EXECUTIVE SUMMARY OF
DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT
AND
ENVIRONMENT MANAGEMENT PLAN

FOR OBTAINING

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

"B1" CATEGORY – MINOR MINERAL – CLUSTER – NON-FOREST LAND
CLUSTER EXTENT = 18.31.0 hectares

M/s. New Star Blue Metals

At

Kuppam Village, Pugalur Taluk, Karur District

ToR issued vide Letter No. SEIAA-TN/F.No. 9423/SEAC/ToR-1275/2022 dated 08.10.2022

Name and Address	Extent & S.F.No.
M/s. New Star Blue Metals Poolankaadu Uppupalayam, Kuppam Post Pugalur Taluk Pugalur Karur District - 639 111	1.62.0 ha & S. F. No. 553/2 (Part)

ENVIRONMENTAL CONSULTANT

GEO TECHNICAL MINING SOLUTIONS

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Valid till : 31 Dec.2023

ENVIRONMENTAL LAB
EXCELLENCE LABORATORY

Baseline Study Period – October 2022 to December 2022

CHAPTER I

INTRODUCTION

As the proposed rough stone and gravel mining project, known as P1 falls within the 500 m radius cluster of quarries with the total extent of >5 ha (**i.e.,18.31.0 ha**), it is classified under category “B1” and requires submission of EIA report for grant of Environmental Clearance (EC) after conducting public hearing. The cluster contains 4 proposed projects, known as P1, P2, P3 and P4, 1 existing and 3 expired quarries, as shown in Table 1.2. All the projects mentioned above have been taken for cluster extent calculation as per MoEF & CC Notification S.O. 2269 I dated 1st July 2016, as shown in Figure 1.1. This EIA draft discusses the cumulative Impacts of 4 proposed projects in a cluster on the environment and provides a detailed Environmental Management Plan (EMP) to minimize the adverse impacts of those projects situated in the cluster falling in Kuppam Village, Pugalur Taluk, Karur District and Tamil Nadu State. It has been prepared in compliance with ToR issued vide Lr.No. SEIAA-TN/F.No.9423/ToR-1275/2022 dated 08.10.2022 for the proposed project by conducting baseline study during the period of October to December 2022. Details of the project proponent and the list of quarries within the cluster of 500 m radius have been provided in Tables 1.1 and 1.2, respectively.

Table 1.1 Details of Project Proponent

Name of the Project Proponent	M/s. New Star Blue Metals
Address	Poolankaadu Uppupalayam, Kuppam Post Pugalur Taluk Pugalur Karur - 639111
Status	Proprietor

Table 1.2 Details of Quarries within the cluster area of 500 m radius

Proposed Quarries				
Code	**Name of the Owner**	**S.F. No and Village**	**Extent (ha)**	**Status**
P1	Tvl. New Star Blue Metals	553/2(P) Kuppam	1.62.0	Proposed Area

P2	Tvl. NTC Blue Metals	544/1,544/2 544/3,545/1 Kuppam	2.15.0	Applied Area
P3	Tvl. NTC Blue Metals	543/1,543/2, 543/3,557/2(P) Kuppam	2.28.5	Applied Area
P4	Tmt. K. Rani	545/2 Kuppam	0.84.5	Proposed Area
Existing Quarries				
E1	Thiru,C.Chinnasamy	551/1(Part)	2.00.0	21.2.2018 to 20.02.2023
Expired Quarries				
EX1	Thirumalai Blue Metals	1238/2 Kuppam	4.80.0	14.10.2016 to 13.10.2021
EX2	Tvl. New Star Blue Metals	533/1, 534/1, 550/C3 Kuppam	4.61.0	02.12.2016 to 01.12.2021
	Total Cluster Extent		**18.31.0**	---

Source:

i. *DD Letter: Rc.No.291/Mines/2021, Dated:04.04.2022.*

ii. *DD Letter: Rc.No.571/Mines/2021, Dated:22.06.2022*

iii. *DD Letter: Rc.No.435/Mines/2021, Dated:22.06.2022*

iv. *DD Letter: Rc.No.482/Mines/2021, Dated:20.07.2022*

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

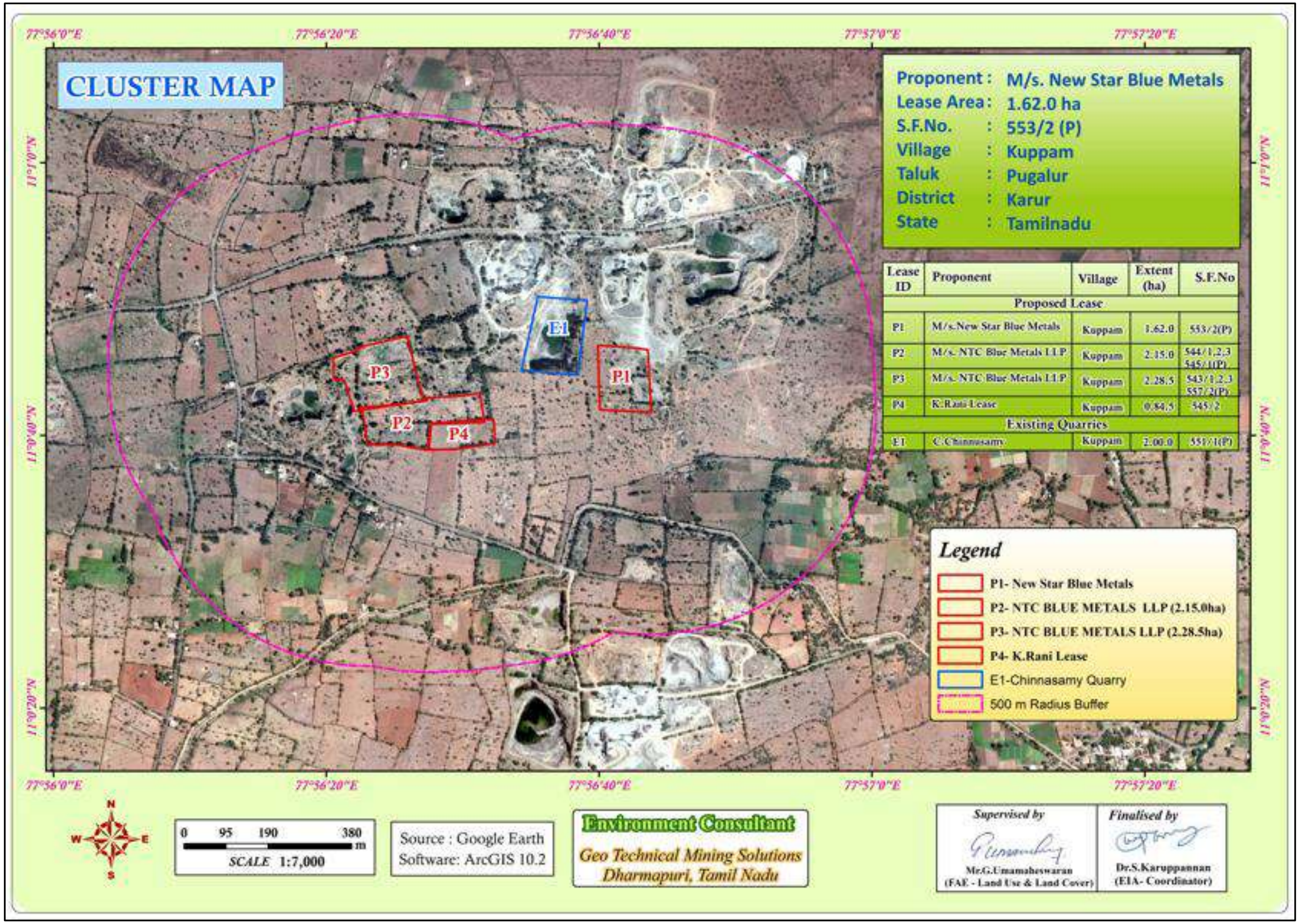


Figure 1.1 Google Earth Image Showing 500m Radius Limit and the Proposed Project and Existing Quarries within the Limit

CHAPTER II

PROJECT DESCRIPTION

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 an open cast semi-mechanized mining method involving drilling, blasting and formation of benches with 5 m height and 5 m width and secondary blasting. The proposed project area is located between latitudes from 11°0'41.69"N to 11°0'46.62"N and from longitudes from 77°56'39.90"E to 77°56'43.82"E in Kuppam Village, Pugalur Tluk, and Karur District. The project site is a Patta land with the extent of 1.62.0 ha owned by the project proponent. The proponent had applied for quarry lease on 12.10.2021 to extract rough stone and gravel and obtained the precise area communication letter issued by Department of Geology and Mining, Karur vide Rc.No.482/Mines/2021 dated 19.04.2022. Based on the precise area communication letter, mining plan was prepared. The mining plan thus prepared was approved by Deputy Director of Geology and Mining, Karur (Rc. No.482/Mines/2021 dated 11.07.2022).

