification Authority of India

முகவரி:
S/O கன்னியப்பன் தா, 45, மரியம்மன் கோல்
ஸ்ட்ரீட், நேர்குண்டம், கங்கேசுபுரம்,
தமிழ் நாடு - 603107

Address:
S/O Kanniyappan N, 45, MARIYAMMAN KOIL
STREET, Neerkundram, Kanchipuram,
Tamil Nadu - 603107

9942 5320 3152
VID: 91 98 9290 0072 7917

K. A P

1 பதற்கம் 2019 ம் வருத்திய 1272ம் சுவணம்
43 தாள்களைக்கொண்டது.
39 வது தாள் பதிவு செய்யுமல்



1899ம் ஆண்டு இந்திய முத்திரைச் சட்டம் 42வது பிரிவின் கீழான சான்று

2019ம் ஆண்டு வரிசை எண் 391

எண். 1/60 மாரியம்மன்கோயில் தெரு, நீர்க்குன்றம், உத்திரமேரூர், காஞ்சிபுரம், தமிழ்நாடு, இந்தியா, 603107-ல் வசிக்கும் திரு கன்னியப்பன் என்பவரிடமிருந்து ₹ 1,01,797/- (ரூபாய் ஒரு இலட்சத்து ஆயிரத்து எழுநூற்று தொண்ணூற்றேழு மட்டும்) இந்த ஆவணத்திற்காக இந்திய முத்திரைச் சட்டம் 41வது பிரிவின் படி குறைவாயிருந்த முத்திரைக் கட்டணம் வசூலிக்கப்பட்டது என நான் இதன் மூலம் சான்றளிக்கிறேன்.

சார்பதிவாளர் : சாலவாக்கம்

நாள்: 28/11/2019

சார்பதிவாளர் மற்றும் இந்திய முத்திரைச் சட்டம் பிரிவு
41ன் படி ஆட்சியர்

2019 ஆம் ஆண்டு நவம்பர் மாதம் 28ம் தேதி பி.ப. 03:45 மணியளவில் சாலவாக்கம் சார்பதிவாளர் அலுவலகத்தில் தாக்கல் செய்து கட்டணம் ₹ 65,041/- செலுத்தியவர்.

இடது பெருவிரல்



கன்னியப்பன்

கூடுதல் விவரங்கள் ஆவண வாசகத்தில் உள்ளபடி

எழுதிக் கொடுத்ததாக ஒப்புக் கொண்டவர்
இடது பெருவிரல்

சரசு

கூடுதல் விவரங்கள் ஆவண வாசகத்தில் உள்ளபடி

எழுதிக் கொடுத்ததாக ஒப்புக் கொண்டவர்
இடது பெருவிரல்

1 புத்தகம் 2019 ம் வருத்திய 1272ம் ஆவணம்
43 நாள் கணக்கொண்டது.
40 வது நாள்

சாலவாக்கம்

கூடுதல் விவரங்கள் ஆவண வாசகத்தில் உள்ளபடி



எழுதிக் கொடுத்ததாக ஒப்புக் கொண்டவர்
இடது பெருவிரல்



பஞ்சவர்ணம்

கூடுதல் விவரங்கள் ஆவண வாசகத்தில் உள்ளபடி

எழுதிக் கொடுத்ததாக ஒப்புக் கொண்டவர்
இடது பெருவிரல்



டா. இ. ஜி
உ. குமார்

கூடுதல் விவரங்கள் ஆவண வாசகத்தில் உள்ளபடி

எழுதிக் கொடுத்ததாக ஒப்புக் கொண்டவர்
இடது பெருவிரல்



1 பத்தகம் 2019 ம் வருடத்தில் 1272ம் ஆவணம்
43 தாள்களைக் கொண்டது.
41 வது தாள் பதிவு அலுவலர்

கிராமம்

கூடுதல் விவரங்கள் ஆவண வாசகத்தில் உள்ளபடி



எழுதிக் கொடுத்ததாக ஒப்புக் கொண்டவர்
இடது பெருவிரல்



உ. அலி

கூடுதல் விவரங்கள் ஆவண வாசகத்தில் உள்ளபடி

எழுதிக் கொடுத்ததாக ஒப்புக் கொண்டவர்
இடது பெருவிரல்



உ. சுவாமிநாதன்

2/4 கூடுதல் விவரங்கள் ஆவண வாசகத்தில் உள்ளபடி

எழுதிக் கொடுத்ததாக ஒப்புக் கொண்டவர்
இடது பெருவிரல்



S. S.

கூடுதல் விவரங்கள் ஆவண வாசகத்தில் உள்ளபடி

எழுதிக் கொடுத்ததாக ஒப்புக் கொண்டவர்
இடது பெருவிரல்



R. S.

கூடுதல் விவரங்கள் ஆவண வாசகத்தில் உள்ளபடி

எழுதிக் கொடுத்ததாக ஒப்புக் கொண்டவர்
இடது பெருவிரல்



1 பத்தகம் 2019 ம் வருத்தியி 272 ம் ஆவணம்
43 தாள்களைக் கொண்டது.
42 வது தாள்

பதிவு அலுவலர்

R. S.

கூடுதல் விவரங்கள் ஆவண வாசகத்தில் உள்ளபடி

எழுதிக் கொடுத்ததாக ஒப்புக் கொண்டவர்
இடது பெருவிரல்



R. S.

கூடுதல் விவரங்கள் ஆவண வாசகத்தில் உள்ளபடி

எழுதி வாங்கியதாக ஒப்புக் கொண்டவர்
இடது பெருவிரல்



R. S.

3/4 கூடுதல் விவரங்கள் ஆவண வாசகத்தில் உள்ளபடி



இன்னாரென்று நிரூபித்தவர்கள்

1. K.A. A. S.

திரு அருள்குமார் த/பெ கன்னியப்பன் எண்.45 மாரியம்மன் கோயில் தெரு, நீர்க்குன்றம், உத்திரமேரூர், காஞ்சிபுரம், தமிழ்நாடு, இந்தியா, 603107

2. P. S. S. S.

திரு புருஷோத்தமன் த/பெ துரைகண்ணு எண்.22 பிள்ளையார்கோயில் தெரு, சிறுதாமர், உத்திரமேரூர், காஞ்சிபுரம், தமிழ்நாடு, இந்தியா, 631606

2019 ஆம் ஆண்டு நவம்பர் மாதம் 28ம் நாள்

[Signature]

பாலகிருஷ்ணன் ராமசந்திரன்
சார்பதிவாளர்
சாலவாக்கம்

R/சாலவாக்கம்/புத்தகம்-1/1272/2019 எண்ணாகப் பதிவு செய்யப்பட்டது.

[Signature]

பாலகிருஷ்ணன் ராமசந்திரன்
சார்பதிவாளர்

நாள்: 28/11/2019
சாலவாக்கம்



1 புத்தகம் 2019 ம் வருத்திய 1272ம் சுவணம்
43 தாள்களைக் கொண்டது.
43 வது தாள் பதிவு சுவலவலர்

பதிவு செய்யப்பட்டது

Seam

738 / 2019



தமிழ்நாடு தமிழ்நாடு TAMILNADU

N. கன்னியப்பன்
சென்னை

AP 421242

M. ச. சண்முகம்
S.V. காமராசன் தமிழ்நாடு
உள்ளிட்ட 7-7-2019

12453

15 JUL 2019



சுத்த விகிகிரையப்பத்திரம்

2019 ஆம் ஆண்டு ஜூலை மாதம் 15 ஆம் தேதி, காஞ்சிபுரம் மாவட்டம், உத்திரமேரூர் வட்டம், வாலாஜாபாத் சாந்திவிவகத்தைச் சேர்ந்த 82 ஆம் எண். நீர்குன்றம் கிராமம், எண். 1/60 மாரியம்மன் கோயில் தெரு, விலாசத்தில் வசிக்கும் காலம் சென்ற திரு. நாராயணப்பிள்ளை அவர்களின் குமாரர் சுமார் வயது 69 உள்ள திரு. N. கன்னியப்பன் (வாக்காளர் அடையாள அட்டை எண். TN/05/025/0316402) (PAN NO. DXSPK5378D) (cell no. 9940551261) அவர்களுக்கு,

சென்னை-600056, காட்டுப்பாக்கம், A.D கோவிந்தராஜ் நகர், அம்மன் நகர் மெயின்ரோடு, கதவு எண். 2282, உள்ள விலாசத்தில் வசிக்கும் திரு. K. செல்வராஜ் என்கிற செல்வராஜ் அவர்களின் குமாரர் சுமார் வயது 42 உள்ள திரு. S. எல்லப்பன்-1, (வாக்காளர் அடையாள அட்டை எண். UVQ1337872)

சுன்னியப்பன்

S. S.

S. S.

1	பித்தம் 2019ம் வருத்திய 738 ம் ஆவணம்
2	தாள்வைக்கொண்டது.
1	வது தாள்

பதிவு அலுவலர்





தமிழ்நாடு தமிழ்நாடு TAMILNADU



N. சன்னப்பன்
தேன்மேட்டம்

AP. 421243
ப.சன்னப்பன்
S.V. வானாச்சாரி தமிழ்நாடு
உரிமம் எண் 7372 / B1 / 86
வரிசை எண் 12453 தேதி 15 JUL 2019

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சென்னை-600096, பெருங்குடி, பஞ்சாயத்து மெயின்ரோடு, 2வது குறுக்குத்தெரு, கதவு எண். 14/7, உள்ள விலாசத்தில் வசிக்கும் திரு. K. செல்வராஜி என்கிற செல்வராஜ் அவர்களின் குமாரர் சுமார் வயது 35 உள்ள திரு. S. ஜெகநாதன்-2, (வாக்காளர் அடையாள அட்டை எண்.TAU2518595) ஆகிய நாங்கள் சம்மதித்து எழுதிக் கொடுத்த புன்செய் நிலம், கிணர், 5. H.P மின் மோட்டார், மின் இணைப்பு எண். 148 இதன் வைப்புத் தொகை உள்படவும், சுத்த விக் கிரையப்பத்திரம்

என்னவென்றால் 83 ஆம் எண் சிறுதாழர் கிராமத்தில் இந்த சொத்து விவரத்தில் கண்டுள்ள புன்செய் சர்வே எண். 277/2 ஏக்கர் 2.90 செண்ட் நிலத்தினையும், கிணர், 5. H.P மின் மோட்டார், மின் இணைப்பு எண். 148 இதன் வைப்புத் தொகை உள்படவும்,

சன்னப்பன்

1	கதவு 2019ம் வருடத்திய 738 ம் சுவணம்
2	தாள் கணக்கொண்டது.
3	வது தாள்

பதிவு அலுவலர்



சன்னப்பன்



தமிழ்நாடு தமிழ்நாடு TAMILNADU



ந. சின்னையப்பன்
திருச்செந்தூர்

AP 421244
L.S. சின்னையப்பன்
S.V. அனந்தசுந்தரன்
உயர்நீதிமன்றம்
12437 15 JUL 2019

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எங்களின் இருவரின் பெயரிலும் எங்கள் தகப்பனார் திரு. K. செல்வராஜ் என்கிற செல்வராஜ் அவர்கள் சென்ற 31-12-2018 தேதியில் ஒரு செட்டில்மெண்ட் பத்திரம் எழுதி வைத்து அந்த பத்திரமானது சாலவாக்கம் சார்பதிவகத்தில் தாக்கல் செய்யப்பட்டு 1 புத்தகம் 2018 ஆம் ஆண்டின் 1594 ஆம் எண் பத்திரமாக பதிவு செய்யப்பட்டு எங்கள் இருவர் பெயரிலும் கூட்டுப்பட்டா எண். 4186 ஆக தாக்கலாய் உள்ளதும், நாங்கள் அரசுக்கு செலுத்த வேண்டிய வரிவகையறாக்களை செலுத்திக் கொண்டு இன்றைய தேதிவரை நாங்கள் சர்வசுதந்திரமாய் சகலவிதமான அதிகாரங்களுடன் ஆண்டு அனுபவித்து வருகின்றதும், எங்களது சுவாதீனத்திலும் அனுபவித்திலும் இருந்து வருகின்ற சொத்துக்களாகும். இந்த சொத்து விவரத்தில் கண்ட சொத்துக்களை நாங்கள் இன்று தேதியில் தங்களுக்கு கிரையம் கொடுப்பதாக கிரையம் நிச்சயித்த ரூபாய். 10,86,000/- (எழுத்தால் ரூபாய். பத்து இலட்சத்து எண்பத்து ஆறாயிரம்) மட்டும்.

சின்னையப்பன்

1	முதலாம் 2019ம் வருடத்திய 738ம் ஆவணம்
2	தாள்களைக் கொண்டது.
3	வது தாள்

பதிவு அலுவலர்





தமிழ்நாடு தமிழ்நாடு TAMILNADU

N. சண்முகம்

திருச்சூர்

AP 421245

ச.ந. சண்முகம் தமிழ்நாடு

உரிமம் எண் 7372 / B1 / 86

வரிசை எண் 12403

15 JUL 2019



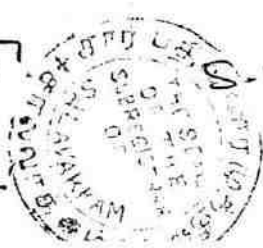
-4-

மேற்கண்ட கிரையத் தொகை ரூபாய் 10,00,000/-ம் (பத்து இலட்சம்) நாங்கள் மேற்கு தாம்பரம், இந்தியன் வங்கி கிளை காசோலை எண். 151925 மூலமும் மற்றும் ரூபாய் 86,000/- (எழுத்தால் ரூபாய் எண்பத்தாராயிரம் ரொக்கமாகவும்) ஆக மேற்கண்ட கிரையத் தொகை ரூபாய் 10,86,000/-ம் எங்களது குடும்ப செலவினங்களுக்காக பெற்றுக் கொண்டோம். கிரையத் தொகை முழுவதும் எங்களுக்கு சேர்ந்துவிட்ட படியால் சொத்து விவரத்தில் கண்ட சொத்துக்களை இன்றே தங்களின் சுவாதீனம் செய்துவிட்டோம். இது முதற்கொண்டு தாங்களே கைப்பற்றி தங்களின் பெயரில் பட்டா மாற்றம் செய்து கொண்டு சர்வ சுதத்திரமாய் சகலவித அதிகாரங்களுடன் புத்திர பெளத்திர பாரம்பரியமாய் தானாதி வினிமிய விக்கிரையங்களுக்கு உரித்தாய் ஆண்டு அனுபவித்துக் கொள்ள வேண்டியது.

சுண்முகம்

சுண்முகம்

1. 15.7.2019 ம் வந்ததில் 738 ம் சுவண்ம
2. தாங்களேக்கொண்டது.
4 வது தாள்
பதிவு அலுவலர்



332

சுண்முகம்



தமிழ்நாடு தமிலநாடு TAMILNADU

N. சண்முகப்பன்
தொகுப்பாளர்

AP 421246

ப.சண்முகப்பன்
ச.வ. வாராந்தரத் தமிழ்நாடு
உரிமம் எண்: 7372 / B1 / 80
வாங்கு எண்: 12459

15 JUL 2019



-5-

இந்த கிரையச்சொத்துக்களின் பேரில் யாதொரு விதமான முன் கலன் அக்கு வில்லங்க தகாதாக்கள், வங்கி கடன்கள், பிறகடன்கள், டைட்டில் வாரிசு தகராறுகள், கோர்ட் அட்டாச்மெண்ட், நீதிமன்ற உறுத்துக்கட்டளைகள், ஜப்தி நடவடிக்கைகள், முன்கிரைய உடன்படிக்கைகள், மூல ஆவண வைப்பு உடன்படிக்கைகள், போன்ற எந்தவிதமான வில்லங்க தகாதாக்களும் இல்லை எனவும், அப்படி யாதாகிலும், இருப்பதாக பின்னிட்டு தெரிந்திடிலும் அவைகளை நாங்களே முன்னின்று வில்லங்கத்தை தீர்த்து தருகிறோம்.

சு. சண்முகப்பன்

S. Sankar

1	மத்திய 2019 ம் வருத்திய 738 ம் ஆவணம்
2	தாள்களைக்கொண்டது.
5	வது தாள்
	பதிவு அலுவலர்



சு. சண்முகப்பன்



தமிழ்நாடு தமில்நாடு TAMILNADU

AP. 421247.

N. சண்முகப்பன்
தீர்மானம்

பி.சண்முகம்
S.V. சண்முகம் தமில்நாடு
உரிமை எண் 7372/B4/33
12465

15 JUL 2019



-6-

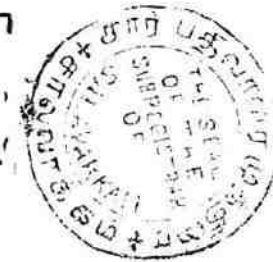
இந்த சொத்து விவரத்தில் கண்ட சொத்துக்கள் சம்மந்தமாக பிற்காலத்தில் ஆவணங்கள் ஏதாகிலும் எழுதிக் கொடுக்க வேண்டியிருந்தால் அவற்றையும் எவ்வித பிரதி பலனும் எதிர்பாராமல் எழுதிக் கொடுக்க சம்மதிக்கிறோம். இதுமுதற்கொண்டு இந்த சொத்து விவரத்தில் கண்ட சொத்துக்கள் மீது எங்களுக்கோ, எங்களுடைய வாரிசுகளுக்கோ எவ்வித உரிமையும், பாத்தியதையும், பின்தொடர்ச்சியும் கிடையாது என்று உறுதி கூறுகிறோம்.

சண்முகப்பன்

S. Sankar

1	தேதி 2019 ம் வருடத்திய 738 ம் ஆவணம்
21	தீர்மானம் கொண்டு.
6	வது தாள்

பதிவு அலுவலர்



334 சண்முகப்பன்



தமிழ்நாடு தமிழ்நாடு TAMILNADU

AP- 421248

N. சண்முகம் பப்பன்
திருச்செந்தூர்

ப.ச.சண்முகம்
S.V. சண்முகம் திருச்செந்தூர்
உரிமம் எண்: 7372/B1/00
வரிசை எண்: 12461

15 JUL 2015



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இந்தப்படிக்கு நாங்கள் சம்மதித்து எழுதிக் கொடுத்த புன்செய் நிலம், கிணர், 5. H.P மின்
மோட்டார், மின் இணைப்பு எண். 148 இதன் வைப்புத் தொகை உள்படவும், சுத்த விக்கிரையப்பத்திரம்.