According to the approved mining plan, about 164992 m^3 of rough stone and about 25088 m^3 of gravel will be mined up to the depth of 20 m BGL in the first five years. To achieve the estimated production, 3 jack hammers, 1 compressor, 1 excavator with bucket/rock breaker, and 7 tippers will be deployed. To operate the machineries and to break the rough stone to preferred dimension, about 14 persons will be employed. At the end of the quarry life, the dimension of the ultimate pit will be 128 m*98 m*20 m and about 1.26.2 ha of land would have been quarried; about 0.02.0 ha of land would have been used for establishing infrastructures; about 0.08.0 ha of land would have been used for road development; about 0.20.0 ha of land would have been used for green belt development; about 0.04.0 ha of land would have been used for drainage and settling tank construction; and about 0.01.8 ha of land would have been left unutilized. The final mine closure plan shows that about Rs.405200 with the annual recurring cost of Rs.31800 will be spent towards mine closure. Boundary coordinates of corner pillars of the project site and accessibility details to the location of the project site are given in Tables 2.1 & 2.2, respectively. The lease area of the project site overlaid on Google earth image is shown in Figure 2.1.

Table 2.1 Corner Geographic Coordinates of Proposed Project

Pillar ID	Latitude	Longitude
1	11°0'46.27"N	77°56'43.56"E
2	11°0'41.69"N	77°56'43.82"E
3	11°0'41.87"N	77°56'40.05"E
4	11°0'46.62"N	77°56'39.90"E
5	11°0'46.38"N	77°56'42.98"E

Table 2.2 Site Connectivity to the Project Area

Type of Features	Name/Location	Distance (km)	Direction
Nearest Roadways	(SH-84) Erode to Karur	2.60 km	E
	(SH – 332) Noyyal to Paramathi	2.33 km	W
Nearest Railway	Pugalur	6.76	NE
Nearest Airport	Tiruchirapalli	88 km	E
Nearest Seaport	Tutcorin	253 km	E

2.3 DETAILS OF RESERVES

Reserves were calculated using cross-section method after leaving the safety distance as shown in Figure 2.2. Details of resources and reserves of the project are given in Table 2.3.

Table 2.3 Estimated Resources and Reserves of the Project

Resource Type	Rough Stone in m^3	Gravel in m^3
Geological Resource in m^3	694837	32318
Mineable Reserves in m^3	234592	25088
Proposed production for 5 years m^3	164992	25088

Based on the year wise development and production plan and sections, as shown in Figures 2.3 & 2.3a, the year wise production results are given in Table 2.4.

Table 2.4 Year-Wise Production Details

Year	Rough Stone (m^3)	Gravel (m^3)
I	26282	8428
II	31708	8232
III	31562	8428
IV	42120	-
V	33320	-
Total	**164992**	**25088**

2.3 LAND USE PATTERN

Land use and land cover information for the proposed project site has been given in Table 2.5.

Table 2.5 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	1.26.2
Infrastructure	Nil	0.02.0
Roads	Nil	0.08.0
Green Belt & Dump	Nil	0.20.0
Drainage & Settling tank	Nil	0.04.0
Unutilized area	1.62.0	0.01.8
Total	**1.62.0**	**1.62.0**

Source: Approved mining plan

2.4 METHOD OF MINING

The quarrying operation is proposed to be carried out by opencast semi mechanized mining method involving drilling, blasting, and formation of benches. Machineries, blasting design and fuel requirement and capital proposed for this project have been given in Tables 2.6- 2.8.

Table 2.6 Proposed Machinery Deployments

S. No.	Type	No. of Unit	Capacity	Make	Motive Power
1	Jack Hammers	3	1.2 m to 2 m	---	Compressed Air
2	Compressor	1	400 psi	Atlas Copco	Diesel Drive
3	Excavator	1	300 HP	Tata Hitachi	Diesel Drive
4	Tipper	7	15 tons	Benz	Diesel Drive

Table 2.7 Conceptual Blasting Design

Blasthole Diameter (D) in mm	32
Burden (B) in m	1
Spacing (S) in m	0.97
Subdrill in m	0.3
Charge length (C) in m	0.64
Stemming	1
Hole Length (L) in m	1.9
Bench Height (BH) in m	1.6
Mass of explosive/hole in g	400
Stemming material size in mm	3.2
Burden stiffness ratio	1.64
Blast volume/hole in m3	1.59
Production of rough stone/day in m3	122
Number of blastholes/day	77
Blasthole pattern	Staggered/Rectangular
Mass of explosive /day in kg	31
Powder factor in kg/m3	0.25
Loading density	0.63
Type of explosives	Slurry
Diameter of packaging in mm	25
Initiation system	NONEL
Fly rock distance in m	23

Table 2.8 Fuel Requirement Details

Fuel Requirement for Excavator			
Details	**Roughstone ($164992\ m^3$)**	**Gravel ($25088\ m^3$)**	**Total Diesel in litters**
Average Rate of Fuel Consumption (l/hr)	16	10	---
Working Capacity (m^3/hr)	20	60	---
Time Required (hours)	8250	418	---
Total Diesel Consumption for 5 years (litre)	131994	4181	**136175**
Fuel Requirement for Compressor			
Average Rate of Fuel Consumption/hole (litre)	0.4	**---**	**---**
Number of Drillholes/day	77	**---**	**---**
Total Diesel Consumption for 5 years (litre)	41580	**---**	**41580**
Fuel Requirement for Tipper			
Average Rate of Fuel Consumption/Trip (litre)	20	20	---
Carrying Capacity in m^3	6	6	---
Number of Trips / days	20	3	---
Number of Trips / 5 years	27499	4181	---
Total Diesel Consumption for 5 years (litre)	549973	83627	**633600**
Total Diesel Consumption by Excavator, Compressor and Tipper			**811355**

Table 2.9 Capital Requirement Details

S. No.	**Description**	**Cost (Rs.)**
1	Fixed Asset	15,50,000
2	Machinery	20,00,000
3	EMP	33,55,000
Total Project Cost		**69,05,000**

Source: Approved Mining Plan

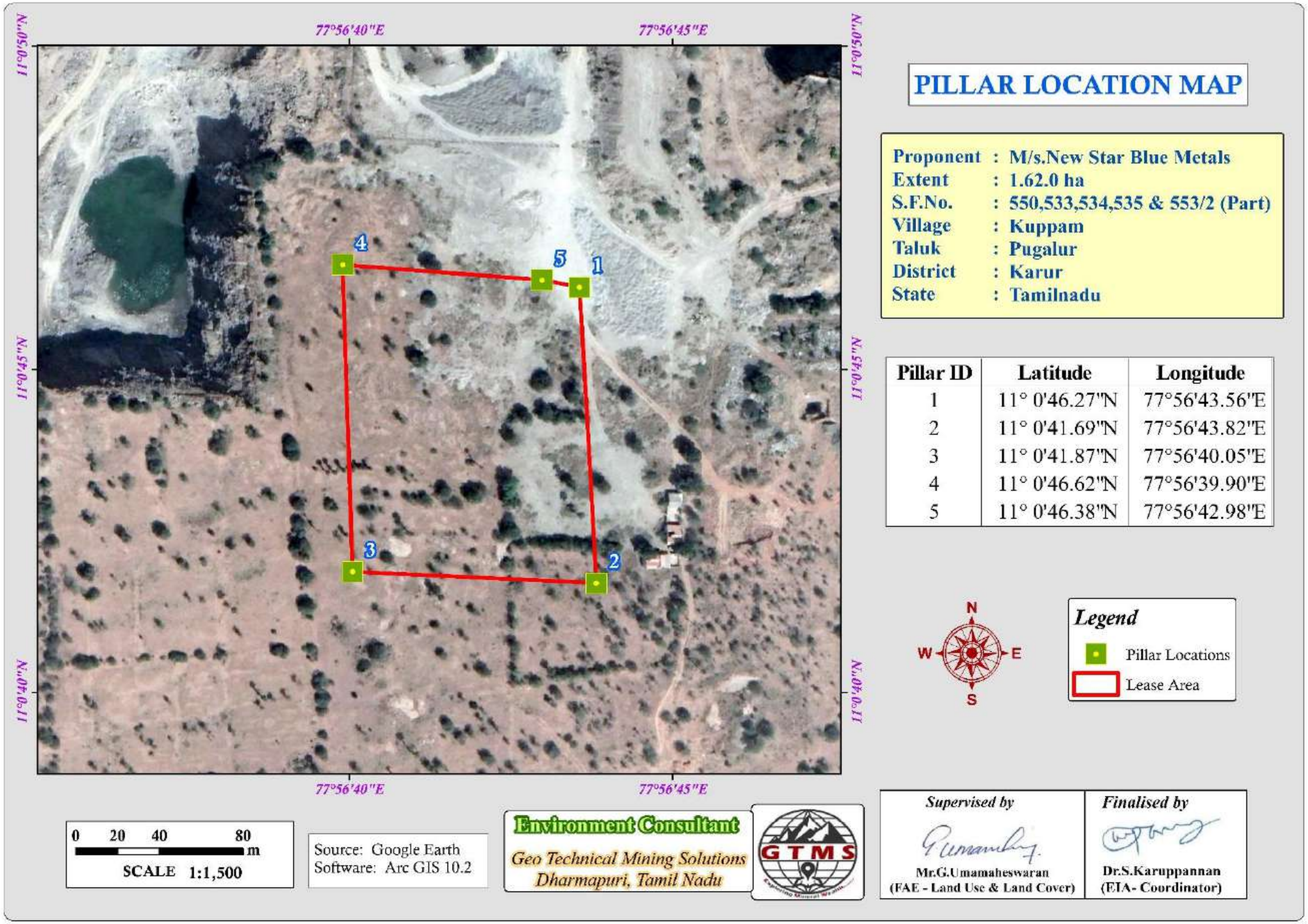
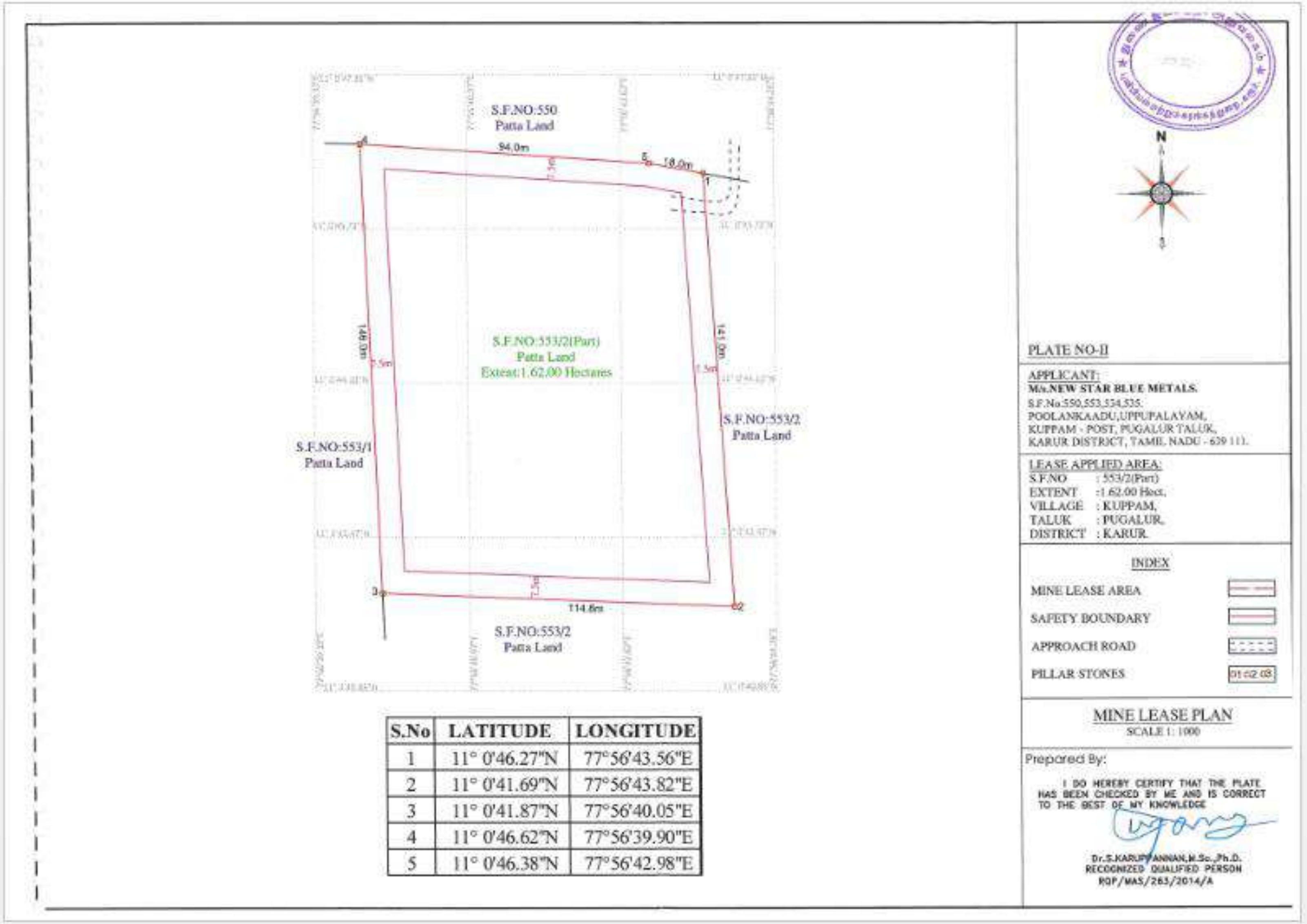


Figure 2.1 Google Earth Image Showing Lease Area with Pillars



S.No	LATITUDE	LONGITUDE
1	11° 0'46.27"N	77°56'43.56"E
2	11° 0'41.69"N	77°56'43.82"E
3	11° 0'41.87"N	77°56'40.05"E
4	11° 0'46.62"N	77°56'39.90"E
5	11° 0'46.38"N	77°56'42.98"E