சண்முகம் பப்பன்

சண்முகம் பப்பன்

S. S. S. S.

1	முதகம் 2019ம் வருடத்திய 738 ம் ஆவணம்
2	தாக்கவைக்கொண்டது.
3	வது நாள்

பதிவு அலுவலர்



சண்முகம் பப்பன்

3335



தமிழ்நாடு தமிழ்நாடு TAMILNADU

N. தனையப்பன்
சுன்னையப்பன்

AP. 421249

பி.சுன்னையப்பன்
S.V. வானவாசுதமிழ்நாடு
உரிமம் எண்: 7372/B1/86
பதிவு எண்: 12462

15 JUL 2010



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சொத்து விவரம்

காஞ்சிபுரம் மாவட்டம், உத்திரமேரூர் வட்டம், சாலவாக்கம் சார்பதிவகத்தைச் சேர்ந்த

83-ம் எண். சிறுதரமூர் கிராமத்திய பட்டா எண். 4186-ல் அடங்கிய.

வரிசை எண்.	சர்வே எண் உட்பிரிவு	ஏக்கர்- செண்ட்	எக்டர் ஏர்ஸ்	சொத்தின் தன்மை
1	277/2	2.90	1.17.5	புன்செய்
2	277/2	உள்ள கிணர்		
3	277/2	5.H.P மின் மோட்டார்		
4	277/2	5.H.P மின் இணைப்பு எண். 148 இதன் வைப்புத் தொகை		
	மொத்தம்	2.90		

1. மூலம் 2019ம் வருடத்திய 738ம் ஆவணம்
2. தாள்களைக் கொண்டது.
8 வது தாள்
பதிவு அலுவலர்



சுன்னையப்பன்

சுன்னையப்பன்

336 சுன்னையப்பன்



தமிழ்நாடு தமிழ்நாடு TAMILNADU

[Signature] AP 421250



N. தன்னியப்பன்
தேய்வனம்

செ.வ. வாரணாசி தமிழ்நாடு
உரிமம் எண் 7372/B1/26
வரிசை எண் 12463 தேதி

15 JUL 2019

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மேற்படி நிலங்களானது உத்திரமேரூர் ஊராட்சி ஒன்றியத்தைச் சேர்ந்த சிறுதாலூர் ஊராட்சி மன்றத்தின் எல்லைக்குட்பட்டது. மேற்படி சொத்துக்களின் தற்கால சந்தை மதிப்பு ரூபாய். 10,86,000/-தாளக்கூடியது. கிரையம் பெறுபவர்

தன்னியப்பன்

கிரையம் கொடுப்பவர்கள்

[Signature]
[Signature]

சாட்சிகள்:-

1. *[Signature]* க/பெ. லோகநாதன் எண். 2/13 கோதண்டராமர் தெரு, பெருங்குடி.

20 *[Signature]* த/பெ. துரைகண்ணு எண். 22 பிள்ளையார் கோயில் தெரு, சிறுதாலூர் மதுரா

பட்டா

1	புத்தகம் 2019 ம் வருடத்திய 738 ம் ஆவணம்
21	தாள்களைக்கொண்டது.
9	வது தாள் பதிவு செய்யுமா?



DOCUMENT WRITER
L.No: B/3279/CGI/2011
Sekarakkam - 603 107



தமிழக அரசு

வருவாய்த் துறை

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

மாவட்டம் : காஞ்சிபுரம்

வட்டம் : உத்திரமேரூர்

வருவாய் கிராமம் : சிறுதாமூர்

பட்டா எண் : 4186

உரிமையாளர்கள் பெயர்

1.	செல்வராஜி	மகன்	எல்லப்பன்
2.	செல்வராஜி	மகன்	ஜெகநாதன்

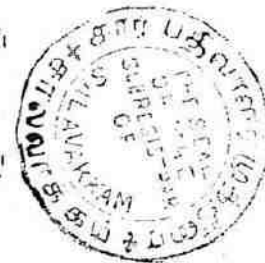
நன்செய்		புன்செய்		மற்றவை	
பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை
புல எண்	உட்பிரிவு	ஹெக்டர் - ஏர்	ரூ - பை	ஹெக்டர் - ஏர்	ரூ - பை
277	2	--	--	1 - 17.50	2.18
				1 - 17.50	2.18

குறிப்பு2 :



1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 03/03/083/04186/40399 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 05-06-2019 அன்று 08:51:31 PM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின் 2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

1. டிசம்பர் 2019ம் வருத்திய 738 ம் ஆவணம்
2. தாள்களைக்கொண்டது.
11 வது தாள் பதிவு ஆலுவணி





-10-

இணைப்பு

இந்திய முத்திரைச் சட்டம் விதி 3(1)ன் கீழ் பத்திரங்களின் மதிப்பை குறைப்பை தடுப்பதற்கான விவரப்பட்டியல் : 83 ஆம் எண் சிறுதாழூர் கிராமம்.

வரிசை எண்.	சர்வே எண் உட்பிரிவு	ஏக்கர்- செண்ட்	எக்டர் ஏர்ஸ்	சொத்தின் தன்மை	எழுதிக் கொடுப்பவரின் தற்கால சந்தை மதிப்பு ரூபாய்
1	277/2	2.90	1.17.5	புன்செய்	10,15,000/-
2	277/2	உள்ள கிணர்			20,000/-
3	277/2	5.H.P மின் மோட்டார்			50,000/-
4	277/2	5.H.P மின் இணைப்பு எண். 148 இதன் வைப்புத் தொகை			1,000/-
	மொத்தம்	2.90			10,86,000/-

சுன்னியப்பன்

2.2.2019

1	முதலகம் 2019ம் வருடத்திய 738ம் ஆவணம்
2	தாள்களைக் கொண்டது.
3	வது தாள்

பதிவு அலுவலர்



சுன்னியப்பன்



**ELECTION COMMISSION OF INDIA
IDENTITY CARD**

இந்தியத் தேர்தல் ஆணையம்
அடைபாள் அட்டை

TN/05/025/0316402



Elector's Name : Kanniyappan
வாக்காளரின் பெயர் : கன்னியப்பன்
Father / Mother /
Husband's Name : Narayanan
தந்தை/தாய்/கணவர் : நாராயணன்
பெயர்
Sex / பாலினம் : Male / ஆண்
Age as on 1.1.1995 : 40
1.1.1995 அன்று வயது :

Address / முகவரி :
41 Neerkunram Village & Harijana Colony
Aanambakkam (P)
Uthiramerur (Tk)
Kancheepuram (Dt)
41 நீர்குன்றம் கிராமம் மற்றும் ஹரிஜனக் காலனி
ஆனம்பாக்கம் (அவ)
உத்திரமேரூர் (வ)
காஞ்சிபுரம் (ம)

Facsimile Signature of the Electoral Registration Officer
for 025 - Uthiramerur Assembly Constituency

025 - உத்திரமேரூர்
சட்டமன்றத் தொகுதிக்குள் வாக்காளர் பதிவு
அதிகாரியின் கையொப்பத்திற்கு

Place : Kancheepuram
இடம் : காஞ்சிபுரம்
Date / நாள் : 01.10.1998

This Card may be used as an Identity Card
under different Government Schemes.

இந்த அட்டையை அரசின் பல்வேறு திட்டங்களின்
கீழ் அடைபாள் அட்டையாகப் பயன்படுத்தலாம்.

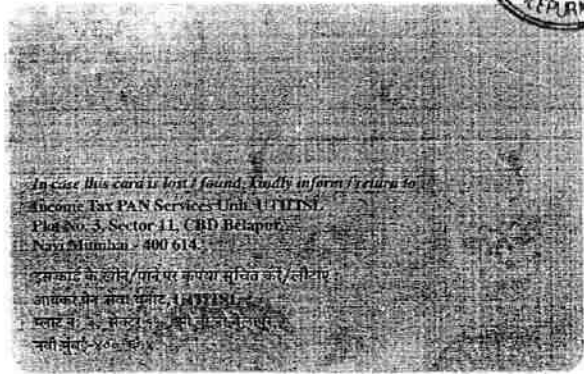
சுண்ணப்பன்

8/2

1 புத்தகம் 2019 ம் வருடத்திய 738 ம் ஆவணம்
24 தாள்களைக்கொண்டது.
12 வது தாள் பதிவு அலுவலர்



சுண்ணப்பன்



சுன்னியப் பன்

1. பத்தகம் 2019ம் வருடத்திய 738ம் ஆவணம்
24 தாள்களைக்கொண்டது.
13 வது தாள் பதிவு அலுவலர்,



சுன்னியப் பன்



தேவநகர் 2282 / NA
 ராஜகோவிலத்தாதி குகா
 கால்டுவெயர் - 500 056

இந்திய தேர்தல் ஆணையம்
வாக்-பார் அண்ட்-பார் அட்டை
ELECTION COMMISSION OF INDIA
IDENTITY CARD
UVQ1337872



வாக்காளர் பெயர் : எல்லப்பன்

Elector's Name : Ellappan

தந்தை பெயர் : செல்வராஜ்

Father's Name : Selvaraj

பாலினம் / Sex : ஆண் / Male

|பிறந்த தேதி / Date of Birth: 01/05/1977

Address: 2282/NA
A D Govindaraj Nagar
Kattupakkam - 600 056

Print Date : 07/01/2014

வாகடகாணி பதிவு அலுவலகம்
கையொப்ப முத்திரை
005 - புத்தமலர்
சட்டமன்ற தொகுதி

Facsimile Signature of
Electoral Registration Officer
005 - Poornimala

[illegible]

B. J.

1 புதிதம் 2019ம் வருடத்திய 73 8ம் ஆவணம்
21 தாள்களைக் கொண்டு.
14 வது தாள் பதிவு அலுவலர்



சரிதான்



FORM 60

[See third provision to of Rule 114B]

Form of Declaration to be filled by a person who does not have either permanent account number or general index Register Number and who makes payment in respect of transaction specified in clauses (c) to (f) of rule 114B of the income Tax Act, 1962.

1. Full Name and Address of the declarant S. Ellappa
S/o Selvaraj No 2282 Aruman Nagar Main Road
A.D. Govindaraj Nagar Kattupakkam
Chennai 600056
2. Particulars of transaction
 Account Type Number
3. Amount of the transaction Rs. 10,86,000/-
4. Are you assessed to tax? Yes / No Yes
5. If yes,
 - i) Details of Ward / Circle / Range where the last return of income was filed.
 - ii) Reasons for not having permanent account number / General Index Register Number
6. Details of document being produced in support of address in column (1)

Verification

I, S. Ellappa S/o Selvaraj do hereby declare that what is stated above is true to the best of my knowledge and belief.

Date 15.7.2019Place Chennai

1	முதலில் 2019-ம் வருடத்திய 738-ம் ஆவணம்
2	தாள்களைக் கொண்டது.
15	வது தாள்

பதிவு அலுவலர்

Signature of the declarant

Instructions: Documents which can be produced in support of the address are:

- (a) Ration Card
- (b) Passport
- (c) Driving License
- (d) Identity Card issued by any institution
- (e) Copy of Electricity bill or Telephone bill showing residential address.
- (f) Any document of communication issued by authority of Central Government or local bodies showing residential address.
- (g) Any other documentary evidence in support of his address given in the declaration



சென்னைப் பதிவு அலுவலர்

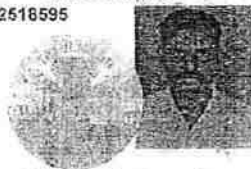


TAU251859



இந்திய தேர்தல் ஆணையம்
வாக்காளர் அடையாள அட்டை
ELECTION COMMISSION OF INDIA
IDENTITY CARD

TAU2518595



வாக்காளர் பெயர் : ஜெகநாதன்

Elector's Name : Jaganathan

தந்தை பெயர் : செல்வராஜ்

Father's Name : Selvarai

பாலினம் / Sex : ஆண் / Male

பிறந்த தேதி / Date of Birth: 30/05/1984

முதலாளி: 14/7
பஞ்சாயத் மெயின் ரோடு 2வது
தரத்திலு் தெரு
பெருங்குடி
500005

Address : 14/7
Panchayat Main Road 2nd cross
Street
Perungudi
600 096

Printed / Date : 08/01/2013

027 - ~~சென்னை~~ சென்னை

Facsimile Signature of
Electoral Registration Officer
Sho Shozhingamallur
Assembly Constituency

Assembly constituency

(INFORMATION) ID NUMBER DATE TIME OFFICER
IN THE COURT OF JUDICIAL RECORDS - CIVIL CHIEF CLERK
CONSTITUTIONAL AND LEGISLATIVE DEPARTMENT
OF THE HONORABLE HOUSE OF REPRESENTATIVES
WASHINGTON, D.C. 20540-6798
In case of change of address mention the prior card
No. in the relevant form for recording your name
in the roll at the changed address and to obtain
the card with same number.

113-1521

S. Joz 7 1/2

1 பத்தகம் 2019 ம் வருடத்திய 738 ம் ஆவணம்
21 தாள்களைக்கொண்டது.
16 வது தாள் பதிவு அலுவலர்



344

நினைப்புகள்

-349-

ASSISTANT DIRECTOR
RTO, KANCHI

TN21 2006 0006185

Date of Issue: 27-12-2006
Validity: 26-12-2026
20-11-2018

Name: EMBUSHOTTHAMAN D
Father's Name: DURAKANNU

Date of Birth: 20-05-1983
Blood Group: O+

Present Address: NO. 22 PELLAYAKKOL STREET, PATTATHIRIPAKKUDAL, KANCHI-600006

Permanent Address: NO. 22 PELLAYAKKOL STREET, PATTATHIRIPAKKUDAL, KANCHI-600006

Master's Signature: [Signature]

Assistant Licensing Authority: RTO, KANCHI

Form 7 Rule 18(2)

D. Pusth Kumar

1. முதல் 19ம் வருத்திய 238ம் ஆவணம்
2. தாள்களைக்கொண்டது.
19. வது தாள்

பதிவு அலுவலர் [Signature]



சின்னியப்பன்



S. Jaganathan

1 புத்தகம் 2019 ம் வருடத்திய 738 ம் ஆவணம்
21 தாள்களைக் கொண்டது.
12 வது தாள் பதிவு அலுவலர்





R/சாலவாக்கம்/புத்தகம்-1/738/2019

1899ம் ஆண்டு இந்திய முத்திரைச் சட்டம் 42வது பிரிவின் கீழான சான்று

2019ம் ஆண்டு வரிசை எண் 242

எண். 45 மாரியம்மன் கோயில் தெரு, நீர்க்குன்றம், உத்திரமேரூர், காஞ்சிபுரம், தமிழ்நாடு, இந்தியா, 603107-ல் வசிக்கும் திரு கன்னியப்பன் என்பவரிடமிருந்து ₹ 67,020/- (ரூபாய் அறுபத்தேழாயிரத்து இருபது மட்டும்) இந்த ஆவணத்திற்காக இந்திய முத்திரைச் சட்டம் 41வது பிரிவின் படி குறைவாயிருந்த முத்திரைக் கட்டணம் வசூலிக்கப்பட்டது என நான் இதன் மூலம் சான்றளிக்கிறேன்.

சார்பதிவாளர் : சாலவாக்கம்
நாள்: 15/07/2019

சார்பதிவாளர் மற்றும் இந்திய முத்திரைச் சட்டம் பிரிவு
41ன் படி ஆட்சியர்

2019 ஆம் ஆண்டு ஜூலை மாதம் 15ம் தேதி பி.ப. 04:13 மணியளவில் சாலவாக்கம் சார்பதிவாளர் அலுவலகத்தில் தாக்கல் செய்து கட்டணம் ₹ 43,725/- செலுத்தியவர்.

இடது பெருவிரல்



நன்னியப்பன்

கூடுதல் விவரங்கள் ஆவண வாசகத்தில் உள்ளபடி

எழுதிக் கொடுத்ததாக ஒப்புக் கொண்டவர்
இடது பெருவிரல்

21-07-2019ம் வருடத்திய 738ம் ஆவணம்
தாள்களைக்கொண்டது.
பதிவு அலுவலர்
கூடுதல் விவரங்கள் ஆவண வாசகத்தில் உள்ளபடி

எழுதிக் கொடுத்ததாக ஒப்புக் கொண்டவர்
இடது பெருவிரல்

கூடுதல் விவரங்கள் ஆவண வாசகத்தில் உள்ளபடி





R/சாலவாக்கம்/புத்தகம்-1/738/2019

எழுதி வாங்கியதாக ஒப்புக் கொண்டவர்
இடது பெருவிரல்



குன்னியப்பன்

கூடுதல் விவரங்கள் ஆவண வாசகத்தில் உள்ளபடி

இன்னாரென்று நிரூபித்தவர்கள்

1. *Q. S. Kumar*

திரு புருஷோத்தமன் த/பெ துரைக்கண்ணன். 22 பிள்ளையார் கோயில் தெரு, சிறுதாமர், உத்திரமேரூர், காஞ்சிபுரம், தமிழ்நாடு, இந்தியா, 631606

2. *L. S. S. Kumar*

திருமதி ராஜகுமாரி த/பெ செல்வராஜி என்கிற செல்வராஜ் எண். 2/13 கோதண்டராமர் தெரு, சென்னை, தமிழ்நாடு, இந்தியா, 600096

2019 ஆம் ஆண்டு ஜூலை மாதம் 15ம் நாள்

[Signature]

பாலகிருஷ்ணன் ராமசந்திரன்
சார்பதிவாளர்
சாலவாக்கம்

R/சாலவாக்கம்/புத்தகம்-1/738/2019 எண்ணாகப் பதிவு செய்யப்பட்டது.

நாள்: 15/07/2019
சாலவாக்கம்

[Signature]

பாலகிருஷ்ணன் ராமசந்திரன்
சார்பதிவாளர்



1	முதலில் 19 ம் வருடத்திய 738 ம் ஆவணம்
2	தாள்களைக் கொண்டது.
2	வது தாள்
பதிவு அலுவலர்	
2/2	

குன்னியப்பன் *[Signature]*
Dr. S. KARUPPANNAN, M.Sc., Ph.D.,
RQP/MAS/263/2014/A



PHOTOCOPY OF THE PROPOSED LEASE AREA

Field photos in respect of rough stone and gravel for patta land lease quarry, over an extent of 3.11.5 hectares in S.F.No's: 277/1A, 277/1C, 277/1E, 277/1F, 277/2, 277/1B, 277/1D and 280/2, Sirudamur Village, Uthiramerur Taluk, Kancheepuram District, Tamil Nadu belongs to Mr.N.Kanniyappan.



Dr. S. KARUPPANNAN, M.Sc., Ph.D.,
RQP/MAS/263/2014/A

350
சென்னை மாவட்டம்

ANNEXURE



Explosives Blasting Contractors & Dealers

Plot No. 1, Mennakshi Avenue, 3rd Cross Street, Old Perungalathur, Chennai – 600063

TeleFax No: 2276 1987 , Cell No: 9444814614, 9941181779, 9444814614. E.mail ID: dhanamexplo1@yahoo.com

27th October, 2021

Mr. N Kanniyappan

S/o, Narayana Pillai

No : 55, Mariyamman Kovil Street

Neerkundrum Village, Anampakkam Post

Uthiramerur Taluka – 603 107

Kanchipuram Dist.