Figure 2.2 Mine Lease Plan

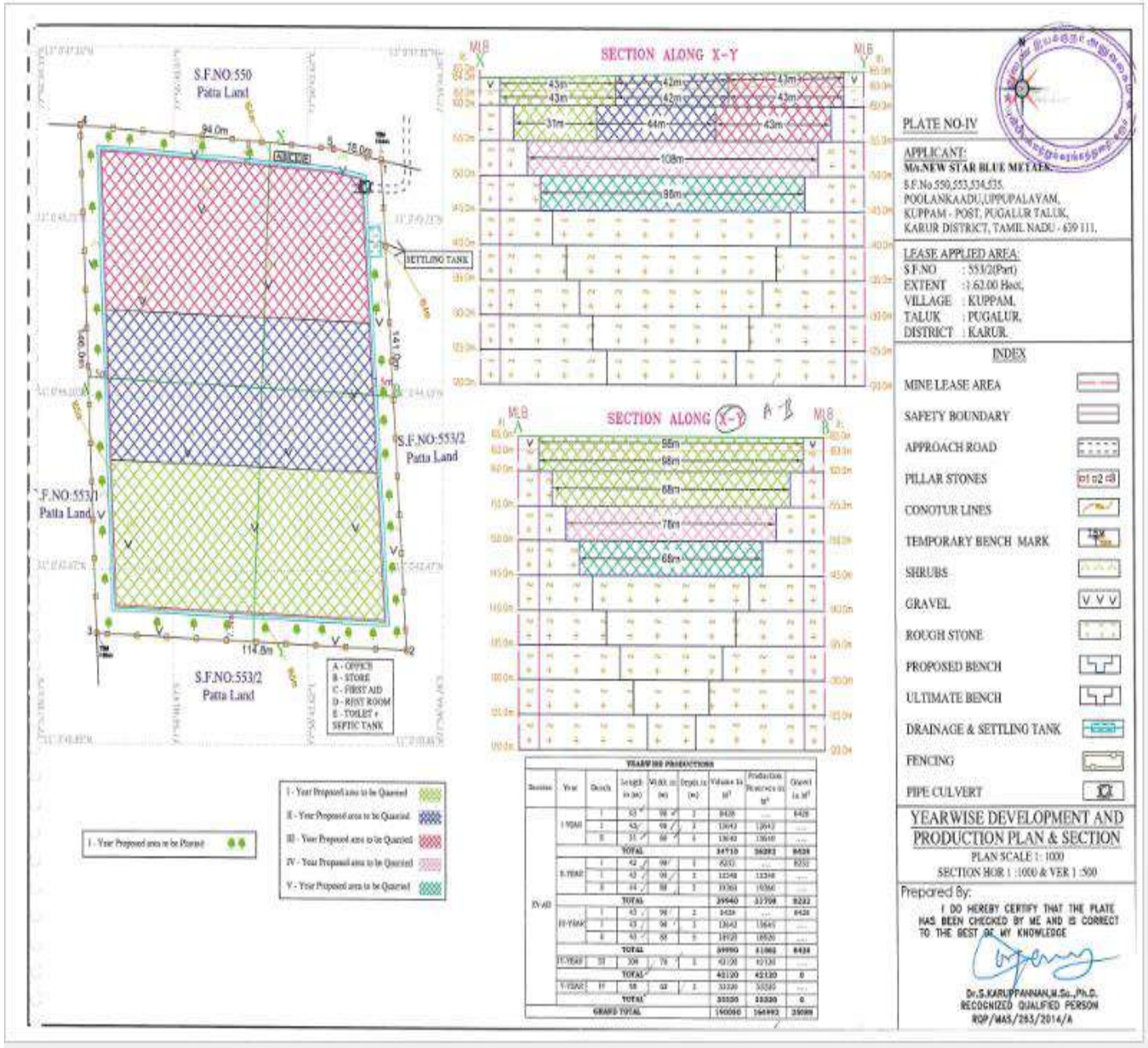


Figure 2.3 Yearwise Development and Production Plan and Sections

2.5 CONCEPTUAL MINE CLOSURE PLAN

- Mine closure is a process of returning a disturbed site to its natural state for other productive uses to minimize adverse effects on the environment or threats to humans' health and safety.
- The objective of the mine closure plan is to transform quarries to be physically safe to humans and animals, geo-technically stable, geo-chemically non-polluting, and non-contaminating.
- At the end of mining life, the mine pit will act as an artificial reservoir for collecting rain water and will help to meet the water demand during drought season.
- After mine closure, the greenbelt will be developed along the safety barrier and over top benches. Water from the pit will be used to the greenbelt development and maintenance. Budgetary provision for mine closure is provided in Table 2.7.

Table 2.7 Mine Closure Budget

Activity	Capital Cost	Recurring Cost/Annum
324 Plants Inside the Lease Area	64800	9720
486 Plants Outside the Lease Area	145800	14580
Wire Fencing	324000	16200
Garland Drain	16200	8100
Total	**550800**	**48600**

Source: Environment Management Plan

CHAPTER III

DESCRIPTION OF THE ENVIRONMENT

3.0 INTRODUCTION

Field monitoring studies were carried out to evaluate the existing environmental condition of the project site during October through December, 2022 as per CPCB guidelines. Environmental baseline data were collected by an NABL accredited and MoEF notified Excellence Laboratory for the environmental attributes including soil, water, noise, air and by FAEs for ecology and biodiversity, traffic, and socio-economy.

3.1 LAND ENVIRONMENT

Land use pattern of the area of 5 km radius was studied using Sentinel II imagery. LULC types and their extent are given in Table 3.1.

Table 3.1 Land Use / Land Cover Statistics for the Area of 5 km Radius

S. No.	Classification	Area (ha)	Area (%)
1	Crop Land	6542	85.80
2	Dense Forest	96	1.26
3	Fallow Land	32	0.42
4	Mining/Industrial lands	176	2.31
5	Plantations	709	9.29
6	Settlements	5	0.07
7	Water Bodies	65	0.85
Total		**7626**	**100**

Source: Sentinel II Imagery

3.1.1 SOIL ENVIRONMENT

Eight locations were selected for soil sampling based on soil types, vegetative cover, and industrial & residential activities including infrastructure facilities. The physical and chemical characteristic results of soil samples are provided below.

Physical Characteristics

The soil samples in the study area show loamy textures varying between sandy loam and sandy clay loam. PH of the soil varies from 6.5 to 7.7 indicating slightly acidic to slightly alkaline nature. Electrical conductivity of the soil varies from 143 to 247 µs/cm. Bulk density ranges between 1.12 and 3.8.

Chemical Characteristics

Nitrogen ranges between 0.04 and 1.1 %. Phosphate ranges between 0.14 and 3.8 %. Potassium ranges between 0.12 and 0.26 %. Calcium ranges between 161 and 513 mg/kg. Organic matter content ranges between 0.35 and 2.0 %.

3.2 WATER ENVIRONMENT

Surface Water

Noyyal River is the prominent surface water resources present in the study area. This river was ephemeral in nature, which convey water only after rainfall events. The proposed project area is located 4.48 km NW of Noyyal River. One surface water sample, known as SW1 were collected from the Noyyal River to assess the baseline water quality. Result for surface water sample indicate that the physical, chemical and biological parameters, and heavy metals are within permissible limits in comparison with standards of IS10500:2012.

Ground Water Resources

Groundwater in the study area occurs in the crystalline rocks of Archaean age and recent alluvium. The movement of the groundwater is controlled by the intensity of weathering and fracturing of crystalline rocks. Dug wells and bore wells are the most common ground water abstraction structures in the area. However, in dry season, people in the study area heavily rely on bore wells for their domestic and agriculture purpose.

Nine groundwater samples, known as BW01, BW02, BW03, BW04, BW05, BW06, BW07, OW01 and OW02 collected from bore wells and open wells were analysed for physico-chemical conditions, heavy metals and bacteriological contents in order to assess baseline quality of ground water. Results for ground water samples indicate that the physical, chemical and biological parameters, and heavy metals are within permissible limits in comparison with standards of IS10500:2012.

Groundwater Levels and Flow Direction

Data regarding groundwater elevations were collected from 9 open wells and 9 bore wells at various locations within 2 km radius around the proposed project sites for the period from March through May, 2022 (Pre-Monsoon Season) and from October through December, 2022 (Post Monsoon Season). Average depths to the static water table in open wells range from 10.1 to 14.1 m BGL in pre monsoon and from 11.5 to 16.3 m BGL in post monsoon. The average depths to static potentiometric surface in bore wells for the period of March through May, 2022 (Pre-Monsoon Season) vary from 62.3 to 65.8 m and from 63.8 to 66.3 m for the period of October through December, 2022 (Post-Monsoon Season). The groundwater flow studies indicate that in the two monsoon seasons groundwater flows towards the bore well number 1 located in southern direction of the proposed project site.

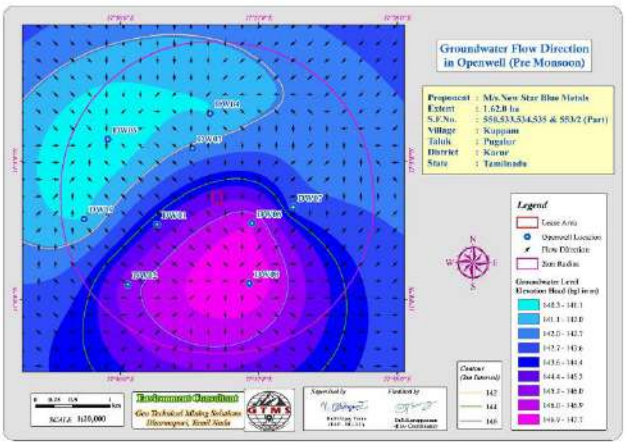


Figure 3.1 Open Well Static Groundwater Elevation Map Showing the Direction of Groundwater Flow During Pre-Monsoon Season

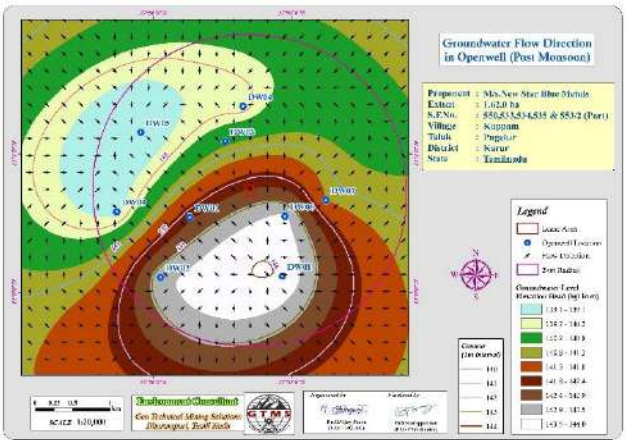


Figure 3.2 Open Well Static Groundwater Elevation Map Showing the Direction of Groundwater Flow During Post-Monsoon Season

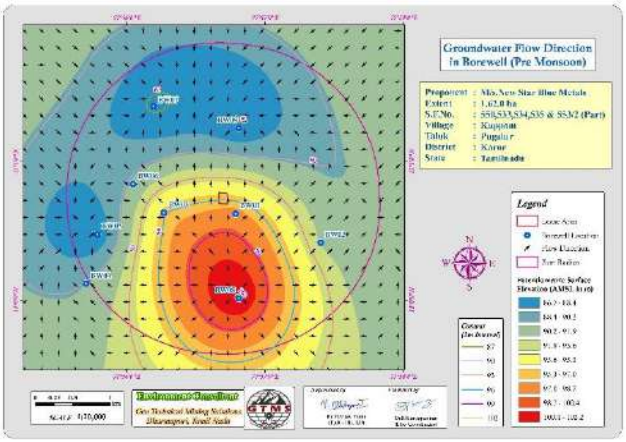


Figure 3.3 Borewell Static Groundwater Elevation Map Showing the Direction of Groundwater Flow During Pre-Monsoon Season

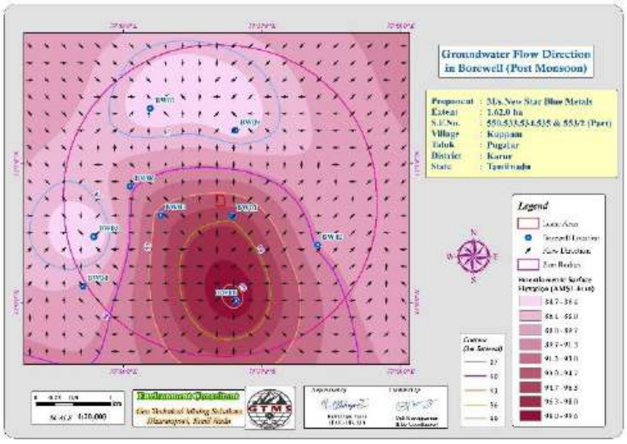


Figure 3.4 Borewell Static Groundwater Elevation Map Showing the Direction of Groundwater Flow During Post-Monsoon Season

3.3 AIR ENVIRONMENT

As per the monitoring data, $PM_{2.5}$ ranges from 22.8 µg/m^3 to 17.4 µg/m^3; PM_{10} from 42.2 µg/m^3 to 36.8 µg/m^3; SO_2 from 10.5 µg/m^3 to 7 µg/m^3; NO_2 from 20.4 µg/m^3 to 14.3 g/m^3. The concentration levels of the pollutants fall within the acceptable limits of NAAQS prescribed by CPCB.

3.4 NOISE ENVIRONMENT

The noise level in core zone was 41.7 dB (A) Leq during day time and 34.7 dB(A) Leq during night time. Noise levels recorded in buffer zone during day time varied from 32.6 to 42.2dB (A) Leq and during night time from 29.8 to 36.6dB (A) Leq. Thus, the noise level for industrial and residential area meets the requirements of CPCB.

3.5 BIOLOGICAL ENVIRONMENT

The main objective of biological study is to collect the baseline data regarding flora and fauna in the study area and identify ecologically sensitive areas and whether there are any rare, endangered, endemic or threatened (REET) species of flora and fauna in the core zone as well as buffer zone. In core zone, a total of 16 trees belonging to 4 species such as Prosophis juliflora, Azadirachta indica, Vachelia leucoploea, and Albizia amara are present in the mining lease area, whereas in buffer zone, 75 species belonging to 38 families were recorded from the buffer zone. The floral (75) varieties are 35 Trees (46%), 20 Shrubs (15%) Herbs and 25 Climbers, Creeper, Grass & Cactus (33%). From the study of biological environment, it is concluded that there was no schedule I species of animals observed within study area as per Wildlife Protection Act, 1972 and no species were found in vulnerable, endangered or threatened category as per IUCN and that there is no endangered red list species found in the study area.

3.6 SOCIO ECONOMIC ENVIRONMENT

Socio-economic study is an essential part of environmental study. It is a measure of an individual's or family's or group of people's economic and social position based on education, income, health, and occupation. Socio-economic most important determinant of livelihoods as levels of knowledge, skill and income conditions which mean for their living. The study found that a part of population is suffering from lack of permanent job to run their day-to-day life. Their expectation is to earn some income for their sustainability on a long-term basis. The proposed project will aim to provide preferential employment to the local people there by improving the employment opportunity in the area, which will in turn improve the social standards.

3.7 TRAFFIC ENVIRONMENT

Table 3.2 Traffic Survey Locations

Station Code	Road Name	Distance and Direction	Type of Road
TS1	Noyyal to Paramathi	3.37 Km-SW	Noyyal to Paramathi SH-332
TS2	Erode to Karur (SH-84)	2.67 Km-NW	Erode to Karur (SH-84)
TS3	Paramathi to Karur Road (NH-67)	6.84 km-SW	Paramathi to Karur Road (NH-67)

Source: On-site monitoring by GTMS FAE & TM

Table 3.3 Existing Traffic Volume

Station code	HMV		LMV		2/3 Wheelers		Total PCU
	No	PCU	No	PCU	No	PCU	
TS1	90	270	48	48	89	45	363
TS2	95	285	52	52	94	47	384
TS3	105	315	55	55	105	53	423

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

3.8 SITE SPECIFIC FEATURES

Table 3.4 Details of Environmentally Sensitive Ecological Features in the Study Area

S. No.	Sensitive Ecological Features	Name	Areal Distance in km
1	National Park / Wild life Sanctuaries	None	Nil within 10 km radius
		None	Nil within 10 km radius
2	Reserve Forest	Thathampalayam Reserve Forest	10 km NE
3	Lakes/Reservoirs/ Dams/Streams/Rivers	Cauveri River	5.44 km N
		Noyyal River	4.59 km NW
4	Tiger Reserve/Elephant Reserve/ Biosphere Reserve	None	Nil within 10 km radius
5	Critically Polluted Areas	None	Nil within 10 km radius
6	Mangroves	None	Nil within 10 km radius
7	Mountains/Hills	None	Nil within 10 km radius
8	Centrally Protected Archaeological Sites	None	Nil within 10 km radius
9	Industries/ Thermal Power Plants	TNPL	6.6 km NE
10	Defence Installation	None	Nil within 10 km radius

Source: Survey of India Toposheet

CHAPTER IV

ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

4.0 INTRODUCTION

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 for sustainable resource extraction.

4.1 LAND ENVIRONMENT

Anticipated Impact

- Permanent impact on mineral resources due to removal of 164992 m^3 of rough stone and 25088 m^3 of gravel
- Permanent or temporary change on land use and land cover
- Change in topography of the mine lease area
- 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

Mitigation Measures

The mining activity will be progressively implemented along with other mitigative measures as discussed below:

- ❖ Garland drains will be constructed all around the quarry pit and a check dam will be constructed at the suitable location in lower elevations to prevent erosion due to surface runoff during heavy rainfall and to collect the storm water for various uses.
- ❖ Green belt will be developed in safety zone. The water stored in the quarry will be used for greenbelt.
- ❖ Thick plantation will be done on unutilized area, top benches, safety barrier, etc.,
- ❖ At conceptual stage, the land use pattern of the quarry will be changed into greenbelt area and temporary reservoir.
- ❖ Natural vegetation surrounding the quarry will be retained to minimize dust emissions.
- ❖ Proper fencing will be established at the conceptual stage and security will be posted round the clock to prevent inherent entry of the public and cattle.

4.2 SOIL ENVIRONMENT

Anticipated Impact

No top soil is produced during the project operation. However, some of the important common mitigation measures is provided below.

Mitigation Measures

- *Run-off diversion* – Garland drains will be constructed all around the project boundary to prevent surface flows from entering the quarry area. The water from garland drainage system 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 ponds trap sediments and reduce suspended sediment loads before runoff is discharged from the quarry sites. Sedimentation ponds will 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.
- *Retention of vegetation* – Retain existing vegetation or replant the vegetation at the site wherever possible.
- *Monitoring and maintenance* –Erosion control systems will be maintained to make sure seamless performance of the systems during rainy season.

4.3 WATER ENVIRONMENT

Anticipated Impact

- As the proposed project acquires 4.0 KLD of water from water vendors, it will not extract water by developing abstraction structures in the lease area. Therefore, the project will not deplete aquifer beneath the lease area.
- The impact of mining on the water quality is insignificant because of no use of chemicals or hazardous substances during quarrying process.
- The quarrying activity will not intersect ground water table as the proposed depth is 30 m below ground level and water table is found at depths of 60 m below ground level.
- There is no intersection of surface water bodies in the project area.
- As there is no proposal for rough stone and gravel processing or workshop within the project area there will be no effluent anticipated from the mines.

Mitigation Measures

- Rainwater will be collected in the mining pit and the water will be pumped out to surface settling tank to remove suspended solids if any. The water stored in the settling tank will be used for dust suppression, greenbelt development and rainwater harvesting.

- ❖ A drainage network, known as garland drains will be constructed to divert surface run-off into the quarrying area.
- ❖ The quality of water in the quarry will be analysed periodically.
- ❖ Domestic sewage from site office and latrines in the mining site will be discharged to septic tanks followed by soak pits.
- ❖ Wastewater from the mining site will be treated in settling tanks before using it for dust suppression and tree plantation purposes.
- ❖ Desilting will be carried out before and immediately after the monsoon season.
- ❖ The quality of water in open and bore wells, and surface water bodies will be monitored regularly.