Dear Sir,

SUB : OFFER LETTER FOR BLASTING WORK CONTRACT.

With reference to the subject and we refer to the discussions the undersigned had with you regarding the subject work, we wish to inform you that, we undertake blasting work contract for various satisfied customers for the past Five years. We confirm that we are having well trained and qualified blasters and mining mates for execution of the blasting contracts. Our Magazine Licence No : E/SC/TN/22/298(E56920) Situated at 592/2B 1A, 164 Arungunam Village, Madurantakam Taluk, Kanchipuram District. (copy of our magazine license enclosed for your ready reference).

We also wish to inform you that, we are operating separate licensed explosive vehicles for transporting class 2 explosives to your site as per the instructions given by the explosive authority. We hereby confirm and agree to carry out the blasting work at your quarry and also to supply Explosive materials for your proposed Quarry at Survey No : 277/1A, 277/1C, 277/1E, 277/1F, 277/2, 280/2, 277/1B, 277/1D total area measuring to 3.11.50 Hecter at Sirudamur Village, Uthiramerur Taluka, Kanchipuram District.

We now request you to kindly consider us for blasting works and supply of Explosives materials to your mining quarry.

Thanking you and assuring you of our best attention always, we remain

Yours faithfully

For **KUBERAN EXPLOSIVES & CO**

DHANAKOTTESWARAN K
Proprietor.



- Encl : 1) Our Magazine License Copy.
2) Our Explosive Vehicle Authorised license copy.

351 ஜெனியப்பன்



भारत सरकार | Government of India
वाणिज्य और उद्योग मंत्रालय | Ministry of Commerce & Industry
पेट्रोलियम तथा विस्फोटक सुरक्षा संगठन (पेसो) | Petroleum & Explosives Safety Organisation (PESO)
पूर्व नाम- विस्फोटक विभाग | Formerly- Department of Explosives
A और D- विंग ब्लॉक 1-8, दूसरा तल, शास्त्री भवन | A & D - Wing, Block 1-8, IInd Floor, Shastri Bhavan
26 हड्डोस रोड, नुंगम्बक्कम चेन्नई 600006
फोन (Phone)- 28281023 | फैक्स (Fax)- 28284848
ई-मेल Email: jtecechennai@explosives.gov.in

संख्या (No.): E/HQ/TN/22/298(E56920)

दिनांक (Date): 07/04/2021

संवा में | To,

M/s. Kuberan Explosives & Co.,
D. No. 164, Varanavasi Village, Banrutti (Post), Thenneri (Via), Town/Village - Kanchipuram
District-KANCHIPURAM, State-Tamil Nadu, Pincode -

08 APR 2021

विषय: Survey No(s):592/2B 1A, ग्राम 164, Arugunam village, Madurantakam Taluk, जिला KANCHIPURAM, राज्य Tamil Nadu में विस्फोटक के मैगजीन में उपयोग के लिए कब्जा हेतु विस्फोटक नियम, 2008 के अंतर्गत LE-3 में जारी अनुज्ञप्ति से E/HQ/TN/22/298(E56920) के नवीनीकरण संदर्भ में।

Subject: Possession for Use of Explosives from magazine situated at Survey No(s):592/2B 1A, 164, Arugunam village, Madurantakam Taluk, Dist. KANCHIPURAM, Tamil Nadu -Licence No.: E/HQ/TN/22/298(E56920) granted in Form LE-3 of Explosives Rules, 2008 - Renewal regarding

महोदय | Sir,

आपका उपर्युक्त विषय पर पत्र संख्या X दिनांक 23/03/2021 का संदर्भ ग्रहण करें। विस्फोटक नियम, 2008 के अंतर्गत प्रारूप LE-3 में जारी अनुज्ञप्ति दिनांक 31/3/2026 तक नवीनीकृत कर इस पत्र के साथ भेजी जा रही है।

Reference to your letter No.: X dated: 23/03/2021, the subject licence duly renewed upto 31/3/2026 and issued in Form LE-3 of Explosives Rules, 2008 is forwarded herewith.

अनुज्ञप्ति के आगामी नवीकरण हेतु कृपया निम्नलिखित दस्तावेज दिनांक 31/03/2026 से पहले इस कार्यालय को भेजे जाएं।

For further renewal of licence, please submit the following documents so as to reach this office on or before 31/3/2026.

- प्रारूप आरई-1 में विधिवत पूर्ण एवं हस्ताक्षरित आवेदन।
Application in Form RE-1 duly filled in and signed.
- एक से पाँच वर्ष के अनुज्ञप्ति शुल्क का, विस्फोटक नियम, 2008 के तहत ऑनलाइन आवेदन पोर्टल पर उपलब्ध ई-भुगतान सुविधा के माध्यम से लाइसेंस शुल्क ऑनलाइन जमा किया जाना है।
Licence fees renewable for one to five years, to be submitted online through e-payment facility available on online application portal under the Explosives Rules, 2008.
- अनुमोदित प्लान के साथ मूल अनुज्ञप्ति।
Original licence with approved plan.
- कृपया इस संबंध में विस्फोटक नियम, 2008 के नियम 112 का भी संदर्भ ग्रहण करें।
In this connection, please also refer to Rule 112 of Explosives Rules, 2008.
- विस्फोटकों के क्रय हेतु आरई-11 में मांगपत्र (इंडेंट) आपूर्तिकर्ता को दिया जाए और उसी की एक प्रति इस कार्यालय को भेजी जाए (आतिशबाजी गोदाम के लिए लागू नहीं)।
Indent for purchase of explosives shall be placed in RE-11 with the supplier and copy of the same shall be sent to this office. (Not applicable for fireworks store house)
- कृपया विस्फोटकों की त्रैमासिक विवरणी हर तिमाही के अंत में आरई-7 में प्रस्तुत की जाए। विवरणी इस कार्यालय के कार्यालय में आगामी तिमाही के 10 तारीख से पहले पहुंच जानी चाहिए (आतिशबाजी गोदाम के लिए लागू नहीं)। Please submit quarterly returns of explosives in RE-7 at the end of every quarter so as to reach this office by 10th of the succeeding quarter. (Not applicable for fireworks store house)
- सभी ब्लास्टिंग ऑपरेशन एक सक्षम द्वारा की जाएगी जो उपरोक्त नियमों के तहत एक वैध शॉट फायर प्रमाणपत्र धारक हो। हालांकि, खान अधिनियम 1952 के अधीन आने वाले खानों में ब्लास्टिंग ऑपरेशन करने वाले ब्लास्टर की योग्यता उसी अधिनियम से निर्धारित हो।
All blasting operations shall be carried out by a competent person holding a valid shot firer's permit granted under above rules. However, blasting operations in mines coming under the purview of the Mines Act 1952, the blaster shall have qualifications prescribed in the regulations framed under the said Act.

भवदीय | Your's faithfully

(डॉ. ए. शेख हुसैन | Dr. A SHEKH HUSSAIN)

उप विस्फोटक नियंत्रक | Dy. Controller of Explosives

कृते संयुक्त मुख्य विस्फोटक नियंत्रक | For Joint Chief Controller of Explosives

दक्षिणांचल, चेन्नई | South Circle, Chennai

प्रतिलाप प्राप्त | Copy Forwarded to:

1. जिला मजिस्ट्रेट (District Magistrate), KANCHIPURAM (Tamil Nadu)- सूचना के लिए (for information.)

कृते संयुक्त मुख्य विस्फोटक नियंत्रक | For Joint Chief Controller of Explosives

दक्षिणांचल, चेन्नई | South Circle, Chennai

(अधिक जानकारी जैसे आवेदन का स्थिति, शुल्क आदि के लिए हमारी वेबसाइट <http://peso.gov.in> देखें।)
(For more information regarding status, fees and other details please visit our website <http://peso.gov.in>)

Note :- This is system generated document does not require physical signature. Applicant may take printout for their records.

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अनुज्ञापन प्रारूप एल. ई.-3 | LICENCE FORM LE-3

(विस्फोटक नियम, 2008 को अनुसूची 4 के भाग 1 के अनुच्छेद 3(क) से (घ) देखिए।)
(See article 3(a) to (d) of Part 1 of Schedule IV of Explosives Rules, 2008)

(ग) उपयोग के लिए एक समय पर वर्ग 1, 2, 3, 4, 5 या वर्ग 7 के विस्फोटक या किसी मैगजीन में वर्ग 6 के विस्फोटक रखें
Licence to possess : (c) for use, explosives of class 1, 2, 3, 4, 5, 6 or 7 in a magazine

अनुज्ञापन सं. (Licence No.): E/HQ/TN/22/298(E56920)
वार्षिक फीस रुपए (Annual Fee Rs): 12400/-



1. Licence is hereby granted to

M/s. Kuheran Explosives & Co. (अधिभोगी / Occupier : K. Dhana Kotteswaran), D. No. 164, Varanavasi Village, Banruti (Post), Thenneri (Via), Town/Village - Kanchipuram, District-KANCHIPURAM, State-Tamil Nadu, Pincode -

को अनुज्ञापन अनुदत्त की जाती है।

2. अनुज्ञापन धारता की प्राप्ति | Status of licensee : Individual

3. अनुज्ञापन निम्नलिखित प्रयोजनों के लिए विधिमाम्य है।
Licence is valid only for the following purpose

4. अनुज्ञापन विस्फोटकों के निम्नलिखित किस्मों, प्रकार और मात्रा के लिए विधिमाम्य है।
Licence is valid for the following kinds and quantity of explosives: - (क) (a)

क्र. Sr. No.	नाम और विवरण Name and Description	वर्ग और प्रभाग Class & Division	उप-प्रभाग Sub-division	मात्रा किसी एक समय में Quantity at any one time
1	Nitrate Mixture	2.0	0	6400 Kg
2	Detonating Fuse	6.2	0	50000 Mtrs
3	Detonators	6.3	0	44000 Nos

(ख) किसी एक कैलेंडर मास में खरीदे जाने वाले विस्फोटक की मात्रा [अनुच्छेद 3(ख) और (ग) के अधीन अनुज्ञापन के लिए]
(b) Quantity of explosives to be purchased in a calendar month [applicable for licence under article 3(b) and (c)]:

20 times
as above.

5. निम्नलिखित रेखाचित्र (रेखाचित्रों) से अनुज्ञापन परिसर की पुष्टि होती है।
The licensed premises shall conform to the following drawing(s):

रेखाचित्र क्र. (Drawing No.) E/HQ/TN/22/298(E56920)
दिनांक (Dated) 10/01/2012

6. अनुज्ञापन परिसर निम्नलिखित पते पर स्थित है। The licensed premises are situated at following address:
Survey No(s). 592/2B 1A, ग्राम (Town/Village): 164, Arugunam village, Madurantakam Taluk

जिला (District) KANCHIPURAM
दूरभाष (Phone) 9444814614

राज्य (State) Tamil Nadu
ई. मेल (E-Mail)

पुलिस थाना (Police Station): Madurantakam
पिनकोड (Pincode)

फैक्स (Fax)

7. अनुज्ञापन परिसर में निम्नलिखित सुविधाएं अंतर्भूत हैं।
The licensed premises consist of following facilities:

a main magazine room, a lobby and a detonators store room.

8. अनुज्ञापन समय - समय पर यथासंशोधित विस्फोटक अधिनियम, 1884 और उनके अधीन विरचित विस्फोटक नियम, 2004 के उपबंधों, शर्तों और अतिरिक्त शर्तों और निम्नलिखित उपबंधों के अधीन रहते हुए अनुदत्त की जाती है।
The licence is granted subject to the provision of Explosives Act 1884 as amended from time to time and the Explosives Rules, 2004 framed there under and the conditions, additional conditions and the following Annexures.

- उपयुक्त क्रम सं. 5 में यथा कथित रेखाचित्र (स्थान, संरचनात्मक और अन्य विवरण दर्शित करते हुए)
Drawings (showing site, constructional and other details) as stated in serial No. 5 above.
- अनुज्ञापन प्राधिकारी द्वारा हस्ताक्षरित इस अनुज्ञापन की शर्तों और अतिरिक्त शर्तों।
Conditions and Additional Conditions of this licence signed by the licensing authority.
- दूरी प्रारूप DE-2 | Distance Form DE-2.

9. यह अनुज्ञापन तारीख 31 मार्च 2012 तक विधिमाम्य रहेगी। This licence shall remain valid till 31st day of March 2012.

यह अनुज्ञापन, अधिनियम या उसके अधीन विरचित नियमों या अनुसूची V के भाग 4 के प्रति निर्दिष्ट सेट-VII के अधीन तथा उपबर्णित इस अनुज्ञापन की शर्तों का अधिक्रमण करने या यदि अनुज्ञापन परिसर योजना या उससे संलग्न उपबंध में दर्शित विवरण के अनुरूप नहीं पाए जाने पर निलंबित या प्रतिबंधित की जा सकती है, जहां वह लागू हो।
This licence is liable to be suspended or revoked for any violation of the Act or Rules framed there under or the conditions of this licence as set forth under Set VIII, wherever applicable, referred to in Part 4 of Schedule V or if the licensed premises are not found conforming to the description shown in the plans and Annexure attached hereto.

तारीख | The Date - 10/01/2012

मुख्य विस्फोटक नियंत्रक | Chief Controller of Explosives

Amendments :

- Amendment of Quantity of Explosives/Monthly Purchase Limit dated : 01/08/2012
- Amendment of Quantity of Explosives/Monthly Purchase Limit dated : 08/03/2013
- Amendment of Quantity of Explosives/Monthly Purchase Limit dated : 18/07/2014

नवीनीकरण के पृष्ठांकन के लिए स्थान
Space for Endorsement of Renewal

नवीकरण की तारीख
Date of Renewal

समाप्त की तारीख
Date of Expiry

अनुज्ञापन प्राधिकारी के हस्ताक्षर और स्टाम्प
Signature of licensing authority and stamp

07/04/2021

31/03/2026

Jt. Chief Controller of Explosives, South Circle, Chennai

कानूनी चेतावनी : विस्फोटकों को गलत ढंग से चलाने 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.



GOVERNMENT OF INDIA
MINISTRY OF COMMERCE & INDUSTRY
PETROLEUM AND EXPLOSIVES SAFETY ORGANISATION (PESO)
 (Formerly Department of Explosives)
 A & D - Wing, Block 1-8, 11th Floor, Shastri Bhavan
 26 Haddous Road, Nungambakkam Chennai 600006
 Tele: 28281023 Fax: 28284848
 Email: jtccechennai@explosives.gov.in

No:E/SC/TN/25/842(E81250)

3 MAR 2020
Dated: 24/02/2020

To,
 K. Dhanamkoteswaran,
 Prop. M/s Sri Dhanam Koteswaran Explosives & Co., New No.1, Meenachi Avenue, Old Perungalathur, Tambaram, Chennai PIN 600063
 Town/Village - Chennai
 Dist. CHENNAI, State. Tamil Nadu, Pincode-600063

Subject: Road Van for the carriage of Explosives Registration No TN-11/F-9092 Licence No.E/SC/TN/25/842(E81250)
 granted in Form LE-7 of Explosives Rules 2008 - Renewal regarding

Sir(s),

Reference to your letter No.: 24037 dated: 11/02/2020, the subject licence duly renewed upto 31/3/2025 and issued in Form LE-7 of Explosives Rules, 2008 is forwarded herewith.


For further renewal of licence, please submit the following documents so as to reach this office on or before 31/3/2025.

- Application in Form RE-1 duly filled in and signed.
- Licence fees renewable for one to five years, to be submitted online through e-payment facility available on online application portal under the Explosives Rules, 2008.
- Original licence with approved plan.
- In this connection, please also refer to Rule 112 of Explosives Rules, 2008.

Please follow following instructions strictly:

1. The records of explosives transported by the licenced Roadvan shall be maintained in the proforma RE-6 under Part 5 of schedule V of Explosives Rules 2008.
2. Please ensure that persons whose antecedents verified by the local Police shall only be employed with the licenced explosives roadvan/compressor mounted truck as drivers or cleaners. List of such drivers and cleaner's alongwith the personal particulars shall be made available to the local police in advance. The re-verification of such staff shall also be made at least once in a year in compliance to Rule 61(3) of Explosives Rules 2008.
3. Please note that during transportation of explosives, the Roadvan shall always be attended to by two armed guards. If the consignment of explosives is likely to pass through sensitive areas notified by Ministry of Home Affairs, it should be escorted by armed Police escort / guard provided by District Police Administration as required in Rule 67(7) of Explosives Rules 2008.

Enclosures :

Yours faithfully,

 (Dr. A SHEIK HUSSAIN)
 Dy. Controller of Explosives
 For Joint Chief Controller of Explosives
 South Circle, Chennai

Copy Forwarded to:

1. District Magistrate, VILUPPURAM (Tamil Nadu) for information.

For Joint Chief Controller of Explosives
 South Circle, Chennai

[For more information regarding status, fees and other details, please visit our web site <http://peso.gov.in>]



Source Endorsed under Rule 107(1) of Explosives Rules, 2008
By Shri Dr. P. K. Rana, Controller of Explosives, Chennai on 20/05/2014

अनुज्ञप्ति फॉर्म एनई - 7 / LICENCE FORM LE-7
(विस्फोटक नियम 2008 की अनुसूची 4 के भाग 1 का अनुच्छेद 7 देखें)
(See article no 7 of Part 1 of Schedule IV of Explosives Rules, 2008)

अनुज्ञप्ति : सड़क वैन में विस्फोटकों के परिवहन के लिए
Licence to : transport explosives in a road van



अनुज्ञप्ति संख्या / Licence No. : E/SC/TN/25/842(E81250)
वार्षिक फीस रूप / Annual Fee Rs : 2500/-

- अनुज्ञप्ति एतद्वारा जारी की जाती है
Licence is hereby granted to : **K Dhanamkotteswaran (Occupier : K Dhanamkotteswaran)**
Prop.M/s Sri Dhanam Kotteswaran Explosives & Co.,New No.1,Meenachi Avenue,Old Perungalathur,
Thambaram, Chennai PIN 600063,
District-CHENNAI, State-Tamil Nadu, Pincode-600063
- अनुज्ञप्तिधारी की प्राप्ति / Status of licensee : **Proprietorship Firm**
- सड़क वैन की विशेषताएँ / Particulars of the road van:

पंजीकरण संख्या / Registration No.	TN-11/F-9092
यान का मेक एवं मॉडल / Make and model of vehicle	MAHINDRA AND MAHINDRA/BOLERO MAXI
सदाम रहित वजन / Unladen weight	1830 Kg(s)
सदाम सहित अधिकतम वजन / Maximum laden weight	2620 Kg(s)
परिवहन के लिए अनुज्ञेय विस्फोटकों की अधिकतम मात्रा Maximum quantity of explosives permitted for transport	790 Kg(s)
इंजिन संख्या / Engine No.	TBE1A80113
चैसिस संख्या / Chassis No.	MA1ZP2TBKE1A19328
अन्य फिटिंग्स का विवरण / Description of Other Fittings	As per approved drawings
वाहन के लिए अनुमत्य विस्फोटकों की मात्रा / Quantity of Explosives permitted to carry	790 Kg(s)

- अनुज्ञप्त परिसर निम्नलिखित आरेखण (आरेखणों) के अनुरूप होना चाहिए / The licensed premises shall conform to the following drawing(s):
आरेखण संख्या / Drawing No : E/SC/TN/25/842(E81250) दिनांक / dated : 20/05/2014
- समय समय पर यथा संशोधित विस्फोटक अधिनियम, 1884 और उसके अधीन बनाए गए विस्फोटक नियम, 2008 के उपबन्धों और शर्तों एवं निम्नलिखित अनुलग्नकों के अधीन अनुज्ञप्ति 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 thereunder and the conditions and the following annexures:
(क) उपर्युक्त क्रम संख्या 4 में यथाकथित सड़क वैन का आरेखण / (a) Drawings of the road van as stated in serial no.4 above.
(ख) अनुज्ञापन प्राधिकारी द्वारा हस्ताक्षरित शर्तें / (b) Conditions signed by the licensing authority.
- यह अनुज्ञप्ति तारीख 31 मार्च 2019 तक विधिमान्य रहेगी / This licence shall remain valid till 31st day of March 2019

यह अनुज्ञप्ति, अधिनियम या उसके अधीन विरहित नियमों या इस अनुज्ञप्ति की शर्तों के उल्लंघन, अनुसूची 5 के भाग 4 में सन्दर्भित, जहाँ भी लागू हो, या यदि अनुज्ञप्त परिसर आरेखण या उससे संलग्न उद्घाटनों में दर्शाए गए विवरण के अनुरूप नहीं पाए जाने पर निलम्बित या प्रतिसंहत की जा सकती 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, 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.

दिनांक / Date: 20/05/2014

संयुक्त मुख्य विस्फोटक नियंत्रक / Joint Chief Controller of Explosives
दक्षिण वैन, चेन्नई / South Circle, Chennai

अनुज्ञप्ति के नवीनीकरण हेतु पंखें / Endorsement for renewal of licence:

नवीनीकरण की तिथि Date of Renewal	वैधता समाप्ति की तिथि Date of Expiry	अनुज्ञापन प्राधिकारी के हस्ताक्षर Signature of licensing authority
24/02/2020	31/03/2025	Jt. Chief Controller of Explosives, South Circle, Chennai

वैधानिक चेतावनी : विस्फोटकों का लापरवाही से प्रयोग या दुरुपयोग, विधि के अधीन गम्भीर दण्डनीय अपराध होगा।
Statutory Warning : Mishandling and misuse of explosives shall constitute serious criminal offence under the law.

'Covering Letter'



GOVERNMENT OF INDIA
MINISTRY OF COMMERCE & INDUSTRY
PETROLEUM AND EXPLOSIVES SAFETY ORGANISATION (PESU)
(Formerly Department of Explosives)
A & D - Wing, Block 1-8, 1st Floor, Shastri Bhavan
26 Haddons Road, Nungambakkam Chennai 600006
Tele: 28281023 Fax: 28284848
Email: jtecechennai@explosives.gov.in

No.F/SC/VN/25/1491(E115693)

Dated: 03/04/2019

~~M/s. Kuberan Explosives & Co.,
No.1, Meezanhi Avenue, Old Perungudalur, Tambaram
Town Village - Tambaram
Dist. CHENNAI, State, Tamil Nadu, Pincode-600063~~

Subject: Road Van for the carriage of Explosives - Registration No TN11AJ6274 Licence No./E/SC/TN/25/1491(E115693) granted in Form LE-7 under Explosives Rules, 2008 -Endorsement regarding -Endorsement of Licence.

Sixty.

Reference memo No. E/SC/FS/25/1491(E115693) Dated 29/03/2019 from Joint Chief Controller of Explosives, South Circle, Chennai and
Inspection of the subject premises by an officer of this organization on 27/02/2019

The subject licence No. E/SC/TN/25/1491(E115693) valid upto 31st March 2023 duly endorsed is forwarded herewith.

For further renewal of licence, please submit following documents so as to reach this office on or before 31/03/2023

- Application in Form KE-1 duly filled in and signed.
- Licence fees for one to five years in the form of demand draft drawn on any Nationalized Bank in favour of Jt. Chief Controller of Explosives, Chennai payable at Chennai.
- Original licence with approved plan.
- In this connection, please also refer to Rule 112 of Explosives Rules, 2008.

Please follow following instructions strictly:

1. The records of explosives transported by the licensed Roadvan shall be maintained in the proforma RE-6 under Part 5 of schedule V of Explosives Rules 2008.
2. Please ensure that persons whose antecedents verified by the local Police shall only be employed with the licensed explosives roadvan/compressor/mounded truck as drivers or cleaners. List of such drivers and cleaner's alongwith the personal particulars shall be made available to the local police in advance. The re-verification of such staff shall also be made at least once in a year in compliance to Rule 61(3) of Explosives Rules 2008.
3. Please note that during transportation of explosives, the Roadvan shall always be attended to by two armed guards. If the consignment of explosives is likely to pass through sensitive areas notified by Ministry of Home Affairs, it should be escorted by armed Police escort guard provided by District Police Administration as required in Rule 67(7) of Explosives Rules 2008.

Yours faithfully,

[Signature]
Controller of Explosives
For Joint Chief Controller of Explosives
South Circle, Chennai

Copy Forwarded to

1. District Magistrate, KANCHIPURAM, Tamil Nadu with reference to his No: Re. 42317/2010/M3 Dated: 30/05/2011.

For John Chief, Controller of Explosives,
South Circle, Chennai

[For more information regarding status, fees and other details, please visit our website <http://explosives.gov> in



Under the Rule 107(3) of Explosives Rules, 2008
in M.C. PASADIS, Controller of Explosives, Chennai on 26/02/2019

[Signature]

अनुमति प्रारूप एनई - 7 / LICENCE FORM I.E-7
(विस्फोटक नियम 2008 की अनुसूची 4 के भाग 1 का अनुच्छेद 7 देखें)
(See article no 7 of Part I of Schedule IV of Explosives Rules, 2008)

अनुमति : सड़क वैन में विस्फोटकों के परिवहन के लिए
Licence to : transport explosives in a road van



अनुमति संख्या / Licence No. : EISC/TN/25/1491(E115693)
वार्षिक फीस / Annual Fee Rs. : 2500/-

1. अनुमति एतद्वारा जारी की जाती है
Licence is hereby granted to : M/s. Kuberan Explosives & Co (Occupier : K. Dhanakotteswaran)
No.1, Meenachi Avenue, Old Perungalathur, Tambaram,
District-CHENNAI, State-Tamil Nadu, Pincode-600063
2. अनुमतिधारी की प्रस्थिति / Status of licensee : Proprietorship Firm
3. सड़क वैन की विशेषताएँ / Particulars of the road van:

पंजीकरण संख्या / Registration No.	TN11AJ6274
वाहन का मेक एवं मॉडल / Make and model of vehicle	TATA MOTORS LTD
नलदायक वजन / Laden weight	2200 Kg(s)
नलदायक सहित अधिकतम वजन / Maximum laden weight	5950 Kg(s)
परिवहन के लिए अनुमति विस्फोटकों की अधिकतम मात्रा Maximum quantity of explosives permitted for transport.	3750 Kg(s)
इंजिन संख्या / Engine No.	4SPCR11FRY636710
चैसिस संख्या / Chassis No.	MAFS05358JSL16313
अन्य फिटिंग्स का विवरण / Description of Other Fittings	Spark Arrestor, Battery Cut-off Switch, fire screen & Gun
वाहन के लिए अनुमति विस्फोटकों की मात्रा / Quantity of Explosives permitted to carry	3750 Kg(s)

4. अनुमति परिसर निम्नलिखित आरेखण (आरेखणों) के अनुरूप होना चाहिए / The licensed premises shall conform to the following drawing(s):
आरेखण संख्या / Drawing No. : EISC/TN/25/1491(E115693) दिनांक / dated : 26/02/2019
5. समय समय पर यथा लक्ष्यित विस्फोटक अधिनियम, 1884 और उसके अधीन बनाए गए विस्फोटक नियम, 2008 के उपबन्धों और शर्तों एवं निम्नलिखित अनुमति के अधीन अनुमति प्रदान की जाती है।
The licensee is granted subject to the provision of Explosives Act 1884 as amended from time to time and the Explosives Rules, 2008 framed thereunder and the conditions and the following annexures:-
(क) उपरोक्त क्रम संख्या 4 में यथास्थित सड़क वैन का आरेखण / (a) Drawings of the road van as stated in serial no.4 above
(ख) अनुमतिपत्र प्राधिकारी द्वारा हस्ताक्षरित शर्तें / (b) Conditions signed by the licensing authority.
6. यह अनुमति तारीख 31 मार्च 2023 तक विधिमान्य रहेगी / This licence shall remain valid till 31st day of March 2023

यह अनुमति अधिनियम या उसके अधीन विधित नियमों या इस अनुमति की शर्तों के उल्लंघन, अनुसूची 3 के भाग 4 में सम्बंधित जहाँ भी लागू हो, या
यह अनुमति परिसर आरेखण या उससे संलग्न उपायों में दशिए गए विवरण के अनुरूप नहीं पाए जाने पर निलम्बित या प्रतिनष्ट की जा सकती 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
whenever 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.

दिनांक / Date: 26/02/2019

संयुक्त मुख्य विस्फोटक नियंत्रक / Joint Chief Controller of Explosives
दक्षिणार्च, चेन्नई / South Circle, Chennai

अनुमति के लचीलीकरण हेतु पंजीकरण / Endorsement for renewal of licence.

लचीलीकरण की तिथि
Date of Renewal

वैधता समाप्ति की तिथि
Date of Expiry

अनुमतिपत्र प्राधिकारी के हस्ताक्षर
Signature of licensing authority

वैधानिक चेतावनी : विस्फोटकों का लापरवाही से प्रयोग या दुरुपयोग, विधि के अधीन गम्भीर दण्डित अपराध होगा।
Statutory Warning : Mishandling and misuse of explosives shall constitute serious criminal offence under the law.

[Signature]
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Dr. S. KARUPPANNAN, M.Sc., Ph.D.,
RQP/MA5/263/2014/A



ANNEXURE - VIII

இந்திய அரசாங்கம்
Government of India

கன்னியப்பன் நா
Kanniyappan N

தந்தை : நாராயணன்
Father : NARAYANAN

பிறந்ததேதி / Year of Birth : 1949

ஆண்பால் / Male

4778 6355 6599

ஆதார் - சாதாரண மனிதனின் அதிகாரம்

Unique Identification Authority of India

முகவரி:
S/O: நாராயணன், 55,
மாரியம்மன் கோவில்,
ஆனம்பாக்கம் அஞ்சல்,
நீர்க்குன்றம், கங்கேசுபுரம்,
ஆனம்பாக்கம், தமிழ் நாடு,
603107

Address:
S/O: Narayanan, 55,
MARIYAMMAN KOVIL,
AANAMPAKKAM POST,
Neerkundram, Kancheepuram,
Aanambakkam, Tamil Nadu,
603107

4778 6355 6599

1047 1800 200 1947

help@uidai.gov.in

www.uidai.gov.in

Dr. S. KARUPPANNAN, M.Sc., Ph.D.,
RQP/MAS/263/2014/A



Signature of Dr. S. Karuppannan

अर्हता प्राप्त व्यक्ति के रूप में मान्यता प्रमाण पत्र
(खनिज रियायत नियमावली, 1960 के नियम 22सी के तहत)
CERTIFICATE OF RECOGNITION AS QUALIFIED PERSON
(Under Rule 22C of Mineral Concession Rules, 1960)

श्री एस. करुपन्नण, मॉगनीकाडू, मुत्तमंपट्टी पोस्ट, बोम्मीडी वयॉ, ओमलूर तालुक, सैलम डीस्टीक्ट, तमिलनाडू - 635 301, जिनका फोटो और हस्ताक्षर ऊपर दिया हुआ है, तथा जिनहोंने अपनी अर्हता और अनुभव का संतोष जनक साक्ष्य दिया है, को खनन योजना तैयार करने हेतु खनिज रियायत नियमावली 1960 के नियम 22सी के तहत अर्हता प्राप्त व्यक्ति के रूप में मान्यता प्रदान की जाती है।

Shri S. Karuppannan, Mangarikadu, Muthampatty (Post), Bommididi (Via), Omalur Taluk, Salem District, Tamilnadu - 635 301, whose **Photograph and signature** is affixed herein above, having given satisfactory evidence of his qualifications & experience hereby **RECOGNISED** under Rule 22C of the Mineral Concession Rule, 1960 as a Qualified Person to prepare Mining Plans.

उनकीपंजीयन संख्या है

His registration number is

RQP /MAS/263/2014/A

यह मान्यता 10 वर्षों की अवधि के लिए मान्यता है जो दिनांक 15.12.2024 को समाप्त होगी।
This recognition is valid for a period of 10 years ending on 15.12.2024.

उनके द्वारा प्रस्तुत खनन योजना में गलत जानकारी / दस्तावेज पाए जाने की स्थिति में यह प्रमाण पत्र वापस लिया जाएगा / निरस्त किया जाएगा।

This certificate will liable to be withdrawn / cancelled in the event of furnishing the wrong information / documents in the Mining Plan submitted by him.

स्थान/ Place : Chennai

दिनांक/ Date : 16.12.2014.

Signature of Dr. S. Karuppannan
359
Dr. S. KARUPPANNAN, M.Sc., Ph.D.,
RQP/MAS/263/2014/A

Signature of Regional Controller of Mines
खाननियंत्रक / Regional Controller of Mines
भारतीय खानब्यूरो/ Indian Bureau of Mines
चेन्नई क्षेत्र / Chennai Region

TOWARDS
WALAJABAD

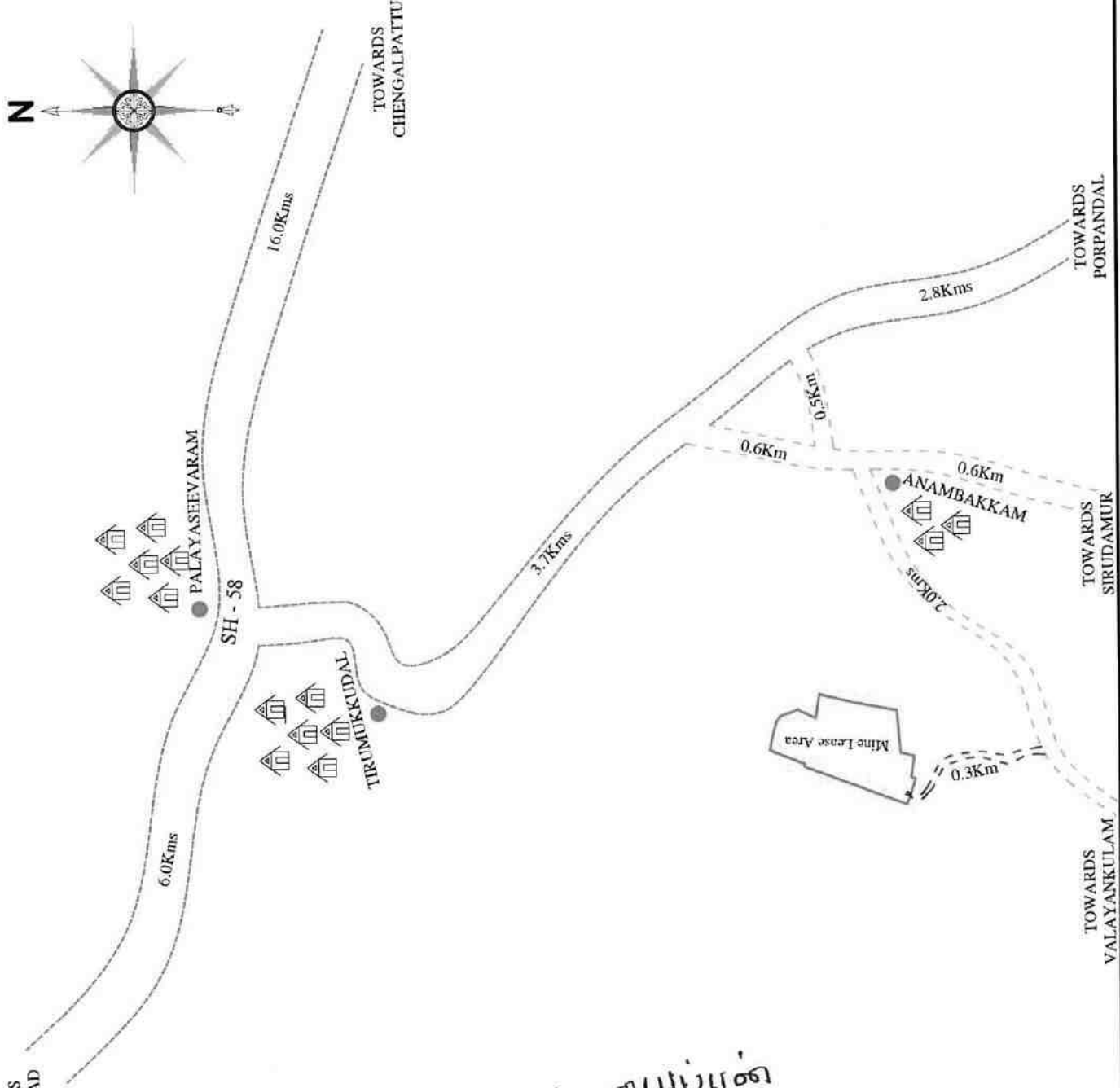


PLATE NO-I

APPLICANT:

Mr.N.KANNIYAPPAN,
S/O Mr.NARAYANAPILLAI,
No.55,MARIYAMMAN KOVIL,
AANAMPAKKAM POST,
NEERKUNDRAM VILLAGE,
UTHIRAMERUR TALUK,
KANCHEEPURAM DISTRICT.

LEASE APPLIED AREA:

S.F.NO : 277/1A, 277/1B, 277/1C, 277/1D,
277/1E, 277/1F, 277/2 & 280/2

EXTENT : 3.11.50Hect.