4.4 AIR ENVIRONMENT

Anticipated Impact

Table 4.1 Incremental and Resultant $PM_{2.5}$

Station ID	Distance to core area (km)	Direction	$PM_{2.5}$ concentrations($\mu g/m^3$)			Comparison against air quality standard (60 $\mu g/m^3$)	Magnitude of Change (%)	Significance
			Baseline	Predicted	Total			
AAQ1	0.42	W	21.1	1	22.1	Below Standard	4.74	Not Significant
AAQ2	--	-	21.6	6.9	28.5		31.94	
AAQ3	0.83	S	20.4	0.5	20.9		2.45	
AAQ4	1.58	SW	16.0	0.5	16.5		3.13	
AAQ5	4.65	W	18.0	0	18		0.00	
AAQ6	5.03	W	19.1	0	19.1		0.00	
AAQ7	4.69	SW	18.0	0	18		0.00	
AAQ8	3.75	E	25.3	0.5	25.8		1.98	
AAQ9	4.75	S	21.0	0.5	21.5		2.38	
AAQ10	1.87	N	21.2	1	22.2		4.72	

Table 4.2 Incremental & Resultant GLC of PM_{10}

Station ID	Distance to core area (km)	Direction	PM_{10} concentrations (μg/m^3)			Comparison against air quality standard (100 μg/m^3)	Magnitude of change (%)	Significance
			Baseline	Predicted	Total			
AAQ1	0.42	W	42.6	5	47.6	Below Standard	11.74	Not Significant
AAQ2	--	-	39.5	11.4	50.9		28.86	
AAQ3	0.83	S	39.8	0.5	40.3		1.26	
AAQ4	1.58	SW	37.0	0.5	37.5		1.35	
AAQ5	4.65	W	34.9	0	34.9		0.00	
AAQ6	5.03	W	37.0	0	37		0.00	
AAQ7	4.69	SW	39.7	0	39.7		0.00	
AAQ8	3.75	E	46.8	1	47.8		2.14	
AAQ9	4.75	S	39.3	0.5	39.8		1.27	
AAQ10	1.87	N	39.8	5	44.8		12.56	

Table 4.3 Incremental & Resultant GLC of SO_2

Station ID	Distance to core area (km)	Direction	SO_2 concentrations (μg/m^3)			Comparison against air quality standard (80 μg/m^3)	Magnitude of change (%)	Significance
			Baseline	Predicted	Total			
AAQ1	0.42	W	8.4	1	9.4	Below Standard	11.90	Not Significant
AAQ2	--	-	8.9	5.5	14.4		61.80	
AAQ3	0.83	S	9.5	0.5	10		5.26	
AAQ4	1.58	SW	7.4	0.5	7.9		6.76	
AAQ5	4.65	W	8.4	0	8.4		0.00	
AAQ6	5.03	W	10.0	0	10		0.00	
AAQ7	4.69	SW	7.7	0	7.7		0.00	
AAQ8	3.75	E	9.1	0.5	9.6		5.49	
AAQ9	4.75	S	9.2	0.5	9.7		5.43	
AAQ10	1.87	N	8.9	1	9.9		11.24	

Table 4.4 Incremental & Resultant GLC of NOx

Station ID	Distance to core area (km)	Direction	NOx concentrations($\mu g/m^3$)			Comparison against air quality standard (80 $\mu g/m^3$)	Magnitude of change (%)	Significance
			Baseline	Predicted	Total			
AAQ1	0.42	W	16.3	1	17.3	Below Standard	6.13	Not Significant
AAQ2	--	-	16.9	6.4	23.3		37.87	
AAQ3	0.83	S	16.6	0.5	17.1		3.01	
AAQ4	1.58	SW	11.0	0.5	11.5		4.55	
AAQ5	4.65	W	17.0	0	17		0.00	
AAQ6	5.03	W	19.1	0	19.1		0.00	
AAQ7	4.69	SW	14.0	0	14		0.00	
AAQ8	3.75	E	26.6	0.5	27.1		1.88	
AAQ9	4.75	S	18.2	0.5	18.7		2.75	
AAQ10	1.87	N	16.0	1	17		6.25	

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.

Mitigation Measures

- ❖ Water will be sprinkled on haul roads twice a day to avoid dust generation during transportation.
- ❖ Rough stone and gravel will be properly covered with tarpaulin and transported during the day time.
- ❖ The speed of tippers plying on the haul road will be limited to below 20 km/hr to avoid generation of dust.
- ❖ Main source of gaseous pollution will be from vehicle used for transportation of mineral; therefore, weekly maintenance of vehicles and other machines will be done to improve combustion process and reduce the emission of pollutants.
- ❖ The haul roads will be compacted weekly before being put into use.
- ❖ Over loading of tippers will be avoided to prevent spillage.

- ❖ It will be ensured that all transportation vehicles carry a valid PUC (Pollution Under Control) certificate.
- ❖ Trees will be planted all along the main haul roads and haul roads will often be levelled to prevent the generation of dust due to movement of tippers.
- ❖ Green belt of adequate width will be developed around the project areas.
- ❖ Dust masks will be provided to the workers and their use will be strictly monitored.
- ❖ Annual medical check-ups, trainings and campaigns will be arranged to create awareness about the importance of wearing dust masks among all mine workers and tipper drivers.
- ❖ Ambient air quality monitoring will be conducted six months once to assess the effectiveness of mitigation measures proposed for the projects.

4.5 NOISE ENVIRONMENT

Anticipated Impact

Table 4.5 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)
Between NTC and Rani Leases	360	41.7	28.25	41.89
Core	100	40.3	39.38	42.87
Amaravathi Lease	870	40.0	20.59	40.05
Kuppam	1930	35.4	13.67	35.43
Puthurpatti	890	32.6	20.39	32.85
Andisangilipalayam	1600	36.2	15.30	36.24
Velampalayam	4710	40.3	5.92	40.30
Athipalayam	4930	40.8	5.52	40.80
Munnur	4570	40.8	6.18	40.80
Punna chatram	3750	42.2	7.90	42.20
Karudayampalayam	4830	41.2	5.70	41.20
Kunthanipalayam	1930	41.7	13.67	41.71
NAAQ Standards	Industrial Day Time - 75 dB (A) & Night Time- 70 dB (A) Residential Day Time -55 dB (A) & Night Time- 45 dB (A)			

Total noise level in all the sampling areas is well below the CPCB standards for industrial and residential areas. By adopting suitable mitigation measures, the noise levels due to the project can be controlled further.

Table 4.6 Predicted PPV Values due to Blasting

Location ID	Maximum Charge in kgs	Nearest Habitation in m	PPV in mm/s	Fly rock distance in m	Air Blast	
					Pressure (kPa)	Sound Level (dB)
P1	31	890	0.14	23	0.06	129

Table 4.7 Predicted PPV Values due to Blasting at 100-500m radius

Location ID	Maximum Charge in kgs	Radial Distance in m	PPV in mm/s	Fly rock Distance in m	Air Blast	
					Pressure (kPa)	Sound Level (dB)
P1	31	100	4.92	23	0.80	152
		200	1.62		0.35	145
		300	0.84		0.21	141
		400	0.53		0.15	138
		500	0.37		0.12	135

The peak particle velocity produced by the charge of 31 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.

Mitigation Measures

- ❖ Proper maintenance, oiling and greasing of machines will be done every week to reduce generation of noise.
- ❖ Sound insulated chambers will be provided for the workers working on machines producing higher levels of noise.
- ❖ Silencers / mufflers will be installed in all machineries.
- ❖ Green belt will be developed around the project area and along the haul roads to minimize propagation of noise.
- ❖ Personal Protective Equipment (PPE) like ear muffs/ear plugs will be provided to the operators of heavy machines and persons working near the heavy machines and their use will be ensured though training and awareness.

- Regular medical check–up and proper training will be provided to personnel to create awareness about adverse noise level effects.
- 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
- 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 0.9 mm/s
- Vibration monitoring will be carried out every 6 months to check the efficacy of blasting practices.

4.6 BIOLOGICAL ENVIRONMENT

Anticipated Impact

- None of the plants will be cut during operational phase of the projects.
- There shall be negligible air emissions or effluents from the project sites. Dust generation during loading will be a temporary effect and is not anticipated to affect the surrounding vegetation significantly.

- ❖ Most of the land in the buffer area consists of crop lands, grass patches and small shrubs. Hence, there will be no effect on the flora.
- ❖ Wildlife except few domestic animals, reptiles, hares and some common birds is not found in the cluster and its immediate surrounds because of lack of vegetal cover and surface water.

Mitigation Measures

The proposed projects will develop the green belt within the lease area, along roads and other vacant areas 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. During green belt development, about 810 saplings will be planted by the project proponent both inside and outside the lease area in about three months. For this program, Rs.210600 will be invested as capital and Rs.24300 excluding 5% inflation will be spent annually for green belt maintenance.