VILLAGE : SIRUTHAMUR,

TALUK : UTHIRAMERUR,

DISTRICT : KANCHEEPURAM

INDEX

MINE LEASE AREA

APPROACH ROAD

SH - 58 ROAD

MDR - 789

VILLAGE ROAD

CART TRACK

KEY MAP

Not to Scale

Prepared By:

I DO HEREBY CERTIFY THAT THE PLATE
HAS BEEN CHECKED BY ME AND IS CORRECT
TO THE BEST OF MY KNOWLEDGE

Dr.S.KARUPPANNAN,M.Sc.,Ph.D.
RECOGNISED QUALIFIED PERSON
RQP/MAS/263/2014/A

12°43'25.86"N

TAMIL NADU

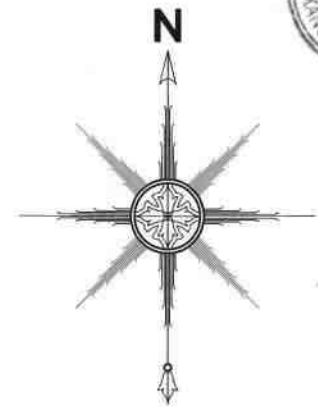
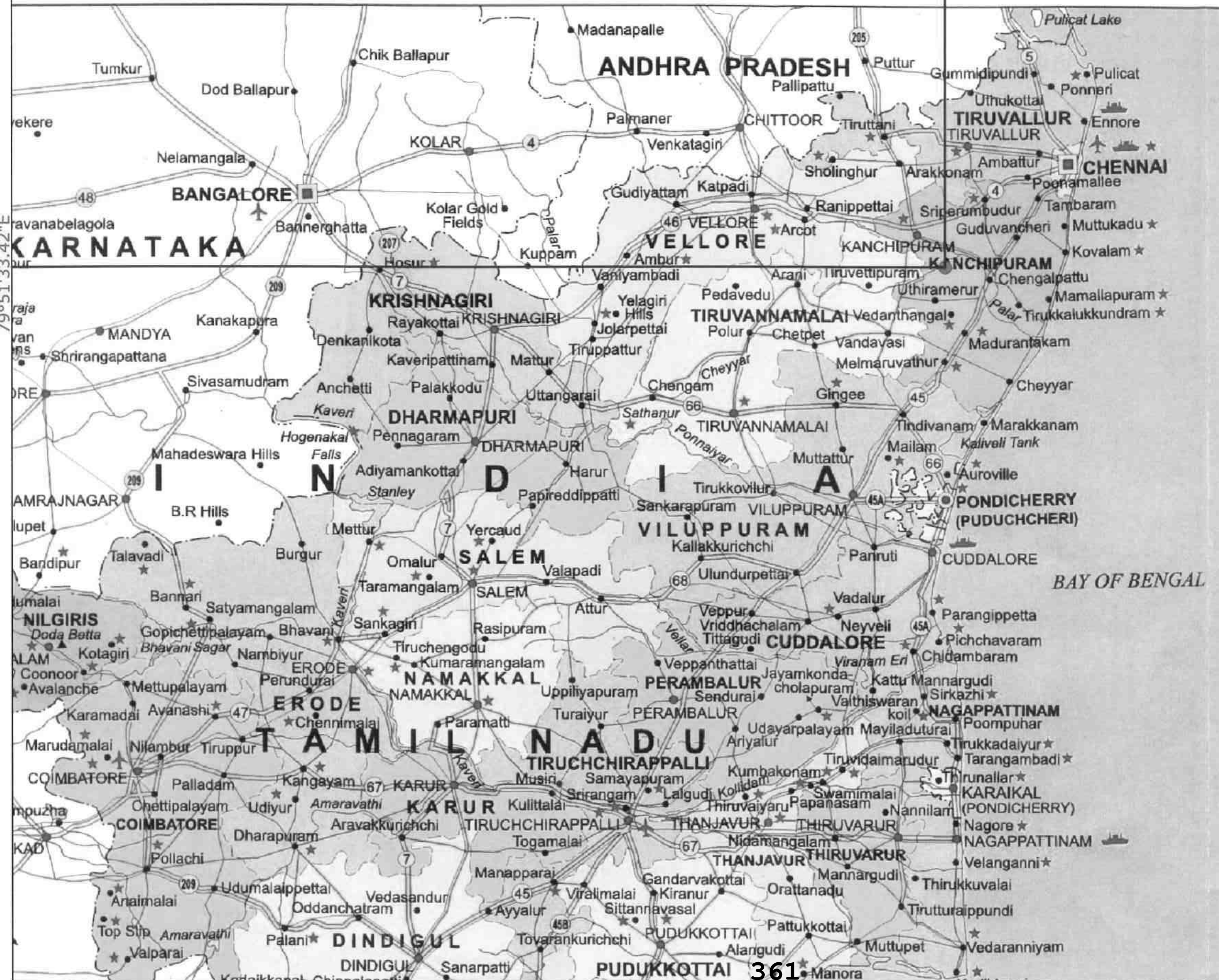


PLATE NO-IA

APPLICANT:
Mr.N.KANNIYAPPAN,
S/O Mr.NARAYANAPILLAI,
No.55,MARIYAMMAN KOVIL,
AANAMPAKKAM POST,
NEERKUNDRAM VILLAGE,
UTHIRAMERUR TALUK,
KANCHEEPURAM DISTRICT.

LEASE APPLIED AREA:

S.F.NO : 277/1A, 277/1B, 277/1C, 277/1D,
277/1E, 277/1F, 277/2 & 280/2
EXTENT : 3.11.50Hect,
VILLAGE : SIRUTHAMUR,
TALUK : UTHIRAMERUR,
DISTRICT : KANCHEEPURAM

INDEX

MINE LEASE AREA: ●
TOPO SHEET NO : 57-P/14
LATITUDE : 12°43'17.34"N to 12°43'25.86"N
LONGITUDE : 79°51'33.42"E to 79°51'40.03"E

LOCATION PLAN

NOT TO SCALE

Prepared By:

I DO HEREBY CERTIFY THAT THE PLATE
HAS BEEN CHECKED BY ME AND IS CORRECT
TO THE BEST OF MY KNOWLEDGE

[Signature]

Dr.S.KARUPPANNAN,M.Sc.,Ph.D.,
RECOGNISED QUALIFIED PERSON
RQP/MAS/263/2014/A

சுதந்திரம்



PLATE NO-IB

APPLICANT:

Mr.N.KANNIYAPPAN,
S/O Mr.NARAYANAPILLAI,
No.55,MARIYAMMAN KOVIL,
AANAMPAKKAM POST,
NEERKUNDRAM VILLAGE,
UTHIRAMERUR TALUK,
KANCHEEPURAM DISTRICT.

LEASE APPLIED AREA:

S.F.NO : 277/1A, 277/1B, 277/1C, 277/1D
277/1E, 277/1F, 277/2 & 280/2

EXTENT : 3.11.50Hect,
VILLAGE : SIRUTHAMUR,
TALUK : UTHIRAMERUR,
DISTRICT : KANCHEEPURAM

TOPO SHEET NO : 57-P/14

LATITUDE : 12°43'17.34"N to 12°43'25.86"N

LONGITUDE: 79°51'33.42"E to 79°51'40.03"E

MINE LEASE AREA




TOPO SHEET MAP

SCALE- 1:1,00,000

Prepared By:

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TO THE BEST OF MY KNOWLEDGE


Dr.S.KARUPPANNAN,M.Sc.,Ph.D.,
RECOGNISED QUALIFIED PERSON
RQP/MAS/263/2014/A

79°51'33.42"E

362

தான் அப்படி

12°43'25.86"N

79°51'33.42"E

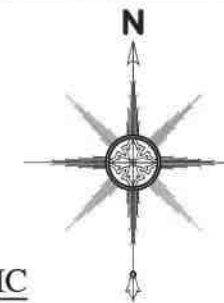


PLATE NO-IC

APPLICANT:
Mr.N.KANNIYAPPAN,
S/O Mr.NARAYANAPILLAI,
No.55,MARIYAMMAN KOVIL,
AANAMPAKKAM POST,
NEERKUNDRAM VILLAGE,
UTHIRAMERUR TALUK,
KANCHEEPURAM DISTRICT.

LEASE APPLIED AREA:
S.F.NO : 277/1A, 277/1B, 277/1C, 277/1D,
277/1E, 277/1F, 277/2 & 280/2
EXTENT : 3.11.50Hect,
VILLAGE : SIRUTHAMUR,
TALUK : UTHIRAMERUR,
DISTRICT : KANCHEEPURAM

INDEX

MINE LEASE AREA	
APPROACH ROAD	
VILLAGE ROAD	
CART TRACK	
300m RADIUS	
500m RADIUS	
WATER TANK & ODAI	
EXISTING QUARRY PIT	

TOPO SHEET NO : 57-P/14
LATITUDE : 12°43'17.34"N to 12°43'25.86"N
LONGITUDE : 79°51'33.42"E to 79°51'40.03"E

SATELLITE IMAGERY MAP

SCALE- 1:5000

Prepared By:

I DO HEREBY CERTIFY THAT THE PLATE
HAS BEEN CHECKED BY ME AND IS CORRECT
TO THE BEST OF MY KNOWLEDGE

Dr.S.KARUPPANNAN,M.Sc.,Ph.D.,
RECOGNISED QUALIFIED PERSON
RQP/MAS/263/2014/A

சென்னை மாவட்டம்



OCTOBER TO DECEMBER

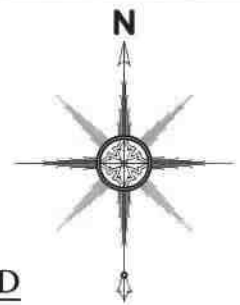


PLATE NO-ID

APPLICANT:

Mr.N.KANNIYAPPAN,
S/O Mr.NARAYANAPILLAI,
No.55,MARIYAMMAN KOVIL,
AANAMPAKKAM POST,
NEERKUNDRAM VILLAGE,
UTHIRAMERUR TALUK,
KANCHEEPURAM DISTRICT.

LEASE APPLIED AREA:

S.F.NO : 277/1A, 277/1B, 277/1C, 277/1D,
277/1E, 277/1F, 277/2 & 280/2

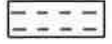
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VILLAGE : SIRUTHAMUR,
TALUK : UTHIRAMERUR,
DISTRICT : KANCHEEPURAM

INDEX

MINE LEASE AREA



APPROACH ROAD



VILLAGE ROAD



CART TRACK



300m RADIUS



500m RADIUS



WATER TANK & ODAI



EXISTING QUARRY PIT



TOPO SHEET NO : 57-P/14

LATITUDE : 12°43'17.34"N to 12°43'25.86"N

LONGITUDE : 79°51'33.42"E to 79°51'40.03"E

ENVIRONMENTAL PLAN

SCALE- 1:5000

Prepared By:

I DO HEREBY CERTIFY THAT THE PLATE
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TO THE BEST OF MY KNOWLEDGE

[Signature]

Dr.S.KARUPPANNAN,M.Sc.,Ph.D.,
RECOGNISED QUALIFIED PERSON
RQP/MAS/263/2014/A

JULY TO SEPTEMBER

TOWARDS
ANAMPAKKAM

364

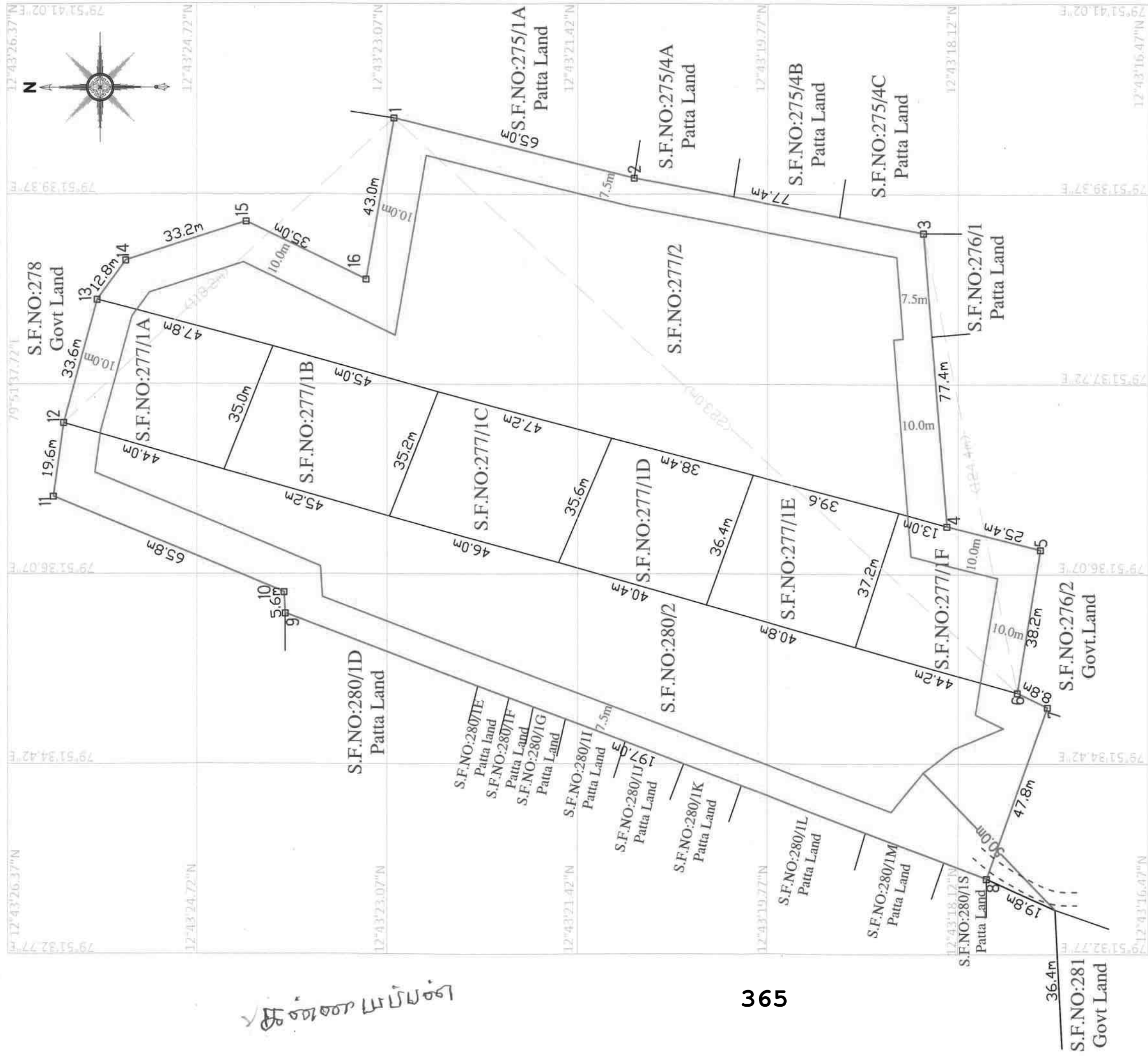


PLATE NO-II

APPLICANT:

Mr.N.KANNIYAPPAN,
S/O Mr.NARAYANAPILLAI,
No.55,MARIYAMMAN KOVIL,
AANAMPAKKAM POST,
NEERKUNDRAM VILLAGE,
UTHIRAMERUR TALUK,
KANCHEEPURAM DISTRICT.

LEASE APPLIED AREA:

S.F.NO : 277/1A, 277/1B, 277/1C, 277/1D,
277/1E, 277/1F, 277/2 & 280/2
EXTENT : 3.11.50Hect,
VILLAGE : SIRUTHAMUR,
TALUK : UTHIRAMERUR,
DISTRICT : KANCHEEPURAM

INDEX

- MINE LEASE AREA
- SAFETY BOUNDARY
- APPROACH ROAD
- PILLAR STONES

Pillar ID	Latitude	Longitude
1	12°43'22.95"N	79°51'40.03"E
2	12°43'20.90"N	79°51'39.52"E
3	12°43'18.42"N	79°51'39.05"E
4	12°43'18.21"N	79°51'36.50"E
5	12°43'17.41"N	79°51'36.29"E
6	12°43'17.60"N	79°51'35.04"E
7	12°43'17.34"N	79°51'34.92"E
8	12°43'17.86"N	79°51'33.42"E
9	12°43'23.86"N	79°51'35.71"E
10	12°43'23.88"N	79°51'35.89"E
11	12°43'25.86"N	79°51'36.72"E
12	12°43'25.77"N	79°51'37.36"E
13	12°43'25.49"N	79°51'38.44"E
14	12°43'25.24"N	79°51'38.78"E
15	12°43'24.21"N	79°51'39.13"E
16	12°43'23.19"N	79°51'38.63"E

MINE LEASE PLAN
SCALE 1: 1000

Prepared By:

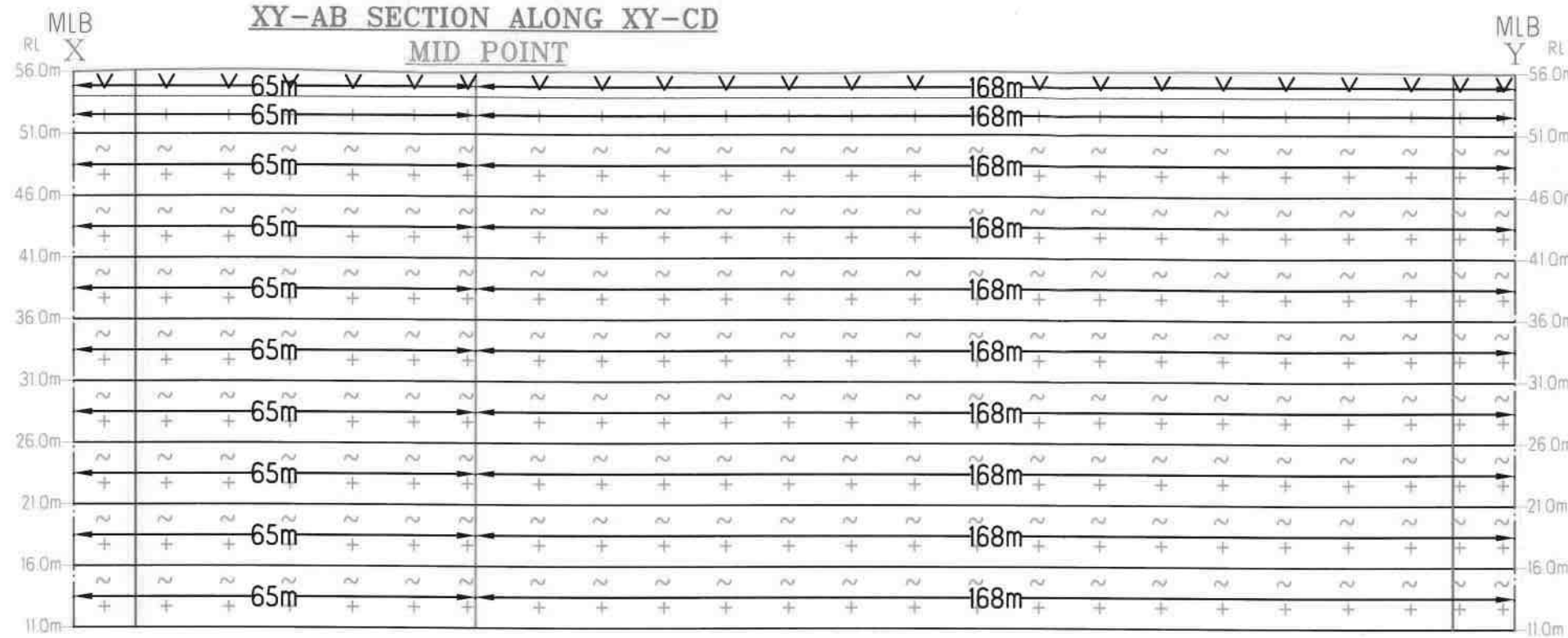
I DO HEREBY CERTIFY THAT THE PLATE
HAS BEEN CHECKED BY ME AND IS CORRECT
TO THE BEST OF MY KNOWLEDGE

[Signature]

Dr.S.KARUPPANNAN,M.Sc.,Ph.D
RECOGNIZED QUALIFIED PERSON
RQP/MAS/263/2014/A



SECTION ALONG X-Y



GEOLOGICAL RESOURCES						
Section	Bench	length in (m)	Width in (m)	Depth in (m)	Volume In CBM	Gravel in CBM
XY-AB	I	65	88	2	11440	11440
	I	65	88	3	17160	17160
	II	65	88	5	28600	28600
	III	65	88	5	28600	28600
	IV	65	88	5	28600	28600
	V	65	88	5	28600	28600
	VI	65	88	5	28600	28600
	VII	65	88	5	28600	28600
	VIII	65	88	5	28600	28600
	IX	65	88	5	28600	28600
TOTAL					257400	245960
XY-AB	I	168	151	2	50736	50736
	I	168	151	3	76104	76104
	II	168	151	5	126840	126840
	III	168	151	5	126840	126840
	IV	168	151	5	126840	126840
	V	168	151	5	126840	126840
	VI	168	151	5	126840	126840
	VII	168	151	5	126840	126840
	VIII	168	151	5	126840	126840
	IX	168	151	5	126840	126840
TOTAL					1141560	1090824
GRAND TOTAL					1398960	1336784

PLATE NO-III

APPLICANT:

Mr.N.KANNIYAPPAN,
S/O Mr.NARAYANAPILLAI,
No.55,MARIYAMMAN KOVIL,
AANAMPAKKAM POST,
NEERKUNDRAM VILLAGE,
UTHIRAMERUR TALUK,
KANCHEEPURAM DISTRICT.

LEASE APPLIED AREA:

S.F.NO : 277/1A, 277/1B, 277/1C, 277/1D,
277/1E, 277/1F, 277/2 & 280/2

EXTENT : 3.11.50Hect,
VILLAGE : SIRUTHAMUR,
TALUK : UTHIRAMERUR,
DISTRICT : KANCHEEPURAM

INDEX

MINE LEASE AREA	<input type="checkbox"/>
SAFETY BOUNDARY	<input type="checkbox"/>
GRAVEL	<input checked="" type="checkbox"/>
ROUGH STONE	<input type="checkbox"/>

GEOLOGICAL SECTIONS

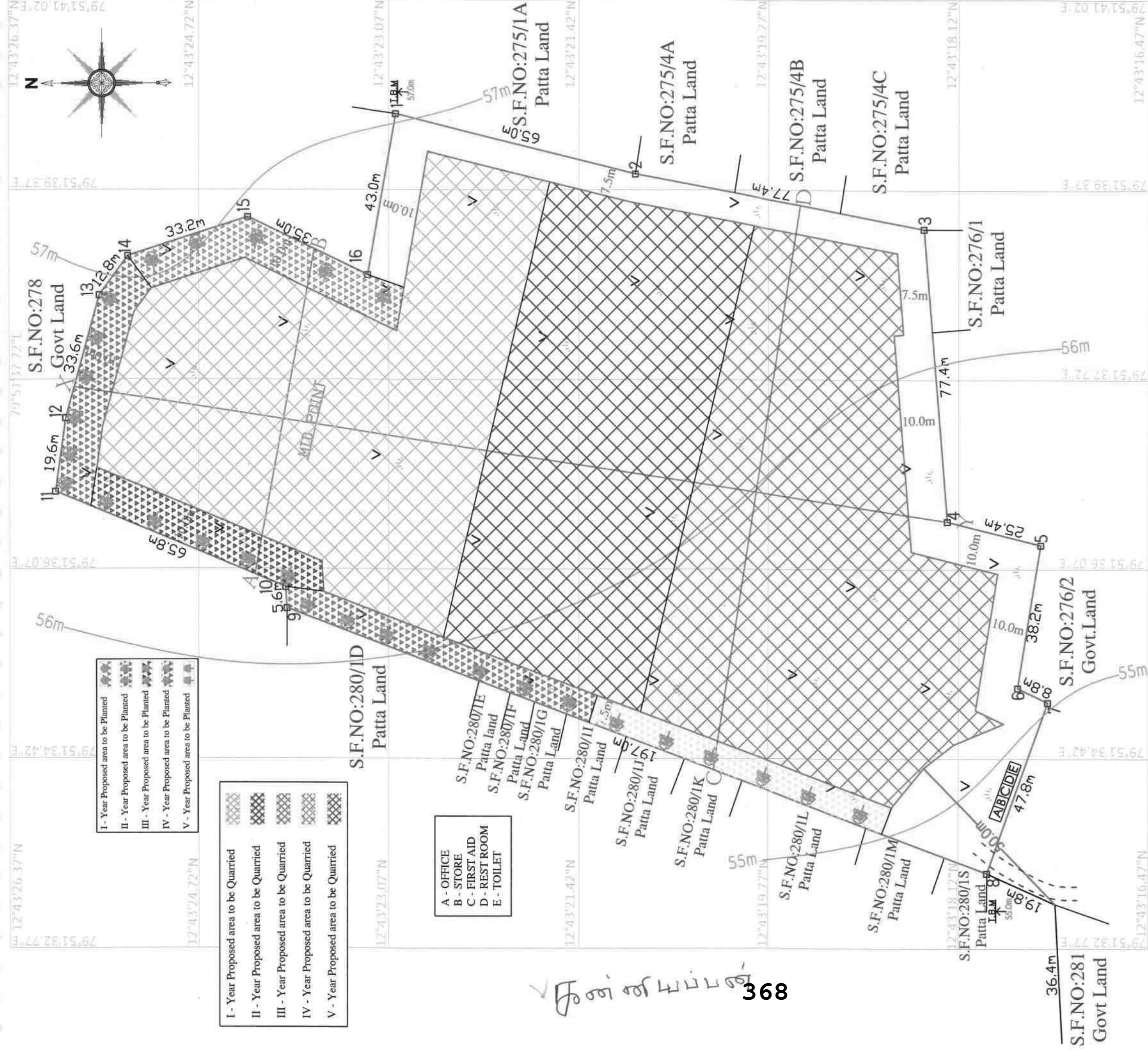
SECTION HOR 1 : 1000 & VER 1: 500

Prepared By:

I DO HEREBY CERTIFY THAT THE PLATE
HAS BEEN CHECKED BY ME AND IS CORRECT
TO THE BEST OF MY KNOWLEDGE

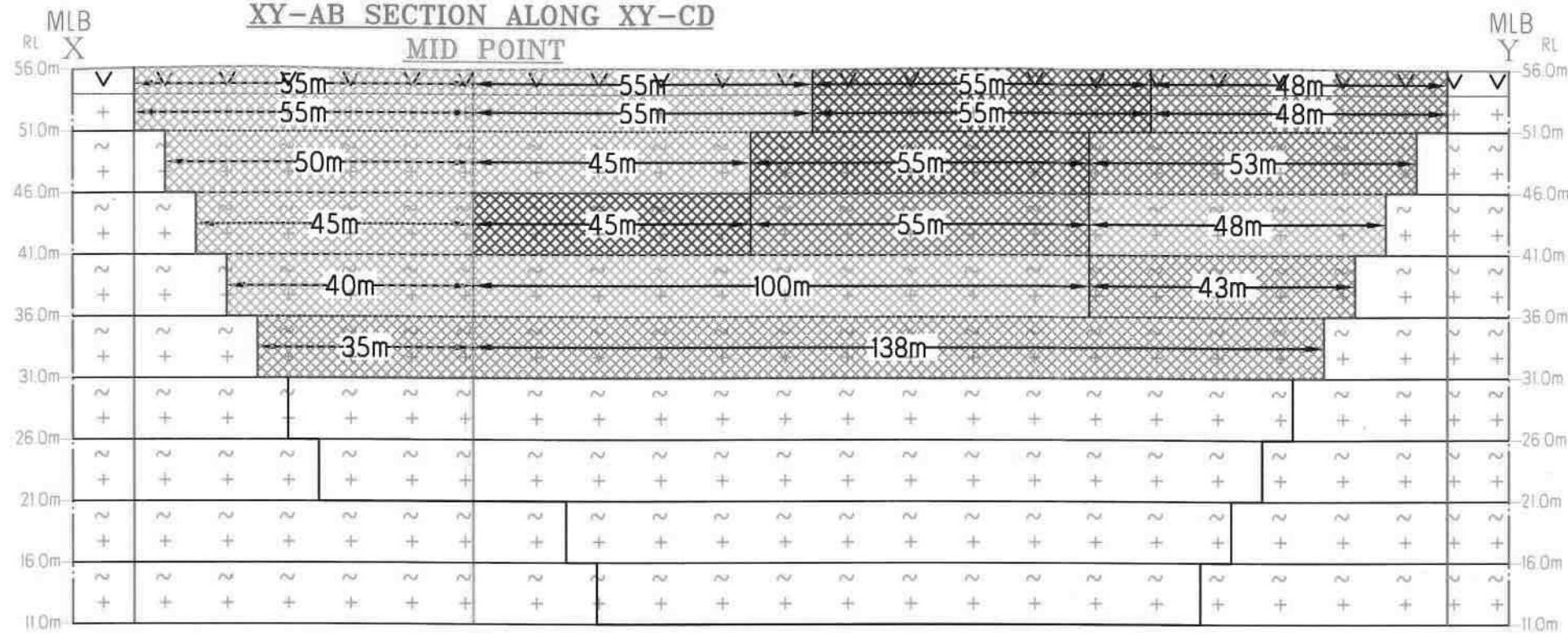
Dr.S.KARUPANNAN,M.Sc.,Ph.D.
RECOGNIZED QUALIFIED PERSON
RQP/MAS/263/2014/A

சு. கருப்பண்ணன்



YEARWISE DEVELOPMENT & PRODUCTION PLAN SCALE 1 : 1000	
<p>INDEX</p> <p>MINE LEASE AREA</p> <p>SAFETY BOUNDARY</p> <p>APPROACH ROAD</p> <p>PILLAR STONES</p> <p>TEMPORARY BENCH MARK</p> <p>CONTOUR LINE</p> <p>SHRUBS</p> <p>GRAVEL</p>	<p>PLATE NO-IV</p> <p>APPLICANT: Mr.N.KANNIYAPPAN, S/O Mr.NARAYANAPILLAI, No.55,MARIYAMMAN KOVIL, AANAMPAKKAM POST, NEERKUNDRAM VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT.</p> <p>LEASE APPLIED AREA: S.F.NO : 277/1A, 277/1B, 277/1C, 277/1D, 277/1E, 277/1F, 277/2 & 280/2 EXTENT : 3.11.50Hect, VILLAGE : SIRUTHAMUR, TALUK : UTHIRAMERUR, DISTRICT : KANCHEEPURAM</p>
<p>Prepared By:</p> <p>I DO HEREBY CERTIFY THAT THE PLATE HAS BEEN CHECKED BY ME AND IS CORRECT TO THE BEST OF MY KNOWLEDGE</p> <p><i>[Signature]</i></p> <p>Dr.S.KARUPPANNAN,M.Sc.,Ph.D RECOGNIZED QUALIFIED PERSON RQP/MAS/263/2014/A</p>	<p>ASSISTANT DIRECTOR</p> <p>Dr.S.KARUPPANNAN,M.Sc.,Ph.D RECOGNIZED QUALIFIED PERSON RQP/MAS/263/2014/A</p>

SECTION ALONG X-Y



YEARWISE PRODUCTION								
Year	Section	Bench	length in (m)	Width in (m)	Depth in (m)	Volume In CBM	Production in CBM	Gravel in CBM
I	XY-AB	I	55	68	2	7480		7480
	XY-AB	I	55	68	3	11220	11220	
	XY-CD	I	55	136	2	14960		14960
	XY-CD	I	55	136	3	22440	22440	
	XY-AB	II	50	58	5	14500	14500	
	XY-CD	II	45	126	5	28350	28350	
	XY-AB	III	45	48	5	10800	10800	
TOTAL						109750	87310	22440
II	XY-CD	III	45	116	5	26100	26100	
	XY-CD	I	55	136	2	14960		14960
	XY-CD	I	55	136	3	22440	22440	
	XY-CD	II	55	126	5	34650	34650	
TOTAL						98150	83190	14960
III	XY-CD	III	55	116	5	31900	31900	
	XY-CD	I	48	136	2	13056		13056
	XY-CD	I	48	136	3	19584	19584	
	XY-CD	II	53	126	5	33390	33390	
TOTAL						97930	84874	13056
IV	XY-CD	III	48	116	5	27840	27840	
	XY-AB	IV	40	38	5	7600	7600	
	XY-CD	IV	100	106	5	53000	53000	
TOTAL						88440	88440	0
V	XY-CD	IV	43	106	5	22790	22790	
	XY-CD	V	138	96	5	66240	66240	
	XY-AB	V	35	28	5	4900	4900	
TOTAL						93930	93930	0
GRAND TOTAL						488200	437744	50456

PLATE NO-IVA

APPLICANT:

Mr.N.KANNIYAPPAN,
S/O Mr.NARAYANAPILLAI,
No.55,MARIYAMMAN KOVIL,
AANAMPAKKAM POST,
NEERKUNDRAM VILLAGE,
UTHIRAMERUR TALUK,
KANCHEEPURAM DISTRICT.

LEASE APPLIED AREA:

S.F.NO : 277/1A, 277/1B, 277/1C, 277/1D,
277/1E, 277/1F, 277/2 & 280/2

EXTENT : 3.11.50Hect,
VILLAGE : SIRUTHAMUR,
TALUK : UTHIRAMERUR,
DISTRICT : KANCHEEPURAM

INDEX

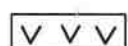
MINE LEASE AREA



SAFETY BOUNDARY



GRAVEL



ROUGH STONE



PROPOSED BENCH



ULTIMATE BENCH



YEARWISE DEVELOPMENT & PRODUCTION SECTIONS

SECTION HOR 1 : 1000 & VER 1 : 500

Prepared By:

I DO HEREBY CERTIFY THAT THE PLATE
HAS BEEN CHECKED BY ME AND IS CORRECT
TO THE BEST OF MY KNOWLEDGE

Dr.S.KARUPPANNAN,M.Sc.,Ph.D.
RECOGNIZED QUALIFIED PERSON
RQP/MAS/263/2014/A

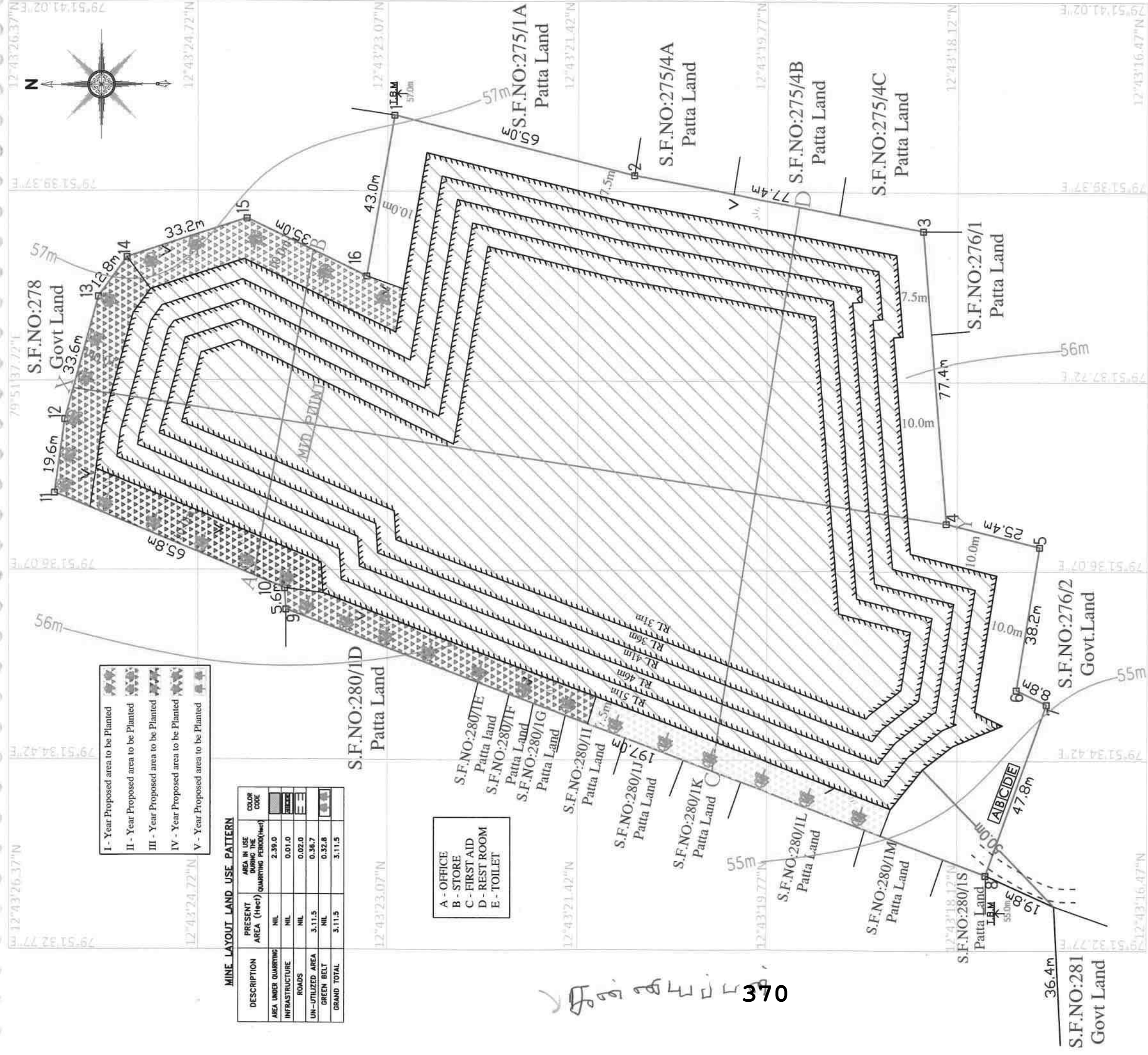
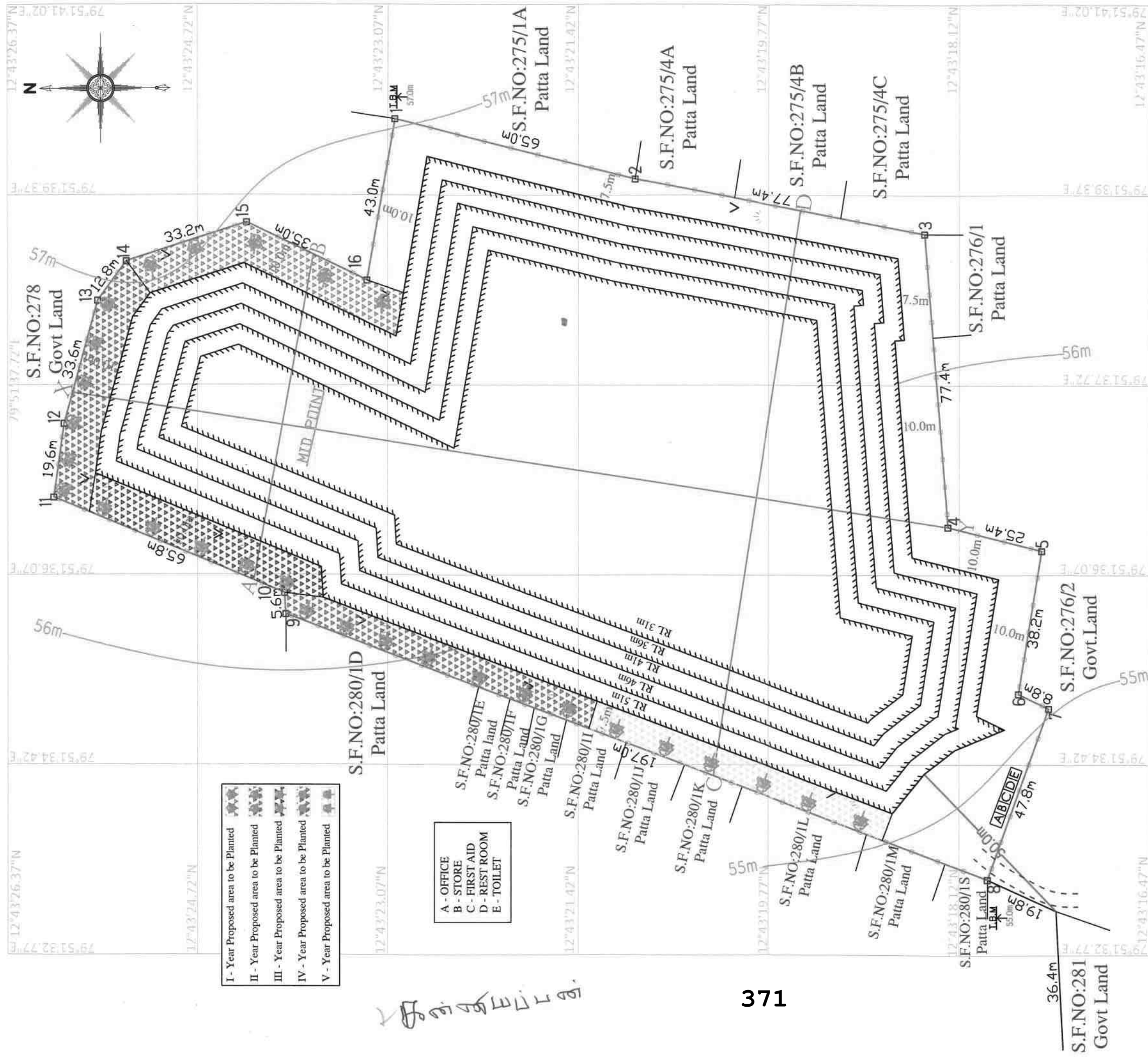


PLATE NO-V		INDEX		MINE LAYOUT PLAN AND LAND USE PATTERN	
APPLICANT: Mr.N.KANNIYAPPAN, S/O Mr.NARAYANAPILLAI, No.55,MARIYAMMAN KOVIL, AANAMPAKKAM POST, NEERKUNDRAM VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT.		MINE LEASE AREA 		SCALE 1 : 1000	
LEASE APPLIED AREA: S.F.NO : 277/1A, 277/1B, 277/1C, 277/1D, 277/1E, 277/1F, 277/2 & 280/2		SAFETY BOUNDARY 		Prepared By:	
EXTENT : 3.11.50Hect,		APPROACH ROAD 		I DO HEREBY CERTIFY THAT THE PLATE HAS BEEN CHECKED BY ME AND IS CORRECT TO THE BEST OF MY KNOWLEDGE	
VILLAGE : SIRUTHAMUR,		PILLAR STONES 		Dr.S.KARUPPANNAN,M.Sc.,Ph.D.	
TALUK : UTHIRAMERUR,		TEMPORARY BENCH MARK 		RECOGNIZED QUALIFIED PERSON	
DISTRICT : KANCHEEPURAM		CONTOUR LINE 		RQP/MAS/263/2014/A	
		SHRUBS 			
		GRAVEL 			
		PROPOSED BENCH 			

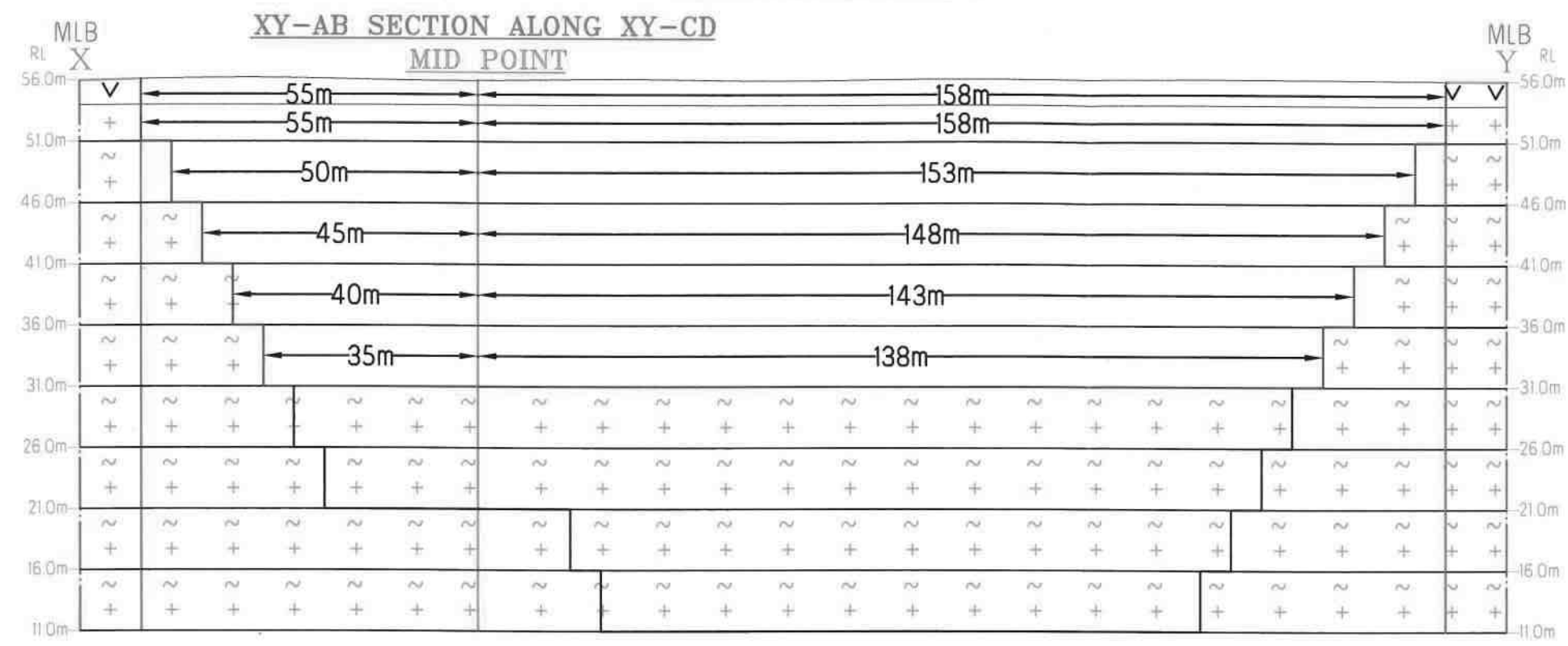




<div>PLATE NO-VI</div> <div>APPLICANT: Mr.N.KANNIYAPPAN, S/O Mr.NARAYANAPILLAI, No.55,MARIYAMMAN KOVIL, AANAMPAKKAM POST, NEERKUNDAM VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT.</div> <div>LEASE APPLIED AREA: S.F.NO : 277/1A, 277/1B, 277/1C, 277/1D, 277/1E, 277/1F, 277/2 & 280/2 EXTENT : 3.11.50Hect, VILLAGE : SIRUTHAMUR, TALUK : UTHIRAMERUR, DISTRICT : KANCHEEPURAM</div>		<div>INDEX</div> <div>MINE LEASE AREA</div> <div>SAFETY BOUNDARY</div> <div>APPROACH ROAD</div> <div>PILLAR STONES</div> <div>TEMPORARY BENCH MARK</div> <div>CONTOUR LINE</div> <div>SHRUBS</div> <div>GRAVEL</div> <div>PROPOSED BENCH</div> <div>FENCING</div>
<div>PROGRESSIVE MINE CLOSURE PLAN</div> <div>SCALE PLAN 1 : 1000</div>		<div>Prepared By:</div> <div>I DO HEREBY CERTIFY THAT THE PLATE HAS BEEN CHECKED BY ME AND IS CORRECT TO THE BEST OF MY KNOWLEDGE</div> <div>Dr.S.KARUPPANNAN,M.Sc.,Ph.D. RECOGNIZED QUALIFIED PERSON RQP/MAS/263/2014/A</div>



SECTION ALONG X-Y



PRODUCTIONS							
Section	Bench	length in (m)	Width in (m)	Depth in (m)	Volume In CBM	Production in CBM	Gravel in CBM
XY-AB	I	55	68	2	7480	.....	7480
	I	55	68	3	11220	11220	.....
	II	50	58	5	14500	14500	.....
	III	45	48	5	10800	10800	.....
	IV	40	38	5	7600	7600	.....
	V	35	28	5	4900	4900	.....
TOTAL					56500	49020	7480
XY-CD	I	158	136	2	42976	.....	42976
	I	158	136	3	64464	64464	.....
	II	153	126	5	96390	96390	.....
	III	148	116	5	85840	85840	.....
	IV	143	106	5	75790	75790	.....
	V	138	96	5	66240	66240	.....
TOTAL					431700	388724	42976
GRAND TOTAL					488200	437744	50456

PLATE NO-VIA

APPLICANT:
 Mr.N.KANNIYAPPAN,
 S/O Mr.NARAYANAPILLAI,
 No.55,MARIYAMMAN KOVIL,
 AANAMPAKKAM POST,
 NEERKUNDRAM VILLAGE,
 UTHIRAMERUR TALUK,
 KANCHEEPURAM DISTRICT.

LEASE APPLIED AREA:
 S.F.NO : 277/1A, 277/1B, 277/1C, 277/1D,
 277/1E, 277/1F, 277/2 & 280/2
 EXTENT : 3.11.50Hect,
 VILLAGE : SIRUTHAMUR,
 TALUK : UTHIRAMERUR,
 DISTRICT : KANCHEEPURAM

INDEX

- MINE LEASE AREA ☐
- SAFETY BOUNDARY ☐
- GRAVEL ☒
- ROUGH STONE ☐
- PROPOSED BENCH ☐
- ULTIMATE BENCH ☐

PROGRESSIVE MINE CLOSURE SECTIONS

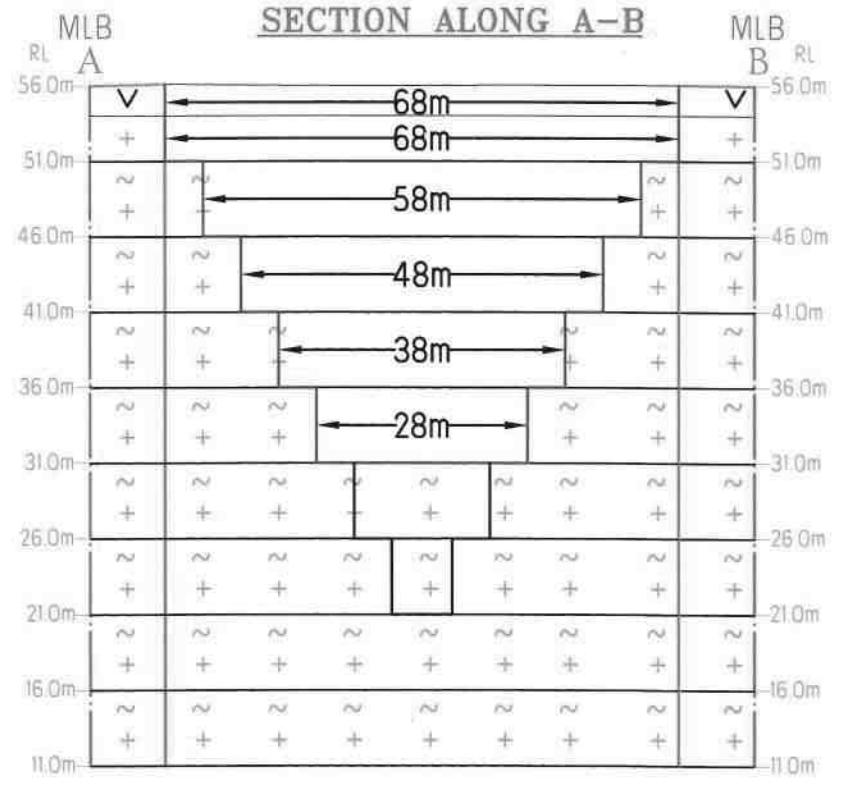
SECTION HOR 1 : 1000 & VER 1 : 500

Prepared By:

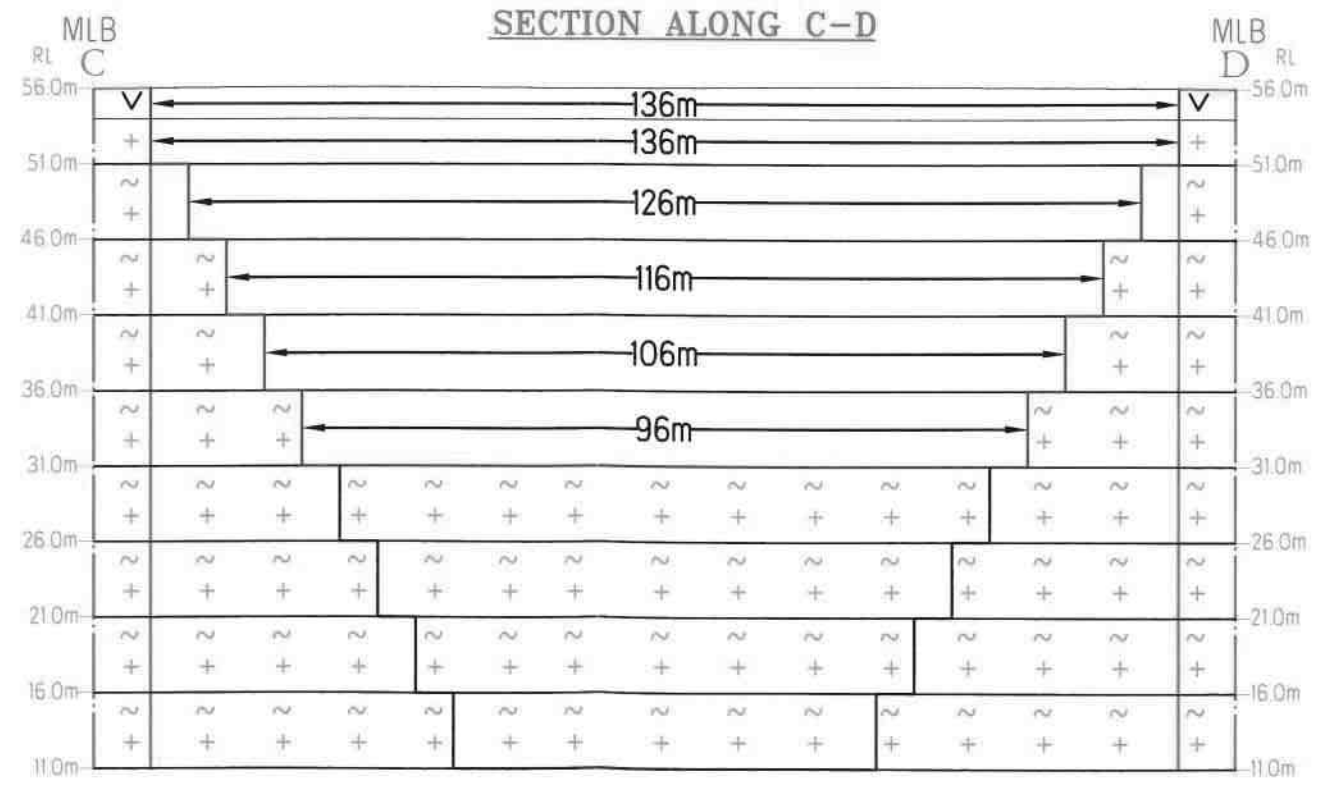
I DO HEREBY CERTIFY THAT THE PLATE HAS BEEN CHECKED BY ME AND IS CORRECT TO THE BEST OF MY KNOWLEDGE