4.7 SOCIO ECONOMIC ENVIRONMENT

Anticipated Impact

- ❖ The project will generate employment for about 14 persons
- ❖ Dust generation from mining activity can have negative impact on the health of the workers and people in the nearby area.
- ❖ Approach roads can be damaged by the movement of tippers

Mitigation Measures

- ❖ Good maintenance practices will be adopted for plant machinery and equipment to avert potential noise problems.
- ❖ Green belt will be developed in and around the project sites as per Central Pollution Control Board (CPCB) guidelines.
- ❖ Appropriate air pollution control measure will be provided to minimize the environmental impact within the core zone.
- ❖ For the safety of workers, personal protective appliances like hand gloves, helmets, safety shoes, goggles, aprons, nose masks and ear protecting devices will be provided as per the mines act and rules.
- ❖ Both the State and the Central governments will be benefited through financial revenues by way of royalty, tax, DMF, NMET etc. from the projects directly and indirectly.

4.8 OCCUPATIONAL HEALTH MEASURES

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

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

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

CHAPTER V

ANALYSIS OF ALTERNATIVES (TECHNOLOGY AND SITE)

The mineral deposits are site specific in nature; hence question of seeking alternate sites do not arise for the projects.

CHAPTER VI

ENVIRONMENT MONITORING PROGRAM

Regular monitoring program of environmental components is essential to take into account the changes in the environmental components as shown in Table 6.1. The Objectives of monitoring is:

- ❖ To check or assess the efficiency of the controlling measures;
- ❖ To establish a data base for future impact assessment studies.

Table 6.1 Post Environmental Clearance Monitoring Schedule

S. No.	Environment Attributes	Location	Monitoring		Parameters
			Duration	Frequency	
1	Air Quality	2 locations (1 core & 1buffer)	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 (1Core & 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 6 months	Physical and Chemical Characteristics
8	Greenbelt	Within the Project Area	Daily	Monthly	Maintenance

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

6.2 BUDGETARY PROVISION FOR EMP

The cost in respect of monitoring of environmental components has been shown in Table 6.2.

Table 6.2 Environment Monitoring Budget

S. No.	Parameter	Capital Cost	Recurring Cost per annum
1	Air Quality	-	Rs. 60,000/-
2	Meteorology	-	Rs. 15,000/-
3	Water Quality	-	Rs. 20,000/-
4	Water Level Monitoring		Rs. 10,000/-

5	Soil Quality	-	Rs.20,000/-
6	Noise Quality	-	Rs.10,000/-
7	Vibration Study	-	Rs.1,50,000/-
8	Greenbelt	-	Rs.10,000/-
Total		**-**	**Rs.2,95,000 /-**

Source: Field Data

CHAPTER VII

ADDITIONAL STUDIES

7.1 RISK ASSESSMENT

Risk assessment is all about prevention of accidents and to take necessary steps to prevent it from happening. The methodology for the risk assessment is 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 assess the risk levels of those hazards in order to prioritize those that need an immediate attention. Further, mechanisms responsible for these hazards are identified and control measures are recorded along with pinpointed responsibilities. The whole quarry operation will be carried out under the direction of a qualified competent mine manager certified by the DGMS, Dhanbad.

7.2 DISASTER MANAGEMENT PLAN

The objective of the disaster management plan is to make use of the combined resources of the mine and the outside services to:

- ❖ Rescue and treat 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.

7.3 CUMULATIVE IMPACT STUDY

- ❖ The results on the cumulative impact of the 4 proposed projects on air environment of the cluster do not exceed the permissible limits set by CPCB for air pollutants.

- ❖ The cumulative results of noise for the habitation in consideration do not exceed the limit set by CPCB for residential areas for day time.
- ❖ PPV resulting from 4 proposed projects is well below the permissible limit of Peak Particle Velocity of 8 mm/s.
- ❖ The 4 proposed projects will allocate Rs.20,00,000/- towards CER as recommended by SEAC.
- ❖ The 4 proposed projects will directly provide jobs to about 76 local people.
- ❖ The proposed projects will plant about 3449 saplings in and around the lease area.
- ❖ The proposed projects will add an average of 363 PCU per day to the nearby roads.
- ❖ **7.4 PLASTIC WASTE MANAGEMENT PLAN**

The Project Proponent shall comply with Tamil Nadu Government Order (Ms) No. 84 Environment and Forest (EC.2) Department Dated: 25.06.2018 regarding ban on one time use and throw away plastics irrespective of thickness with effect from 01.01.2019 under Environment (Protection) Act, 1986.

Objective

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

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

CHAPTER VIII
PROJECT BENEFITS

Various benefits are envisaged due to the proposed mine and benefits anticipated from the proposed project to the locality, neighbourhood, region and nation as a whole are:

- ❖ Direct employment to 14 local people
- ❖ 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.,
- ❖ CSR activities mainly contributing to education, health, training of women self-help groups and infrastructure etc., will be taken up in the Kuppam Village. CSR budget is allocated as 2.5% of the profit.
- ❖ Rs. 5,00,000 will be allocated for CER.

CHAPTER IX
ENVIRONMENT MANAGEMENT PLAN

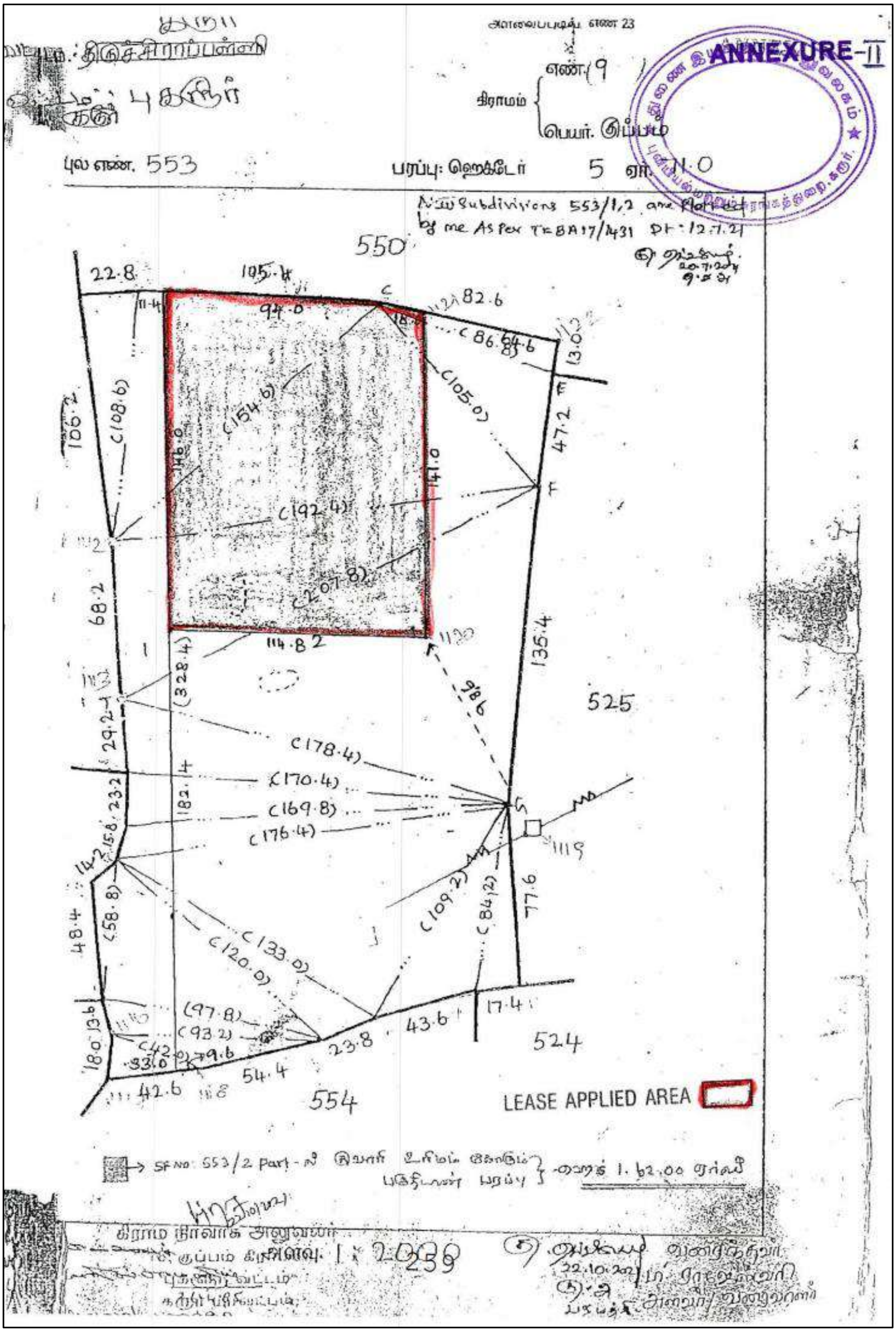
In order to implement the environmental protection measures, an amount of Rs.**1794000** as capital cost and recurring cost as Rs.**1549208** as recurring cost/annum is proposed considering present market price considering present market scenario for the proposed project. After the adjustment of 5% inflation per year, the overall EMP cost for 5 years will be Rs. **10354354.**

CHAPTER X
CONCLUSION

Various aspects of mining activities were considered and related impacts were evaluated. Considering all the possible ways to mitigate the environmental issues, environmental management plan (EMP) 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.