Dr.S.KARUPPANNAN,M.Sc.,Ph.D.
 RECOGNIZED QUALIFIED PERSON
 RQP/MAS/263/2014/A

SECTION ALONG A-B



SECTION ALONG C-D



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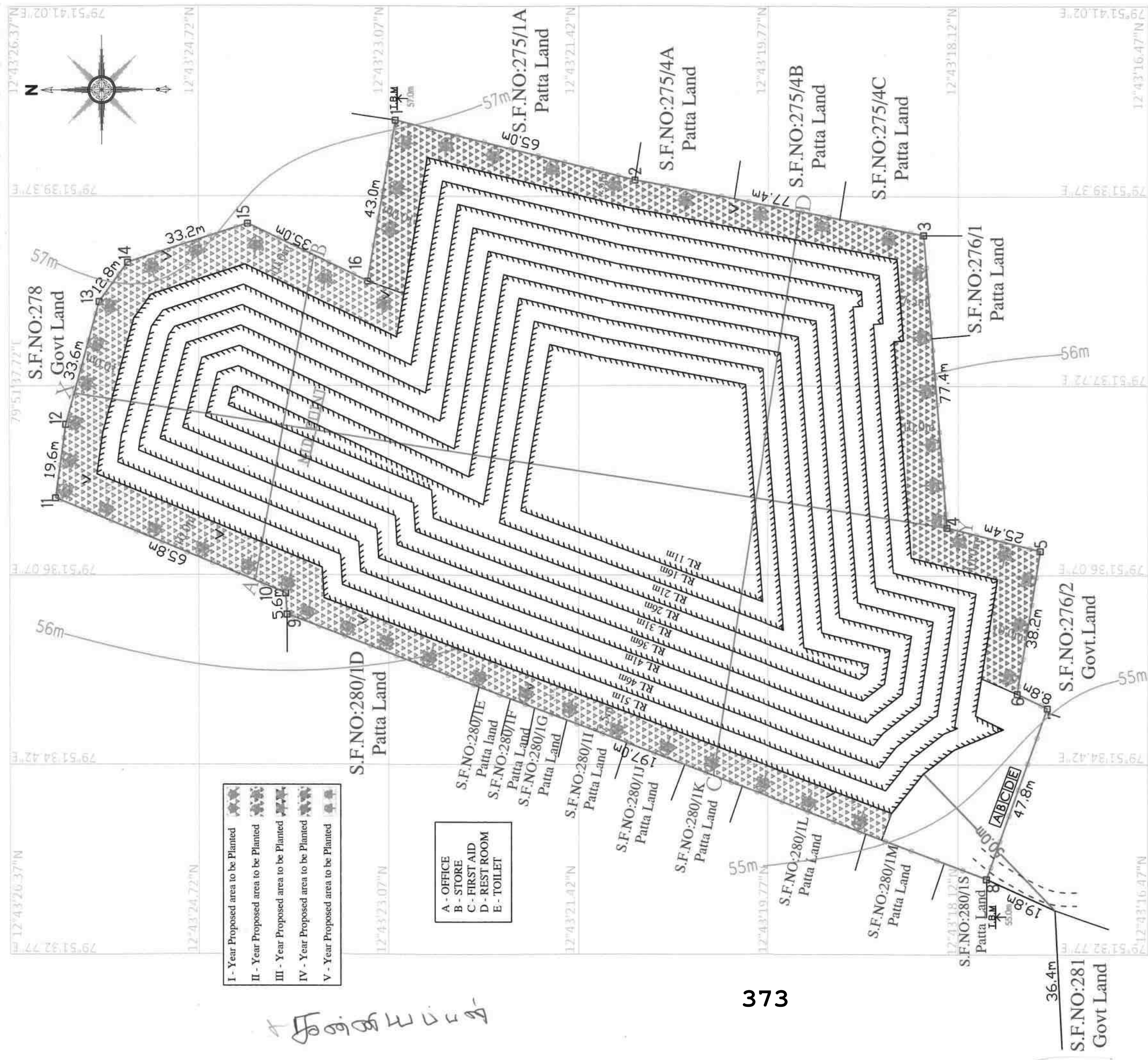
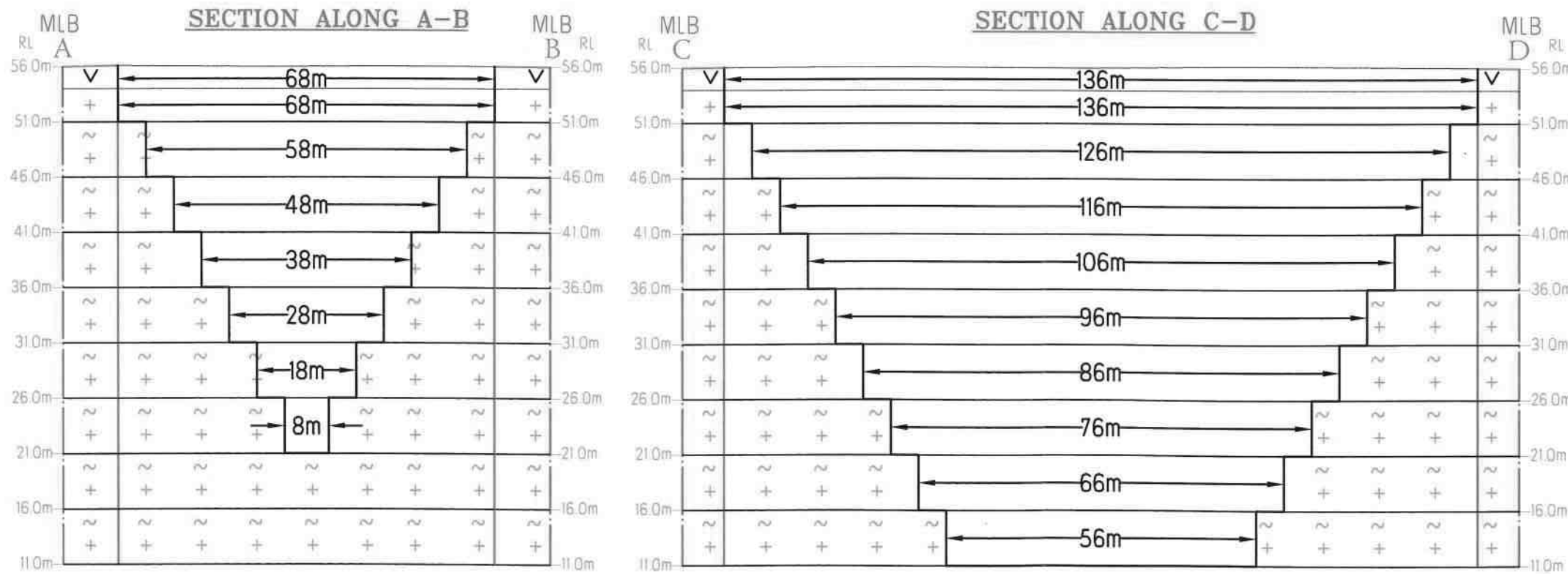
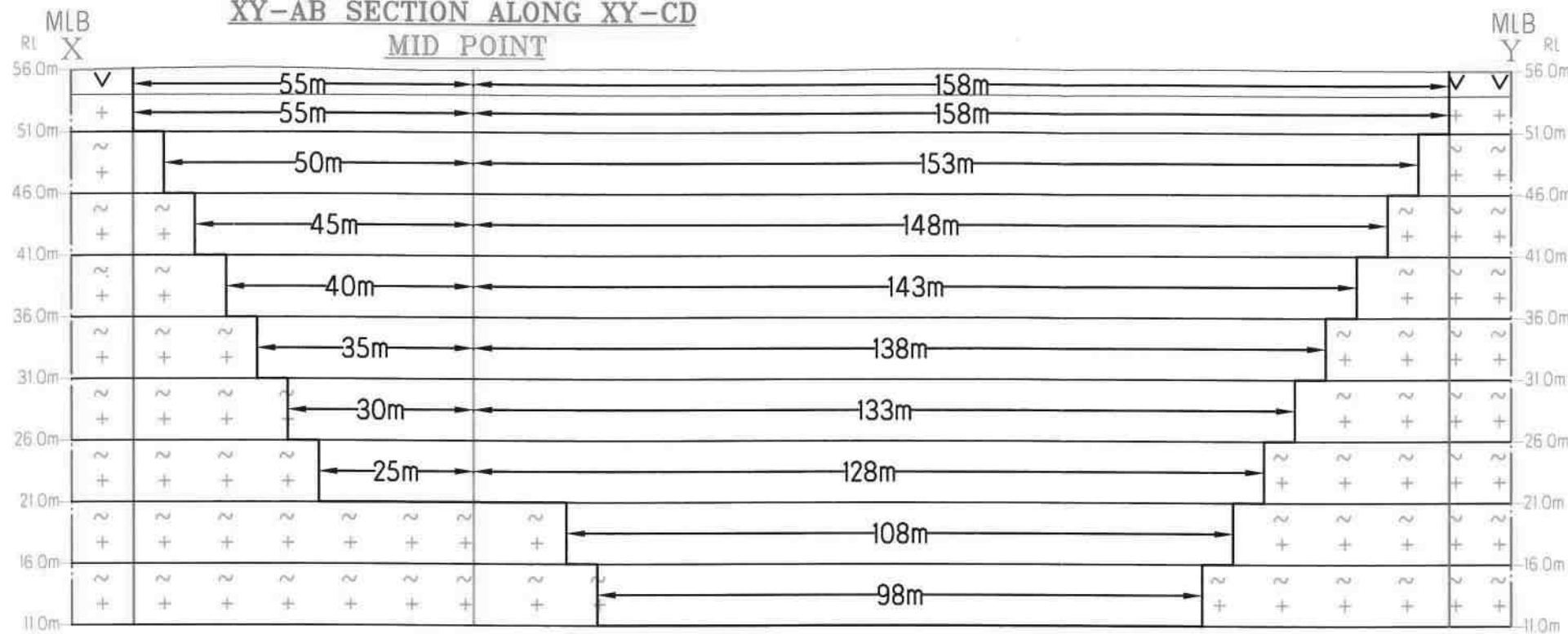


PLATE NO-VII		INDEX		PROGRESSIVE MINE CLOSURE PLAN SCALE PLAN 1 : 1000	
APPLICANT: Mr.N.KANNIYAPPAN, S/O Mr.NARAYANAPILLAI, No.55,MARIYAMMAN KOVIL, AANAMPAKKAM POST, NEERKUNDRAM VILLAGE, UTHIRAMERUR TALUK, KANCHEEPURAM DISTRICT.		MINE LEASE AREA SAFETY BOUNDARY APPROACH ROAD PILLAR STONES TEMPORARY BENCH MARK CONTOUR LINE SHRUBS GRAVEL ULTIMATE BENCH FENCING 		Prepared By: I DO HEREBY CERTIFY THAT THE PLATE HAS BEEN CHECKED BY ME AND IS CORRECT TO THE BEST OF MY KNOWLEDGE	
LEASE APPLIED AREA: S.F.NO : 277/1A, 277/1B, 277/1C, 277/1D, 277/1E, 277/1F, 277/2 & 280/2 EXTENT : 3.11.50Hect. VILLAGE : SIRUTHAMUR, TALUK : UTHIRAMERUR, DISTRICT : KANCHEEPURAM		Dr.S.KARUPPANNAN,M.Sc.,Ph.D. RECOGNIZED QUALIFIED PERSON RQP/MAS/263/2014/A			

SECTION ALONG X-Y



MINEABLE RESERVES

Section	Bench	length in (m)	Width in (m)	Depth in (m)	Volume In CBM	Mineable Reserves in CBM	Gravel in CBM
XY-AB	I	55	68	2	7480	7480	7480
	I	55	68	3	11220	11220	.....
	II	50	58	5	14500	14500	.....
	III	45	48	5	10800	10800	.....
	IV	40	38	5	7600	7600	.....
	V	35	28	5	4900	4900	.....
	VI	30	18	5	2700	2700	.....
	VII	25	8	5	1000	1000	.....
TOTAL					60200	52720	7480
XY-CD	I	158	136	2	42976	.....	42976
	I	158	136	3	64464	64464	.....
	II	153	126	5	96390	96390	.....
	III	148	116	5	85840	85840	.....
	IV	143	106	5	75790	75790	.....
	V	138	96	5	66240	66240	.....
	VI	133	86	5	57190	57190	.....
	VII	128	76	5	48640	48640	.....
	VIII	108	66	5	35640	35640	.....
	IX	98	56	5	27440	27440	.....
TOTAL					600610	557634	42976
GRAND TOTAL					660810	610354	50456

PLATE NO-VIIA

APPLICANT:

Mr.N.KANNIYAPPAN,
S/O Mr.NARAYANAPILLAI,
No.55,MARIYAMMAN KOVIL,
AANAMPAKKAM POST,
NEERKUNDRAM VILLAGE,
UTHIRAMERUR TALUK,
KANCHEEPURAM DISTRICT.

LEASE APPLIED AREA:

S.F.NO : 277/1A, 277/1B, 277/1C, 277/1D,
277/1E, 277/1F, 277/2 & 280/2

EXTENT : 3.11.50Hect,
VILLAGE : SIRUTHAMUR,
TALUK : UTHIRAMERUR,
DISTRICT : KANCHEEPURAM

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MINE LEASE AREA



SAFETY BOUNDARY



GRAVEL



ROUGH STONE



ULTIMATE BENCH



CONCEPTUAL SECTIONS

SECTION HOR 1 : 1000 & VER 1: 500

Prepared By:

I DO HEREBY CERTIFY THAT THE PLATE
HAS BEEN CHECKED BY ME AND IS CORRECT
TO THE BEST OF MY KNOWLEDGE

Dr.S.KARUPPANNAN,M.Sc.,Ph.D.
RECOGNIZED QUALIFIED PERSON
RQP/MAS/263/2014/A

From
K. Vijayaragavan, M.Sc.,
Assistant Director,
Dept. of Geology and Mining,
Kancheepuram.

To
Thiru. N. Kanniyappan
S/o. Mr. Narayanapillai,
No.55, Mariyamman Kovil,
Aanampakkam post,
Neerkundram Village,
Uthiramerur Taluk,
Kancheepuram District.

Rc.No. 257/Q3/2020, Dated.30.09.2021

Sir,

Sub: Mines and Quarries - Kancheepuram District -
Uthiramerur Taluk - Sirudhamur Village - S.F. Nos.
277/1A, 277/1C, 277/1E, 277/1F, 277/2, 280/2,
277/1B, 277/1D - over an extent of 3.11.50
Hectares of patta lands - permission requested for
Quarrying Rough stone and Gravel under rule 19(1)
of Tamil Nadu Minor Mineral Concession Rules 1959
- applied by Thiru. N. Kanniyappan S/o.
Narayanapillai - Mining Plan submitted for approval
- **Mining Plan approved for Five years** - directed to
obtain Environmental clearance from State Level
Environment Impact Assessment Authority, Tamil
Nadu -Reg.

- Ref:**
1. Application of Thiru. N. Kanniyappan S/o. Mr. Narayanapillai, No.55, Mariyamman Kovil, Aanampakkam post, Neerkundram Village, Uthiramerur Taluk, Kancheepuram District dated.20.10.2020.
 2. Precise are notice issued by the Assistant Director, Geology and Mining, Kancheepuram in Rc.No.257/Q3/2020, dated.06.09.2021.
 3. Representation of Thiru. N N. Kanniyappan S/o. Mr. Narayanapillai dated.28.09.2021.

In the reference 1st cited, one Thiru. N. Kanniyappan S/o. Mr. Narayanapillai, No.55, Mariyamman Kovil, Aanampakkam post, Neerkundram Village, Uthiramerur Taluk, Kancheepuram District has applied for quarrying Rough stone and gravel from S.F. Nos. 277/1A(0.16.00), 277/1C(0.16.50), 277/1E(0.16.50), 277/1F(0.15.50), 277/2(1.17.50), 280/2(0.97.50), 277/1B(0.16.00), 277/1D(0.16.00) over an extent of 3.11.50 hectares of Sirudhamur Village, Uthiramerur Taluk, Kancheepuram District under Rule 19(1) of Tamil Nadu Minor Mineral Concession Rules, 1959.


In this regard, based on the recommendations of the Revenue Divisional Officer, Kancheepuram, Tahsildar, Uthiramerur and Inspection

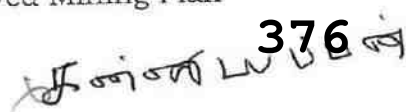
report submitted by the Assistant Director, Geology and Mining, Kancheepuram the above application was considered for quarrying Rough stone and Gravel from the above area under rule 19(1) of Tamil Nadu Minor Mineral Concession Rules, 1959 for a period of **Five years** subject to certain conditions and precise area has been communicated to the applicant vide reference 2nd cited.

In exercise of the power delegated under Rule 42 of Tamil Nadu Minor Mineral Concession Rules, 1959, I hereby approve the mining plan submitted by Thiru. N. Kanniyappan S/o. Narayanapillai for the grant of lease to quarry Rough Stone and Gravel over an extent of 3.11.50 Hectares in S.F. Nos. 277/1A(0.16.00), 277/1C(0.16.50), 277/1E(0.16.50), 277/1F(0.15.50), 277/2(1.17.50), 280/2(0.97.50), 277/1B(0.16.00), 277/1D(0.16.00) Patta lands of Sirudhamur Village, Uthiramerur Taluk, Kancheepuram District the mineable reserves of Rough stone & Gravel after leaving safety distance is arrived as 4,37,744 M³ of Rough stone, 50,456 M³ of Gravel for **Five years** upto a depth of 25 meter (BGL). This approval is subject to the following conditions:-

- i) That the Mining Plan is approved without prejudice to any other Law applicable to quarrying Rough stone and Gravel from time to time whether such laws are made by the Central Government/State Government or any other authority.
- ii) The approval of the Mining Plan does not in any way imply the approval of the Government in terms of any other provisions of the Mines and Minerals (Development and Regulation) Act, 1957 or any other connected laws including Forest (Conservation) Act, 1980 Forest Conservation Rules 1981, Environment Protection Act, 1980, Indian Explosives Act, 1884 (Central Act IV of 1884) and the rules made there under 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 applicant is directed to submit the application in Form -I as prescribed by the MoEF along with the approved Mining Plan.

Encl: Approved Mining Plan


Assistant Director, 30/5/17
Geology and Mining,
Kancheepuram.

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ANNEXURE – IV

NABET CERTIFICATE OF EIA CONSULTANT



**QUALITY COUNCIL[®]
OF INDIA**
Creating an Ecosystem for Quality



National Accreditation Board for Education and Training



Certificate of Accreditation

Geo Technical Mining Solutions

1/213B, Natesan Complex, Dharmapuri Salem Main Road, Oddapatti, Collectorate post office,
Dharmapuri, Tamil Nadu-636705

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

S. No	Sector Description	Sector (as per)		Cat.
		NABET	MoEFCC	
1	Mining of minerals including opencast/ underground mining.	1	1 (a) (i)	B

Note: Names of approved EIA Coordinators and Functional Area Experts are mentioned in SAAC minutes dated September 13, 2022 posted on QCI-NABET website.

The Accreditation shall remain in force subject to continued compliance to the terms and conditions mentioned in QCI-NABET's letter of accreditation bearing no. QCI/NABET/ENV/ACO/23/2641 dated January 19, 2023. The accreditation needs to be renewed before the expiry date by Geo Technical Mining Solutions following due process of assessment.

Sr. Director, NABET
Dated: January 19, 2023

Certificate No.
NABET/EIA/2124/SA 0184

Valid up to
Dec 31, 2023

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