LAND DOCUMENTS

Some of the important land related documents are shown in below.



An FMP sketch showing proposed lease area in red colour

ANNEXURE IV

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(9) 13

ஏண் (9) குப்பம்

	1	2	3	4	5	6	7	8	9	10	11
									குழி. ஹெ.ஏர்ஸ்	ரு.பை.	
546	...	546	[illegible]	பு	...	3-4	5	1 38	2 05.0	2 35	991 கு. கருப்பண்ண கவுண்டர் மற்றும் மூன்று பேர்களும்.
547	...	547	[illegible]	பு	...	3-4	5	1 38	2 53.5	3 53	150 S. K. ந. குமாரசாமி கவுண்டர்.
548	...	548	[illegible]	பு	...	3-4	5	1 38	2 49.5	3 46	350 S. K. ந. குமாரசாமி கவுண்டர்.
549	...	549	[illegible]	பு	...	3-4	5	1 38	1 72.0	2 33	310 ஏ. பழனிச்சாமி.
550	A1	550-A1	[illegible]	பு	...	3-4	5	1 38	0 76.0	1 05	311 அ. பழனியம்மாள்.
	A2	-A2	[illegible]	பு	...	3-4	5	1 38	1 01.0	1 40	53 செ. கந்தசாமி.
	A3	-A3	[illegible]	பு	...	3-4	5	1 38	0 42.5	0 53	705 செ. கந்தசாமி (1), செ. குமார் (2).
	B	-B	[illegible]	பு	...	3-4	5	1 38	0 97.0	1 34	371 மா. மொட்டையப்ப கவுண்டர் (1), மா. முத்தப்ப கவுண்டர் (2), ம. செல்லப்ப கவுண்டர் (3).
	C1	-C1	[illegible]	பு	...	3-4	6	1 38	0 45.0	0 52	391 செ. வையாபுரி.
	C2	-C2	[illegible]	பு	...	3-4	5	1 38	0 46.5	0 64	312 சு. பவுதாயி அம்மாள்.
	C3	-C3	[illegible]	பு	...	3-4	6	1 38	0 92.0	1 38	707 கி. குப்புசாமி (1), மொ. காளியப்பன் (2).
									5 00.0	6 91	
551	...	551	[illegible]	பு	...	3-4	6	1 38	7 34.0	10 15	1232 கு. கருப்பண்ண கவுண்டர் மற்றும் ஒன்பது பேர்களும்.
552	...	552	[illegible]	பு	...	3-4	6	1 38	1 15.5	1 60	1126 கு. ராமசாமி மற்றும் ஐந்து பேர்களும்.
553	...	553	[illegible]	பு	...	3-4	5	1 38	5 71.0	7 90	1255 அ. அம்மையப்பன் மற்றும் எட்டு பேர்களும்.
554	...	554	[illegible]	பு	...	3-4	6	1 38	3 51.0	4 36	995 அ. அம்மையப்பன் மற்றும் மூன்று பேர்களும்.
555	1	555-1	[illegible]	பு	...	3-4	6	1 38	[illegible]	0 94	185 மா. சின்னப்ப கவுண்டர்.

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உண்மை நகல்

கிராம நிர்வாக அலுவலர்

A Register Document

டடாடசாயர அலுவலக இணைய சேவை - அ-...   https://eservices.tn.gov.in/eservicesnew/land/aregExtract_en.html

அ-பதிவேடு விவரங்கள்

மாவட்டம் : கரூர்

வட்டம் : புகளூர்

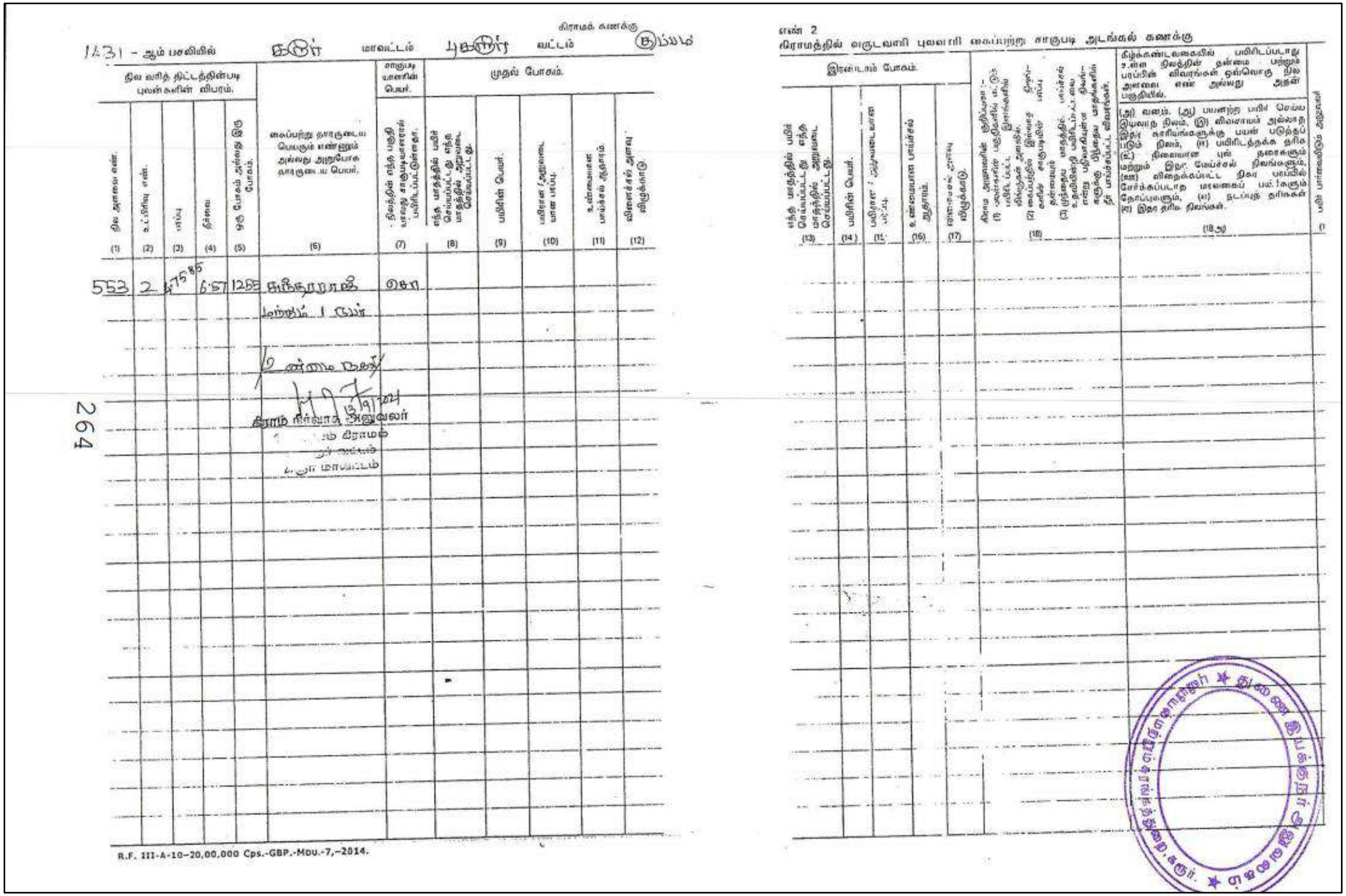
கிராமம் : குப்பம்

1. புல எண்	353	9. மண் வயணமும் ரகமும்	3 - 4
2. உட்பிரிவு எண்	3	10. மண் தரம்	5
3. பழைய புல உட்பிரிவு எண்	353--	11. தீர்வை (ரு - பை)	1.33
4. பகுதி	?	12. பரப்பு (ஹெக்டேர் - ஏர்)	4 - 73.55
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரு - பை)	6.57
6. நிலத்தின் வகை	புஞ்சை	14. பட்டா எண்	1255
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
8. இரு போகமா	-	16. பெயர்	1.சுந்தரராஜ் 2.கன்னம்மாள்

குறிப்பு 1:

1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் http://eservices.tn.gov.in என்ற இணைய தளத்தில் 50323 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.

Copy of patta chitta documents



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